**1. Theoretical prediction of Xe-containing polymer**

**Accession number:** 2020246199

**Authors:** Zhao, Rui (1); Sheng, Li (1); Gao, Kunqi (2)

**Author affiliation:** (1) MIIT Key Laboratory of Critical Materials Technology for New Energy Conversion and Storage, School of Chemistry and Chemical Engineering, Harbin Institute of Technology, Harbin, China; (2) School of Science, College of Art and Science, Shanghai Polytechnic University, Shanghai, China

**Corresponding author:** Sheng, Li(shengli@hit.edu.cn)

**Source title:** Molecular Physics

**Abbreviated source title:** Mol. Phys.

**Issue date:** 2020

**Publication year:** 2020

**Article number:** e1842532

**Language:** English

**ISSN:** 00268976

**E-ISSN:** 13623028

**CODEN:** MOPHAM

**Document type:** Article in Press

**Publisher:** Taylor and Francis Ltd.

**Abstract:** Density functional theory (DFT) calculation has been performed to investigate the C5N4H10XeH2 molecule and Xe-containing polymer CH2Y(XeY)nCH2 (Y = C4N4H8, n = 1∼6). The topological properties at the bond critical point and the electron localisation function analysis show that the Xe-N bond in C5N4H10XeH2 is covalent. Two dissociation channels have been predicted to investigate the stability of C5N4H10XeH2, in which the products of the two-body dissociation channel are Xe and C5N4H12, and the energy barrier is 5.2 kcal mol−1. We also study the CH2Y(XeY)nCH2 polymer, in which Xe is on the one dimensional extension chain. Besides, two one-dimensional chains joined together by Xe associatione, further form two-dimensional network structures. And two network structures with Xe as the skeleton have been optimised by DFT calculation, each of which contains multiple Xe atoms. © 2020 Informa UK Limited, trading as Taylor & Francis Group.

**Number of references:** 38

**Controlled terms:** xenon  -  polymer  -  dissociation  -  nitrogen derivative  -  chemical compound  -  mathematics  -  density functional theory

**Uncontrolled terms:** Bond critical points  -  DFT calculation  -  Dissociation channels  -  Electron localisation functions  -  Network structures  -  One-dimensional chains  -  Topological properties  -  Two-dimensional networks

**CAS registry number(s):** xenon   -  7440-63-3

**DOI:** 10.1080/00268976.2020.1842532

**Database:** Chimica

Compilation and indexing terms, Copyright 2021 Elsevier Inc.

**Data Provider:** Engineering Village

**2. Vacancy-induced anion and cation redox chemistry in cation-deficient F-doped anatase TiO2**

**Accession number:** 2020240618

**Authors:** Li, Haoxin (1, 2); Li, Yining (2, 3); Zhao, Xiaolin (2, 3); Wang, Youwei (2, 3); Huang, Kexian (2); Qiu, Wujie (2, 3); Wang, Jifen (1); Liu, Jianjun (2, 3, 4)

**Author affiliation:** (1) School of Science, College of Art and Science, Shanghai Polytechnic University, No. 2360 Jinhai Rd., Shanghai; 201209, China; (2) State Key Laboratory of High Performance Ceramics and Superfine Microstructure, Shanghai Institute of Ceramics, Chinese Academy of Sciences, 1295 Dingxi Road, Shanghai; 200050, China; (3) Center of Materials Science and Optoelectronics Engineering, University of Chinese Academy of Sciences, Beijing; 100049, China; (4) School of Chemistry and Materials Science, Hangzhou Institute for Advanced Study, University of Chinese Academy of Science, 1 Sub-lane Xiangshan, Hangzhou; 310024, China

**Corresponding author:** Wang, Jifen(wangjifen@sspu.edu.cnemailwjqiu@mail.sic.ac.cnemailjliu@mail.sic.ac.cn)Qiu, Wujie(wjqiu@mail.sic.ac.cnemailjliu@mail.sic.ac.cn)Liu, Jianjun(jliu@mail.sic.ac.cn)

**Source title:** Journal of Materials Chemistry A

**Abbreviated source title:** J. Mater. Chem. A

**Volume:** 8

**Issue:** 39

**Issue date:** October 21, 2020

**Publication year:** 2020

**Pages:** 20393-20401

**Language:** English

**ISSN:** 20507488

**E-ISSN:** 20507496

**CODEN:** JMCAET

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

**Publisher:** Royal Society of Chemistry

**Abstract:** The incorporation of point defects such as cationic vacancies into electrode materials has been considered as an effective strategy to improve the charge-transfer and ion-diffusion kinetics and allow insertion and migration of multivalent ions. However, they suffer from low specific capacity and electrochemical irreversibility. To elucidate the origin of these issues, we investigated the F-doped and cation-deficient anatase TiO2 through Mg2+ insertion for understanding the redox activity of vacancy structure. Our first-principles calculations showed that charge transfer inductively occurs from anion O2-/F- to cation Ti4+ near vacancies, forming oxidized anions F(1-x)-/O(2-y)- and reduced cations Ti(4-z)+. We further found that cooperative cationic and anionic redox reactions, Ti3.83+ + 0.19e- → Ti3.64+, O1.94- + 0.06e- → O2- and F0.93- + 0.07e- → F-, take place during Mg2+ insertion. The peculiar anionic redox reaction of oxidized F 2p states is attributed to low-coordination fluorine ions, which was demonstrated by the previous NMR characterization. Our calculations showed that the fluorine redox reaction contributes 26.5% of the total redox capacity. The present results provided chemical clues to use the vacancy structure design to develop efficient cationic and anionic redox materials for improving the energy density and cyclic stability of battery materials. © 2020 The Royal Society of Chemistry.

**Number of references:** 51

**Controlled terms:** materials science  -  chemistry  -  fluorine  -  calculation  -  fluorine derivative  -  physical chemistry  -  cation  -  magnesium derivative  -  mineral  -  titanium dioxide   -  oxidation reduction reaction  -  chemical reaction  -  anion

**Uncontrolled terms:** Battery materials  -  Cationic vacancy  -  Electrode material  -  First-principles calculation  -  Low coordination  -  Multivalent ions  -  Specific capacities  -  Vacancy structures

**CAS registry number(s):** fluorine   -  7782-41-4   -  titanium dioxide   -  1317-70-0   -  1317-80-2   -  13463-67-7 (titanium oxide)  -  51745-87-0

**DOI:** 10.1039/d0ta07578g

**Funding Details:** Number: 11804351, Acronym: -, Sponsor: National Natural Science Foundation of China; Number: 18520723000, Acronym: -, Sponsor: Science and Technology Commission of Shanghai Municipality; Number: 21973107, Acronym: -, Sponsor: National Natural Science Foundation of China; Number: 51702345, Acronym: -, Sponsor: National Natural Science Foundation of China; Number: 51776116, Acronym: -, Sponsor: National Natural Science Foundation of China;

**Funding text:** This work is financially supported by the National Natural Science Foundation of China, NSFC (No. 21973107, 51702345, 51776116, and 11804351), the Key Project of Science and Technology of Shanghai (No. 18511109400), Science and Technology Commission of Shanghai Municipality (No. 18520723000), the Major Program of the National Natural Science Foundation of China (No. 51590902), and Graduate Student Fund of Shanghai Polytechnic University (No. EGD19YJ0066).

**Database:** Chimica

Compilation and indexing terms, Copyright 2021 Elsevier Inc.

**Data Provider:** Engineering Village

**3. Observation of suppressed photocurrent of plasmonic Au on TiO2 by a double light beam method**

**Accession number:** 2020260315

**Authors:** Ma, Xinzhou (1, 2); Li, Xiaoxin (1); Mai, Manfang (3); Lin, Donghai (4); Zhou, Hua (5); Zhang, Li (1, 2); Li, Jingling (1, 2); Li, Qiuguo (6); Chen, Dongchu (1, 2)

**Author affiliation:** (1) School of Materials Science and Energy Engineering, Foshan University, Foshan; 528000, China; (2) Guangdong Key Laboratory for Hydrogen Energy Technologies, Foshan; 528000, China; (3) School of Physics and Optoelectronic Engineering, Foshan University, Foshan; 528000, China; (4) School of Environmental and Materials Engineering, College of Engineering, Shanghai Polytechnic University, Shanghai; 201209, China; (5) School of Physics, State Key Laboratory of Crystal Materials, Shandong University, Jinan; 250100, China; (6) Laboratory of Electronic Functional Materials, Huizhou University, Huizhou; 516001, China

**Corresponding author:** Ma, Xinzhou(xinzhou.ma@hotmail.comemailchendc@fosu.edu.cn)Chen, Dongchu(chendc@fosu.edu.cn)

**Source title:** International Journal of Hydrogen Energy

**Abbreviated source title:** Int J Hydrogen Energy

**Issue date:** 2020

**Publication year:** 2020

**Language:** English

**ISSN:** 03603199

**CODEN:** IJHEDX

**Document type:** Article in Press

**Publisher:** Elsevier Ltd

**Abstract:** Decoration of TiO2 with plasmonic Au nanoparticles is attracting extensive research for enhancing photoelectrochemical water splitting efficiency. In this work, we propose a double light beam method to investigate enhance effect of Au nanoparticles on the TiO2 single crystals. With double light beam method, it was found out that the photocurrent produced by Au nanoparticles was strongly decreased 3.5–4 times by inter-band transition of TiO2. The amplitude of open circuit potential transient was decreased from 100 mV to 12 mV by the inter-band transition. By analysis with Mott-Schottky plotting, photo-generated Au hot hole concentration decreased from 1.28 × 1019 cm−3 to 1.02 × 1018 cm−3 was revealed. Potential independent photocurrent of Au NPs was observed, indicating that the photocurrent produced by Au NPs was determined by the generation rate of Au hot holes. The underlying reason for the suppressive effect of inter-band transition on the photocurrent of Au nanoparticles was pointed to the strongly decreased photo-generated Au hot hole concentration. © 2020 Hydrogen Energy Publications LLC

**Number of references:** 42

**Controlled terms:** titanium dioxide  -  mineral  -  nanoparticle  -  semiconductor  -  gold nanoparticle  -  physics  -  gold  -  titanium dioxide nanoparticle  -  electric current

**Uncontrolled terms:** Au nanoparticle  -  Generation rate  -  Hot holes  -  Inter-band transition  -  Light beam  -  Mott-Schottky  -  Open-circuit potential transients  -  Photoelectrochemical water splitting efficiencies

**CAS registry number(s):** titanium dioxide   -  1317-70-0   -  1317-80-2   -  13463-67-7 (titanium oxide)  -  51745-87-0   -  gold   -  7440-57-5

**DOI:** 10.1016/j.ijhydene.2020.11.029

**Funding Details:** Number: -, Acronym: -, Sponsor: Program for Professor of Special Appointment (Eastern Scholar) at Shanghai Institutions of Higher Learning; Number: 11504242, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 51902054, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;

**Funding text:** This work was supported by the National Science Foundation of China (No. 11504242, No. 51902054); the Key Project of Department of Education of Guangdong Province (No. 2016GCZ008); the Project of Engineering Research Center of Foshan (No. 20172010018); Project of Guangdong Provincial Education (No. 2020KTSCX131); 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).

**Database:** Chimica

Compilation and indexing terms, Copyright 2021 Elsevier Inc.

**Data Provider:** Engineering Village

**4. Ti3C2Tx MXene contained nanofluids with high thermal conductivity, super colloidal stability and low viscosity**

**Accession number:** 2020253551

**Authors:** Bao, Zhijie (1); Bing, Naici (1, 2); Zhu, Xiangrong (1); 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) Shanghai Key Laboratory of Engineering Materials Application and Evaluation, Shanghai Polytechnic University, Shanghai; 201209, China

**Corresponding author:** Bing, Naici(ncbing@sspu.edu.cn)

**Source title:** Chemical Engineering Journal

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

**Volume:** 406

**Issue date:** February 15, 2021

**Publication year:** 2021

**Article number:** 126390

**Language:** English

**ISSN:** 13858947

**CODEN:** CMEJAJ

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

**Publisher:** Elsevier B.V.

**Abstract:** Nanofluids as heat transfer fluids have shown huge potential in heat exchange systems. How to balance effective thermal conductivity, dispersion stability and viscosity has become one of crucial issues for the application of nanofluids. MXene nanosheets with high aspect ratio coupled with high thermal conductivity and hydrophilic properties are expected to be potential fluids fillers. In this study, comprehensive performance of ethylene glycol (EG) based nanofluids containing multilayer and delaminated single layer Ti3C2Tx MXene are investigated in detail. The thermal conductivity of nanofluids with 5 vol% of multilayer and single layer Ti3C2Tx increase by 53.1% and 64.9% compared with EG, respectively. It is interesting that the viscosity of 1 vol% of MXene nanofluids is much lower than those of graphene and multi-walled carbon nanotube with 0.1 vol% due to the excellent self-lubricating properties. Single layer Ti3C2Tx-EG nanofluids also exhibit excellent stability and no obvious sedimentation in 30 days. The detailed study on MXene nanofluids will provide a strategy for heat transfer fluids development. © 2020 Elsevier B.V.

**Number of references:** 50

**Controlled terms:** nanofluidics  -  chemistry  -  carbon nanotube  -  viscosity  -  thermal conductivity  -  ethylene glycol  -  film  -  heat transfer  -  ethylene

**Uncontrolled terms:** Colloidal Stability  -  Comprehensive performance  -  Dispersion stability  -  Effective thermal conductivity  -  Heat exchange systems  -  High thermal conductivity  -  Hydrophilic properties  -  Self-lubricating properties

**CAS registry number(s):** ethylene glycol   -  107-21-1 (ethylene glycol)  -  ethylene   -  74-85-1 (ethylene)

**DOI:** 10.1016/j.cej.2020.126390

**Funding Details:** Number: -, Acronym: NPU, Sponsor: Northwestern Polytechnical University; Number: 17ZR1411000, Acronym: -, Sponsor: Natural Science Foundation of Shanghai; Number: 51590902, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 51676103, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: XXKZD1601, Acronym: -, Sponsor: Natural Science Foundation of Shanghai;

**Funding text:** This work was supported by National Natural Science Foundation of China (No. 51590902,51676103), Natural Science Foundation of Shanghai (No. 17ZR1411000) and the Key Subject of Shanghai Polytechnic University (Material Science and Engineering, XXKZD1601) and Gaoyuan Discipline of Shanghai-Environmental Science and Engineering (Resource Recycling Science and Engineering). The author would like to thank Prof. Junwei Gu from Northwestern Polytechnical University for discussion.

**Database:** Chimica

Compilation and indexing terms, Copyright 2021 Elsevier Inc.

**Data Provider:** Engineering Village

**5. Significant solar energy absorption of MXene Ti3C2Tx nanofluids via localized surface plasmon resonance**

**Accession number:** 2020241453

**Authors:** Wang, Debing (1); Fang, Yuxin (2); Yu, Wei (1); Wang, Lingling (1, 3); Xie, Huaqing (1); Yue, Yanan (2, 4)

**Author affiliation:** (1) College of Engineering, Shanghai Key Laboratory of Engineering Materials Application and Evaluation, Shanghai Polytechnic University, Shanghai; 201209, China; (2) Key Laboratory of Hydraulic Machinery Transients (MOE), School of Power and Mechanical Engineering, Wuhan University, Wuhan; Hubei; 430072, China; (3) Research Center of Resource Recycling Science and Engineering, Shanghai Polytechnic University, Shanghai; 201209, China; (4) Department of Mechanical and Manufacturing Engineering, Miami University, Oxford; OH; 45056, United States

**Corresponding author:** Yu, Wei(yuwei@sspu.edu.cnemailyyue@miamioh.edu)Yue, Yanan(yyue@miamioh.edu)

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

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

**Volume:** 220

**Issue date:** January 2021

**Publication year:** 2021

**Article number:** 110850

**Language:** English

**ISSN:** 09270248

**CODEN:** SEMCEQ

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

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

**Abstract:** Efficiency is an important factor in the utilization of solar energy. Direct absorption solar energy collectors (DASCs), a new generation collector of converting solar irradiation into heat directly by nanofluids, is regarded as a promising solution for capturing solar energy with high efficiency. Both good stability and high absorption ability are crucial for nanofluids to be an ideal working fluid of DASCs. In this work, we synthesize hyperstable Ti3C2Tx-H2O nanofluids as the working fluids of DASCs and investigate its photothermal conversion performance. The results show that the maximum conversion efficiency of thin-layer Ti3C2Tx nanofluids achieves 91.9% at a very low mass fraction of 0.02 wt%, which is higher than that of multi-layer Ti3C2Tx samples. Based on the experimental results, a simulation model is built to observe the radiation energy transformation in DASCs and results show that better photothermal performance of thin-layer MXene Ti3C2Tx stems from its stronger localized surface plasmon resonance (LSPR) effect. Besides, the coupling effect and the shape of Ti3C2Tx particles also play important roles in photothermal absorption and conversion. Based on our experimental and numerical results, the Ti3C2Tx-H2O nanofluids have great potential in solar energy harvesting. © 2020

**Number of references:** 47

**Controlled terms:** physics  -  liquid  -  solar energy  -  nanofluidics  -  energy absorption  -  devices  -  surface plasmon resonance  -  energy conversion

**Uncontrolled terms:** Absorption abilities  -  Direct absorption  -  Localized surface plasmon resonance  -  Numerical results  -  Photo-thermal conversions  -  Simulation model  -  Solar energy collectors  -  Solar irradiation

**DOI:** 10.1016/j.solmat.2020.110850

**Funding Details:** Number: 51576145, Acronym: NSFC, Sponsor: National Natural Science Foundation of China; Number: 51590901, Acronym: NSFC, Sponsor: National Natural Science Foundation of China;

**Funding text:** The work was supported by National Natural Science Foundation of China (Nos. 51590901, 51576145), the Subject of Shanghai Polytechnic University (Material Science and Engineering; Grant Nos. XXKZD1601), and Gaoyuan Discipline of Shanghai-Environmental Science and Engineering (Resource Recycling Science and Engineering).

**Database:** Chimica

Compilation and indexing terms, Copyright 2021 Elsevier Inc.

**Data Provider:** Engineering Village

**6. First-principle study for influence of normal strain on the magnetic properties of nonmetal adsorbed WSe2 monolayer**

**Accession number:** 20204509455162

**Authors:** Luo, Min (1); Xu, Yu-e (2); Shen, Yuhao (3)

**Author affiliation:** (1) Department of Physics, Shanghai Polytechnic University, Shanghai, PR, China; (2) Department of Electronic Engineering, Shanghai Jianqiao University, Shanghai, PR, China; (3) Key Laboratory of Polar Materials and Devices, East China Normal University, Shanghai, PR, China

**Corresponding author:** Luo, Min(luomin@sspu.edu.cn)

**Source title:** Ferroelectrics

**Abbreviated source title:** Ferroelectrics

**Volume:** 568

**Issue:** 1

**Issue date:** November 17, 2020

**Publication year:** 2020

**Pages:** 132-142

**Language:** English

**ISSN:** 00150193

**E-ISSN:** 15635112

**CODEN:** FEROA8

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

**Publisher:** Bellwether Publishing, Ltd.

**Abstract:** In this work, the magnetic properties of the WSe2 monolayer with different nonmetals (B, C, F, N, and O) are studied by the ab initio calculations. Different behavior shows up by applying the normal strain. Under the normal strain, the magnetism becomes tunable except for the B and O adatoms. Then, the magnetic coupling between two nonmetals has been checked. A transformation from ferromagnetic (FM) to nonmagnetic (NM) has been observed in two F-adsorbed systems, which could be explained by the p–p hybridization mechanism. Our results provide a theoretical reference for the adsorption on the WSe2 surfaces. © 2020 Taylor & Francis Group, LLC.

**Number of references:** 35

**Main heading:** Tungsten compounds

**Controlled terms:** Calculations  -  Magnetic properties  -  Magnetism  -  Monolayers  -  Selenium compounds  -  Strain

**Uncontrolled terms:** Ab initio calculations  -  Adsorbed system  -  First-principle study  -  Hybridization mechanism  -  Nonmagnetics  -  Normal strain  -  O adatoms

**Classification code:** 701.2 Magnetism: Basic Concepts and Phenomena  -  921 Mathematics  -  951 Materials Science

**DOI:** 10.1080/00150193.2020.1811037

**Funding Details:** Number: XXKZD1605, Acronym: -, Sponsor: -; Number: EGD18XQD29, 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 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 2021 Elsevier Inc.

**Data Provider:** Engineering Village

**7. Pricing and Quality Decisions of Follower Brands in Presence of Brand Loyalty**

**Accession number:** 20204509448120

**Title of translation:**

**Authors:** Xu, Xiaolei (1, 2); Zhou, Jianheng (1)

**Author affiliation:** (1) Glorious Sun School of Business and Management, Donghua University, Shanghai; 200051, China; (2) School of Economics and Management, Shanghai Polytechnic University, Shanghai; 201209, China

**Corresponding author:** Zhou, Jianheng(Zjh001@dhu.edu.cn)

**Source title:** Xinan Jiaotong Daxue Xuebao/Journal of Southwest Jiaotong University

**Abbreviated source title:** Xinan Jiaotong Daxue Xuebao

**Volume:** 55

**Issue:** 5

**Issue date:** October 1, 2020

**Publication year:** 2020

**Pages:** 980-987

**Language:** Chinese

**ISSN:** 02582724

**CODEN:** XJDXEW

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

**Publisher:** Science Press

**Abstract:** International famous fashion brands usually attract and cultivate many loyal customers with their high quality and unique cultural value. Thus, domestic follower brands have to be confronted with the effect of customer stickiness and strategic behavior. How to break through the existing barriers and attract strategic customers to buy cost-effective follower brands has become an important issue. On the basis of the assumption that fashion products have certain value depreciation, a strategic game model of competitive firms in two-period, is built to analyze how follower businesses decide their product quality and price. It is found that high brand loyalty is benefit to the leader demand, but may be adverse to its profit. Furthermore, given the value depreciation, if the strategic behavior is weak, the followers’ profit may increase with the brand loyalty. The reason is that the positive effect of follower price increasing with customer loyalty is greater than the negative effect of market demand decreasing with it, which promotes the increase of follower brand profit. In addition, a follower’s profit does not monotonically increase with its product similarity; thus it is essential for a follower to own a certain degree of brand originality in order to maximize profits. © 2020, Editorial Department of Journal of Southwest Jiaotong University. All right reserved.

**Number of references:** 18

**Main heading:** Profitability

**Controlled terms:** Cost effectiveness  -  Costs  -  Depreciation  -  Sales

**Uncontrolled terms:** Brand loyalty  -  Cost effective  -  Cultural value  -  Customer loyalty  -  High quality  -  Market demand  -  Strategic Behavior  -  Strategic game

**Classification code:** 911 Cost and Value Engineering; Industrial Economics  -  911.2 Industrial Economics

**DOI:** 10.3969/j.issn.0258-2724.20200012

**Compendex references:** YES

**Database:** Compendex

Compilation and indexing terms, Copyright 2021 Elsevier Inc.

**Data Provider:** Engineering Village

**8. Two-Dimensional Perturbation Correlation Infrared Spectroscopy Analysis of Animal Manure Biochar**

**Accession number:** 20204709501457

**Title of translation:**

**Authors:** Gui, Xiang-Yang (1, 2); Liu, Chen (3); Xu, Ji-Hong (1); Duan, Fang-Lei (1); Fang, Shu-Wei (1); Li, Fei-Yue (1)

**Author affiliation:** (1) College of Resource and Environment, Anhui Science and Technology University, Fengyang; 233100, China; (2) China-UK Low Carbon College, Shanghai Jiaotong University, Shanghai; 200240, China; (3) School of Environmental and Materials Engineering, Shanghai Second Polytechnic University, Shanghai; 201209, China

**Corresponding author:** Li, Fei-Yue(lifeiyue0523@163.com)

**Source title:** Guang Pu Xue Yu Guang Pu Fen Xi/Spectroscopy and Spectral Analysis

**Abbreviated source title:** Guang Pu Xue Yu Guang Pu Fen Xi

**Volume:** 40

**Issue:** 11

**Issue date:** November 1, 2020

**Publication year:** 2020

**Pages:** 3606-3612

**Language:** Chinese

**ISSN:** 10000593

**CODEN:** GYGFED

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

**Publisher:** Science Press

**Abstract:** More attention has been paid to biochar which has been hot research area as a novel environmental functional material due to its special structure and physicochemical properties, it has multiple environmental benefits such as pollution remediation, soil improvement, carbon sequestration and emission reduction. The physicochemical properties of biochar were determined by the types and distribution of surface functional groups. Pyrolysis temperature and material type are two important factors affecting functional groups of biochar. In this article, animal manure biochars were prepared under different temperature from 200 to 700 with the materials of chicken manure, dairy manure and pig manure. On the basis of traditional one-dimensional infrared spectrum analysis, the change tendency of functional groups of animal manure biochars with the increase of pyrolysis temperature was revealed using the method of Fourier transform infrared spectroscopy (FTIR) combined with two-dimensional correlation analysis, providing a theoretical basis for better research on structure-activity relationship of biochar. The results showed that with the increase of pyrolysis temperature, Which variations mainly existed in the unceasing weakening of alcohols and phenols -OH peak and aliphatic -CH2 peak of manure biochar, among which the changes of chicken manure were the most obvious. Furthermore, the changing intensity of -OH was higher than -CH2 and was removed before -CH2 in the range of 3 600~2 800 cm-1. The number of auto-peaks was 6, 5, 6 respectively in the two-dimensional perturbation correlation infrared spectroscopy of chicken, dairy and pig manure biochar. The changing intensity of each auto-peak was (chicken manure biochar) aromatic C=C> C=O>Si-O/C-O>P-O/C-H; (dairy manure biochar) C=O>C=C and P-O/C-H>C-OH, C-O/Si-O; (pig manure biochar) C=O> C=C>COO->Carboxylic C-OH>P-O/C-H=C-O/Si-O. The groups of C=O and C=C broke and reconstituted, and C=O broke ahead of C=C. However, there were differences in the functional groups of different animal manure biochars, mainly the change of C-O/Si-O was prior to P-O/C-H in chicken manure biochar, while P-O/C-H in dairy manure biochar changed earlier than C-O/Si-O, and C-O/Si-O and P-O/C-H in pig manure biochar occurred simultaneously in the range of 1 800~800 cm-1. © 2020, Peking University Press. All right reserved.

**Number of references:** 22

**Main heading:** Manures

**Controlled terms:** Emission control  -  Fertilizers  -  Fourier transform infrared spectroscopy  -  Functional materials  -  Mammals  -  Physicochemical properties  -  Pyrolysis  -  Silicon  -  Soil pollution  -  Spectrum analysis

**Uncontrolled terms:** Carbon sequestration  -  Emission reduction  -  Environmental benefits  -  Pyrolysis temperature  -  Structure activity relationships  -  Surface functional groups  -  Two-dimensional perturbation  -  Twodimensional correlation analysis

**Classification code:** 451.2 Air Pollution Control  -  483.1 Soils and Soil Mechanics  -  549.3 Nonferrous Metals and Alloys excluding Alkali and Alkaline Earth Metals  -  801 Chemistry  -  802.2 Chemical Reactions  -  804 Chemical Products Generally  -  821.5 Agricultural Wastes  -  951 Materials Science

**DOI:** 10.3964/j.issn.1000-0593(2020)11-3606-07

**Compendex references:** YES

**Database:** Compendex

Compilation and indexing terms, Copyright 2021 Elsevier Inc.

**Data Provider:** Engineering Village

**9. Rolling bearing fault diagnosis based on composite multiscale permutation entropy and reverse cognitive fruit fly optimization algorithm – Extreme learning machine**

**Accession number:** 20204509447559

**Authors:** He, Cheng (1); Wu, Tao (2); Gu, Runwei (3); Jin, Zhongyan (2); Ma, Renjie (2); Qu, Huaying (4)

**Author affiliation:** (1) School of Intelligent Manufacturing and Control Engineering, Shanghai Polytechnic University, Pudong, Shanghai; 201209, China; (2) School of Environmental and Material Engineering, Shanghai Polytechnic University, Pudong, Shanghai; 201209, China; (3) Production Guarantee Department, China Shipbuilding Hudong Heavy Machinery Co., Ltd., Pudong, Shanghai; 201209, China; (4) Mechanical Design Department, China Tobacco Machinery Technology Center Co., Ltd., Pudong, Shanghai; 201209, China

**Corresponding author:** Qu, Huaying(2113200680@qq.com)

**Source title:** Measurement: Journal of the International Measurement Confederation

**Abbreviated source title:** Meas J Int Meas Confed

**Issue date:** 2020

**Publication year:** 2020

**Article number:** 108636

**Language:** English

**ISSN:** 02632241

**CODEN:** MSRMDA

**Document type:** Article in Press

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

**Abstract:** Rolling bearings usually work in complex environments, which makes them more prone to mechanical failures. Aiming at the non-stationary and nonlinear characteristics of its vibration signals, a fault diagnosis model based on composite multiscale permutation entropy (CMPE) and reverse cognitive fruit fly optimization algorithm optimized extreme learning machine (RCFOA-ELM) is proposed. Firstly, the particle swarm optimization optimized variational mode decomposition (PSO-VMD) is used to decompose the bearing vibration signal. Then the composite multiscale permutation entropy (CMPE) is used to calculate and compose the fault feature vector. Finally, input the feature sets into the optimized extreme learning machine (ELM) model for training and testing. Different types and different degrees of rolling bearing fault diagnosis experiments have proved that this model has a higher fault diagnosis recognition rate than other models. Therefore, this model can effectively improve the accuracy of fault classification and provide a new solution for rolling bearing fault diagnosis. © 2020 Elsevier Ltd

**Number of references:** 50

**Main heading:** Roller bearings

**Controlled terms:** Computer aided diagnosis  -  Entropy  -  Failure (mechanical)  -  Failure analysis  -  Fault detection  -  Fault slips  -  Fruits  -  Knowledge acquisition  -  Learning algorithms  -  Machine learning   -  Particle swarm optimization (PSO)

**Uncontrolled terms:** Complex environments  -  Extreme learning machine  -  Fault classification  -  Fault diagnosis model  -  Mechanical failures  -  Nonlinear characteristics  -  Permutation entropy  -  Training and testing

**Classification code:** 484.1 Earthquake Measurements and Analysis  -  601.2 Machine Components  -  641.1 Thermodynamics  -  723 Computer Software, Data Handling and Applications  -  821.4 Agricultural Products

**DOI:** 10.1016/j.measurement.2020.108636

**Funding Details:**

**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

Compilation and indexing terms, Copyright 2021 Elsevier Inc.

**Data Provider:** Engineering Village

**10. Design of Mosquito Killers Based on Intelligent Lighting Control over Solar Energy and High-Voltage DC**

**Accession number:** 20204409440078

**Authors:** Li, Kefeng (1); Yu, Lijun (1)

**Author affiliation:** (1) Shanghai Polytechnic University, Shanghai, China

**Source title:** Proceedings of 2020 IEEE International Conference on Advances in Electrical Engineering and Computer Applications, AEECA 2020

**Abbreviated source title:** Proc. IEEE Int. Conf. Adv. Electr. Eng. Comput. Appl., AEECA

**Part number:** 1 of 1

**Issue title:** Proceedings of 2020 IEEE International Conference on Advances in Electrical Engineering and Computer Applications, AEECA 2020

**Issue date:** August 2020

**Publication year:** 2020

**Pages:** 541-544

**Article number:** 9213548

**Language:** English

**ISBN-13:** 9781728165202

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

**Conference name:** 2020 IEEE International Conference on Advances in Electrical Engineering and Computer Applications, AEECA 2020

**Conference date:** August 25, 2020 - August 27, 2020

**Conference location:** Dalian, China

**Conference code:** 163766

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

**Abstract:** This design of the mosquito killer is based on intelligent lighting control over solar energy and high-voltage DC. The device consists of the frame, solar module, control module, mosquito killing module. The solar module is fixed on the top of the frame, which uses the solar energy to store electric energy. The control module, which is fixed inside the frame, is connected with the solar module through a circuit. It controls the opening or closing of the control module through light control and temperature control. The mosquito killing module, which is fixed at the lower part of the frame, is connected with the control module through a circuit. When the control module is enabled, the power is supplied by the solar module, the mosquito killing module is enabled and starts to lure mosquitos and kill them. When the control module is disabled, the circuit connection between the solar module and the mosquito killing module is disrupted, and the mosquito killing module is disabled. The mosquito killer of this design uses the solar energy to supply electricity, light control and temperature control to realize time control of mosquito killing, the ultraviolet color light to lure mosquitos to approach, and the high-voltage power to kill them. It features high mosquito killing efficiency, environmental protection, and energy saving. © 2020 IEEE.

**Number of references:** 6

**Main heading:** Mosquito control

**Controlled terms:** Energy conservation  -  HVDC power transmission  -  Lighting  -  Solar cell arrays  -  Solar energy  -  Solar power generation  -  Temperature control

**Uncontrolled terms:** Circuit connections  -  Control module  -  Electric energies  -  High voltage DC  -  High voltage power  -  Intelligent lightings  -  Light control  -  Solar module

**Classification code:** 525.2 Energy Conservation  -  615.2 Solar Power  -  657.1 Solar Energy and Phenomena  -  702.3 Solar Cells  -  706.1.1 Electric Power Transmission  -  731.3 Specific Variables Control

**DOI:** 10.1109/AEECA49918.2020.9213548

**Compendex references:** YES

**Database:** Compendex

Compilation and indexing terms, Copyright 2021 Elsevier Inc.

**Data Provider:** Engineering Village

**11. A study on the classification of left-and righthanded eeg signals based on motor imagination**

**Accession number:** 20204409440050

**Authors:** Yu, Ye (1)

**Author affiliation:** (1) Shanghai Second Polytechnic University, Shanghai, China

**Corresponding author:** Yu, Ye(yyzhmyxb@sina.cn)

**Source title:** Proceedings of 2020 IEEE International Conference on Advances in Electrical Engineering and Computer Applications, AEECA 2020

**Abbreviated source title:** Proc. IEEE Int. Conf. Adv. Electr. Eng. Comput. Appl., AEECA

**Part number:** 1 of 1

**Issue title:** Proceedings of 2020 IEEE International Conference on Advances in Electrical Engineering and Computer Applications, AEECA 2020

**Issue date:** August 2020

**Publication year:** 2020

**Pages:** 28-31

**Article number:** 9213510

**Language:** English

**ISBN-13:** 9781728165202

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

**Conference name:** 2020 IEEE International Conference on Advances in Electrical Engineering and Computer Applications, AEECA 2020

**Conference date:** August 25, 2020 - August 27, 2020

**Conference location:** Dalian, China

**Conference code:** 163766

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

**Abstract:** Aiming at the commonly used motion imaging eeg signals in BCI system, this experiment discusses the principle of extraction of left and right hand motion imaging features by cospatial mode and frequency band energy analysis respectively, and compares the two methods. Using PhysioNet’s publicly available eeg data set classification and recognition, the results show that the highest classification accuracy is 77.8% when CSP feature is combined with support vector machine. The highest classification accuracy of frequency band energy feature combined with support vector machine is 85.5%. Finally, the method of multi-feature fusion is proposed. The experimental results show that the classification accuracy of multi-feature fusion is higher than that of single feature, which is kept at about 90%. It can better represent the electroencephalogram signal of motion imagination. © 2020 IEEE.

**Number of references:** 8

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

**Controlled terms:** Brain computer interface  -  Image processing  -  Support vector machines

**Uncontrolled terms:** Classification accuracy  -  Classification and recognition  -  EEG signals  -  Electroencephalogram signals  -  Frequency band energies  -  Frequency band energy analysis  -  Motion imaging  -  Multi-feature fusion

**Classification code:** 716.1 Information Theory and Signal Processing  -  722.2 Computer Peripheral Equipment  -  723 Computer Software, Data Handling and Applications

**Numerical data indexing:** Percentage 7.78e+01%, Percentage 8.55e+01%, Percentage 9.00e+01%

**DOI:** 10.1109/AEECA49918.2020.9213510

**Compendex references:** YES

**Database:** Compendex

Compilation and indexing terms, Copyright 2021 Elsevier Inc.

**Data Provider:** Engineering Village