证 明

经教育部科技查新工作站（G12）检索，2020年至今（2020-11-1）上海第二工业大学老师发表的论文被EI（美国工程索引）Compendex收录的有136篇，详见附件。

特此证明！

教育部科技查新工作站G12

2020年11月1日

**1. V2VR: Reliable Hybrid-Network-Oriented V2V Data Transmission and Routing Considering RSUs and Connectivity Probability**

**Accession number:** 20201708508993

**Authors:** Gao, Honghao (1); Liu, Can (2); Li, Youhuizi (3); Yang, Xiaoxian (4)

**Author affiliation:** (1) Computing Center, Shanghai University, Shanghai 200444, China.; (2) School of Computer Engineering and Science, Shanghai University, Shanghai 200444, China.; (3) School of Computer Science, Hangzhou Dianzi University, Hangzhou 310018, China.; (4) School of Computer and Information Engineering, Shanghai Polytechnic University, Shanghai 201209, China (e-mail: xxyang@sspu.edu.cn)

**Source title:** IEEE Transactions on Intelligent Transportation Systems

**Abbreviated source title:** IEEE Trans. Intell. Transp. Syst.

**Issue date:** 2020

**Publication year:** 2020

**Language:** English

**ISSN:** 15249050

**E-ISSN:** 15580016

**Document type:** Article in Press

**Publisher:** Institute of Electrical and Electronics Engineers Inc.

**Abstract:** Vehicular ad hoc networks (VANETs) have been widely used in intelligent transportation systems (ITSs) for purposes such as the control of unmanned aerial vehicles (UAVs) and trajectory prediction. However, an efficient and reliable data routing decision scheme is critical for VANETs due to the feature of self-organizing wireless multi-hop communication. Compared with wireless networks, which are unstable and have limited bandwidth, wired networks normally provide longer transmission distances, higher network speeds and greater reliability. To address this problem, this paper proposes a reliable VANET routing decision scheme based on the Manhattan mobility model, which considers the integration of roadside units (RSUs) into wireless and wired modes for data transmission and routing optimization. First, the problems of frequently moving vehicles and network connectivity are analyzed based on road networks and the motion information of vehicle nodes. Second, an improved greedy algorithm for vehicle wireless communication is used for network optimization, and a wired RSU network is also applied. In addition, routing decision analysis is carried out in accordance with the probabilistic model for various transmission ranges by checking the connectivity among vehicles and RSUs. Finally, comprehensive experiments show that our proposed method can support real-time planning and improve network transmission performance compared with other baseline protocol approaches in terms of several metrics, including package delivery ratio, time delay and wireless hops. IEEE

**Main heading:** Vehicular ad hoc networks

**Controlled terms:** Antennas  -  Data communication systems  -  Data transfer  -  Intelligent systems  -  Road vehicles

**Uncontrolled terms:** Connectivity probability  -  Intelligent transportation systems  -  Manhattan mobility models  -  Probabilistic modeling  -  Self-organizing wireless  -  Transmission distances  -  Vehicular Adhoc Networks (VANETs)  -  Wireless communications

**Classification code:** 723 Computer Software, Data Handling and Applications  -  723.4 Artificial Intelligence

**DOI:** 10.1109/TITS.2020.2983835

**Database:** Compendex

Compilation and indexing terms, Copyright 2020 Elsevier Inc.

**Data Provider:** Engineering Village

**2. Effects of Taiji on Participants’ Knees: A Behavioral-Modeling Approach**

**Accession number:** 20203509097883

**Authors:** Yan, Jihong (1); Wu, Liang (1); Zhang, Shuying (1); Liang, Hongguang (2); Lin, Qiang (2)

**Author affiliation:** (1) College of Computer and Information Engineering, Shanghai Polytechnic University, Shanghai; 201209, China; (2) Department of Tuina, Shanghai General Hospital, Shanghai Jiao Tong University, Shanghai; 200080, China

**Corresponding author:** Lin, Qiang(jhyanjihong@163.com)

**Source title:** Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)

**Abbreviated source title:** Lect. Notes Comput. Sci.

**Volume:** 12290 LNCS

**Part number:** 1 of 1

**Issue title:** Algorithmic Aspects in Information and Management - 14th International Conference, AAIM 2020, Proceedings

**Issue date:** 2020

**Publication year:** 2020

**Pages:** 615-626

**Language:** English

**ISSN:** 03029743

**E-ISSN:** 16113349

**ISBN-13:** 9783030576011

**Document type:** Conference article (CA)

**Conference name:** 14th International Conference on Algorithmic Aspects in Information and Management, AAIM 2020

**Conference date:** August 10, 2020 - August 12, 2020

**Conference location:** Jinhua, China

**Conference code:** 243469

**Publisher:** Springer

**Abstract:** More and more people like to practice taiji for different purposes. Taiji has been proposed as a treatment for the knee osteoarthritis. But there have always been different opinions that Taiji can cause knee injuries. The information on an individual participant is often incomplete. When complementary information is integrated, a better profile of a participant’s knee can be built to explore the tension. This paper aims to investigate the effects of Taiji on knees. We introduce a method for buildting a mapping among Taiji participants and their knee healthcare. It consists of three key components: the first component identifies Taiji participants’ unique behavioral patterns; the second component constructs features due to these behavioral patterns; and the third component exploys machine learning for effective computing. We formally define the problem and show that our method is effective. This study paves the way for analysis and mining knee osteoarthritis prevention and treatment. It also facilitates the creation of novel healthcare services. © 2020, Springer Nature Switzerland AG.

**Number of references:** 12

**Main heading:** Health care

**Controlled terms:** Artificial intelligence  -  Computer science  -  Computers

**Uncontrolled terms:** Behavioral model  -  Behavioral patterns  -  Healthcare services  -  Knee injury  -  Knee osteoarthritis  -  Third component

**Classification code:** 461.7 Health Care  -  723.4 Artificial Intelligence

**DOI:** 10.1007/978-3-030-57602-8\_55

**Funding Details:**

**Funding text:** Supported by Key Disciplines of Software Engineering of Shanghai Polytechnic University under Grant No. XXKZD1604.

**Compendex references:** YES

**Database:** Compendex

Compilation and indexing terms, Copyright 2020 Elsevier Inc.

**Data Provider:** Engineering Village

**3. A spam worker detection approach based on heterogeneous network embedding in crowdsourcing platforms**

**Accession number:** 20204209359466

**Authors:** Kuang, Li (1); Zhang, Huan (1); Shi, Ruyi (1); Liao, Zhifang (1); Yang, Xiaoxian (2)

**Author affiliation:** (1) School of Computer Science and Engineering, Central South University, Hunan; 410075, China; (2) School of Computer and Information Engineering, Shanghai Polytechnic University, Shanghai; 201209, China

**Corresponding author:** Yang, Xiaoxian(xxyang@sspu.edu.cn)

**Source title:** Computer Networks

**Abbreviated source title:** Comput. Networks

**Volume:** 183

**Issue date:** December 24, 2020

**Publication year:** 2020

**Article number:** 107587

**Language:** English

**ISSN:** 13891286

**CODEN:** CNETDP

**Document type:** Journal article (JA)

**Publisher:** Elsevier B.V., Netherlands

**Abstract:** Due to the popularity of crowdsourcing, more crowds are participating in crowdsourcing tasks. However, the proportion of spam workers is continuously increasing due to the openness of crowdsourcing platforms and their incentive mechanisms. To defend against threats from spam workers, researchers have proposed reputation-based and verification-based detection methods, but they either cannot address various collusion patterns or are costly when facing a large number of spam workers with “good” reputations due to collusion. Therefore, we propose a spam worker detection approach based on heterogeneous network embedding. We first model three collusion patterns and analyze the characteristics of spam workers to provide a theoretical basis for detecting spam workers. We then transform the problem of spam worker detection into a node classification problem in a crowdsourcing heterogeneous network in which the vectors of worker nodes are learned using network embedding. To improve the efficiency of network embedding, we propose an improved variable-length random walk algorithm based on node centrality. Finally, based on the obtained vectors of worker nodes, a one-class SVM is used to detect spam workers. The experiments demonstrate that our proposed approach can effectively detect spam workers in different collusion patterns and that the proposed random walk algorithm can reduce the time spent on model training while improving the efficiency of network embedding. © 2020 Elsevier Ltd

**Number of references:** 29

**Main heading:** Crowdsourcing

**Controlled terms:** Efficiency  -  Embeddings  -  Heterogeneous networks  -  Random processes  -  Support vector machines

**Uncontrolled terms:** Crowdsourcing platforms  -  Detection approach  -  Detection methods  -  Incentive mechanism  -  Model training  -  Network embedding  -  Random walk algorithms  -  Variable length

**Classification code:** 723 Computer Software, Data Handling and Applications  -  913.1 Production Engineering  -  922.1 Probability Theory

**DOI:** 10.1016/j.comnet.2020.107587

**Funding Details:** Number: 2018YFB1003800, Acronym: -, Sponsor: -; Number: 2020zzts607, Acronym: -, Sponsor: Fundamental Research Funds for Central Universities of the Central South University; Number: 61772560,61902236, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 2019JJ40388, Acronym: -, Sponsor: -;

**Funding text:** This work was supported by the National Key R&D Program of China (grant no. 2018YFB1003800 ), the National Natural Science Foundation of China (grant no. 61772560 and no. 61902236 ), the Natural Science Foundation of Hunan Province (grant no. 2019JJ40388 ), and the Fundamental Research Funds for the Central Universities of Central South University (grant no. 2020zzts607 ) .

**Compendex references:** YES

**Database:** Compendex

Compilation and indexing terms, Copyright 2020 Elsevier Inc.

**Data Provider:** Engineering Village

**4. The squareness errors compensation for Coordinate Measuring Machines based on virtual factory**

**Accession number:** 20204109328035

**Authors:** Pan, Fangyu (1); Bai, Yuewei (1); Xu, Kefeng (2); Nie, Li (1)

**Author affiliation:** (1) School of Intelligent, Manufacturing and Control Engineering, Shanghai Polytechnic University, Shanghai; 201209, China; (2) College of Business, University of Texas at San, Antonio; 78249, United States

**Source title:** Proceedings of 2020 IEEE International Conference on Artificial Intelligence and Computer Applications, ICAICA 2020

**Abbreviated source title:** Proc. IEEE Int. Conf. Artif. Intell. Comput. Appl., ICAICA

**Part number:** 1 of 1

**Issue title:** Proceedings of 2020 IEEE International Conference on Artificial Intelligence and Computer Applications, ICAICA 2020

**Issue date:** June 2020

**Publication year:** 2020

**Pages:** 670-673

**Article number:** 9182535

**Language:** English

**ISBN-13:** 9781728170046

**Document type:** Conference article (CA)

**Conference name:** 2020 IEEE International Conference on Artificial Intelligence and Computer Applications, ICAICA 2020

**Conference date:** June 27, 2020 - June 29, 2020

**Conference location:** Dalian, China

**Conference code:** 162787

**Publisher:** Institute of Electrical and Electronics Engineers Inc., United States

**Abstract:** Faced with fierce competition, the concept of virtual factory comes out. As an important part of virtual factories, Coordinate Measuring Machines’ accuracy is important. The paper introduces the efficient and economic method, error compensation, to enhance the Coordinate Measuring Machines precision. As the basic steps of error compensation, the significant error sources-geometric errors are found out; the errors relationship is established and the squareness errors’ measurement is analyzed. The experiment is done, which validates the feasibility of the method. © 2020 IEEE.

**Number of references:** 5

**DOI:** 10.1109/ICAICA50127.2020.9182535

**Funding Details:** Number: 2017YFE0118700, Acronym: -, Sponsor: -; Number: 734599, Acronym: MSCA, Sponsor: H2020 Marie Sk&lstrok;odowska-Curie Actions; Number: -, Acronym: H2020, Sponsor: Horizon 2020 Framework Programme; Number: 51605273, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;

**Funding text:** This project is funded by the State Key Research and Development Program of China (2017YFE0118700); and received funding from the European Union’s Horizon 2020 research and innovation programme under the Marie Sklodowska-Curie grant agreement No 734599; and the National Natural Science Foundation of China under Grant No. 51605273.

**Compendex references:** YES

**Database:** Compendex

Compilation and indexing terms, Copyright 2020 Elsevier Inc.

**Data Provider:** Engineering Village

**5. Visual 3D Reconstruction System Based on RGBD Camera**

**Accession number:** 20202408820791

**Authors:** Zhang, Guangcai (1, 2); Jiao, Yu (2, 3); Zhihao, Wang (1, 2); Xiuqian, Gao (1, 2); Jirong, He (2)

**Author affiliation:** (1) Suzhou Vocational Institute of Industrial Technology, Suzhou, China; (2) Yangzhou HRG Technology and Innovation Robot Research Institute Co., Ltd., Yangzhou, China; (3) Shanghai Polytechnic University, Shanghai, China

**Source title:** Proceedings of 2020 IEEE 4th Information Technology, Networking, Electronic and Automation Control Conference, ITNEC 2020

**Abbreviated source title:** Proc. IEEE Inf. Technol., Netw., Electron. Autom. Control Conf., ITNEC

**Part number:** 1 of 1

**Issue title:** Proceedings of 2020 IEEE 4th Information Technology, Networking, Electronic and Automation Control Conference, ITNEC 2020

**Issue date:** June 2020

**Publication year:** 2020

**Pages:** 908-911

**Article number:** 9085048

**Language:** English

**ISBN-13:** 9781728143903

**Document type:** Conference article (CA)

**Conference name:** 4th IEEE Information Technology, Networking, Electronic and Automation Control Conference, ITNEC 2020

**Conference date:** June 12, 2020 - June 14, 2020

**Conference location:** Chongqing, China

**Conference code:** 159655

**Sponsor:** Chengdu Global Union Academy of Science and Technology; Chongqing Geeks Education Technology Co., Ltd; Chongqing Global Union Academy of Science and Technology; Global Union Academy of Science and Technology; IEEE Beijing Section

**Publisher:** Institute of Electrical and Electronics Engineers Inc.

**Abstract:** With the development of computer science and artificial intelligence, the industrial field is gradually becoming unmanned. In this paper, a 3D point cloud image is created with an RGBD camera, the scene is restored through dense 3D reconstruction, and then the color information in the 3D point cloud image is recognized to obtain the 3D coordinates of the area to be painted. Finally, the coordinates are sent to the painting robot to achieve the purpose of automatic painting. This article describes the visual 3D reconstruction part. Unlike the current painting system, this system can automatically obtain the position information without the need to fix the position of the object. In the end, the system can realize the dense reconstruction of 3D point clouds of objects, which provides a certain reference for industrial unmanned management. © 2020 IEEE.

**Number of references:** 5

**Main heading:** Image reconstruction

**Controlled terms:** Cameras

**Uncontrolled terms:** 3D point cloud  -  3D reconstruction  -  Automatic painting  -  Color information  -  Industrial fields  -  Painting robots  -  Painting system  -  Position information

**Classification code:** 742.2 Photographic Equipment

**DOI:** 10.1109/ITNEC48623.2020.9085048

**Compendex references:** YES

**Database:** Compendex

Compilation and indexing terms, Copyright 2020 Elsevier Inc.

**Data Provider:** Engineering Village

**6. Single Image Super-resolution Reconstruction with Wavelet based Deep Residual Learning**

**Accession number:** 20204009254747

**Authors:** Dou, Jianfang (1); Tu, Zimei (1); Peng, Xishuai (2)

**Author affiliation:** (1) Shanghai Polytechnic University, Department of Automation and Mechanical and Electrical Engineering, 201209, China; (2) Shanghai Jiao Tong University, Department of Aerospace Information and Control, 200240, China

**Source title:** Proceedings of the 32nd Chinese Control and Decision Conference, CCDC 2020

**Abbreviated source title:** Proc. Chin. Control Decis. Conf., CCDC

**Part number:** 1 of 1

**Issue title:** Proceedings of the 32nd Chinese Control and Decision Conference, CCDC 2020

**Issue date:** August 2020

**Publication year:** 2020

**Pages:** 4270-4275

**Article number:** 9164678

**Language:** English

**ISBN-13:** 9781728158549

**Document type:** Conference article (CA)

**Conference name:** 32nd Chinese Control and Decision Conference, CCDC 2020

**Conference date:** August 22, 2020 - August 24, 2020

**Conference location:** Hefei, China

**Conference code:** 162350

**Sponsor:** IEEE Control Systems Society (CSS); Northeastern University; State Key Laboratory of Synthetical Automation for Process Industries; Technical Committee on Control Theory, Chinese Association of Automation

**Publisher:** Institute of Electrical and Electronics Engineers Inc., United States

**Abstract:** We present a single-image super-resolution (SR) method for Remote Sensing Image based on deep learning within Discrete Wavelet Domain in this paper. Our method is inspired Residual Learning. Firstly, an input image is decomposed by single level 2D Discrete wavelet transform to get four sub-bands; The four sub-bands coefficients are feeding into the Deep Learning Residual Network to predict correspondingly residual images; Adding four sub-band images and residual images as the new sub-bands of 2D wavelet transform; Finally, uses the inverse 2D Discrete wavelet transform to get the final output Super Resolution HR image. Our proposed method performs better than existing methods in accuracy and visual improvements in our results are easily noticeable. © 2020 IEEE.

**Number of references:** 31

**Main heading:** Deep learning

**Controlled terms:** Discrete wavelet transforms  -  Image compression  -  Image reconstruction  -  Inverse problems  -  Learning systems  -  Optical resolving power  -  Remote sensing

**Uncontrolled terms:** 2-d discrete wavelet transforms  -  2-D wavelet transform  -  Discrete wavelets  -  Remote sensing images  -  Residual images  -  Single-image super-resolution reconstruction  -  Super resolution  -  Visual improvements

**Classification code:** 741.1 Light/Optics  -  921.3 Mathematical Transformations

**DOI:** 10.1109/CCDC49329.2020.9164678

**Funding Details:** Number: A01GY15GX48, Acronym: -, Sponsor: -; Number: A11NH182016, Acronym: -, Sponsor: -;

**Funding text:** This work was supported by the by Shanghai University Outstanding Teachers Cultivation Fund Program A30DB1524011-21 and 2015 School Fund Project A01GY15GX48 and Shanghai Second Polytechnic University Mechanical Engineering Key Disciplines XXKZD1603 and the Construction of University Enterprise Cooperation Automobile Electronic Joint Experiment Center, Grant Number A11NH182016.

**Compendex references:** YES

**Database:** Compendex

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**Data Provider:** Engineering Village

**7. Construction of a novel electrochemical biosensor based on a mesoporous silica/oriented graphene oxide planar electrode for detecting hydrogen peroxide**

**Accession number:** 20204209365965

**Authors:** Lu, Kun-Chao (1); Wang, Ji-Kui (1); Lin, Dong-Hai (2); Chen, Xue (1); Yin, Shi-Yu (1); Chen, Guo-Song (1)

**Author affiliation:** (1) School of Chemistry and Molecular Engineering, Nanjing Tech University, Nanjing; 210009, China; (2) School of Environmental and Materials Engineering, College of Engineering, Shanghai Polytechnic University, Shanghai; 201209, China

**Corresponding author:** Wang, Ji-Kui(wjk@njtech.edu.cnemaildhlin@sspu.edu.cn)Lin, Dong-Hai(dhlin@sspu.edu.cn)

**Source title:** Analytical Methods

**Abbreviated source title:** Anal. Methods

**Volume:** 12

**Issue:** 21

**Issue date:** June 7, 2020

**Publication year:** 2020

**Pages:** 2661-2667

**Language:** English

**ISSN:** 17599660

**E-ISSN:** 17599679

**Document type:** Journal article (JA)

**Publisher:** Royal Society of Chemistry

**Abstract:** A constant magnetic field (CMF) was used to arrange the orientation of graphene oxide (GO) which was modified on a self-made screen-printed electrode. We evaluated the efficiency of this method for potential analytical application towards the sensing of hydrogen peroxide (H2O2). Mesoporous silica (MS)-encapsulated horseradish peroxidase (HRP) was immobilized on the electrode with vertically arranged GO to construct an H2O2 sensor (denoted as CMF/GO/HRP@MS). The linear range of the response of the CMF/GO/HRP@MS sensor to H2O2 was 0.1-235 μM, and the detection limit was as low as 0.01 μM. The results demonstrated that the vertical arrangement of GO resulting from the CMF on the electrode surface could increase the electron transfer rate. The excellent selectivity and anti-interference ability of this sensor to H2O2 in physiological samples may be attributed to the synergistic effect of mesoporous silica, GO and constant magnetic field. © 2020 The Royal Society of Chemistry.

**Number of references:** 39

**Main heading:** Electrochemical electrodes

**Controlled terms:** Graphene  -  Hydrogen peroxide  -  Magnetic fields  -  Mesoporous materials  -  Oxidation  -  Peroxides  -  Silica

**Uncontrolled terms:** Analytical applications  -  Constant magnetic fields  -  Electrochemical biosensor  -  Electrode surfaces  -  Electron transfer rates  -  Horseradish peroxidase  -  Screen printed electrodes  -  Synergistic effect

**Classification code:** 701.2 Magnetism: Basic Concepts and Phenomena  -  761 Nanotechnology  -  802.2 Chemical Reactions  -  804 Chemical Products Generally  -  804.2 Inorganic Compounds

**DOI:** 10.1039/d0ay00430h

**Funding Details:** Number: -, Acronym: -, Sponsor: Program for Professor of Special Appointment (Eastern Scholar) at Shanghai Institutions of Higher Learning;

**Funding text:** This work was supported by the Program for Professor of Special Appointment (Eastern Scholar) at Shanghai Institutions of Higher Learning and Gaoyuan Discipline of Shanghai- Environmental Science and Engineering (Resource Recycling Science and Engineering).

**Compendex references:** YES

**Database:** Compendex

Compilation and indexing terms, Copyright 2020 Elsevier Inc.

**Data Provider:** Engineering Village

**8. FIR to FIR Model Reduction with Linear Group Delay in Passband by SDP Optimization    (*Open Access*)**

**Accession number:** 20201108291134

**Authors:** Hu, Haijiang (1); Song, Shaojing (1); Zhang, Fengdeng (2)

**Author affiliation:** (1) College of Engineering, Shanghai Polytechnic University, Shanghai; 201209, China; (2) School of Optical-Electrical and Computer Engineering, University of Shanghai for Science and Technology, Shanghai; 200093, China

**Corresponding author:** Song, Shaojing(sjsong@sspu.edu.cn)

**Source title:** Journal of Electrical and Computer Engineering

**Abbreviated source title:** J. Electr. Comput. Eng.

**Volume:** 2020

**Issue date:** 2020

**Publication year:** 2020

**Article number:** 4503706

**Language:** English

**ISSN:** 20900147

**E-ISSN:** 20900155

**Document type:** Journal article (JA)

**Publisher:** Hindawi Limited, 410 Park Avenue, 15th Floor, 287 pmb, New York, NY 10022, United States

**Abstract:** Filter model reduction is an important optimization method in digital signal processing. A method of FIR to FIR model reduction using SDP optimization is proposed in this paper. At first, we use SDP to design an original FIR filter. Then we name a general K-order FIR digital filter H1z-1 with coefficient values equal to the first K + 1 filter coefficient values of H0z-1. Finally, we design a new general K-order FIR digital filter H2z-1 connected in parallel with H1z-1 using SDP optimization. The experiment results show this method has good performance on the magnitude error and the linear phase in passband. Therefore, this method can be used in the field of digital signal processing. © 2020 Haijiang Hu et al.

**Number of references:** 14

**Main heading:** FIR filters

**Controlled terms:** Digital signal processing  -  Group delay

**Uncontrolled terms:** Coefficient values  -  Filter coefficients  -  Filter model  -  FIR digital filters  -  Linear group  -  Linear phase  -  Magnitude error  -  Optimization method

**Classification code:** 703.1 Electric Networks  -  703.2 Electric Filters

**DOI:** 10.1155/2020/4503706

**Funding Details:** Number: A11NH182016, Acronym: -, Sponsor: -;

**Funding text:** The generous support of the Discipline Construction Fund of SSPU (XXKZD1605) and the Construction of University Enterprise Cooperation Automobile Electronic J Experiment Center (A11NH182016) are gratefully acknowledged.

**Compendex references:** YES

**Database:** Compendex

Compilation and indexing terms, Copyright 2020 Elsevier Inc.

**Data Provider:** Engineering Village

**9. A Modified Particle Swarm Algorithm for Solving Group Robotics Problem**

**Accession number:** 20200708154376

**Authors:** Liang, Kang (1); Karpenko, A.P. (2)

**Author affiliation:** (1) Shanghai Polytechnic University, Pudong District, Jin Hai Road, 2360, Shanghai; 201209, China; (2) Bauman Moscow State Technical University, ul. Baumanskaya 2-ya, 5/1, Moscow; 10005, Russia

**Corresponding author:** Karpenko, A.P.(apkarpenko@mail.ru)

**Source title:** Advances in Intelligent Systems and Computing

**Abbreviated source title:** Adv. Intell. Sys. Comput.

**Volume:** 1127 AISC

**Part number:** 1 of 1

**Issue title:** Advances in Intelligent Systems, Computer Science and Digital Economics, CSDEIS 2019

**Issue date:** 2020

**Publication year:** 2020

**Pages:** 205-217

**Language:** English

**ISSN:** 21945357

**E-ISSN:** 21945365

**ISBN-13:** 9783030392154

**Document type:** Conference article (CA)

**Conference name:** International Symposium on Computer Science, Digital Economy and Intelligent Systems, CSDEIS 2019

**Conference date:** October 4, 2019 - October 6, 2019

**Conference location:** Moscow, Russia

**Conference code:** 236659

**Publisher:** Springer

**Abstract:** The paper proposes modifications of the PSO+ global optimization algorithm, which is based on the canonical particle swarm algorithm (PSO). The PSO+ algorithm is designed to solve the group robotics problem that comes down to the localization of the global extremum of a certain scalar objective function when there are no obstacles for robots’ movement. The PSO+ algorithm modifications proposed in the paper make allowance for a possibility that such obstacles are present. The paper objective is to study the obstacles effect on the efficiency of the modified PSO+ algorithm. We consider two possible options of the problem: a priori information about the obstacle sizes and locations is available and specified prior information is non-available. The results of computational experiments to study the effectiveness of the modified PSO+ algorithm is presented. The experimental results show that the modification of the PSO+ algorithm proposed in the work provides a high quality solution to the considered task of group robotics under conditions when there is an obstacle to the movement of robots in the search area. © 2020, The Editor(s) (if applicable) and The Author(s), under exclusive license to Springer Nature Switzerland AG.

**Number of references:** 18

**Main heading:** Particle swarm optimization (PSO)

**Controlled terms:** Economics  -  Global optimization  -  Intelligent systems  -  Robotics  -  Swarm intelligence

**Uncontrolled terms:** Computational experiment  -  Global optimization algorithm  -  Group robotics  -  High-quality solutions  -  Modified particle swarm optimization algorithms  -  Objective functions  -  Particle swarm algorithm  -  Priori information

**Classification code:** 723.4 Artificial Intelligence  -  731.5 Robotics  -  921.5 Optimization Techniques  -  971 Social Sciences

**DOI:** 10.1007/978-3-030-39216-1\_19

**Compendex references:** YES

**Database:** Compendex

Compilation and indexing terms, Copyright 2020 Elsevier Inc.

**Data Provider:** Engineering Village

**10. Investigation of Enhanced Volumetric Solar Steam Generation by a Lower Concentration of ZrC Nanofluid**

**Accession number:** 20201308344969

**Authors:** Wang, Kongxiang (1); Xing, Jiaojiao (1); Kan, Ankang (2); Xie, Huaqing (1); Yu, Wei (1)

**Author affiliation:** (1) College of Engineering, Shanghai Key Laboratory of Engineering Materials Application and Evaluation, Shanghai Polytechnic University, Shanghai; 201209, China; (2) Merchant Marine College, Shanghai Maritime University, Shanghai; 201306, China

**Corresponding author:** Yu, Wei(yuwei@sspu.edu.cn)

**Source title:** Nano

**Abbreviated source title:** Nano

**Volume:** 15

**Issue:** 3

**Issue date:** March 1, 2020

**Publication year:** 2020

**Article number:** 2050030

**Language:** English

**ISSN:** 17932920

**Document type:** Journal article (JA)

**Publisher:** World Scientific Publishing Co. Pte Ltd

**Abstract:** Solar steam generation is an efficient photo thermal conversion method, which has a wide range of applications in water purification and desalination. With an increasing requirement for technological advancements, the low efficiency of the working media has become a hindrance. In this work, ZrC nanofluid, which has good stability and broad-band absorption capability, was prepared to enhance the volumetric solar steam generation. The effect of ZrC nanoparticle concentration, within a large volume, on a solar steam generation was experimentally studied. It has been found that due to the unique optical absorption characteristics of ZrC nanoparticles, an advantageous temperature gradient with hot irradiation surface layer is attained and the irradiation energy is mostly absorbed by the top surface layer to generate steam. This reduces heat dissipation and improves the evaporation efficiency of the working media. Enhanced solar steam generation by using ZrC nanofluid in the base fluid reduces evaporation costs and expands its applicability in commercial production. © 2020 World Scientific Publishing Company.

**Number of references:** 44

**Main heading:** Nanofluidics

**Controlled terms:** Desalination  -  Energy efficiency  -  Evaporation  -  Irradiation  -  Light absorption  -  Nanoparticles  -  Solar energy  -  Steam  -  Steam generators  -  Zirconium compounds

**Uncontrolled terms:** Absorption characteristics  -  Broad band absorptions  -  Commercial productions  -  Nanofluids  -  Nanoparticle concentrations  -  Photo-thermal conversions  -  Steam generation  -  Technological advancement

**Classification code:** 445.1 Water Treatment Techniques  -  525.2 Energy Conservation  -  614.2 Steam Power Plant Equipment and Operation  -  657.1 Solar Energy and Phenomena  -  741.1 Light/Optics  -  761 Nanotechnology  -  802.3 Chemical Operations  -  933 Solid State Physics

**DOI:** 10.1142/S1793292020500307

**Funding Details:** Number: 17ZR1411000, Acronym: -, Sponsor: Natural Science Foundation of Shanghai; Number: 51590901, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;

**Funding text:** The work was supported by the National Natural Science Foundation of China (51590901 and 51876112), the Shanghai Municipal Natural Science Foundation (Grant No. 17ZR1411000), the Key Subject of Shanghai Polytechnic University (Material Science and Engineering; Grant Nos. XXKZD1601 and A10GY19H10-g01).

**Compendex references:** YES

**Database:** Compendex

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**Data Provider:** Engineering Village

**11. Influence of copper oxide with different morphologies on heat transfer performance of nanofluids    (*Open Access*)**

**Accession number:** 20201108288434

**Title of translation:**

**Authors:** Zhu, Dahai (1, 2); Yu, Wei (2); Zhu, Guihua (1, 2); Zhang, Yingchun (2); Xie, Huaqing (2)

**Author affiliation:** (1) School of Environmental Science and Engineering, Donghua University, Shanghai; 201620, China; (2) School of Environmental and Materials Engineering, College of Engineering, Shanghai Polytechnic University, Shanghai; 201209, China

**Corresponding author:** Yu, Wei(yuwei@sspu.edu.cn)

**Source title:** Kexue Tongbao/Chinese Science Bulletin

**Abbreviated source title:** Kexue Tongbao/Chin. Sc. Bull.

**Volume:** 65

**Issue:** 2-3

**Issue date:** January 15, 2020

**Publication year:** 2020

**Pages:** 222-228

**Language:** Chinese

**ISSN:** 0023074X

**E-ISSN:** 20959419

**Document type:** Journal article (JA)

**Publisher:** Chinese Academy of Sciences, P.O. Box 2871, Beijing, 100085, China

**Abstract:** By acting as an ideal working fluid for the improvement of the heat transfer performance, nanofluids can enhance the process of convective heat transfer by adding nanoparticles to working fluids. As nanofluids can significantly improve heat exchange efficiency in the heat exchange systems, they have been studied extensively as a primary research topic in the past two decades. Owing to its good thermophysical properties, CuO is usually used as additive filler for improving the enhanced heat transfer performance of different base fluids. So far, various morphologies and structures of CuO nanoparticles and CuO composites (such as nanowires, nanoblocks, and nanospheres) have been synthesized. However, due to different preparation processes and systems, very few studies have explored the effect of CuO morphology on the enhanced heat transfer of nanofluids under the same conditions. In fact, the study of the influence of nanoparticle morphology and subsequent mechanism is significant for the promotion of its practical applications. Water and ethylene glycol have been the primary focus of traditional research works conducted on the base fluid of nanofluids. However, water and ethylene glycol have low boiling points; therefore, they cannot be exposed to higher temperatures. This limitation causes the devices (used for water and ethylene glycol) to become more prone to wear and corrosion, thereby limiting the wide applications of water and ethylene glycol in industrial production. As compared to water and ethylene glycol, dimethicone has the following advantages: Good thermal stability, non-toxicity, odorlessness, and recyclability. However, the thermal conductivity of dimethicone is too low, thereby leading to lower heat transfer efficiency. Therefore, researchers have tried to increase its thermal conductivity by employing various methods. Experimental studies have shown that the heat transfer performance of nanofluids can be enhanced by the addition of metal oxide nanoparticles having high thermal conductivity. In this study, we prepared CuO nanospheres, CuO nanoflowers, CuO nanorods, CuO nanowires-dimethicone nanofluids in order to verify the effect of CuO morphology on the thermal conductivity of nanofluids. The effects of particle volume fraction and shape on thermal conductivity were also studied. In addition, we carried out an in-depth analysis of its enhanced heat transfer mechanism and theoretical prediction model. The experimental results demonstrated that the structure and morphology of nanomaterials have a significant influence on the thermal conductivity of nanofluids. The increase of volume fraction indicates that there is a nearly linear relationship between thermal conductivity and volume fraction. At the volume fraction of 0.75%, thermal conductivities of CuO nanospheres, CuO nanoflowers, CuO nanorods, and CuO nanowires were 0.155, 0.168, 0.189, and 0.233 W/(m K), respectively. The corresponding thermal conductivities also increased by 7.00%, 16.11%, 51.62% and 60.78%, respectively. Through comparison, we conclude that the thermal conductivity of CuO nanofluids is positively correlated with the aspect ratio of CuO under the same conditions. Through a comprehensive comparison of experimental results and the classical theoretical prediction models, we found out that the Maxwell, Jeffrey, Bruggeman, and Looyenga models can meet the prediction requirements of thermal conductivity of spherical CuO nanofluids. The Hamilton-Crosser model can serve as a better predictor of the thermal conductivity of CuO nanofluids. In addition, we analyzed the heat transfer mechanism of CuO nanofluids. It was found that the higher aspect ratio of CuO nanorods and nanowires helps in increasing the probability of contact with each other. This, in turn, established an optimal condition for the hot carrier transport to achieve a minimum energy loss path, thus building a faster thermal conduction network. © 2020, Science Press. All right reserved.

**Number of references:** 30

**Main heading:** Thermal conductivity of liquids

**Controlled terms:** Aspect ratio  -  Copper oxides  -  Corrosion  -  Energy dissipation  -  Ethylene  -  Ethylene glycol  -  Forecasting  -  Heat convection  -  Heat exchangers  -  Heat transfer performance   -  Metal nanoparticles  -  Metals  -  Morphology  -  Nanoflowers  -  Nanofluidics  -  Nanorods  -  Nanospheres  -  Nanowires  -  Polyols  -  Synthesis (chemical)   -  Thermal conductivity  -  Thermodynamic properties  -  Volume fraction  -  Working fluids

**Uncontrolled terms:** Comprehensive comparisons  -  Enhanced heat transfer  -  Enhanced heat transfer mechanism  -  Heat transfer mechanism  -  High thermal conductivity  -  Metal oxide nanoparticles  -  Nanofluids  -  Particle volume fractions

**Classification code:** 525.4 Energy Losses (industrial and residential)  -  616.1 Heat Exchange Equipment and Components  -  641.1 Thermodynamics  -  641.2 Heat Transfer  -  761 Nanotechnology  -  802.2 Chemical Reactions  -  804.1 Organic Compounds  -  804.2 Inorganic Compounds  -  951 Materials Science

**Numerical data indexing:** Percentage 1.61e+01%, Percentage 5.16e+01%, Percentage 6.08e+01%, Percentage 7.00e+00%, Percentage 7.50e-01%, Thermal\_Conductivity 2.33e-01W/m\*K

**DOI:** 10.1360/TB-2019-0389

**Compendex references:** YES

**Database:** Compendex

Compilation and indexing terms, Copyright 2020 Elsevier Inc.

**Data Provider:** Engineering Village

**12. Experimental investigation of novel integrated photovoltaic-thermoelectric hybrid devices with enhanced performance**

**Accession number:** 20202608861016

**Authors:** Zhang, Jia (1); Zhai, Han (2); Wu, Zihua (1); Wang, Yuanyuan (1); Xie, Huaqing (1, 2)

**Author affiliation:** (1) School of Environmental and Materials Engineering, Shanghai Polytechnic University, Shanghai; 201209, China; (2) School of Energy and Power Engineering, Nanjing University of Science and Technology, Nanjing; 210014, China

**Corresponding author:** Wu, Zihua(wuzihua@sspu.edu.cnemailhqxie@sspu.edu.cn)Xie, Huaqing(hqxie@sspu.edu.cn)

**Source title:** Solar Energy Materials and Solar Cells

**Abbreviated source title:** Sol Energ Mater Sol Cells

**Volume:** 215

**Issue date:** 15 September 2020

**Publication year:** 2020

**Article number:** 110666

**Language:** English

**ISSN:** 09270248

**CODEN:** SEMCEQ

**Document type:** Journal article (JA)

**Publisher:** Elsevier B.V.

**Abstract:** A combined photovoltaic (PV) cell and thermoelectric (TE) device can effectively expand the utilization of the solar spectrum, and it has been confirmed that effective heat transfer can improve the performance of PV-TE hybrid devices. In this study, a series of novel integrated PV-TE hybrid devices with enhanced heat transfer capabilities have been manufactured by removing the upper ceramic plate of conventional TE devices. An insulating layer was deposited on the back of the PV cell to avoid an electrical connection between the PV cell and the TE device. An exhaustive experimental study has been conducted on the integrated PV-TE hybrid device, using a system that includes a solar simulator and cooling equipment. Experimental results indicate that the integrated hybrid design can improve the electrical output of the PV cell. In addition, thermal greases with different thermal conductivities are used to decrease the thermal resistance between the PV cell and TE device. The use of the thermal lubricant significantly improves the performance of the integrated PV-TE hybrid device by enhancing the heat dissipation of the PV cell, and the heat absorption of the hot side of TE device. The thickness of the insulating layer may be controlled with the use of different application times, and this has been demonstrated. Experimental results show that a thinner insulating layer can increase heat transfer significantly and improve the performance of the integrated PV-TE hybrid device. Consequently, the design utilizes a more compatible and efficient integrated couple involving a PV cell and TE device. © 2020 Elsevier B.V.

**Number of references:** 37

**Main heading:** Solar cells

**Controlled terms:** Cells  -  Cytology  -  Electric connectors  -  Heat transfer performance  -  Insulating materials  -  Insulation  -  Photovoltaic cells  -  Solar power generation  -  Thermal conductivity

**Uncontrolled terms:** Cooling equipment  -  Electrical connection  -  Electrical output  -  Enhanced heat transfer  -  Experimental investigations  -  Heat absorption  -  Insulating layers  -  Solar simulator

**Classification code:** 413 Insulating Materials  -  461.2 Biological Materials and Tissue Engineering  -  615.2 Solar Power  -  641.1 Thermodynamics  -  702.3 Solar Cells  -  704.1 Electric Components

**DOI:** 10.1016/j.solmat.2020.110666

**Funding Details:** Number: EGD18YJ0018, Acronym: -, Sponsor: -; Number: QD2015052, Acronym: -, Sponsor: -; Number: 51590902, Acronym: -, Sponsor: -;

**Funding text:** This work was supported by the Major Program of the National Natural Science Foundation of China (grant number 51590902 ); the National Natural Science Foundation of China (grant number 51676117 ); the Program for Professor of Special Appointment at Shanghai Institutions of Higher Learning ( Young Eastern Scholar , grant number QD2015052 ); and Shanghai Polytechnic University Graduate Program Foundation (grant number EGD18YJ0018 ).

**Compendex references:** YES

**Database:** Compendex

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**Data Provider:** Engineering Village

**13. Modeling of molar volume for the Ni–Al γ/γ′ binary phases within the framework of CALPHAD method**

**Accession number:** 20203809213235

**Authors:** Zhu, Na-Qiong (1); Liu, Wei (2); Wang, Zhi-Chao (3); Lu, Xiao-Gang (2, 3)

**Author affiliation:** (1) College of International Vocational Education, Shanghai Polytechnic University, Shanghai; 201209, China; (2) Materials Genome Institute, Shanghai University, Shanghai; 200444, China; (3) School of Materials Science and Engineering, Shanghai University, Shanghai; 200444, China

**Corresponding author:** Zhu, Na-Qiong(nqzhu@sspu.edu.cn)

**Source title:** Calphad: Computer Coupling of Phase Diagrams and Thermochemistry

**Abbreviated source title:** Calphad

**Volume:** 71

**Issue date:** December 2020

**Publication year:** 2020

**Article number:** 101792

**Language:** English

**ISSN:** 03645916

**CODEN:** CCCTD6

**Document type:** Journal article (JA)

**Publisher:** Elsevier Ltd

**Abstract:** Assisted by the first-principles calculations, the molar volumes of γ and γ′ phases in the binary Ni–Al system were modeled within the framework of the CALPHAD method. A CALPHAD database integrating thermodynamic and molar volume descriptions was established. The present Ni–Al binary database was validated to make good predictions of molar volumes/lattice parameters and thermal expansivities for both γ and γ′ phases. The predicted γ/γ′ lattice misfits from low to high temperatures turn out to be reasonable. © 2020 Elsevier Ltd

**Number of references:** 51

**Main heading:** Volume measurement

**Controlled terms:** Calculations

**Uncontrolled terms:** Binary phasis  -  Calphad  -  CALPHAD method  -  First-principles calculation  -  Lattice misfits  -  Low-to-high  -  Thermal expansivity

**Classification code:** 921 Mathematics  -  943.2 Mechanical Variables Measurements

**DOI:** 10.1016/j.calphad.2020.101792

**Funding Details:** Number: EGD18XQD28, Acronym: -, Sponsor: -;

**Funding text:** The authors thank Professor Qing-Miao Hu in Institute of Metal Research, Chinese Academy of Sciences for the guidance on EMTO-CPA calculations. The financial support from the Shanghai Polytechnic University School-level Project (Grant number: EGD18XQD28 ) is gratefully acknowledged.

**Compendex references:** YES

**Database:** Compendex

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**Data Provider:** Engineering Village

**14. Optimization of uplink power control parameters in wireless cellular networks**

**Accession number:** 20202808915529

**Authors:** Zhang, Hua (1); Zuo, Jiancun (1)

**Author affiliation:** (1) Shanghai Second Polytechnic University, College of Computer and Information Engineering, 2360 Jin Hai Road, Shanghai; 201209, China

**Source title:** 2020 5th International Conference on Computer and Communication Systems, ICCCS 2020

**Abbreviated source title:** Int. Conf. Comput. Commun. Syst., ICCCS

**Part number:** 1 of 1

**Issue title:** 2020 5th International Conference on Computer and Communication Systems, ICCCS 2020

**Issue date:** May 2020

**Publication year:** 2020

**Pages:** 738-741

**Article number:** 9118456

**Language:** English

**ISBN-13:** 9781728161365

**Document type:** Conference article (CA)

**Conference name:** 5th International Conference on Computer and Communication Systems, ICCCS 2020

**Conference date:** May 15, 2020 - May 18, 2020

**Conference location:** Shanghai, China

**Conference code:** 161227

**Publisher:** Institute of Electrical and Electronics Engineers Inc.

**Abstract:** In both 4G Long Term Evolution (LTE) and 5G New Radio (NR) systems, uplink power control (UPC) is a key feature of radio resource management to balance the inter-cell interference and guarantee the network performance, especially for physical uplink shared channel (PUSCH). In this paper, a methodology for optimizing UPC parameters is presented via network utility maximization (NUM). The network utility is defined as the sum of user utilities and is proven to be a concave function towards the two most important UPC parameters, i.e., nominal power level and channel path-loss compensation factor. Each cell optimizes its own UPC parameters semi-autonomously with only exchanging a few key variables via inter-cell coordination. Under the assumption of best effort traffic, results via system-level simulation show that network throughput performance with the proposed UPC mechanism is significantly improved when compared with typical fixed UPC parameter settings. © 2020 IEEE.

**Number of references:** 16

**Main heading:** Power control

**Controlled terms:** 5G mobile communication systems  -  Long Term Evolution (LTE)  -  Mobile telecommunication systems

**Uncontrolled terms:** Inter-cell coordinations  -  Intercell interference  -  Network utility maximizations (NUM)  -  Nominal power levels  -  Radio resource management  -  System level simulation  -  Uplink power controls  -  Wireless cellular networks

**Classification code:** 716 Telecommunication; Radar, Radio and Television  -  731.3 Specific Variables Control

**DOI:** 10.1109/ICCCS49078.2020.9118456

**Compendex references:** YES

**Database:** Compendex

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**Data Provider:** Engineering Village

**15. Enhancing the performance of TEG system coupled with PCMs by regulating the interfacial thermal conduction    (*Open Access*)**

**Accession number:** 20203108996061

**Authors:** Liu, Anbang (1, 2); Zou, Jiapu (2); Wu, Zihua (2); Wang, Yuanyuan (2); Tian, Yuanyuan (2); Xie, Huaqing (1, 2)

**Author affiliation:** (1) School of Energy and Power Engineering, Nanjing University of Science & Technology, Nanjing; 210094, China; (2) School of Environmental and Materials Engineering, College of Engineering, Shanghai Polytechnic University, Shanghai; 201209, China

**Corresponding author:** Xie, Huaqing(hqxie@sspu.edu.cn)

**Source title:** Energy Reports

**Abbreviated source title:** Energy Rep.

**Volume:** 6

**Issue date:** November 2020

**Publication year:** 2020

**Pages:** 1942-1949

**Language:** English

**E-ISSN:** 23524847

**Document type:** Journal article (JA)

**Publisher:** Elsevier Ltd

**Abstract:** Heat storage with phase change materials (PCMs) is promising to enhance the performance of thermoelectric generator (TEG) systems. Optimizing the thermal management in practical application is crucial to improve the performance of these TEG-PCM coupling systems. In this study, a TEG system coupled with PCMs has been fabricated and thermal interface materials (TIMs) with different thermal conductivities were used to regulate the interfacial thermal conduction between heat storage unit, TEG and heat exchanger. The experimental results revealed that the interfacial thermal conduction has substantial effects on the temperatures and performance of the TEG system coupled with PCMs. With the improvement of the interfacial thermal conduction, the time of the temperature of PCMs maintaining stable during cooling (tp) was shortened, while the average of output power of TEG system within this period (Pp) was increased. It indicates that the excess energy generated with the coupled PCMs would not increase monotonously with the enhancement of interfacial thermal conduction. We proposed a method to explore the optimal interfacial thermal conduction for the largest excess energy by performing polynomial fitting analysis of tp and Pp, respectively. This study provided a feasible means to improve the performance of TEG-PCM coupling systems by regulating the interfacial thermal conduction. © 2020 The Author(s)

**Number of references:** 43

**Main heading:** Thermal conductivity

**Controlled terms:** Heat storage  -  Phase change materials  -  Thermal insulating materials  -  Thermoelectric energy conversion  -  Thermoelectric equipment

**Uncontrolled terms:** Coupling systems  -  Excess energy  -  Heat storage units  -  Output power  -  Polynomial fittings  -  Thermal conduction  -  Thermal interface materials  -  Thermoelectric generators

**Classification code:** 413.2 Heat Insulating Materials  -  615.4 Thermoelectric Energy  -  641.1 Thermodynamics

**DOI:** 10.1016/j.egyr.2020.07.014

**Funding Details:** Number: EGD19YJ0103, Acronym: -, Sponsor: -; Number: -, Acronym: -, Sponsor: Shanghai Municipal Education Commission; Number: 18SG54, Acronym: SEDF, Sponsor: Shanghai Education Development Foundation; Number: 51590902, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;

**Funding text:** This work was financially supported by Major Program of the National Natural Science Foundation of China (Grant No. 51590902 ), National Natural Science Foundation of China (Grant No. 51676117 ), “Shu Guang” Project of Shanghai Municipal Education Commission and Shanghai Education Development Foundation (Grant No. 18SG54 ), and the Program of Graduate Student Foundation of Shanghai Polytechnic University ( EGD19YJ0103 ).

**Compendex references:** YES

**Database:** Compendex

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**Data Provider:** Engineering Village

**16. Medical Data Compression and Sharing Technology Based on Blockchain**

**Accession number:** 20203509097880

**Authors:** Du, Yi (1); Yu, Hua (2)

**Author affiliation:** (1) College of Engineering, Shanghai Polytechnic University, No. 2360 Jinghai Road, Pudong District, Shanghai; 230020, China; (2) Information Center, Shanghai General Hospital, No. 100 Haining Road, Shanghai; 200080, China

**Corresponding author:** Yu, Hua(h.yu@shgh.cn)

**Source title:** Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)

**Abbreviated source title:** Lect. Notes Comput. Sci.

**Volume:** 12290 LNCS

**Part number:** 1 of 1

**Issue title:** Algorithmic Aspects in Information and Management - 14th International Conference, AAIM 2020, Proceedings

**Issue date:** 2020

**Publication year:** 2020

**Pages:** 581-592

**Language:** English

**ISSN:** 03029743

**E-ISSN:** 16113349

**ISBN-13:** 9783030576011

**Document type:** Conference article (CA)

**Conference name:** 14th International Conference on Algorithmic Aspects in Information and Management, AAIM 2020

**Conference date:** August 10, 2020 - August 12, 2020

**Conference location:** Jinhua, China

**Conference code:** 243469

**Publisher:** Springer

**Abstract:** Cloud service provides distributed storage spaces and avoids computing bottlenecks of centralized database storage, but it cannot provide secure data storage and sharing. How to store and share medical data efficiently and reliably is an important issue to ensure the safety of medical data in the process of medical data management of multi-regional hospitals. The public access of blockchains and the non-modifiable characteristics of the stored data make it an effective implementation scheme for medical data sharing. Meanwhile, with the continuous transactions in blockchains, the data of the blockchains are bound to be larger and larger, which leads to serious issues for the use and storage of data. Based on the LZW (Lemple-Ziv-Welch) algorithm, this paper presents a lossless compression technology for Chinese text compression with a compression storage and sharing scheme for medical data using blockchains to provide safer and more efficient access services for medical data. © 2020, Springer Nature Switzerland AG.

**Number of references:** 19

**Main heading:** Data Sharing

**Controlled terms:** Blockchain  -  Data compression  -  Digital storage  -  Information management  -  Storage as a service (STaaS)

**Uncontrolled terms:** Centralized data-base  -  Compression storages  -  Distributed storage  -  Implementation scheme  -  Lossless compression  -  Medical data management  -  Secure data storage  -  Technology-based

**Classification code:** 722.1 Data Storage, Equipment and Techniques  -  722.4 Digital Computers and Systems

**DOI:** 10.1007/978-3-030-57602-8\_52

**Funding Details:** Number: 41672114, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;

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**Compendex references:** YES

**Database:** Compendex

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**Data Provider:** Engineering Village

**17. Correction of optical lag-angle for monostatic LIDAR sensors**

**Accession number:** 20203709173506

**Authors:** Shao, Fu (1)

**Author affiliation:** (1) Department of Measurement Control and Automaton, Shanghai Second Polytechnic University, 2360 Jinhai Road, Shanghai; 201209, China

**Corresponding author:** Shao, Fu

**Source title:** Proceedings of SPIE - The International Society for Optical Engineering

**Abbreviated source title:** Proc SPIE Int Soc Opt Eng

**Volume:** 11455

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**Issue title:** Sixth Symposium on Novel Optoelectronic Detection Technology and Applications

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**Article number:** 114552W

**Language:** English

**ISSN:** 0277786X

**E-ISSN:** 1996756X

**CODEN:** PSISDG

**ISBN-13:** 9781510637047

**Document type:** Conference article (CA)

**Conference name:** 6th Symposium on Novel Optoelectronic Detection Technology and Applications

**Conference date:** December 3, 2019 - December 5, 2019

**Conference location:** Beijing, China

**Conference code:** 162270

**Sponsor:** Chinese Society for Optical Engineering; Science and Technology on Low-light-level Night Vision Laboratory

**Publisher:** SPIE

**Abstract:** This paper analyzes the optical lag-angle in the returning laser signal of monostatic LIDAR sensors for high speed scanning or long range detection or combined applications. The relevant issues of power loss in signal receiving and reduction of sensor sensitivity are also analyzed. A method is presented to correct the optical lag-angle in order to solve the problem of power loss in signal receiving and guarantee the sensitivity of monostatic LIDAR sensors. © 2020 SPIE.

**Number of references:** 7

**Main heading:** Optical radar

**Controlled terms:** Optical engineering

**Uncontrolled terms:** High speed scanning  -  Laser signals  -  Long range detections  -  Monostatic lidar  -  Power-losses  -  Sensor sensitivity  -  Signal receiving

**Classification code:** 716.2 Radar Systems and Equipment

**DOI:** 10.1117/12.2564065

**Funding Details:** Number: 2017YFE0118700, Acronym: -, Sponsor: -; Number: A11NH190704, Acronym: -, Sponsor: -; Number: XXKZD1603, Acronym: -, Sponsor: -; Number: 734599, Acronym: -, Sponsor: -; Number: No.U1537110, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;

**Funding text:** This research was partially sponsored by National Key R&D Program of China (2017YFE0118700), EU H2020 FIRST project (Grand No.734599, FIR ST: vF Interoperation supporting business innovation), National Natural Science Foundation of China under Grand (No.U1537110 and 51605273), and Shanghai Polytechnic University (SSPU) Key Discipline Construction (Mechanical Engineering, XXKZD1603), and SSPU University-Enterprise Cooperation Automobile Electronic Joint Experiment Center with Grant Number A11NH190704.

**Compendex references:** YES

**Database:** Compendex

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**Data Provider:** Engineering Village

**18. Spontaneous Atomic Ruthenium Doping in Mo2CTX MXene Defects Enhances Electrocatalytic Activity for the Nitrogen Reduction Reaction**

**Accession number:** 20202808912474

**Authors:** Peng, Wei (1); Luo, Min (2); Xu, Xiandong (1); Jiang, Kang (1); Peng, Ming (1); Chen, Dechao (1); Chan, Ting-Shan (3); Tan, Yongwen (1)

**Author affiliation:** (1) College of Materials Science and Engineering, Hunan University, Changsha; Hunan; 410082, China; (2) Department of Physics, Shanghai Polytechnic University, Shanghai; 201209, China; (3) National Synchrotron Radiation Research Center, Hsinchu; 300, Taiwan

**Corresponding author:** Tan, Yongwen(tanyw@hnu.edu.cn)

**Source title:** Advanced Energy Materials

**Abbreviated source title:** Adv. Energy Mater.

**Volume:** 10

**Issue:** 25

**Issue date:** July 1, 2020

**Publication year:** 2020

**Article number:** 2001364

**Language:** English

**ISSN:** 16146832

**E-ISSN:** 16146840

**Document type:** Journal article (JA)

**Publisher:** Wiley-VCH Verlag

**Abstract:** The electrochemical nitrogen reduction reaction (NRR) process usually suffers extremely low Faradaic efficiency and ammonia yields due to sluggish N≡N dissociation. Herein, single-atomic ruthenium modified Mo2CTX MXene nanosheets as an efficient electrocatalyst for nitrogen fixation at ambient conditions are reported. The catalyst achieves a Faradaic efficiency of 25.77% and ammonia yield rate of 40.57 µg h−1 mg−1 at -0.3 V versus the reversible hydrogen electrode in 0.5 m K2SO4 solution. Operando X-ray absorption spectroscopy studies and density functional theory calculations reveal that single-atomic Ru anchored on MXene nanosheets act as important electron back-donation centers for N2 activation, which can not only promote nitrogen adsorption and activation behavior of the catalyst, but also lower the thermodynamic energy barrier of the first hydrogenation step. This work opens up a promising avenue to manipulate catalytic performance of electrocatalysts utilizing an atomic-level engineering strategy. © 2020 WILEY-VCH Verlag GmbH & Co. KGaA, Weinheim

**Number of references:** 47

**Main heading:** Nitrogen fixation

**Controlled terms:** Ammonia  -  Atoms  -  Chemical activation  -  Density functional theory  -  Electrocatalysts  -  Gas adsorption  -  Nanosheets  -  Potash  -  Reduction  -  Ruthenium   -  X ray absorption spectroscopy

**Uncontrolled terms:** Activation behavior  -  Catalytic performance  -  Electrocatalytic activity  -  Faradaic efficiencies  -  Nitrogen adsorption  -  Nitrogen reduction  -  Reversible hydrogen electrodes  -  Thermodynamic energy

**Classification code:** 547.1 Precious Metals  -  761 Nanotechnology  -  802.2 Chemical Reactions  -  802.3 Chemical Operations  -  803 Chemical Agents and Basic Industrial Chemicals  -  804.2 Inorganic Compounds  -  931.3 Atomic and Molecular Physics  -  933 Solid State Physics

**Numerical data indexing:** Percentage 2.58e+01%, Voltage -3.00e-01V

**DOI:** 10.1002/aenm.202001364

**Funding Details:** Number: 71860007, Acronym: SKLDMVB, Sponsor: State Key Laboratory of Advanced Design and Manufacturing for Vehicle Body; Number: 51771072, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: -, Acronym: -, Sponsor: Fundamental Research Funds for the Central Universities;

**Funding text:** W.P. and M.L. contributed equally to this work. This work was supported by the National Natural Science Foundation of China (Grant Nos. 51771072, 51901076), the Youth 1000 Talent Program of China, Fundamental Research Funds for the Central Universities, and Hunan University State Key Laboratory of Advanced Design and Manufacturing for Vehicle Body Independent Research Project (No. 71860007).

**Compendex references:** YES

**Database:** Compendex

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**Data Provider:** Engineering Village

**19. Molecular Chemo-diversity of the Dissolved Organic Matter Occurring in Urban Stormwater Runoff**

**Accession number:** 20202008658116

**Title of translation:**

**Authors:** Nie, Yun-Han (1); Chen, Hao (2); Li, Lei (1); Zhu, Yi (1); Zhao, Xin (1); Jia, Qi-Long (2); Xu, Hui-Ting (3); Ye, Jian-Feng (2)

**Author affiliation:** (1) College of Environmental Science and Engineering, Donghua University, Shanghai; 201620, China; (2) Shanghai Academy of Environmental Sciences, Shanghai; 20233, China; (3) College of Engineering, Shanghai Polytechnic University, Shanghai; 201209, China

**Corresponding author:** Ye, Jian-Feng(yejf99@gmail.com)

**Source title:** Huanjing Kexue/Environmental Science

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**CODEN:** HCKHDV

**Document type:** Journal article (JA)

**Publisher:** Science Press

**Abstract:** Stormwater runoff pollution occurring in urban areas can be a notable threat to the ecological environments of receiving water bodies. Dissolved organic matter (DOM) constitutes the primary type of pollutant in stormwater runoff, and tracking of its components and sources can provide valuable scientific bases for the future abatement of stormwater runoff pollution. In this study, aiming to demonstrate the characteristics and sources of the contained DOM in both pavement runoff (PR) and greenland runoff (GR), we applied ultra-high-resolution Fourier transform ion cyclotron resonance mass spectrometry (FT-ICR-MS) to analyze the molecular chemo-diversity of their DOM, as well as Spearman rank correlations between the molecular chemo-diversity and water quality indicators including suspended solids (SS), total nitrogen (TN), dissolved organic carbon (DOC), and dissolved lead (Pb). The results show: When the molecular accumulation reaches a saturated state, the cumulative number of molecules of PR-DOM (12498) is much larger than that of GR-DOM (7015). The molecular distribution of PR-DOM (150-750) is smaller yet more concentrated than that of GR-DOM (150-850). According to the molecular composition characterization and Spearman rank correlation analysis, the sources of the components of PR-DOM and GR-DOM are remarkably different. PR-DOM can be greatly influenced by human activities, and its primary element component (CHOS) contains a large number of substances that were recognized to be from the surfactant sulfonic acid. Additionally, the significant aliphatic components that emerged were from traffic pollution. In contrast, GR-DOM is less affected by human activities, and its primary element component (CHO) gives priority to natural organic matter (NOM). The most abundant substance component that occurred in GR-DOM, i.e., the highly unsaturated and phenolic compound that generally originates in the degraded humus, is initially formed by the plant residue and flushed by rainfall runoff. © 2020, Science Press. All right reserved.

**Number of references:** 35

**Main heading:** Runoff

**Controlled terms:** Biogeochemistry  -  Dissolution  -  Mass spectrometry  -  Organic carbon  -  Soils  -  Storm sewers  -  Storms  -  Water pollution  -  Water quality

**Uncontrolled terms:** Dissolved organic carbon  -  Dissolved organic matters  -  Ecological environments  -  Fourier transform ion cyclotron resonance mass spectrometry  -  Natural organic matters  -  Spearman rank correlation  -  Urban stormwater runoff  -  Water quality indicators

**Classification code:** 442.1 Flood Control  -  443.3 Precipitation  -  445.2 Water Analysis  -  452.1 Sewage  -  453 Water Pollution  -  483.1 Soils and Soil Mechanics  -  801 Chemistry  -  801.2 Biochemistry  -  802.3 Chemical Operations  -  804.1 Organic Compounds

**DOI:** 10.13227/j.hjkx.201910238

**Compendex references:** YES

**Database:** Compendex

Compilation and indexing terms, Copyright 2020 Elsevier Inc.

**Data Provider:** Engineering Village

**20. Crowd-Based Cooperative Task Allocation via Multicriteria Optimization and Decision-Making**

**Accession number:** 20203809186723

**Authors:** Zhao, Lu (1); Tan, Wenan (1, 3); Xu, Lida (2); Xie, Na (1); Huang, Li (1, 4)

**Author affiliation:** (1) Nanjing University of Aeronautics and Astronautics, Nanjing; 211106, China; (2) Old Dominion University, Norfolk; VA; 23529, United States; (3) Shanghai Polytechnic University, Shanghai; 100044, China; (4) Jiangsu Open University, Nanjing; 210017, China

**Corresponding author:** Tan, Wenan(watan@sspu.edu.cn)

**Source title:** IEEE Systems Journal

**Abbreviated source title:** IEEE Syst. J.

**Volume:** 14

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**Publication year:** 2020

**Pages:** 3904-3915

**Article number:** 8977560

**Language:** English

**ISSN:** 19328184

**E-ISSN:** 19379234

**Document type:** Journal article (JA)

**Publisher:** Institute of Electrical and Electronics Engineers Inc.

**Abstract:** As a new computing paradigm, crowd-based cooperative computing aims at effective management and the coordinated use of crowd resources. In crowd-based cooperative task allocation (CBCTA), it is necessary to ensure the suitability and high-quality collaboration of resources for computer supported cooperative work. Generally, the high matching rate between resource and task requirements can achieve the optimal parameter configuration, whereas high-quality collaboration ensures the quality and success rates of crowd-based cooperative task. This article proposes a methodology to optimize the resource allocation model for solving CBCTA problems in a cost-efficient, requirements adapted fashion. Specifically, the proposed methodology hinges on evolutionary heuristics to find proper resources that optimally balance matching rate and collaborative quality. We also present suitable metrics to quantify the aforementioned targets. Furthermore, the obtained solutions are ranked based on multicriteria decision making to provide a flexible design choice for decision-makers. Different scales of CBCTA problems are conducted to illustrate the value of the proposed methodology. The experimental results show that the proposed methodology is effective and feasible. © 2007-2012 IEEE.

**Number of references:** 36

**Main heading:** Decision making

**Controlled terms:** Heuristic methods  -  Multiobjective optimization

**Uncontrolled terms:** Computing paradigm  -  Cooperative computing  -  Effective management  -  Evolutionary heuristics  -  Multi criteria decision making  -  Multicriteria optimization  -  Optimal parameter  -  Resource allocation model

**Classification code:** 912.2 Management  -  921.5 Optimization Techniques

**DOI:** 10.1109/JSYST.2020.2966646

**Funding Details:** Number: XXKZD1604, Acronym: -, Sponsor: -; Number: 18KJB520008, Acronym: -, Sponsor: Natural Science Foundation of Jiangsu Province; Number: 61672022, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;

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**Compendex references:** YES

**Database:** Compendex

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**Data Provider:** Engineering Village

**21. Enhancement of therminol-based nanofluids with reverse-irradiation for medium-temperature direct absorption solar collection**

**Accession number:** 20202908952921

**Authors:** Wang, K. (1); He, Y. (3); Kan, A. (2); Yu, W. (1); Wang, L. (1); Wang, D. (1, 5); Liu, P. (1); Xie, H. (1); She, X. (4)

**Author affiliation:** (1) College of Engineering, Shanghai Key Laboratory of Engineering Materials Application and Evaluation, Shanghai Polytechnic University, Shanghai; 201209, China; (2) Merchant Marine College, Shanghai Maritime University, Shanghai; 201306, China; (3) School of Mechanical and Electrical Engineering, Qingdao University of Science and Technology, Qingdao; 266061, China; (4) Birmingham Centre for Energy Storage, School of Chemical Engineering, University of Birmingham, Birmingham; B15 2TT, United Kingdom; (5) Research Center of Resource Recycling Science and Engineering, Shanghai Polytechnic University, Shanghai; 201209, China

**Corresponding author:** She, X.(shexh19@hotmail.comemailyuwei@sspu.edu.cn)Yu, W.(yuwei@sspu.edu.cn)

**Source title:** Materials Today Energy

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**Volume:** 17

**Issue date:** September 2020

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**Article number:** 100480

**Language:** English

**E-ISSN:** 24686069

**Document type:** Journal article (JA)

**Publisher:** Elsevier Ltd

**Abstract:** The nanofluids-based direct absorption solar collector (DASC) is considered as the next-generation solar collection technology due to its high photo-thermal conversion efficiency. However, the key challenges for its development are the large temperature gradients inside nanofluids and the agglomeration of nanoparticles. To address these issues, this paper proposes to apply solar irradiation at the bottom surface of the DASC (i.e. reverse irradiation) rather than at the top surface, which changes the heat transfer mode from heat conduction to heat convection. Experimental test is carried out for the first time for medium-temperature solar collection (~150 °C), where titanium nitride is selected as nanoparticles and therminol as base fluid. The experimental results show that reverse irradiation contributes to a uniform temperature distribution in nanofluids and results in a 36.4% higher photo-thermal conversion efficiency compared with the top irradiation; the maximum efficiency can reach up to 80%. What’s more, the response time for nanofluids to achieve a steady-state temperature is shortened by 55.6%. One week test shows that reverse irradiation significantly improves the stability of nanofluids and mitigates the agglomeration of nanoparticles. Therefore, it can be concluded that the reverse irradiation DASC is a high-efficient, a fast-response and a long lifetime technology for solar collection. © 2020 Elsevier Ltd

**Number of references:** 47

**Main heading:** Nanofluidics

**Controlled terms:** Agglomeration  -  Collector efficiency  -  Conversion efficiency  -  Efficiency  -  Heat conduction  -  Heat convection  -  Irradiation  -  Nanoparticles  -  Radiation  -  Titanium nitride

**Uncontrolled terms:** Experimental test  -  Maximum Efficiency  -  Medium temperature  -  Photo-thermal conversions  -  Reverse irradiation  -  Solar irradiation  -  Stability of nanofluids  -  Steady-state temperature

**Classification code:** 525.5 Energy Conversion Issues  -  641.2 Heat Transfer  -  702.3 Solar Cells  -  761 Nanotechnology  -  802.3 Chemical Operations  -  804.2 Inorganic Compounds  -  913.1 Production Engineering  -  933 Solid State Physics

**Numerical data indexing:** Percentage 3.64e+01%, Percentage 5.56e+01%, Percentage 8.00e+01%

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**Funding Details:** Number: 17ZR1411000, Acronym: -, Sponsor: Natural Science Foundation of Shanghai; Number: 51590901, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;

**Funding text:** The work was supported by National Natural Science Foundation of China (No. 51590901 & 51876112 ), Shanghai Municipal Natural Science Foundation (No. 17ZR1411000 ), the Key Subject of Shanghai Polytechnic University (Material Science and engineering; No. XXKZD1601 and A10GY19H10-g01 ) and an IGI/IAS Global Challenges Funding (IGI/IAS ID 3041 ).

**Compendex references:** YES

**Database:** Compendex

Compilation and indexing terms, Copyright 2020 Elsevier Inc.

**Data Provider:** Engineering Village

**22. A cascadic multigrid asymptotic-preserving discrete ordinate discontinuous streamline diffusion method for radiative transfer equations with diffusive scalings**

**Accession number:** 20203509095971

**Authors:** Shao, Wenting (1); Sheng, Qiwei (2); Wang, Cheng (3)

**Author affiliation:** (1) School of Science, Shanghai Polytechnic University, Shanghai; 201209, China; (2) Department of Mathematics, California State University, Bakersfield; CA; 93311, United States; (3) School of Mathematical Sciences, Tongji University, Shanghai; 200092, China

**Corresponding author:** Sheng, Qiwei(qsheng@csub.edu)

**Source title:** Computers and Mathematics with Applications

**Abbreviated source title:** Comput Math Appl

**Volume:** 80

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**Publication year:** 2020

**Pages:** 1650-1667

**Language:** English

**ISSN:** 08981221

**CODEN:** CMAPDK

**Document type:** Journal article (JA)

**Publisher:** Elsevier Ltd

**Abstract:** In this paper, we develop a cascadic multigrid asymptotic-preserving discrete ordinate discontinuous streamline diffusion scheme for radiative transfer equations (RTE) with multiple scalings. Our new method employs a simple and efficient cascadic multigrid method to the discretized RTE system as well as a diffusion synthetic acceleration technique as an efficient smoother to accelerate the convergence of the iteration in diffusive region. Furthermore, by applying the discontinuous streamline diffusion schemes, improved convergence condition in heterogeneous media and the asymptotic-preserving (AP) property can be achieved. The AP property of these methods will be explained formally and demonstrated numerically. Numerical results are presented to show the effectiveness and efficiency of the proposed numerical scheme for solving radiative transfer equations, especially in diffusive and heterogeneous media. © 2020 Elsevier Ltd

**Number of references:** 33

**Main heading:** Iterative methods

**Controlled terms:** Diffusion  -  Radiative transfer

**Uncontrolled terms:** Cascadic multigrid method  -  Diffusion synthetic accelerations  -  Effectiveness and efficiencies  -  Improved convergence  -  Radiative Transfer Equation(RTE)  -  Radiative transfer equations  -  Streamline diffusion  -  Streamline diffusion methods

**Classification code:** 701 Electricity and Magnetism  -  921.6 Numerical Methods

**DOI:** 10.1016/j.camwa.2020.08.002

**Funding Details:** Number: 4260141304/004/010, Acronym: -, Sponsor: Tongji University; Number: 16ZR1412700, Acronym: -, Sponsor: Natural Science Foundation of Shanghai; Number: 11526132, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;

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**Compendex references:** YES

**Database:** Compendex

Compilation and indexing terms, Copyright 2020 Elsevier Inc.

**Data Provider:** Engineering Village

**23. Mechanochemical immobilization of lead contaminated soil by ball milling with the additive of Ca(H2PO4)2**

**Accession number:** 20200408076823

**Authors:** Zhang, Ziwei (1); Yuan, Wenyi (2); Li, Peizhong (3); Song, Qingbin (4); Wang, Xiaoyan (1); Xu, Weitong (1); Zhu, Xuefeng (1); Zhang, Qiwu (5); Yue, Jianwei (6); Bai, Jianfeng (2); Wang, Jingwei (2)

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**Source title:** Chemosphere

**Abbreviated source title:** Chemosphere

**Volume:** 247

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**Publication year:** 2020

**Article number:** 125963

**Language:** English

**ISSN:** 00456535

**E-ISSN:** 18791298

**CODEN:** CMSHAF

**Document type:** Journal article (JA)

**Publisher:** Elsevier Ltd

**Abstract:** Lead (Pb) pollution in the soil is becoming more and more serious, and lead poisoning incidents also constantly occur. Therefore, the remediation of lead pollution in the soil has attracted widespread attention. In this study, heavy metal lead in soil was remediated by mechanochemical methods. The effects of different ball milling conditions on the toxic leaching concentration and morphological distribution (BCR sequential extraction procedure) of lead in contaminated soil were analyzed, including the addition of calcium dihydrogen phosphate (Ca(H2PO4)2), ball milling time, and ball milling speed. The reaction mechanism was analyzed by X-ray diffractometry (XRD), scanning electron microscopy (SEM), and a laser particle size analyzer. The results show that the optimal conditions for mechanochemical immobilization were 10% additive (Ca(H2PO4)2), milling speed of 550 rpm, and ball milling time for 2 h. Under this condition, the toxic leaching concentration of lead from contaminated soil was 4.36 mg L−1, and in the BCR sequential extraction procedure, Pb was mainly present in the residual fraction (54.96%). The mechanism of mechanochemical solidification of heavy metal lead in soil is that, during the ball milling process, the lead precipitates with Ca(H2PO4)2 to produce dense agglomerates (Pb3(PO4)2 and PbxCa10-x(PO4)6(OH)2), which fixes the lead in the soil and hampers its leaching. © 2020 Elsevier Ltd

**Number of references:** 37

**Main heading:** Soil pollution

**Controlled terms:** Additives  -  Ball milling  -  Contamination  -  Extraction  -  Heavy metals  -  Leaching  -  Lead compounds  -  Milling (machining)  -  Particle size  -  Particle size analysis   -  Positive ions  -  Radioactive waste vitrification  -  Remediation  -  Scanning electron microscopy  -  Soils  -  X ray diffraction analysis

**Uncontrolled terms:** BCR sequential extraction  -  Dihydrogen phosphate  -  Laser particle size analyzer  -  Leaching concentrations  -  Lead-contaminated soil  -  Mechano-chemical methods  -  Mechanochemicals  -  Morphological distribution

**Classification code:** 454.2 Environmental Impact and Protection  -  483.1 Soils and Soil Mechanics  -  531 Metallurgy and Metallography  -  604.2 Machining Operations  -  802.2 Chemical Reactions  -  802.3 Chemical Operations  -  803 Chemical Agents and Basic Industrial Chemicals  -  951 Materials Science

**Numerical data indexing:** Percentage 1.00e+01%, Percentage 5.50e+01%, Rotational\_Speed 5.50e+02RPM, Time 7.20e+03s

**DOI:** 10.1016/j.chemosphere.2020.125963

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**Funding text:** The authors gratefully acknowledge the financial support from the National Natural Science Foundation of China (No. 21876106 ), Gaoyuan Discipline of Shanghai-Environmental Science and Engineering (Resource Recycling Science and Engineering), The Science and Technology Development Fund, Macau SAR ( 0027/2018/A ) and SSPU Foundation ( A01GY18EX04 , A01GY18F022-d02 ).

**Compendex references:** YES

**Database:** Compendex

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**Data Provider:** Engineering Village

**24. Adsorption induced magnetic anisotropy in the two-dimensional magnet CrCl3**

**Accession number:** 20203409080950

**Authors:** Luo, M. (1); Li, Y.D. (2); Wang, K.J. (3); Shen, Y.H. (3)

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**Source title:** Solid State Communications

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**Language:** English

**ISSN:** 00381098

**CODEN:** SSCOA4

**Document type:** Journal article (JA)

**Publisher:** Elsevier Ltd

**Abstract:** Two-dimensional (2D) CrCl3 has attracted much attention as it is reported to be a ferromagnetic semiconductor. By performing first-principles calculations, we investigate the effects of Li and F adsorption on the saturation magnetization and magnetic anisotropy energy (MAE) of CrCl3. It is observed that Li adsorption can dramatically enhance its saturation magnetization, and tune its easy magnetization axis to the in-plane direction from original out-of-plane. The monotonic enhancement of in-plane magnetism in CrCl3 as the coverage of Li increases are attributed to electrostatic doping induced by charge transfer between Li atoms and Br atoms. By contrast, the F adsorption reduces the out-of-plane magnetism in CrCl3 as the coverage of F increases but keeps the original easy magnetization. These findings will benefit for further understanding of the tunable magnetic properties of CrCl3 and push 2D spintronics applications. © 2020 Elsevier Ltd

**Number of references:** 27

**Main heading:** Saturation magnetization

**Controlled terms:** Adsorption  -  Calculations  -  Charge transfer  -  Chlorine compounds  -  Chromium compounds  -  Lithium  -  Magnetic anisotropy  -  Magnetic semiconductors  -  Semiconductor doping

**Uncontrolled terms:** Electrostatic doping  -  Ferromagnetic semiconductor  -  First-principles calculation  -  Induced magnetic anisotropy  -  Magnetic anisotropy energy  -  Spintronics application  -  Two Dimensional (2 D)  -  Two-dimensional magnet

**Classification code:** 542.4 Lithium and Alloys  -  701.2 Magnetism: Basic Concepts and Phenomena  -  712.1 Semiconducting Materials  -  802.2 Chemical Reactions  -  802.3 Chemical Operations  -  921 Mathematics

**DOI:** 10.1016/j.ssc.2020.114048

**Funding Details:** Number: XXKZD1605, Acronym: -, Sponsor: -; Number: 19ZR1419800, Acronym: -, Sponsor: Natural Science Foundation of Shanghai;

**Funding text:** The work is supported by the Discipline Project of Shanghai Polytechnic University (Grant No. XXKZD1605 ) and the Natural Science Foundation of Shanghai (Grant No. 19ZR1419800 ). Our work is also supported by the Research Center of Resource Recycling Science and Engineering, Shanghai Polytechnic University , and Gaoyuan Discipline of Shanghai-Environmental Science and Engineering (Resource Recycling Science and Engineering).

**Compendex references:** YES

**Database:** Compendex

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**Data Provider:** Engineering Village

**25. Theoretical and Experimental Research on H∞ Control Suspension System with Time Delay**

**Accession number:** 20202408812077

**Title of translation:** H∞

**Authors:** Ji, Renjie (1, 2); Fang, Mingxia (1); Li, Peilin (1); Yan, Gai (1, 3)

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**Corresponding author:** Fang, Mingxia(92226@tongji.edu.cn)

**Source title:** Qiche Gongcheng/Automotive Engineering

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**Pages:** 339-344 and 352

**Language:** Chinese

**ISSN:** 1000680X

**CODEN:** QIGOE4

**Document type:** Journal article (JA)

**Publisher:** SAE-China

**Abstract:** In this paper, taking the vehicle active suspension system considering time delay as the research object, by the method of combining theory and experiment, the influence of time delay on the vibration characteristics of the suspension system is studied. Firstly, the dynamic model of the active suspension system with time delay is established. Based on H∞ control theory, through Lyapunov -Krasovskii function and free weight matrix method, the matrix inequality of asymptotically stable closed-loop system with time-delay is derived, and the H∞ control law with known maximum stable time-delay is designed. Then, the numerical simulation and experimental method are used to verify the control law. The results show that H∞ control law can effectively suppress the sprung mass acceleration. Finally, the relationship between the time delay and the root mean square value of the sprung mass acceleration is analyzed under different gain and it is found that the closer the time delay is to τmax for gain control, the better the control effect. © 2020, Society of Automotive Engineers of China. All right reserved.

**Number of references:** 15

**Main heading:** Suspensions (components)

**Controlled terms:** Active suspension systems  -  Closed loop systems  -  Control theory  -  Delay control systems  -  Numerical methods  -  Time delay  -  Timing circuits  -  Vibrations (mechanical)

**Uncontrolled terms:** Asymptotically stable  -  Experimental methods  -  Experimental research  -  Lyapunov Krasovskii function  -  Root mean square values  -  Suspension system  -  Vehicle active suspension system  -  Vibration characteristics

**Classification code:** 601.2 Machine Components  -  713 Electronic Circuits  -  713.4 Pulse Circuits  -  731.1 Control Systems  -  921.6 Numerical Methods  -  931.1 Mechanics  -  961 Systems Science

**DOI:** 10.19562/j.chinasae.qcgc.2020.03.009

**Compendex references:** YES

**Database:** Compendex

Compilation and indexing terms, Copyright 2020 Elsevier Inc.

**Data Provider:** Engineering Village

**26. Near-Optimal User Recruitment in Mobile Crowdsensing for Urban Fine-Grained Event Detection    (*Open Access*)**

**Accession number:** 20200508114677

**Authors:** Liu, Tong (1, 2); Zhang, Yameng (1); Yang, Xiaoxian (3); Tong, Weiqin (1, 2)

**Author affiliation:** (1) School of Computer Engineering and Science, Shanghai University, Shanghai; 200444, China; (2) Shanghai Institute for Advanced Communication and Data Science, Shanghai University, Shanghai; 200444, China; (3) School of Computer and Information Engineering, Shanghai Polytechnic University, Shanghai; 201209, China

**Corresponding author:** Liu, Tong(tong\_liu@shu.edu.cn)

**Source title:** IEEE Access

**Abbreviated source title:** IEEE Access

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**Article number:** 8938742

**Language:** English

**E-ISSN:** 21693536

**Document type:** Journal article (JA)

**Publisher:** Institute of Electrical and Electronics Engineers Inc.

**Abstract:** Thanks to the popularization of mobile smart devices equipped with various sensors like smartphones, the concept of mobile crowdsensing has come forth as a promising data collecting paradigm. Event detection in urban areas (i.e., traffic jam monitoring) is an important application of mobile crowdsensing, which can be implemented by recruiting a set of smart device users to collect plenty of fine-grained sensing data. However, as users are mobile and their sensing data are unreliable, it is hard to ensure that all events can be detected accurately. Thus, which users are recruited should be carefully determined to achieve a high detection accuracy and control the costs of users within a given budget. Unfortunately, we prove that the user recruitment problem in mobile crowdsensing for event detection is a NP-hard problem, indicating that there is no polynomial-time algorithm to achieve the optimal solution unless P = NP. In this work, we propose a polynomial-time near-optimal user recruitment algorithm, by leveraging the properties of adaptive monotonicity and adaptive submodularity. Our algorithm is theoretically proved to achieve a constant approximation ratio, compared with the optimum. Moreover, a data-dependent upper bound of our solution is also derived, providing a tighter performance guarantee. We also provide an accelerated version of our proposed algorithm by reducing its computation load. Extensive simulations are conducted, which show our proposed algorithm outperforms baselines under different settings and achieves near-optimal performance. Besides, the execution time of the accelerated version is significantly reduced. © 2013 IEEE.

**Number of references:** 31

**Main heading:** Optimization

**Controlled terms:** Approximation algorithms  -  Budget control  -  Computational complexity  -  Polynomial approximation  -  Traffic congestion

**Uncontrolled terms:** Approximation ratios  -  Event detection  -  Extensive simulations  -  Mobile crowdsensing  -  Near-optimal performance  -  Performance guarantees  -  Polynomial-time algorithms  -  user recruitment

**Classification code:** 721.1 Computer Theory, Includes Formal Logic, Automata Theory, Switching Theory, Programming Theory  -  921 Mathematics

**DOI:** 10.1109/ACCESS.2019.2961384

**Funding Details:** Number: 18YF1408200, Acronym: -, Sponsor: -; Number: 61802245, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: -, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;

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**Compendex references:** YES

**Database:** Compendex

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**Data Provider:** Engineering Village

**27. Fe3O4/SiO2/CS surface ion-imprinted polymer modified glassy carbon electrode for highly sensitivity and selectivity detection of toxic metal ions**

**Accession number:** 20203909224367

**Authors:** Wei, Pengju (1, 2); Li, Zhanhong (1, 2); Zhao, Xueling (2); Song, Runmin (2); Zhu, Zhigang (1, 2)

**Author affiliation:** (1) School of Medical Instrument and Food Engineering, University of Shanghai for Science and Technology, Shanghai; 200093, China; (2) School of Environmental and Materials Engineering, Shanghai Polytechnic University, 2360 Jinhai Road, Shanghai; 201209, China

**Corresponding author:** Zhu, Zhigang(Zhigang\_zhu259@163.com)

**Source title:** Journal of the Taiwan Institute of Chemical Engineers

**Abbreviated source title:** J. Taiwan Inst. Chem. Eng.

**Volume:** 113

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**Pages:** 107-113

**Language:** English

**ISSN:** 18761070

**Document type:** Journal article (JA)

**Publisher:** Taiwan Institute of Chemical Engineers

**Abstract:** A surface ion-imprinting polymer (IIP) based on Fe3O4/SiO2/CS was selected to modify the glassy carbon electrode (Fe3O4/SiO2/CS/Nafion/GCE), and the sensor exhibits ultrasensitive and highly selective to monitor trace level of Cu (II). SiO2 was homogeneously coated on the Fe3O4 magnetic core to enhance the resistance in the harsh environment, especially various acids in the real environment. After that, chitosan film, incorporating copper ions as template ions, covered the Fe3O4/SiO2 and cross-linked with glutaraldehyde. The prepared electrode was used as a working electrode to construct an electrochemical sensor for detecting trace Cu (II) and amplifying the electrochemical signal through the formation of the ion imprinted polymer. The Fe3O4/SiO2/CS/Nafion/GCE IIP based sensors were characterized by XRD, FT-IR, SEM, and TGA. During the electrochemical measurement, different experimental parameters were optimized, and the sensors exhibited a wide linear detection range (0.01 to 20 μmol L−1) and low limit of detection (5 nmol L−1). Besides that, the sensors also demonstrated highly selective to Cu ion, comparing with other interfering ions. The Fe3O4/SiO2/CS/Nafion/GCE-IIP based sensor displayed notable reproducibility and the RSD was 3.3%. The sensors based on Fe3O4/SiO2/CS ion imprinted polymer have the potential to monitor other toxic metal ion pollution in harsh environment. © 2020 Taiwan Institute of Chemical Engineers

**Number of references:** 32

**Main heading:** Electrochemical sensors

**Controlled terms:** Carbon  -  Copper compounds  -  Glass  -  Glass membrane electrodes  -  Heavy ions  -  Iron oxides  -  Magnetite  -  Metal ions  -  Metals  -  Polymers   -  Silica  -  Silicon

**Uncontrolled terms:** Electrochemical measurements  -  Electrochemical signals  -  Experimental parameters  -  Glassy carbon electrodes  -  Ion imprinted polymer  -  Limit of detection  -  Linear detection ranges  -  Working electrode

**Classification code:** 531.1 Metallurgy  -  549.3 Nonferrous Metals and Alloys excluding Alkali and Alkaline Earth Metals  -  801 Chemistry  -  804 Chemical Products Generally  -  804.2 Inorganic Compounds  -  812.3 Glass  -  815.1 Polymeric Materials

**Numerical data indexing:** Percentage 3.30e+00%

**DOI:** 10.1016/j.jtice.2020.08.035

**Funding Details:** Number: 61471233, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;

**Funding text:** This work was supported by the National Natural Science Foundation of China (No. 61471233 ).

**Compendex references:** YES

**Database:** Compendex

Compilation and indexing terms, Copyright 2020 Elsevier Inc.

**Data Provider:** Engineering Village

**28. A novel method for global minimization combined filled function method and dimensionality reduction technique    (*Open Access*)**

**Accession number:** 20203709174461

**Authors:** Wang, Weixiang (1); Shang, Youlin (2, 3); Sun, Guanglei (3)

**Author affiliation:** (1) College of Science, Shanghai Polytechnic University, Shanghai; 201209, China; (2) School of Mathematics and Statistics, Henan University of Science and Technology, Luoyang; 471003, China; (3) School of Information Engineering, Henan University of Science and Technology, Luoyang; 471003, China

**Corresponding author:** Shang, Youlin(mathshang@sina.com)

**Source title:** Journal of Physics: Conference Series

**Abbreviated source title:** J. Phys. Conf. Ser.

**Volume:** 1616

**Part number:** 1 of 1

**Issue:** 1

**Issue title:** 3rd International Symposium on Big Data and Applied Statistics

**Issue date:** August 21, 2020

**Publication year:** 2020

**Article number:** 012068

**Language:** English

**ISSN:** 17426588

**E-ISSN:** 17426596

**Document type:** Conference article (CA)

**Conference name:** 2020 3rd International Symposium on Big Data and Applied Statistics, ISBDAS 2020

**Conference date:** July 10, 2020 - July 12, 2020

**Conference location:** Kunming, China

**Conference code:** 162486

**Publisher:** Institute of Physics Publishing

**Abstract:** This paper introduces a new filled function method based on the dimensionality reduction technique for the global minimization problem. By utilizing the so called α - dense curves, we first transform the original function of n-variables into a single variable function, and then minimize the transformed function with the filled function method. The constructed filled function contains just one parameter which can be adjusted readily during the iterative process. The theoretical properties of the filled function are discussed, and the filled function algorithm is given. At last, a few numerical experiments are included. © Published under licence by IOP Publishing Ltd.

**Number of references:** 10

**Main heading:** Iterative methods

**Controlled terms:** Big data  -  Dimensionality reduction

**Uncontrolled terms:** Dimensionality reduction techniques  -  Filled function  -  Filled function algorithms  -  Filled function method  -  Global minimization  -  Iterative process  -  Numerical experiments  -  Single variable functions

**Classification code:** 723.2 Data Processing and Image Processing  -  921.6 Numerical Methods

**DOI:** 10.1088/1742-6596/1616/1/012068

**Funding Details:** Number: 11001248, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 20ZX001, Acronym: -, Sponsor: -;

**Funding text:** This work was jointly supported by the NNSF of China (No.11471102, 11001248, 51776116), basic research projects for key scientific research projects in Henan Province (No. 20ZX001), the key discipline “Applied Mathematics” of SSPU (No.XXKPY1604).

**Compendex references:** YES

**Database:** Compendex

Compilation and indexing terms, Copyright 2020 Elsevier Inc.

**Data Provider:** Engineering Village

**29. Controllable synthesis, characterization and photoluminescence properties of flower-like BaMoO4hierarchical architectures**

**Accession number:** 20202108697416

**Authors:** Mao, YuQin (1); Wei, JianGang (1); Zou, Yongjin (2); Zhu, LuPing (1)

**Author affiliation:** (1) School of Environmental and Materials Engineering, Research Center of Resource Recycling Science and Engineering, Shanghai Polytechnic University, Shanghai; 201209, China; (2) Guangxi Key Laboratory of Information Materials, Guilin University of Electronic Technology (GUET), Guilin; 541004, China

**Corresponding author:** Zhu, LuPing(lpzhu@sspu.edu.cn)

**Source title:** CrystEngComm

**Abbreviated source title:** Crystengcomm

**Volume:** 22

**Issue:** 18

**Issue date:** March 14, 2020

**Publication year:** 2020

**Pages:** 3115-3121

**Language:** English

**E-ISSN:** 14668033

**CODEN:** CRECF4

**Document type:** Journal article (JA)

**Publisher:** Royal Society of Chemistry

**Abstract:** Flower-like BaMoO4hierarchical architectures were successfully prepared by a facile solvothermal route. The influences of reaction time and various solvents on the morphology, structure, and performance of the samples were studied in detail. A nucleation-oriented attachment-self-assembly-Ostwald ripening mechanism is presented for the formation of the flower-like BMO HAs. X-ray diffraction, scanning electron microscopy, transmission electron microscopy, and UV-vis spectroscopy were applied to characterize the structure, morphology, and optical properties of the as-synthesized products. The results reveal that the products have a well-crystallized scheelite tetragonal structure with good dispersion and uniformity. The photoluminescence (PL) properties of the products were all detected at room temperature. The PL spectra show that all the products have two distinct emission peaks and a strong ultraviolet (UV) emission in the UV region, indicating that the synthesized BMO products have a great potential application in photoluminescence areas. The synthetic route is simple, and can also be used to prepare other molybdates and related inorganic materials with specific morphology and structure by adjusting the synthetic parameters. © The Royal Society of Chemistry 2020.

**Number of references:** 39

**Main heading:** Optical properties

**Controlled terms:** High resolution transmission electron microscopy  -  Molybdenum compounds  -  Morphology  -  Photoluminescence  -  Scanning electron microscopy  -  Tungstate minerals  -  Ultraviolet visible spectroscopy

**Uncontrolled terms:** Controllable synthesis  -  Inorganic materials  -  Morphology and structures  -  Ostwald ripening mechanism  -  Photoluminescence properties  -  Synthetic parameters  -  Tetragonal structure  -  UV-vis spectroscopy

**Classification code:** 482.2 Minerals  -  741.1 Light/Optics  -  741.3 Optical Devices and Systems  -  951 Materials Science

**DOI:** 10.1039/d0ce00371a

**Funding Details:** Number: EGD18YJ0049, Acronym: -, Sponsor: -; Number: 18ZR1415700, Acronym: -, Sponsor: Natural Science Foundation of Shanghai;

**Funding text:** This research was jointly sponsored by the Shanghai Municipal Natural Science Foundation (No: 18ZR1415700), the Guangxi Key Laboratory of Information Materials (GUET) (No:171011-K), the Leap Project and Postgraduate fund (SSPU) (Nos: EGD18XQD26, EGD18YJ0049), the key subject of SSPU (No. 4: Material Science and Engineering, XXKZD1601), and the Gaoyuan Discipline of Shanghai–Environmental Science and Engineering (Resource Recycling Science and Engineering).

**Compendex references:** YES

**Database:** Compendex

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**Data Provider:** Engineering Village

**30. An optimal service selection approach for service-oriented business collaboration using crowd-based cooperative computing**

**Accession number:** 20201908619386

**Authors:** Zhao, Lu (1); Tan, Wenan (1, 2); Xie, Na (1); Huang, Li (1, 3)

**Author affiliation:** (1) College of Computer Science and Technology, Nanjing University of Aeronautics and Astronautics, Nanjing, Jiangsu, China; (2) School of Computer and Information Engineering, Shanghai Polytechnic University, Shanghai, China; (3) School of Information and Electromechanical Engineering, Jiangsu Open University, Nanjing, Jiangsu, China

**Corresponding author:** Tan, Wenan(watan@sspu.edu.cn)

**Source title:** Applied Soft Computing Journal

**Abbreviated source title:** Appl. Soft Comput. J.

**Volume:** 92

**Issue date:** July 2020

**Publication year:** 2020

**Article number:** 106270

**Language:** English

**ISSN:** 15684946

**Document type:** Journal article (JA)

**Publisher:** Elsevier Ltd

**Abstract:** Crowd-based cooperative computing (CBCC) emerges as a new computing paradigm, the core issue of which is the effective management and the coordinated use of crowd resources, including Internet users, application services, and smart devices. The service-oriented architecture (SOA) provides interoperability among crowd resources to support service-oriented business collaboration (SOBC). To address such a common issue of the coordinated use of crowd resources for SOBC, this paper studies a collaborative service computing model by considering the competition and cooperation among crowd resources. Then, a multi-objective optimization mathematical model is established for optimal service selection (OSS). Specifically, the methodology is resorted to an improved particle swarm optimization (IPSO) algorithm to find suitable collaborative services that optimally balance the quality of service (QoS) and synergy effect (SE). Furthermore, a flexible rescheduling strategy is presented for faulty services. The experimental results show that the proposed methodology is effective and feasible to obtain better-quality solutions for fulfilling the SOBC. © 2020 Elsevier B.V.

**Number of references:** 53

**Main heading:** Service oriented architecture (SOA)

**Controlled terms:** Information services  -  Interoperability  -  Multiobjective optimization  -  Particle swarm optimization (PSO)  -  Quality of service

**Uncontrolled terms:** Application services  -  Business collaboration  -  Collaborative services  -  Competition and cooperation  -  Computing paradigm  -  Cooperative computing  -  Effective management  -  Improved particle swarm optimization algorithms

**Classification code:** 722.4 Digital Computers and Systems  -  903.4 Information Services  -  921.5 Optimization Techniques

**DOI:** 10.1016/j.asoc.2020.106270

**Funding Details:** Number: 201906830062, Acronym: CSC, Sponsor: China Scholarship Council; Number: XXKZD1604, Acronym: -, Sponsor: -; Number: 18KJB520008, Acronym: -, Sponsor: Natural Science Foundation of Jiangsu Province; Number: 61672022, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;

**Funding text:** The paper is supported in part by the National Natural Science Foundation of China under Grants No. 61672022 and No. U1904186 , Key Disciplines of Software Engineering of Shanghai Polytechnic University under Grant No. XXKZD1604 , China Scholarship Council under Grant No. 201906830062 , the University Natural Science Foundation of Jiangsu Province under Grant No. 18KJB520008 , the Qinglan Project in the University of Jiangsu Province.

**Compendex references:** YES

**Database:** Compendex

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**Data Provider:** Engineering Village

**31. Graphene oxide orientated by a magnetic field and application in sensitive detection of chemical oxygen demand**

**Accession number:** 20202008659487

**Authors:** Li, Xiaolu (1); Lin, Donghai (2); Lu, Kunchao (1); Chen, Xue (1); Yin, Shiyu (1); Li, Yan (1); Zhang, Zhiyi (1); Tang, Meihua (3); Chen, Guosong (1)

**Author affiliation:** (1) College of Chemistry and Molecular Engineering, Nanjing Tech University, Nanjing; 210009, China; (2) School of Environmental and Materials Engineering, College of Engineering, Shanghai Polytechnic University, Shanghai; 201209, China; (3) School of Biotechnology and Pharmaceutical Engineering, Nanjing Tech University, Nanjing; 210009, China

**Corresponding author:** Chen, Guosong(gschen@njtech.edu.cn)

**Source title:** Analytica Chimica Acta

**Abbreviated source title:** Anal. Chim. Acta

**Volume:** 1122

**Issue date:** 25 July 2020

**Publication year:** 2020

**Pages:** 31-38

**Language:** English

**ISSN:** 00032670

**E-ISSN:** 18734324

**CODEN:** ACACAM

**Document type:** Journal article (JA)

**Publisher:** Elsevier B.V.

**Abstract:** An upright GO (UGO) modified screen-printed electrode was prepared with the help of the external magnetic field for improving its electrochemical performance. The ratio of GO: Nafion and the magnetic field intensity on the properties of UGO were examined by scanning electron microscope, cyclic voltammetry and electrochemical impedance spectroscopy. The magnetic field intensity does not influence the electron transfer kinetics but increase the number of active sites and therefore enhance the electroactive surface area. In addition, the UGO electrode that was electrodeposited Ni nanoparticles (denotes as Ni NPs/UGO modified electrode) display excellent oxidation towards glycine using chronoamperometry. The Ni NPs/UGO modified electrode indicated an excellent performance for electrochemical COD (chemical oxide demand) analysis with a linear detection range of 0.1–400 mg/L and a lower detection limit of 0.02 mg/L. Moreover, this Ni NPs/UGO modified electrode can be applied to the rapid determination of COD in general real water samples. The results were in agreement with those obtained by using the standard method (ISO 6060). © 2020 Elsevier B.V.

**Number of references:** 34

**Main heading:** Chemical oxygen demand

**Controlled terms:** Amino acids  -  Chemical detection  -  Chronoamperometry  -  Cyclic voltammetry  -  Electrochemical electrodes  -  Electrochemical impedance spectroscopy  -  Graphene  -  Magnetic fields  -  Nickel  -  Oxygen   -  Scanning electron microscopy

**Uncontrolled terms:** Electroactive surface areas  -  Electrochemical performance  -  Electron transfer kinetics  -  External magnetic field  -  Linear detection ranges  -  Magnetic-field intensity  -  Number of active sites  -  Screen printed electrodes

**Classification code:** 548.1 Nickel  -  701.2 Magnetism: Basic Concepts and Phenomena  -  801 Chemistry  -  801.4.1 Electrochemistry  -  804 Chemical Products Generally  -  804.1 Organic Compounds

**Numerical data indexing:** Mass\_Density 2.00e-05kg/m3

**DOI:** 10.1016/j.aca.2020.05.009

**Funding Details:** Number: -, Acronym: -, Sponsor: Program for Professor of Special Appointment (Eastern Scholar) at Shanghai Institutions of Higher Learning;

**Funding text:** This work was supported by the Program for Professor of Special Appointment (Eastern Scholar) at Shanghai Institutions of Higher Learning and Gaoyuan Discipline of Shanghai-Environmental Science and Engineering (Resource Recycling Science and Engineering).

**Compendex references:** YES

**Database:** Compendex

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**Data Provider:** Engineering Village

**32. Deep ResNet Based Remote Sensing Image Super-Resolution Reconstruction in Discrete Wavelet Domain**

**Accession number:** 20203809209712

**Authors:** Qin, Q. (1); Dou, J. (1); Tu, Z. (1)

**Author affiliation:** (1) Department of Automation and Mechanical and Electrical engineering, School of Intelligent Manufacturing and Control Engineering, Shanghai Second Polytechnic University, Shanghai; 201209, China

**Corresponding author:** Qin, Q.(qinqin@sspu.edu.cnemailjfdou@sspu.edu.cnemailzmtu@sspu.edu.cn)Dou, J.(jfdou@sspu.edu.cnemailzmtu@sspu.edu.cn)Tu, Z.(zmtu@sspu.edu.cn)

**Source title:** Pattern Recognition and Image Analysis

**Abbreviated source title:** Pattern Recogn. Image Anal.

**Volume:** 30

**Issue:** 3

**Issue date:** July 1, 2020

**Publication year:** 2020

**Pages:** 541-550

**Language:** English

**ISSN:** 10546618

**E-ISSN:** 15556212

**Document type:** Journal article (JA)

**Publisher:** Pleiades journals

**Abstract:** Abstract: We present a single-image super-resolution (SR) method for Remote Sensing Image based on deep learning within Discrete Wavelet Domain in this paper. Our method is inspired Residual Learning. Firstly, an input image is decomposed by single level 2D Discrete wavelet transform to get four sub-bands. The four sub-bands coefficients are feeding into the Deep Learning Residual Network to predict correspondingly residual images; Adding four sub-band images and residual images as the new sub-bands of 2D wavelet transform; Finally, uses the inverse 2D Discrete wavelet transform to get the final output Super Resolution HR image. Our proposed method performs better than existing methods in accuracy and visual improvements in our results are easily noticeable. © 2020, Pleiades Publishing, Ltd.

**Number of references:** 30

**Main heading:** Image reconstruction

**Controlled terms:** Deep learning  -  Discrete wavelet transforms  -  Image compression  -  Inverse problems  -  Learning systems  -  Optical resolving power  -  Remote sensing

**Uncontrolled terms:** 2-d discrete wavelet transforms  -  2-D wavelet transform  -  Discrete wavelets  -  Remote sensing images  -  Residual images  -  Single images  -  Super resolution  -  Visual improvements

**Classification code:** 741.1 Light/Optics  -  921.3 Mathematical Transformations

**DOI:** 10.1134/S1054661820030232

**Funding Details:** Number: A11NH190704, Acronym: -, Sponsor: -; Number: 2017YFE0118700, Acronym: -, Sponsor: -; Number: XXKZD1603, Acronym: -, Sponsor: Shanghai Key Discipline Construction Project; Number: 734599, Acronym: -, Sponsor: -; Number: YS2017YFGH000967, Acronym: -, Sponsor: -; Number: XXKZD1603, Acronym: -, Sponsor: -; Number: 734599, Acronym: -, Sponsor: -; Number: No.U1537110, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;

**Funding text:** This research has been sponsored by National Key R&D Program of China (2017YFE0118700), EU H2020 FIRST project (Grant No. 734599,FIR ST:vF Interoperation supporting business innovation),and Shanghai Polytechnic University Key Discipline Construction (Mechanical Engineering, XXKZD1603).and Shanghai Polytechnic University University Enterprise Cooperation Automobile Electronic Joint Experiment Center with Grant Number A11NH190704 and Shanghai Polytechnic University Research Center of Resource Recycling Science and Engineering, and Gaoyuan Discipline of Shanghai – Environmental Science and Engineering (Resource Recycling Science and Engineering).This research has been partially sponsored by National Key R&D Program of China (YS2017YFGH000967), EU H2020 FIRST project (Grant no. 734599, FIRST: vF Interoperation suppoRting buSiness innovaTion), National Natural Science Foundation of China under Grant (No.U1537110 and 51605273), and Shanghai Polytechnic University-Key Discipline Construction (Mechanical Engineering, XXKZD1603).

**Compendex references:** YES

**Database:** Compendex

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**Data Provider:** Engineering Village

**33. Application of sludge-based biochar generated by pyrolysis: A mini review**

**Accession number:** 20204209352439

**Authors:** Deng, Yi (1); Huang, Qing (2, 3); Gu, Weihua (2, 4); Li, Shuyuan (1)

**Author affiliation:** (1) Solid Waste and Chemicals Management Center, Ministry of Ecology and Environment, Beijing, China; (2) WEEE Research Centre of Shanghai Polytechnic University, Shanghai, China; (3) School of Tourism, Shanghai Normal University, Shanghai, China; (4) College of Environment, Zhejiang University of Technology, Hangzhou, China

**Corresponding author:** Li, Shuyuan(lishuyuan@meescc.cn)

**Source title:** Energy Sources, Part A: Recovery, Utilization and Environmental Effects

**Abbreviated source title:** Energy Sources Recovery Util. Environ. Eff.

**Issue date:** 2020

**Publication year:** 2020

**Language:** English

**ISSN:** 15567036

**E-ISSN:** 15567230

**Document type:** Article in Press

**Publisher:** Bellwether Publishing, Ltd.

**Abstract:** The production of sludge is increasing with the rapid development of wastewater treatment. However, to sludge disposal, the restriction of landfill and the hazard of incineration fly ash show that it is imperative to develop a suitable technology to solve the sludge problem. As an emerging sludge treatment technology, pyrolysis has the advantages of reduction, stabilization, harmlessness, and recycling to sludge. In addition, high-value utilization can be made to the pyrolysis products, especially for sludge-based biochar. However, the performance of sludge-based biochar can be affected by many factors, thus it is essential to investigate its preparation conditions, existing problems, and potential applications. In view of this, this mini review firstly discusses the preparation and characterization methods of sludge-based biochar, and points out the preparation method of a novel sludge-based biochar that can remove large amounts of pollutants. Then the applications of sludge-based biochar such as adsorbents, soil conditioners, and catalyst carriers, are also introduced, respectively. Meanwhile, the existing problems during the applications of sludge-based biochar are pointed out. Finally, from the perspective of preparation and application of sludge-based biochar, the research emphases in future are proposed. © 2020 Taylor & Francis Group, LLC.

**Number of references:** 61

**Main heading:** Sludge disposal

**Controlled terms:** Fly ash  -  Incineration  -  Pyrolysis  -  Soil conditioners  -  Wastewater disposal  -  Wastewater treatment

**Uncontrolled terms:** Catalyst carrier  -  Characterization methods  -  Existing problems  -  Incineration fly ashes  -  Preparation conditions  -  Preparation method  -  Pyrolysis products  -  Sludge treatment

**Classification code:** 452.2 Sewage Treatment  -  452.4 Industrial Wastes Treatment and Disposal  -  483.1 Soils and Soil Mechanics  -  802.2 Chemical Reactions

**DOI:** 10.1080/15567036.2020.1826602

**Compendex references:** YES

**Database:** Compendex

Compilation and indexing terms, Copyright 2020 Elsevier Inc.

**Data Provider:** Engineering Village

**34. The Neutrophil’s Morphology Classification Using Convolutional Neural Network**

**Accession number:** 20201808598818

**Authors:** Zhang, Xiliang (1); Li, Jialong (1); Wang, Bohao (1); Shi, Kunju (2); Qin, Qin (1); Fan, Bo (3)

**Author affiliation:** (1) Shanghai Polytechnic University, No. 2360, Jin Hai Road, Pudong, Shanghai; 201209, China; (2) Shanghai Dianji University, No. 300, Shui Hua Road, Pudong, Shanghai; 201306, China; (3) Amkor Assembly & Test (Shanghai) Co., Ltd., No. 111 Ying Lun Road, Pudong, Shanghai; 200131, China

**Corresponding author:** Qin, Qin(qinqin@sspu.edu.cn)

**Source title:** Communications in Computer and Information Science

**Abbreviated source title:** Commun. Comput. Info. Sci.

**Volume:** 1160 CCIS

**Part number:** 2 of 2

**Issue title:** Bio-inspired Computing: Theories and Applications - 14th International Conference, BIC-TA 2019, Revised Selected Papers

**Issue date:** 2020

**Publication year:** 2020

**Pages:** 576-585

**Language:** English

**ISSN:** 18650929

**E-ISSN:** 18650937

**ISBN-13:** 9789811534140

**Document type:** Conference article (CA)

**Conference name:** 14th International Conference on Bio-inspired Computing: Theories and Applications, BIC-TA 2019

**Conference date:** November 22, 2019 - November 25, 2019

**Conference location:** Zhengzhou, China

**Conference code:** 239059

**Publisher:** Springer

**Abstract:** To better understand the mechanism of neutrophils moving in response to an inflammatory response, the morphology changing and the modes of neutrophils are investigated. The morphology changing usually refers to the appearance of pseudopods in a neutrophil, which means the mode of the neutrophil changes, and becomes activated. However, the mechanism is still not completely understood. It will be helpful to better understand the mechanism, if the modes of neutrophils are successfully classified. This paper proposed a method to successfully classify the modes of neutrophils using transfer learning based on the pre-trained AlexNet due to the good performance of deep learning in classification tasks. The result of classification is very accurate with high probability. The classification method using transfer learning based on a pre-trained AlexNet is not novel, but the application in this area is new. Furthermore, owing to the transfer learning, only a few pieces of data are needed to train the new network and successfully classify the modes of neutrophils. © 2020, Springer Nature Singapore Pte Ltd.

**Number of references:** 12

**Main heading:** Transfer learning

**Controlled terms:** Biomimetics  -  Computation theory  -  Convolutional neural networks  -  Deep learning  -  Learning systems  -  Morphology

**Uncontrolled terms:** Classification methods  -  Classification tasks  -  High probability  -  Inflammatory response  -  Morphology classification

**Classification code:** 461.8 Biotechnology  -  721.1 Computer Theory, Includes Formal Logic, Automata Theory, Switching Theory, Programming Theory  -  951 Materials Science

**DOI:** 10.1007/978-981-15-3415-7\_48

**Funding Details:** Number: 2017YFE0118700, Acronym: -, Sponsor: -; Number: 734599, Acronym: -, Sponsor: -; Number: -, Acronym: H2020, Sponsor: Horizon 2020 Framework Programme; Number: EGD19XQD07, Acronym: -, Sponsor: -;

**Funding text:** Supported by the State Key Research and Development Program of China (2017YFE0118700), the European Unions Horizon 2020 research and innovation programme under the Marie Sklodowska-Curie grant agreement No 734599, 2018 University Young Teacher Cultivation Funding Project of Shanghai (ZZEGD18037), and the Research Administration Office of Shanghai Polytechnic University (EGD19XQD07).

**Compendex references:** YES

**Database:** Compendex

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**Data Provider:** Engineering Village

**35. Acute and subchronic toxicity of Ag+-laden liposomes on Daphnia magna: the effect of encapsulation**

**Accession number:** 20203008977034

**Authors:** Luo, Ping (1); Wang, Na (1); Lu, Mengtian (1); Chen, Xiaoqu (2); Ji, Youqing (1); Wang, Wenxuan (1); Xu, Zhaona (1); Jiang, Jiachao (1); Zhang, Chenglong (3); Xiao, Xin (1)

**Author affiliation:** (1) School of Environment and Geo-informatics, China University of Mining and Technology, Xuzhou, China; (2) Guangdong Laboratory Animals Monitoring Institute, Guangdong Provincial Key Laboratory of Laboratory Animals, Guangzhou, China; (3) Shanghai Collaborative Innovation Centre for WEEE Recycling, Shanghai Polytechnic University, Shanghai, China

**Corresponding author:** Xiao, Xin

**Source title:** Journal of Environmental Science and Health - Part A Toxic/Hazardous Substances and Environmental Engineering

**Abbreviated source title:** J. Environ. Sci. Health Part A Toxic Hazard. Subst. Environ. Eng.

**Issue date:** 2020

**Publication year:** 2020

**Pages:** 1-10

**Language:** English

**ISSN:** 10934529

**E-ISSN:** 15324117

**CODEN:** JATEF9

**Document type:** Journal article (JA)

**Publisher:** Taylor and Francis Inc., 325 Chestnut St, Suite 800, Philadelphia, PA 19106, United States

**Abstract:** The toxic effects of various substances on Daphnia magna (D. magna) observed through traditional waterborne uptake may involve alterations to the nutritional quality of the contaminated algae and culture media. It is essential to find an alternative delivery method that will not affect the nutritional quality of D. magna’s diet in order to elucidate the mechanisms of dietary metal toxicity. Therefore, this study examined the application of liposome encapsulation on the dietary toxicity of D. magna. Ag+-laden liposomes were prepared and the Ag encapsulation efficiency and inhibition effect on algae growth were examined. Then, acute and 14-day subchronic studies were performed to examine the effect of Ag+-laden liposomes on D. magna. The EC50 for the 24 h immobilization test was 10.59 µg/L for Ag+-laden liposomes and 3.07 µg/L for Ag+. In terms of subchronic effects, the estimated ECx values under the Ag+-laden liposome condition were always higher than the direct exposure condition. Furthermore, the bioaccumulation of Ag+-laden liposomes was about 1.68 times lower than direct exposure. Generally, Ag+-laden liposomes produced less efficient toxicity than direct exposure, e.g., lower D. magna mortality, production of more neonates, higher intrinsic rate of natural increase (rm), earlier time to first brood, and higher enzyme activities. © 2020, © 2020 Taylor & Francis Group, LLC.

**Number of references:** 60

**Main heading:** Liposomes

**Controlled terms:** Algae  -  Biochemistry  -  Nutrition  -  Toxicity

**Uncontrolled terms:** Delivery methods  -  Dietary metals  -  Effect of encapsulation  -  Encapsulation efficiency  -  Exposure conditions  -  Inhibition effect  -  Intrinsic rates  -  Nutritional qualities

**Classification code:** 461.7 Health Care  -  461.9 Biology  -  801.2 Biochemistry

**Numerical data indexing:** Age 3.84e-02yr, Time 8.64e+04s

**DOI:** 10.1080/10934529.2020.1794444

**Funding Details:** Number: -, Acronym: CUMT, Sponsor: China University of Mining and Technology; Number: 2017XKQY95, Acronym: -, Sponsor: Fundamental Research Funds for the Central Universities;

**Funding text:** This study is funded by the Fundamental Research Funds for the Central Universities (No. 2017XKQY95). The authors wish to express the appreciation to Mr. Jianjun Li from Guangdong Institute of Animal Surveillance (China) for technical support on freshwater green algae and D. magna culturing. The authors would like to thank Dr Zhen Mao from China University of Mining and Technology for the valuable discussion about enzyme test protocols. The authors also thank Prof Lizhang Wang from China University of Mining and Technology and Dr Jing Zhao from Shanghai Polytechnic University for their technical assistance on liposome synthesis and characterization.

**Compendex references:** YES

**Database:** Compendex

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**Data Provider:** Engineering Village

**36. Electroless Plating of Transition Metal Boride with High Boron Content as Superior HER Electrocatalyst**

**Accession number:** 20201908613209

**Authors:** Zhang, Ruiqi (1); Liu, Huixiang (1); Wang, Chenfeng (2); Wang, Lincai (2); Yang, Yanjing (3); Guo, Yanhui (1)

**Author affiliation:** (1) Department of Materials Science, Fudan University, Shanghai; 200433, China; (2) Research Center of Resource Recycling Science and Engineering, Shanghai Polytechnic University, Shanghai; 201209, China; (3) Science and Technology on Combustion and Explosion Laboratory, Xi’an Modern Chemistry Research Institute, Xi’an; Shannxi; 710065, China

**Corresponding author:** Guo, Yanhui(gyh@fudan.edu.cn)

**Source title:** ChemCatChem

**Abbreviated source title:** ChemCatChem

**Volume:** 12

**Issue:** 11

**Issue date:** June 5, 2020

**Publication year:** 2020

**Pages:** 3068-3075

**Language:** English

**ISSN:** 18673880

**E-ISSN:** 18673899

**CODEN:** CHEMK3

**Document type:** Journal article (JA)

**Publisher:** Wiley Blackwell

**Abstract:** Facile deposition of transition metal boride (TMB) with high-boron content as highly efficient hydrogen evolution reaction (HER) electrocatalyst has been realized by a facile one-step electroless-plating (EP) method. Boron content of the TMB catalyst shows an appreciable impact on its intrinsic HER activity. NiB/NF electrode with thin amorphous nickel boride (NiB) deposition on nickel foam (NF) required overpotential of only 41.2 mV to deliver a current density of 10 mA cm−2 for HER in 1.0 M KOH alkaline electrolyte. Meanwhile, this kind of electrode also shows satisfied stability which can work at large current density of 1000 mA cm−2 for over 72 h without performance degradation. The advance on the TMB electrode may pave a way to the development of practical electrodes for water splitting. © 2020 Wiley-VCH Verlag GmbH & Co. KGaA, Weinheim

**Number of references:** 45

**Main heading:** Nickel compounds

**Controlled terms:** Borides  -  Boron  -  Electrocatalysts  -  Electrodes  -  Electroless plating  -  Electrolytes  -  Hydrogen evolution reaction  -  Nickel  -  Potassium hydroxide

**Uncontrolled terms:** Alkaline electrolytes  -  Amorphous nickel  -  Boron content  -  Large current density  -  Nickel foam  -  Overpotential  -  Performance degradation  -  Water splitting

**Classification code:** 539.3.2 Electroless Plating  -  548.1 Nickel  -  549.3 Nonferrous Metals and Alloys excluding Alkali and Alkaline Earth Metals  -  803 Chemical Agents and Basic Industrial Chemicals  -  804.2 Inorganic Compounds

**Numerical data indexing:** Time 2.59e+05s

**DOI:** 10.1002/cctc.202000315

**Funding Details:** Number: XXKZD1602, Acronym: -, Sponsor: -; Number: 17ZR1402500, Acronym: -, Sponsor: -; Number: 21975201, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;

**Funding text:** This work was financially supported by the National Natural Science Foundation of China (Grant No. 21975201), the Science and Technology Committee of Shanghai (17ZR1402500). Key Project of Shanghai Polytechnic University (XXKZD1602), Gaoyuan Discipline of ShanghaiEnvironmental Science and Engineering.

**Compendex references:** YES

**Database:** Compendex

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**Data Provider:** Engineering Village

**37. Comprehensive excellent performance for silicone-based thermal interface materials through the synergistic effect between graphene and spherical alumina**

**Accession number:** 20200708172747

**Authors:** Chen, Cheng (1); He, Yan (2); Liu, Changqing (3); Xie, Huaqing (1); Yu, Wei (1)

**Author affiliation:** (1) College of Engineering, Shanghai Key Laboratory of Engineering Materials Application and Evaluation, Shanghai Polytechnic University, Shanghai; 201209, China; (2) School of Mechanical and Electrical Engineering, Qingdao University of Science and Technology, Qingdao; 266061, China; (3) School of Mechanical and Energy Engineering, Shaoyang University, Shaoyang; 422001, China

**Corresponding author:** Yu, Wei(yuwei@sspu.edu.cn)

**Source title:** Journal of Materials Science: Materials in Electronics

**Abbreviated source title:** J Mater Sci Mater Electron

**Volume:** 31

**Issue:** 6

**Issue date:** March 1, 2020

**Publication year:** 2020

**Pages:** 4642-4649

**Language:** English

**ISSN:** 09574522

**E-ISSN:** 1573482X

**Document type:** Journal article (JA)

**Publisher:** Springer

**Abstract:** Rapid heat dissipation is the pain point of modern miniaturized electronic equipment and components. High-power and high-efficiency operation puts forward higher requirements on the heat transfer capability of thermal interface materials (TIM). In this work, taking advantage of synergistic effect between thermally conductive fillers graphene and alumina (Al2O3), thermal grease-based TIM was prepared. Secondly, the effects of temperature and pressure on the thermal interface resistance were studied. Lastly, coating thickness and thermal stability of thermal grease-based TIM were tested. These results show thermal conductivity of composite as high as 4.38 W/(m K). The interface thermal resistance is as low as 0.243 °C cm2/W (80 °C, 60 psi) in case that the temperature and pressure strain capability within a certain range are subsequently considerable. Furthermore, the oil leakage is fractional when the silicone grease was placed at 80 °C for 600 h, showing good thermal stability. © 2020, Springer Science+Business Media, LLC, part of Springer Nature.

**Number of references:** 27

**Main heading:** Thermal conductivity

**Controlled terms:** Alumina  -  Aluminum oxide  -  Graphene  -  Heat transfer  -  Interfaces (materials)  -  Leakage (fluid)  -  Oscillators (electronic)  -  Silicones  -  Temperature  -  Thermal insulating materials   -  Thermodynamic stability  -  Thickness measurement

**Uncontrolled terms:** Heat transfer capability  -  High-efficiency operations  -  Interface thermal resistance  -  Miniaturized electronics  -  Temperature and pressures  -  Thermal interface materials  -  Thermal interface resistances  -  Thermally conductive fillers

**Classification code:** 413.2 Heat Insulating Materials  -  641.1 Thermodynamics  -  641.2 Heat Transfer  -  713.2 Oscillators  -  761 Nanotechnology  -  804 Chemical Products Generally  -  804.2 Inorganic Compounds  -  815.1.1 Organic Polymers  -  943.2 Mechanical Variables Measurements  -  951 Materials Science

**Numerical data indexing:** Pressure 4.14e+05Pa, Temperature 3.53e+02K, Thermal\_Conductivity 4.38e+00W/m\*K, Time 2.16e+06s

**DOI:** 10.1007/s10854-020-03016-3

**Funding Details:** Number: EGD18YJ0024, Acronym: -, Sponsor: -; Number: 2018JJ3478, Acronym: -, Sponsor: -; Number: 19A448, Acronym: -, Sponsor: -; Number: 51590902, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;

**Funding text:** The work was supported by National Natural Science Foundation of China (51590902 & 51876112), the Key Subject of Shanghai Polytechnic University (Material Science and engineering; Grant Nos. XXKZD1601 and EGD18YJ0024), Hunan Provincial Natural Science Fund (2018JJ3478) and the Key projects of Hunan Provincial Education Department (no. 19A448).

**Compendex references:** YES

**Database:** Compendex

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**Data Provider:** Engineering Village

**38. Thermal properties of a novel form-stable phase change thermal interface materials olefin block copolymer/paraffin filled with Al2O3**

**Accession number:** 20200608142575

**Authors:** Liu, Changqing (1, 2); Chen, Cheng (3); Yu, Wei (3); Chen, Mao (1, 2); Zhou, Dongyi (1, 2); Xie, Huaqing (3)

**Author affiliation:** (1) School of Mechanical and Energy Engineering, Shaoyang University, Shaoyang; 422000, China; (2) Key Laboratory of Hunan Province for Efficient Power System and Intelligent Manufacturing, Shaoyang University, Shaoyang; 422000, China; (3) College of Engineering, Shanghai Key Laboratory of Engineering Materials Application and Evaluation, Shanghai Polytechnic University, Shanghai; 201209, China

**Corresponding author:** Yu, Wei(yuwei@sspu.edu.cn)

**Source title:** International Journal of Thermal Sciences

**Abbreviated source title:** Int. J. Therm. Sci.

**Volume:** 152

**Issue date:** June 2020

**Publication year:** 2020

**Article number:** 106293

**Language:** English

**ISSN:** 12900729

**CODEN:** RGTHA7

**Document type:** Journal article (JA)

**Publisher:** Elsevier Masson SAS, 62 rue Camille Desmoulins, Issy les Moulineaux Cedex, 92442, France

**Abstract:** Thermal contact resistance (TCR) between the thermal interface materials (TIMs) and the upper and lower contact surfaces plays an important role in the heat dissipation process of electronic devices. Moreover, TCR is mainly affected by temperature, pressure and fluidity of TIMs. When the critical operating temperature of the electronic device is reached, if solid-solid contact between two contact surfaces is changed into solid-liquid contact, TCR will be greatly reduced. Based on this idea, a novel form-stable phase change TIMs is proposed. The thermal conductivity of paraffin wax (PA) is improved by filling Al2O3 particles. The addition of olefin block copolymer (OBC) improves the stability and solves the leakage problem of PA. In addition, the effects of temperature and pressure on the TCR, especially near the phase transition point, are systematically studied. These results confirm that TCR of phase change Al2O3/OBC/PA is very sensitive to temperature. When the temperature rises from 37 °C to 41 °C, TCR of all samples decreases sharply from 10~20 K⋅cm2/Wto 1~2K⋅cm2/W. TCR of all samples decreases slowly with the increase of pressure (10~50 Psi, 45 °C) and is very close to the TCR of common thermal grease. Finally, when the mass fraction of Al2O3 is higher than 60 wt%, the thermal conductivity of the Al2O3/OBC/PA increases sharply with the increase of Al2O3. Therefore, form-stable Al2O3/OBC/PA is an important development direction to solve the heat dissipation in electronic technology. © 2020

**Number of references:** 29

**Main heading:** Phase change materials

**Controlled terms:** Alumina  -  Aluminum oxide  -  Block copolymers  -  Contact resistance  -  Electronic equipment  -  Heat resistance  -  Interfaces (materials)  -  Olefins  -  Temperature  -  Thermal conductivity   -  Thermal conductivity of solids  -  Thermal insulating materials  -  Thermoelectric equipment

**Uncontrolled terms:** Al2O3  -  Development directions  -  Effects of temperature  -  Electronic technologies  -  Olefin block copolymers  -  Phase transition point  -  Thermal contact resistance  -  Thermal interface materials

**Classification code:** 413.2 Heat Insulating Materials  -  615.4 Thermoelectric Energy  -  641.1 Thermodynamics  -  701.1 Electricity: Basic Concepts and Phenomena  -  804.1 Organic Compounds  -  804.2 Inorganic Compounds  -  815.1 Polymeric Materials  -  951 Materials Science

**Numerical data indexing:** Pressure 6.89e+04Pa to 3.45e+05Pa, Temperature 3.10e+02K to 3.14e+02K, Temperature 3.18e+02K

**DOI:** 10.1016/j.ijthermalsci.2020.106293

**Funding Details:** Number: 2018JJ3478, Acronym: -, Sponsor: -; Number: 19A448, Acronym: -, Sponsor: -; Number: 51590902, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;

**Funding text:** The work was supported by National Natural Science Foundation of China (Grant No. 51590902 and 51876112 ), Hunan Provincial Natural Science Fund ( 2018JJ3478 ) and the Key projects of Hunan Provincial Education Department (no. 19A448 ).

**Compendex references:** YES

**Database:** Compendex

Compilation and indexing terms, Copyright 2020 Elsevier Inc.

**Data Provider:** Engineering Village

**39. The feasibility study of wavelength selection of multi-spectral LIDAR for autonomous driving**

**Accession number:** 20201508396745

**Title of translation:**

**Authors:** Song, Shao-Jing (1); Chen, Yu-Wei (2); Hu, Hai-Jiang (1); Hu, Jin-Yan (1); Gong, Yu-Mei (1); Shao, Hui (2, 3)

**Author affiliation:** (1) Department of Communication and Information Engineering, Shanghai Polytechnic University, Shanghai; 201209, China; (2) Department of Remote Sensing and Photogrammetry, Finnish Geospatial Research Institute, National Land Survey of Finland, Masala; 02431, Finland; (3) School of Electronic and Information Engineering, Anhui Jianzhu University, Hefei; 230601, China

**Corresponding author:** Song, Shao-Jing(sjsong@sspu.edu.cn)

**Source title:** Hongwai Yu Haomibo Xuebao/Journal of Infrared and Millimeter Waves

**Abbreviated source title:** Hongwai Yu Haomibo Xuebao

**Volume:** 39

**Issue:** 1

**Issue date:** February 1, 2020

**Publication year:** 2020

**Pages:** 86-91

**Language:** Chinese

**ISSN:** 10019014

**CODEN:** HHXUEZ

**Document type:** Journal article (JA)

**Publisher:** Chinese Optical Society

**Abstract:** In the autonomous driving system of automobile, in order to improve the performance of single- wavelength LIDAR in physical property detection classification and state, and draw lessons from the principle that multi-spectral detection has physical property detection ability, this paper studies the band selection of multi-spectral LIDAR, calculates and analyses the spectrum of typical targets in autonomous driving by using principal component analysis method. The characteristics of laser source and detector, the band selection method of multi-spectral LIDAR, the spectral characteristic analysis of typical targets for autonomous driving application scenarios and the availability of commercial LIDAR are synthesized. The central wavelength of the multi-spectral LIDAR suitable for autonomous driving of automobiles is 808 nm, 905 nm, 1 064 nm and 1 310 nm. The validity of the selected wavelength of the multi-spectral LIDAR is verified by testing. © 2020, Science Press. All right reserved.

**Number of references:** 12

**Main heading:** Optical radar

**Controlled terms:** Autonomous vehicles  -  Physical properties  -  Principal component analysis

**Uncontrolled terms:** Application scenario  -  Autonomous driving  -  Central wavelength  -  Feasibility studies  -  Principal component analysis method  -  Single wavelength  -  Spectral characteristics  -  Wavelength selection

**Classification code:** 716.2 Radar Systems and Equipment  -  922.2 Mathematical Statistics  -  931.2 Physical Properties of Gases, Liquids and Solids

**Numerical data indexing:** Size 1.06e-06m, Size 1.31e-06m, Size 8.08e-07m, Size 9.05e-07m

**DOI:** 10.11972/j.issn.1001-9014.2020.01.012

**Funding Details:**

**Funding text:** 2019H 08H 222019-11-21 Received date2019H 08H 22Revised date2019-11-21 XXKZD1605A11NH190704 Foundation itemsSupported by Discipline Construction Project of Shanghai Polytechnic UniversityXXKZD1605and Construction Project of UniH versity Enterprise Joint Automobile Electronic Experiment CenterA11NH190704. Biography1974E-mailsjsong@sspu. edu. cn \*Corresponding authorE-mailsjsong@sspu. edu. cn

**Compendex references:** YES

**Database:** Compendex

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**Data Provider:** Engineering Village

**40. The recovery of phosphorus from acidic ultra-high phosphorous waste water by the struvite crystallization    (*Open Access*)**

**Accession number:** 20202608871074

**Authors:** Li, Qiang (1); Wang, Song (2, 3); Wang, Lifang (1); Zhang, Li (3); Wan, Xiaohui (3); Sun, Zhiguo (3)

**Author affiliation:** (1) School of Management, Northwestern Polytechnical University, 127West Youxi Road, Xian; 710072, China; (2) Shangtex Architectural Design Research Institute Co., Ltd., Shanghai; 200060, China; (3) Research Center of Resource Recycling Science and Engineering, School of Environmental and Materials Engineering, Shanghai Polytechnic University, Shanghai; 201209, China

**Corresponding author:** Zhang, Li(zhangli@sspu.edu.cnemailzgsun@sspu.edu.cn)Sun, Zhiguo(zgsun@sspu.edu.cn)

**Source title:** Water (Switzerland)

**Abbreviated source title:** Water

**Volume:** 12

**Issue:** 4

**Issue date:** April 1, 2020

**Publication year:** 2020

**Article number:** 946

**Language:** English

**E-ISSN:** 20734441

**Document type:** Journal article (JA)

**Publisher:** MDPI AG, Postfach, Basel, CH-4005, Switzerland

**Abstract:** Phosphorus recovery from industrial wastewater has attracted considerable interest. In this study, struvite crystallization method has been used for treatment of high phosphorus wastewater. The new combination agents of Mg5(CO3)4(OH)2·4H2O and NH4Cl were used as the precipitant. The effects of initial pH, n(Mg):n(P), n(N):n(P), and reaction time on the removal of total phosphorus (TP) in wastewater were investigated. The results showed that under the condition of initial pH = 4, Mg:N:P = 1.2:1.1:1, reaction time for 30 min, and static storage for 20 min, the residual amount of TP in wastewater was 2.98 mg /L, and the removal rate of TP reached 99.99%. The mass fraction of P2O5 in the generated sediment reached 25.22%, equivalent to high grade phosphate ore and slow-release fertilizer, so as to realize the recycling and utilization of phosphorus in ultra-high phosphorous wastewater. This work will have practical application potential in treatment of high phosphorus wastewater and environmental management. © 2020 by the authors.

**Number of references:** 25

**Main heading:** Nitrogen compounds

**Controlled terms:** Chlorine compounds  -  Environmental management  -  Phosphorus  -  Wastewater reclamation  -  Wastewater treatment

**Uncontrolled terms:** Industrial wastewaters  -  Phosphate ores  -  Phosphorus recovery  -  Recycling and utilization  -  Residual amounts  -  Slow release fertilizers  -  Static storage  -  Total phosphorus

**Classification code:** 452.4 Industrial Wastes Treatment and Disposal  -  454.1 Environmental Engineering, General  -  804 Chemical Products Generally

**Numerical data indexing:** Mass\_Density 2.98e-03kg/m3, Percentage 1.00e+02%, Percentage 2.52e+01%, Time 1.20e+03s, Time 1.80e+03s

**DOI:** 10.3390/W12040946

**Funding Details:** Number: -, Acronym: -, Sponsor: Shanghai Municipal Education Commission; Number: 15SG52, Acronym: SEDF, Sponsor: Shanghai Education Development Foundation; Number: 16ZR1412600, Acronym: -, Sponsor: Natural Science Foundation of Shanghai; Number: 51590901, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;

**Funding text:** Funding: This research was funded by Natural Science Foundation of China (Nos. 21806101, 51476094, 51590901), Natural Science Foundation of Shanghai (Nos. 16ZR1412600, 15ZR1416900), Gaoyuan Discipline of Shanghai-Environmental Science and Engineering (Resource Recycling Science and Engineering), Shanghai Eastern Professorship grant, Shu Guang project supported by Shanghai Municipal Education Commission and Shanghai Education Development Foundation (No. 15SG52).

**Compendex references:** YES

**Database:** Compendex

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**Data Provider:** Engineering Village

**41. Enhancement of Photo-Thermal Conversion Performance of the Nanofluids Through Spectral Complementarity between Silver and Cesium Tungstate Oxide Nanoparticles**

**Accession number:** 20202808911730

**Authors:** Liu, Changqing (1, 2); Zhang, Liye (3); He, Yan (4); Yu, Wei (3)

**Author affiliation:** (1) School of Mechanical and Energy Engineering, Shaoyang University, Shaoyang; 422000, China; (2) Key Laboratory of Hunan Province for Efficient Power System and Intelligent Manufacturing, Shaoyang University, Shaoyang; 422000, China; (3) College of Engineering, Shanghai Polytechnic University, Shanghai; 201209, China; (4) School of Mechanical and Electrical Engineering, Qingdao University of Science and Technology, Qingdao; 266061, China

**Corresponding author:** Yu, Wei(yuwei@sspu.edu.cnemailheyan\_sd@163.com)He, Yan(heyan\_sd@163.com)

**Source title:** Journal of Thermal Science

**Abbreviated source title:** J. Therm. Sci.

**Volume:** 29

**Issue:** 5

**Issue date:** October 1, 2020

**Publication year:** 2020

**Pages:** 1322-1332

**Language:** English

**ISSN:** 10032169

**E-ISSN:** 1993033X

**Document type:** Journal article (JA)

**Publisher:** Science Press

**Abstract:** Nanofluids with full-spectrum absorption properties are highly desirable for direct solar thermal energy conversion applications. In this work, Ag and CsWO3 nanofluids, which exhibit absorption both in the visible and near-infrared (NIR) region, are integrated to obtain two-component hybrid nanofluids. The hybrid nanofluids show broad band absorption with a solar weighted absorption fraction of 99.6%, compared to 18% and 54% for the base liquid (ethylene glycol) and CsWO3 nanofluids, respectively. The highest photo-thermal conversion performance for the hybrid nanofluids is obtained with Ag/CsWO3 weight ratio of 3/7. The solar thermal conversion efficiency of the optimum hybrid nanofluids is 67%, 10% and 15% higher than single Ag and CsWO3 nanofluids. The two-component hybrid nanofluid provides an alternative for making the best use of solar energy. © 2020, Science Press, Institute of Engineering Thermophysics, CAS and Springer-Verlag GmbH Germany, part of Springer Nature.

**Number of references:** 45

**Main heading:** Nanofluidics

**Controlled terms:** Absorption spectroscopy  -  Cesium compounds  -  Energy conversion  -  Ethylene  -  Ethylene glycol  -  Image enhancement  -  Infrared devices  -  Solar energy  -  Solar heating  -  Tungsten compounds

**Uncontrolled terms:** Absorption fraction  -  Broad band absorptions  -  Full spectrum  -  Hybrid nanofluid  -  Oxide nanoparticles  -  Photo-thermal conversions  -  Solar thermal conversion  -  Visible and near infrared

**Classification code:** 525.5 Energy Conversion Issues  -  657.1 Solar Energy and Phenomena  -  761 Nanotechnology  -  804.1 Organic Compounds

**Numerical data indexing:** Percentage 6.70e+01%, Percentage 9.96e+01%, Percentage 1.00e+01%, Percentage 1.50e+01%, Percentage 1.80e+01%, Percentage 5.40e+01%

**DOI:** 10.1007/s11630-020-1306-2

**Funding Details:** Number: 19A448, Acronym: -, Sponsor: -; Number: 2018JJ3478, Acronym: -, Sponsor: -; Number: 51590901, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;

**Funding text:** The work was supported by National Natural Science Foundation of China (Grant No. 51590901 and No. 51876112), Hunan Provincial Natural Science Fund (2018JJ3478), and the key project of Hunan Provincial Education Department (No. 19A448).

**Compendex references:** YES

**Database:** Compendex

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**Data Provider:** Engineering Village

**42. Reinforcement Learning-Based Control for Nonlinear Discrete-Time Systems with Unknown Control Directions and Control Constraints**

**Accession number:** 20201608434538

**Authors:** Huang, Miao (1); Liu, Cong (2); He, Xiaoqi (3); Ma, Longhua (4); Lu, Zheming (5); Su, Hongye (5)

**Author affiliation:** (1) College of Intelligent Manufacturing and Control Engineering, Shanghai Polytechnic University, Shanghai; 201209, China; (2) Department of Internet of Things Engineering, Shanghai Business School, Shanghai; 200235, China; (3) Ningbo Industrial Internet Institute, Ningbo; 315000, China; (4) Ningbo Institute of Technology, Zhejiang University, Ningbo; 315100, China; (5) Zhejiang University, Hangzhou; 310058, China

**Corresponding author:** Huang, Miao(huangmiao@sspu.edu.cn)

**Source title:** Neurocomputing

**Abbreviated source title:** Neurocomputing

**Volume:** 402

**Issue date:** 18 August 2020

**Publication year:** 2020

**Pages:** 50-65

**Language:** English

**ISSN:** 09252312

**E-ISSN:** 18728286

**CODEN:** NRCGEO

**Document type:** Journal article (JA)

**Publisher:** Elsevier B.V.

**Abstract:** In this work, output-feedback control problems for a class of discrete-time non-affine nonlinear systems with unknown control directions and input constraints are considered by using reinforcement learning (RL) method. Two neural networks (NNs) implement the control: 1) a critic NN that estimates a non-quadratic strategic utility function (SUF) and 2) an action NN that generates optimized control input and minimizes the SUF. The implicit function theorem is applied to obtain the optimal control law since the control is appeared in a non-affine form. For the first time, the discrete Nussbaum gain is introduced to overcome the difficulty that the control directions are unknown and a non-quadratic SUF is used to deal with the control constraints in the RL-based control. The theoretical derivation of the uniformly ultimately boundedness of the NN weights and the closed-loop output tracking error is given. And two numerical examples have been supplied to valid the proposed method. © 2020 Elsevier B.V.

**Number of references:** 26

**Main heading:** Discrete time control systems

**Controlled terms:** Control theory  -  Digital control systems  -  Learning systems  -  Numerical methods  -  Reinforcement learning

**Uncontrolled terms:** Discrete Nussbaum gain  -  Implicit function theorem  -  Non-affine nonlinear systems  -  Nonlinear discrete-time systems  -  Output feedback controls  -  Reinforcement learning method  -  Theoretical derivations  -  Unknown control direction

**Classification code:** 723.4 Artificial Intelligence  -  731.1 Control Systems  -  921.6 Numerical Methods

**DOI:** 10.1016/j.neucom.2020.03.061

**Funding Details:** Number: 2018A610165, Acronym: -, Sponsor: Natural Science Foundation of Ningbo; Number: Y201636903, Acronym: -, Sponsor: -; Number: LQ19F030005, Acronym: -, Sponsor: -; Number: 61272020, Acronym: -, Sponsor: -; Number: 61621002, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;

**Funding text:** This work is supported by the National Nature Science Foundation of China under Grant number 61633019, 61272020 and 61673268; Science Fund for Innovative Research Groups of the National Natural Science Foundation of China under Grant Number 61621002; Zhejiang Provincial Natural Science Foundation of China under Grant number LQ19F030005; Natural Science Foundation of Ningbo City under Grants 2018A610165; Research Programs of Educational Commission Foundation of Zhejiang Province of China under Grant number Y201636903.Cong Liu received the Ph.D. degree in control theory and engineering from Tongji University, Shanghai, China, in 2016. Currently, he is with Department of Internet of Things Engineering, Shanghai Business School, Shanghai, China. He has published over 10 international journal and conference papers. He has taken charge of a Natural Science Foundation of Ningbo City and Research Programs of Educational Commission Foundation of Zhejiang Province of China. His research interests include medical image processing and computer vision.

**Compendex references:** YES

**Database:** Compendex

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**Data Provider:** Engineering Village

**43. Multilayer electrospun nanofibrous membranes with antibacterial property for air filtration**

**Accession number:** 20201108300110

**Authors:** Zhang, Lu (1, 2); Li, Lingfeng (1, 2); Wang, Lincai (3); Nie, Jun (1, 2); Ma, Guiping (1, 2)

**Author affiliation:** (1) Beijing Laboratory of Biomedical Materials, Ministry of Education, Beijing University of Chemical Technology, Beijing; 100029, China; (2) Key Laboratory of Biomedical Materials of Nature Macromolecules, Ministry of Education, Beijing University of Chemical Technology, Beijing; 100029, China; (3) Research Center of Resource Recycling Science and Engineering, Shanghai Polytechnic University, Shanghai; 201209, China

**Corresponding author:** Ma, Guiping(magp@mail.buct.edu.cn)

**Source title:** Applied Surface Science

**Abbreviated source title:** Appl Surf Sci

**Volume:** 515

**Issue date:** 15 June 2020

**Publication year:** 2020

**Article number:** 145962

**Language:** English

**ISSN:** 01694332

**CODEN:** ASUSEE

**Document type:** Journal article (JA)

**Publisher:** Elsevier B.V.

**Abstract:** With the aggravation of particulate matter (PM) pollution, critical requirements including intercepting the fine particles effectively and trapping biological pollutants have been proposed for the air filtration material. In this study, multilayer structured membranes with excellent air filtration performance and antibacterial ability were fabricated via sequential electrospinning. A novel N-halamine biopolymer, P(ADMH-NVF), was first synthesized via a free-radical copolymerization of N-Vinylformamide (NVF) and 3-allyl-5,5-dimethylhydantoin (ADMH), and combined with polyvinyl alcohol (PVA) as a middle layer (PVA/P(ADMH-NVF)). Polyvinyl alcohol/ chitosan electrospun membranes (PVA/CS) were then orderly assembled onto both sides of the (PVA/P(ADMH-NVF)) membranes to form multilayer membranes. In the filtration test, the multilayer electrospun nanofibrous membranes showed high filtration efficiencies of 99.3% for sodium chloride (NaCl) and 99.4% for Diisooctyl sebacate (DEHS) aerosol. In addition, the multilayer electrospun nanofibrous membranes hold a relatively low pressure drop of 183 Pa for NaCl and 238 Pa for DEHS aerosol, as well as a high tensile strength of 6.1 MPa. For the antibacterial test, the multilayer electrospun nanofibrous membranes exhibited excellent antibacterial abilities against both Gram-negative bacteria E. coli and Gram-positive bacteria S. aureus. It is expected that these multilayer electrospun nanofibrous membranes containing N-halamine will have wide application prospects in air filtration. © 2020 Elsevier B.V.

**Number of references:** 50

**Main heading:** Air filters

**Controlled terms:** Aerosols  -  Biopolymers  -  Escherichia coli  -  Free radicals  -  Membranes  -  Microfiltration  -  Multilayers  -  Nanofibers  -  Pollution  -  Polyvinyl alcohols   -  Sodium chloride  -  Tensile strength

**Uncontrolled terms:** Air filtration  -  Antibacterial ability  -  Antibacterial properties  -  Electrospun nanofibers  -  Electrospun nanofibrous membranes  -  Free radical copolymerization  -  Gram-positive bacterium  -  Poly (vinyl alcohol) (PVA)

**Classification code:** 451.2 Air Pollution Control  -  761 Nanotechnology  -  802.3 Chemical Operations  -  815.1 Polymeric Materials  -  815.1.1 Organic Polymers  -  933 Solid State Physics  -  951 Materials Science

**Numerical data indexing:** Percentage 9.93e+01%, Percentage 9.94e+01%, Pressure 1.83e+02Pa, Pressure 2.38e+02Pa, Pressure 6.10e+06Pa

**DOI:** 10.1016/j.apsusc.2020.145962

**Funding Details:** Number: XXKZD1602, Acronym: -, Sponsor: -; Number: 51973009, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;

**Funding text:** This work was supported by the National Natural Science Foundation of China (Grant No. 51973009 ) and Key Project of Shanghai Polytechnic University ( XXKZD1602 ).

**Compendex references:** YES

**Database:** Compendex

Compilation and indexing terms, Copyright 2020 Elsevier Inc.

**Data Provider:** Engineering Village

**44. Orbit optimization of spacecraft for remote sensing of Qinghai-Tibet plateau**

**Accession number:** 20201108287063

**Authors:** Jiang, Hu (1, 2, 3); Deng, Lei (1, 2, 3); Yu, Jinpei (1, 2, 3); Jiang, Yuesheng (4)

**Author affiliation:** (1) Shanghai Engineering Center for Microsatellites, 99, Haike Rd., Shanghai; 201203, China; (2) Innovation Academy for Microsatellites, Chinese Academy of Sciences, 99 Haike Rd, Shanghai; 201203, China; (3) Key Lab of Microsatellites, Chinese Academy of Sciences, 99, Haike Rd, Shanghai; 201203, China; (4) College of Engineering, Shanghai Polytechnic University, 2360, Jinhai Rd., Hanghai; 201209, China

**Corresponding author:** Jiang, Hu(hh9999ca@163.com)

**Source title:** Proceedings of SPIE - The International Society for Optical Engineering

**Abbreviated source title:** Proc SPIE Int Soc Opt Eng

**Volume:** 11432

**Part number:** 1 of 1

**Issue title:** MIPPR 2019: Remote Sensing Image Processing, Geographic Information Systems, and Other Applications

**Issue date:** 2020

**Publication year:** 2020

**Article number:** 114320W

**Language:** English

**ISSN:** 0277786X

**E-ISSN:** 1996756X

**CODEN:** PSISDG

**ISBN-13:** 9781510636415

**Document type:** Conference article (CA)

**Conference name:** 11th International Symposium on Multispectral Image Processing and Pattern Recognition: Remote Sensing Image Processing, Geographic Information Systems, and Other Applications, MIPPR 2019

**Conference date:** November 2, 2019 - November 3, 2019

**Conference location:** Wuhan, China

**Conference code:** 157924

**Sponsor:** Automation Association of Hubei; Huazhong University of Science and Technology; National Key Laboratory of Science and Technology on Multi-spectral Information Processing; Wuhan Institute of Technology

**Publisher:** SPIE

**Abstract:** Qinghai-Tibet plateau is one of the increasingly important parts of Chinese Mainland. After military tension at the boundary between China and India appeared a few years ago, China is focusing on such tasks as remote sensing of Qinghai-Tibet plateau. Qinghai-Tibet plateau is too large to collect basic dataset of meteorology, greenery, and hydrology by manual means. Space-based technique can meet such an requirement. Such payloads onboard spacecraft as lidar, radiometer, radar can provide a good solution to effectively collect dataset for a particular area of interest. With the deployment of comprehensive survey of Qinghai-Tibet plateau by China, the feasibilities assessment of implementing space project to monitor the Qinghai-Tibet plateau are impending. How to choose the most proper orbit is one of the tasks of feasibilities assessment. Herein, three sets of orbits are simulated and assessed. In case 1, a circular orbit with 250 kilometers in altitude is analyzed, and the operation orbit is sun-synchronous. According to relative simulations, orbital altitude damping rate is 10.2 kilometers per day. In order to keep the stable orbit altitude or offset the orbit altitude damping, 558 kilograms of fuel should be needed per year; 1117 kilograms of fuel should be needed to keep a stable orbit every two years. In case 2, an elliptic orbit with perigee altitude of 250km and apogee altitude of 500km is considered. Based on relative simulations, orbital altitude damping rate is 2.461 kilometers per day. In order to keep the stable orbit altitude or offset the orbit altitude damping, 130 kilograms of fuel should be needed per year; 261 kilograms of fuel should be needed to keep a stable orbit every two years. In case 3, an elliptic orbit with perigee altitude of 250km and apogee altitude of 600km is considered. Based on relative simulations, orbital altitude damping rate is 1.67 kilometers per day. In order to keep the stable orbit altitude or offset the orbit altitude damping, 87.6 kilograms of fuel should be needed per year; 175.2 kilograms of fuel should be needed to keep a stable orbit every two years. During the simulation and assessment, the ratio of area to mass of the spacecraft in question is assumed to be 0.01 square meters per kilograms; and the mass of the spacecraft is set to be 500 kilograms. As a result of trade-off between economy and payload priority of observation advantages, the case 3 is preferred to work as the operation orbit. In such an orbit, the spacecraft will contribute more efficiently to the comprehensive surveying of Qinghai-Tibet plateau. © COPYRIGHT SPIE. Downloading of the abstract is permitted for personal use only.

**Number of references:** 4

**Main heading:** Orbits

**Controlled terms:** Damping  -  Economic and social effects  -  Fuels  -  Geographic information systems  -  Image processing  -  Information systems  -  Information use  -  Large dataset  -  Optical radar  -  Pattern recognition systems   -  Remote sensing  -  Space flight  -  Space optics  -  Spacecraft  -  Surveys

**Uncontrolled terms:** Area of interest  -  China and India  -  Chinese mainland  -  On-board spacecrafts  -  Orbit optimization  -  payload  -  Qinghai Tibet plateau  -  Space projects

**Classification code:** 655.1 Spacecraft, General  -  656.1 Space Flight  -  716.2 Radar Systems and Equipment  -  903.3 Information Retrieval and Use  -  931.1 Mechanics  -  971 Social Sciences

**Numerical data indexing:** Size 5.00e+05m, Size 6.00e+05m, Mass 1.12e+03kg, Mass 1.30e+02kg, Mass 1.75e+02kg, Mass 2.61e+02kg, Mass 5.00e+02kg, Mass 5.58e+02kg, Mass 8.76e+01kg, Size 1.02e+04m, Size 1.67e+03m, Size 2.46e+03m, Size 2.50e+05m

**DOI:** 10.1117/12.2537669

**Compendex references:** YES

**Database:** Compendex

Compilation and indexing terms, Copyright 2020 Elsevier Inc.

**Data Provider:** Engineering Village

**45. Flexible fabric gas sensors based on PANI/WO3 pn heterojunction for high performance NH3 detection at room temperature    (*Open Access*)**

**Accession number:** 20202608876270

**Title of translation:** p-PANI/n-WO3NH3

**Authors:** He, Meng (1, 2); Xie, Lili (2); Luo, Guifang (2); Li, Zhanhong (2); Wright, James (3); Zhu, Zhigang (1, 2)

**Author affiliation:** (1) School of Medical Instrument and Food Engineering, University of Shanghai for Science and Technology, Shanghai; 200093, China; (2) School of Environmental and Materials Engineering, Shanghai Polytechnic University, 2360 Jinhai Road, Shanghai; 201209, China; (3) Department of Electronic Engineering, School of Engineering, Technological University Dublin, Tallaght, Dublin 24, Ireland

**Corresponding author:** Zhu, Zhigang(zhigang\_zhu259@163.com)

**Source title:** Science China Materials

**Abbreviated source title:** Sci. China Mater.

**Volume:** 63

**Issue:** 10

**Issue date:** October 1, 2020

**Publication year:** 2020

**Pages:** 2028-2039

**Language:** English

**ISSN:** 20958226

**E-ISSN:** 21994501

**Document type:** Journal article (JA)

**Publisher:** Science in China Press

**Abstract:** A PANI/WO3@cotton thread-based flexible sensor that is capable of detecting NH3 at room temperature is developed here. A layer of WO3 with PANI nanoparticles can be deposited by in-situ polymerization. The morphology and structure of the specimens were investigated by utilizing TEM, SEM, XRD and FTIR. The sensing performance of the PANI/WO3@cotton sensors with different WO3 molar ratios to NH3 at room temperature was examined. The results show that the optimal sensor (10 mol% WO3) has a response of 6.0 to 100 ppm NH3, which is significantly higher than that of the sensors based on pristine PANI and other composites. The PANI/WO3@cotton sensor also displays excellent selectivity, gas response, and flexibility even at room temperature. The unique fiber structure, p-n heterojunction, and the increased protonation of PANI in the composites contribute to the enhanced sensing property. © 2020, Science China Press and Springer-Verlag GmbH Germany, part of Springer Nature.

**Number of references:** 50

**Main heading:** Ammonia

**Controlled terms:** Cotton  -  Heterojunctions  -  Molar ratio  -  Tungsten compounds

**Uncontrolled terms:** Cotton threads  -  Fiber structures  -  Flexible sensor  -  In-situ polymerization  -  Morphology and structures  -  P-n heterojunctions  -  Sensing performance  -  Sensing property

**Classification code:** 714.2 Semiconductor Devices and Integrated Circuits  -  804.2 Inorganic Compounds  -  821.4 Agricultural Products

**DOI:** 10.1007/s40843-020-1364-4

**Funding Details:** Number: 61471233, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;

**Funding text:** This work was supported by the National Natural Science Foundation of China (61471233).

**Compendex references:** YES

**Database:** Compendex

Compilation and indexing terms, Copyright 2020 Elsevier Inc.

**Data Provider:** Engineering Village

**46. Interoperability of the future factory: An overview of concepts and research challenges**

**Accession number:** 20203309056997

**Authors:** Xu, Lai (1); de Vrieze, Paul (1); Yu, Hongnian (2); Phalp, Keith (1); Bai, Yuewei (3)

**Author affiliation:** (1) Faculty of Science and Technology, Bournemouth University, Poole House, Fern Barrow, Poole; BH12 5BB, United Kingdom; (2) School of Engineering and The Built Environment, Edinburgh Napier University, 10, Colinton Road, Edinburgh; EH10 5DT, United Kingdom; (3) College of Engineering, Shanghai Polytechnic University, Jinhai Road, Pudong, Shanghai; 2360, China

**Corresponding author:** Xu, Lai(lxu@bournemouth.ac.uk)

**Source title:** International Journal of Mechatronics and Manufacturing Systems

**Abbreviated source title:** Int. J. Mechatronics Manuf. Syst.

**Volume:** 13

**Issue:** 1

**Issue date:** 2020

**Publication year:** 2020

**Pages:** 3-27

**Language:** English

**ISSN:** 17531039

**E-ISSN:** 17531047

**Document type:** Conference article (CA)

**Publisher:** Inderscience Publishers

**Abstract:** Interoperability is a key factor in implementing a future factory. In European Union context interoperability is the ability of organisations to interact towards mutually beneficial goals, involving the sharing of information and knowledge between these organisations, through the business processes they support, by means of the exchange of data between their Information and Communications Technology (ICT) systems. Interoperability of future factory synthesizes software components, application solutions, business processes and business context throughout the diversified, heterogeneous, autonomous procedure, assembled from multiple independent factories or smart/digital factory networks. As a part of research results of EU H2020 “vF Interoperation suppoRting buSiness innovaTion” (FIRST) project, we present a comprehensive review on basic concepts of factories of the future. The relationships among smart factory, digital factory and virtual factory are studied. In this paper, we define future factory interoperability and outline the research challenges related to interoperability. Copyright © 2020 Inderscience Enterprises Ltd.

**Number of references:** 54

**Main heading:** Interoperability

**Controlled terms:** Application programs  -  Knowledge management

**Uncontrolled terms:** Business contexts  -  Business innovation  -  Digital factories  -  Factories of the futures  -  Information and communications technology  -  Research challenges  -  Research results  -  Software component

**Classification code:** 723 Computer Software, Data Handling and Applications  -  723.5 Computer Applications

**DOI:** 10.1504/IJMMS.2020.108333

**Funding Details:** Number: 2017YFE0118700, Acronym: -, Sponsor: -; Number: 734599, Acronym: MSCA, Sponsor: H2020 Marie Sk&Aring;&eacute;odowska-Curie Actions;

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**Compendex references:** YES

**Database:** Compendex

Compilation and indexing terms, Copyright 2020 Elsevier Inc.

**Data Provider:** Engineering Village

**47. A practical method for employing multi-spectral LiDAR intensities in points cloud classification**

**Accession number:** 20203509120417

**Authors:** Jiang, Changhui (1); Chen, Yuwei (1, 2); Tian, Wenxin (2); Wu, Haohao (2); Li, Wei (2); Zhou, Hui (3); Shao, Hui (4); Song, Shaojing (5); Puttonen, Eetu (1); Hyyppä, Juha (1)

**Author affiliation:** (1) Department of Photogrammetry and Remote Sensing, Finnish Geospatial Research Institute, Masala, Finland; (2) Key Laboratory of Quantitative Remote Sensing Information Technology, Chinese Academy of Sciences, Beijing, China; (3) Electronic Inforamtion School, Wuhan University, Wuhan, China; (4) Department of Electronics Engineering, Anhui Jianzhu University, Hefei, China; (5) Department of Communication and Information Engineering, Shanghai Polytechnic University, Shanghai, China

**Corresponding author:** Song, Shaojing(sjsong@sspu.edu.cn)

**Source title:** International Journal of Remote Sensing

**Abbreviated source title:** Int. J. Remote Sens.

**Volume:** 41

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**Issue date:** November 1, 2020

**Publication year:** 2020

**Pages:** 8366-8379

**Language:** English

**ISSN:** 01431161

**E-ISSN:** 13665901

**CODEN:** IJSEDK

**Document type:** Journal article (JA)

**Publisher:** Taylor and Francis Ltd.

**Abstract:** Light Detection and Ranging (LiDAR) intensity is associated with the target surface material, which could help the points cloud classification. However, the intensity is also associated with the laser beam incident angle and the transmitting distance, which obstructs its further application in points cloud classification. Motivated by this problem, this paper proposed a practical method for employing the LiDAR intensities in points cloud classification without distance and incident angle calibration, specifically, ratio values between different spectral channels from a newly invented Hyper-spectral LiDAR (HSL) were defined and calculated for generating robust spectral features. Since the HSL different channels had the same transmitting distance and incident angle, therefore, the ratio values were independent on the laser pulse transmitting distance and laser beam incident angle. An indoor experiment was conducted for fully assessing the proposed method. The HSL had eight different spectral channels with spectral wavelength covering from 650 nm to 1000 nm. In the experiments, papers with different colours were pasted on a flat glass; the HSL scanned them at four distinctive positions with 60 cm displacement. The spectral ratio values between different channels at each position were calculated using the obtained multiple spectral profiles from the HSL. The results showed that the points cloud scanned at different incident and distance could be classified though the spectral ratio values without complex distance and incident angle calibration. © 2020 Informa UK Limited, trading as Taylor & Francis Group.

**Number of references:** 12

**Main heading:** Optical radar

**Controlled terms:** Calibration  -  Laser beams

**Uncontrolled terms:** Cloud classification  -  Indoor experiment  -  LiDAR intensities  -  Light detection and ranging  -  Practical method  -  Spectral channels  -  Spectral feature  -  Spectral profile

**Classification code:** 716.2 Radar Systems and Equipment  -  744.8 Laser Beam Interactions

**Numerical data indexing:** Size 6.00e-01m

**DOI:** 10.1080/01431161.2020.1775323

**Funding Details:** Number: 181811KYSB20160040, Acronym: -, Sponsor: -; Number: Z181100001018036, Acronym: -, Sponsor: Beijing Municipal Science and Technology Commission; Number: 2020-2023, Acronym: MICYT, Sponsor: Ministerio de Ciencia y Tecnolog&Atilde;&shy;a; Number: 307362, Acronym: -, Sponsor: Academy of Finland; Number: 18590712600, Acronym: -, Sponsor: -; Number: X190211TE190, Acronym: -, Sponsor: -; Number: 314312, Acronym: SRC, Sponsor: Strategic Research Council;

**Funding text:** The authors gratefully acknowledge the ?nancial support from Academy of Finland projects ?Centre of Excellence in Laser Scanning Research (CoE-LaSR)(307362)?, ?New laser and spectral field methods for in situ mining and raw material investigations (project 292648) Strategic Research Council project ?Competence-Based Growth Through Integrated Disruptive Technologies of 3D Digitalization, Robotics, Geospatial Information and Image Processing/Computing?Point Cloud Ecosystem (314312)?. Additionally, Chinese Academy of Science (181811KYSB20160040), Shanghai Science and Technology Foundations (18590712600) and Beijing Municipal Science and Technology Commission (Z181100001018036), Jihua Lab (X190211TE190) are acknowledged. The project of Ministry of Science and Technology ended last year (2019)?and continue with Jihua Lab project (2020-2023).

**Compendex references:** YES

**Database:** Compendex

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**Data Provider:** Engineering Village

**48. Electroless plating-induced morphology self-assembly of free-standing Co–P–B enabling efficient overall water splitting**

**Accession number:** 20202708903810

**Authors:** Hao, Weiju (1); Huang, Hao (3); Chen, Ziliang (2); Wang, Lincai (4); Ma, Xiaohua (2); Huang, Mingxian (1); Ou, Xin (3); Guo, Yanhui (2)

**Author affiliation:** (1) College of Science, University of Shanghai for Science and Technology, Shanghai; 200093, China; (2) Department of Material Science, Fudan University, Shanghai; 200433, China; (3) State Key Laboratory of Functional Materials for Informatics, Shanghai Institute of Microsystem and Information Technology, CAS, Shanghai; 20050, China; (4) Research Center of Resource Recycling Science and Engineering, Shanghai Polytechnic University, Shanghai; 201209, China

**Corresponding author:** Guo, Yanhui(gyh@fudan.edu.cnemailouxin@mail.sim.ac.cn)Ou, Xin(ouxin@mail.sim.ac.cn)

**Source title:** Electrochimica Acta

**Abbreviated source title:** Electrochim Acta

**Volume:** 354

**Issue date:** 10 September 2020

**Publication year:** 2020

**Article number:** 136645

**Language:** English

**ISSN:** 00134686

**CODEN:** ELCAAV

**Document type:** Journal article (JA)

**Publisher:** Elsevier Ltd

**Abstract:** Precisely controlling the morphology of electrocatalyst which is critical to its activity and stability remains a key challenge toward efficient overall water splitting. Herein, a distinct temperature-dependent structure modulation effect of electroless plating technique is reported and consequently several bifunctional electrocatalysts with various structures are developed. The optimized bifunctional electrode with cobalt-phosphorus-boron nanoflowers growing on the carbon cloth demands overpotentials of only 91 mV and 294 mV to achieve a current density of 50 mA cm−2 for the hydrogen evolution reaction and oxygen evolution reaction in 1.0 M potassium hydroxide at 25 °C. Moreover, an overall water-splitting device assembled by this electrode can also work at high temperature of 60 °C with excellent long term durability and achieve a current density of 20 mA cm−2 at a cell voltage of around 1.39 V. This work uncovers some structure design principles of highly active electrocatalyst and provides a versatile strategy for structure modulation of the electrocatalyst for pratctical water electrolysis. © 2020 Elsevier Ltd

**Number of references:** 51

**Main heading:** Morphology

**Controlled terms:** Electrocatalysts  -  Electrodes  -  Electroless plating  -  Hydrogen evolution reaction  -  Modulation  -  Oxygen evolution reaction  -  Potassium hydroxide  -  Self assembly

**Uncontrolled terms:** Bifunctional electrocatalysts  -  Bifunctional electrodes  -  High temperature  -  Long term durability  -  Structure design  -  Structure modulation  -  Temperature dependent  -  Water electrolysis

**Classification code:** 539.3.2 Electroless Plating  -  803 Chemical Agents and Basic Industrial Chemicals  -  804.2 Inorganic Compounds  -  951 Materials Science

**Numerical data indexing:** Temperature 2.98e+02K, Temperature 3.33e+02K, Voltage 1.39e+00V, Voltage 9.10e-02V

**DOI:** 10.1016/j.electacta.2020.136645

**Funding Details:** Number: KLH2021056, Acronym: -, Sponsor: China Postdoctoral Science Foundation; Number: -, Acronym: -, Sponsor: Natural Science Foundation of Shanghai; Number: -, Acronym: -, Sponsor: Recruitment Program of Global Experts; Number: 20YF1432300, Acronym: -, Sponsor: -; Number: 51727801, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;

**Funding text:** W. Hao and H. Huang are equally to this work. The authors acknowledge the financial support from the National Natural Science Foundation of China ( 51571063 , 51727801 , 11622545 and U1732268 , 51672049 ), the Natural Science Foundation of Shanghai , Sponsored by Shanghai Sailing Program ( 20YF1432300 ), China Postdoctoral Science Foundation ( KLH2021056 ) and the Recruitment Program of Global Youth Experts (National Thousand Young Talents Program).

**Compendex references:** YES

**Database:** Compendex

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**Data Provider:** Engineering Village

**49. Fabrication of practical catalytic electrodes using insulating and eco-friendly substrates for overall water splitting**

**Accession number:** 20200508105967

**Authors:** Hao, Weiju (1, 2); Wu, Renbing (1); Huang, Hao (3); Ou, Xin (3); Wang, Lincai (4); Sun, Dalin (1); Ma, Xiaohua (1); Guo, Yanhui (1)

**Author affiliation:** (1) Department of Material Science, Fudan University, Shanghai; 200433, China; (2) College of Science, University of Shanghai for Science and Technology, Shanghai; 200093, China; (3) State Key Laboratory of Functional Materials for Informatics, Shanghai Institute of Microsystem and Information Technology, CAS 20050, Shanghai, China; (4) Research Center of Resource Recycling Science and Engineering, Shanghai Polytechnic University, Shanghai; 201209, China

**Source title:** Energy and Environmental Science

**Abbreviated source title:** Energy Environ. Sci.

**Volume:** 13

**Issue:** 1

**Issue date:** January 2020

**Publication year:** 2020

**Pages:** 102-110

**Language:** English

**ISSN:** 17545692

**E-ISSN:** 17545706

**Document type:** Journal article (JA)

**Publisher:** Royal Society of Chemistry

**Abstract:** The development of efficient and cost-effective catalytic electrodes is of great importance to electrolysis. Herein, a strategy of fabricating practical catalytic electrodes by depositing conductive catalysts on inexpensive and easily accessible insulating substrates of paper, textiles and sponge has been realized and well developed. These electrodes are found to be highly active toward overall water splitting. As a distinctive example, the Ni-P-B/paper electrode affords 50 mA cm-2 at overpotentials of only 76 mV for the hydrogen evolution reaction and 263 mV for the oxygen evolution reaction, and can survive at large current density of 1000 mA cm-2 for over 240 h without apparent performance degradation in 1.0 M KOH. A two-electrode cell constructed by this paper electrode, which is only 1/5 the weight of a traditional metal electrode, delivered 50 mA cm-2 water-splitting current at a cell voltage of only 1.661 V, rivalling the integrated state-of-the-art Pt-C/Ni and IrO2/Ni electrode. Moreover, a functional Ni-P-B/paper ring electrode with in situ separation function has been constructed, enabling simultaneous generation, separation and collection of hydrogen and oxygen. This discovery may enable a large extension toward practical catalytic electrodes that are also active, cheap, light, flexible, earth-abundant and recyclable. © 2020 The Royal Society of Chemistry.

**Number of references:** 57

**Main heading:** Electrodes

**Controlled terms:** Cost effectiveness  -  Fabrication  -  Hydrogen  -  Oxygen  -  Potassium hydroxide  -  Substrates

**Uncontrolled terms:** Catalytic electrodes  -  Hydrogen evolution reactions  -  Insulating substrates  -  Large current density  -  Oxygen evolution reaction  -  Performance degradation  -  State of the art  -  Two electrode cells

**Classification code:** 804 Chemical Products Generally  -  804.2 Inorganic Compounds  -  911.2 Industrial Economics

**Numerical data indexing:** Current\_Density 1.00e+04A/m2, Current\_Density 5.00e+02A/m2, Time 8.64e+05s, Voltage 1.66e+00V, Voltage 2.63e-01V, Voltage 7.60e-02V

**DOI:** 10.1039/c9ee00839j

**Funding Details:** Number: 17ZR1402500, Acronym: -, Sponsor: -; Number: XXKZD1602, Acronym: -, Sponsor: -; Number: GJHZ201950, Acronym: -, Sponsor: -; Number: KLH2021056, Acronym: -, Sponsor: China Postdoctoral Science Foundation; Number: 51727801, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;

**Funding text:** The authors acknowledge the financial support from the National Natural Science Foundation of China (51571063, 51672049, U1732268, 51727801, 51871060 and 61874128), Science and Technology Committee of Shanghai (17ZR1402500), the National Thousand Young Talents Program, China Postdoctoral Science Foundation (KLH2021056), Chinese-Austrian Cooperative R&D Project (GJHZ201950), and Key Project of Shanghai Polytechnic University (XXKZD1602).

**Compendex references:** YES

**Database:** Compendex

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**Data Provider:** Engineering Village

**50. Defect creation by benzoic acid in Cu-Based Metal−Organic frameworks for enhancing sulfur capture**

**Accession number:** 20200908216286

**Authors:** Zhang, Hong-Yan (1, 2); Shi, Rui-Hua (1); Fan, Hui-Ling (1); Yang, Chao (1); Zhang, Chao-Nan (1); Wang, Ye-Shuang (1); Tian, Zhen (3)

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**Corresponding author:** Fan, Hui-Ling(fanhuiling@tyut.edu.cn)

**Source title:** Microporous and Mesoporous Materials

**Abbreviated source title:** Microporous Mesoporous Mater.

**Volume:** 298

**Issue date:** 15 May 2020

**Publication year:** 2020

**Article number:** 110070

**Language:** English

**ISSN:** 13871811

**CODEN:** MIMMFJ

**Document type:** Journal article (JA)

**Publisher:** Elsevier B.V.

**Abstract:** The clean and efficient utilization of fossil fuels places increasing demands on desulfurization materials. The metal–organic framework MOF-199, known for its high surface area and easy functionalization, has been shown to be a promising adsorptive material. Strong interaction between the unsaturated copper centers of MOF-199 and sulfides is the main reason for its good desulfurization performance. So-called “defect engineering” is considered to be an efficient modification method for further improving the desulfurization performance of MOF-199. In this study, a defective MOF-199 has been fabricated in the presence of benzoic acid (BA) and characterized by means of experimental and computational methods. The adsorption and regeneration properties of the product towards H2S and CH3SCH3 have been evaluated by breakthrough experiments in a fixed-bed reactor. BA-MOF-199 exhibited superior results for H2S and CH3SCH3 removal compared to those with pristine MOF-199, with higher sulfur capacities of 69.2 and 78.9 mg S/g sorbent, respectively, at 1% breakthrough level, with corresponding partition coefficients of 5.4 and 12.3 mol kg−1 Pa−1. BA modification increased the number of unsaturated copper centers in MOF-199 and formed more mesoporous structures, which served to improve the sulfide adsorption capacity. © 2020 Elsevier Inc.

**Number of references:** 49

**Main heading:** Benzoic acid

**Controlled terms:** Chemical reactors  -  Copper  -  Desulfurization  -  Fossil fuels  -  Sulfur  -  Sulfur compounds

**Uncontrolled terms:** Adsorptive materials  -  Breakthrough experiment  -  DFT calculation  -  Mesoporous structures  -  Modification methods  -  Mof-199  -  Partition coefficient  -  Regeneration properties

**Classification code:** 544.1 Copper  -  802.1 Chemical Plants and Equipment  -  804 Chemical Products Generally  -  804.1 Organic Compounds

**Numerical data indexing:** Percentage 1.00e+00%

**DOI:** 10.1016/j.micromeso.2020.110070

**Funding Details:** Number: 21878209, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;

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**Compendex references:** YES

**Database:** Compendex

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**Data Provider:** Engineering Village

**51. Scalable synthesis of nanoporous boron for high efficiency ammonia electrosynthesis**

**Accession number:** 20202208713616

**Authors:** Lan, Jiao (1); Peng, Ming (1); Liu, Pan (2); Chen, Dechao (1); Xu, Xiandong (1); Luo, Min (3); Tan, Yongwen (1); Chen, Mingwei (4)

**Author affiliation:** (1) College of Materials Science and Engineering, Hunan University, Changsha; Hunan; 410082, China; (2) State Key Laboratory of Metal Matrix Composites, School of Materials Science and Engineering, Shanghai Jiao Tong University, Shanghai; 200030, China; (3) Department of Physics, Shanghai Polytechnic University, Shanghai; 201209, China; (4) Department of Materials Science and Engineering, Johns Hopkins University, Baltimore; MD; 21218, United States

**Corresponding author:** Tan, Yongwen(tanyw@hnu.edu.cn)

**Source title:** Materials Today

**Abbreviated source title:** Mater. Today

**Volume:** 38

**Issue date:** September 2020

**Publication year:** 2020

**Pages:** 58-66

**Language:** English

**ISSN:** 13697021

**E-ISSN:** 18734103

**Document type:** Journal article (JA)

**Publisher:** Elsevier B.V., Netherlands

**Abstract:** Three-dimensional bicontinuous nanoporosity fabricated by dealloying can provide unique chemical properties in catalytic materials, which conventional nanoparticulate catalysts do not have. Although many solid elements in the periodic table have been fabricated as nanoporous materials by dealloying, technically important nanoporous boron has not been realized because of the poor diffusivity and high chemical stability of boron. Here we report a scalable top–down method to produce three-dimensional nanoporous boron by selectively leaching a less stable metal compound phase from rapidly solidified two-phase metal–boron alloys. The metalloid boron phase with relatively high chemical stability remains as the skeleton of a nanoporous structure. The resultant nanoporous boron with tunable pore sizes, and porosities, shows superior catalytic activities towards ammonia electrosynthesis. This work provides a new approach to fabricate nanoporous metalloids for a wide range of functional applications and brings boron, an important functional material, to the family of dealloyed nanoporous materials. © 2020 Elsevier Ltd

**Number of references:** 63

**Main heading:** Nanocatalysts

**Controlled terms:** Ammonia  -  Catalyst activity  -  Chemical stability  -  Dealloying  -  Functional materials  -  Metals  -  Nanopores  -  Plasma interactions  -  Pore size  -  Porous materials   -  Rapid solidification

**Uncontrolled terms:** Catalytic materials  -  Functional applications  -  Nano particulates  -  Nano-porous materials  -  Nanoporous structures  -  Rapidly solidified  -  Scalable synthesis  -  Two phase metals

**Classification code:** 761 Nanotechnology  -  801 Chemistry  -  803 Chemical Agents and Basic Industrial Chemicals  -  804 Chemical Products Generally  -  804.2 Inorganic Compounds  -  932.3 Plasma Physics  -  933 Solid State Physics  -  951 Materials Science

**DOI:** 10.1016/j.mattod.2020.04.012

**Funding Details:** Number: -, Acronym: JHU, Sponsor: Johns Hopkins University; Number: 71860007, Acronym: SKLDMVB, Sponsor: State Key Laboratory of Advanced Design and Manufacturing for Vehicle Body; Number: 51771072, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;

**Funding text:** This work was financially supported by National Natural Science Foundation of China (No. 51771072 ), the Youth 1000 Talent Program of China , the Fundamental Research Funds for the Central Universities and Hunan University State Key Laboratory of Advanced Design and Manufacturing for Vehicle Body Independent Research Project (No. 71860007 ). M. C was sponsored by the Whiting School of Engineering, Johns Hopkins University .

**Compendex references:** YES

**Database:** Compendex

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**Data Provider:** Engineering Village

**52. Multifunctional epoxy composites with highly flame retardant and effective electromagnetic interference shielding performances**

**Accession number:** 20201308365230

**Authors:** Guo, Wenwen (1); Zhao, Yuyu (2); Wang, Xin (1); Cai, Wei (1); Wang, Junling (1); Song, Lei (1); Hu, Yuan (1)

**Author affiliation:** (1) State Key Laboratory of Fire Science, University of Science and Technology of China, 96 Jinzhai Road, Hefei; Anhui; 230026, China; (2) School of Urban Development and Environmental Engineering, Shanghai Second Polytechnic University, Shanghai; 201209, China

**Corresponding author:** Wang, Xin(wxcmx@ustc.edu.cn)

**Source title:** Composites Part B: Engineering

**Abbreviated source title:** Compos Part B: Eng

**Volume:** 192

**Issue date:** 1 July 2020

**Publication year:** 2020

**Article number:** 107990

**Language:** English

**ISSN:** 13598368

**CODEN:** CPBEFF

**Document type:** Journal article (JA)

**Publisher:** Elsevier Ltd

**Abstract:** Multifunctional epoxy composites with low flammability, high ablation resistance, superior electrical conductivity and outstanding electromagnetic interference (EMI) shielding performances are prepared by a two-step procedure. The first step involves pyrolysis of lignin-resorcinol-glyoxal pre-polymer into carbon foams, while the second step is infiltrating flame retardant epoxy resins (FREP) into the highly porous carbon foams. SEM images show that the three-dimensional network microstructure of carbon foams is integrally preserved during infiltration by the epoxy resins, which could serve as an effective pathway for electron transport. For the flame-retardant carbon foam/epoxy (FREP-CF) composite, a UL-94 V-0 classification is achieved. In the cone calorimeter measurement, the peak heat release rate and the total heat release of the FREP-CF composite are reduced by 64% and 37%, respectively, compared to those of the original epoxy resin. The FREP-CF composite can resist approximately 1000 °C flame for 10 min with the temperature on the back side lower than 200 °C, which is much better than the EP-CF composite. Additionally, a notable electrical conductivity of 216 S/m and a superior EMI shielding effectiveness of 33.5 dB are achieved for the FREP-CF composite. This multifunctional epoxy composite enables it a promising candidate for electronics, aerospace and transportation applications. © 2020 Elsevier Ltd

**Number of references:** 62

**Main heading:** Epoxy resins

**Controlled terms:** Electric conductivity  -  Electromagnetic pulse  -  Electromagnetic shielding  -  Electromagnetic wave interference  -  Electron transport properties  -  Flame retardants  -  Foams  -  Porous carbon  -  Shielding  -  Signal interference

**Uncontrolled terms:** Carbon foam  -  Electrical conductivity  -  Electromagnetic interference shielding  -  EMI shielding effectiveness  -  Epoxy composite  -  Peak heat release rates  -  Shielding performance  -  Three-dimensional networks

**Classification code:** 701 Electricity and Magnetism  -  701.1 Electricity: Basic Concepts and Phenomena  -  711 Electromagnetic Waves  -  716.1 Information Theory and Signal Processing  -  803 Chemical Agents and Basic Industrial Chemicals  -  815.1.1 Organic Polymers

**Numerical data indexing:** Decibel 3.35e+01dB, Electrical\_Conductivity 2.16e+02S/m, Percentage 3.70e+01%, Percentage 6.40e+01%, Temperature 1.27e+03K, Temperature 4.73e+02K, Time 6.00e+02s

**DOI:** 10.1016/j.compositesb.2020.107990

**Funding Details:** Number: 16kffk03, Acronym: -, Sponsor: State Key Laboratory Cultivation Base for Nonmetal Composites and Functional Materials; Number: 21604081, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;

**Funding text:** We gratefully acknowledge financial support from the National Natural Science Foundation of China (Grant No. 21604081 ), and the Open Project of State Key Laboratory Cultivation Base for Nonmetal Composites and Functional Materials (Grant No.: 16kffk03 ).

**Compendex references:** YES

**Database:** Compendex

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**Data Provider:** Engineering Village

**53. The effect of nanoparticles on the microstructure of alkanes: A molecular dynamics study**

**Accession number:** 20202108673694

**Authors:** Wang, Xuzhe (1); Sun, Lei (2); Zhang, Xuelai (1); Zhang, Shaozheng (1); Wang, Jifen (1, 3); Zhang, Yongyichuan (1)

**Author affiliation:** (1) Cold Storage Technology Institute, Shanghai Maritime University, Shanghai; 201306, China; (2) School of Mechanical and Power Engineering, East China University of Science and Technology, Shanghai; 200237, China; (3) Department of Applied Chemistry, Shanghai Second Polytechnic University, Shanghai; 201209, China

**Corresponding author:** Zhang, Xuelai(xlzhang@shmtu.edu.cn)

**Source title:** Journal of Molecular Liquids

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**Volume:** 309

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**Publication year:** 2020

**Article number:** 113162

**Language:** English

**ISSN:** 01677322

**CODEN:** JMLIDT

**Document type:** Journal article (JA)

**Publisher:** Elsevier B.V.

**Abstract:** In order to explore the influence of nanoparticles on the microstructure of phase change materials in alkane systems, five different models were studied by molecular dynamics simulation. Eicosane is used to represent paraffin. One of the models was pure eicosane as a control group. The other four models mix four different nanoparticles of Ag, Cu, Al and Fe in eicosane. The mean square displacement, self-diffusion coefficient, end-to-end distance distribution and radial distribution function of each model under different temperature fields were calculated by simulation. Studies have found that the self-diffusion coefficient of eicosane increases with increasing temperature. However, the presence of nanoparticles limits the development of self-diffusion coefficient of eicosane. Through the statistical analysis of the end-to-end distance distribution, it is concluded that the presence of nanoparticles has a certain binding effect on the eicosane molecule. The presence of nanoparticles causes the conformation of more eicosane molecules to change from a linear to a curved state. It is found by the statistics of the radial distribution functions that the presence of the nanoparticles increases the number of particles around the eicosane molecule compared to the number of particles in the unadded nanoparticle model, and the system becomes more compact. The results obtained in this paper hope to provide a certain reference value for exploring the influence mechanism of nanoparticles on organic phase change materials and contribute to the improvement of energy utilization efficiency. © 2018 Elsevier B.V.

**Number of references:** 35

**Main heading:** Phase change materials

**Controlled terms:** Diffusion in liquids  -  Distribution functions  -  Energy utilization  -  Hydrocarbons  -  Microstructure  -  Molecular dynamics  -  Molecules  -  Nanoparticles  -  Paraffins

**Uncontrolled terms:** End-to-end distances  -  Energy utilization efficiency  -  Increasing temperatures  -  Influence mechanism  -  Mean square displacement  -  Molecular dynamics simulations  -  Radial distribution functions  -  Self-diffusion coefficients

**Classification code:** 525.3 Energy Utilization  -  761 Nanotechnology  -  801.4 Physical Chemistry  -  804.1 Organic Compounds  -  922.1 Probability Theory  -  931.3 Atomic and Molecular Physics  -  933 Solid State Physics  -  951 Materials Science

**DOI:** 10.1016/j.molliq.2020.113162

**Funding Details:** Number: 51776116, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;

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**Compendex references:** YES

**Database:** Compendex

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**Data Provider:** Engineering Village

**54. A neighborhood rough set model with nominal metric embedding**

**Accession number:** 20200808195534

**Authors:** Luo, Sheng (1); Miao, Duoqian (2, 3); Zhang, Zhifei (2, 3); Zhang, Yuanjian (2, 3); Hu, Shengdan (2, 3)

**Author affiliation:** (1) School of Computer and Information, Shanghai Second Polytechnic University, Shanghai; 201209, China; (2) Department of Computer Science and Technology, Tongji University, Shanghai; 201804, China; (3) Key Laboratory of Embedded System and Service Computing, Ministry of Education, Tongji University, Shanghai; 201804, China

**Corresponding author:** Luo, Sheng(tjluosheng@gmail.com)

**Source title:** Information Sciences

**Abbreviated source title:** Inf Sci

**Volume:** 520

**Issue date:** May 2020

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**Language:** English

**ISSN:** 00200255

**CODEN:** ISIJBC

**Document type:** Journal article (JA)

**Publisher:** Elsevier Inc.

**Abstract:** Rough set theory is an essential tool for measuring uncertainty, which has been widely applied in attribute reduction algorithms. Most of the related researches focus on how to update the lower and the upper approximation operator to match data characteristics or how to improve the efficiency of the attribute reduction algorithm. However, in the nominal data environment, existing rough set models that use the Hamming metric and its variants to evaluate the relations between nominal objects can not capture the inherent ordered relationships and statistic information from nominal values due to the complexity of data. The missing information will affect the accuracy and validity of the data representation, thereby reducing the reliability of rough set models. To overcome this challenge, we propose a novel object dissimilarity measure, i.e., relative object dissimilarity metric(RODM) that learned from nominal data to replace the Hamming metric and then construct a ψ-neighborhood rough set model. It extends the classical rough set model to a robust, representative, and effective model which is close to the characteristics of nominal data. Based on the ψ-neighborhood rough set model, we propose a heuristic two-stage attribute reduction algorithm(HTSAR) to perform the feature selection task. Experiments show that the ψ-neighborhood rough set model can take advantage of more potential knowledge in nominal data and achieve better performance for attribute reduction than the existing rough set model. © 2020 Elsevier Inc.

**Number of references:** 48

**Main heading:** Rough set theory

**Controlled terms:** Approximation algorithms  -  Data reduction

**Uncontrolled terms:** Attribute reduction  -  Attribute reduction algorithm  -  Dissimilarity measures  -  Measuring uncertainty  -  Metric learning  -  Neighborhood rough sets  -  Nominal datum  -  Statistic informations

**Classification code:** 723.2 Data Processing and Image Processing  -  921 Mathematics  -  921.4 Combinatorial Mathematics, Includes Graph Theory, Set Theory

**DOI:** 10.1016/j.ins.2020.02.015

**Funding Details:** Number: 213, Acronym: -, Sponsor: -; Number: 20170004, Acronym: MPS, Sponsor: Ministry of Public Security of the People’s Republic of China; Number: 61673301, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;

**Funding text:** The authors thank both the editors and the anonymous referees for their valuable suggestions, which substantially improved this paper. This work is supported by National Key R&D Program of China (Grant No. 213), the National Science Foundation of China (Grant No. 61673301, 61502259 ), and Major Project of Ministry of Public Security (Grant No. 20170004).

**Compendex references:** YES

**Database:** Compendex

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**Data Provider:** Engineering Village

**55. Proposal Complementary Action Detection**

**Accession number:** 20203209018553

**Authors:** Zhu, Suguo (1); Yang, Xiaoxian (2); Yu, Jun (1); Fang, Zhenying (1); Wang, Meng (3); Huang, Qingming (4)

**Author affiliation:** (1) Key Laboratory of Complex Systems Modeling and Simulation, School of Computer Science and Technology, Hangzhou Dianzi University, Hangzhou; 310018, China; (2) School of Computer and Information Engineering, Shanghai Polytechnic University, Shanghai, China; (3) School of Computer Science and Information Engineering, Hefei University of Technology, Hefei, China; (4) School of Computer and Control Engineering, University of Chinese Academy of Sciences, Beijing, China

**Corresponding author:** Zhu, Suguo(zsg2016@hdu.edu.cn)

**Source title:** ACM Transactions on Multimedia Computing, Communications and Applications

**Abbreviated source title:** ACM Trans. Multimedia Comput. Commun. Appl.

**Volume:** 16

**Issue:** 2s

**Issue date:** July 2020

**Publication year:** 2020

**Article number:** 64

**Language:** English

**ISSN:** 15516857

**E-ISSN:** 15516865

**Document type:** Journal article (JA)

**Publisher:** Association for Computing Machinery

**Abstract:** Temporal action detection not only requires correct classification but also needs to detect the start and end times of each action accurately. However, traditional approaches always employ sliding windows or actionness to predict the actions, and it is different to train to model with sliding windows or actionness by end-to-end means. In this article, we attempt a different idea to detect the actions end-to-end, which can calculate the probabilities of actions directly through one network as one part of the results. We present PCAD, a novel proposal complementary action detector to deal with video streams under continuous, untrimmed conditions. Our approach first uses a simple fully 3D convolutional network to encode the video streams and then generates candidate temporal proposals for activities by using anchor segments. To generate more precise proposals, we also design a boundary proposal network to offer some complementary information for the candidate proposals. Finally, we learn an efficient classifier to classify the generated proposals into different activities and refine their temporal boundaries at the same time. Our model can achieve end-to-end training by jointly optimizing classification loss and regression loss. When evaluating on the THUMOS’14 detection benchmark, PCAD achieves state-of-the-art performance in high-speed models. © 2020 ACM.

**Number of references:** 26

**Main heading:** Convolutional neural networks

**Controlled terms:** Benchmarking  -  Video streaming

**Uncontrolled terms:** Convolutional networks  -  End to end  -  High Speed  -  One parts  -  Sliding Window  -  State-of-the-art performance  -  Traditional approaches

**DOI:** 10.1145/3361845

**Funding Details:** Number: 61836002, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;

**Funding text:** This work was supported by the National Natural Science Foundation of China under grants 61902101, 61836002, and 61622205. Authors’ addresses: S. Zhu (corresponding author), J. Yu, and Z. Fang, Key Laboratory of Complex Systems Modeling and Simulation, School of Computer Science and Technology, Hangzhou Dianzi University, Hangzhou, China, 310018; emails: { zsg2016, yujun} @hdu.edu.cn, fzy19931001@gmail.com; X. Yang, School of Computer and Information Engineering, Shanghai Polytechnic University, Shanghai, China; email: xxyang@sspu.edu.cn; M. Wang, School of Computer Science and Information Engineering, Hefei University of Technology, Hefei, China; email: eric.mengwang@gmail.com; Q. Huang, School of Computer and Control Engineering, University of Chinese Academy of Sciences, Beijing, China; email: qmhuang@ucas.ac.cn. Permission to make digital or hard copies of all or part of this work for personal or classroom use is granted without fee provided that copies are not made or distributed for profit or commercial advantage and that copies bear this notice and the full citation on the first page. Copyrights for components of this work owned by others than ACM must be honored. Abstracting with credit is permitted. To copy otherwise, or republish, to post on servers or to redistribute to lists, requires prior specific permission and/or a fee. Request permissions from permissions@acm.org. © 2020 Association for Computing Machinery. 1551-6857/2020/06-ART64 $15.00 https://doi.org/10.1145/3361845

**Compendex references:** YES

**Database:** Compendex

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**Data Provider:** Engineering Village

**56. Non-numerical nearest neighbor classifiers with value-object hierarchical embedding**

**Accession number:** 20200708183116

**Authors:** Luo, Sheng (1); Miao, Duoqian (2, 3); Zhang, Zhifei (2, 3); Wei, Zhihua (2, 3)

**Author affiliation:** (1) School of Computer and Information, Shanghai Second Polytechnic University, Shanghai; 201209, China; (2) Department of Computer Science and Technology, Tongji University, Shanghai; 201804, China; (3) Key Laboratory of Embedded System and Service Computing, Ministry of Education, Tongji University, Shanghai; 201804, China

**Corresponding author:** Miao, Duoqian(dqmiao@tongji.edu.cn)

**Source title:** Expert Systems with Applications

**Abbreviated source title:** Expert Sys Appl

**Volume:** 150

**Issue date:** 15 July 2020

**Publication year:** 2020

**Article number:** 113206

**Language:** English

**ISSN:** 09574174

**CODEN:** ESAPEH

**Document type:** Journal article (JA)

**Publisher:** Elsevier Ltd

**Abstract:** Non-numerical classification plays an essential role in many real-world applications such as DNA analysis, recommendation systems and expert systems. The nearest neighbor classifier is one of the most popular and flexible models for performing classification tasks in these applications. However, due to the complexity of non-numerical data, existing nearest neighbor classifiers that use the overlap measure and its variants cannot capture the inherent ordered relationship and statistic information of non-numerical data. This phenomenon leads to the classification limitation of nearest neighbor classifiers in non-numerical data environments. To overcome this challenge, we propose a novel object distance metric, i.e., value-object hierarchical metric (VOHM), which is able to capture inherent ordered relationships within non-numerical data. Then, we construct two nearest neighbor classifiers, i.e., the value-object hierarchical embedded nearest neighbor classifier (VO-kNN) and the two-stage value-object hierarchical embedded nearest neighbor classifier (TSVO-kNN), which take advantages of both VOHM and non-numerical feature selection. Experiments show that both VO-kNN and TSVO-kNN could mine more knowledge from data and achieve better performance than state-of-the-art classifiers in non-numerical data environments. © 2020

**Number of references:** 55

**Main heading:** Classification (of information)

**Controlled terms:** Expert systems  -  Nearest neighbor search

**Uncontrolled terms:** Attribute reduction  -  Categorical data  -  Data complexity  -  Nearest Neighbor classifier  -  Numerical classification

**Classification code:** 716.1 Information Theory and Signal Processing  -  723.4.1 Expert Systems  -  921.5 Optimization Techniques

**DOI:** 10.1016/j.eswa.2020.113206

**Funding Details:** Number: 213, Acronym: -, Sponsor: -; Number: 61673301, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;

**Funding text:** The authors thank both the editors and the anonymous referees for their valuable suggestions, which substantially improved this paper. This work is supported by National Key R&D Program of China (Grant no. 213 ), the National Science Foundation of China (Grant nos. 61673301 , 61906137 ).

**Compendex references:** YES

**Database:** Compendex

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**Data Provider:** Engineering Village

**57. Fabrication of flexible microsupercapacitors with binder-free ZIF-8 derived carbon films via electrophoretic deposition    (*Open Access*)**

**Accession number:** 20201708546484

**Authors:** Li, Yang (1, 2, 3, 4); Henzie, Joel (4); Park, Teahoon (5); Wang, Jie (4); Young, Christine (4); Xie, Huaqing (1, 2, 3); Yi, Jin Woo (5); Li, Jing (1, 2, 3); Kim, Minjun (6); Kim, Jeonghun (6); Yamauchi, Yusuke (6, 7); Na, Jongbeom (4, 6)

**Author affiliation:** (1) School of Environmental and Materials Engineering, College of Engineering, Shanghai Polytechnic University, Shanghai; 201209, China; (2) Shanghai Innovation Institute for Materials, Shanghai; 200444, China; (3) Research Center of Resource Recycling Science and Engineering, Shanghai Polytechnic University, Shanghai; 201209, China; (4) International Center for Materials Nanoarchitectonics, (WPI-MANA), National Institute for Materials Science (NIMS), 1-1 Namiki, Tsukuba, Ibaraki; 305-0044, Japan; (5) Carbon Composite Department, Composites Research Division, Korea Institute of Materials Science (KIMS), 797, Changwon-daero, Seongsan-gu, Changwon-si, Gyeongsangnam-do; 51508, Korea, Republic of; (6) School of Chemical Engineering, Australian Institute for Bioengineering and Nanotechnology (AIBN), University of Queensland, Brisbane; QLD; 4072, Australia; (7) Department of Plant and Environmental New Resources, Kyung Hee University, 1732 Deogyeong-daero, Giheung-gu, Yongin-si, Gyeonggi-do; 446-701, Korea, Republic of

**Corresponding author:** Henzie, Joel(HENZIE.Joeladam@nims.go.jp)

**Source title:** Bulletin of the Chemical Society of Japan

**Abbreviated source title:** Bull. Chem. Soc. Jpn.

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**Publication year:** 2020

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**Language:** English

**ISSN:** 00092673

**E-ISSN:** 13480634

**CODEN:** BCSJA8

**Document type:** Journal article (JA)

**Publisher:** Chemical Society of Japan

**Abstract:** Miniaturized power supplies, such as microsupercapacitors, are highly demanded in micro-electro mechanical systems (MEMS) and micro portable microdevices due to their superior cyclability, high power density, and considerable energy. In this study, we utilize ZIF-8 derived carbon as a source of active material to fabricate flexible microsupercapacitors via a simple electrophoresis method. The deposited ZIF-8 derived carbon particles with high surface area play a decisive role in achieving high electrochemical performances. The simple and straightforward process of electrophoretic deposition using ZIF-8 derived carbon particles generates porous carbon films on microsupercapacitors, which leads to a superior electrochemical performance. © 2020 The Chemical Society of Japan.

**Number of references:** 23

**Main heading:** Carbon films

**Controlled terms:** Deposition  -  Electrophoresis  -  Fabrication  -  MEMS  -  Porous materials

**Uncontrolled terms:** Active material  -  Derived carbons  -  Electrochemical performance  -  Electrophoretic depositions  -  High power density  -  High surface area  -  Micro electromechanical system (MEMS)  -  Microsupercapacitors

**Classification code:** 701.1 Electricity: Basic Concepts and Phenomena  -  704.2 Electric Equipment  -  802.3 Chemical Operations  -  813.2 Coating Materials  -  951 Materials Science

**DOI:** 10.1246/BCSJ.20190298

**Funding Details:** Number: -, Acronym: KIMS, Sponsor: Korea Institute of Materials Science;

**Funding text:** This research was supported by the Principal Research Program (PNK5600) at the Korea Institute of Materials Science (KIMS).

**Compendex references:** YES

**Database:** Compendex

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**Data Provider:** Engineering Village

**58. Co50Gd48-xFe2Nix amorphous alloys with high adiabatic temperature rise near the hot end of a domestic magnetic refrigerator**

**Accession number:** 20202508837980

**Authors:** Wang, X. (1); Tang, B.Z. (2); Wang, Q. (2); Yu, P. (3); Ding, D. (2); Xia, L. (2)

**Author affiliation:** (1) Department of Engineering, Shanghai Second Polytechnic University, Shanghai; 201209, China; (2) Institute of Materials, Shanghai University, Shanghai; 200072, China; (3) Chongqing Key Laboratory of Photo-Electric Functional Materials, College of Physics and Electronic Engineering, Chongqing Normal University, Chongqing; 401331, China

**Corresponding author:** Xia, L.(xialei@shu.edu.cn)

**Source title:** Journal of Non-Crystalline Solids

**Abbreviated source title:** J Non Cryst Solids

**Volume:** 544

**Issue date:** 15 September 2020

**Publication year:** 2020

**Article number:** 120146

**Language:** English

**ISSN:** 00223093

**CODEN:** JNCSBJ

**Document type:** Journal article (JA)

**Publisher:** Elsevier B.V.

**Abstract:** In the present work, the Curie temperature (Tc) of the Co50Gd48Fe2 amorphous alloy, which exhibits high adiabatic temperature change (ΔTad) at room temperature, was further improved by small amount of Ni substitution for Gd. The maximum magnetic entropy change (−ΔSmpeak) of the Co50Gd48-xFe2Nix (x = 1 and 2) amorphous ribbons decreases with Ni addition, but is still large than those of the Fe-based metallic glasses. The maximum ΔTad of the Co50Gd48-xFe2Nix glassy alloys near the hot end of a residential refrigerator, which is at least 65% higher than those of the Fe-based glassy ribbons, indicates that the Co50Gd48-xFe2Nix amorphous alloys are the better candidates for the domestic magnetic refrigerants. © 2020 Elsevier B.V.

**Number of references:** 33

**Main heading:** Iron alloys

**Controlled terms:** Amorphous alloys  -  Cobalt alloys  -  Gadolinium alloys  -  Glass  -  Magnetic refrigeration  -  Magnetism  -  Metallic glass  -  Nickel  -  Refrigerators  -  Samarium alloys   -  Ternary alloys

**Uncontrolled terms:** Adiabatic temperature change  -  Adiabatic temperature rise  -  Amorphous ribbon  -  Fe-based metallic glass  -  Glassy alloys  -  Magnetic entropy change  -  Magnetic refrigerants  -  Magnetic refrigerators

**Classification code:** 531 Metallurgy and Metallography  -  545.2 Iron Alloys  -  547.2 Rare Earth Metals  -  548.1 Nickel  -  549.3 Nonferrous Metals and Alloys excluding Alkali and Alkaline Earth Metals  -  644.3 Refrigeration Equipment and Components  -  701.2 Magnetism: Basic Concepts and Phenomena  -  812.3 Glass

**Numerical data indexing:** Percentage 6.50e+01%

**DOI:** 10.1016/j.jnoncrysol.2020.120146

**Funding Details:** Number: -, Acronym: -, Sponsor: Chongqing Research Program of Basic Research and Frontier Technology; Number: 51871139, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;

**Funding text:** The work described in this paper was supported by the National Natural Science Foundation of China (Grant nos. 51671119 and 51871139 ). P. Yu and L. Xia would like to appreciate the financial support from the Chongqing Research Program of Basic Research and Frontier Technology (Grant nos. cstc2018jcyjAX0329 and cstc2018jcyjAX0444 ).

**Compendex references:** YES

**Database:** Compendex

Compilation and indexing terms, Copyright 2020 Elsevier Inc.

**Data Provider:** Engineering Village

**59. Large magnetic entropy change and adiabatic temperature rise of a ternary Gd34Ni33Al33 metallic glass**

**Accession number:** 20202708889687

**Authors:** Wang, Xin (1); Wang, Qiang (2); Tang, Benzhen (2); Yu, Peng (3); Xia, Lei (2); Ding, Ding (2)

**Author affiliation:** (1) Department of Engineering, Shanghai Second Polytechnic University, Shanghai; 201209, China; (2) Institute of Materials, Shanghai University, Shanghai; 200072, China; (3) Chongqing Key Laboratory of Photo-Electric Functional Materials, College of Physics and Electronic Engineering, Chongqing Normal University, Chongqing; 401331, China

**Corresponding author:** Ding, Ding(d.ding@shu.edu.cn)

**Source title:** Journal of Rare Earths

**Abbreviated source title:** J Rare Earth

**Issue date:** 2020

**Publication year:** 2020

**Language:** English

**ISSN:** 10020721

**CODEN:** JREAE6

**Document type:** Article in Press

**Publisher:** Chinese Society of Rare Earths

**Abstract:** A low cost Gd34Ni33Al33 metallic glass with excellent magnetocaloric properties was successfully prepared in the present work. The magnetic properties of the ribbons were measured by constructing the relationship of magnetic entropy change (–ΔSm) on temperature as well as magnetic field. The amorphous alloy shows typical magnetocaloric behaviors, large maximum –ΔSm (11.06 J/(kg·K) under 5 T) and adiabatic temperature rise (4.3 K under 5 T) near 40 K, indicating that the low cost Gd34Ni33Al33 metallic glass is a good candidate material for low temperature magnetic refrigeration. © 2020 Chinese Society of Rare Earths

**Number of references:** 33

**Main heading:** Aluminum alloys

**Controlled terms:** Amorphous alloys  -  Costs  -  Entropy  -  Gadolinium alloys  -  Glass  -  Magnetism  -  Metallic glass  -  Temperature  -  Ternary alloys

**Uncontrolled terms:** Adiabatic temperature rise  -  Candidate materials  -  Low costs  -  Low temperatures  -  Magnetic entropy change  -  Magnetocaloric  -  Magnetocaloric properties

**Classification code:** 531 Metallurgy and Metallography  -  541.2 Aluminum Alloys  -  547.2 Rare Earth Metals  -  641.1 Thermodynamics  -  701.2 Magnetism: Basic Concepts and Phenomena  -  812.3 Glass  -  911 Cost and Value Engineering; Industrial Economics

**Numerical data indexing:** Magnetic\_Flux\_Density 5.00e+00T, Temperature 4.00e+01K, Temperature 4.30e+00K

**DOI:** 10.1016/j.jre.2020.04.011

**Funding Details:** Number: 51871139, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;

**Funding text:** Foundation item: Project supported by the National Natural Science Foundation of China (51671119, 51701003, 51871139).

**Compendex references:** YES

**Database:** Compendex

Compilation and indexing terms, Copyright 2020 Elsevier Inc.

**Data Provider:** Engineering Village

**60. Thermal resistance network model for heat conduction of amorphous polymers**

**Accession number:** 20200408081788

**Authors:** Zhou, Jun (1); Xi, Qing (1); He, Jixiong (2); Xu, Xiangfan (1); Nakayama, Tsuneyoshi (1, 3); Wang, Yuanyuan (4); Liu, Jun (2)

**Author affiliation:** (1) Center for Phononics and Thermal Energy Science, China-EU Joint Lab for Nanophononics, School of Physics Science and Engineering, Tongji University, Shanghai; 200092, China; (2) Department of Mechanical and Aerospace Engineering, North Carolina State University, Raleigh; NC; 27695, United States; (3) Department of Applied Physics, Hokkaido University, Sapporo, Hokkaido; 060-0826, Japan; (4) School of Environmental and Materials Engineering, Shanghai Polytechnic University, Shanghai; 201209, China

**Source title:** Physical Review Materials

**Abbreviated source title:** Physic. Rev. Mat.

**Volume:** 4

**Issue:** 1

**Issue date:** January 17, 2020

**Publication year:** 2020

**Article number:** 015601

**Language:** English

**E-ISSN:** 24759953

**Document type:** Journal article (JA)

**Publisher:** American Physical Society

**Abstract:** The thermal conductivities (TCs) of the vast majority of amorphous polymers are in a very narrow range, 0.1-0.5 W m-1 K-1, although single polymer chains possess TCs of orders of magnitude higher. The chemical structure of polymer chains plays an important role in determining the TC of bulk polymers. We propose a thermal resistance network (TRN) model for the TC in amorphous polymers taking into account the chemical structure of molecular chains. Our model elucidates the physical origin of the low TC universally observed in amorphous polymers with various chemical structures. The empirical formulas of the pressure and temperature dependence of TC can be successfully reproduced not only in solid polymers but also in polymer melts. We further quantitatively explain the anisotropic TC in oriented polymers. © 2020 American Physical Society.

**Number of references:** 42

**Main heading:** Thermal conductivity

**Controlled terms:** Heat conduction  -  Heat resistance  -  Polymer melts  -  Structure (composition)  -  Temperature distribution

**Uncontrolled terms:** Amorphous polymers  -  Empirical formulas  -  Molecular chains  -  Orders of magnitude  -  Oriented polymers  -  Pressure and temperature  -  Single polymer chains  -  Thermal resistance networks

**Classification code:** 641.1 Thermodynamics  -  641.2 Heat Transfer  -  815.1 Polymeric Materials  -  951 Materials Science

**DOI:** 10.1103/PhysRevMaterials.4.015601

**Funding Details:** Number: 2017YFB0406004, Acronym: -, Sponsor: -; Number: 11674245,11890703, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: -, Acronym: NCSU, Sponsor: North Carolina State University;

**Funding text:** This work was supported by National Key R&D Program of China (Grant No. 2017YFB0406004), National Natural Science Foundation of China (Grants No. 11890703, No. 11674245), and Shanghai Key Laboratory of Special Artificial Microstructure Materials and Technology. This work was also supported by the Faculty Research and Professional Development Fund at North Carolina State University.

**Compendex references:** YES

**Database:** Compendex

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**Data Provider:** Engineering Village

**61. Influence diffusion model in multiplex networks    (*Open Access*)**

**Accession number:** 20203809191961

**Authors:** Chen, Senbo (1, 3); Tan, Wenan (1, 2)

**Author affiliation:** (1) School of Computer Science and Technology, Nanjing University of Aeronautics and Astronautics, Nanjing; 210000, China; (2) School of Computer and Information, Shanghai Second Polytechnic University, Shanghai, China; (3) Department of Infection, Immunity and Inflammation, University of Leicester, Leicester; LE1 7RH, United Kingdom

**Corresponding author:** Chen, Senbo(sam\_c@163.com)

**Source title:** Computers, Materials and Continua

**Abbreviated source title:** Comput. Mater. Continua

**Volume:** 64

**Issue:** 1

**Issue date:** 2020

**Publication year:** 2020

**Pages:** 35-358

**Language:** English

**ISSN:** 15462218

**E-ISSN:** 15462226

**Document type:** Journal article (JA)

**Publisher:** Tech Science Press

**Abstract:** The problem of influence maximizing in social networks refers to obtaining a set of nodes of a specified size under a specific propagation model so that the aggregation of the node-set in the network has the greatest influence. Up to now, most of the research has tended to focus on monolayer network rather than on multiplex networks. But in the real world, most individuals usually exist in multiplex networks. Multiplex networks are substantially different as compared with those of a monolayer network. In this paper, we integrate the multi-relationship of agents in multiplex networks by considering the existing and relevant correlations in each layer of relationships and study the problem of unbalanced distribution between various relationships. Meanwhile, we measure the distribution across the network by the similarity of the links in the different relationship layers and establish a unified propagation model. After that, place on the established multiplex network propagation model, we propose a basic greedy algorithm on it. To reduce complexity, we combine some of the characteristics of triggering model into our algorithm. Then we propose a novel MNStaticGreedy algorithm which is based on the efficiency and scalability of the StaticGreedy algorithm. Our experiments show that the novel model and algorithm are effective, efficient and adaptable. © 2020 Tech Science Press. All rights reserved.

**Number of references:** 20

**Main heading:** Monolayers

**Controlled terms:** Biomaterials  -  Computer simulation

**Uncontrolled terms:** Diffusion model  -  Greedy algorithms  -  Model and algorithms  -  Multiplex networks  -  Propagation modeling  -  Real-world  -  Triggering model  -  Unbalanced distribution

**Classification code:** 462.5 Biomaterials (including synthetics)  -  723.5 Computer Applications

**DOI:** 10.32604/CMC.2020.09807

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**Compendex references:** YES

**Database:** Compendex

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**Data Provider:** Engineering Village

**62. Remarkably reduced thermal contact resistance of graphene/olefin block copolymer/paraffin form stable phase change thermal interface material**

**Accession number:** 20203709161123

**Authors:** Liu, Changqing (1, 2); Yu, Wei (3); Chen, Cheng (3); Xie, Huaqing (3); Cao, Bingyang (4)

**Author affiliation:** (1) School of Mechanical and Energy Engineering, Shaoyang University, Shaoyang; 422000, China; (2) Key Laboratory of Hunan Province for Efficient Power System and Intelligent Manufacturing, Shaoyang University, Shaoyang; 422000, China; (3) College of Engineering, Shanghai Key Laboratory of Engineering Materials Application and Evaluation, Shanghai Polytechnic University, Shanghai; 201209, China; (4) Key Laboratory for Thermal Science and Power Engineering of Ministry of Education, Department of Engineering Mechanics, Tsinghua University, Beijing; 100084, China

**Corresponding author:** Yu, Wei(yuwei@sspu.edu.cn)

**Source title:** International Journal of Heat and Mass Transfer

**Abbreviated source title:** Int. J. Heat Mass Transf.

**Volume:** 163

**Issue date:** December 2020

**Publication year:** 2020

**Article number:** 120393

**Language:** English

**ISSN:** 00179310

**CODEN:** IJHMAK

**Document type:** Journal article (JA)

**Publisher:** Elsevier Ltd

**Abstract:** Thermal contact resistance is a key bottleneck to restrict the rapid heat dissipation of electronic device. The wetting between two contact surfaces is one of the most important factors affecting the thermal contact resistance. Phase change thermal interface material can transform from solid state to molten state by heat inducing, which is an efficient way to reduce the thermal contact resistance. In this work, a novel form stable phase change thermal interface material of graphene/olefin block copolymer/paraffin filled with graphene (≤4.0 wt%) was designed. Furthermore, the influence of temperature and pressure on thermal contact resistance were studied, and the dominant position of thermal contact resistance and RTIMs in total thermal resistance was analyzed systematically. The results exhibit that thermal contact resistance decreases sharply from 8–20 Kcm2/W to 0.1–0.2 Kcm2/W for the temperature increases from 37 °C to 45 °C (50 Psi), with a drop of up to two orders of magnitude. This is because the wettability of the two contact surfaces is greatly improved by changing solid–liquid contact to solid–liquid contact. In addition, the thermal contact resistance decreases slightly with the increase of pressure (10–50 Psi, 48 °C). A small amount of graphene can significantly enhance the thermal conductivity of graphene/olefin block copolymer/paraffin, but the effect on thermal contact resistance is relatively weak. Moreover, critical thickness is proposed to quantitatively evaluate the dominant position of thermal contact resistance or RTIMs in total thermal resistance. It facilitates the quantitative analysis and optimization of thermal resistance in practical application. © 2020

**Number of references:** 29

**Main heading:** Heat resistance

**Controlled terms:** Block copolymers  -  Contact resistance  -  Graphene  -  Interface states  -  Phase interfaces  -  Thermal conductivity of solids  -  Thermal insulating materials  -  Wetting

**Uncontrolled terms:** Contact surface  -  Critical thickness  -  Electronic device  -  Orders of magnitude  -  Temperature and pressures  -  Temperature increase  -  Thermal contact resistance  -  Thermal interface materials

**Classification code:** 413.2 Heat Insulating Materials  -  641.1 Thermodynamics  -  701.1 Electricity: Basic Concepts and Phenomena  -  761 Nanotechnology  -  801.4 Physical Chemistry  -  804 Chemical Products Generally  -  815.1 Polymeric Materials  -  931 Classical Physics; Quantum Theory; Relativity  -  932 High Energy Physics; Nuclear Physics; Plasma Physics

**Numerical data indexing:** Pressure 3.45e+05Pa, Temperature 3.21e+02K

**DOI:** 10.1016/j.ijheatmasstransfer.2020.120393

**Funding Details:** Number: 2018JJ3478, Acronym: -, Sponsor: -; Number: 19A448, Acronym: -, Sponsor: -; Number: 51590902, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;

**Funding text:** This work was supported by National Natural Science Foundation of China (Grant No. 51590902 and 51876112), Hunan Provincial Natural Science Fund (2018JJ3478) and the Key projects of Hunan Provincial Education Department (no. 19A448).

**Compendex references:** YES

**Database:** Compendex

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**Data Provider:** Engineering Village

**63. Electrophoretic Deposition of Binder-Free MOF-Derived Carbon Films for High-Performance Microsupercapacitors**

**Accession number:** 20203008964217

**Authors:** Li, Yang (1, 2, 3); Park, Teahoon (4); Kim, Minjun (5); Xie, Huaqing (1, 2, 3); Yi, Jin Woo (4); Li, Jing (1, 2, 3); Alshehri, Saad M. (6); Ahamad, Tansir (6); Na, Jongbeom (5); Yamauchi, Yusuke (5, 7, 8)

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**Corresponding author:** Na, Jongbeom(j.na@uq.edu.auemaily.yamauchi@uq.edu.auemaily.yamauchi@uq.edu.auemaily.yamauchi@uq.edu.au)Yamauchi, Yusuke(y.yamauchi@uq.edu.auemaily.yamauchi@uq.edu.auemaily.yamauchi@uq.edu.au)Yamauchi, Yusuke(y.yamauchi@uq.edu.auemaily.yamauchi@uq.edu.au)Yamauchi, Yusuke(y.yamauchi@uq.edu.au)

**Source title:** Chemistry - A European Journal

**Abbreviated source title:** Chem. Eur. J.

**Volume:** 26

**Issue:** 45

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**Pages:** 10283-10289

**Language:** English

**ISSN:** 09476539

**E-ISSN:** 15213765

**CODEN:** CEUJED

**Document type:** Journal article (JA)

**Publisher:** Wiley-VCH Verlag

**Abstract:** Recently, miniaturized power supplies have become essential components of micro-electromechanical systems (MEMS) and portable microdevices due to their high-power density, moderate specific energy, and superior long-term cyclability. In this study, microsupercapacitors with ZIF-8-derived carbons as active materials were successfully fabricate by electrophoretic deposition method. The carbon materials on microsupercapacitors, which are directly deposited or obtained by pyrolyzing predeposited ZIF-8 particles, play a crucial role in achieving outstanding electrochemical performances. The microsupercapacitor of 16 interdigital finger electrodes, prepared by electrophoretic deposition of ZIF-8 particles and subsequent pyrolysis, shows maximum specific power 687.6 mW cm−3, specific energy 2.87 mWh cm−3, and 97.8 % capacitance retention rate after 10 000 cycles. The simple and facile process of electrophoretic deposition and subsequent pyrolysis of ZIF-8 particles generates a film of densely populated microporous carbon particles on microsupercapacitor, leading to superior capacitive performances. © 2020 Wiley-VCH Verlag GmbH & Co. KGaA, Weinheim

**Number of references:** 26

**Main heading:** Carbon films

**Controlled terms:** Deposition  -  Electrophoresis  -  MEMS  -  Microporosity  -  Pyrolysis

**Uncontrolled terms:** Capacitance retention  -  Capacitive performance  -  Electrochemical performance  -  Electrophoretic deposition methods  -  Electrophoretic depositions  -  Micro electromechanical system (MEMS)  -  Micro-porous carbons  -  Microsupercapacitors

**Classification code:** 701.1 Electricity: Basic Concepts and Phenomena  -  704.2 Electric Equipment  -  802.2 Chemical Reactions  -  802.3 Chemical Operations  -  813.2 Coating Materials  -  931.2 Physical Properties of Gases, Liquids and Solids

**Numerical data indexing:** Percentage 9.78e+01%

**DOI:** 10.1002/chem.202000764

**Funding Details:** Number: -, Acronym: KIMS, Sponsor: Korea Institute of Materials Science; Number: -, Acronym: KIMS, Sponsor: Korea Institute of Materials Science;

**Funding text:** This research was supported by the Principal Research Program (PNK6650) at the Korea Institute of Materials Science (KIMS). S.M.A., T.A., and Y.Y. thank to Researchers Supporting Project Number (RSP2019/6), King Saud University, Riyadh, Saudi Arabia.

**Compendex references:** YES

**Database:** Compendex

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**Data Provider:** Engineering Village

**64. Self-assembly of phosphonate-metal complex for superhydrophobic and durable flame-retardant polyester–cotton fabrics**

**Accession number:** 20201808586475

**Authors:** Liu, Longxiang (1); Pan, Ying (2); Zhao, Yuyu (3); Cai, Wei (1); Gui, Zhou (1); Hu, Yuan (1); Wang, Xin (1)

**Author affiliation:** (1) State Key Laboratory of Fire Science, University of Science and Technology of China, Hefei; Anhui; 230026, China; (2) College of Materials and Environmental Engineering, Hangzhou Dianzi University, Hangzhou; Zhejiang; 310018, China; (3) School of Urban Development and Environmental Engineering, Shanghai Second Polytechnic University, Shanghai; 201209, China

**Corresponding author:** Gui, Zhou(zgui@ustc.edu.cn)

**Source title:** Cellulose

**Abbreviated source title:** Cellulose

**Volume:** 27

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**Issue date:** July 1, 2020

**Publication year:** 2020

**Pages:** 6011-6025

**Language:** English

**ISSN:** 09690239

**E-ISSN:** 1572882X

**CODEN:** CELLE8

**Document type:** Journal article (JA)

**Publisher:** Springer

**Abstract:** Abstract: Poor washing durability still poses a big challenge to the practical applications of flame-retardant fabrics. Herein, a facile and eco-friendly dip-coating approach is proposed to fabricate durable flame-retardant and superhydrophobic polyester–cotton (PTCO) fabrics. Self-assembled depositions of diethylenetriamine penta(methylene-phosphonic acid) (DTPMP) and ferric ion (Fe3+) were applied on PTCO fabrics through coordination interaction. Owing to the intumescent effect of DTPMP–Fe3+ complexes, DTPMP–Fe3+-coated fabric self-extinguished in the horizontal flame testing. Polydimethylsiloxane (PDMS) was then applied on DTPMP–Fe3+ complexes to impart the flame-retardant PTCO fabrics with superhydrophobicity (water contact angle: 155.6°) and self-cleaning properties. Especially, the washing durability of DTPMP–Fe3+-coated PTCO fabrics was improved by the modification of PDMS. The DT/Fe-8BL@PDMS sample still achieved self-extinguishing in the horizontal flame testing even after 12 laundering cycles. Graphic abstract: Flame-retardant and superhydrophobic polyester–cotton fabrics are fabricated through the deposition of DTPMP–Fe3+ complexes and further modification of PDMS.[Figure not available: see fulltext.]. © 2020, Springer Nature B.V.

**Number of references:** 40

**Main heading:** Iron compounds

**Controlled terms:** Contact angle  -  Cotton  -  Cotton fabrics  -  Deposition  -  Durability  -  Metal complexes  -  Microchannels  -  Polydimethylsiloxane  -  Polyesters  -  Protective coatings   -  Self assembly  -  Silicones  -  Superhydrophobicity  -  Washing

**Uncontrolled terms:** Coordination interactions  -  Diethylenetriamine  -  Laundering cycles  -  Polydimethylsiloxane PDMS  -  Self-cleaning properties  -  Self-extinguishing  -  Washing durability  -  Water contact angle

**Classification code:** 802.3 Chemical Operations  -  804.2 Inorganic Compounds  -  815.1.1 Organic Polymers  -  819.5 Textile Products and Processing  -  821.4 Agricultural Products  -  931.2 Physical Properties of Gases, Liquids and Solids  -  951 Materials Science

**DOI:** 10.1007/s10570-020-03148-z

**Funding Details:** Number: 2016YFC0802802, Acronym: -, Sponsor: National Basic Research Program of China (973 Program); Number: 51573173, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;

**Funding text:** We gratefully acknowledge financial support from the National Key Research and Development Program of China (Grant No.: 2016YFC0802802), and the National Natural Science Foundation of China (Grant Nos.: 51573173, 21604081).

**Compendex references:** YES

**Database:** Compendex

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**Data Provider:** Engineering Village

**65. Low optical dosage heating-reduced viscosity for fast and large-scale cleanup of spilled crude oil by reduced graphene oxide melamine nanocomposite adsorbents**

**Accession number:** 20201608426714

**Authors:** Xu, Guangqiao (1); Zhang, Li (1); Yu, Wei (1); Sun, Zhiguo (1); Guan, Jie (1); Zhang, Jiaoxia (2, 3); Lin, Jing (4); Zhou, Juying (3, 5); Fan, Jincheng (6); Murugadoss, Vignesh (3, 7, 8); Guo, Zhanhu (3)

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**Corresponding author:** Guo, Zhanhu(zguo10@utk.edu)

**Source title:** Nanotechnology

**Abbreviated source title:** Nanotechnology

**Volume:** 31

**Issue:** 22

**Issue date:** May 29, 2020

**Publication year:** 2020

**Article number:** 225402

**Language:** English

**ISSN:** 09574484

**E-ISSN:** 13616528

**CODEN:** NNOTER

**Document type:** Journal article (JA)

**Publisher:** Institute of Physics Publishing

**Abstract:** Heating under low solar radiation intensity is demonstrated to facilitate the cleaning of crude oil by the hydrophobic nanocomposite adsorbents of reduced graphene oxide (RGO) melamine sponge (MS@RGO) foams. The heat generated by the irradiation reduces the viscosity of the crude oil, and consequently increases the oil-diffusion coefficient of the pores of the MS@RGO foams and speeds up the oil-sorption rate. Even under a solar radiation intensity as low as 2 kW m-2, the temperature of crude oil rapidly rises to 68 °C or higher within 10 min. It only takes 29 s to completely absorb 6 g of crude oil at 60 °C by three tiny pieces of MS@RGO foam. This work makes better use of the excellent photothermal conversion characteristics of crude oil, and its photothermal conversion mechanism under simulated solar radiation is also discussed. This methodology can be adopted to clean up viscous crude oil or extract other chemicals effectively at a large scale, and provides a complete solution for the cleanup of crude oil in the sea or on the beach for actual engineering applications. © 2020 IOP Publishing Ltd.

**Number of references:** 77

**Main heading:** Crude oil

**Controlled terms:** Foams  -  Graphene  -  Reduced Graphene Oxide  -  Solar radiation  -  Viscosity

**Uncontrolled terms:** Complete solutions  -  Engineering applications  -  Photo-thermal conversions  -  Reduced graphene oxides (RGO)  -  Reduced viscosity  -  Simulated solar radiations  -  Solar radiation intensity  -  Viscous crude oil

**Classification code:** 512.1 Petroleum Deposits  -  631.1 Fluid Flow, General  -  657.1 Solar Energy and Phenomena  -  761 Nanotechnology  -  804 Chemical Products Generally

**Numerical data indexing:** Mass 6.00e-03kg, Surface\_Power\_Density 2.00e+03W/m2, Temperature 3.33e+02K, Temperature 3.41e+02K, Time 6.00e+02s

**DOI:** 10.1088/1361-6528/ab76eb

**Compendex references:** YES

**Database:** Compendex

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**Data Provider:** Engineering Village

**66. Human exposure to PBDEs in e-waste areas: A review**

**Accession number:** 20203809213991

**Authors:** Cai, Kaihan (1, 2); Song, Qingbin (1); Yuan, Wenyi (3); Ruan, Jujun (4); Duan, Huabo (5); Li, Ying (6); Li, Jinhui (7)

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**Corresponding author:** Song, Qingbin(qbsong@must.edu.mo)

**Source title:** Environmental Pollution

**Abbreviated source title:** Environ. Pollut.

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**Article number:** 115634

**Language:** English

**ISSN:** 02697491

**E-ISSN:** 18736424

**CODEN:** ENPOEK

**Document type:** Journal article (JA)

**Publisher:** Elsevier Ltd

**Abstract:** Polybrominated biphenyl ethers (PBDEs) are commonly added to electronic products for flame-retardation effects, and are attracting more and more attentions due to their potential toxicity, durability and bioaccumulation. This study conducts a sysmtematic review to understand the human exposure to PBDEs from e-waste recycling, especially exploring the exposure pathways and human burden of PBDEs as well as investigating the temporal trend of PBDEs exposure worldwide. The results show that the particular foods (contaminated fish, poultry, meat and breast milk) ingestion, indoor dust ingestion and indoor air inhalation may be key factors leading to human health risks of PBDEs exposure in e-waste recycling regions. Residents and some vulnerable groups (occupational workers and children) in e-waste recycling areas may face higher exposure levels and health risks. PBDE exposure is closely related to exposure level, exposure duration, e-waste recycling methods, and dietary customs. High levels of PBDEs are found in human tissues (breast milk, hair, blood (serum), placenta and other tissues) in e-waste areas, at far higher levels than in other areas. Existing data indicate that PBDE exposure levels do not present any apparent downward trend, and will possibly cause serious human diseases. More epidemiological studies are still needed to provide a solid basis for health risk assessment. © 2020 Elsevier Ltd

**Number of references:** 121

**Main heading:** Chemical contamination

**Controlled terms:** Biochemistry  -  Dairies  -  Electronic Waste  -  Health  -  Health risks  -  Histology  -  Organic pollutants  -  Recycling  -  Risk assessment  -  Tissue   -  Wastes

**Uncontrolled terms:** Electronic product  -  Epidemiological studies  -  Exposure durations  -  Exposure pathways  -  Flame retardation  -  Human health risks  -  Polybrominated biphenyl ethers  -  Vulnerable groups

**Classification code:** 452.3 Industrial Wastes  -  461 Bioengineering and Biology  -  801.2 Biochemistry  -  804.1 Organic Compounds  -  822.1 Food Products Plants and Equipment  -  822.3 Food Products  -  914.1 Accidents and Accident Prevention

**DOI:** 10.1016/j.envpol.2020.115634

**Funding Details:** Number: 2019B110209001, Acronym: -, Sponsor: -; Number: 0011/2018/A, Acronym: -, Sponsor: -; Number: 21876106, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;

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**Compendex references:** YES

**Database:** Compendex

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**Data Provider:** Engineering Village

**67. Moist-Retaining, Self-Recoverable, Bioadhesive, and Transparent in Situ Forming Hydrogels to Accelerate Wound Healing**

**Accession number:** 20200908229899

**Authors:** Li, Jun (1); Yu, Fan (2); Chen, Gong (3); Liu, Jia (4); Li, Xiao-Long (5); Cheng, Biao (1); Mo, Xiu-Mei (2); Chen, Cheng (3); Pan, Jian-Feng (1)

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**Source title:** ACS Applied Materials and Interfaces

**Abbreviated source title:** ACS Appl. Mater. Interfaces

**Volume:** 12

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**ISSN:** 19448244

**E-ISSN:** 19448252

**Document type:** Journal article (JA)

**Publisher:** American Chemical Society

**Abstract:** In the management of accelerating wound healing, moist environments play an important role. Compared with other scaffolds of various forms, hydrogels can maintain a moist environment in the wound area. They are cross-linked hydrophilic polymeric networks that resemble natural soft tissues and extracellular matrices. Among them, injectable hydrogels have attracted great attention in wound repair, as they can be injected into irregular-shaped skin defects and formed in situ to shape the contour of different dimensions. The excellent compliance makes hydrogels easy to adapt to the wound under different conditions of skin movement. Here, we oxidized hydroxyethyl starch (O-HES) and modified carboxymethyl chitosan (M-CMCS) to fabricate an in situ forming hydrogel with excellent self-recoverable extensibility-compressibility, biocompatibility, biodegradability, and transparency for accelerating wound healing. The oxidation degree of O-HES was 74%. The amino modification degree of M-CMCS was 63%. M-CMCS/O-HES hydrogels were formed through the Schiff base reaction. The physicochemical properties of M-CMCS/O-HES hydrogels with various ratios were investigated, and M-CMCS/O-HES hydrogel with a volume ratio of 5:5 exhibited appropriate gelation time, notable water-retaining capacity, self-recoverable conformal deformation, suitable biodegradability, and good biocompatibility for wound-healing application. Then, skin wound-healing experimental studies were carried out in Sprague-Dawley rats with full-thickness skin defects. Significant outcomes were achieved in the M-CMCS/O-HES hydrogel-treated group including higher wound closure percentage, more granulation tissue formation, faster epithelialization, and decreased collagen deposition. These findings demonstrate that using the obtained M-CMCS/O-HES hydrogels is a promising therapeutic strategy for wound healing. Copyright © 2020 American Chemical Society.

**Number of references:** 47

**Main heading:** Hydrogels

**Controlled terms:** Biocompatibility  -  Biodegradability  -  Compressibility  -  Defects  -  Gelation  -  Physicochemical properties  -  Starch  -  Tissue  -  Tissue regeneration

**Uncontrolled terms:** extensibility  -  Injectable hydrogels  -  Moisture retention  -  Self recovery  -  Skin regeneration  -  Wound healing

**Classification code:** 461 Bioengineering and Biology  -  801.2 Biochemistry  -  802.3 Chemical Operations  -  804 Chemical Products Generally  -  804.1 Organic Compounds  -  951 Materials Science

**Numerical data indexing:** Percentage 6.30e+01%, Percentage 7.40e+01%

**DOI:** 10.1021/acsami.9b17180

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**Compendex references:** YES

**Database:** Compendex

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**Data Provider:** Engineering Village

**68. Carbon emissions under different domestic waste treatment modes induced by garbage classification: Case study in pilot communities in Shanghai, China**

**Accession number:** 20200708165200

**Authors:** Chen, Sisi (1); Huang, Jialiang (2); Xiao, Tingting (1); Gao, Jun (1); Bai, Jianfeng (3); Luo, Wei (4); Dong, Bin (1)

**Author affiliation:** (1) State Key Laboratory of Pollution Control and Resource Reuse, College of Environmental Science and Engineering, Tongji University, Shanghai; 200092, China; (2) School of Environment and Architecture, University of Shanghai for Science and Technology, Shanghai; 200093, China; (3) WEEE Research Centre of Shanghai Second Polytechnic University, Shanghai; 201209, China; (4) Beijing Jinghuan Intelligent Environmental Protection Technology Co., Ltd, Beijing; 100101, China

**Corresponding author:** Dong, Bin(dongbin@tongji.edu.cn)

**Source title:** Science of the Total Environment

**Abbreviated source title:** Sci. Total Environ.

**Volume:** 717

**Issue date:** 15 May 2020

**Publication year:** 2020

**Article number:** 137193

**Language:** English

**ISSN:** 00489697

**E-ISSN:** 18791026

**CODEN:** STEVA8

**Document type:** Journal article (JA)

**Publisher:** Elsevier B.V.

**Abstract:** The GHGs contributions (tally by carbon emissions) during treatment of domestic food waste and residual waste from pilot communities (contained 2365 families) in Shanghai, China, under different Modes induced by garbage classification were investigated. It was found that under the present condition of garbage classification in Shanghai, 51.8% of the food waste could be separated finally. With garbage classification, the load of landfill was saved by 17.3% (Mode 2) and 16.5% (Mode 3), the moisture of garbage for incineration was reduced by 13.6%, and the lower heating value (LHV) of garbage was increased by 16.2%. Applying the life-cycle assessment (LCA) methodology and Life Cycle Inventory (LCI) with material flows, net carbon emissions during the treatment of garbage were found to be in the following order: Mode 3 (1.60 × 10−3 kg CE/kg waste) −3 kg CE/kg waste) −3 kg CE/kg waste) −2 kg CE/kg waste). Mode 2 and Mode 3 were replaceable patterns of Mode 1, and anaerobic digestion was the recommendable strategy to recover energy from food waste. Especially, there was no obvious benefit of increasing the separation proportion of food waste to 60% (or above) for reducing net carbon emissions in the following treatment processes. © 2020

**Number of references:** 44

**Main heading:** Waste incineration

**Controlled terms:** Anaerobic digestion  -  Calorific value  -  Carbon  -  Composting  -  Food waste  -  Greenhouse gases  -  Incineration  -  Land fill  -  Life cycle  -  Municipal solid waste

**Uncontrolled terms:** Carbon emissions  -  Domestic wastes  -  Life Cycle Assessment (LCA)  -  Life cycle inventories  -  Lower heating value  -  Residual wastes  -  Shanghai , China  -  Treatment process

**Classification code:** 451.1 Air Pollution Sources  -  452 Municipal and Industrial Wastes; Waste Treatment and Disposal  -  452.4 Industrial Wastes Treatment and Disposal  -  804 Chemical Products Generally

**Numerical data indexing:** Percentage 1.36e+01%, Percentage 1.62e+01%, Percentage 1.65e+01%, Percentage 1.73e+01%, Percentage 5.18e+01%, Percentage 6.00e+01%

**DOI:** 10.1016/j.scitotenv.2020.137193

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**Compendex references:** YES

**Database:** Compendex

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**Data Provider:** Engineering Village

**69. Exploring the critical role of grinding modification on the flotation recovery of electrode materials from spent lithium ion batteries**

**Accession number:** 20203008962961

**Authors:** Yu, Jiadong (1, 5); He, Yaqun (2, 3); Qu, Lili (1); Yang, Jinshan (1); Xie, Weining (3); Zhu, Xiangnan (4)

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**Abbreviated source title:** J. Clean. Prod.

**Volume:** 274

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**Article number:** 123066

**Language:** English

**ISSN:** 09596526

**CODEN:** JCROE8

**Document type:** Journal article (JA)

**Publisher:** Elsevier Ltd

**Abstract:** The growing demand for high-quality batteries has promoted frequent upgrading of Lithium-Ion Batteries (LIBs), resulting in a large number of spent LIBs entering into the waste stream. Grinding flotation may be a promising physical recycling method to help dispose of this waste. This study provides theoretical support for this technology by exploring the physical and chemical changes in the grinding modification process. To study physical grinding behavior, an interaction model between LiCoO2 and graphite particles was proposed; it shows that a mixed grinding process successively undergoes peeling of the graphite lamellar structure, abrasion of the LiCoO2 particles, and bending fracture of the graphite sheets. This process effectively avoids excessive pulverization of feed particles and guarantees a good flotation environment. As for surface hydrophobic changes, the contact angle difference significantly increased, from 5° to 53.34°, after mixed grinding. Further chemical composition analysis suggests that the active lithium element robs the F element from the C–F bond to form LiF, which reduces about 25% surfactant organic impurities and ultimately increases the hydrophobicity differential in the electrode materials. It is the synergistic effect of a good feeding environment and great hydrophobicity differential that contributes most to excellent flotation separation (LiCoO2 94.38%). © 2020 Elsevier Ltd

**Number of references:** 33

**Main heading:** Lithium-ion batteries

**Controlled terms:** Chemical analysis  -  Chemical modification  -  Cobalt compounds  -  Contact angle  -  Electrodes  -  Flotation  -  Graphite  -  Grinding (machining)  -  Hydrophobicity  -  Impurities   -  Lamellar structures  -  Lithium compounds

**Uncontrolled terms:** Chemical composition analysis  -  Electrode material  -  Flotation recovery  -  Flotation separation  -  Graphite particles  -  Modification process  -  Spent lithium-ion batteries  -  Synergistic effect

**Classification code:** 604.2 Machining Operations  -  801.4 Physical Chemistry  -  802.3 Chemical Operations  -  931.2 Physical Properties of Gases, Liquids and Solids  -  951 Materials Science

**Numerical data indexing:** Percentage 2.50e+01%, Percentage 9.44e+01%

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**Compendex references:** YES

**Database:** Compendex

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**Data Provider:** Engineering Village

**70. Impact of heterostructures on hydrogen sulfide sensing: Example of core-shell CuO/CuFe2O4 nanostructures**

**Accession number:** 20202708884146

**Authors:** Boepple, Matthias (1, 2); Zhu, Zhigang (3, 4); Hu, Xiaobing (3, 4); Weimar, Udo (1, 2); Barsan, Nicolae (1, 2)

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**Abbreviated source title:** Sens Actuators, B Chem

**Volume:** 321

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**Publication year:** 2020

**Article number:** 128523

**Language:** English

**ISSN:** 09254005

**CODEN:** SABCEB

**Document type:** Journal article (JA)

**Publisher:** Elsevier B.V.

**Abstract:** Toxic and corrosive H2S gas is detected using chemoresistive sensors based on CuO/CuFe2O4 core-shell heterostructures, which are characterized by DC resistance measurements, scanning electron microscopy and energy-dispersive X-ray spectroscopy. Exposure to various test gases (CO, H2, NO2, VOCs) reveals low responses. However, unique reactivity towards H2S at low operating temperatures leads to accumulation of CuS clusters on the surface, which can connect to create a percolation path of high electric conductance. The core-shell heterostructures differ in their response to H2S, as the materials’ shell (CuFe2O4) partly converts incoming H2S to its combustion products, effectively reducing the amount of H2S reaching the core structures. This behavior was observed for both pulsed and continuous exposure to H2S, making it an inherent property of the examined core-shell heterostructures. SEM images and EDX spectra reveal that the phase transition with subsequent regeneration have a strong impact on the morphology of the functional layer. © 2020 Elsevier B.V.

**Number of references:** 34

**Main heading:** Shells (structures)

**Controlled terms:** Copper oxides  -  Energy dispersive spectroscopy  -  Iron compounds  -  Morphology  -  Scanning electron microscopy  -  Solvents  -  Sulfur compounds

**Uncontrolled terms:** Chemoresistive sensors  -  Combustion products  -  Continuous exposure  -  Core-shell heterostructures  -  Energy dispersive X ray spectroscopy  -  Functional layer  -  Low operating temperature  -  Percolation path

**Classification code:** 408.2 Structural Members and Shapes  -  803 Chemical Agents and Basic Industrial Chemicals  -  804.2 Inorganic Compounds  -  951 Materials Science

**DOI:** 10.1016/j.snb.2020.128523

**Funding Details:** Number: 61471233, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;

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**Compendex references:** YES

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**Data Provider:** Engineering Village

**71. Dual character of peroxymonosulfate oxidation process to treat salty wastewater containing 2,4,6-tribromophenol**

**Accession number:** 20203909229908

**Authors:** Fang, Changling (1); Lou, Xiaoyi (1); Tang, Yunyu (1); Tian, Liangliang (1); Cai, Youqiong (1); Xiao, Dongxue (1, 2); Guo, Yaoguang (3, 4); Liu, Jianshe (5)

**Author affiliation:** (1) East China Sea Fisheries Research Institute, Chinese Academy of Fishery Sciences, Key Laboratory of Control of Quality and Safety for Aquatic Products, Ministry of Agriculture and Rural Affairs, Shanghai; 200090, China; (2) Department of Environmental Science and Engineering, Fudan University, Shanghai; 200433, China; (3) Research Centre of Resource Recycling Science and Engineering, School of Environmental and Materials Engineering, Shanghai Polytechnic University, Shanghai; 201209, China; (4) Department of Physics, City University of Hong Kong, Hong Kong SAR; 999077, Hong Kong; (5) State Environ. Protection Engineering Center for Pollution Treatment and Control in Textile Industry, College of Environmental Science and Engineering, Donghua University, Shanghai; 201620, China

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**Article number:** 103998

**Language:** English

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**Document type:** Journal article (JA)

**Publisher:** Elsevier Ltd

**Abstract:** Nowadays, increasing attention has been paid on the peroxymonosulfate (PMS) in situ oxidation for environmental decontamination. Chloride ion (Cl-) could directly react with PMS to produce some reactive halogen agents via non-radical pathways. In present study, the degradation kinetics of 2,4,6-tribromophenol (TBP) and the total organic carbon (TOC) removal by adding PMS in salty wastewater were inspected. TBP could effectively degraded by PMS in salty wastewater over the pH range of 3.0-7.0, and the degradation ratio increased with the pH of reaction solution. Positive effects of Cl- concentration (1-100 »mM) on TBP degradation kinetics were also examined. Moreover, the oxidation products and their evolution with reaction time were conducted in order to further evaluate the environmental benefits with co-existence of PMS and Cl-. Instead of complete mineralization, TBP was mainly transformed to new halogenated products which also have long half-lives. The chlorination of TBP is the dominant pathway in the presence of Cl-, since the main oxidant (HOCl) played an important role. The formation of undesirable halogenated products provides that adding PMS into salty wastewater might not be an unexpected proposal for TBP depletion involving of the attendance of chloride. © 2020 Elsevier Ltd.

**Number of references:** 48

**Main heading:** Chlorine compounds

**Controlled terms:** Degradation  -  Halogenation  -  Organic carbon  -  Oxidation  -  Wastewater treatment

**Uncontrolled terms:** 2 ,4 ,6-tribromophenol  -  Degradation kinetics  -  Degradation ratios  -  Environmental benefits  -  Oxidation products  -  Positive effects of Cl  -  Reaction solutions  -  Total Organic Carbon

**Classification code:** 452.4 Industrial Wastes Treatment and Disposal  -  802.2 Chemical Reactions  -  804.1 Organic Compounds

**DOI:** 10.1016/j.jece.2020.103998

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**Compendex references:** YES

**Database:** Compendex

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**Data Provider:** Engineering Village

**72. Efficient degradation of industrial pollutants with sulfur (IV) mediated by LiCoO2 cathode powders of spent lithium ion batteries: A “treating waste with waste” strategy**

**Accession number:** 20202308799493

**Authors:** Guo, Yaoguang (1, 2); Zhao, Yan-Ling (2); Lou, Xiaoyi (3); Zhou, Tianyi (4); Wang, Zhaohui (5, 6); Fang, Changling (3); Guan, Jie (1); Chen, Shuai (1); Xu, Xin (7); Zhang, Rui-Qin (2, 8)

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**CODEN:** JHMAD9

**Document type:** Journal article (JA)

**Publisher:** Elsevier B.V.

**Abstract:** Strategies to maximize the reuse of electronic and industrial wastes have scientific, economic, social and environmental implications. We herein propose a strategy of “treating waste with waste” using LiCoO2 cathode powders from spent lithium ion batteries to eliminate industrial pollutants led by sulfur (S) (IV) in waste water. By radical scavenging experiments and electron spin resonance (ESR) analysis, we identified singlet 1O2 as the dominant species while SO4[rad]− and [rad]OH as the secondary species for decontamination during the oxidization process mediated by LiCoO2 powders. The intrinsic mechanism of S(IV) conversion was revealed to be two-step hydrogen migrations from HSO3− to O2 occurring on LiCoO2 surface by density functional theory (DFT) calculations. The surface of LiCoO2 powders plays a key role in anchoring sulfur species and forming surface complex as an excellent medium, which is found to be stable and reusable by material characterizations and the recycling experiment. Free Co(II) ions in solvents have no catalysis effect on the conversion of pollutants. Our work offers a particularly vivid example for rational reuse of electronic wastes to eliminate industrial pollutants, and may raise economic benefits in environmental practice due to two aims achieved in once action. © 2020 Elsevier B.V.

**Number of references:** 53

**Main heading:** Lithium-ion batteries

**Controlled terms:** Cathodes  -  Cobalt compounds  -  Density functional theory  -  Electron spin resonance spectroscopy  -  Industrial economics  -  Industrial wastes  -  Ions  -  Lithium compounds  -  Magnetic moments  -  Powders   -  Waste treatment  -  Wastewater treatment  -  Water pollution  -  Water treatment

**Uncontrolled terms:** Environmental practices  -  Hydrogen migration  -  Industrial pollutants  -  Intrinsic mechanisms  -  Material characterizations  -  Recycling experiments  -  Social and environmental  -  Spent lithium-ion batteries

**Classification code:** 445.1 Water Treatment Techniques  -  452.3 Industrial Wastes  -  452.4 Industrial Wastes Treatment and Disposal  -  453 Water Pollution  -  701.2 Magnetism: Basic Concepts and Phenomena  -  801 Chemistry  -  911.2 Industrial Economics  -  922.1 Probability Theory

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**Database:** Compendex

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**Data Provider:** Engineering Village

**73. Concept Representation by Learning Explicit and Implicit Concept Couplings**

**Accession number:** 20203709157567

**Authors:** Lu, Wenpeng (1); Zhang, Yuteng (2); Wang, Shoujin (3); Huang, Heyan (4); Liu, Qian (5); Luo, Sheng (6)

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**Document type:** Article in Press

**Publisher:** Institute of Electrical and Electronics Engineers Inc.

**Abstract:** Generating the precise semantic representation of a word/concept is a fundamental task in natural language processing. Recent studies which incorporate semantic knowledge into word embedding have shown their potential in improving the semantic representation of a concept. However, existing approaches only achieved limited performance improvement as they usually (1) model a words semantics from some explicit aspects while ignoring the intrinsic aspects of the word, (2) treat semantic knowledge as a supplement of word embeddings, and (3) consider partial relations between concepts while ignoring rich coupling relations between them, such as explicit concept co-occurrences in descriptive texts in a corpus as well as concept hyperlink relations in a knowledge network, and implicit couplings between the explicit relations. In human consciousness, concepts are associated with various coupling relations, which inspires us to capture as many concept couplings as possible for building a better concept representation. We thus propose a neural coupled concept representation (CoupledCR) framework and its instantiation: a coupled concept embedding (CCE) model. CCE first learns two types of explicit couplings from concept cooccurrences and hyperlink relations respectively, and then learns a type of high-level implicit couplings between these two types of explicit couplings. Extensive experimental results on real-world datasets show that CCE significantly outperforms state-of-the-art semantic representation methods. IEEE

**Main heading:** Couplings

**Controlled terms:** Embeddings  -  Hypertext systems  -  Natural language processing systems  -  Semantics

**Uncontrolled terms:** Coupling relation  -  Human consciousness  -  Knowledge networks  -  NAtural language processing  -  Partial relations  -  Real-world datasets  -  Semantic knowledge  -  Semantic representation

**Classification code:** 723.2 Data Processing and Image Processing

**DOI:** 10.1109/MIS.2020.3021188

**Database:** Compendex

Compilation and indexing terms, Copyright 2020 Elsevier Inc.

**Data Provider:** Engineering Village

**74. A Distance Adaptive Visual Odometer Design Based on ORB**

**Accession number:** 20202408820588

**Authors:** Jiao, Yu (1); Wang, Zhifeng (1)

**Author affiliation:** (1) Shanghai Polytechnic University, Shanghai, China

**Source title:** Proceedings of 2020 IEEE 4th Information Technology, Networking, Electronic and Automation Control Conference, ITNEC 2020

**Abbreviated source title:** Proc. IEEE Inf. Technol., Netw., Electron. Autom. Control Conf., ITNEC

**Part number:** 1 of 1

**Issue title:** Proceedings of 2020 IEEE 4th Information Technology, Networking, Electronic and Automation Control Conference, ITNEC 2020

**Issue date:** June 2020

**Publication year:** 2020

**Pages:** 280-283

**Article number:** 9084879

**Language:** English

**ISBN-13:** 9781728143903

**Document type:** Conference article (CA)

**Conference name:** 4th IEEE Information Technology, Networking, Electronic and Automation Control Conference, ITNEC 2020

**Conference date:** June 12, 2020 - June 14, 2020

**Conference location:** Chongqing, China

**Conference code:** 159655

**Sponsor:** Chengdu Global Union Academy of Science and Technology; Chongqing Geeks Education Technology Co., Ltd; Chongqing Global Union Academy of Science and Technology; Global Union Academy of Science and Technology; IEEE Beijing Section

**Publisher:** Institute of Electrical and Electronics Engineers Inc.

**Abstract:** With the development of visual SLAM and the development of unmanned technology, this paper proposes an improved visual odometer(VO) for optimizing camera motion estimation in visual odometers. The feature point matching is optimized using the Hamming distance by ORB corner extraction. Through experiments, it is found that the correct matching points in the vicinity can better reflect the rotation characteristics, and the correct feature matching points in the distance can better express the translation characteristics. Therefore, this paper calculates the feature point depth by triangulation and divided into far points and near points. The RANSAC filter feature points are used to calculate the camera rotation matrix and translation vector of the near and far points respectively, and then the camera position is restored by the homography matrix, it recovered by the overall feature points, which improves the robustness of the visual odometer. © 2020 IEEE.

**Number of references:** 7

**Main heading:** Hamming distance

**Controlled terms:** Cameras  -  Motion estimation

**Uncontrolled terms:** Camera positions  -  Camera rotations  -  Camera-motion estimation  -  Corner extractions  -  Feature matching  -  Feature point matching  -  Homography matrices  -  Translation vector

**Classification code:** 742.2 Photographic Equipment

**DOI:** 10.1109/ITNEC48623.2020.9084879

**Funding Details:**

**Funding text:** ACKNOWLEDGMENT This work was supported by Shanghai Polytechnic University Graduate Project Fund No. EGD18YJ0053.

**Compendex references:** YES

**Database:** Compendex

Compilation and indexing terms, Copyright 2020 Elsevier Inc.

**Data Provider:** Engineering Village

**75. Interaction method based on visual gesture recognition**

**Accession number:** 20201108282724

**Authors:** Li, Tiezhu (1); Qin, Qin (2); Chen, Zhenyu (2)

**Author affiliation:** (1) Engineering Training Center, Shanghai Polytechnic University, Shanghai; 201209, China; (2) School of Intelligent Manufacturing and Control Engineering, Shanghai Polytechnic University, Shanghai; 201209, China

**Source title:** Proceedings of SPIE - The International Society for Optical Engineering

**Abbreviated source title:** Proc SPIE Int Soc Opt Eng

**Volume:** 11427

**Part number:** 1 of 1

**Issue title:** Second Target Recognition and Artificial Intelligence Summit Forum

**Issue date:** 2020

**Publication year:** 2020

**Article number:** 114273C

**Language:** English

**ISSN:** 0277786X

**E-ISSN:** 1996756X

**CODEN:** PSISDG

**ISBN-13:** 9781510636316

**Document type:** Conference article (CA)

**Conference name:** 2nd Target Recognition and Artificial Intelligence Summit Forum 2019

**Conference date:** August 28, 2019 - August 30, 2019

**Conference location:** Shenyang, China

**Conference code:** 157916

**Sponsor:** Chinese Society for Optical Engineering

**Publisher:** SPIE

**Abstract:** In order to enrich the diversity of interactive recognition methods, an interactive method of gesture recognition based on static vision is proposed. The static gesture images are captured by color camera in real time. The gesture is extracted based on FHOG features. The extracted eigenvalues are used as input of SVM multi-class classifier to recognize gesture actions. The gesture features are used to locate feature points to achieve the segmentation of gesture recognition and gesture recognition. The experimental results show that the system can recognize six common static gestures. The system has good robustness, with an average recognition rate of 95.31%, a rejection recognition rate of 9.37%, and an overall recognition efficiency of 90.63%. © COPYRIGHT SPIE. Downloading of the abstract is permitted for personal use only.

**Number of references:** 11

**Main heading:** Support vector machines

**Controlled terms:** Eigenvalues and eigenfunctions  -  Feature extraction  -  Gesture recognition

**Uncontrolled terms:** FHOG  -  Gesture features  -  Interaction methods  -  Interactive methods  -  Multi-class classifier  -  Recognition efficiency  -  Recognition methods  -  Support vector machine classification

**Classification code:** 723 Computer Software, Data Handling and Applications

**Numerical data indexing:** Percentage 9.06e+01%, Percentage 9.37e+00%, Percentage 9.53e+01%

**DOI:** 10.1117/12.2553006

**Funding Details:** Number: 2017YFE0118700, Acronym: -, Sponsor: -; Number: 734599, Acronym: MSCA, Sponsor: H2020 Marie Sk&Aring;&eacute;odowska-Curie Actions; Number: -, Acronym: H2020, Sponsor: Horizon 2020 Framework Programme;

**Funding text:** In this paper, an interactive method of gesture recognition based on static vision is proposed. The static gesture image is captured by color camera in real time. The gesture is extracted based on FHOG features. The extracted eigenvalues are used as input of SVM multi-class classifier for gesture recognition, and feature points are located according to gesture features. Six kinds of gestures are classified and recognized by segmenting gestures. The experimental results show that the system can recognize six common static gestures. The system has good robustness, with an average recognition rate of 95.31%, a rejection recognition rate of 9.37%, and an overall recognition efficiency of 90.63%. 6. Acknowledgments This project is funded by the State Key Research and Development Program of China (2017YFE0118700); and received funding from the European Union’s Horizon 2020 research and innovation programme under the Marie Sklodowska-Curie grant agreement No 734599. 7. References [1] Mandeep K AAmardeep S. A survey of hand gesture recognition[J]. International Journal of Advance Research in Computer and Management Studies. 2015,3(5):266-271. [2]Wang Bing,DongHongwei,Zhang Mingmin. Dynamic hand gesture recognition based on Kinect [J]. Transducer and Microsystem Technologie,2018,37(2):143-146. [3]Gao Chen,Zhang Yajun. Fingertip Detection and Hand Gesture Recognition Based on Kinect Depth Image [J]. Computer Systems and Applications,2017,26(4):192-197. [4] Wu Kangwei,Yuan Mingxin,Ge Yuting. Gesture Recognition Algorithm Combined with Geometric Features and HMM [J]Techniques of Automation and Application,201736():108-111 [5] Li Haibiao, Huang Shan. A Target Tracking Algorithm Based on Adaptive Kernelized Correlation Filtering[J]. Electronics Optics & Control,2019,26(4):49-53 [6]Olshausen B A. Emergence of simple-cell receptive field properties by learning a sparse code for natural images[J].Nature,1996,381(6583):607-609 [7] Zhang Xuegong. On Statistical Learning Theory and Support Vector Machine [J]. Journal of Automation, 2000, 26 (1): 32-42. [8] Dhruva N,Rupanagudi S R,Sachin S K,et al. Novel segmentation algorithm for hand gesture recognition[C].IEEE international multi conference on automation computing,control,communication and compressed sensing. Kottayam, India:IEEE,2013:383-388. [9] Memo A,Minto L,Zanuttigh PExploiting Silhouette Descriptors and Synthetic Data for Hand Gesture Recognition [M].The Eurographics Association,2015 [10] Memo A, Zanuttigh P. Head-mounted gesture controlled Interface for human-computer interaction[J]Multimedia ToolsAnd Applications,2018,77(1):27-53 [11] LI Y,WANG X G,LIU W Y,etalDeep attention network for Joint hand gesture localization and recognition using static RGBD images[J]InformationSciences,2018,441:66-78

**Compendex references:** YES

**Database:** Compendex

Compilation and indexing terms, Copyright 2020 Elsevier Inc.

**Data Provider:** Engineering Village

**76. Application of big data to precision marketing in B2C e-commerce**

**Accession number:** 20200808196640

**Authors:** Yin, Shi (1, 2); Pan, Hailan (1, 2)

**Author affiliation:** (1) Research Center of Resource Recycling Science and Engineering, Shanghai Polytechnic University, Shanghai, China; (2) School of Economics and Management, Shanghai Polytechnic University, Shanghai, China

**Corresponding author:** Yin, Shi(yinshi@sspu.edu.cn)

**Source title:** Advances in Intelligent Systems and Computing

**Abbreviated source title:** Adv. Intell. Sys. Comput.

**Volume:** 1117 AISC

**Part number:** 1 of 1

**Issue title:** Big Data Analytics for Cyber-Physical System in Smart City, BDCPS 2019

**Issue date:** 2020

**Publication year:** 2020

**Pages:** 731-738

**Language:** English

**ISSN:** 21945357

**E-ISSN:** 21945365

**ISBN-13:** 9789811525674

**Document type:** Conference article (CA)

**Conference name:** 1st International Conference on Big Data Analytics for Cyber-Physical System in Smart City, BDCPS 2019

**Conference date:** December 28, 2019 - December 29, 2019

**Conference location:** Shenyang, China

**Conference code:** 236369

**Publisher:** Springer

**Abstract:** With the emergence and the widespread use of big data, more industries gain the strong radiation effect from it, which also brings new opportunities for the development of B2C e-commerce, and the transformation of its marketing mode is more significant. In the new competitive environment, B2C e-commerce market has experienced a change from extensive sales to precise marketing. How enterprises can constantly accurately match the characteristics of its products or services with consumers, and always maintain a relatively stable customer group size and structure, not only depends on the characteristics of its products or services, but also depends on precision marketing. This paper mainly studies precision marketing of B2C e-commerce enterprises using data mining to analyze valuable information from consumers, and make specific analysis on Jingdong Mall. Research on precision marketing strategies of e-commerce enterprises has practical application value. © Springer Nature Singapore Pte Ltd. 2020.

**Number of references:** 10

**Main heading:** Marketing

**Controlled terms:** Advanced Analytics  -  Big data  -  Data mining  -  Electronic commerce  -  Embedded systems  -  Metadata  -  Smart city

**Uncontrolled terms:** B2C e-commerce  -  Business to Consumer  -  Competitive environment  -  E-commerce enterprise  -  Group size  -  Jingdong  -  Precision marketings

**Classification code:** 723.2 Data Processing and Image Processing  -  723.5 Computer Applications  -  911.4 Marketing

**DOI:** 10.1007/978-981-15-2568-1\_100

**Funding Details:** Number: XXKPY1606, Acronym: -, Sponsor: -;

**Funding text:** This work was supported by Gaoyuan Discipline of Shanghai?Environ-mental Science and Engineering (Resource Recycling Science and Engineering), Discipline of Management Science and Engineering of Shanghai Polytechnic University (Grant No. XXKPY1606) and Construction of Ideological Education System for E-commerce Major (Grant No. ZZEGD19021).

**Compendex references:** YES

**Database:** Compendex

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**Data Provider:** Engineering Village

**77. Hydrogel-based colloidal photonic crystal devices for glucose sensing    (*Open Access*)**

**Accession number:** 20201508380036

**Authors:** Tang, Wenwei (1); Chen, Cheng (2, 3)

**Author affiliation:** (1) Modern Service Department, College of International Vocational Education, Shanghai Polytechnic University, Shanghai; 201209, China; (2) School of Environmental and Materials Engineering, College of Engineering, Shanghai Polytechnic University, Shanghai; 201209, China; (3) Research Center of Resource Recycling Science and Engineering, Shanghai Polytechnic University, Shanghai; 201209, China

**Corresponding author:** Chen, Cheng(chencheng@sspu.edu.cn)

**Source title:** Polymers

**Abbreviated source title:** Polym.

**Volume:** 12

**Issue:** 3

**Issue date:** March 1, 2020

**Publication year:** 2020

**Article number:** 625

**Language:** English

**E-ISSN:** 20734360

**Document type:** Journal article (JA)

**Publisher:** MDPI AG, Postfach, Basel, CH-4005, Switzerland

**Abstract:** Diabetes, a common epidemic disease, is increasingly hazardous to human health. Monitoring body glucose concentrations for the prevention and therapy of diabetes has become very important. Hydrogel-based responsive photonic crystal (PC) materials are noninvasive options for glucose detection. This article reviews glucose-sensing materials/devices composed of hydrogels and colloidal photonic crystals (CPCs), including the construction of 2D/3D CPCs and 2D/3D hydrogel-based CPCs (HCPCs). The development and mechanisms of glucose-responsive hydrogels and the achieved technologies of HCPC glucose sensors were also concluded. This review concludes by showing a perspective for the future design of CPC glucose biosensors with functional hydrogels. © 2020 by the authors.

**Number of references:** 108

**Main heading:** Glucose

**Controlled terms:** Glucose sensors  -  Hydrogels  -  Photonic crystals

**Uncontrolled terms:** Colloidal crystals  -  Colloidal photonic crystals  -  Epidemic disease  -  Glucose biosensor  -  Glucose concentration  -  Glucose detection  -  Glucose sensing  -  Glucose-responsive

**Classification code:** 462.1 Biomedical Equipment, General  -  804 Chemical Products Generally  -  804.1 Organic Compounds

**DOI:** 10.3390/polym12030625

**Funding Details:** Number: EGD19XQD03, Acronym: -, Sponsor: -;

**Funding text:** Funding: This work was supported by the key subject of Shanghai Polytechnic University (XXKZD1601, EGD19XQD03).

**Compendex references:** YES

**Database:** Compendex

Compilation and indexing terms, Copyright 2020 Elsevier Inc.

**Data Provider:** Engineering Village

**78. A new fatigue damage accumulation rating life model of ball bearings under vibration load**

**Accession number:** 20202208762864

**Authors:** Cui, Li (1)

**Author affiliation:** (1) Faculty of Engineering, Shanghai Polytechnic University, Shanghai, China

**Corresponding author:** Cui, Li(mechcui@163.com)

**Source title:** Industrial Lubrication and Tribology

**Abbreviated source title:** Ind Lubr Tribol

**Issue date:** 2020

**Publication year:** 2020

**Language:** English

**ISSN:** 00368792

**CODEN:** ILTRA7

**Document type:** Article in Press

**Publisher:** Emerald Group Publishing Ltd., Howard House, Wagon Lane, Bingley, BD16 1WA, United Kingdom

**Abstract:** Purpose: Bearings in electric machines often work in high speed, light load and vibration load conditions. The purpose of this paper is to find a new fatigue damage accumulation rating life model of ball bearings, which is expected for calculating fatigue life of ball bearings more accurately under vibration load, especially in high speed and light load conditions. Design/methodology/approach: A new fatigue damage accumulation rating life model of ball bearings considering time-varying vibration load is proposed. Vibration equations of rotor-bearing system are constructed and solved by Runge–Kutta method. The modified rating life and modified reference rating life model under vibration load is also proposed. Contrast of the three fatigue life models and the influence of dynamic balance level, rotating speed, preload of ball bearings on bearing’s fatigue life are analyzed. Findings: To calculate fatigue rating life of ball bearings more accurately under vibration load, especially in high speed and light load conditions, the fatigue damage accumulation rating life model should be considered. The optimum preload has an obvious influence on fatigue rating life. Originality/value: This paper used analytical method and model that is helpful for design of steel ball bearing in high speed, light load and vibration load conditions. Peer review: The peer review history for this article is available at: https://publons.com/publon/10.1108/ILT-05-2019-0180/. © 2020, Li Cui.

**Number of references:** 27

**Main heading:** Vibration analysis

**Controlled terms:** Ball bearings  -  Fatigue damage  -  Runge Kutta methods  -  Speed

**Uncontrolled terms:** Analytical method  -  Design/methodology/approach  -  Dynamic balance  -  Fatigue damage accumulation  -  Fatigue life model  -  Rotor-bearing system  -  Vibration equations  -  Vibration loads

**Classification code:** 601.2 Machine Components  -  921.6 Numerical Methods  -  951 Materials Science

**DOI:** 10.1108/ILT-05-2019-0180

**Funding Details:** Number: XXKZD1601, Acronym: -, Sponsor: -; Number: 51675323, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;

**Funding text:** This work was financially supported by the National Natural Science Foundation of China (No. 51675323), The key subject of Shanghai Polytechnic University (Material Science and Engineering, XXKZD1601).

**Compendex references:** YES

**Database:** Compendex

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**Data Provider:** Engineering Village

**79. Research on Fault Diagnosis of External Short Circuit of Lithium Battery for Electric Vehicle    (*Open Access*)**

**Accession number:** 20201408376949

**Authors:** Liu, Changchun (1); Wu, Tao (1); He, Cheng (2)

**Author affiliation:** (1) School of Environmental and Material Engineering, Shanghai Polytechnic University, Shanghai; 201209, China; (2) School of Intelligent Manufacturing and Control Engineering, Shanghai Polytechnic University, Shanghai; 201209, China

**Source title:** IOP Conference Series: Earth and Environmental Science

**Abbreviated source title:** IOP Conf. Ser. Earth Environ. Sci.

**Volume:** 440

**Part number:** 3 of 5

**Issue:** 3

**Issue title:** 2019 5th International Conference on Environmental Science and Material Application - Energy Science and Power Engineering

**Issue date:** March 18, 2020

**Publication year:** 2020

**Article number:** 032106

**Language:** English

**ISSN:** 17551307

**E-ISSN:** 17551315

**Document type:** Conference article (CA)

**Conference name:** 2019 5th International Conference on Environmental Science and Material Application, ESMA 2019

**Conference date:** December 15, 2019 - December 16, 2019

**Conference location:** Xi’an, China

**Conference code:** 158435

**Publisher:** Institute of Physics Publishing

**Abstract:** This study conducted an experimental study on the external short circuit (ESC) fault characteristics of lithium-ion batteries for electric vehicles. An experimental platform was established to simulate the electrical behavior of lithium batteries during ESC failure using a modified first-order RC model. The model parameters are reidentified by the dynamic neighborhood particle swarm optimization algorithm. An ESC fault diagnosis algorithm based on two-layer model is proposed. The first layer performs initial fault detection and the second layer performs accurate model-based diagnostics. The four new units are shorted to evaluate the proposed algorithm. The results show that the ESC fault can be diagnosed within 5 s, and the error between the model and the measured data is less than 0.36 V. The proposed algorithm can make a correct diagnosis. © 2020 Published under licence by IOP Publishing Ltd.

**Number of references:** 2

**Main heading:** Fault detection

**Controlled terms:** Automotive batteries  -  Electric fault currents  -  Electric vehicles  -  Failure analysis  -  Lithium-ion batteries  -  Particle swarm optimization (PSO)  -  Timing circuits

**Uncontrolled terms:** Accurate modeling  -  Diagnosis algorithms  -  Dynamic neighborhood  -  Electrical behaviors  -  Experimental platform  -  External short circuits  -  Fault characteristics  -  Particle swarm optimization algorithm

**Classification code:** 701.1 Electricity: Basic Concepts and Phenomena  -  713.4 Pulse Circuits  -  723 Computer Software, Data Handling and Applications

**Numerical data indexing:** Time 5.00e+00s, Voltage 3.60e-01V

**DOI:** 10.1088/1755-1315/440/3/032106

**Funding Details:** Number: EGD18YJ0003, Acronym: -, Sponsor: -;

**Funding text:** This work was financially supported by Shanghai Polytechnic University Graduate Program Fund (EGD18YJ0003).

**Compendex references:** YES

**Database:** Compendex

Compilation and indexing terms, Copyright 2020 Elsevier Inc.

**Data Provider:** Engineering Village

**80. Mesoporous CuO with full spectrum absorption for photothermal conversion in direct absorption solar collectors**

**Accession number:** 20201208317294

**Authors:** Zhang, Hongyun (1, 2); Wang, Kongxiang (1); Wang, Lingling (1, 2); Xie, Huaqing (1); Yu, Wei (1, 3)

**Author affiliation:** (1) School of Environmental and Materials Engineering, College of Engineering, Shanghai Polytechnic University, Shanghai; 201209, China; (2) Research Center of Resource Recycling Science and Engineering, Shanghai Polytechnic University, Shanghai; 201209, China; (3) College of Engineering, Shanghai Key Laboratory of Engineering Materials Application and Evaluation, Shanghai Polytechnic University, Shanghai; 201209, China

**Corresponding author:** Wang, Lingling(llwang@sspu.edu.cn)

**Source title:** Solar Energy

**Abbreviated source title:** Sol. Energy

**Volume:** 201

**Issue date:** 1 May 2020

**Publication year:** 2020

**Pages:** 628-637

**Language:** English

**ISSN:** 0038092X

**CODEN:** SRENA4

**Document type:** Journal article (JA)

**Publisher:** Elsevier Ltd

**Abstract:** Many semiconductors with broad solar spectrum absorption have always been pursuing for the effective photothermal conversion process. However, it is still a challenge to modulate the structural and bandgap of semiconductors to enhance the photothermal activity synergistically. In this work, facile prepared mesoporous CuO displays a narrower bandgap than non-porous CuO, leading to highly efficient solar-thermal conversion. Mesoporous CuO shows obvious broad and strong optical absorption, especially in the visible light region. It is noteworthy that the mesoporous CuO nanofluids exhibit good dispersibility in water. Different concentrations of mesoporous CuO nanofluids have higher temperature rise than non-porous CuO nanofluids. The photothermal conversion efficiency of 50 ppm mesoporous CuO/water nanofluid is 83.66%, compared with 58.86% for 50 ppm CuO/water nanofluid. Mesoporous CuO will bring a new paradigm for mesoporous metal oxide nanofluids as working fluids in direct absorption solar collectors. © 2020 International Solar Energy Society

**Number of references:** 42

**Main heading:** Copper oxides

**Controlled terms:** Absorption spectroscopy  -  Energy gap  -  Light absorption  -  Mesoporous materials  -  Metal working  -  Metals  -  Nanofluidics  -  Solar collectors  -  Solar energy  -  Working fluids

**Uncontrolled terms:** CuO/water nanofluid  -  Mesoporous  -  Mesoporous metal oxides  -  Nanofluids  -  Photo-thermal conversions  -  Photothermal conversion efficiencies  -  Solar thermal conversion  -  Visible light region

**Classification code:** 535.2.2 Metal Forming Practice  -  657.1 Solar Energy and Phenomena  -  741.1 Light/Optics  -  761 Nanotechnology  -  804.2 Inorganic Compounds

**Numerical data indexing:** Percentage 5.89e+01%, Percentage 8.37e+01%

**DOI:** 10.1016/j.solener.2020.03.047

**Funding Details:** Number: EGD19YJ0033, Acronym: -, Sponsor: -; Number: 17ZR1411000, Acronym: -, Sponsor: Natural Science Foundation of Shanghai; Number: 51590901, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;

**Funding text:** This work is supported by National Natural Science Foundation of China ( 51906132 & 51590901 & 51876112 ), Shanghai Municipal Natural Science Foundation (Grant No. 17ZR1411000 ), the Key Subject of Shanghai Polytechnic University (Material Science and engineering, Grant Nos. XXKZD1601 and EGD19XQD05 ), the Graduate Program Foundation of Shanghai Polytechnic University ( EGD19YJ0033 ).

**Compendex references:** YES

**Database:** Compendex

Compilation and indexing terms, Copyright 2020 Elsevier Inc.

**Data Provider:** Engineering Village

**81. Interface improvement of carbon fiber/PMMA resin composites by fiber surface coating**

**Accession number:** 20203909233112

**Authors:** Fengxu, Zhou (1)

**Author affiliation:** (1) School of Engineering, Shanghai Polytechnic University, Shanghai; 201209, China

**Corresponding author:** Fengxu, Zhou(zhoudongyut@163.com)

**Source title:** Indian Journal of Engineering and Materials Sciences

**Abbreviated source title:** Indian J. Eng. Mater. Sci.

**Volume:** 27

**Issue:** 3

**Issue date:** June 2020

**Publication year:** 2020

**Pages:** 616-622

**Language:** English

**ISSN:** 09714588

**E-ISSN:** 09751017

**Document type:** Journal article (JA)

**Publisher:** National Institute of Science Communication and Information Resources

**Abstract:** The surface of the carbon fiber (CF) has been pretreated by liquid phase deposition of microcrystalline cellulose (MCC). X-ray photoelectron spectroscopy, atomic force microscopy (AFM) and scanning electron microscopy (SEM) have been used to analyze and characterize the surface morphology and structure of carbon fiber, and the shear strength test and SEM observation of single fiber interface have been performed. The interfacial adhesion properties of carbon fiber composites have been investigated. The results have shown that the pretreated carbon fiber deposition increases the shear strength of the single fiber interface by 259.3%. The analysis results have shown that the improvement of interfacial shear strength has been related to the mechanical riveting between the fibers/resin and the force of the interface. Pretreatment has increased the carboxyl groups on the surface of carbon fibers and forms hydrogen bonds between carboxyl groups, thereby improving the interfacial properties of carbon fiber composites. © 2020, National Institute of Science Communication and Information Resources. All rights reserved.

**Number of references:** 24

**Main heading:** Fibers

**Controlled terms:** Atomic force microscopy  -  Cellulose  -  Deposition  -  Graphite fibers  -  Hydrogen bonds  -  Microcrystals  -  Morphology  -  Scanning electron microscopy  -  Surface morphology  -  X ray photoelectron spectroscopy

**Uncontrolled terms:** Carbon fiber composite  -  Interfacial adhesions  -  Interfacial property  -  Interfacial shear strength  -  Liquid phase depositions (LPD)  -  Microcrystalline cellulose  -  Morphology and structures  -  Shear strength tests

**Classification code:** 741.3 Optical Devices and Systems  -  801.4 Physical Chemistry  -  802.3 Chemical Operations  -  811.3 Cellulose, Lignin and Derivatives  -  933.1 Crystalline Solids  -  951 Materials Science

**Numerical data indexing:** Percentage 2.59e+02%

**Compendex references:** YES

**Database:** Compendex

Compilation and indexing terms, Copyright 2020 Elsevier Inc.

**Data Provider:** Engineering Village

**82. A hybrid teaching reform scheme of compiler technology course based on Engineering Education**

**Accession number:** 20203909245425

**Authors:** Wang, Na (1); Li, Liping (1)

**Author affiliation:** (1) Shanghai Polytechnic University, NO.2360, Jinhai RD, Shanghai, China

**Source title:** ACM International Conference Proceeding Series

**Abbreviated source title:** ACM Int. Conf. Proc. Ser.

**Part number:** 1 of 1

**Issue title:** Proceedings of the 5th International Conference on Information and Education Innovations, ICIEI 2020

**Issue date:** July 26, 2020

**Publication year:** 2020

**Pages:** 16-19

**Language:** English

**ISBN-13:** 9781450375757

**Document type:** Conference article (CA)

**Conference name:** 5th International Conference on Information and Education Innovations, ICIEI 2020

**Conference date:** July 26, 2020 - July 28, 2020

**Conference location:** London, Virtual, United kingdom

**Conference code:** 162622

**Sponsor:** Middlesex University, London, School of Computing Science

**Publisher:** Association for Computing Machinery, 2 Penn Plaza, Suite 701, New York, NY 10121-0701, United States

**Abstract:** Combined with our school’s orientation as an application-oriented undergraduate college, we have carried out theoretical and experimental teaching reform and exploration on compiler technology course. Considering the professional requirements of engineering education certification, with the help of various forms of online resources, we put forward a hybrid teaching reform scheme of compiling technology course. The test results show that teaching reform on this course has a great advantage in learning. © 2020 ACM.

**Number of references:** 10

**Main heading:** Engineering education

**Controlled terms:** Program compilers  -  Teaching

**Uncontrolled terms:** Application-oriented  -  Compiler technology  -  Experimental teachings  -  Online resources  -  Teaching reforms

**Classification code:** 901.2 Education

**DOI:** 10.1145/3411681.3411695

**Funding Details:** Number: XXKZD1604, Acronym: -, Sponsor: -;

**Funding text:** This work is supported by Key Disciplines of Computer Science and Technology of Shanghai Polytechnic University under Grant No. XXKZD1604 and Construction of Key Courses in Shanghai under Grant No. A01GY20G013. The authors would like to thank the referees for their invaluable comments and suggestions.

**Compendex references:** YES

**Database:** Compendex

Compilation and indexing terms, Copyright 2020 Elsevier Inc.

**Data Provider:** Engineering Village

**83. Novel image detector of fixed-valued impulse noise with high noise intensity**

**Accession number:** 20201208329231

**Authors:** Hu, Haijiang (1); Song, Shaojing (1); Gan, Weifei (1)

**Author affiliation:** (1) College of Engineering, Shanghai Polytechnic University, Shanghai; 201209, China

**Corresponding author:** Song, Shaojing(hjhu@sspu.edu.cn)

**Source title:** MATEC Web of Conferences

**Abbreviated source title:** MATEC Web Conf.

**Volume:** 309

**Part number:** 1 of 1

**Issue title:** 2019 International Conference on Computer Science Communication and Network Security, CSCNS 2019

**Issue date:** March 4, 2020

**Publication year:** 2020

**Article number:** 03032

**Language:** English

**ISSN:** 22747214

**E-ISSN:** 2261236X

**Document type:** Conference article (CA)

**Conference name:** 2019 International Conference on Computer Science Communication and Network Security, CSCNS 2019

**Conference date:** December 22, 2019 - December 23, 2019

**Conference location:** Sanya, China

**Conference code:** 158071

**Publisher:** EDP Sciences

**Abstract:** Impulse noise is a common noise in digital image processing, which includes the fixed-valued impulse noise and the random-valued impulse noise. A novel method is proposed to detect the fix-value impulse that uses the deviation of slant angle as test object to recognize whether a noise candidate is impulse noise pixel. Distinguishing the average method and medium method, the method uses the new test object to detect the impulse noise. The mathematical model and the detection algorithm of this method are stated and analyzed, and the experiments show the performance of this method under the different circumstance. The biggest advantage of this method is to detect the fixed-valued impulse noise correctly and robustly under the different noise intensity that is up to 0.95. © The Authors, published by EDP Sciences, 2020.

**Number of references:** 7

**Main heading:** Impulse noise

**Controlled terms:** Computer networks  -  Network security  -  Object detection

**Uncontrolled terms:** Average method  -  Detection algorithm  -  Image detector  -  Noise detectors  -  Noise intensities  -  Pepper noise  -  Random-valued impulse noise  -  Slant angle

**Classification code:** 723 Computer Software, Data Handling and Applications  -  723.2 Data Processing and Image Processing

**DOI:** 10.1051/matecconf/202030903032

**Compendex references:** YES

**Database:** Compendex

Compilation and indexing terms, Copyright 2020 Elsevier Inc.

**Data Provider:** Engineering Village

**84. Well oil dispersed Au/oxygen-deficient TiO2 nanofluids towards full spectrum solar thermal conversion**

**Accession number:** 20201908613197

**Authors:** Wang, Lingling (1, 2); Wang, Min (1, 2); Xu, Zhongping (1, 2); Yu, Wei (1, 3); Xie, Huaqing (1, 2)

**Author affiliation:** (1) School of Environmental and Materials Engineering, College of Engineering, Shanghai Polytechnic University, Shanghai; 201209, China; (2) Research Center of Resource Recycling Science and Engineering, Shanghai Polytechnic University, Shanghai; 201209, China; (3) Shanghai Key Laboratory of Engineering Materials Application and Evaluation, College of Engineering, Shanghai Polytechnic University, Shanghai; 201209, China

**Corresponding author:** Yu, Wei(yuwei@sspu.edu.cn)

**Source title:** Solar Energy Materials and Solar Cells

**Abbreviated source title:** Sol Energ Mater Sol Cells

**Volume:** 212

**Issue date:** 1 August 2020

**Publication year:** 2020

**Article number:** 110575

**Language:** English

**ISSN:** 09270248

**CODEN:** SEMCEQ

**Document type:** Journal article (JA)

**Publisher:** Elsevier B.V.

**Abstract:** Harvesting full spectrum sunlight for direct absorption solar collectors (DASCs) has attracted extensive attention and a number of potential nanofluids have been reported. In the current work, oxygen-deficient TiO2 (TiO2-x) improves the defects of conventional TiO2, making it fascinating optical absorption in the full solar spectrum. In the current work, oxygen-deficient TiO2 is obtained by NaBH4-reduction. The lower the reduction temperature is, the poorer the full solar absorption possesses. 600 °C is an appropriate reducing temperature from the results of XRD and UV–Vis–NIR. TiO2-x is stably dispersed in two oil system (heat transfer oil and silicone oil), leading to good medium-temperature solar thermal conversion. Au nanoparticles can further enhance the full solar absorption of oxygen-deficient TiO2. The highest temperature can be arrived at 91 °C for 100 ppm 5% Au/TiO2-x, 26.6 °C higher than base silicone oil. The excellent full solar absorption properties of TiO2-x and Au/TiO2-x in oil nanofluids bring new paradigms for working fluids in DASCs with medium temperatures. © 2020

**Number of references:** 43

**Main heading:** Nitrogen compounds

**Controlled terms:** Absorption spectroscopy  -  Gold compounds  -  Gold nanoparticles  -  Light absorption  -  Nanofluidics  -  Oxygen  -  Silicones  -  Sodium Borohydride  -  Solar heating  -  TiO2 nanoparticles   -  Titanium dioxide  -  Working fluids

**Uncontrolled terms:** Direct absorption  -  Highest temperature  -  Medium temperature  -  Oxygen deficient  -  Reducing temperature  -  Reduction temperatures  -  Solar absorption  -  Solar thermal conversion

**Classification code:** 657.1 Solar Energy and Phenomena  -  741.1 Light/Optics  -  761 Nanotechnology  -  804 Chemical Products Generally  -  804.2 Inorganic Compounds  -  815.1.1 Organic Polymers

**Numerical data indexing:** Temperature 3.00e+02K, Temperature 3.64e+02K, Temperature 8.73e+02K

**DOI:** 10.1016/j.solmat.2020.110575

**Funding Details:** Number: EGD18YJ0051, Acronym: -, Sponsor: -; Number: 17ZR1411000, Acronym: -, Sponsor: Natural Science Foundation of Shanghai; Number: 51590901, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;

**Funding text:** This work is supported by National Natural Science Foundation of China ( 51906132 & 51590901 & 51876112 ), Shanghai Municipal Natural Science Foundation (Grant No. 17ZR1411000 ), the Key Subject of Shanghai Polytechnic University (Material Science and engineering, Grant Nos. XXKZD1601 and EGD19XQD05 ), the Graduate Program Foundation of Shanghai Polytechnic University ( EGD18YJ0051 ).

**Compendex references:** YES

**Database:** Compendex

Compilation and indexing terms, Copyright 2020 Elsevier Inc.

**Data Provider:** Engineering Village

**85. Prediction of Egional Temperature Change Trend Based on LSTM Algorithm**

**Accession number:** 20202408820572

**Authors:** Wu, Tao (1); Liu, Changchun (1); He, Cheng (1)

**Author affiliation:** (1) Mechanical Intelligence Manufacturing Institute, Shanghai Polytechnic University, Shanghai, China

**Source title:** Proceedings of 2020 IEEE 4th Information Technology, Networking, Electronic and Automation Control Conference, ITNEC 2020

**Abbreviated source title:** Proc. IEEE Inf. Technol., Netw., Electron. Autom. Control Conf., ITNEC

**Part number:** 1 of 1

**Issue title:** Proceedings of 2020 IEEE 4th Information Technology, Networking, Electronic and Automation Control Conference, ITNEC 2020

**Issue date:** June 2020

**Publication year:** 2020

**Pages:** 62-66

**Article number:** 9084842

**Language:** English

**ISBN-13:** 9781728143903

**Document type:** Conference article (CA)

**Conference name:** 4th IEEE Information Technology, Networking, Electronic and Automation Control Conference, ITNEC 2020

**Conference date:** June 12, 2020 - June 14, 2020

**Conference location:** Chongqing, China

**Conference code:** 159655

**Sponsor:** Chengdu Global Union Academy of Science and Technology; Chongqing Geeks Education Technology Co., Ltd; Chongqing Global Union Academy of Science and Technology; Global Union Academy of Science and Technology; IEEE Beijing Section

**Publisher:** Institute of Electrical and Electronics Engineers Inc.

**Abstract:** In order to better predict the trend of temperature in future regions, a time recurrent neural network algorithm LSTM is proposed to predict regional temperature trends. This paper obtains temperature changes in Alberta, Quebec, and Saskatchewan, Canada. Based on the average temperature timing characteristics of each province, LSTM (long short-term memory) is used to analyze the provinces of Canada. Temperature and time trends of temperature and modelling, predicting temperature changes in future Canadian provinces; The results show that after the above model predicts the temperature change trend for the next three years, the predicted temperature change trend is almost consistent with the existing data, and the prediction accuracy is also relatively high. Therefore, the LSTM algorithm based on this paper can be applied to the prediction of regional temperature trends, and the prediction results and accuracy are very good, which has certain value and significance for real life. © 2020 IEEE.

**Number of references:** 10

**Main heading:** Long short-term memory

**Controlled terms:** Forecasting

**Uncontrolled terms:** Alberta  -  Almost consistent  -  Prediction accuracy  -  Saskatchewan , Canada  -  Temperature changes  -  Temperature trends  -  Time trends  -  Timing characteristics

**DOI:** 10.1109/ITNEC48623.2020.9084842

**Funding text:** ACKNOWLEDGMENT This paper is supported by the “Mechanical Engineering” school-level key discipline construction project (No. XXKZD1603) of Shanghai Polytechnic University.

**Compendex references:** YES

**Database:** Compendex

Compilation and indexing terms, Copyright 2020 Elsevier Inc.

**Data Provider:** Engineering Village

**86. The integrable property of a higher-order Zakharov–Shabat hierarchy**

**Accession number:** 20201108289225

**Authors:** Luo, Lin (1)

**Author affiliation:** (1) Department of Mathematics, Shanghai Polytechnic University, Shanghai; 201209, China

**Source title:** Applied Mathematics Letters

**Abbreviated source title:** Appl Math Lett

**Volume:** 105

**Issue date:** July 2020

**Publication year:** 2020

**Article number:** 106323

**Language:** English

**ISSN:** 08939659

**E-ISSN:** 18735452

**CODEN:** AMLEEL

**Document type:** Journal article (JA)

**Publisher:** Elsevier Ltd

**Abstract:** In this letter, we derive the isospectral and nonisospectral soliton hierarchies of a higher-order Zakharov–Shabat spectral problem where nonlinear Schrödinger equation and modified KdV equation are included. Furthermore, it is discussed that the new integrable properties are found about the higher-order Zakharov–Shabat hierarchy, including the master symmetry and the time dependent symmetry. © 2020

**Number of references:** 19

**Main heading:** Nonlinear equations

**Controlled terms:** Mathematical techniques

**Uncontrolled terms:** Dinger equation  -  Higher-order  -  Integrable property  -  KdV equations  -  Master symmetries  -  Soliton hierarchy  -  Spectral problem  -  Time dependent

**DOI:** 10.1016/j.aml.2020.106323

**Funding Details:** Number: 11371244, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;

**Funding text:** The author thanks Professor George Bluman for his constructive discussion and helpful suggestions. This work is supported by grants from the National Science Foundation of China (Grant No. 11371244 ) and the Applied Mathematical Subject of SSPU, China (Grant No. XXKPY1604 ).

**Compendex references:** YES

**Database:** Compendex

Compilation and indexing terms, Copyright 2020 Elsevier Inc.

**Data Provider:** Engineering Village

**87. Commodity Sales Data Analysis Based on Qoo10 Platform**

**Accession number:** 20200808204692

**Authors:** Yang, Yunle (2); Pan, Hailan (1, 2); Xiang, Jiaqi (2)

**Author affiliation:** (1) Research Center of Resource Recycling Science and Engineering, Shanghai Polytechnic University, 2360 Jinhai Road, Pudong, Shanghai, China; (2) School of Economics and Management, Shanghai Polytechnic University, 2360 Jinhai Road, Pudong, Shanghai, China

**Corresponding author:** Pan, Hailan(panhailan@sspu.edu.cn)

**Source title:** Advances in Intelligent Systems and Computing

**Abbreviated source title:** Adv. Intell. Sys. Comput.

**Volume:** 1088

**Part number:** 1 of 1

**Issue title:** Data Processing Techniques and Applications for Cyber-Physical Systems, DPTA 2019

**Issue date:** 2020

**Publication year:** 2020

**Pages:** 899-907

**Language:** English

**ISSN:** 21945357

**E-ISSN:** 21945365

**ISBN-13:** 9789811514678

**Document type:** Conference article (CA)

**Conference name:** International Conference on Data Processing Techniques and Applications for Cyber-Physical Systems, DPTA 2019

**Conference date:** November 15, 2019 - November 16, 2019

**Conference location:** Shanghai, China

**Conference code:** 237139

**Publisher:** Springer

**Abstract:** In recent years, many traditional trade practitioners have embraced electronization and digitization and enjoyed the convenience brought by technology. This paper takes Singapore as an example in the emerging Southeast Asian e-commerce market, based on the local mainstream e-commerce platform qoo10 to provide operational strategies for new commodities. Emphasis is laid on the monthly explosive Germa mini-dehumidifier as an example to study the operation strategy of commodity on-line initial stage, fierce competition period, heat cooling period, and provide data for the corresponding period as support. Finally, it gives suggestions for the new and old businesses and platform practitioners of qoo10, and summarizes the experience and lessons of the operation process. © 2020, Springer Nature Singapore Pte Ltd.

**Number of references:** 10

**Main heading:** Data handling

**Controlled terms:** Data reduction  -  Electronic commerce  -  Embedded systems  -  Humidity control  -  Information analysis

**Uncontrolled terms:** Click-through rate  -  Conversion rates  -  Cross-border  -  Electronization  -  Operation process  -  Operation strategy  -  Operational strategies  -  Qoo10

**Classification code:** 723.2 Data Processing and Image Processing  -  723.5 Computer Applications  -  903.1 Information Sources and Analysis

**DOI:** 10.1007/978-981-15-1468-5\_105

**Funding Details:**

**Funding text:** Acknowledgements The paper is supported in part by Gaoyuan Discipline of Shanghai–Environmental Science and Engineering (Resource Recycling Science and Engineering), Discipline of Management Science and Engineering of Shanghai Polytechnic University (Grant No. XXKPY1606).

**Compendex references:** YES

**Database:** Compendex

Compilation and indexing terms, Copyright 2020 Elsevier Inc.

**Data Provider:** Engineering Village

**88. Progress in molecular imprinted photonic crystals**

**Accession number:** 20202008654373

**Title of translation:**

**Authors:** Wang, Xiao-Hui (1); Chen, Gong (1); Dong, Zhi-Qiang (2); Zhu, Zhi-Gang (1, 2); Chen, Cheng (1)

**Author affiliation:** (1) School of Environmental and Materials Engineering, College of Engineering, Shanghai Polytechnic University, Shanghai; 201209, China; (2) Research Center of Resource Recycling Science and Engineering, Shanghai Polytechnic University, Shanghai; 201209, China

**Corresponding author:** Chen, Cheng(chencheng@sspu.edu.cn)

**Source title:** Cailiao Gongcheng/Journal of Materials Engineering

**Abbreviated source title:** Cailiao Gongcheng

**Volume:** 48

**Issue:** 4

**Issue date:** April 20, 2020

**Publication year:** 2020

**Pages:** 60-72

**Language:** Chinese

**ISSN:** 10014381

**CODEN:** CAGOEW

**Document type:** Journal article (JA)

**Publisher:** Beijing Institute of Aeronautical Materials (BIAM)

**Abstract:** Photonic crystal is a kind of ordered material which consists of two or more periodic arranged refractive index materials, and the propagation of light can be controlled by changing its average refractive index or lattice spacing. The molecularly imprinted photonic crystal chemical sensors based on the combination of responsive photonic crystal structure and molecular imprinting technique have attracted research interests due to their strong specificity, high sensitivity and self-expression ability, which also provide a novel strategy for the trace detection. In this review, the two- and three-dimensional photonic crystal sensor materials were introduced, and the preparation, properties and applications of molecular imprinted photonic crystal(MIPC) were reviewed. The future research focus such as the improvement of resolution and repeatability of MIPC visual detection materials was analyzed and prospected at last. © 2020, Journal of Materials Engineering. All right reserved.

**Number of references:** 108

**Main heading:** Photonic crystals

**Controlled terms:** Chemical detection  -  Crystal structure  -  Refractive index  -  Trace analysis

**Uncontrolled terms:** High sensitivity  -  Molecular imprinting techniques  -  Molecularly imprinted  -  Novel strategies  -  Propagation of lights  -  Research interests  -  Three dimensional photonic crystals  -  Visual detection

**Classification code:** 741.1 Light/Optics  -  801 Chemistry  -  933.1.1 Crystal Lattice

**DOI:** 10.11868/j.issn.1001-4381.2019.000539

**Compendex references:** YES

**Database:** Compendex

Compilation and indexing terms, Copyright 2020 Elsevier Inc.

**Data Provider:** Engineering Village

**89. 3D graphene nanofluids with high photothermal conversion and thermal transportation properties**

**Accession number:** 20201108293834

**Authors:** Bing, Naici (1, 2); Yang, Jie (1); Zhang, Yingchun (1); Yu, Wei (1); Wang, Lingling (1, 2); Xie, Huaqing (1)

**Author affiliation:** (1) School of Environmental and Materials Engineering, College of Engineering, Shanghai Polytechnic University, Shanghai; 201209, China; (2) Research Center of Resource Recycling Science and Engineering, Shanghai Polytechnic University, Shanghai; 201209, China

**Corresponding author:** Yu, Wei(yuwei@sspu.edu.cn)

**Source title:** Sustainable Energy and Fuels

**Abbreviated source title:** Sustain. Energy Fuels

**Volume:** 4

**Issue:** 3

**Issue date:** March 2020

**Publication year:** 2020

**Pages:** 1208-1215

**Language:** English

**E-ISSN:** 23984902

**Document type:** Journal article (JA)

**Publisher:** Royal Society of Chemistry

**Abstract:** Nanofluids as the working fluids enhance solar energy utilization significantly and have led to remarkable progress being made in direct absorption solar collectors (DASCs). In DASCs, nanofluids with better incident light absorption and heat-transfer properties are highly desired. In this study, high surface area and self-standing porous three-dimensional (3D) graphene was easily synthesized through a Ni2+-exchange/KOH activation combination method and then dispersing the product in ethylene glycol (EG) as nanofluids. The 3D graphene nanofluids showed greater optical absorption compared to EG in the 250-1400 nm wavelength range. The 3D graphene/EG nanofluids exhibited enhanced thermal conductivity compared with some reported results for graphene nanofluids. When the mass fraction of 3D graphene was 0.064%, the thermal conductivity enhancement was 11.67% at 20 °C. The photothermal conversion efficiency of nanofluids achieved 20% enhancement compared to that of EG. The enhanced photothermal properties of the nanofluids could be attributed to the special architectures of 3D graphene, which can prevent the aggregation of nanosheets and provide more thermal transfer tunnels as well as a longer light scattering distance. This work reveals that 3D graphene has a great application potential in solar thermal systems. This journal is © The Royal Society of Chemistry.

**Number of references:** 42

**Main heading:** Thermal conductivity of liquids

**Controlled terms:** Energy utilization  -  Ethylene  -  Ethylene glycol  -  Graphene  -  Heat transfer  -  Light absorption  -  Light scattering  -  Nanofluidics  -  Solar energy  -  Working fluids

**Uncontrolled terms:** Enhanced thermal conductivity  -  Heat transfer properties  -  Photo-thermal conversions  -  Photothermal conversion efficiencies  -  Photothermal properties  -  Thermal conductivity enhancement  -  Thermal transportations  -  Threedimensional (3-d)

**Classification code:** 525.3 Energy Utilization  -  641.1 Thermodynamics  -  641.2 Heat Transfer  -  657.1 Solar Energy and Phenomena  -  741.1 Light/Optics  -  761 Nanotechnology  -  804 Chemical Products Generally  -  804.1 Organic Compounds

**Numerical data indexing:** Percentage 1.17e+01%, Percentage 2.00e+01%, Percentage 6.40e-02%, Size 2.50e-07m to 1.40e-06m, Temperature 2.93e+02K

**DOI:** 10.1039/c9se00866g

**Funding Details:** Number: XXKZD1601, Acronym: -, Sponsor: -; Number: 17ZR1411000, Acronym: -, Sponsor: Natural Science Foundation of Shanghai; Number: 51590901, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;

**Funding text:** This work was supported by National Natural Science Foundation of China (No. 51590901, 51676103, 51906132), Natural Science Foundation of Shanghai (Grant No. 17ZR1411000) and the Key Subject of Shanghai Polytechnic University (Material Science, XXKZD1601) and Gaoyuan Discipline of Shanghai – Environmental Science and Engineering (Resource Recycling Science and Engineering).

**Compendex references:** YES

**Database:** Compendex

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**Data Provider:** Engineering Village

**90. A constant time complexity spam detection algorithm for boosting throughput on rule-based filtering systems    (*Open Access*)**

**Accession number:** 20202108698024

**Authors:** Xia, Tian (1)

**Author affiliation:** (1) Computer and Information Engineering Department, Shanghai Polytechnic University, Shanghai; 201209, China

**Corresponding author:** Xia, Tian(xiatian@sspu.edu.cn)

**Source title:** IEEE Access

**Abbreviated source title:** IEEE Access

**Volume:** 8

**Issue date:** 2020

**Publication year:** 2020

**Pages:** 82653-82661

**Article number:** 9081901

**Language:** English

**E-ISSN:** 21693536

**Document type:** Journal article (JA)

**Publisher:** Institute of Electrical and Electronics Engineers Inc.

**Abstract:** Along with the barbarous growth of spams, anti-spam technologies including rule-based approaches and machine-learning thrive rapidly as well. In antispam industry, the rule-based systems (RBS) becomes the most prominent methods for fighting spam due to its capability to enrich and update rules remotely. However, the antispam filtering throughput is always a great challenge of RBS. Especially, the explosively spreading of obfuscated words leads to frequent rule update and extensive rule vocabulary expansion. These incremental obfuscated words make the filtering speed slow down and the throughput decrease. This paper addresses the challenging throughput issue and proposes a constant time complexity rule-based spam detection algorithm. The algorithm has a constant processing speed, which is independent of rule and its vocabulary size. A new special data structure, namely, Hash Forest, and a rule encoding method are developed to make constant time complexity possible. Instead of traversing each spam term in rules, the proposed algorithm manages to detect spam terms by checking a very small portion of all terms. The experiment results show effectiveness of proposed algorithm. © 2013 IEEE.

**Number of references:** 30

**Main heading:** Computational complexity

**Controlled terms:** Signal detection

**Uncontrolled terms:** Anti spam technology  -  Anti-spam filtering  -  Constant time complexity  -  Encoding methods  -  Filtering systems  -  Processing speed  -  Vocabulary expansions  -  Vocabulary size

**Classification code:** 716.1 Information Theory and Signal Processing  -  721.1 Computer Theory, Includes Formal Logic, Automata Theory, Switching Theory, Programming Theory

**DOI:** 10.1109/ACCESS.2020.2991328

**Funding Details:**

**Funding text:** This work was supported in part by the Key Disciplines of Computer Science and Technology of Shanghai Polytechnic University under Grant No. xxkzd1604.

**Compendex references:** YES

**Database:** Compendex

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**Data Provider:** Engineering Village

**91. Innovation of financial shared service center based on artificial intelligence**

**Accession number:** 20200808196598

**Authors:** Zhang, Yanchang (1, 2)

**Author affiliation:** (1) College of International Vocational Education, Shanghai; 201209, China; (2) Shanghai Polytechnic University, Shanghai; 201209, China

**Corresponding author:** Zhang, Yanchang(yczhang@sspu.edu.cn)

**Source title:** Advances in Intelligent Systems and Computing

**Abbreviated source title:** Adv. Intell. Sys. Comput.

**Volume:** 1117 AISC

**Part number:** 1 of 1

**Issue title:** Big Data Analytics for Cyber-Physical System in Smart City, BDCPS 2019

**Issue date:** 2020

**Publication year:** 2020

**Pages:** 1110-1116

**Language:** English

**ISSN:** 21945357

**E-ISSN:** 21945365

**ISBN-13:** 9789811525674

**Document type:** Conference article (CA)

**Conference name:** 1st International Conference on Big Data Analytics for Cyber-Physical System in Smart City, BDCPS 2019

**Conference date:** December 28, 2019 - December 29, 2019

**Conference location:** Shenyang, China

**Conference code:** 236369

**Publisher:** Springer

**Abstract:** With the development of the global economy and the further improvement of artificial intelligence research, the relationship between artificial intelligence and finance is increasingly close. The booming financial sharing services have greatly improved the efficiency of relevant financial work. At present, the global financial sharing service platform has excellent performance in reducing labor cost and improving operation efficiency, but it has not fully exerted the function of creating value of financial work. The establishment of financial sharing requires a large amount of data research, which requires the help of artificial intelligence to carry out relevant data statistics. Using big data and artificial intelligence technology to improve the financial sharing service platform can further liberate human resources and promote capital integration, which is an important way for the financial sharing service center to play its role in creating value. Finally, the improvement work should properly deal with the balance between centralization and decentralization, actively extend the business and expand the professional skills of financial personnel. However, we must see its two sides in the development process and avoid the problems in the research. © Springer Nature Singapore Pte Ltd. 2020.

**Number of references:** 10

**Main heading:** Data Sharing

**Controlled terms:** Advanced Analytics  -  Artificial intelligence  -  Big data  -  Efficiency  -  Embedded systems  -  Finance  -  Smart city  -  Wages

**Uncontrolled terms:** Artificial intelligence research  -  Artificial intelligence technologies  -  Centralization and decentralizations  -  Development process  -  Financial sharing  -  Operation efficiencies  -  Operational efficiencies  -  Shared service center

**Classification code:** 723.2 Data Processing and Image Processing  -  723.4 Artificial Intelligence  -  912.4 Personnel  -  913.1 Production Engineering

**DOI:** 10.1007/978-981-15-2568-1\_153

**Compendex references:** YES

**Database:** Compendex

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**Data Provider:** Engineering Village

**92. One-step in situ controllable synthesis of MnFe2O4/rGO nanocomposite and its application to electrochemical sensing of hydrogen peroxide    (*Open Access*)**

**Accession number:** 20202008650330

**Authors:** Zhao, Xueling (1, 2); Xie, Beilei (1); Li, Zhanhong (1, 2); Chen, Cheng (1, 2); Zhu, Zhigang (1, 2)

**Author affiliation:** (1) School of Environmental and Materials Engineering, College of Engineering, Shanghai Polytechnic University, 2360 Jinhai Road, Shanghai; 201209, China; (2) Research Center of Resource Recycling Science and Engineering, Shanghai Polytechnic University, 2360 Jinhai Road, Shanghai; 201209, China

**Corresponding author:** Zhu, Zhigang(zgzhu@sspu.edu.cn)

**Source title:** Sensors and Materials

**Abbreviated source title:** Sens. Mater.

**Volume:** 32

**Issue:** 3

**Issue date:** 2020

**Publication year:** 2020

**Pages:** 1091-1099

**Language:** English

**ISSN:** 09144935

**Document type:** Journal article (JA)

**Publisher:** M Y U Scientific Publishing Division

**Abstract:** In this work, we prepared a reduced graphene oxide (rGO)-supported manganese ferrite (MnFe2O4) hybrid material by a simple one-pot solvothermal synthesis method, using graphite oxide (GO) and metal ions (Fe3+, Mn2+) as raw materials. The reduction of GO and the in situ formation of MnFe2O4 nanoparticles were simultaneously achieved during the synthesis. The properties of MnFe2O4/rGO were characterized by scanning electron microscopy, powder X-ray diffraction, Fourier-transform infrared spectroscopy, and energy-dispersive X-ray spectrometry. The electrochemical characterizations of the resulting sensor were carried out by cyclic voltammetry and chronoamperometry. The results of electrochemical experiments show that the composite has improved hydrogen peroxide (H2O2) reduction performance. The linear range of the as-prepared sensor for H2O2 detection is 0.025 to 1.5 mM, with a detection limit of 0.796 μM (S/N = 3) and a response time of less than 4 s. In this paper, an effective, economical, and green experimental method for the synthesis of metal-oxide/graphene nanocomposites is proposed. © 2020 M Y U Scientific Publishing Division. All rights reserved.

**Number of references:** 30

**Main heading:** Manganese compounds

**Controlled terms:** Chronoamperometry  -  Cyclic voltammetry  -  Fourier transform infrared spectroscopy  -  Graphene oxide  -  Hybrid materials  -  Hydrogen peroxide  -  Iron compounds  -  Metal ions  -  Metals  -  Oxidation   -  Peroxides  -  Reduced Graphene Oxide  -  Reduction  -  Scanning electron microscopy  -  Synthesis (chemical)

**Uncontrolled terms:** Controllable synthesis  -  Electrochemical characterizations  -  Electrochemical experiments  -  Electrochemical sensing  -  Energy dispersive X-ray spectrometry  -  Powder X ray diffraction  -  Reduced graphene oxides (RGO)  -  Solvothermal synthesis

**Classification code:** 531.1 Metallurgy  -  801 Chemistry  -  801.4.1 Electrochemistry  -  802.2 Chemical Reactions  -  804.2 Inorganic Compounds

**Numerical data indexing:** Time 4.00e+00s

**DOI:** 10.18494/SAM.2020.2639

**Funding Details:** Number: XXKZD1601, Acronym: -, Sponsor: -; Number: 18CG68, Acronym: -, Sponsor: Shanghai Municipal Education Commission; Number: 17YF1406600, Acronym: STCSM, Sponsor: Science and Technology Commission of Shanghai Municipality; Number: 21504051, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;

**Funding text:** This work was supported by the National Natural Science Foundation of China (Nos. 61471233, 21504051), the Sailing Project from the Science and Technology Commission of Shanghai Municipality (17YF1406600), the Chenguang Project supported by Shanghai Municipal Education Commission (18CG68), and the key subject of Shanghai Polytechnic University (Material Science and Technology, XXKZD1601).

**Compendex references:** YES

**Database:** Compendex

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**Data Provider:** Engineering Village

**93. The Early-Warning Model of Evaluation and Prevention for Venous Thromboembolism in Gynecological Tumor Surgical Patients Based on WSOM**

**Accession number:** 20203509097878

**Authors:** Yin, Shi (1, 2); Chang, Jian (3)

**Author affiliation:** (1) Research Center of Resource Recycling Science and Engineering, Shanghai Polytechnic University, Shanghai; 201209, China; (2) School of Economics and Management, Shanghai Polytechnic University, Shanghai; 201209, China; (3) Nursing Department, Shanghai General Hospital, Shanghai; 200080, China

**Corresponding author:** Chang, Jian(changjiancn@163.com)

**Source title:** Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)

**Abbreviated source title:** Lect. Notes Comput. Sci.

**Volume:** 12290 LNCS

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**Issue title:** Algorithmic Aspects in Information and Management - 14th International Conference, AAIM 2020, Proceedings

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**ISSN:** 03029743

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**Conference name:** 14th International Conference on Algorithmic Aspects in Information and Management, AAIM 2020

**Conference date:** August 10, 2020 - August 12, 2020

**Conference location:** Jinhua, China

**Conference code:** 243469

**Publisher:** Springer

**Abstract:** The pathologic analysis of gynecological tumor patients is relatively complex, and the patients without preventive measures after surgery are the high-risk population of VTE. Based on the inpatient data of patients admitted to a hospital in Shanghai and undergoing gynecological tumor surgery, this paper directly verified whether patients in the model construction group had VTE according to the VTE early warning model. Based on direct verification, according to the coagulation report, medical history and hormone level of the patients in the model construction group, the WSOM algorithm model was used to construct the VTE early warning model for gynecological tumor patients after surgery. The study found that based on the coagulation report, three new indicators of FSH, LH and E2 of sex hormone levels in patients with gynecological tumors after surgery were needed to be added to the VTE early warning model after surgery. Meanwhile, the physical and drug preventive measures of VTE for gynecological tumor patients after surgery were proposed. © 2020, Springer Nature Switzerland AG.

**Number of references:** 9

**Main heading:** Surgery

**Controlled terms:** Coagulation  -  Risk assessment  -  Tumors

**Uncontrolled terms:** Algorithm model  -  Early-warning models  -  Hormone levels  -  Medical history  -  Model construction  -  Preventive measures  -  Surgical patients  -  Venous thromboembolism

**Classification code:** 461.2 Biological Materials and Tissue Engineering  -  461.6 Medicine and Pharmacology  -  802.3 Chemical Operations  -  914.1 Accidents and Accident Prevention

**DOI:** 10.1007/978-3-030-57602-8\_50

**Funding Details:** Number: EGD20XQD17, Acronym: -, Sponsor: -; Number: 2017SJKJGG32, Acronym: -, Sponsor: -; Number: CHDI-2018-A-16, Acronym: -, Sponsor: -;

**Funding text:** Acknowledgments. This work was supported in part by Fund Project of SSPU (EGD20XQD17), Gaoyuan Discipline of Shanghai–Environmental Science and Engineering (Resource Recycling Science and Engineering), Discipline of Management Science and Engineering of Shanghai Polytechnic University (Grant No. XXKPY1606). Scientific Research Project in Hospital Management Construction of Shanghai Jiaotong University (CHDI-2018-A-16) and Scientific, and Technological Key Project of Shanghai Songjiang District Science and Technology Commission (2017SJKJGG32).

**Compendex references:** YES

**Database:** Compendex

Compilation and indexing terms, Copyright 2020 Elsevier Inc.

**Data Provider:** Engineering Village

**94. Enhanced slow and fast light in strong dispersion region of the Raman assisted narrow band fiber optical parametric amplifier**

**Accession number:** 20201808587537

**Authors:** Gui, Lin (1)

**Author affiliation:** (1) College of Computer and Information Engineering, Shanghai Polytechnic University, Shanghai; 201209, China

**Source title:** Optics Communications

**Abbreviated source title:** Opt Commun

**Volume:** 473

**Issue date:** 15 October 2020

**Publication year:** 2020

**Article number:** 125594

**Language:** English

**ISSN:** 00304018

**CODEN:** OPCOB8

**Document type:** Journal article (JA)

**Publisher:** Elsevier B.V.

**Abstract:** Narrow band fiber optical parametric amplifier with normal second order dispersion is deemed as a potential approach to delay the wide band signal in future optical telecommunication. Due to the combined effect of Raman and four-wave mixing, the slow and fast light is complex in this case. By considering both the real and imaginary part of the Raman susceptibility, two formulas for the phase shift and delay time in the stimulated Raman scattering assisted fiber optical parametric amplifier are presented. The wavelengths with maximum delay and advanced time are calculated numerically. Then we find some narrow frequency regions with the enhanced slow and fast light in both stokes and anti-stokes wave regions, which is the result of strong dispersion generated by the interaction between the stimulated Raman scattering and four-wave-fixing effect at the strong absorption region. In a narrow frequency region around the wavelength with maximum delay or advanced time, the case with low pump power and longer fiber can generate large delay(advanced) time if the signal wave has low bandwidth. Meanwhile, the delay or advanced times in these regions are sensitive to the signal wavelength due to the drastic change of the delay time spectrum. Simulation shows that the delay or advanced time will drop with the signal bandwidth. The time difference between two 1 GHz signal waves with 0.02 nm wavelength separation can reach 290ps in the Raman enhanced slow light region when we employ 2.4W pump power and 1km NZ-DSF. These features of enhanced slow and fast light in the interaction between the stimulated Raman scattering and four wave mixing effect has the potential to be applied in the optical signal processing. © 2020 Elsevier B.V.

**Number of references:** 30

**Main heading:** Optical parametric amplifiers

**Controlled terms:** Bandwidth  -  Dispersion (waves)  -  Fiber amplifiers  -  Fibers  -  Four wave mixing  -  Parametric amplifiers  -  Slow light  -  Stimulated Raman scattering

**Uncontrolled terms:** Delay time spectrums  -  Fiber optical parametric amplifiers  -  Optical telecommunication  -  Second-order dispersion  -  Slow and fast light  -  Stokes and anti-Stokes  -  Strong absorptions  -  Wavelength separation

**Classification code:** 713.1 Amplifiers  -  714 Electronic Components and Tubes  -  716.1 Information Theory and Signal Processing  -  741.1 Light/Optics  -  744.4 Solid State Lasers

**Numerical data indexing:** Frequency 1.00e+09Hz, Power 2.40e+00W, Size 2.00e-11m, Time 2.90e-10s

**DOI:** 10.1016/j.optcom.2020.125594

**Funding Details:**

**Funding text:** We acknowledge the Project ( A01GY19EX06 ) Funded by the leap Program of talent in Shanghai polytechnic University .

**Compendex references:** YES

**Database:** Compendex

Compilation and indexing terms, Copyright 2020 Elsevier Inc.

**Data Provider:** Engineering Village

**95. A novel method of composite multiscale weighted permutation entropy and machine learning for fault complex system fault diagnosis**

**Accession number:** 20201408378863

**Authors:** He, Cheng (1); Wu, Tao (2); Liu, Changchun (2); Chen, Tong (3)

**Author affiliation:** (1) School of Intelligent Manufacturing and Control Engineering, Shanghai Polytechnic University, Shanghai, Pudong; 201209, China; (2) School of Environmental and Material Engineering, Shanghai Polytechnic University, Shanghai, Pudong; 201209, China; (3) Logistics Support Department, Shanghai General Hospital, Shanghai, 200001, China

**Corresponding author:** Chen, Tong(2804623748@qq.com)

**Source title:** Measurement: Journal of the International Measurement Confederation

**Abbreviated source title:** Meas J Int Meas Confed

**Volume:** 158

**Issue date:** 1 July 2020

**Publication year:** 2020

**Article number:** 107748

**Language:** English

**ISSN:** 02632241

**CODEN:** MSRMDA

**Document type:** Journal article (JA)

**Publisher:** Elsevier B.V.

**Abstract:** A novel fault diagnosis method is proposed for rolling bearing by combining extreme-point symmetric mode decomposition (ESMD) composite multiscale weighted permutation entropy (CMWPE) and gravitational search algorithm based on multiple adaptive constraint strategy (MACGSA) optimized least squares support vector machine (LSSVM). In order to solve the problem of intrinsic mode function (IMF) modal aliasing and small differences in fault features, ESMD and CMWPE are used to obtain a more sensitive high-dimensional feature vector set. Aiming at the low accuracy of LSSVM fault diagnosis, MACGSA was used to optimize LSSVM to improve the accuracy of fault diagnosis. ESMD is used to process the rolling bearing data to obtain a series of IMFs; Then, extracting the CMWPE values of IMFs to form a high-dimensional feature vector set; Finally, the MACGSA-LSSVM model is adopted to achieve fault classification. Compared with other diagnostic methods, this method has higher diagnostic accuracy. © 2020 Elsevier Ltd

**Number of references:** 47

**Main heading:** Fault detection

**Controlled terms:** Entropy  -  Failure analysis  -  Learning algorithms  -  Least squares approximations  -  Roller bearings  -  Signal processing  -  Support vector machines  -  Vectors

**Uncontrolled terms:** Adaptive constraints  -  Fault diagnosis method  -  Gravitational search algorithms  -  High dimensional feature  -  Intrinsic Mode functions  -  Least squares support vector machines  -  Permutation entropy  -  Symmetric mode

**Classification code:** 601.2 Machine Components  -  641.1 Thermodynamics  -  716.1 Information Theory and Signal Processing  -  723 Computer Software, Data Handling and Applications  -  921.1 Algebra  -  921.6 Numerical Methods

**DOI:** 10.1016/j.measurement.2020.107748

**Funding text:** This article is supported by the “Mechanical Engineering” school-level key discipline construction project (No. XXKZD1603) of Shanghai Polytechnic University.

**Compendex references:** YES

**Database:** Compendex

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**Data Provider:** Engineering Village

**96. Progress in Controllable Preparation and Thermoelectric Properties of Cu2-xS and Cu2-xSe Liquid-like Materials**

**Accession number:** 20202508848246

**Title of translation:** Cu2-xSCu2-xSe

**Authors:** Lin, Jinhao (1); Xie, Huaqing (1); Wu, Zihua (1); Li, Yihuai (1); Wang, Yuanyuan (1)

**Author affiliation:** (1) School of Environmental and Materials Engineering, Shanghai Polytechnic University, Shanghai; 201209, China

**Corresponding author:** Xie, Huaqing(hqxie@sspu.edu.cn)

**Source title:** Cailiao Daobao/Materials Reports

**Abbreviated source title:** Cailiao Daobao/Mater. Rep.

**Volume:** 34

**Issue:** 4

**Issue date:** April 10, 2020

**Publication year:** 2020

**Pages:** 07071-07081

**Language:** Chinese

**ISSN:** 1005023X

**Document type:** Journal article (JA)

**Publisher:** Cailiao Daobaoshe/ Materials Review

**Abstract:** In the 21st century of rapid development of science, with the gradual depletion of fossil energy, discovery and application of new energy resources have been attracting lots of attention. Thermoelectric technology has become a promising choice. Thermoelectric conversion techno-logy based on thermoelectric materials can convert thermal energy into electrical energy directly. The related devices and systems have the advantages of small size, light weight, strong, non-transmission components, noise-free operation, safety, reliability and easy to control. Thermoelectric dimensionless figure of merit ZT is a parameter to evaluate the thermoelectric performance. ZT=S2σT/κ, where S is the Seebeck coefficient, σ is the electrical conductivity, T is the absolute temperature, and κ is the thermal conductivity. It would have remarkable thermoelectric properties and can be considered for commercial applications if the ZT value is above 1. In recent years, various excellent thermoelectrical materials have been developed and applied. Since the concept of “Phonon liquid electron crystals (PLEC)” was brought up, more and more studies have been devoted to this novel kind of materials due to their feature of super-low thermal conductivity. Cu-S like materials (Cu2S and Cu2Se), as typical PLEC materials which are intrinsic p type semiconductors with very low thermal conductivity, have been taken more researches. As to their structures, both of them can undergo phase transition with increasing temperature. For instance, Cu2S would change to α-Cu2S in 723 K and Cu2Se would become β-Cu2Se in 400 K, both of which are cubic phase with lo-wer thermal conductivity. Especially, in the structure of α-Cu2S, a “liquid sub-lattice” is that S atoms form a rigid sublattice where Cu ions possess liquid-like migration behavior. Liquid sub-lattice disturbs the transverse propagation of lattice phonons strongly, such behavior reduces the number of transverse modes of heat conduction, leads to the decrease of specific heat at constant volume, average phonon velocity and average free path of phonons, and causes low thermal conductivity. Normally, hydrothermal method and precursor method are used to prepare most nanoscale materials with merits of simple operation, low cost, better appearance, and flexibility. In order to gather better thermal properties, we usually apply doping and composite to improve thermal conductivity or resistance further. For example, Te-doped Cu2S forms Cu2S0.52Te0.48 that is a nanoscale mosaic structure. Its ZT achieves 2.1 in 1 000 K. Similarly, S-doped Cu2Se to prepares Cu2Se0.8S0.2, not only can reduces the scattering speed of phonons, but also introduces additional point defect scattering phonons, further reducing the thermal conductivity with the result that ZT reaches 1.65 in 950 K. This paper mainly considers typical PLEC materials, that is, Cu2-xS and Cu2-xSe related thermoelectric materials. The structures and the cha-racteristics are briefly introduced. The progresses of the studies on the preparation methods and thermoelectric properties of these two kinds of materials are reviewed. And the development tendency is further discussed. © 2020, Materials Review Magazine. All right reserved.

**Number of references:** 60

**Main heading:** Copper compounds

**Controlled terms:** Crystal atomic structure  -  Energy resources  -  Heat conduction  -  Heavy ions  -  Liquids  -  Nanotechnology  -  Phonons  -  Selenium compounds  -  Semiconductor doping  -  Specific heat   -  Structural properties  -  Thermal conductivity  -  Thermoelectric equipment  -  Thermoelectricity

**Uncontrolled terms:** Dimensionless figure of merit  -  Low thermal conductivity  -  Thermo-Electric materials  -  Thermoelectric conversion  -  Thermoelectric performance  -  Thermoelectric properties  -  Thermoelectrical materials  -  Transmission components

**Classification code:** 408 Structural Design  -  525.1 Energy Resources and Renewable Energy Issues  -  615.4 Thermoelectric Energy  -  641.1 Thermodynamics  -  641.2 Heat Transfer  -  701.1 Electricity: Basic Concepts and Phenomena  -  712.1 Semiconducting Materials  -  761 Nanotechnology  -  931.3 Atomic and Molecular Physics  -  951 Materials Science

**Numerical data indexing:** Temperature 1.00e+03K, Temperature 4.00e+02K, Temperature 7.23e+02K, Temperature 9.50e+02K

**DOI:** 10.11896/cldb.18110099

**Funding Details:** Number: EGD18YJ0027, Acronym: -, Sponsor: -; Number: 51590902, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;

**Funding text:** This work was supported by the National Natural Science Foundation of China (51590902, 51676117),Foundation of Shanghai Polytechnic University Gradua-te Program (EGD18YJ0027).

**Compendex references:** YES

**Database:** Compendex

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**Data Provider:** Engineering Village

**97. A rescheduling approach based on genetic algorithm for flexible scheduling problem subject to machine breakdown    (*Open Access*)**

**Accession number:** 20201108294038

**Authors:** Nie, Li (1); Wang, Xiaogang (1); Liu, Kai (1); Bai, Yuewei (1)

**Author affiliation:** (1) School of Intelligent Manufacturing and Control Engineering, Shanghai Polytechnic University, Shanghai; 201029, China

**Corresponding author:** Nie, Li(nieli@sspu.edi.cn)

**Source title:** Journal of Physics: Conference Series

**Abbreviated source title:** J. Phys. Conf. Ser.

**Volume:** 1453

**Part number:** 1 of 1

**Issue:** 1

**Issue title:** 2019 2nd International Conference on Computer Information Science and Artificial Intelligence, CISAI 2019

**Issue date:** March 3, 2020

**Publication year:** 2020

**Article number:** 012018

**Language:** English

**ISSN:** 17426588

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**Document type:** Conference article (CA)

**Conference name:** 2019 2nd International Conference on Computer Information Science and Artificial Intelligence, CISAI 2019

**Conference date:** October 25, 2019 - October 27, 2019

**Conference location:** Xi’an, China

**Conference code:** 158105

**Publisher:** Institute of Physics Publishing

**Abstract:** In this paper, a rescheduling approach based on genetic algorithm (GA) for solving the flexible scheduling problem subject to machine breakdown is proposed. In the proposed approach, event-driven rolling horizon rescheduling policy is employed to trigger the rescheduling procedure. Computational experiments are conducted on several benchmark data to prove the performance of the proposed approach. The results show that the proposed approach combines the rescheduling strategies of right-shift rescheduling and routing changing rescheduling to optimize the robustness and stability of rescheduling solution simultaneously. © Published under licence by IOP Publishing Ltd.

**Number of references:** 18

**Main heading:** Scheduling algorithms

**Controlled terms:** Artificial intelligence  -  Benchmarking  -  Genetic algorithms  -  Machine shop practice  -  Real time systems  -  Scheduling

**Uncontrolled terms:** Benchmark data  -  Computational experiment  -  Event-driven  -  Flexible scheduling  -  Machine breakdown  -  Rolling horizon

**Classification code:** 604.2 Machining Operations  -  722.4 Digital Computers and Systems  -  723.4 Artificial Intelligence  -  912.2 Management

**DOI:** 10.1088/1742-6596/1453/1/012018

**Funding Details:** Number: XXKZD1603, Acronym: -, Sponsor: -; Number: 2017YFE0118700, Acronym: -, Sponsor: -; Number: 51605273, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;

**Funding text:** This research is supported by the National Key R&D Program of China under Grant No. 2017YFE0118700, the National Natural Science Foundation of China under Grant No. 51605273 and U1537110, and Shanghai Polytechnic University - Key Discipline Construction (Mechanical Engineering, XXKZD1603)

**Compendex references:** YES

**Database:** Compendex

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**Data Provider:** Engineering Village

**98. Leaching of copper from waste printed circuit boards using Phanerochaete chrysosporium fungi**

**Accession number:** 20203209016857

**Authors:** Liu, Qian (1); Bai, Jian-feng (1); Gu, Wei-hua (1); Peng, Sheng-juan (1); Wang, Lin-cai (1); Wang, Jing-wei (1); Li, Hui-xin (1)

**Author affiliation:** (1) Shanghai Collaborative Innovation Centre for WEEE Recycling, Shanghai Polytechnic University, Shanghai; 201209, China

**Corresponding author:** Liu, Qian(liuqian@sspu.edu.cn)

**Source title:** Hydrometallurgy

**Abbreviated source title:** Hydrometallurgy

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**Article number:** 105427

**Language:** English

**ISSN:** 0304386X

**CODEN:** HYDRDA

**Document type:** Journal article (JA)

**Publisher:** Elsevier B.V.

**Abstract:** We investigated the leaching of copper with Phanerochaete chrysosporium (P. chrysosporium) from waste printed circuit boards (WPCBs). Leaching of copper after treatment with P. chrysosporium for 14 days was 60.96%, which was 9 times higher than that in absence of the fungi. After 14 days of treatment with fungi, the copper clad laminates of printed circuit boards were seriously corroded without any metallic luster with the corresponding color change from yellow to reddish-brown. An oxidation layer was formed on the surface of the copper clad laminate. It consisted of copper, cupric oxide (CuO), cuprous oxide (Cu2O), and mycelia. The leaching of copper by P. chrysosporium is a result of the combined effect of the bio-enzymes and organic acids. Bio-enzymes, such as laccase (Lac), manganese peroxidase (MnP), and lignin peroxidase (LiP), attacked the chemical bonds in the copper crystal using the generated free radicals. Organic acids, such as oxalic acid, gluconic acid, and citric acid, leached copper because of the H+ ions produced due to acidolysis. In addition, the organic acids also influenced the leaching of copper indirectly by changing the pH of the leaching system. © 2020 Elsevier B.V.

**Number of references:** 41

**Main heading:** Copper oxides

**Controlled terms:** Bond strength (chemical)  -  Copper corrosion  -  Electronics packaging  -  Enzymes  -  Free radicals  -  Fungi  -  Leaching  -  Oxalic acid  -  Oxide minerals  -  Printed circuit boards   -  Timing circuits

**Uncontrolled terms:** Copper clad laminate  -  Corresponding colors  -  Lignin peroxidase  -  Manganese peroxidase  -  Metallic luster  -  Oxidation layers  -  Phanerochaete chrysosporium  -  Waste printed circuit board

**Classification code:** 482.2 Minerals  -  539.1 Metals Corrosion  -  713.4 Pulse Circuits  -  801.4 Physical Chemistry  -  802.3 Chemical Operations  -  804.1 Organic Compounds  -  804.2 Inorganic Compounds

**Numerical data indexing:** Age 3.84e-02yr, Percentage 6.10e+01%

**DOI:** 10.1016/j.hydromet.2020.105427

**Funding Details:** Number: 2019M653844XB, Acronym: -, Sponsor: China Postdoctoral Science Foundation; Number: -, Acronym: SHU, Sponsor: Shanghai University; Number: XXKZD1602, Acronym: -, Sponsor: -;

**Funding text:** The authors acknowledge financial support from the Gaoyuan Discipline of the Shanghai–Environmental Science and Engineering (Resource Recycling Science and Engineering), the Key Discipline of Shanghai Polytechnic University ( XXKZD1602 ), the practice plan of the industry-college-institute cooperation of Shanghai university Teachers 2019, and the Postdoctoral Science Foundation of China ( 2019M653844XB ).

**Compendex references:** YES

**Database:** Compendex

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**Data Provider:** Engineering Village

**99. Absorbing volatile organic compounds discharged during thermal dismantling of waste printed circuit boards using ionic liquids-based on COSMO-RS model**

**Accession number:** 20202908937748

**Title of translation:** -COSMO-RS

**Authors:** Wu, Jin (1, 2); Zhang, Cheng-Long (1, 2); Wang, Rui-Xue (1, 2); Ma, En (1, 2); Wu, Liang (3); Bai, Jian-Feng (1, 2); Wang, Jing-Wei (1, 2)

**Author affiliation:** (1) Research Center of Resource Recycling Science and Engineering, Shanghai Polytechnic University, Shanghai; 201209, China; (2) Shanghai Collaborative Innovation Centre for WEEE Recycling, Shanghai Polytechnic University, Shanghai; 201209, China; (3) Department of Physics, Shanghai University, Shanghai; 200444, China

**Corresponding author:** Zhang, Cheng-Long(clzhang@sspu.edu.cn)

**Source title:** Zhongguo Huanjing Kexue/China Environmental Science

**Abbreviated source title:** Zhongguo Huanjing Kexue

**Volume:** 40

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**Publication year:** 2020

**Pages:** 1946-1952

**Language:** Chinese

**ISSN:** 10006923

**CODEN:** ZHKEEI

**Document type:** Journal article (JA)

**Publisher:** Chinese Society for Environmental Sciences

**Abstract:** Simulated thermal dismantling of WPCB (waste printed circuit boards) was carried out and VOCs (volatile organic compounds) discharged during this processwere analyzed. COSMO-RS (conductor-like screening model for real solvent) model was used to predict the solubility of VOCs with higher concentration by quantum chemistry simulation, study the influence of ILs (ionic liquids)’ components andthe leading interaction energy during the absorbing process, and determine the suitable absorbents. The solubilityin different solvents were experimented to verify the potential utilization of COSMO-RS model. The results showed that:ethyl acetate and cyclopentanonewere two main substances with higher concentration. The concentration was 43.1, 153mg/m3 and 105, 252mg/m3, and the total concentration percentage was 76.3% and 67.3%under 240 and 250, respectively.Higher σ-profile peak, longer cations and anions alkyl chain length and the existence of electrophilic group could increase the solubility of these two compounds. NTf2-based ILs were chosen as excellent absorbents. Misfit and van de Waal energy played the leading roleduring the absorbing process. COSMO-RS model couldbe used to predict the solubility of ethyl acetate and cyclopentanone qualitatively and semi-quantitatively. © 2020, Editorial Board of China Environmental Science. All right reserved.

**Number of references:** 25

**Main heading:** Printed circuit boards

**Controlled terms:** Absorption  -  Ionic liquids  -  Quantum chemistry  -  Solubility  -  Timing circuits  -  Volatile organic compounds

**Uncontrolled terms:** Alkyl chain lengths  -  Chemistry simulations  -  Conductor-like screening model for real solvents  -  Cyclopentanone  -  Different solvents  -  Ethyl acetates  -  Interaction energies  -  Waste printed circuit board

**Classification code:** 713.4 Pulse Circuits  -  801.4 Physical Chemistry  -  802.3 Chemical Operations  -  804 Chemical Products Generally  -  804.1 Organic Compounds

**Numerical data indexing:** Mass\_Density 1.53e-04kg/m3, Mass\_Density 2.52e-04kg/m3, Percentage 7.63e+01%

**Compendex references:** YES

**Database:** Compendex

Compilation and indexing terms, Copyright 2020 Elsevier Inc.

**Data Provider:** Engineering Village

**100. An Available Magnetic Photothermal Nanofluilds for Direct Application**

**Accession number:** 20201008275883

**Authors:** Wang, De-Bing (1); Wang, Ling-Ling (1); Yu, Wei (1); Xie, Hua-Qing (1)

**Author affiliation:** (1) College of Engineering, School of Environmental and Materials Engineering, Shanghai Polytechnic University, Shanghai; 201209, China

**Corresponding author:** Yu, Wei(yuwei@sspu.edu.cn)

**Source title:** Kung Cheng Je Wu Li Hsueh Pao/Journal of Engineering Thermophysics

**Abbreviated source title:** Kung Cheng Je Wu Li Hsueh Pao

**Volume:** 41

**Issue:** 2

**Issue date:** February 1, 2020

**Publication year:** 2020

**Pages:** 443-447

**Language:** Chinese

**ISSN:** 0253231X

**CODEN:** KCJPDF

**Document type:** Journal article (JA)

**Publisher:** Science Press

**Abstract:** Fe3O4-H2O magnetic nanofluids with high photothermal conversion efficiency were prepared by the so-called two-step method, which can be easily separated by using an external magnetic field. The experimental results show that the maximum photo-thermal conversion efficiency of Fe3O4- H2O nanofluids can reach nearly 70.2% in 1200 s. And the magnetic photothermal nanofluilds can be reused at least 60 successive cycles without significant loss of photothermal conversion efficiency. This study paves a new avenue for direct use the base liquid of nanofluids in the solar thermal conversion technique. © 2020, Science Press. All right reserved.

**Number of references:** 15

**Main heading:** Magnetism

**Controlled terms:** Conversion efficiency  -  Efficiency  -  Iron oxides  -  Magnetite  -  Nanofluidics  -  Reusability

**Uncontrolled terms:** Direct use  -  External magnetic field  -  Photo-thermal  -  Photo-thermal conversions  -  Photothermal conversion efficiencies  -  Solar applications  -  Solar thermal conversion  -  Two step method

**Classification code:** 525.5 Energy Conversion Issues  -  701.2 Magnetism: Basic Concepts and Phenomena  -  761 Nanotechnology  -  804.2 Inorganic Compounds  -  913.1 Production Engineering

**Numerical data indexing:** Percentage 7.02e+01%

**Compendex references:** YES

**Database:** Compendex

Compilation and indexing terms, Copyright 2020 Elsevier Inc.

**Data Provider:** Engineering Village

**101. The Theories of a Novel Filled Function Method for Non-smooth Global Optimization**

**Accession number:** 20203509097917

**Authors:** Wang, Wei-xiang (1); Shang, You-lin (2); Li, Shuo (2)

**Author affiliation:** (1) Shanghai Polytechnic University, Shanghai; 201209, China; (2) Henan University of Science and Technology, Luoyang; 471003, China

**Corresponding author:** Shang, You-lin(mathshang@sina.com)

**Source title:** Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)

**Abbreviated source title:** Lect. Notes Comput. Sci.

**Volume:** 12290 LNCS

**Part number:** 1 of 1

**Issue title:** Algorithmic Aspects in Information and Management - 14th International Conference, AAIM 2020, Proceedings

**Issue date:** 2020

**Publication year:** 2020

**Pages:** 381-390

**Language:** English

**ISSN:** 03029743

**E-ISSN:** 16113349

**ISBN-13:** 9783030576011

**Document type:** Conference article (CA)

**Conference name:** 14th International Conference on Algorithmic Aspects in Information and Management, AAIM 2020

**Conference date:** August 10, 2020 - August 12, 2020

**Conference location:** Jinhua, China

**Conference code:** 243469

**Publisher:** Springer

**Abstract:** This paper proposes a novel filled function method for non-smooth box constrained global optimization. The constructed filled function contains two parameters, which could be easily adjusted during the process of terations. The theoretical and numerical properties of the filled function are studied, and a filled function algorithm is given. Finally, several numerical results, including the application of the filled function method in solving nonlinear equations, are reported. © 2020, Springer Nature Switzerland AG.

**Number of references:** 9

**Main heading:** Numerical methods

**Controlled terms:** Constrained optimization  -  Global optimization  -  Nonlinear equations

**Uncontrolled terms:** Constrained global optimization  -  Filled function  -  Filled function algorithms  -  Filled function method  -  Numerical properties  -  Numerical results  -  Solving nonlinear equations  -  Two parameter

**Classification code:** 921.5 Optimization Techniques  -  921.6 Numerical Methods  -  961 Systems Science

**DOI:** 10.1007/978-3-030-57602-8\_34

**Funding Details:** Number: 20ZX001, Acronym: -, Sponsor: -; Number: 11471102, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 11001248, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;

**Funding text:** Supported by organization National Natural Science Foundation of China (No. 11471102), Basic research projects for key scientific research projects in Henan Province (No. 20ZX001).This work was supported by the NNSF of China (No. 11001248,

**Compendex references:** YES

**Database:** Compendex

Compilation and indexing terms, Copyright 2020 Elsevier Inc.

**Data Provider:** Engineering Village

**102. Model Establishment and Algorithm Research of Tumor Marker Combination Prediction for Colorectal Cancer**

**Accession number:** 20203509097881

**Authors:** Li, Bin (2); Li, Tengfei (1); Zhou, Xinye (2); Huang, Chen (1); Tang, Guochun (2)

**Author affiliation:** (1) Shanghi General Hospital, Shanghai Jiaotong University, Shanghai; 200080, China; (2) Shanghai Polytechnic University, Shanghai; 2001209, China

**Corresponding author:** Huang, Chen(richard-hc@hotmail.com)

**Source title:** Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)

**Abbreviated source title:** Lect. Notes Comput. Sci.

**Volume:** 12290 LNCS

**Part number:** 1 of 1

**Issue title:** Algorithmic Aspects in Information and Management - 14th International Conference, AAIM 2020, Proceedings

**Issue date:** 2020

**Publication year:** 2020

**Pages:** 593-603

**Language:** English

**ISSN:** 03029743

**E-ISSN:** 16113349

**ISBN-13:** 9783030576011

**Document type:** Conference article (CA)

**Conference name:** 14th International Conference on Algorithmic Aspects in Information and Management, AAIM 2020

**Conference date:** August 10, 2020 - August 12, 2020

**Conference location:** Jinhua, China

**Conference code:** 243469

**Publisher:** Springer

**Abstract:** Colorectal Cancer (CRC) is one of the most common malignant tumors of digestive tract in the world; the incidence of CRC is increasing year by year. With the development of early screening, the improvement of surgical technique and the application of new treatment methods such as targeted therapy and immunotherapy, the mortality rate of patients with colorectal cancer has decreased obviously, but the long-term therapeutic effect remains suboptimal. Early detection, early diagnosis and early treatment are still the main treatment strategies for CRC. Currently, effective tumor markers are the primary basis for analysis and reference for clinical decision making in CRC treatment. Due to the large variety and quantity of data, the sensitivity and specificity between tumor marker data are difficult to determine, which brings some inconvenience to treatment. We use two-layer neural network’s self-organizing-mapping (SOM) model and unsupervised learning algorithms to map high-dimensional data to a two-dimensional topology, allowing the relationships between the data to be visually represented, which can help doctors better judge the prognosis of CRC and monitor the recurrence and metastasis of CRC from the relationship between the data. © 2020, Springer Nature Switzerland AG.

**Number of references:** 16

**Main heading:** Learning algorithms

**Controlled terms:** Biomarkers  -  Clustering algorithms  -  Data visualization  -  Decision making  -  Diagnosis  -  Diseases  -  Multilayer neural networks  -  Network layers  -  Patient treatment  -  Self organizing maps   -  Topology  -  Tumors

**Uncontrolled terms:** Algorithm researches  -  Clinical decision making  -  Colorectal cancers (CRC)  -  Combination predictions  -  High dimensional data  -  Self-organizing mapping  -  Sensitivity and specificity  -  Therapeutic effects

**Classification code:** 461.2 Biological Materials and Tissue Engineering  -  461.6 Medicine and Pharmacology  -  723 Computer Software, Data Handling and Applications  -  903.1 Information Sources and Analysis  -  912.2 Management  -  921.4 Combinatorial Mathematics, Includes Graph Theory, Set Theory

**DOI:** 10.1007/978-3-030-57602-8\_53

**Compendex references:** YES

**Database:** Compendex

Compilation and indexing terms, Copyright 2020 Elsevier Inc.

**Data Provider:** Engineering Village

**103. Raising the thermoelectric performance of PbS with low-content polyparaphenylene**

**Accession number:** 20201308353252

**Authors:** Li, Yihuai (1, 2, 3); Lin, Jinhao (2); Xie, Huaqing (2, 3); Wang, Yuanyuan (2, 3); Li, Zhen (1)

**Author affiliation:** (1) School of Environmental and Chemical Engineering, Shanghai University, Shanghai; 200444, China; (2) School of Environmental and Materials Engineering, College of Engineering, Shanghai Polytechnic University, Shanghai; 201209, China; (3) Research Center of Resource Recycling Science and Engineering, Shanghai Polytechnic University, Shanghai; 201209, China

**Corresponding author:** Li, Zhen(lizhen@shu.edu.cn)

**Source title:** Journal of Materials Science: Materials in Electronics

**Abbreviated source title:** J Mater Sci Mater Electron

**Volume:** 31

**Issue:** 9

**Issue date:** May 1, 2020

**Publication year:** 2020

**Pages:** 6586-6592

**Language:** English

**ISSN:** 09574522

**E-ISSN:** 1573482X

**Document type:** Journal article (JA)

**Publisher:** Springer

**Abstract:** Lead sulfide (PbS), a promising medium-temperature thermoelectric material, is a cheap and excellent substitute for lead pyride. However, its high thermal conductivity limits its thermoelectric properties strongly. In this paper, the nanocomposites with PbS matrix and organic conducting polymer polyparaphenylene (PPP) supplement are introduced to decrease the thermal conductivity by mechanical mixing method. The experimental results show that the thermal conductivity of PbS–PPP nanocomposites significantly decreases and the minimum thermal conductivity is 0.43 W m−1 K−1, which can be obtained when the mass ratio of the PPP is 3% at 773 K. Consequently, the figure of merit (ZT) of PbS–PPP nanocomposites reaches as large as 0.5, which is 52.40% of magnitude higher than that of pure PbS. Therefore, it is an effective way to improve the thermoelectric properties of PbS by introducing the organic conducting polymer PPP. This work may shed light on developing high-performance thermoelectric materials via organic–inorganic nanocomposites at the intermediate temperature range. © 2020, Springer Science+Business Media, LLC, part of Springer Nature.

**Number of references:** 31

**Main heading:** Lead compounds

**Controlled terms:** Conducting polymers  -  IV-VI semiconductors  -  Nanocomposites  -  Polymer matrix composites  -  Sulfur compounds  -  Thermal conductivity  -  Thermoelectric equipment  -  Thermoelectricity

**Uncontrolled terms:** High thermal conductivity  -  Intermediate temperatures  -  Mechanical mixing method  -  Organic conducting polymers  -  Polyparaphenylenes  -  Thermo-Electric materials  -  Thermoelectric performance  -  Thermoelectric properties

**Classification code:** 615.4 Thermoelectric Energy  -  641.1 Thermodynamics  -  701.1 Electricity: Basic Concepts and Phenomena  -  761 Nanotechnology  -  815.1 Polymeric Materials  -  933 Solid State Physics

**Numerical data indexing:** Percentage 3.00e+00%, Percentage 5.24e+01%

**DOI:** 10.1007/s10854-020-03214-z

**Funding Details:** Number: -, Acronym: -, Sponsor: Program for Professor of Special Appointment (Eastern Scholar) at Shanghai Institutions of Higher Learning; Number: 51590902, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;

**Funding text:** This work was supported by the Major Program of the National Natural Science Foundation of China (No. 51590902), the National Natural Science Foundation of China (No. 51676117), the Program for Professor of Special Appointment (Young Eastern Scholar, No. QD2015052) at Shanghai Institutions of Higher Learning, the Key Subject of Shanghai Polytechnic University (Material Science and Engineering, No. XXKZD1601) and Gaoyuan Discipline of Shanghai: Environmental Science and Engineering (Resource Recycling Science and Engineering).

**Compendex references:** YES

**Database:** Compendex

Compilation and indexing terms, Copyright 2020 Elsevier Inc.

**Data Provider:** Engineering Village

**104. Safety Evaluation and Lean Disposal of Clinical Waste in Outpatient and Emergency Department of Large Hospitals**

**Accession number:** 20203509097882

**Authors:** Lin, Huidan (1); Wu, Huijing (2)

**Author affiliation:** (1) Economy and Management School, Shanghai Polytechnic University, Shanghai; 201209, China; (2) Shanghai General Hospital, Shanghai; 201620, China

**Corresponding author:** Wu, Huijing(vinogarden@126.com)

**Source title:** Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)

**Abbreviated source title:** Lect. Notes Comput. Sci.

**Volume:** 12290 LNCS

**Part number:** 1 of 1

**Issue title:** Algorithmic Aspects in Information and Management - 14th International Conference, AAIM 2020, Proceedings

**Issue date:** 2020

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**Pages:** 604-614

**Language:** English

**ISSN:** 03029743

**E-ISSN:** 16113349

**ISBN-13:** 9783030576011

**Document type:** Conference article (CA)

**Conference name:** 14th International Conference on Algorithmic Aspects in Information and Management, AAIM 2020

**Conference date:** August 10, 2020 - August 12, 2020

**Conference location:** Jinhua, China

**Conference code:** 243469

**Publisher:** Springer

**Abstract:** Large hospitals produce a large amount of medical waste in outpatient and emergency departments. The safety of medical waste is not only a huge problem faced by large hospitals themselves. Improper disposal will cross infection and expand the epidemic. The rational lean disposal of outpatient and emergency medical waste in large hospitals is an important measure, which is helpful to alleviate the problem. In this paper, we use fault tree analysis (FTA) of safety evaluation for medical waste logistics process in large hospitals with the new crown pneumonia for instance. Then we set up the safety evaluation model of this infectious medical waste and master waste streams of hazards and potential risks of large hospitals through calculation and analysis for the “discovery” not in time, “the lack of contingency plans and disposal technology”. The results show that it is of great significance to adopt lean management method of outpatient and emergency treatment to solve these two hazard sources for the safety of infectious medical waste control in outpatient and emergency treatment. © 2020, Springer Nature Switzerland AG.

**Number of references:** 11

**Main heading:** Waste disposal

**Controlled terms:** Emergency rooms  -  Fault tree analysis  -  Hazards  -  Risk assessment  -  Waste treatment

**Uncontrolled terms:** Contingency plans  -  Disposal technologies  -  Emergency departments  -  Emergency treatment  -  Fault tree analyses (FTA)  -  Infectious-medical wastes  -  Logistics process  -  Safety evaluations

**Classification code:** 452.4 Industrial Wastes Treatment and Disposal  -  462.2 Hospitals, Equipment and Supplies  -  914.1 Accidents and Accident Prevention

**DOI:** 10.1007/978-3-030-57602-8\_54

**Funding Details:** Number: EGD19XQD12, Acronym: -, Sponsor: -;

**Funding text:** Supported by the Research Center of Resource Recycling Science and Engineering, Shanghai Polytechnic University Gao-yuan Discipline of Shanghai-Environmental Science and Engineering (Resource Recycling Science and EngineeringA30DB191202) and by Study on Optimization of Hospital Drug Supply Chain Based on SPD Model (EGD19XQD12) of Youth Teachers Training and Research Project of State Revenue in 2019 of Shanghai Polytechnic University.

**Compendex references:** YES

**Database:** Compendex

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**Data Provider:** Engineering Village

**105. Effect of surface treatment on enhancing interfacial strength of carbon fiber/polyimide composites**

**Accession number:** 20202208770314

**Authors:** Jian, Li (1)

**Author affiliation:** (1) School of Engineering, Shanghai Second Polytechnic University, Shanghai, China

**Corresponding author:** Jian, Li(miweijianma@163.com)

**Source title:** Journal of Thermoplastic Composite Materials

**Abbreviated source title:** J Thermoplast Compos Mater

**Issue date:** 2020

**Publication year:** 2020

**Language:** English

**ISSN:** 08927057

**E-ISSN:** 15307980

**CODEN:** JTMAEQ

**Document type:** Article in Press

**Publisher:** SAGE Publications Ltd

**Abstract:** The practical application of carbon fiber (CF)-reinforced polyimide (PI) resin composite was hampered seriously by the poor interfacial adhesion property. In this work, a novel surface treatment agent was designed and prepared to improve the interfacial strength by covalently bonding CF with PI matrix, which is beneficial to the uniform dispersion and impregnation of PI between CF, thereby improving the mechanical properties of CF/PI composites to some extent. The CF was characterized by high surface roughness, which means better wettability by PI. As a result, the interfacial shear strength and interlaminar shear strength of CF/PI composites were enhanced, benefited mainly from the strong and tough interphase. © The Author(s) 2020.

**Number of references:** 28

**Main heading:** Surface treatment

**Controlled terms:** Carbon fibers  -  Shear strength  -  Surface roughness

**Uncontrolled terms:** Inter-laminar shear strengths  -  Interfacial adhesions  -  Interfacial shear strength  -  Interfacial strength  -  Novel surfaces  -  Reinforced polyimides  -  Resin composites  -  Uniform dispersions

**Classification code:** 804 Chemical Products Generally  -  931.2 Physical Properties of Gases, Liquids and Solids

**DOI:** 10.1177/0892705720925141

**Compendex references:** YES

**Database:** Compendex

Compilation and indexing terms, Copyright 2020 Elsevier Inc.

**Data Provider:** Engineering Village

**106. An optimized approach of venous thrombus embolism risk assessment**

**Accession number:** 20200808198931

**Authors:** Wang, Ruiping (1); Wang, Mei (2); Chang, Jian (2); Luo, Zai (2); Zhang, Feng (1); Huang, Chen (2)

**Author affiliation:** (1) Shanghai Polytechnic University, Shanghai; 201209, China; (2) Shanghai General Hospital, School of Medicine, Shanghai Jiaotong University, Shanghai; 200080, China

**Corresponding author:** Huang, Chen(richard-hc@hotmail.com)

**Source title:** Journal of Combinatorial Optimization

**Abbreviated source title:** J Combin Optim

**Issue date:** 2020

**Publication year:** 2020

**Language:** English

**ISSN:** 13826905

**E-ISSN:** 15732886

**CODEN:** JCOPFV

**Document type:** Article in Press

**Publisher:** Springer

**Abstract:** In this paper, we aim to find new approaches to assess venous thrombus embolism (VTE) risk level. We have obtained valid data by filtering all data relevant to the VTE risk rating which was collected in Shanghai general hospital from May to July 2018. In our research, the distribution rule of the valid data was found and the differences of VTE risk scores before and after the surgery was analyzed via variance analysis. We also explored the correlation between the VTE risk score and inner diameter and flow rate of deep vein in lower extremities. Meanwhile, We build linear model, nonlinear model and ordered multinamial probit model to give out the VTE risk scores. After repeated test,it was concluded that the ordered multinamial probit model was the optimum way in the assessment of VTE risk scores. In short, this paper suggests that surgery has increased VTE risk level which is closely associated with inner diameter and flow rate of deep vein in lower extremities. By deploying ordered multinamial probit model, we are able to assess the VTE risk level. The paper is significant both in theory and the practical application of risk assessment,prevention and treatment of VTE and it is also a theoretical support in VTE risk forecasting for patients with operation in hospital. © 2020, Springer Science+Business Media, LLC, part of Springer Nature.

**Number of references:** 16

**Main heading:** Risk assessment

**Controlled terms:** Analysis of variance (ANOVA)  -  Blood vessels  -  Diseases  -  Hospitals  -  Maximum likelihood estimation  -  Surgery

**Uncontrolled terms:** Distribution rule  -  General hospitals  -  Non-linear model  -  Probit models  -  Pseudo-R^2  -  Risk forecasting  -  Variance analysis  -  Venous thrombosis

**Classification code:** 461.2 Biological Materials and Tissue Engineering  -  461.6 Medicine and Pharmacology  -  462.2 Hospitals, Equipment and Supplies  -  914.1 Accidents and Accident Prevention  -  922 Statistical Methods

**DOI:** 10.1007/s10878-020-00531-1

**Compendex references:** YES

**Database:** Compendex

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**Data Provider:** Engineering Village

**107. Effect of monolayer graphene on the performance of near-field radiative thermal rectifier between doped silicon and vanadium dioxide**

**Accession number:** 20201808608445

**Authors:** Zhang, Ping (1); Yang, Peipei (1); Zheng, Zhiheng (2, 3); Yu, Wei (2, 3)

**Author affiliation:** (1) School of Mechanical and Electrical Engineering, Guilin University of Electronic Technology, No. 1 Jinji Road, Guilin; Guangxi; 541004, China; (2) School of Environmental and Materials Engineering, College of Engineering, Shanghai Polytechnic University, Shanghai; 201209, China; (3) Research Center of Resource Recycling Science and Engineering, Shanghai Polytechnic University, Shanghai; 201209, China

**Corresponding author:** Zheng, Zhiheng(zhiheng\_zheng@163.com)

**Source title:** International Journal of Heat and Mass Transfer

**Abbreviated source title:** Int. J. Heat Mass Transf.

**Volume:** 155

**Issue date:** July 2020

**Publication year:** 2020

**Article number:** 119707

**Language:** English

**ISSN:** 00179310

**CODEN:** IJHMAK

**Document type:** Journal article (JA)

**Publisher:** Elsevier Ltd

**Abstract:** We investigate near-field radiative thermal rectifiers (NFRTRs) comprising an asymmetric nanostructure with and without graphene coatings. The asymmetric nanostructure consists of n-type doped silicon (D-Si) and vanadium dioxide (VO2) plates separated by a vacuum gap. On the basis of the stochastic Maxwell equations and fluctuation-dissipation theorem, we analyse the effect of graphene on the near-field radiative heat transfer (NFRHT) and the performance of the NFRTR. We find that the total thermal rectification factor (TTRF) of an NFRTR composed of n-type D-Si and VO2 plates can be significantly enhanced by the presence of graphene, depending on the doping concentration of Si, the chemical potential value of the graphene, and the vacuum gap. When both n-type D-Si and VO2 plates are covered by a layer of graphene, the TTRF of the NFRTR whose n-type D-Si and VO2 plates are separated by a 10 nm vacuum gap improves from 4.38 to 7.79 for a doping concentration of 1019 cm−3 and a chemical potential of 0.25 eV. We attribute this to the strong interaction among the p-polarized surface modes of graphene-covered n-type D-Si with the doping concentration of 1019 cm−3, p-polarized surface modes of graphene-covered insulating VO2, and p-polarized hyperbolic modes (HMs) of insulating VO2. This work is important for near-field radiative thermal management and the application of NFRHT-based thermal devices. © 2020 Elsevier Ltd

**Number of references:** 44

**Main heading:** Silicon compounds

**Controlled terms:** Chemical potential  -  Graphene  -  Heat transfer performance  -  Maxwell equations  -  Monolayers  -  Nanostructures  -  Stochastic systems  -  Vanadium dioxide

**Uncontrolled terms:** Asymmetric nanostructures  -  Doping concentration  -  Fluctuation dissipation theorem  -  Graphene coatings  -  Radiative heat transfer  -  Rectification factors  -  Strong interaction  -  Thermal devices

**Classification code:** 701.1 Electricity: Basic Concepts and Phenomena  -  761 Nanotechnology  -  801.4 Physical Chemistry  -  804 Chemical Products Generally  -  933 Solid State Physics  -  961 Systems Science

**Numerical data indexing:** Electron\_Volt 2.50e-01eV, Size 1.00e-08m

**DOI:** 10.1016/j.ijheatmasstransfer.2020.119707

**Funding Details:** Number: 2017JJA160108, Acronym: -, Sponsor: Natural Science Foundation of Guangxi Province; Number: 51806134, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;

**Funding text:** This work is supported by National Natural Science Foundation of China (Grant No. 51806134 ). The authors also gratefully acknowledge the financial support from Guangxi Natural Science Foundation (Grant No. 2017JJA160108 , 2019JJG160011 ), National Natural Science Foundation of China (Grant No. 51876112 ), the Youth Foundation of Shanghai Polytechnic University (Grant No. EGD18XQD04 ) and Gaoyuan Discipline of Shanghai – Environmental Science and Engineering (Resource Recycling Science and Engineering) .

**Compendex references:** YES

**Database:** Compendex

Compilation and indexing terms, Copyright 2020 Elsevier Inc.

**Data Provider:** Engineering Village

**108. Instantaneous optimal control for vehicle nonlinear suspension system with time delay    (*Open Access*)**

**Accession number:** 20203709177852

**Authors:** Yan, G. (1); Fang, M.X. (2)

**Author affiliation:** (1) College of Engineering, Shanghai Polytechnic University, Shanghai, China; (2) School of Aerospace Engineering and Applied Mechanics, Tongji University, Shanghai, China

**Source title:** Journal of Physics: Conference Series

**Abbreviated source title:** J. Phys. Conf. Ser.

**Volume:** 1605

**Part number:** 1 of 1

**Issue:** 1

**Issue title:** 2020 International Conference on Internet of Things, Artificial Intelligence and Mechanical Automation, IoTAIMA 2020

**Issue date:** August 18, 2020

**Publication year:** 2020

**Article number:** 012018

**Language:** English

**ISSN:** 17426588

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**Document type:** Conference article (CA)

**Conference name:** 2020 International Conference on Internet of Things, Artificial Intelligence and Mechanical Automation, IoTAIMA 2020

**Conference date:** July 10, 2020 - July 12, 2020

**Conference location:** Hangzhou, China

**Conference code:** 162446

**Publisher:** Institute of Physics Publishing

**Abstract:** This paper deals with the problem of instantaneous optimal control for vehicle suspension system with control time delay. The control objective is to improve vehicle ride comfort. Firstly, the dynamic equation of nonlinear suspension system is established. Secondly, to reduce the effect of control time delay, a formula based on integral transformation is introduced to obtain instantaneous optimal control strategy. Finally, the effectiveness of instantaneous optimal control is verified by numerical simulation. The analysis results reflect that the instantaneous optimal control could ensure the stability of the control system no matter how the time delay changes. And it is also found that the control effect varies with the control time delay. It lays a foundation for the study of how to add intentional time delay in the control loop to make the control effect better. This paper provides an effective way for nonlinear vibration control, which has important theoretical and engineering application value. © 2020 Published under licence by IOP Publishing Ltd.

**Number of references:** 13

**Main heading:** Delay control systems

**Controlled terms:** Artificial intelligence  -  Automobile suspensions  -  Integral equations  -  Internet of things  -  Nonlinear equations  -  Optimal control systems  -  Suspensions (components)  -  Time delay  -  Timing circuits

**Uncontrolled terms:** Control objectives  -  Engineering applications  -  Instantaneous optimal control  -  Integral transformations  -  Nonlinear suspensions  -  Nonlinear vibration controls  -  Time delay changes  -  Vehicle suspension systems

**Classification code:** 601.2 Machine Components  -  662.4 Automobile and Smaller Vehicle Components  -  713 Electronic Circuits  -  713.4 Pulse Circuits  -  723 Computer Software, Data Handling and Applications  -  723.4 Artificial Intelligence  -  731.1 Control Systems  -  921.2 Calculus

**DOI:** 10.1088/1742-6596/1605/1/012018

**Funding Details:** Number: 11772229, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;

**Funding text:** This work is supported by National Natural Science Foundation of China under Grant No. 11772229, the key disciplines of Shanghai Polytechnic University No.XXKZD1601 and the fund of Shanghai Polytechnic University No.EGD20XQD03.

**Compendex references:** YES

**Database:** Compendex

Compilation and indexing terms, Copyright 2020 Elsevier Inc.

**Data Provider:** Engineering Village

**109. Research on Stepper Motor Servo Controller Based on Pan-Boolean PID Control**

**Accession number:** 20203909241949

**Authors:** Shi, Jiashun (1); Chen, Jin (1); Qi, Wen (1)

**Author affiliation:** (1) Shanghai Second Polytechnic University, School of Engineering, Shanghai; 201209, China

**Source title:** Chinese Control Conference, CCC

**Abbreviated source title:** Chinese Control Conf., CCC

**Volume:** 2020-July

**Part number:** 1 of 1

**Issue title:** Proceedings of the 39th Chinese Control Conference, CCC 2020

**Issue date:** July 2020

**Publication year:** 2020

**Pages:** 2686-2690

**Article number:** 9189307

**Language:** English

**ISSN:** 19341768

**E-ISSN:** 21612927

**ISBN-13:** 9789881563903

**Document type:** Conference article (CA)

**Conference name:** 39th Chinese Control Conference, CCC 2020

**Conference date:** July 27, 2020 - July 29, 2020

**Conference location:** Shenyang, China

**Conference code:** 162927

**Sponsor:** Systems Engineering Society of China (SESC); Technical Committee on Control Theory (TCCT) of Chinese Association of Automation (CAA)

**Publisher:** IEEE Computer Society

**Abstract:** This paper applies the pan-Boolean PID control algorithm to the stepper motor servo control system. The mathematical simulation control model of the step-motor servo control system [l]is established in the MATALB / SIMULINK environment. Compare the output effect in the stepper motor servo controller. Analysis of simulation model results shows that compared with traditional PID control, pan-Boolean PID control has good control effects such as fast response speed, small overshoot, short adjustment time, and strong robustness. In order to verify the general practicability of the stepper motor servo controller based on the pan-Boolean PID control algorithm, a stepper motor servo controller based on a dedicated control and control chip is designed in this paper. The stepping servo controller designed in this paper has basic functionality. The stepping servo controller can meet the development needs of modem industry, and has certain practical significance for the theoretical research and production practice of the servo controller. © 2020 Technical Committee on Control Theory, Chinese Association of Automation.

**Number of references:** 13

**Main heading:** Controllers

**Controlled terms:** Pneumatic control equipment  -  Stepping motors  -  Three term control systems

**Uncontrolled terms:** Analysis of simulations  -  Development needs  -  Mathematical simulations  -  Production practice  -  Servo control systems  -  Servo-controllers  -  Strong robustness  -  Theoretical research

**Classification code:** 705.3 Electric Motors  -  731.1 Control Systems  -  732.1 Control Equipment

**DOI:** 10.23919/CCC50068.2020.9189307

**Compendex references:** YES

**Database:** Compendex

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**Data Provider:** Engineering Village

**110. Effects of Electric Field on Electronic and Optical Properties of SnSe: A First-Principle Study**

**Accession number:** 20204209362056

**Authors:** Luo, Min (1); Yin, Haihong (2)

**Author affiliation:** (1) Department of Physics, Shanghai Polytechnic University, Shanghai, China; (2) Department of Electronic Engineering, Shang Hai Jian Qiao University, Shanghai, China

**Corresponding author:** Yin, Haihong(hhyin81@gmail.com)

**Source title:** Integrated Ferroelectrics

**Abbreviated source title:** Integr Ferroelectr

**Volume:** 211

**Issue:** 1

**Issue date:** October 12, 2020

**Publication year:** 2020

**Pages:** 167-174

**Language:** English

**ISSN:** 10584587

**E-ISSN:** 16078489

**CODEN:** IFEREU

**Document type:** Journal article (JA)

**Publisher:** Taylor and Francis Ltd.

**Abstract:** Electric field (E-field) effects on electric and optical properties of α-, β- and δ-SnSe have been investigated. Under the E-field, a tunable band gap of δ-SnSe appears, ranging from 2.23 to 1.26 eV. The band gap of β-SnSe could be mildly regulated by the E-field, just from 2.32 to 2.01 eV. For α-SnSe, the E-field has little effect on its band gap. We further find that the Sn-p and Se-p states mainly contribute to the variations of the band structures. Moreover, due to the application of the E-field, the absorption strength of α-SnSe in visible light might be enhanced. © 2020 Taylor & Francis Group, LLC.

**Number of references:** 31

**Main heading:** Optical properties

**Controlled terms:** Electric fields  -  Energy gap  -  Layered semiconductors  -  Tin compounds

**Uncontrolled terms:** Absorption strength  -  E-field  -  Effects of electric fields  -  Electronic and optical properties  -  First-principle study  -  Tunable Band-gap  -  Visible light

**Classification code:** 701.1 Electricity: Basic Concepts and Phenomena  -  741.1 Light/Optics

**Numerical data indexing:** Electron\_Volt 2.23e+00eV to 1.26e+00eV, Electron\_Volt 2.32e+00eV to 2.01e+00eV

**DOI:** 10.1080/10584587.2020.1803684

**Funding Details:** Number: EGD18XQD29, Acronym: -, Sponsor: -; Number: XXKZD1605, Acronym: -, Sponsor: -; Number: 19ZR1419800, Acronym: -, Sponsor: Natural Science Foundation of Shanghai;

**Funding text:** The work is supported by the Discipline Project of Shanghai Polytechnic University (Grant No. XXKZD1605), the Foundation of Shanghai Polytechnic University (Grant No. EGD18XQD29) and the Natural Science Foundation of Shanghai (Grant No. 19ZR1419800). Our work is also supported by the Research Center of Opto-Electrical Sensering, the Research Center of Resource Recycling Science and Engineering, Shanghai Polytechnic University, and Gaoyuan Discipline of Shanghai-Environmental Science and Engineering (Resource Recycling Science and Engineering).

**Compendex references:** YES

**Database:** Compendex

Compilation and indexing terms, Copyright 2020 Elsevier Inc.

**Data Provider:** Engineering Village

**111. Low-temperature and highly sensitivity H2S gas sensor based on ZnO/CuO composite derived from bimetal metal-organic frameworks**

**Accession number:** 20201508383445

**Authors:** Wang, Xu (1); Li, Sihan (1); Xie, Lili (1); Li, Xia (1); Lin, Donghai (1); Zhu, Zhigang (1, 2, 3)

**Author affiliation:** (1) School of Environmental and Materials Engineering, College of Engineering, Shanghai Polytechnic University, Shanghai; 201209, China; (2) School of Medical Instrument and Food Engineering, University of Shanghai for Science and Technology, Shanghai; 200093, China; (3) Research Center of Resource Recycling Science and Engineering, Shanghai Polytechnic University, Shanghai; 201209, China

**Corresponding author:** Zhu, Zhigang(Zhigang\_zhu259@163.com)

**Source title:** Ceramics International

**Abbreviated source title:** Ceram Int

**Volume:** 46

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**Issue date:** July 2020

**Publication year:** 2020

**Pages:** 15858-15866

**Language:** English

**ISSN:** 02728842

**CODEN:** CINNDH

**Document type:** Journal article (JA)

**Publisher:** Elsevier Ltd

**Abstract:** The bimetallic metal-organic frameworks (MOF) Zn/Cu-BTC were prepared by a facile solvothermal method in one step and used as a self-sacrificed template to obtain the ZnO/CuO composites. The composites with different Cu/Zn molar ratios were characterized by XRD, FESEM, and XPS. The ZnO/CuO composite exhibited an octahedral structure, and a p-n heterojunction may be formed between p-type CuO and n-type ZnO. To prove its functional characteristics, the ZnO/CuO composite was used as a sensing material to test its gas sensitivity. The effect of Cu/Zn molar ratios was examined, and the results showed that the optimized ZnO/CuO (1: 0.33) composite based gas sensor exhibited reasonable selectivity to 10 ppm H2S, operated at 40 °C. The sensitivities were improved by 17.1 times and 327.8 times compared with the pristine CuO and ZnO based gas sensors, respectively. Moreover, the detection limit to H2S of such sensors could be reduced as low as 300 ppb. The sensing mechanism has been thoroughly studied and such ZnO/CuO composite is an ideal candidate for highly sensitive detection for H2S with low power consumption in the real application. © 2020 Elsevier Ltd and Techna Group S.r.l.

**Number of references:** 50

**Main heading:** II-VI semiconductors

**Controlled terms:** Chemical sensors  -  Copper oxides  -  Gas detectors  -  Heterojunctions  -  Metal-Organic Frameworks  -  Molar ratio  -  Organometallics  -  Temperature  -  Zinc oxide

**Uncontrolled terms:** Functional characteristics  -  Highly sensitive detections  -  Low-power consumption  -  Octahedral structures  -  P-n heterojunctions  -  P-n junction  -  Sensing mechanism  -  Solvothermal method

**Classification code:** 641.1 Thermodynamics  -  714.2 Semiconductor Devices and Integrated Circuits  -  801 Chemistry  -  804.1 Organic Compounds  -  804.2 Inorganic Compounds  -  914.1 Accidents and Accident Prevention

**Numerical data indexing:** Temperature 3.13e+02K

**DOI:** 10.1016/j.ceramint.2020.03.133

**Funding Details:** Number: 51590902, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;

**Funding text:** This work was supported by the National Natural Science Foundation of China (No. 61471233 , 51590902 ), the Program for Professor of Special Appointment (Eastern Scholar) at SIHL , Gaoyuan Discipline of Shanghai-Environmental Science and Engineering (Resource Recycling Science and Engineering).

**Compendex references:** YES

**Database:** Compendex

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**Data Provider:** Engineering Village

**112. Preface: Combinatorial optimization drives the future of Health Care**

**Accession number:** 20200808203627

**Authors:** Zhong, Liwei (1); Tang, Guochun (2)

**Author affiliation:** (1) Shanghai General Hospital, School of Medicine, Shanghai Jiaotong University, Shanghai; 200080, China; (2) Shanghai Polytechnic University, Shanghai; 201209, China

**Corresponding author:** Tang, Guochun(gctang@sspu.edu.cn)

**Source title:** Journal of Combinatorial Optimization

**Abbreviated source title:** J Combin Optim

**Issue date:** 2020

**Publication year:** 2020

**Language:** English

**ISSN:** 13826905

**E-ISSN:** 15732886

**CODEN:** JCOPFV

**Document type:** Article in Press

**Publisher:** Springer

**DOI:** 10.1007/s10878-020-00545-9

**Database:** Compendex

Compilation and indexing terms, Copyright 2020 Elsevier Inc.

**Data Provider:** Engineering Village

**113. Development of two-axis translation stage control system based on STC8A8K64S4A12**

**Accession number:** 20200908225571

**Authors:** Shi, Jiashun (1); Chen, Jin (1); Qi, Wen (1); Shen, Huizhong (1)

**Author affiliation:** (1) School of Engineering, Shanghai Second Polytechnic University, Shanghai; 201209, China

**Corresponding author:** Shi, Jiashun(1183003687@qq.com)

**Source title:** Journal of Physics: Conference Series

**Abbreviated source title:** J. Phys. Conf. Ser.

**Volume:** 1449

**Part number:** 1 of 1

**Issue:** 1

**Issue title:** 2019 2nd International Symposium on Power Electronics and Control Engineering, ISPECE 2019

**Issue date:** February 7, 2020

**Publication year:** 2020

**Article number:** 012083

**Language:** English

**ISSN:** 17426588

**E-ISSN:** 17426596

**Document type:** Conference article (CA)

**Conference name:** 2019 2nd International Symposium on Power Electronics and Control Engineering, ISPECE 2019

**Conference date:** November 22, 2019 - November 24, 2019

**Conference location:** Tianjin, China

**Conference code:** 157553

**Publisher:** Institute of Physics Publishing

**Abstract:** Based on STC8A8K64S4A12 microcontroller and LabVIEW[1] software, the two-axis translation stage control system is designed. The two-axis translation stage is applied to a plane plotter, and the two rails are placed at right angles to form a horizontal motion mechanism. The two-axis controller consists of STC8A8K64S4A12 microcontroller control board and TMC5160 stepper motor driver[2], which realizes independent control of the two-axis translation stage. At the same time, PC software is designed, which can be connected to the two-axis controller through network interface or serial communication interface. The two-axis translation stage is controlled by a PC or a laptop. Repeated test experiments were carried out on the system. The experimental results show that the system has high reliability and control precision, and the horizontal displacement control accuracy is 0.01 mm. © Published under licence by IOP Publishing Ltd.

**Number of references:** 8

**Main heading:** Controllers

**Controlled terms:** Computer programming languages  -  Flight control systems  -  Microcontrollers  -  Power control  -  Power electronics  -  Stepping motors

**Uncontrolled terms:** Control accuracy  -  Control precision  -  High reliability  -  Horizontal displacements  -  Horizontal motion  -  Independent control  -  Serial communication interfaces  -  Stepper motor drivers

**Classification code:** 705.3 Electric Motors  -  723.1.1 Computer Programming Languages  -  731.1 Control Systems  -  731.3 Specific Variables Control  -  732.1 Control Equipment

**Numerical data indexing:** Size 1.00e-05m

**DOI:** 10.1088/1742-6596/1449/1/012083

**Compendex references:** YES

**Database:** Compendex

Compilation and indexing terms, Copyright 2020 Elsevier Inc.

**Data Provider:** Engineering Village

**114. Metal-Organic frameworks-derived bamboo-like CuO/In2O3 Heterostructure for high-performance H2S gas sensor with Low operating temperature**

**Accession number:** 20200808208303

**Authors:** Li, Sihan (1); Xie, Lili (1, 3); He, Meng (1); Hu, Xiaobing (1); Luo, Guifang (1); Chen, Cheng (1, 3); Zhu, Zhigang (1, 2, 3)

**Author affiliation:** (1) School of Environmental and Materials Engineering, College of Engineering, Shanghai Polytechnic University, Shanghai; 201209, China; (2) School of Medical Instrument and Food Engineering, University of Shanghai for Science and Technology, Shanghai; 200093, China; (3) Research Center of Resource Recycling Science and Engineering, Shanghai Polytechnic University, Shanghai; 201209, China

**Corresponding author:** Xie, Lili(llxie@sspu.edu.cn)

**Source title:** Sensors and Actuators, B: Chemical

**Abbreviated source title:** Sens Actuators, B Chem

**Volume:** 310

**Issue date:** 1 May 2020

**Publication year:** 2020

**Article number:** 127828

**Language:** English

**ISSN:** 09254005

**CODEN:** SABCEB

**Document type:** Journal article (JA)

**Publisher:** Elsevier B.V., Netherlands

**Abstract:** Hydrogen sulfide (H2S) sensors with excellent response and selectivity are in great demand to monitor its concentration changes in the real environment, especially at an ultra-trace level. This work presents a metal-organic framework (MOF)-derived metal oxide prepared via the solvothermal method and the developed sensors based on such materials exhibits enhanced gas-sensing performance. The bamboo-like CuO/In2O3 derived from Cu2+-impregnated CPP-3 were investigated through structural analyses, and it confirms that the n-type In2O3 and p-type CuO were successfully combined and heterojunctions were formed at CuO/In2O3 interfaces. The gas-sensing properties of CuO/In2O3 towards H2S were evaluated, and the sensor based on CuO/In2O3 with 3.5 wt% of Cu to CPP-3(In) is found to exhibit excellent H2S response (Rair/Rgas = 229.35 ppm), which are 8.5 times higher than that of with pristine In2O3. It also discloses low detection limits (200 ppb), low operating temperature (70 °C) and superior selectivity against other interfering gases. The gas sensing mechanism is thoroughly discussed and CuO/In2O3 could be considered as a novel and promising material for the practical application to selectively detect H2S at low operating temperature. © 2020 Elsevier B.V.

**Number of references:** 40

**Main heading:** Indium compounds

**Controlled terms:** Bamboo  -  Chemical detection  -  Chemical sensors  -  Copper oxides  -  Gas detectors  -  Gas sensing electrodes  -  Gases  -  Heterojunctions  -  Metal-Organic Frameworks  -  Metals   -  Organic polymers  -  Organometallics  -  Sulfur compounds  -  Temperature

**Uncontrolled terms:** Concentration change  -  CuO/In2O3  -  Gas sensing mechanism  -  Gas sensing properties  -  Low detection limit  -  Low operating temperature  -  P-n heterojunctions  -  Solvothermal method

**Classification code:** 641.1 Thermodynamics  -  714.2 Semiconductor Devices and Integrated Circuits  -  801 Chemistry  -  804.1 Organic Compounds  -  804.2 Inorganic Compounds  -  811.1 Pulp and Paper  -  815.1.1 Organic Polymers  -  914.1 Accidents and Accident Prevention

**Numerical data indexing:** Temperature 3.43e+02K

**DOI:** 10.1016/j.snb.2020.127828

**Funding Details:** Number: EGD18YJ0007, Acronym: -, Sponsor: -; Number: 51590902, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;

**Funding text:** This work was supported by the National Natural Science Foundation of China (No. 61471233 , 51590902 ), Gaoyuan Discipline of Shanghai-Environmental Science and Engineering (Resource Recycling Science and Engineering) and the Graduate Program Foundation of Shanghai Polytechnic University ( EGD18YJ0007 ).

**Compendex references:** YES

**Database:** Compendex

Compilation and indexing terms, Copyright 2020 Elsevier Inc.

**Data Provider:** Engineering Village

**115. Research on virtual assembly technology of automobile**

**Accession number:** 20201108282824

**Authors:** Tu, Zimei (1); Lv, Qinyuan (1); Zhu, Xiaolong (1); Jiang, Jingke (1); Qin, Qin (1); Dai, Zuoxiao (2)

**Author affiliation:** (1) School of Intelligent Manufacturing and Control Engineering, Shanghai Polytechnic University, China; (2) Shanghai Institute of Technical Physics, Chinese Academy of Chinese, China

**Corresponding author:** Tu, Zimei(zmtu@sspu.edu.cn)

**Source title:** Proceedings of SPIE - The International Society for Optical Engineering

**Abbreviated source title:** Proc SPIE Int Soc Opt Eng

**Volume:** 11427

**Part number:** 1 of 1

**Issue title:** Second Target Recognition and Artificial Intelligence Summit Forum

**Issue date:** 2020

**Publication year:** 2020

**Article number:** 114270H

**Language:** English

**ISSN:** 0277786X

**E-ISSN:** 1996756X

**CODEN:** PSISDG

**ISBN-13:** 9781510636316

**Document type:** Conference article (CA)

**Conference name:** 2nd Target Recognition and Artificial Intelligence Summit Forum 2019

**Conference date:** August 28, 2019 - August 30, 2019

**Conference location:** Shenyang, China

**Conference code:** 157916

**Sponsor:** Chinese Society for Optical Engineering

**Publisher:** SPIE

**Abstract:** The conventional training for automobile assembly and disassembly has such weak points as need of ample space, lack of teachers, heavy loss of instruments, low efficiency and unsatisfactory training results. This article puts forward a kind of automobile assembly technology based on virtual reality (shortened as VR). With the help of HTC VIVE helmet display and handle as the input and output media, the interactive connection between the user and the virtual scene is established. Lead the structured automobile model into the Unity 3D development engine, and write the script using the object-oriented programming method of C# language, to realize automobile virtual assembly processes, which includes such major functions as main scene design, component recognition, assembly demonstration, virtual assembly and simulated driving. This technology, featuring rich content, short cycle, low cost, flexible and easy use, strong user experience, low risk, lead and play, and strong expansibility, etc., has good practical significance for current automobile assembly. © COPYRIGHT SPIE. Downloading of the abstract is permitted for personal use only.

**Number of references:** 9

**Main heading:** Automobile instruments

**Controlled terms:** Artificial intelligence  -  Automobiles  -  Object oriented programming  -  Personnel training  -  User experience  -  Virtual prototyping  -  Virtual reality

**Uncontrolled terms:** Automobile assemblies  -  Automobile models  -  Input and outputs  -  Scene designs  -  Short cycle  -  Simulated driving  -  Virtual assembly  -  Virtual scenes

**Classification code:** 662.1 Automobiles  -  662.4 Automobile and Smaller Vehicle Components  -  723 Computer Software, Data Handling and Applications  -  912.4 Personnel

**DOI:** 10.1117/12.2549952

**Funding Details:** Number: A11NH190704, Acronym: -, Sponsor: -; Number: 2017YFE0118700, Acronym: -, Sponsor: -; Number: XXKZD1603, Acronym: -, Sponsor: Shanghai Key Discipline Construction Project; Number: 734599, Acronym: -, Sponsor: -; Number: No.U1537110, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;

**Funding text:** This research has been partially sponsored by National Key R&D Program of China(2017YFE0118700), EU H2020 FIRST project(Grand No.734599,FIR ST:vF Interoperation supporting business innovation), National Natural Science Foundation of China under Grand(No.U1537110 and 51605273), and Shanghai Polytechnic University Key Discipline Construction (Mechanical Engineering, XXKZD1603). and Shanghai Polytechnic University University Enterprise Cooperation Automobile Electronic Joint Experiment Center with Grant Number A11NH190704 and Shanghai Polytechnic University Research Center of Resource Recycling Science and Engineering, and Gaoyuan Discipline of Shanghai – Environmental Science and Engineering (Resource Recycling Science and Engineering)

**Compendex references:** YES

**Database:** Compendex

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**Data Provider:** Engineering Village

**116. Treatment of High Concentration Acid Plasticizer Wastewater by Ozone Microbubble Oxidation**

**Accession number:** 20202808925093

**Authors:** Wan, Xiaohui (1); Zhang, Li (1); Sun, Zhiguo (1); Yu, Wei (1); Xie, Hongyong (1)

**Author affiliation:** (1) Research Center of Resource Recycling Science and Engineering, School of Environmental and Materials Engineering, Shanghai Polytechnic University, Shanghai; 201209, China

**Corresponding author:** Zhang, Li(zhangli@sspu.edu.cnemailyuwei@sspu.edu.cnemailhyxie@sspu.edu.cn)Yu, Wei(yuwei@sspu.edu.cnemailhyxie@sspu.edu.cn)Xie, Hongyong(hyxie@sspu.edu.cn)

**Source title:** Water, Air, and Soil Pollution

**Abbreviated source title:** Water Air Soil Pollut.

**Volume:** 231

**Issue:** 7

**Issue date:** July 1, 2020

**Publication year:** 2020

**Article number:** 367

**Language:** English

**ISSN:** 00496979

**E-ISSN:** 15732932

**CODEN:** WAPLAC

**Document type:** Journal article (JA)

**Publisher:** Springer

**Abstract:** The large use of plasticizers in industry produced large amounts of wastewater. The treatment of industrial wastewater with advanced oxidation processes (AOPs) has attracted widespread interest from scientists in recent years. Comparing with several common AOPs such as activated persulfate, Fenton, UV, and H2O2, the ozone oxidation technology has the advantages of not introducing other chemical reagents, not bringing secondary pollution, lower energy consumption, safety, and non-flammability or explosion. Using the ozone microbubble process to treat high-concentration acidic plasticizer wastewater is in line with the concepts of green, energy-saving, and environment friendly. This work studied the changes of chemical oxygen demand (COD), pH, and dissolved oxygen (DO) in wastewater by adjusting the reaction time, system pressure, and reaction temperature, and revealed the best working conditions of ozone microbubble technology to treat plasticizer wastewater. The experiment shows that with the condition of the reaction time of 45 h, the pressure of 0.150 MPa, the ozone concentration of 100%, and the gas flow of 0.7 L/min, the dissolved oxygen (DO) of the wastewater increased from 3.8 to 4.5 mg/L, while the pH value increased from 3.23 to 7.54, and the COD removal rate reached up to 94.18%. This work discussed the mechanism of ozone microbubble technology to degrade plasticizer wastewater, and also confirmed that ozone microbubble technology can generate high hydroxyl radicals, even under acidic media. In addition, this technology does not require the addition of any additional chemical reagents and does not form a precipitate in the reaction to cause secondary pollution to the environment. Meanwhile, the water treatment costs of unit tons using this technology have also been analyzed. This technique has great practical application prospects in treating high concentration organic acid wastewater. © 2020, Springer Nature Switzerland AG.

**Number of references:** 34

**Main heading:** Industrial water treatment

**Controlled terms:** Air pollution  -  Binary alloys  -  Biochemical oxygen demand  -  Dissolved oxygen  -  Energy conservation  -  Energy utilization  -  Flow of gases  -  Oxidation  -  Ozone  -  Petroleum prospecting   -  Plasticizers  -  Reagents  -  Reinforced plastics  -  Solvents  -  Wastewater treatment

**Uncontrolled terms:** Activated persulfate  -  Advanced oxidation process  -  Application prospect  -  Environment friendly  -  Industrial wastewaters  -  Ozone concentration  -  Reaction temperature  -  Water treatment costs

**Classification code:** 445.1.2 Water Treatment Techniques for Industrial Use  -  451 Air Pollution  -  452.4 Industrial Wastes Treatment and Disposal  -  512.1.2 Petroleum Deposits : Development Operations  -  525.2 Energy Conservation  -  525.3 Energy Utilization  -  631.1.2 Gas Dynamics  -  802.2 Chemical Reactions  -  803 Chemical Agents and Basic Industrial Chemicals  -  804 Chemical Products Generally  -  817.1 Polymer Products

**Numerical data indexing:** Percentage 1.00e+02%, Percentage 9.42e+01%

**DOI:** 10.1007/s11270-020-04735-3

**Funding Details:** Number: -, Acronym: -, Sponsor: Shanghai Municipal Education Commission; Number: 15SG52, Acronym: SEDF, Sponsor: Shanghai Education Development Foundation; Number: 16ZR1412600, Acronym: -, Sponsor: Natural Science Foundation of Shanghai; Number: 51590901, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;

**Funding text:** The project was funded by the Natural Science Foundation of China (nos. 21806101, 51476094, 51590901), the Natural Science Foundation of Shanghai (nos. 16ZR1412600, 15ZR1416900), the Gaoyuan Discipline of Shanghai-Environmental Science and Engineering (Resource Recycling Science and Engineering), the Shanghai Eastern Professorship grant, ShuGuang project supported by the Shanghai Municipal Education Commission and Shanghai Education Development Foundation (no. 15SG52).

**Compendex references:** YES

**Database:** Compendex

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**Data Provider:** Engineering Village

**117. Detection and Quantization Technique of Optical Distributed Acoustic Coupling Based on φ-OTDR**

**Accession number:** 20201208306487

**Authors:** Zhang, Yang (1); Xu, Hongxuan (1, 2); Zhu, Xianxun (1); Zhao, Zhiyang (1); Zuo, Jiancun (1)

**Author affiliation:** (1) School of Computer and Information Engineering, Shanghai Polytechnic University, Shanghai; 201209, China; (2) Merchant Marine College, Shanghai Maritime University, Shanghai; 201306, China

**Corresponding author:** Zuo, Jiancun(jczuo@sspu.edu.cn)

**Source title:** Journal of Shanghai Jiaotong University (Science)

**Abbreviated source title:** J. Shanghai Jiaotong Univ. Sci.

**Volume:** 25

**Issue:** 2

**Issue date:** April 1, 2020

**Publication year:** 2020

**Pages:** 208-213

**Language:** English

**ISSN:** 10071172

**E-ISSN:** 19958188

**Document type:** Journal article (JA)

**Publisher:** Shanghai Jiao Tong University, 2200 Xietu Rd no.25,, Shanghai, 200032, China

**Abstract:** The detection of multiple acoustic disturbances by optical fiber is a hot research topic in the field of optical fiber sensing. This paper considers adopting an optical distributed acoustic sensing (DAS) system to detect multiple acoustic disturbances, proposes a new approach to processing the DAS signal based on time-space average in frequency domain, and overcomes the randomness of DAS time domain signal. Finally, it obtains a functional model of single-frequency (50–1 000 Hz) sound pressure level and DAS signal intensity, and also the cut-off frequency of acoustic disturbance is detected by DAS system. © 2020, Shanghai Jiao Tong University and Springer-Verlag GmbH Germany, part of Springer Nature.

**Number of references:** 14

**Main heading:** Time domain analysis

**Controlled terms:** Acoustic variables measurement  -  Acoustic wave transmission  -  Chemical analysis  -  Frequency domain analysis  -  Optical fibers

**Uncontrolled terms:** Acoustic disturbances  -  Acoustic sensing  -  Hot research topics  -  Optical fiber sensing  -  Sound pressure level  -  Time-domain signal  -  Time-space  -  TP 212

**Classification code:** 741.1.2 Fiber Optics  -  751.1 Acoustic Waves  -  921 Mathematics  -  921.3 Mathematical Transformations  -  941.2 Acoustic Variables Measurements

**DOI:** 10.1007/s12204-020-2161-8

**Compendex references:** YES

**Database:** Compendex

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**Data Provider:** Engineering Village

**118. Unambiguous and precise correlation receiver for binary offset carrier modulated signal**

**Accession number:** 20200107963120

**Authors:** Zhang, Hua (1); Zuo, Jiancun (1)

**Author affiliation:** (1) College of Computer and Information Engineering, Shanghai Second Polytechnic University, Shanghai, China

**Corresponding author:** Zhang, Hua(zhanghua@sspu.edu.cn)

**Source title:** International Journal of Communication Systems

**Abbreviated source title:** Int J Commun Syst

**Volume:** 33

**Issue:** 6

**Issue date:** April 1, 2020

**Publication year:** 2020

**Article number:** e4300

**Language:** English

**ISSN:** 10745351

**E-ISSN:** 10991131

**CODEN:** IJCYEZ

**Document type:** Journal article (JA)

**Publisher:** John Wiley and Sons Ltd, Southern Gate, Chichester, West Sussex, PO19 8SQ, United Kingdom

**Abstract:** The binary offset carrier (BOC) modulated signal can improve the positioning accuracy and increase the multipath resistance in global navigation satellite system (GNSS), and it may cause potential ambiguity in the process of signal acquisition and code tracking. In this paper, a simple but efficient unambiguous receiver is firstly proposed for multiple side-peaks mitigation by implementing correlation of the received BOC signal with local sine wave instead of square wave used at the transmitter. Moreover, the potential degradation of sharpness of the nonlinear correlation induced by the sine wave is well compensated by optimizing the early-to-late spacing. The other reason leading to ambiguity is the multipath propagation, so we further propose a maximum likelihood (ML) estimator with Newton iteration method, where the received GNSS signal is modeled via the line-of-sight (LOS) component and the first-arrived non-line-of-sight (NLOS) component. Finally, the analytical expression of multipath propagation Cramer-Rao bound is derived for the designed ML estimator. Simulation results indicate that compared with the conventional BOC modulation, the proposed sine wave receiver can achieve unambiguous and more precise code tracking performance and thus turns out to be more robust to multipath propagation. © 2019 John Wiley & Sons, Ltd.

**Number of references:** 36

**Main heading:** Global positioning system

**Controlled terms:** Communication satellites  -  Cramer-Rao bounds  -  Iterative methods  -  Maximum likelihood  -  Maximum likelihood estimation  -  Multipath propagation  -  Signal processing  -  Signal receivers

**Uncontrolled terms:** Analytical expressions  -  Binary offset carriers  -  Code tracking  -  Global Navigation Satellite Systems  -  Maximum likelihood estimator  -  Newton Iteration Method  -  Non-linear correlations  -  Signal acquisitions

**Classification code:** 655.2.1 Communication Satellites  -  711 Electromagnetic Waves  -  716.1 Information Theory and Signal Processing  -  921.6 Numerical Methods  -  922 Statistical Methods

**DOI:** 10.1002/dac.4300

**Compendex references:** YES

**Database:** Compendex

Compilation and indexing terms, Copyright 2020 Elsevier Inc.

**Data Provider:** Engineering Village

**119. Flexible inorganic CsPbI3 perovskite nanocrystal-PMMA composite films with enhanced stability in air and water for white light-emitting diodes**

**Accession number:** 20201608426676

**Authors:** Chen, Changsong (1); Li, Dan (1); Wu, Yihua (1, 2); Chen, Cheng (1, 2); Zhu, Zhi-Gang (1, 2); Shih, Wan Y (3); Shih, Wei-Heng (4)

**Author affiliation:** (1) School of Environmental and Materials Engineering, Shanghai Polytechnic University, Shanghai; 201209, China; (2) Research Center of Resource Recycling Science and Engineering, Shanghai Polytechnic University, Shanghai; 201209, China; (3) School of Biomedical Engineering, Science, and Healthy Systems, Drexel University, Philadelphia; PA; 19104, United States; (4) Department of Materials Science and Engineering, Drexel University, Philadelphia; PA; 19104, United States

**Source title:** Nanotechnology

**Abbreviated source title:** Nanotechnology

**Volume:** 31

**Issue:** 22

**Issue date:** May 29, 2020

**Publication year:** 2020

**Article number:** 225602

**Language:** English

**ISSN:** 09574484

**E-ISSN:** 13616528

**CODEN:** NNOTER

**Document type:** Journal article (JA)

**Publisher:** Institute of Physics Publishing

**Abstract:** Perovskite nanocrystals are a new type of fluorescent material with the advantages of facile preparation process, bright tunable color with high quantum yield. They are ideal candidates for optoelectronic devices such as light-emitting diode (LED) and display. However, for practical applications of iodine-based perovskite nanocrystals, the photostability remains a great challenge because of their sensitivity to environmental factors such as oxygen, humidity etc. In this paper, we improve the photostability of CsPbI3 by introducing the polymethyl methacrylate (PMMA) as a matrix to form flexible perovskite/PMMA composite films. The composite films maintain good photoluminescence quantum yield for 25 d in air and 4 d in water. Furthermore, these films are flexible and can sustain multiple bending and folding while maintaining their photoluminescence properties. This photostability against mechanical deformation allows for the development of flexible devices. As an example, flexible white light-emitting diodes (WLED) were produced with chromaticity coordination (0.31, 0.32), color temperature 6735 K and good stability over time. © 2020 IOP Publishing Ltd.

**Number of references:** 34

**Main heading:** Nanocomposite films

**Controlled terms:** Diodes  -  Display devices  -  Lead compounds  -  Light emitting diodes  -  Nanocrystals  -  Perovskite  -  Photoluminescence  -  Polymethyl methacrylates  -  Quantum yield

**Uncontrolled terms:** Chromaticity coordination  -  Enhanced stability  -  Environmental factors  -  Fluorescent materials  -  Mechanical deformation  -  Photoluminescence properties  -  Photoluminescence quantum yields  -  White light emitting diodes

**Classification code:** 482.2 Minerals  -  712.1 Semiconducting Materials  -  714.2 Semiconductor Devices and Integrated Circuits  -  722.2 Computer Peripheral Equipment  -  741.1 Light/Optics  -  761 Nanotechnology  -  801.4 Physical Chemistry  -  815.1.1 Organic Polymers

**Numerical data indexing:** Temperature 6.74e+03K

**DOI:** 10.1088/1361-6528/ab7648

**Compendex references:** YES

**Database:** Compendex

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**Data Provider:** Engineering Village

**120. First-Principles Investigations on Magnetic and Optical Properties of Transition-Metal Dopants in β-SnSe**

**Accession number:** 20202108707496

**Authors:** Luo, M. (1); Xu, Y.E. (2)

**Author affiliation:** (1) Department of Physics, Shanghai Polytechnic University, Shanghai; 201209, China; (2) Department of Electronic Engineering, Shang Hai Jian Qiao University, Shanghai; 201306, China

**Corresponding author:** Luo, M.(luomin@sspu.edu.cn)

**Source title:** Journal of Superconductivity and Novel Magnetism

**Abbreviated source title:** J Supercond Novel Magn

**Volume:** 33

**Issue:** 9

**Issue date:** September 1, 2020

**Publication year:** 2020

**Pages:** 2801-2807

**Language:** English

**ISSN:** 15571939

**E-ISSN:** 15571947

**Document type:** Journal article (JA)

**Publisher:** Springer

**Abstract:** The effect of transition-metallic doped β-SnSe on magnetic and optical properties has been investigated by using the density functional theory (DFT) approach. All considered transition-metal (TM, TM = Co, Cu, Mn, and Fe) dopants induce magnetic moment except for Cu and Ni. Due to the larger magnetic moment of Mn and Fe dopants, we further study the magnetic coupling of these two systems. For the Mn-doped system, its antiferromagnetic (AFM) state is its ground state, and it turns to nonmagnetic (NM), while the doped crystal direction changes. Different phenomena show in the Fe-doped system, a stable AFM coupling is always observed. Moreover, by introducing Cu and Mn atoms to intrinsic SnSe, the absorption strength in visible light could be enhanced. The results show that the system of TM doped β-SnSe will provide a new idea for the development of spintronic devices and optical fields in the future. © 2020, Springer Science+Business Media, LLC, part of Springer Nature.

**Number of references:** 37

**Main heading:** Optical properties

**Controlled terms:** Density functional theory  -  Ground state  -  Layered semiconductors  -  Magnetic moments  -  Tin compounds  -  Transition metals

**Uncontrolled terms:** Absorption strength  -  Antiferromagnetic state  -  Doped crystals  -  First-principles investigations  -  Magnetic and optical properties  -  Optical field  -  Spintronic device  -  Transition metal dopants

**Classification code:** 531 Metallurgy and Metallography  -  701.2 Magnetism: Basic Concepts and Phenomena  -  741.1 Light/Optics  -  922.1 Probability Theory

**DOI:** 10.1007/s10948-020-05540-z

**Funding Details:** Number: XXKZD1605, Acronym: -, Sponsor: -; Number: 19ZR1419800, Acronym: -, Sponsor: Natural Science Foundation of Shanghai;

**Funding text:** The work is supported by the Discipline Project of Shanghai Polytechnic University (Grant No. XXKZD1605) and the Natural Science Foundation of Shanghai (Grant No. 19ZR1419800). Our work is also supported by the Research Center of Opto-Electrical Sensering, the Research Center of Resource Recycling Science and Engineering, Shanghai Polytechnic University, and Gaoyuan Discipline of Shanghai-Environmental Science and Engineering (Resource Recycling Science and Engineering).

**Compendex references:** YES

**Database:** Compendex

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**Data Provider:** Engineering Village

**121. Highly-efficient nanofluid-based direct absorption solar collector enhanced by reverse-irradiation for medium temperature applications**

**Accession number:** 20202608869013

**Authors:** Wang, Kongxiang (1); He, Yan (2); Liu, Pengyu (1); Kan, Ankang (3); Zheng, Zhiheng (1); Wang, Lingling (1, 4); Xie, Huaqing (1); Yu, Wei (1)

**Author affiliation:** (1) College of Engineering, Shanghai Key Laboratory of Engineering Materials Application and Evaluation, Shanghai Polytechnic University, Shanghai; 201209, China; (2) School of Mechanical and Electrical Engineering, Qingdao University of Science and Technology, Qingdao; 266061, China; (3) Merchant Marine College, Shanghai Maritime University, Shanghai; 201306, China; (4) Research Center of Resource Recycling Science and Engineering, Shanghai Polytechnic University, Shanghai; 201209, China

**Corresponding author:** Yu, Wei(yuwei@sspu.edu.cnemailzhiheng\_zheng@163.com)Zheng, Zhiheng(zhiheng\_zheng@163.com)

**Source title:** Renewable Energy

**Abbreviated source title:** Renew. Energy

**Volume:** 159

**Issue date:** October 2020

**Publication year:** 2020

**Pages:** 652-662

**Language:** English

**ISSN:** 09601481

**E-ISSN:** 18790682

**Document type:** Journal article (JA)

**Publisher:** Elsevier Ltd

**Abstract:** The direct absorption solar collector (DASC) with nanofluids is a promising solar energy collection technology. However, various studies have focused on low-temperature applications of nanofluids, and the medium-temperature collection system that involves high-grade energy is always neglected. This study examines the photo-thermal properties of titanium nitride nanofluids with thermal transfer oil as the base fluids under different solar irradiation intensities. The irradiation surface layer reaches ∼160 °C under 5 suns, and a high-temperature gradient develops within the working fluid, producing a low collector photo-thermal efficiency that is below expectation. To overcome these disadvantages, the heat transfer change from thermal conduction to free convection within the fluid is achieved via reverse irradiation direct absorption solar collector (RI-DASC). The performance parameters of this RI-DASC, including the optical properties of nanofluids, steady-state equilibrium temperature, photo-thermal conversion efficiency, and energy utilization distribution are investigated in detail. The experimental results demonstrate that the temperature difference between the irradiation and non-irradiation surfaces for ∼0.005 wt% under 5000 kW/m2 are ∼50 °C and ∼10 °C in DASC and RI-DASC, respectively. The collector photothermal conversion efficiency of DASC (∼40%) is improved to ∼50% for RI-DASC, and the steady-state temperature is enhanced to 165 °C in RI-DASC. © 2020 Elsevier Ltd

**Number of references:** 46

**Main heading:** Collector efficiency

**Controlled terms:** Conversion efficiency  -  Energy utilization  -  Irradiation  -  Low temperature effects  -  Nanofluidics  -  Optical properties  -  Radiation  -  Solar energy  -  Temperature  -  Titanium nitride

**Uncontrolled terms:** High temperature gradient  -  Low-temperature applications  -  Performance parameters  -  Photo-thermal conversions  -  Photothermal conversion efficiencies  -  Solar energy collections  -  Steady-state temperature  -  Temperature differences

**Classification code:** 525.3 Energy Utilization  -  525.5 Energy Conversion Issues  -  641.1 Thermodynamics  -  657.1 Solar Energy and Phenomena  -  702.3 Solar Cells  -  741.1 Light/Optics  -  761 Nanotechnology  -  804.2 Inorganic Compounds

**Numerical data indexing:** Surface\_Power\_Density 5.00e+06W/m2, Temperature 4.38e+02K

**DOI:** 10.1016/j.renene.2020.05.167

**Funding Details:** Number: 17ZR1411000, Acronym: -, Sponsor: Natural Science Foundation of Shanghai; Number: 51590901, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;

**Funding text:** The work was supported by National Natural Science Foundation of China ( 51590901 & 51876112 ), Shanghai Municipal Natural Science Foundation (Grant No. 17ZR1411000 ).

**Compendex references:** YES

**Database:** Compendex

Compilation and indexing terms, Copyright 2020 Elsevier Inc.

**Data Provider:** Engineering Village

**122. Attitude fault tolerant control for satellite under actuator fault and inertial sensor fault**

**Accession number:** 20203909241618

**Authors:** Yang, Wenbo (1); Wang, Jianjun (1); Li, Shaoyuan (2); Wang, Liandong (1)

**Author affiliation:** (1) Shanghai Polytechnic University, Shanghai; 201209, China; (2) Key Laboratory of System Control and Information Processing, Ministry of Education, Shanghai; 200240, China

**Source title:** Chinese Control Conference, CCC

**Abbreviated source title:** Chinese Control Conf., CCC

**Volume:** 2020-July

**Part number:** 1 of 1

**Issue title:** Proceedings of the 39th Chinese Control Conference, CCC 2020

**Issue date:** July 2020

**Publication year:** 2020

**Pages:** 3439-3443

**Article number:** 9188574

**Language:** English

**ISSN:** 19341768

**E-ISSN:** 21612927

**ISBN-13:** 9789881563903

**Document type:** Conference article (CA)

**Conference name:** 39th Chinese Control Conference, CCC 2020

**Conference date:** July 27, 2020 - July 29, 2020

**Conference location:** Shenyang, China

**Conference code:** 162927

**Sponsor:** Systems Engineering Society of China (SESC); Technical Committee on Control Theory (TCCT) of Chinese Association of Automation (CAA)

**Publisher:** IEEE Computer Society

**Abstract:** Firstly, an adaptive sliding mode fault tolerant controller is designed for the satellite attitude control system aiming at unnormal outputs of control torques because of actuator fault, and the stability of the closed-loop system is analyzed by Lyapunov method. On this basis, considering the coincidence of the actuator fault and the inertial sensor fault with the unknowable attitude angular velocity of the satellite, corresponding fault tolerant controller is presented and the stability of the closed-loop system is analyzed. Finally, the numerical simulation results verify the effectiveness of the designed fault tolerant controller. © 2020 Technical Committee on Control Theory, Chinese Association of Automation.

**Number of references:** 13

**Main heading:** Adaptive control systems

**Controlled terms:** Actuators  -  Attitude control  -  Closed loop systems  -  Controllers  -  Fault tolerance  -  Inertial navigation systems  -  Lyapunov methods  -  Satellites

**Uncontrolled terms:** Actuator fault  -  Adaptive sliding mode  -  Attitude angular velocity  -  Control torque  -  Fault tolerant control  -  Fault tolerant controllers  -  Inertial sensor  -  Satellite attitude control systems

**Classification code:** 655.2 Satellites  -  731.1 Control Systems  -  731.3 Specific Variables Control  -  732.1 Control Equipment  -  961 Systems Science

**DOI:** 10.23919/CCC50068.2020.9188574

**Funding Details:** Number: -, Acronym: -, Sponsor: Shanghai Leading Academic Discipline Project; Number: Scip202013, Acronym: -, Sponsor: -;

**Funding text:** \*This work was supported by Open Fund of Key Laboratory of System Control and Information Processing, Ministry of Education( Scip202013) , and Leading Academic Discipline Project of Information and Communication Engineering (No.XXKZD1605)

**Compendex references:** YES

**Database:** Compendex

Compilation and indexing terms, Copyright 2020 Elsevier Inc.

**Data Provider:** Engineering Village

**123. Editorial: Urban Computing in Mobile Environment    (*Open Access*)**

**Accession number:** 20202008646957

**Authors:** Yang, Xiaoxian (1); Li, Ying (2)

**Author affiliation:** (1) School of Computer and Information Engineering, Shanghai Polytechnic University, Shanghai, China; (2) College of Computer Science and Technology, Zhejiang University, Hangzhou, China

**Corresponding author:** Yang, Xiaoxian(xxyang@sspu.edu.cn)

**Source title:** Mobile Networks and Applications

**Abbreviated source title:** Mobile Networks Appl

**Volume:** 25

**Issue:** 4

**Issue date:** August 1, 2020

**Publication year:** 2020

**Pages:** 1193-1194

**Language:** English

**ISSN:** 1383469X

**E-ISSN:** 15728153

**Document type:** Journal article (JA)

**Publisher:** Springer

**DOI:** 10.1007/s11036-020-01533-3

**Funding Details:** Number: 61902236, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: -, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;

**Funding text:** The guest editors are thankful to our reviewers for their effort in reviewing the manuscripts. We also thank the Edit-in-Chief, Dr. Imrich Chlamtac, for his supportive guidance during the entire process. We also thank you for the support from the National Natural Science Foundation of China (NSFC) under Grant No. 61902236.

**Database:** Compendex

Compilation and indexing terms, Copyright 2020 Elsevier Inc.

**Data Provider:** Engineering Village

**124. A Batch Scheduling Problem of Automatic Drug Dispensing System in Outpatient Pharmacy**

**Accession number:** 20203509097875

**Authors:** Liu, Lili (1); Fu, Chunyu (2)

**Author affiliation:** (1) College of Arts and Sciences, Shanghai Polytechnic University, Shanghai; 201209, China; (2) Shanghai General Hospital, School of Medicine, Shanghai Jiaotong University, Shanghai; 200080, China

**Corresponding author:** Fu, Chunyu(fuchunyu2020@163.com)

**Source title:** Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)

**Abbreviated source title:** Lect. Notes Comput. Sci.

**Volume:** 12290 LNCS

**Part number:** 1 of 1

**Issue title:** Algorithmic Aspects in Information and Management - 14th International Conference, AAIM 2020, Proceedings

**Issue date:** 2020

**Publication year:** 2020

**Pages:** 537-543

**Language:** English

**ISSN:** 03029743

**E-ISSN:** 16113349

**ISBN-13:** 9783030576011

**Document type:** Conference article (CA)

**Conference name:** 14th International Conference on Algorithmic Aspects in Information and Management, AAIM 2020

**Conference date:** August 10, 2020 - August 12, 2020

**Conference location:** Jinhua, China

**Conference code:** 243469

**Publisher:** Springer

**Abstract:** This paper studies the batch scheduling problem with incompatible job families which can be applied to the automatic drug dispensing of outpatient pharmacies. We prove that the problem is strongly NP-hard even if the processing time and the weight of each job are same, and we propose a pseudo-polynomial time algorithm for the special case where the jobs of each family have a common due date. © 2020, Springer Nature Switzerland AG.

**Number of references:** 14

**Main heading:** Job shop scheduling

**Controlled terms:** NP-hard  -  Polynomial approximation  -  Scheduling

**Uncontrolled terms:** Batch-scheduling  -  Common due date  -  Dispensing systems  -  Incompatible job families  -  Processing time  -  Pseudo-polynomial time algorithms  -  Strongly NP-hard

**Classification code:** 912.2 Management  -  921.5 Optimization Techniques  -  921.6 Numerical Methods

**DOI:** 10.1007/978-3-030-57602-8\_48

**Funding Details:** Number: 11601316, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;

**Funding text:** Supported by the National Natural Science Foundation of China (No. 11601316) and discipline “Applied Mathematics” of Shanghai Polytechnic University (No. XXKPY1604).

**Compendex references:** YES

**Database:** Compendex

Compilation and indexing terms, Copyright 2020 Elsevier Inc.

**Data Provider:** Engineering Village

**125. Pipeline Leak Detection Technology Based on Distributed Optical Fiber Acoustic Sensing System    (*Open Access*)**

**Accession number:** 20200908244216

**Authors:** Zuo, Jiancun (1); Zhang, Yang (1); Xu, Hongxuan (1, 2); Zhu, Xianxun (1); Zhao, Zhiyang (1); Wei, Xiong (1); Wang, Xu (1)

**Author affiliation:** (1) College of Computer and Information Engineering, Shanghai Polytechnic University, Shanghai; 201209, China; (2) Merchant Marine College, Shanghai Maritime University, Shanghai; 201306, China

**Corresponding author:** Zuo, Jiancun(jczuo@sspu.edu.cn)

**Source title:** IEEE Access

**Abbreviated source title:** IEEE Access

**Volume:** 8

**Issue date:** 2020

**Publication year:** 2020

**Pages:** 30789-30796

**Article number:** 8993717

**Language:** English

**E-ISSN:** 21693536

**Document type:** Journal article (JA)

**Publisher:** Institute of Electrical and Electronics Engineers Inc.

**Abstract:** Real-time monitoring of flammable and explosive gas pipeline networks is of great significance for ensuring the safety of life and property. Although the optical fiber sensing technology has achieved theoretical research results in the field of monitoring pipeline leakage recently, the practical applicability of theoretical results has not been noticed. This paper analyzes the research progress of pipeline leak detection technology based on optical fiber sensing technology firstly and proposes an algorithm for monitoring gas pipeline leakage based on distributed optical fiber acoustic sensing(DAS) system. The algorithm can obtain the time domain signal characteristics of pipeline leakage to identify leaks, locate the leak points through frequency domain. Experiments show that the algorithm can identify pipeline leakage and locate leaks, the Signal to noise ratio (SNR) and correlation coefficient can be increased to 18.28 and 0.75 respectively. The accuracy of identifying pipeline leakage and locating the pipeline leak points is effectively improved. © 2013 IEEE.

**Number of references:** 16

**Main heading:** Pipelines

**Controlled terms:** Fiber optic sensors  -  Frequency domain analysis  -  Leak detection  -  Optical fibers  -  Signal to noise ratio  -  Time domain analysis

**Uncontrolled terms:** Correlation coefficient  -  Distributed optical fiber  -  Frequency domains  -  Gas pipeline networks  -  Optical fiber sensing technology  -  Pipeline leakage  -  Real time monitoring  -  Time domain

**Classification code:** 619.1 Pipe, Piping and Pipelines  -  716.1 Information Theory and Signal Processing  -  741.1.2 Fiber Optics  -  921 Mathematics  -  921.3 Mathematical Transformations

**DOI:** 10.1109/ACCESS.2020.2973229

**Funding Details:** Number: EGD18YJ0045, Acronym: -, Sponsor: -;

**Funding text:** This work was supported by the Graduate Program Foundation of Shanghai Polytechnic University under Grant EGD18YJ0045.

**Compendex references:** YES

**Database:** Compendex

Compilation and indexing terms, Copyright 2020 Elsevier Inc.

**Data Provider:** Engineering Village

**126. Towards Predictive Maintenance for Flexible Manufacturing Using FIWARE    (*Open Access*)**

**Accession number:** 20202208769298

**Authors:** Sang, Go Muan (1); Xu, Lai (1); de Vrieze, Paul (1); Bai, Yuewei (2)

**Author affiliation:** (1) Faculty of Science and Technology, Bournemouth University, Poole, Dorset, United Kingdom; (2) Industry Engineering of Engineering College, Shanghai Polytechnic University, Shanghai, China

**Corresponding author:** de Vrieze, Paul(pdevrieze@bournemouth.ac.uk)

**Source title:** Lecture Notes in Business Information Processing

**Abbreviated source title:** Lect. Notes Bus. Inf. Process.

**Volume:** 382 LNBIP

**Part number:** 1 of 1

**Issue title:** Advanced Information Systems Engineering Workshops - CAiSE 2020 International Workshops, Proceedings

**Issue date:** 2020

**Publication year:** 2020

**Pages:** 17-28

**Language:** English

**ISSN:** 18651348

**E-ISSN:** 18651356

**ISBN-13:** 9783030491642

**Document type:** Conference article (CA)

**Conference name:** 2nd International Workshop on Key Enabling Technologies for Digital Factories, KET4DF 2020 and the 1st International Workshop on Information Systems Engineering for Smarter Life, ISESL 2020, associated with the 32nd International Conference on Advanced Information Systems Engineering, CAiSE 2020

**Conference date:** June 8, 2020 - June 12, 2020

**Conference location:** Grenoble, France

**Conference code:** 240219

**Publisher:** Springer

**Abstract:** Industry 4.0 has shifted the manufacturing related processes from conventional processes within one organization to collaborative processes across different organizations. For example, product design processes, manufacturing processes, and maintenance processes across different factories and enterprises. This complex and competitive collaboration requires the underlying system architecture and platform to be flexible and extensible to support the demands of dynamic collaborations as well as advanced functionalities such as big data analytics. Both operation and condition of the production equipment are critical to the whole manufacturing process. Failures of any machine tools can easily have impact on the subsequent value-added processes of the collaboration. Predictive maintenance provides a detailed examination of the detection, location and diagnosis of faults in related machineries using various analyses. In this context, this paper explores how the FIWARE framework supports predictive maintenance. Specifically, it looks at applying a data driven approach to the Long Short-Term Memory Network (LSTM) model for machine condition and remaining useful life to support predictive maintenance using FIWARE framework in a modular fashion. © 2020, Springer Nature Switzerland AG.

**Number of references:** 24

**Main heading:** Predictive maintenance

**Controlled terms:** Advanced Analytics  -  Data Analytics  -  Fault detection  -  Information systems  -  Information use  -  Long short-term memory  -  Machine tools  -  Manufacture  -  Product design  -  Systems engineering

**Uncontrolled terms:** Collaborative process  -  Data-driven approach  -  Dynamic collaborations  -  Flexible manufacturing  -  Manufacturing process  -  Product design process  -  Production equipments  -  Remaining useful lives

**Classification code:** 603.1 Machine Tools, General  -  903.3 Information Retrieval and Use  -  913.1 Production Engineering  -  913.4 Manufacturing  -  961 Systems Science

**DOI:** 10.1007/978-3-030-49165-9\_2

**Funding Details:** Number: 2017YFE0118700, Acronym: -, Sponsor: -; Number: 734599, Acronym: H2020, Sponsor: Horizon 2020 Framework Programme;

**Funding text:** This research is partially funded by the State Key Research and Development Program of China (2017YFE0118700) and it is part of the FIRST project which has received funding from the European Union?s Horizon 2020 research and innovation programme under the Marie Sk?odowska-Curie grant agreement No 734599.

**Compendex references:** YES

**Database:** Compendex

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**Data Provider:** Engineering Village

**127. Direct recovery of LiCoO2 from the recycled lithium-ion batteries via structure restoration**

**Accession number:** 20203108995315

**Authors:** Gao, Ying (1, 2); Li, Yang (1, 2); Li, Jing (1, 2); Xie, Huaqing (1, 2); Chen, Yanping (1, 2)

**Author affiliation:** (1) School of Environmental and Materials Engineering, College of Engineering, Shanghai Polytechnic University, Shanghai; 201209, China; (2) Shanghai Innovation Institute for Materials, Shanghai; 200444, China

**Corresponding author:** Li, Yang(liyang@sspu.edu.cn)

**Source title:** Journal of Alloys and Compounds

**Abbreviated source title:** J Alloys Compd

**Volume:** 845

**Issue date:** 10 December 2020

**Publication year:** 2020

**Article number:** 156234

**Language:** English

**ISSN:** 09258388

**CODEN:** JALCEU

**Document type:** Journal article (JA)

**Publisher:** Elsevier Ltd

**Abstract:** The efficient reutilization of electrode materials in waste lithium-ion batteries (LIBs) is an urgent and tough problem that grows along with the rapid increase in the use of LIBs in various areas, including portable electronic products, electric vehicles and backup power supplies. Herein, we propose a promising way to recover the LiCoO2 positive electrode material from the recycled LIBs via structure restoration. The collected spent LiCoO2 powder is mixed with lithium salts and sintered to form a sophisticated layered structure. When Li2CO3 is added as the lithium source and the mole ratio of lithium to cobalt is controlled at 1.00 in the mixture, a layered structure of regenerated LiCoO2 could be preferably obtained at a calcination temperature of 800 °C. To improve the electrochemical performance of the regenerated LiCoO2, nanosized Al2O3 particles are coated on the surface of the regenerated LiCoO2. The Al2O3-coated and regenerated LiCoO2 demonstrates comparable properties to those of commercial LiCoO2 materials. The regeneration of spent LiCoO2 via structure restoration, which is demonstrated in the present study, provides an effective way to reuse cobalt metal directly without traditional leaching and re-synthesis procedures, which reduces energy consumption and contributes to the environmental protection. © 2020 Elsevier B.V.

**Number of references:** 35

**Main heading:** Lithium-ion batteries

**Controlled terms:** Alumina  -  Aluminum oxide  -  Cobalt  -  Electric power systems  -  Electrodes  -  Energy utilization  -  Lithium compounds  -  Recycling  -  Restoration  -  Solid wastes

**Uncontrolled terms:** Backup power supplies  -  Calcination temperature  -  Electrochemical performance  -  Layered Structures  -  Nano-sized Al2O3 particles  -  Portable electronics  -  Positive electrode materials  -  Synthesis procedure

**Classification code:** 452.3 Industrial Wastes  -  525.3 Energy Utilization  -  549.3 Nonferrous Metals and Alloys excluding Alkali and Alkaline Earth Metals  -  706.1 Electric Power Systems  -  804.2 Inorganic Compounds

**Numerical data indexing:** Temperature 1.07e+03K

**DOI:** 10.1016/j.jallcom.2020.156234

**Funding Details:** Number: 18ZR1415800, Acronym: -, Sponsor: Natural Science Foundation of Shanghai; Number: 51590902, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;

**Funding text:** This work was supported by the National Natural Science Foundation of China (grant number 51590902 ), Shanghai Municipal Natural Science Foundation (grant number 18ZR1415800 ) and Gaoyuan Discipline of Shanghai - Environmental Science and Engineering (Resource Recycling Science and Engineering) .

**Compendex references:** YES

**Database:** Compendex

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**Data Provider:** Engineering Village

**128. An experimental investigation of abrasive suspension flow machining of injector nozzle based on orthogonal test design**

**Accession number:** 20203409081259

**Authors:** Fang, Minghui (1); Yu, Tao (1, 2); Xi, Fengfeng (3)

**Author affiliation:** (1) School of Mechatronic Engineering and Automation, Shanghai University, Shanghai, China; (2) Shanghai Polytechnic University, Shanghai, China; (3) Department of Aerospace Engineering, Ryerson University, Toronto, Canada

**Corresponding author:** Fang, Minghui(fangminghui@shu.edu.cn)

**Source title:** International Journal of Advanced Manufacturing Technology

**Abbreviated source title:** Int J Adv Manuf Technol

**Volume:** 110

**Issue:** 3-4

**Issue date:** September 1, 2020

**Publication year:** 2020

**Pages:** 1071-1082

**Language:** English

**ISSN:** 02683768

**E-ISSN:** 14333015

**CODEN:** IJATEA

**Document type:** Journal article (JA)

**Publisher:** Springer

**Abstract:** The application of abrasive suspension flow machining (ASFM) to grind a diesel engine injector nozzle is discussed in this paper. The purpose is to remove the sharp corners of the spray holes and improve the fuel flow through the injector nozzle. The proposed method adopts one-way flow to grind the spray holes for high-efficiency production. Compared with traditional reciprocating flow grinding methods using abrasive pastes, the viscosity of slurry and abrasive concentration of ASFM are lower, better for more smooth flow. To achieve a good grinding performance, it is important to determine proper viscosity and concentration. For this purpose, a design of experiments (DoE) method is adopted. In this paper, an orthogonal test method is combined with a non-linear regression method to optimize the process parameters. Through a range analysis on experiment results, the optimal process conditions in terms of the grinding efficiency and the grinding quality are determined. Experiment verifications show that the optimized process parameters can significantly improve the ASFM grinding efficiency and grinding quality. © 2020, Springer-Verlag London Ltd., part of Springer Nature.

**Number of references:** 25

**Main heading:** Suspensions (fluids)

**Controlled terms:** Abrasives  -  Design of experiments  -  Efficiency  -  Grinding (machining)  -  Nozzle design  -  Regression analysis  -  Spray nozzles  -  Suspensions (components)  -  Testing  -  Viscosity

**Uncontrolled terms:** Abrasive concentration  -  Abrasive suspension  -  Experiment verification  -  Experimental investigations  -  Grinding performance  -  Non-linear regression method  -  Orthogonal test design  -  Orthogonal test method

**Classification code:** 601.2 Machine Components  -  604.2 Machining Operations  -  606.1 Abrasive Materials  -  631.1 Fluid Flow, General  -  804 Chemical Products Generally  -  901.3 Engineering Research  -  913.1 Production Engineering  -  922.2 Mathematical Statistics

**DOI:** 10.1007/s00170-020-05914-6

**Compendex references:** YES

**Database:** Compendex

Compilation and indexing terms, Copyright 2020 Elsevier Inc.

**Data Provider:** Engineering Village

**129. Numerical simulation optimization and experimental study of vacuum ultraviolet solution equipment based on cfd technology    (*Open Access*)**

**Accession number:** 20203809205498

**Authors:** Yuan, Hao (1, 2); Liu, Ruixin (1); Guan, Jie (1, 2); Dai, Jue (1, 2); Su, Ruijing (1, 2); Guo, Yaoguang (1, 2); Liu, Yong (1); Peng, He (1)

**Author affiliation:** (1) School of Environmental and Materials Engineering, Shanghai Second Polytechnic University, Shanghai; 201209, China; (2) Research Center of Resource Recycling Science and Engineering, School of Environmental and Materials Engineering, Shanghai Second Polytechnic University, Shanghai; 201209, China

**Corresponding author:** Dai, Jue(guanjie@sspu.eduemailguanjie@sspu.edu)Dai, Jue(guanjie@sspu.edu)

**Source title:** IOP Conference Series: Earth and Environmental Science

**Abbreviated source title:** IOP Conf. Ser. Earth Environ. Sci.

**Volume:** 514

**Part number:** 5 of 5

**Issue:** 5

**Issue title:** 4th International Symposium on Resource Exploration and Environmental Science - 4. Environmental Chemistry, Environmental Bioengineering and Related Technologies

**Issue date:** July 2, 2020

**Publication year:** 2020

**Article number:** 052032

**Language:** English

**ISSN:** 17551307

**E-ISSN:** 17551315

**Document type:** Conference article (CA)

**Conference name:** 4th International Symposium on Resource Exploration and Environmental Science, REES 2020

**Conference date:** April 25, 2020 - April 26, 2020

**Conference location:** Ordos, China

**Conference code:** 161594

**Publisher:** IOP Publishing Ltd

**Abstract:** In order to improve the photo-degradation efficiency of waste gas and the utilization rate of ultraviolet lamp, numerical simulation software was used to simulate the wind speed field in ultraviolet equipment. The simulation of uniform and dislocation arrangement of ultraviolet lamp in ultraviolet equipment, taper of variable diameter of equipment, transverse flow and cis flow of ultraviolet equipment is presented. The results show that the gas flow in the equipment is more uniform than that in the ultraviolet lamp. The reducing taper of ultraviolet equipment becomes smaller, and the gas retention area gradually becomes smaller. When the reducing taper is reduced to 30°, it is most suitable. The wind speed field in the downstream ultraviolet equipment is more uniform than that in the horizontal flow type, and the ultraviolet utilization rate is higher. In addition, the tubular downstream ultraviolet equipment can not only ensure the utilization rate of ultraviolet lamp, but also improve the degradation effect of organic waste gas. © Published under licence by IOP Publishing Ltd.

**Number of references:** 12

**Main heading:** Oil field equipment

**Controlled terms:** Computer software  -  Degradation  -  Environmental technology  -  Flow of gases  -  Image enhancement  -  Numerical models  -  Petroleum prospecting  -  Ultraviolet lamps  -  Wind

**Uncontrolled terms:** Degradation effect  -  Dislocation arrangement  -  Numerical simulation software  -  Simulation optimization  -  Utilization rates  -  Vacuum ultraviolets  -  Variable diameter  -  Wind speed fields

**Classification code:** 443.1 Atmospheric Properties  -  454 Environmental Engineering  -  511.2 Oil Field Equipment  -  512.1.2 Petroleum Deposits : Development Operations  -  631.1.2 Gas Dynamics  -  707.2 Electric Lamps  -  723 Computer Software, Data Handling and Applications  -  802.2 Chemical Reactions  -  921 Mathematics

**DOI:** 10.1088/1755-1315/514/5/052032

**Funding Details:** Number: A10GY19H010-g18, Acronym: -, Sponsor: -; Number: XXKPY1601, Acronym: -, Sponsor: -; Number: 51678353, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;

**Funding text:** This project is financially supported by the National Natural Science Foundation of China (51678353) and Cultivation Discipline Fund of Shanghai Polytechnic University (XXKPY1601). The authors also appreciate the Graduate Student Funding Program of Shanghai Polytechnic University (A10GY19H010-g18), and Gaoyuan Discipline of Shanghai Environmental Science and Engineering (Resource Recycling Science and Engineering).

**Compendex references:** YES

**Database:** Compendex

Compilation and indexing terms, Copyright 2020 Elsevier Inc.

**Data Provider:** Engineering Village

**130. Preface**

**Accession number:** 20201308356750

**Authors:** Gao, Honghao (1); Li, Kuang (2); Yang, Xiaoxian (3); Yin, Yuyu (4)

**Author affiliation:** (1) Shanghai University, Shanghai, China; (2) Shanghai Polytechnic University, Shanghai, China; (3) School of Software, Central South University, Changsha, China; (4) Hangzhou Dianzi University, Hangzhou Shi; Zhejiang, China

**Source title:** Lecture Notes of the Institute for Computer Sciences, Social-Informatics and Telecommunications Engineering, LNICST

**Abbreviated source title:** Lect. Notes Inst. Comput. Sci. Soc. Informatics Telecommun. Eng.

**Volume:** 309 LNICST

**Part number:** 1 of 1

**Issue title:** Testbeds and Research Infrastructures for the Development of Networks and Communications - 14th EAI International Conference, TridentCom 2019, Proceedings

**Issue date:** 2020

**Publication year:** 2020

**Pages:** v

**Language:** English

**ISSN:** 18678211

**ISBN-13:** 9783030432140

**Document type:** Journal article (JA)

**Conference name:** 14th EAI International Conference on Testbeds and Research Infrastructures for the Development of Networks and Communications, TridentCom 2019

**Conference date:** December 7, 2019 - December 8, 2019

**Conference location:** Changsha, China

**Conference code:** 238339

**Publisher:** Springer

**Database:** Compendex

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**Data Provider:** Engineering Village

**131. Providing privacy preserving in next POI recommendation for Mobile edge computing    (*Open Access*)**

**Accession number:** 20200708155964

**Authors:** Kuang, Li (1); Tu, Shenmei (1); Zhang, Yangqi (1); Yang, Xiaoxian (2)

**Author affiliation:** (1) School of Computer Science and Engineering, Central South University, Changsha, China; (2) School of Computer and Information Engineering, Shanghai Polytechnic University, Shanghai, China

**Corresponding author:** Yang, Xiaoxian(xxyang@sspu.edu.cn)

**Source title:** Journal of Cloud Computing

**Abbreviated source title:** J. Cloud Comput.

**Volume:** 9

**Issue:** 1

**Issue date:** December 1, 2020

**Publication year:** 2020

**Article number:** 10

**Language:** English

**E-ISSN:** 2192113X

**Document type:** Journal article (JA)

**Publisher:** Springer

**Abstract:** Point of interest (POI) recommendation can benefit users and merchants. It is a very important and popular service in modern life. In this paper, we aim to study the next new POI recommendation problem with the consideration of privacy preserving in edge computing. The challenge lies in capturing the transition patterns between POIs precisely and meanwhile protecting users’ location. In this paper, first, we propose to model users’ check-in sequences with their latent states based on HMM, and EM algorithm is used to estimate the parameters of the model. Second, we propose to protect users’ location information by a weighted noise injection method. Third, we predict users’ next movement according to his current location based on Forward algorithm. Experimental results on two large-scale LBSNs datasets show that our proposed model without noise injection can achieve better recommendation accuracy than several state-of-the-art techniques, and the proposed weighted noise injection approach can achieve better performance on privacy preserving than traditional one with a little cost on accuracy. © 2020, The Author(s).

**Number of references:** 31

**Main heading:** Edge computing

**Controlled terms:** Large dataset  -  Location  -  Scales (weighing instruments)

**Uncontrolled terms:** Forward algorithms  -  Latent state  -  Location information  -  POI recommendation  -  Privacy preserving  -  Recommendation accuracy  -  State-of-the-art techniques  -  Transition patterns

**Classification code:** 943.3 Special Purpose Instruments

**DOI:** 10.1186/s13677-020-0158-3

**Funding Details:** Number: 2018YFB1003800, Acronym: -, Sponsor: -; Number: 61772560, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;

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**Compendex references:** YES

**Database:** Compendex

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**Data Provider:** Engineering Village

**132. Integration Framework of MES Toward Data Security Interoperation    (*Open Access*)**

**Accession number:** 20202208769300

**Authors:** Wei, Shuangyu (1); Bai, Yuewei (1); Xu, Lai (2); Mu, Hua (3); Liu, Kai (1); Wang, Xiaogang (1)

**Author affiliation:** (1) Shanghai Polytechnic University, Pudong; Shanghai; 201209, China; (2) Bournemouth University, Bournemouth; BH12 5BB, United Kingdom; (3) KM Information Technology Co., Ltd., Wuhan; Hubei; 430000, China

**Corresponding author:** Bai, Yuewei(ywbai@sspu.edu.cn)

**Source title:** Lecture Notes in Business Information Processing

**Abbreviated source title:** Lect. Notes Bus. Inf. Process.

**Volume:** 382 LNBIP

**Part number:** 1 of 1

**Issue title:** Advanced Information Systems Engineering Workshops - CAiSE 2020 International Workshops, Proceedings

**Issue date:** 2020

**Publication year:** 2020

**Pages:** 41-52

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**E-ISSN:** 18651356

**ISBN-13:** 9783030491642

**Document type:** Conference article (CA)

**Conference name:** 2nd International Workshop on Key Enabling Technologies for Digital Factories, KET4DF 2020 and the 1st International Workshop on Information Systems Engineering for Smarter Life, ISESL 2020, associated with the 32nd International Conference on Advanced Information Systems Engineering, CAiSE 2020

**Conference date:** June 8, 2020 - June 12, 2020

**Conference location:** Grenoble, France

**Conference code:** 240219

**Publisher:** Springer

**Abstract:** The core problem of the application of MES (Manufacturing Execution System) in intelligent manufacturing systems is integration, which solves the problem of the data interoperation between the distributed manufacturing systems. The previous researches on MES integration rarely considered the problem of system data security access. A three-level data security access mechanism based on the independence of the system administrators, security administrators, and security auditors is proposed which integrated into the MES integration framework to guarantee the business and engineering data security access for the related distributed clients. The principle is using the domain to make the logical isolation for different clients and data sources and applying the pre-defined data sharing rules for safe access. In the proposed MES integration framework model, the data interoperation between MES and the engineering software systems is discussed which includes ERP (Enterprise Resource Management), CAPP (Computer Aided Process Planning), DNC (Distribution Numerical Control), WMS (Warehouse Management System), and SCADA (Supervisory Control and Data Acquisition), etc., the implementation method of personalized data display GUI is discussed as well. The study is based on the KMMES developed by Wuhan KM-Software of China, and it has been deployed in over forty companies from the sections of aerospace, automotive, shipbuilding and other industries. © 2020, Springer Nature Switzerland AG.

**Number of references:** 15

**Main heading:** Information management

**Controlled terms:** Automotive industry  -  Computer aided process planning  -  Computer aided software engineering  -  Computer control systems  -  Computer resource management  -  Data integration  -  Data Sharing  -  Enterprise resource management  -  Enterprise resource planning  -  Information systems   -  Information use  -  Management information systems  -  Manufacture  -  Numerical methods  -  SCADA systems  -  Systems engineering  -  Warehouses

**Uncontrolled terms:** Distributed manufacturing systems  -  Integration frameworks  -  Intelligent manufacturing system  -  MES (manufacturing execution system)  -  Security administrator  -  Supervisory control and data acquisition  -  System administrators  -  Warehouse management systems

**Classification code:** 537.1 Heat Treatment Processes  -  694.4 Storage  -  723 Computer Software, Data Handling and Applications  -  731.1 Control Systems  -  903.3 Information Retrieval and Use  -  912.2 Management  -  921.6 Numerical Methods  -  961 Systems Science

**DOI:** 10.1007/978-3-030-49165-9\_4

**Funding Details:** Number: 2017YFE0118700, Acronym: -, Sponsor: -; Number: 734599, Acronym: H2020, Sponsor: Horizon 2020 Framework Programme;

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**Compendex references:** YES

**Database:** Compendex

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**Data Provider:** Engineering Village

**133. Expermental Research on Light-curing Rapid Prototyping Silicon Oxide Ceramics    (*Open Access*)**

**Accession number:** 20203709177924

**Authors:** Yan, Liang (1); Yuan, WenJing (1); Yan, Biao (2)

**Author affiliation:** (1) Faculty of Engineering, Shanghai Polytechnic University, 2360 Jin’ Hai, Shanghai, China; (2) School of Material Science and Engineering, Tongji University, 4800 Cao’An, Shanghai, China

**Corresponding author:** Yan, Liang(yanliang@sspu.edu.cn)

**Source title:** Journal of Physics: Conference Series

**Abbreviated source title:** J. Phys. Conf. Ser.

**Volume:** 1605

**Part number:** 1 of 1

**Issue:** 1

**Issue title:** 2020 International Conference on Internet of Things, Artificial Intelligence and Mechanical Automation, IoTAIMA 2020

**Issue date:** August 18, 2020

**Publication year:** 2020

**Article number:** 012141

**Language:** English

**ISSN:** 17426588

**E-ISSN:** 17426596

**Document type:** Conference article (CA)

**Conference name:** 2020 International Conference on Internet of Things, Artificial Intelligence and Mechanical Automation, IoTAIMA 2020

**Conference date:** July 10, 2020 - July 12, 2020

**Conference location:** Hangzhou, China

**Conference code:** 162446

**Publisher:** Institute of Physics Publishing

**Abstract:** 3D printing technology is an emerging technology that is rapidly developing in the manufacturing field. It can easily and automatically manufacture complex three-dimensional shapes that are difficult to be produced by various processing methods. Printable ceramic materials are prepared by mixing photosensitive resin and different ceramic powders. By studying the effects of dispersant, slurry, PH value, silica particle size and solid phase content on slurry viscosity and fluidity, low viscosity Ceramic slurry with high solid phase content and good fluidity. The effects of different solid phase contents on the bending strength, firing shrinkage, porosity and density of ceramics were tested. The results show that the bending strength of sintered SiO2 ceramics reaches 15.78Mpa at a solid content of 70vol %. The density was 76.21%, porosity was 40.04%, sintering shrinkage was 0.89%. © 2020 Published under licence by IOP Publishing Ltd.

**Number of references:** 5

**Main heading:** Silicon oxides

**Controlled terms:** 3D printers  -  Artificial intelligence  -  Bending strength  -  Fluidity  -  Internet of things  -  Particle size  -  Porosity  -  Powders  -  Processing  -  Shrinkage   -  Silica  -  Sintering  -  Viscosity

**Uncontrolled terms:** Emerging technologies  -  Firing shrinkage  -  Manufacturing fields  -  Photosensitive resins  -  Processing method  -  Silica particle size  -  Sintering shrinkage  -  Three-dimensional shape

**Classification code:** 723 Computer Software, Data Handling and Applications  -  723.4 Artificial Intelligence  -  745.1.1 Printing Equipment  -  804 Chemical Products Generally  -  913.4 Manufacturing  -  931.2 Physical Properties of Gases, Liquids and Solids  -  951 Materials Science

**Numerical data indexing:** Percentage 4.00e+01%, Percentage 7.62e+01%, Percentage 8.90e-01%

**DOI:** 10.1088/1742-6596/1605/1/012141

**Compendex references:** YES

**Database:** Compendex

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**Data Provider:** Engineering Village

**134. Influence and Optimization of Packet Loss on the Internet-Based Geographically Distributed Test Platform for Fuel Cell Electric Vehicle Powertrain Systems    (*Open Access*)**

**Accession number:** 20200908225757

**Authors:** Niu, Wenxu (1); Song, Ke (2); Zhang, Yongqian (2); Xiao, Qiwen (3); Behrendt, Matthias (3); Albers, Albert (3); Zhang, Tong (2)

**Author affiliation:** (1) College of Engineering, Shanghai Polytechnic University, Shanghai, China; (2) School of Automotive Studies, Tongji University, Shanghai, China; (3) Institute of Product Engineering, Karlsruhe Institute of Technology, Karlsruhe, Germany

**Corresponding author:** Song, Ke(ke\_song@tongji.edu.cn)

**Source title:** IEEE Access

**Abbreviated source title:** IEEE Access

**Volume:** 8

**Issue date:** 2020

**Publication year:** 2020

**Pages:** 20708-20716

**Article number:** 8963939

**Language:** English

**E-ISSN:** 21693536

**Document type:** Journal article (JA)

**Publisher:** Institute of Electrical and Electronics Engineers Inc.

**Abstract:** In view of recent developments in fuel cell electric vehicle powertrain systems, Internet-based geographically distributed test platforms for fuel cell electric vehicle powertrain systems become a development and validation trend. Due to the involvement of remote connection and the Internet, simulation with connected models can suffer great uncertainty because of packet loss. Such a test platform, including packet loss characteristics, was built using MATLAB/Simulink for use in this paper. The simulation analysis results show that packet loss affects the stability of the whole test system. The impact on vehicle speed is mainly concentrated in the later stage of simulation. Aiming at reducing the effect of packet loss caused by Internet, a robust model predictive compensator was designed. Under this compensator, the stability of the system is greatly improved compared to the system without a compensator. © 2013 IEEE.

**Number of references:** 21

**Main heading:** Automobile testing

**Controlled terms:** Electric losses  -  Fuel cells  -  Gears  -  MATLAB  -  Packet loss  -  Powertrains  -  System stability

**Uncontrolled terms:** Fuel cell electric vehicle  -  Internet based  -  Loss characteristics  -  MATLAB /simulink  -  Power-train systems  -  Robust modeling  -  Simulation analysis  -  Test platforms

**Classification code:** 601.2 Machine Components  -  662 Automobiles and Smaller Vehicles  -  662.4 Automobile and Smaller Vehicle Components  -  702.2 Fuel Cells  -  921 Mathematics  -  961 Systems Science

**DOI:** 10.1109/ACCESS.2020.2968155

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**Funding text:** This work was supported in part by the Shanghai Education Development Foundation through the Chenguang Program, in part by the Shanghai Municipal Education Commission, in part by the Chinese Ministry of Science and Technology under the Project ‘‘Sino-German Fuel Cell Vehicle International Cooperation (Demonstration and Application)’’, under Project 2017YFB0103101, in part by the Chinese National Key Research and Development Program ‘‘Reference Implementation and Verification Platform of Reconfigurable Intelligent Production System,’’ under Project 2017YFE0101400, and in part by the German Federal Ministry of Education and Research under the project ‘‘Methods for Spatially Distributed Development of H2 Fuel Cell Vehicles in Cooperation with China (MorEH2),’’ under Project 16EMO0316.

**Compendex references:** YES

**Database:** Compendex

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**Data Provider:** Engineering Village

**135. Single Bounded Parallel-Batch Machine Scheduling with an Unavailability Constraint and Job Delivery**

**Accession number:** 20203509097874

**Authors:** Fan, Jing (1); Ng, C.T. (2); Cheng, T.C.E. (2); Shi, Hui (3)

**Author affiliation:** (1) Shanghai Polytechnic University, Shanghai; 201209, China; (2) Logistics Research Centre, Department of Logistics and Maritime Studies, The Hong Kong Polytechnic University, Hong Kong; (3) Shanghai General Hospital, School of Medicine, Shanghai Jiaotong University, Shanghai; 200080, China

**Corresponding author:** Shi, Hui(sspu\_fj@163.com)

**Source title:** Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)

**Abbreviated source title:** Lect. Notes Comput. Sci.

**Volume:** 12290 LNCS

**Part number:** 1 of 1

**Issue title:** Algorithmic Aspects in Information and Management - 14th International Conference, AAIM 2020, Proceedings

**Issue date:** 2020

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**Pages:** 525-536

**Language:** English

**ISSN:** 03029743

**E-ISSN:** 16113349

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**Document type:** Conference article (CA)

**Conference name:** 14th International Conference on Algorithmic Aspects in Information and Management, AAIM 2020

**Conference date:** August 10, 2020 - August 12, 2020

**Conference location:** Jinhua, China

**Conference code:** 243469

**Publisher:** Springer

**Abstract:** We consider a scheduling problem where a manufacturer processes a set of jobs for a customer and delivers the completed jobs to the customer. The job sizes and processing times are given. The objective is to minimize the maximum delivery time to the customer. In the production stage, one machine with an unavailability period is used to process the jobs. The machine has a fixed capacity and the jobs are processed in batches under the condition that the total size of the jobs in a batch cannot exceed the machine capacity. The processing time of a batch is the maximum processing time of the jobs contained in the batch. In addition, each batch is non-resumable, i.e., if the processing of a batch cannot be completed before the unavailability period, the batch needs to be processed anew after the unavailability interval. In the distribution stage, the manufacturer assigns a vehicle with a fixed capacity to deliver the completed jobs. The total size of the completed jobs in one delivery cannot exceed the vehicle capacity. We first consider the case where the jobs have the same size and arbitrary processing times, for which we provide a 3/2-approximation algorithm and show that the worst-case ratio is tight. We then consider the case where the jobs have the same processing time and arbitrary sizes, for which we provide a 5/3-approximation algorithm and show that the worst-case ratio is tight. © 2020, Springer Nature Switzerland AG.

**Number of references:** 16

**Main heading:** Automobile manufacture

**Controlled terms:** Sales  -  Scheduling

**Uncontrolled terms:** Maximum processing time  -  Parallel-batch machines  -  Processing time  -  Production stage  -  Scheduling problem  -  Unavailability constraint  -  Unavailability periods  -  Vehicle capacity

**Classification code:** 662.1 Automobiles  -  912.2 Management

**DOI:** 10.1007/978-3-030-57602-8\_47

**Funding Details:** Number: -, Acronym: PolyU, Sponsor: Hong Kong Polytechnic University; Number: 11601316, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;

**Funding text:** Keywords: Parallel-batch · Production and delivery · Unavailability constraint · Approximation algorithm This research was supported in part by the National Natural Science Foundation of China (No.11601316). Fan was also supported in part by the key discipline “Applied Mathematics” of Shanghai Polytechnic University (No. XXKPY1604), Research Center of Resource Recycling Science and Engineering, and Gaoyuan Discipline of Shanghai − Environmental Science and Engineering (Resource Recycling Science and Engineering) of Shanghai Polytechnic University. Cheng was also supported in part by The Hong Kong Polytechnic University under the Fung Yiu King - Wing Hang Bank Endowed Professorship in Business Administration.

**Compendex references:** YES

**Database:** Compendex

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**Data Provider:** Engineering Village

**136. Compressive sensing tomographic reconstruction of non-amplifying in-line hologram based on variable density downsampling in frequency domain**

**Accession number:** 20203609139625

**Title of translation:**

**Authors:** Wu, Xiaoyan (1); Yu, Yingjie (2); Bai, Yuewei (1); Nie, Li (1); Liu, Kai (1); Pan, Fangyu (1); Wang, Xiaogang (1)

**Author affiliation:** (1) School of Intelligent Manufacturing & Control Engineering, Shanghai Polytechnic University, Shanghai; 201209, China; (2) School of Mechatronic Engineering and Automation, Shanghai University, Shanghai; 200072, China

**Corresponding author:** Bai, Yuewei(ywbai@sspu.edu.cn)

**Source title:** Hongwai yu Jiguang Gongcheng/Infrared and Laser Engineering

**Abbreviated source title:** Hongwai yu Jiguang Gongcheng Infrared Laser Eng.

**Volume:** 49

**Issue date:** July 25, 2020

**Publication year:** 2020

**Article number:** 20190500

**Language:** Chinese

**ISSN:** 10072276

**Document type:** Journal article (JA)

**Publisher:** Chinese Society of Astronautics

**Abstract:** A frequency-domain variable density downsampling method was applied to the reconstruction of compressive sensing tomography for non-amplifying in-line hologram. The purpose was to extract a small amount of information from the frequency-domain of non-amplifying in-line hologram and realize the reconstruction of compressed sensing tomography from a small amount of data in the frequency -domain of the hologram. Here, firstly it introduced the principle of combining three variable density downsampling with compressive sensing tomography reconstruction of hologram. Three kinds of variable density downsampling respectively were radial distribution, spiral distribution and exponential distribution variable density downsampling. Secondly, it carried out simulation and test experiments and analyzed the reconstruction quality of the methods for variable density downsampling combined with compressive holography. By experiments, it could be seen that: (1) three kinds of variable density downsampling could realize the extraction of a small amount of data for hologram in the frequency domain; (2) with the increase of sampling rate, the compression sensing tomography reconstruction quality of a small amount of data obtained by variable density reduction sampling was continuously improved; (3) under the sampling rate of less than 50%, exponential distribution downsampling had higher reconstruction quality than the other two methods (for example, in the case of low downsampling rate of 15%, the reconstruction quality of exponential distribution was more obvious than the other two methods); (4) under the sampling rate of more than 50%, the tomographic reconstruction quality of the three downsampling modes was relatively high and basically consistent. © 2020, Editorial Board of Journal of Infrared and Laser Engineering. All right reserved.

**Number of references:** 20

**Main heading:** Image reconstruction

**Controlled terms:** Compressed sensing  -  Data mining  -  Frequency domain analysis  -  Holograms  -  Lithography  -  Signal sampling  -  Tomography

**Uncontrolled terms:** Amount of information  -  Compression sensing  -  Compressive sensing  -  Exponential distributions  -  Radial distributions  -  Reconstruction quality  -  Tomographic reconstruction  -  Tomography reconstruction

**Classification code:** 716.1 Information Theory and Signal Processing  -  723.2 Data Processing and Image Processing  -  743 Holography  -  746 Imaging Techniques  -  921.3 Mathematical Transformations

**Numerical data indexing:** Percentage 1.50e+01%, Percentage 5.00e+01%

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**Data Provider:** Engineering Village