

Editorial Staff

Executive Editor

Michaela Mühlberg

Deputy Editor

Geraldine Hay

Editorial Production Manager

Jonathon Watson

Senior Publishing Editor

Fiona Iddon

Development Editor

Rose Wedgbury

Publishing Editors

Matthew Blow, Sam Howell, Evie Karkera, Carole Martin,

Kirsty McRoberts

Editorial Assistant

Daniel Smith

Publishing Assistant

Jane Paterson

Publisher

Sam Keltie

For queries about submitted papers, please contact Jonathon Watson, Editorial Production Manager in the first instance. E-mail: materialsC@rsc.org

For pre-submission queries please contact Michaela Mühlberg, Executive Editor. E-mail: materialsC@rsc.org

Journal of Materials Chemistry C (electronic: ISSN 2050-7534) is published 48 times a year by the Royal Society of Chemistry, Thomas Graham House, Science Park, Milton Road, Cambridge, UK CB4 0WE.

All orders, with cheques made payable to the Royal Society of Chemistry, should be sent to the Royal Society of Chemistry Order Department, Royal Society of Chemistry, Thomas Graham House, Science Park, Milton Road, Cambridge, CB4 0WE, UK. Tel +44 (0)1223 432398; E-mail orders@rsc.org

2023 Annual (electronic) subscription price: £2521; \$4046. Customers in Canada will be subject to a surcharge to cover GST. Customers in the EU subscribing to the electronic version only will be charged VAT.

If you take an institutional subscription to any Royal Society of Chemistry journal you are entitled to free, site-wide web access to that journal. You can arrange access via Internet Protocol (IP) address at www.rsc.org/ip

Customers should make payments by cheque in sterling payable on a UK clearing bank or in US dollars payable on a US clearing bank.

Whilst this material has been produced with all due care, the Royal Society of Chemistry cannot be held responsible or liable for its accuracy and completeness, nor for any consequences arising from any errors or the use of the information contained in this publication. The publication of advertisements does not constitute any endorsement by the Royal Society of Chemistry or Authors of any products advertised. The views and opinions advanced by contributors do not necessarily reflect those of the Royal Society of Chemistry which shall not be liable for any resulting loss or damage arising as a result of reliance upon this material. The Royal Society of Chemistry is a charity, registered in England and Wales, Number 207890, and a company incorporated in England by Royal Charter (Registered No. RC000524), registered office: Burlington House, Piccadilly, London W1J 0BA, UK, Telephone: +44 (0) 207 4378 6556.

Advertisement sales:

Tel +44 (0) 1223 432246; Fax +44 (0) 1223 426017;

E-mail advertising@rsc.org

For marketing opportunities relating to this journal, contact marketing@rsc.org

Journal of Materials Chemistry C

rsc.li/materials-C

Journal of Materials Chemistry A, B & C cover high quality studies across all fields of materials chemistry. The journals focus on those theoretical or experimental studies that report new understanding, applications, properties and synthesis of materials.

Journal of Materials Chemistry C covers materials with applications in optical, magnetic and electronic devices.

Editorial Board

Editor-in-Chief

Natalie Stingelin, Georgia Institute of Technology, USA

Associate Editors

A. S. Achalkumar, Indian Institute of

Technology, India

Rachel Crespo-Otero, University College

London, UK

Renaud Demadrille, Interdisciplinary

Research Institute of Grenoble, France

Antonio Facchetti, Northwestern University,

USA

Unjong Jeong, POSTECH, South Korea

Oana Jurchescu, Wake Forest University, USA

Mingzhu Li, Technical Institute of Physics

and Chemistry, Chinese Academy of

Sciences, China

Martyn McLachlan, Imperial College

London, UK

Kasper Moth-Poulsen, Chalmers University

of Technology, Sweden

Ana Nogueira, University of Campinas, Brazil

Erin Ratcliff, University of Arizona, USA

Federico Rosei, University of Trieste, Italy

Yana Vayznof, Technical University of

Dresden, Germany

Maia Vergniory, Max Planck Institute for

Chemical Physics of Solids, Germany

Ni Zhao, Chinese University of Hong Kong,

Hong Kong

Zhiguo Xia, South China University of

Technology, China

Hao-Li Zhang, Lanzhou University, China

Advisory Board

C. Bai, Chinese Academy of Sciences, China

E. Bittner, University of Houston, USA

T. Bunning, Air Force Research Laboratory,

USA

J. Casado, University of Malaga, Spain

R. Chandrasekar, University of Hyderabad,

India

Y.-J. Cheng, National Chiao Yung University,

Taiwan

M. Chhowalla, Rutgers - The State University

of New Jersey, USA

C. Chi, National University of Singapore,

Singapore

L. Chua, National University of Singapore,

Singapore

D. Evans, Beijing University of Chemical

Technology, China

M. Green, King's College London, UK

E. von Hauf, VU Amsterdam, Netherlands

L. Hueso, CIC nanoGUNE, Spain

C. S. Hwang, Seoul National University, Korea

M. Kanatzidis, Northwestern University, USA

T. Kato, The University of Tokyo, Japan

J. Kido, Yamagata University, Japan

H. Kuang, Jiangnan University, China

T. Kusamoto, Institute for Molecular Science,

Japan

M. Jeffries-EL, Boston University, USA

M. Lira-Cantú, Catalan Institute of

Nanoscience and Nanotechnology, Spain

S. Marder, University of Colorado Boulder,

USA

I. McCulloch, University of Oxford, UK

H. Mori, University of Tokyo, Japan

J. Ouyang, National University of Singapore,

Singapore

N. Robertson, University of Edinburgh, UK

P. Samori, Université de Strasbourg, France

R. Seshadri, University of California,

Santa Barbara, USA

R. Sessoli, University of Florence, Italy

Z. Shuai, Tsinghua University, China

C. Silva, Georgia Institute of Technology, USA

J. Snyder, Northwestern University, Illinois,

USA

C. Weder, University of Fribourg, Switzerland

G. Welch, University of Calgary, Canada

W. Wong, Hong Kong Polytechnic University,

Hong Kong

P. Woodward, Ohio State University, USA

Y. Yin, UC Riverside, USA

A. Zayats, King's College London, UK

X. Zhan, Peking University, China

Q. Zhang, City University of Hong Kong,

Hong Kong

Information for Authors

Full details on how to submit material for publication in Journal of Materials Chemistry C are given in the Instructions for Authors (available from <http://www.rsc.org/authors>). Submissions should be made via the journal's homepage:

rsc.li/materials-c. Submissions: The journal welcomes submissions of manuscripts for publication as Full Papers, Communications, Reviews, Highlights and Applications. Full Papers and Communications should describe original work of high quality and impact which must highlight the novel properties or applications (or potential properties/applications) of the materials studied.

Additional details are available from the Editorial Office or <http://www.rsc.org/authors>

Authors may reproduce/republish portions of their published contribution without seeking permission from the Royal Society of Chemistry, provided that any such republication is accompanied by

an acknowledgement in the form: (Original Citation)–Reproduced by permission of the Royal Society of Chemistry.

This journal is © The Royal Society of Chemistry 2023.

Apart from fair dealing for the purposes of research or private study for non-commercial purposes, or criticism or review, as permitted under the Copyright, Designs and Patents Act 1988 and the Copyright and Related Rights Regulation 2003, this publication may only be reproduced, stored or transmitted, in any form or by any means, with the prior permission in writing of the Publishers or in the case of reprographic reproduction in accordance with the terms of licences issued by the Copyright Licensing Agency in the UK. US copyright law is applicable to users in the USA.

Registered charity number: 207890

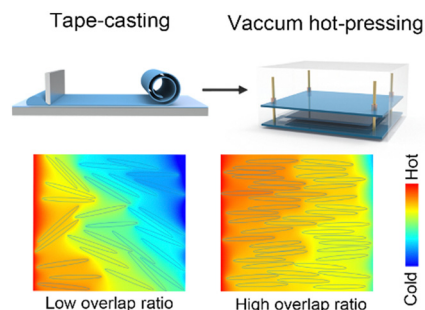


PAPERS

13204

Recycled and flexible boron nitride heat spread film with high thermal conductivity

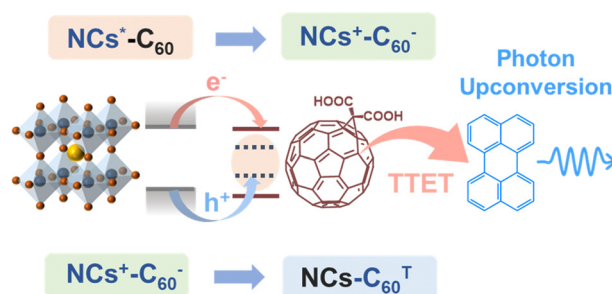
Jianxiang Zhang, Xiangdong Kong, Yandong Wang, Zhenbang Zhang, Linhong Li, Kang Xu, Maohua Li, Rongjie Yang, Yiwei Zhou, Tao Cai, Wen Dai, Cheng-Te Lin, Kazuhito Nishimura, Zhongbin Pan,* Nan Jiang* and Jinhong Yu*



13213

Electron transfer-mediated triplet sensitization from CsPbI₃ nanocrystals to fullerene for photon upconversion

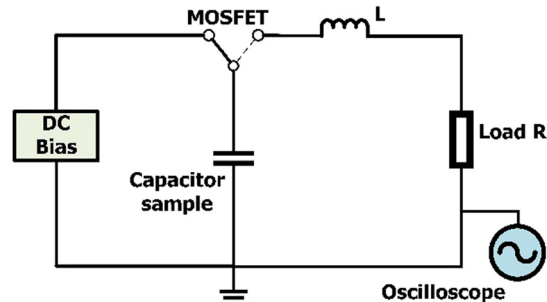
Pengfei Niu, Guiwen Luo, Tianjun Yu, Jinping Chen, Rui Hu, Guoqiang Yang, Yi Zeng* and Yi Li



13220

The effect of non-intrinsic factors on pulse discharge and energy releasing performance of dielectric ceramics

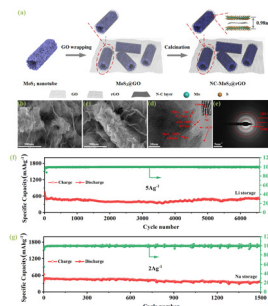
Haochen Xie, Yongping Pu,* Yangchao Shang, Lei Zhang, Bo Wang and Yuxing Hao



13228

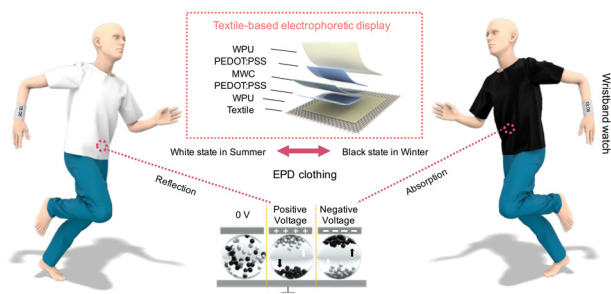
3D hierarchical networks constructed from interlayer-expanded MoS₂ nanotubes and rGO as high-rate and ultra-stable anodes for lithium/sodium-ion batteries

Bingqing Ye, Zhou Cui, Zunxian Yang,* Wenbo Wu, Yuliang Ye, Zihong Shen, Yuanqing Zhou, Qiaocan Huang, Songwei Ye, Zhiming Cheng, Hongyi Hong, Zongyi Meng, Zhiwei Zeng, Qianting Lan, Jiaxiang Wang, Ye Chen, Hui Zhang, Tailiang Guo, Yun Ye, Baisheng Sa,* Zhenzhen Weng and Yongyi Chen



PAPERS

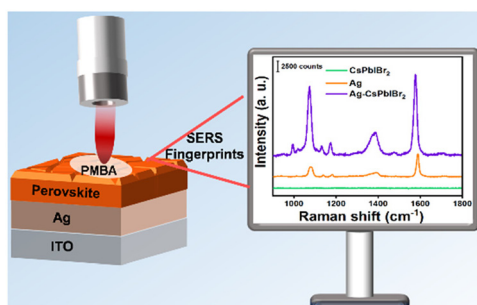
13244



Textile-based electrophoretic electronic paper displays with machine-washable, tailorable, and thermostatic functions for truly wearable displays

Zhiguang Qiu, Yifan Gu, Simu Zhu, Ziyi Wu, Lisha Peng, Ting Wang and Bo-Ru Yang*

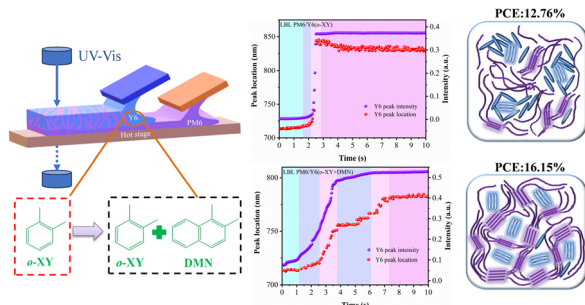
13256



Investigation of sensitive SERS detection via a perovskite-coated Ag nanofilm

Niu Pan, Jun Tian, Ziqian Shi, Wen Zhang, Yukun Gao, Tingting You* and Penggang Yin*

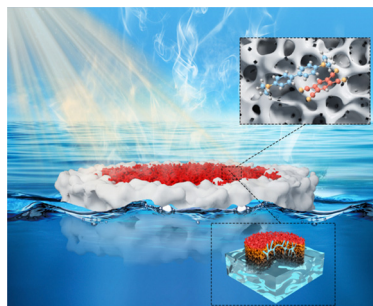
13263



Layer-by-layer blade-coated organic solar cells with non-halogenated solvents and non-halogenated additive via adjusting morphology and crystallization

Youzhan Li, Jiang Wu, Xueting Yi, Zekun Liu, He Liu, Yingying Fu, Jian Liu and Zhiyuan Xie*

13274



Organic photothermal cocrystal with high stability for efficient solar-driven water evaporation

Mengjia Jiang, Yi Su, Shuyu Li, Siyao Fu, Lingsong Wang, Darya Khan, Yajing Sun,* Lingjie Sun,* Xiaotao Zhang* and Wenping Hu

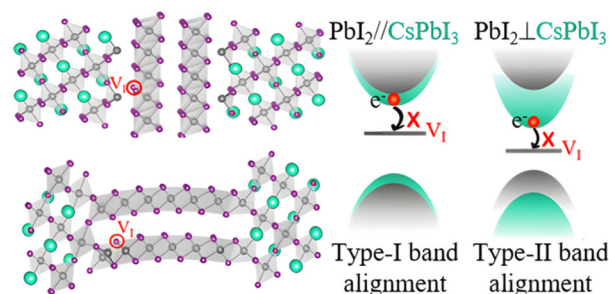


PAPERS

13281

Impacts of PbI_2 on high-efficiency perovskite solar cells: exploring intercalation orientations and defects

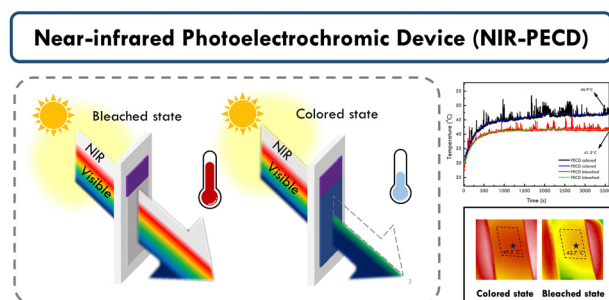
Feifei Ren, Huiwen Xiang, Ke Zhao and Chengyan Liu*



13290

A near-infrared photoelectrochromic device with indoor thermal management for self-powered smart windows

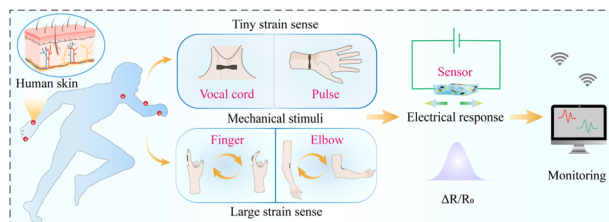
Ching-Cheng Chang, Ling-Yu Chang, Yao-Sheng Cheng, Yu-Hsin Chang, Tsung-Hsin Lai, Ni Luh Wulan Septiani, Brian Yulianto and Min-Hsin Yeh*



13300

Composite biomaterial for mimetic electric skin generated by conductive polymer/anion synergistic effect

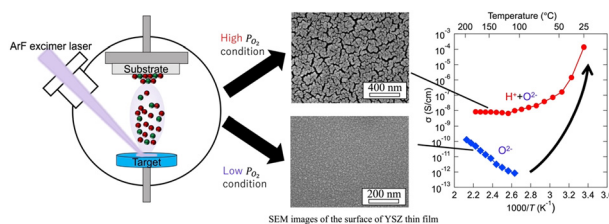
Xiao Li, Yaping Zhu, Siqi Zhang, Xuehui Zhang, Yang Liu, Xiaogang Wu, Yanru Xue, Yi-Xian Qin, Yanqin Wang* and Weiyei Chen*



13311

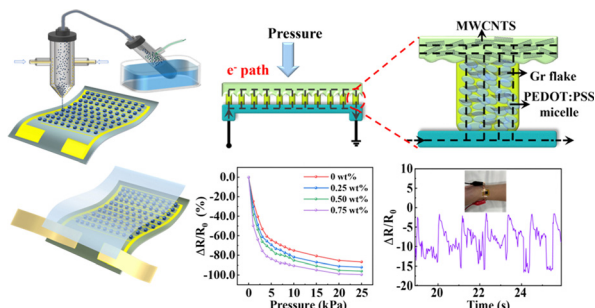
Room temperature fabrication of highly proton conductive amorphous zirconia-based thin films achieved through precise nanostructure control

Makoto Takayanagi, Takashi Tsuchiya,* Daiki Nishioka, Tohru Higuchi* and Kazuya Terabe



PAPERS

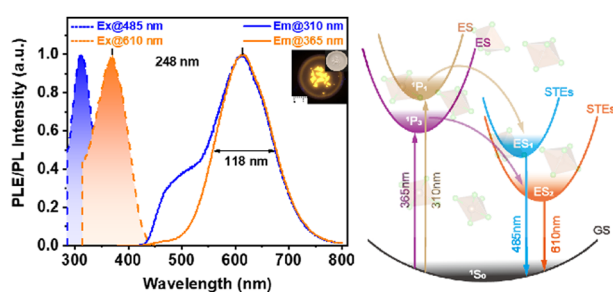
13324



A flexible piezoresistive pressure sensor comprising a microstructure printed with poly(3,4-ethylenedioxythiophene):poly(styrenesulfonate) copolymers@graphene hybrid ink

Haoyang Yao, Zhiheng Yu, Fengli Huang,* Taiyao Pan, Chengli Tang and Hui Zhang

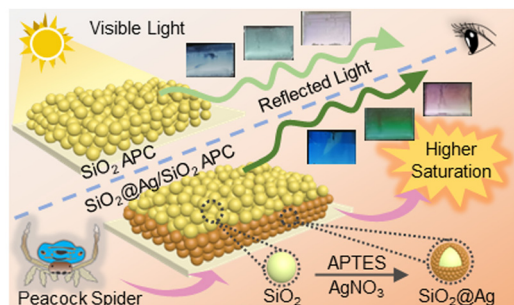
13335



Yellow phosphor based on zero-dimensional antimony halide for white light-emitting diodes

Longyun Lv, Hao Yang, Xiaohua Cheng, Yufan Lin, Xuerui Chang, Teng Cheng, Yipeng Xie, Ying Han, Juan Li,* Jun Yin* and Bin-Bin Cui*

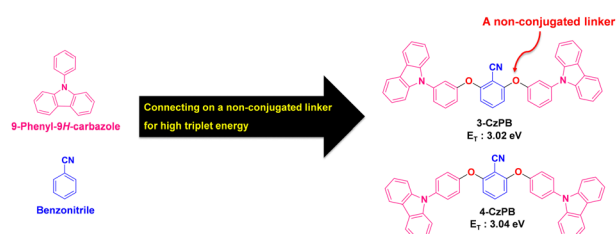
13343



Synthesis of SiO₂@Ag for light absorption and the fabrication of highly color-saturated amorphous photonic crystals

Congcong Chi,* Panpan Qu, Xin Xu, Jiarong Xian, Danjie Zhang, Jiahao Li, Jiangxue Ren, Xinggen Xu and Honglei Chen

13350



Carbazole-benzonitrile derivatives as universal hosts for triplet-harvesting blue organic light-emitting diodes

Sook Hee Jeong, Seung Chan Kim and Jun Yeob Lee*

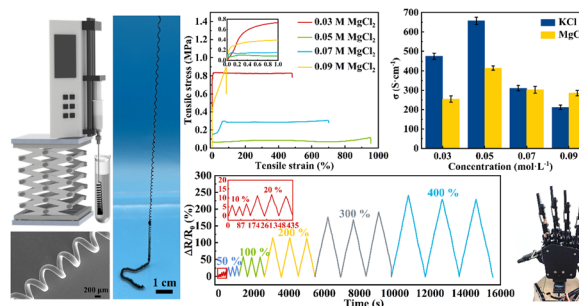


PAPERS

13358

Highly stretchable and elastic PEDOT:PSS helix fibers enabled wearable sensors

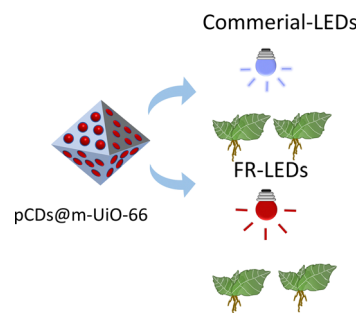
Jing Chen, Jiadeng Zhu, Zhongrui Wei, Ziwei Chen, Chunhong Zhu, Qiang Gao and Chunxia Gao*



13370

Far-red emission carbon dot–metal organic frameworks composite for plant growth regulation application

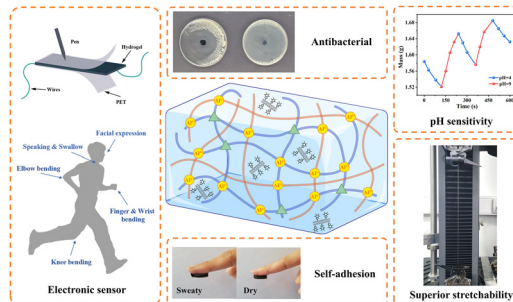
Shixin Wu, Chaowei Yang, Jiechun Zhuang, Jiahao Chen, Wei Li, Yingliang Liu, Mingtao Zheng, Xuejie Zhang, Bingfu Lei,* Yuxia Guo and Haoran Zhang*



13376

A mussel-inspired semi-interpenetrating structure hydrogel with superior stretchability, self-adhesive properties, and pH sensitivity for smart wearable electronics

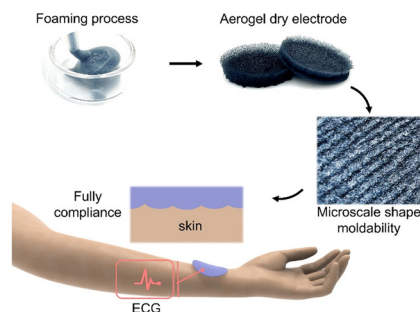
Lu Xing, Yaoting Song, Xinquan Zou, Haojie Tan, Jiani Yan and Jikui Wang*



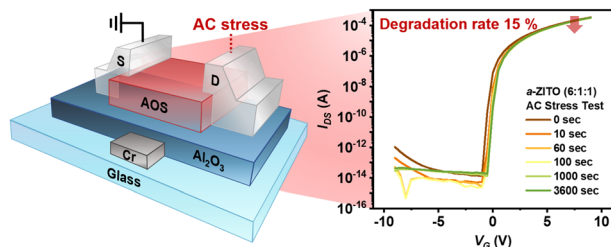
13387

A moldable PEDOT:PSS dry electrode with excellent epidermal compliance for wearable electrocardiogram monitoring

Xianglin Gao, Tong Su, Yilin Bao, Jipei Lu, Lei Zhang,* Chaobin He and Jianyong Ouyang



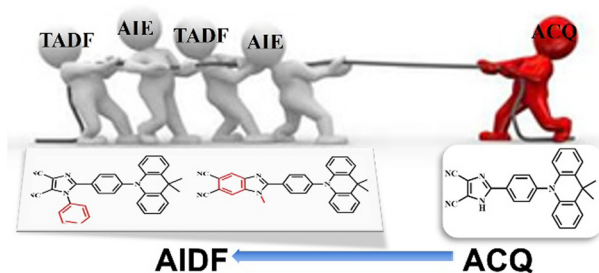
13395



Solution-processed amorphous zinc indium tin oxide thin-film transistors with high stability under AC stress

Dongil Ho, Hyewon Jeong, Hun-Bum Park, Sung Kyu Park, Myung-Gil Kim and Choongik Kim*

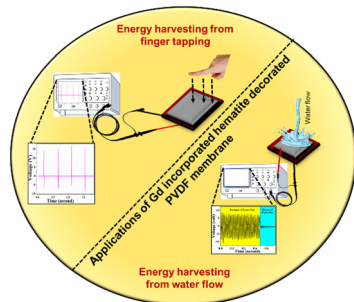
13403



From aggregation-caused quenching to aggregation-induced delayed fluorescence: the impact of the effect of substituents

Yuqi Liu, Lijuan Wang,* Lin Xu and Yan Song

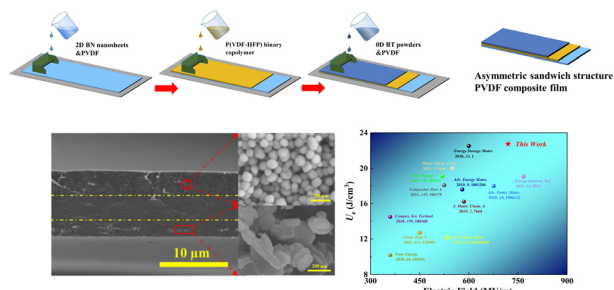
13418



Water flow and finger-tapping mediated piezoelectric energy generation using a natural hematite-based flexible PVDF-HFP membrane

Saheli Ghosh, Dhananjay Mondal, Shubham Roy, Jhilik Roy, Souravi Bardhan, Ayan Mazumder, Neelanjana Bag, Ruma Basu and Sukhen Das*

13429



Ultrahigh breakdown strength and discharge energy density of newly designed asymmetric sandwich-structured PVDF-based nanocomposite film

Yongjing Zhang, Yanlong Ma, Ying Lin,* Qibin Yuan* and Haibo Yang*

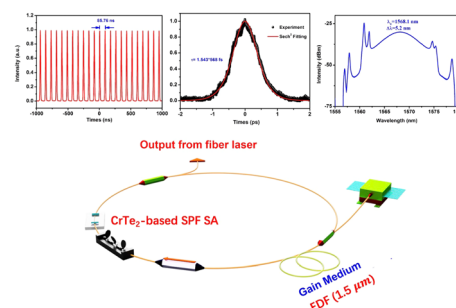


PAPERS

13438

CrTe₂ as a new saturable absorber for a passive mode-locking Er-doped laser

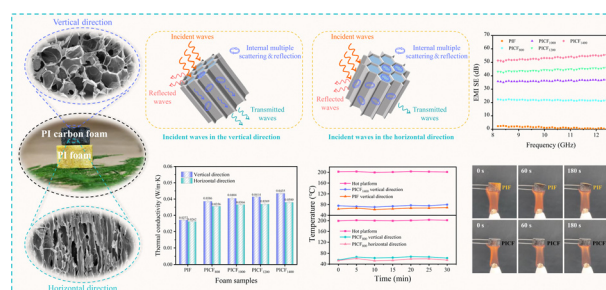
Junpeng Qiao, Safayet Ahmed, Jialiang Yu, Ranran Fan,*
Guangqiang Liu, Yuen Hong Tsang and Sujuan Feng*



13446

Lightweight polyimide-derived carbon foams with anisotropic porous structures prepared by microwave-assisted foaming and carbonization for thermal insulation and EMI shielding applications

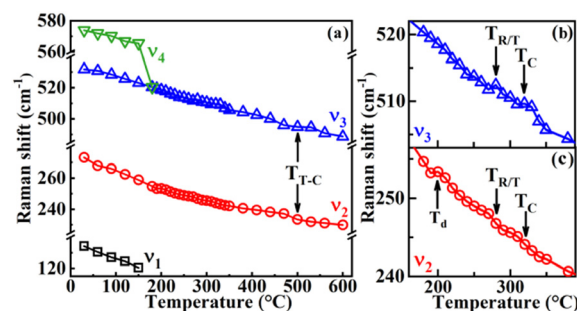
Long Ni, Zhenling Kang, Yinfu Luo, Liwei Yan, Junyu Lu,
Guanchun Wang, Shaoyu Qiu, Mei Liang, Shengtai Zhou*
and Huawei Zou*



13459

Dynamics of the phase transition in Bi_{0.5}Na_{0.5}TiO₃ based on *in situ* Raman spectroscopy

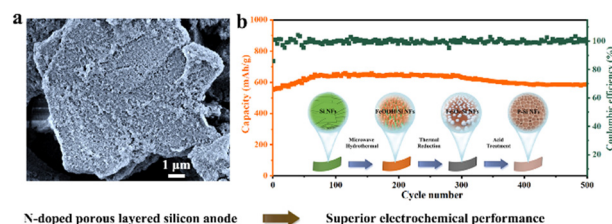
L. G. Wang, C. M. Zhu,* J. B. Jiang, G. B. Yu, H. X. Qin,
P. Y. Zeng, C. H. Jiang and Y. S. Wang



13466

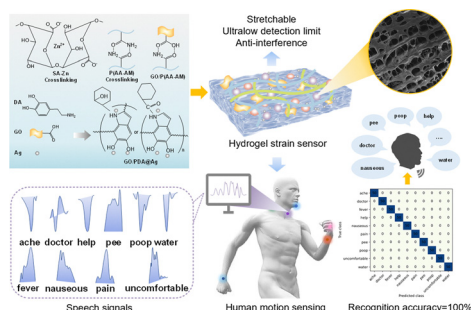
A thermally etched N-doped porous layered silicon anode for improved cycling stability of lithium-ion batteries

Bing Bai, Linlin Qiu, Yang Liu, Zhiqin Su, Lixin Song and
Pingshan Du*



PAPERS

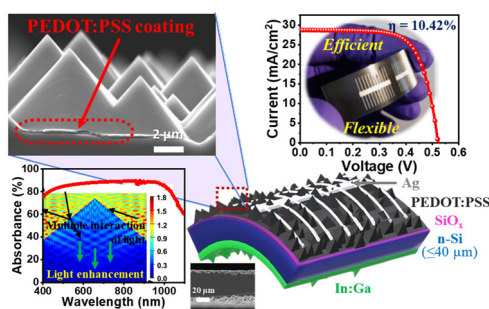
13476



Stretchable, ultralow detection limit and anti-interference hydrogel strain sensor for intelligent throat speech recognition using Resnet50 neural network

Jiaye Zhou, Tianchi Chen,* Zhenzhi He, Lianchao Sheng and Xiangning Lu*

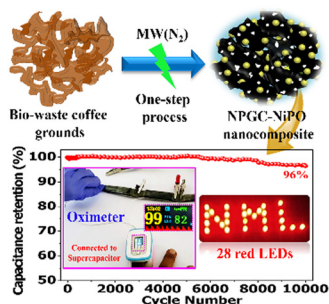
13488



High efficiency flexible PEDOT:PSS/silicon hybrid heterojunction solar cells by employing simple chemical approaches

Deepak Sharma, Avritti Srivastava, Jai S. Tawale, Pathi Prathap and Sanjay K. Srivastava*

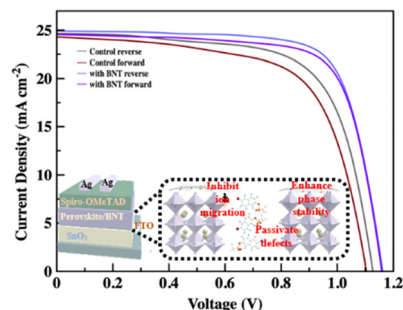
13503



Microwave-plasma induced one-step synthesis of Ni(PO₃)₂ nanosphere-loaded bio-waste derived N, P co-doped carbon for an asymmetric supercapacitor with prolonged life

Nisha Gupta and Pallab Bhattacharya*

13518



Ion migration inhibition and defect passivation via sulfonate salt coordination for high-performance perovskite solar cells with enhanced phase stability

Hanyu Wang,* Wenjing Zou, Hu Luo, Yihao Quan, Lang Yang, Xingchong Liu and Haimin Li

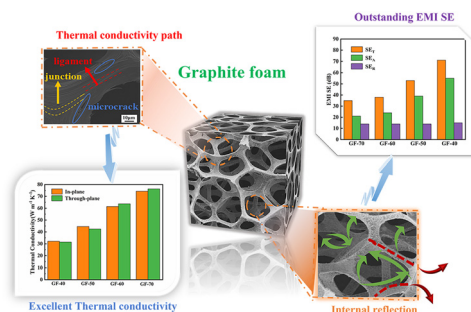


PAPERS

13526

Melamine foam-induced isotropic graphite foam for effective thermal management and electromagnetic interference shielding

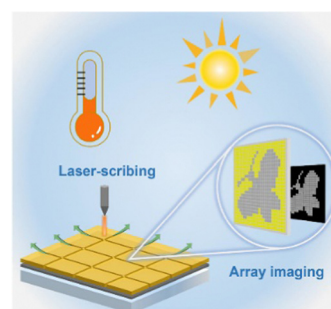
Xing Guo, Yaxiong Liu, Sufang Yang, Hui Jia, Long Gao, Xiaodong Tian, Zechao Tao, Jinxing Liu, Xi Yan* and Zhanjun Liu*



13539

Zero-bias Bi-based perovskite image sensor arrays with direct laser-scribing process

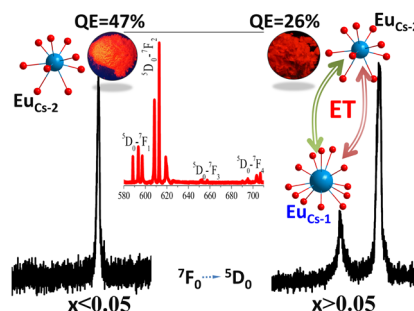
Yaqian Yang, Ying Li,* Di Chen and Guozhen Shen*



13548

Clarifying concentration quenching mechanisms by lattice site-occupation and luminescence kinetics of Eu³⁺-activated Cs₂Mg₂Mo₃O₁₂

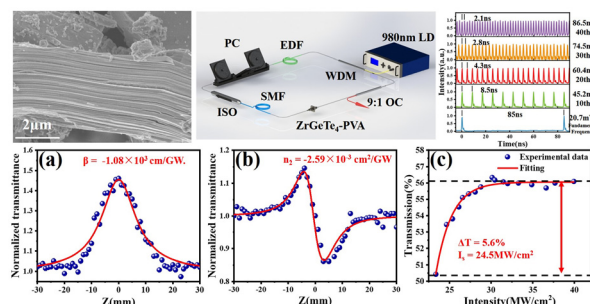
Donglei Wei, Xifeng Yang, Yushen Liu, Joo Hyun Kim, Sung Heum Park, Hyo Jin Seo and Bo Ram Lee*



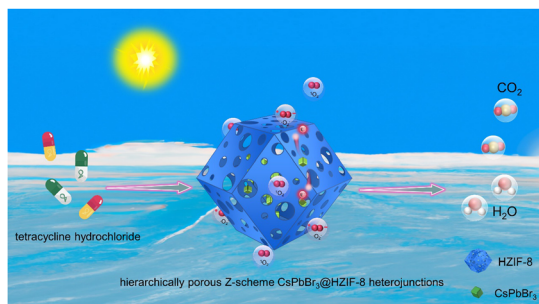
13561

Investigations of the nonlinear optical properties of ZrGeTe₄ nanosheets and their application in ultrafast photonics

Baohao Xu, Lie Shi, Xiangen Ma, Huanian Zhang, Kai Jiang, Jing Wang, Hongwei Chu, Wenjing Tang* and Wei Xia*



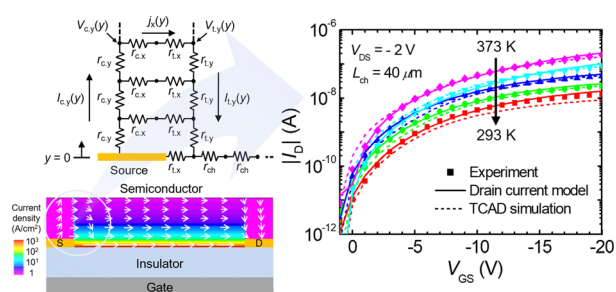
13570



Hierarchically porous CsPbBr_3 @HZIF-8 heterojunctions for high-performance photocatalytic degradation of antibiotics in high-salinity wastewater

Yangwen Hou, Fanfei Meng, Jingting He, Man Dong, Jialin Tong, Jing Sun, Chunyi Sun,* Xinlong Wang and Zhongmin Su*

13579



A temperature dependent power-law drain current model for coplanar OFETs

Junbum Park, Yongjeong Lee, Gilles Horowitz, Sungyeop Jung* and Yvan Bonnasieux*

