Open Access Article. Published on 27 November 2023. Downloaded on 3/17/2026 2:29:22 PM.
This article is licensed under a Creative Commons Attribution 3.0 Unported Licence.

Materials Horizons

rsc.li/materials-horizons

The Royal Society of Chemistry is the world's leading chemistry community. Through our high impact journals and publications we connect the world with the chemical sciences and invest the profits back into the chemistry community.

IN THIS ISSUE

ISSN 2051–6347 CODEN MHAOAL 10(12) 5317–5986 (2023)

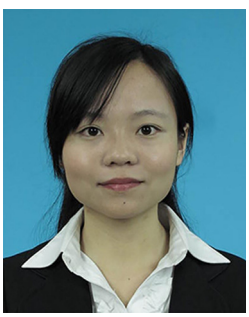
Cover
See Wei Tao, Tiangang Luan, Seyoung Koo, Xiaoyuan Ji *et al.*, pp. 5474–5483. Image reproduced by permission of Xiaoyuan Ji from *Mater. Horiz.*, 2023, **10**, 5474.

Inside cover
See Sandip Thakur and Ashutosh Giri, pp. 5484–5491. Image reproduced by permission of Ashutosh Giri from *Mater. Horiz.*, 2023, **10**, 5484.

EDITORIAL

5335

***Materials Horizons* Emerging Investigator Series: Dr Shanshan Yao, Stony Brook University, USA**

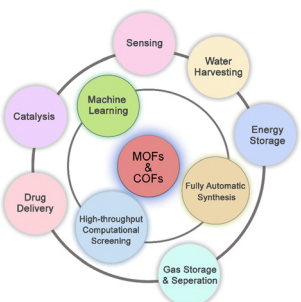


OPINIONS

5337

The future of metal–organic frameworks and covalent organic frameworks: rational synthesis and customized applications

Xing Han, Wenqiang Zhang, Zhijie Chen,* Yan Liu* and Yong Cui*



Open Access Article. Published on 27 November 2023. Downloaded on 3/17/2026 2:29:22 PM.
This article is licensed under a Creative Commons Attribution 3.0 Unported Licence.

Editorial Staff

Executive Editor
Michaela Mühlberg

Deputy Editor
Geraldine Hay

Editorial Production Manager
Jonathon Watson

Senior Publishing Editor
Alex Metherell

Development Editor
Rose Wedgbury

Publishing Editors
Matthew Blow, Chris Dias, Hemna Fathima, Rob Hinde, Ash Hyde, Evie Karkera, Tamara Kosikova, Carole Martin, Kirsty McRoberts, Tiffany Rogers, Cat Schofield, Tom Williams

Editorial Assistant
Daniel Smith

Publisher
Sam Keltie

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

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

Materials Horizons (electronic: ISSN 2051-6355) is published 12 times a year by the Royal Society of Chemistry, Thomas Graham House, Science Park, Milton Road, Cambridge, UK CB4 0WF.

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 0WF, UK
Tel +44 (0)1223 432398; E-mail **orders@rsc.org**

2023 Annual (electronic) subscription price: £2697, $4615. 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**

ROYAL SOCIETY OF CHEMISTRY

Materials Horizons

rsc.li/materials-horizons

Building and designing systems from the molecular level

Editorial Board

Chair
Martina Stenzel, University of New South Wales, Australia

Scientific Editors
Jean-Luc Bredas, University of Arizona, USA
Bruno Chaudret, INSA, France
Guoping Chen, National Institute for Materials Science, Japan
Yong Cui, Shanghai Jiao Tong University, China
Simone Fabiano, Linköping University, Sweden
Zhongyi Jiang, Tianjin University, China
Kisuk Kang, Seoul National University, South Korea
Norbert Koch, Humboldt University of Berlin, Germany
Róisín Owens, University of Cambridge, United Kingdom
Yi Long, Chinese University of Hong Kong, Hong Kong SAR, China

Members
Kelsey Hatzell, Princeton University, USA
Mark E. Thompson, University of Southern
Shu Yang, University of Pennsylvania, USA

Advisory Board

Athina Anastasaki, ETH Zurich, Switzerland
Markus Antonietti, Max Planck Intitute of Colloids & Interfaces, Germany
David Beljonne, University of Mons, Belgium
Chris Bettinger, Carnegie Mellon University, USA
Kanishika Biswas, Jawaharlal Nehru Centre for Advanced Scientific Research, India
Paul Blom, Max Planck Institute for Polymer Research, Mainz, Germany
Mischa Bonn, Max Planck Institute for Polymer Research, Germany
Markus Buehler, Massachusetts Institute of Technology, USA
Jillian Buriak, University of Alberta, Canada
Moyuan Cao, Nankai University, China
Yong Cao, South China University of Technology, China
Rachel Caruso, University of Melbourne, Austrailia
Anthony Cheetham, University of Cambridge, UK
Hong Chen, Soochow University, China
Paulette Clancy, Johns Hopkins University, USA
Brandi Cossairt, University of Washington, USA
Dibyendu Das, IISER Kolkata, India
Luisa De Cola, University of Strasbourg, France
Ulrike Diebold, Vienna University of Technology, Austria
Mircea Dinca, Massachusetts Institute of Technology, USA
Gitti Frey, Technion - Israel Institute of Technology, Israel
Richard Friend, University of Cambridge, UK
Subi George, Jawaharlal Nehru Centre for Advanced Scientific Research, India
Rebecca Gieseking, Brandeis University
Jian Ping Gong, Hokkaido University, Japan
Grace Gu, University of California, Berkeley, USA
Ritu Gupta, Indian Institute of Technology Jodhpur, India
David Haddleton, University of Warwick, UK
Martin Heeney, King Abdullah University of Science and Technology (KAUST), Saudi Arabia
Laura Herz, Univeristy of Oxford, UK
Jurriaan Huskens, University of Twente, Netherlands
Hiroshi Imahori, Kyoto University, Japan
Lei Jiang, Beihang University, China
Antoine Kahn, Princeton University, USA
Richard Kaner, University of California, Los Angeles, USA
Susumu Kitagawa, Kyoto University, Japan
Anna Koehler, University of Bayreuth, Germany
Frederik Krebs, Elite Science, Denmark
Katharina Landfester, Max Planck Institute for Polymer Research, Germany
Guglielmo Lanzani , Italian Institute of Technology, Italy
Neng Li, Wuhan University of Technology, China
Yan Li, Peking University, China
Darren Lipomi, University of California, San Diego, USA
Bin Liu, National University of Singapore, Singapore
Maria Antonietta Loi, University of Groningen, Netherlands
Lynn Yueh Lin Loo, Princeton University, USA
Bettina Lotsch , Max Planck Institute for Solid State Research, Germany
HongYee Low, Singapore University of Technology and Design, Singapore
Eva Malmström Jonsson, KTH Royal Institute of Technology, Sweden
Uttam Manna, Indian Institute of Technology-Guwahati, India
Seth Marder, University of Colorado Boulder, USA
Richard Martel, University of Montreal, Canada
Hedi Mattoussi, Florida State University, USA
David Mecerreyes , University of the Basque Country, Spain
Phillip Messersmith, University of California, Berkeley, USA
Catherine Murphy, University of Illinois Urbana-Champaign, USA
K S Narayan, Jawaharlal Nehru Centre for Advanced Scientific Research, India
Thuc-Quyen Nguyen, University of California, Santa Barbara, USA
Markus Niederberger, ETH Zürich, Switzerland
Teri Odom, Northwestern University, USA
Wee-Jun Ong, Xiamen University, Malaysia
Moon Jeong Park, Pohang University of Science and Technoloy (POSTECH), Korea
Marie-Paule Pileni, Pierre and Marie Curie University, France
Vivek Polshettiwar, Tata Institute of Fundamental Research (TIFR), India
C N R Rao, Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore, India
Erin Ratcliff, University of Arizona, USA
Vince Rotello, University of Massachusetts at Amherst, USA
David Scanlon, University College London, United Kingdom
Bernd M. Schmidt, Heinrich Heine University Düsseldorf, Germany
Christine Schmidt, University of Florida, USA
Gregory D. Scholes, Princeton University, USA
Rachel Segalman, University of California Santa Barbara, USA
Peter Skabara, University of Glasgow, UK
Henry Snaith, University of Oxford, UK
Kazuo Takimaya, RIKEN, Japan
Luisa Torsi, University of Bari, Italy
Ramanathan Vaidhyanathan, IISER Pune, India
Aleks Vojvodic, University of Pennsylvania, USA
Elizabeth von Hauff, VU Amsterdam, The Netherlands
Aron Walsh, Imperial College London, UK
Mengye Wang, Sun Yat-Sen University, China
Shu Wang, Institute of Chemistry, Chinese Academy of Sciences, China
Xun Wang, Tsinghua University, China
Tanja Weil, Max Planck Institute for Polymer Research, Germany
Emily Weiss, Northwestern University, USA
David Weitz, Harvard University, USA
Chris Wolverton, Northwestern University, USA
Yi Xie, University of Science and Technology of China, China
Vivian Wing-Wah Yam, University of Hong Kong, Hong Kong
Shannon Yee, Georgia Institute of Technology, USA
Jihong Yu, Jilin University, China
Shu-Hong Yu, University of Science and Technology of China, China
Aldo J. G. Zarbin, Universidade Federal do Paraná, Brazil
Xiaowei Zhan, Peking University, China
Nan Zhang, Hunan University, China
Dongyuan Zhao, Fudan University, China
Ye Zhou, Shenzhen University, China

Community Board

Please see the Materials Horizons journal webpage for full details of our Community Board: **rsc.li/materials-horizons**

Information for Authors

Full details on how to submit material for publication in Materials Horizons 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-horizons**.
Submissions: The journal welcomes submissions of manuscripts for publication as Communications, Reviews, Mini-reviews and Focus Articles. Communications should contain exceptionally significant scientific work of such importance that rapid publication is desirable. The research presented should provide new insight into the topic and be accessible to the broad readership of the journal.

Colour figures are reproduced free of charge. 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

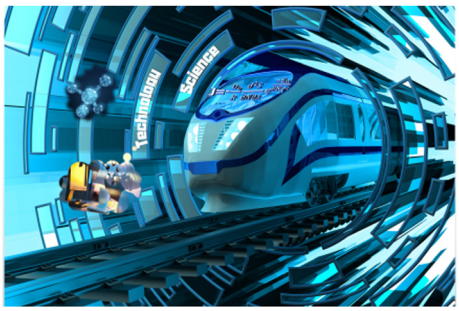
Open Access Article. Published on 27 November 2023. Downloaded on 3/17/2026 2:29:22 PM.
This article is licensed under a Creative Commons Attribution 3.0 Unported Licence.

OPINIONS

5343

Prediction of future breakthroughs in materials synthesis and manufacturing techniques: a new perspective of synthesis dynamics theory

Zeshuo Meng, Zijin Xu, Zhengyan Du, Ting Deng, Dong Wang, Yi Zeng, Shansheng Yu, Xiaoying Hu* and Hongwei Tian*

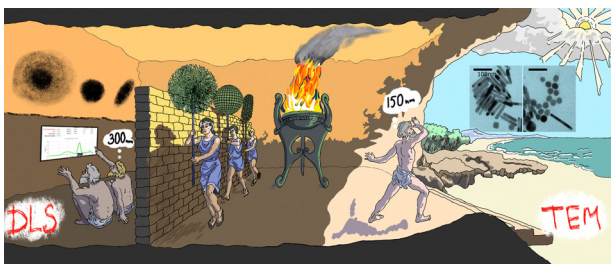


FOCUS

5354

Dynamic light scattering and transmission electron microscopy in drug delivery: a roadmap for correct characterization of nanoparticles and interpretation of results

Sergey K. Filippov,* Ramil Khusnutdinov, Anastasiia Murmiliuk, Wali Inam, Lucia Ya. Zakharova, Hongbo Zhang and Vitaliy V. Khutoryanskiy

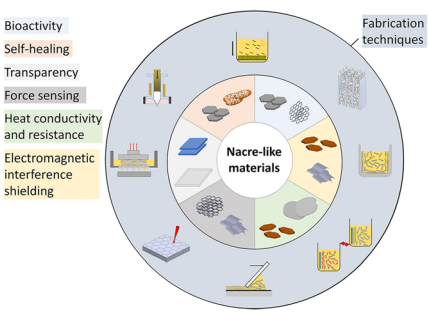


REVIEWS

5371

Multifunctional nacre-like materials

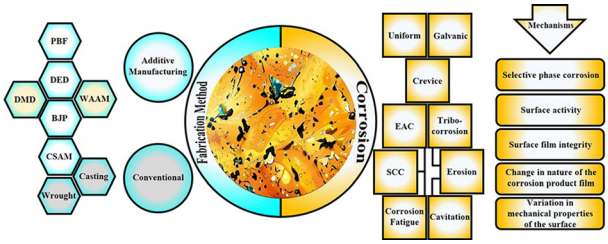
Zizhen Ding, Travis Klein, Christopher Barner-Kowollik and Mohammad Mirkhalaf*



5391

A review of the corrosion behavior of conventional and additively manufactured nickel–aluminum bronze (NAB) alloys: current status and future challenges

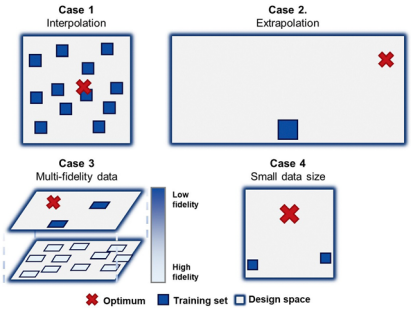
Khashayar Morshed-Behbahani,* Donald Paul Bishop and Ali Nasiri*



Open Access Article. Published on 27 November 2023. Downloaded on 3/17/2026 2:29:22 PM.
This article is licensed under a Creative Commons Attribution 3.0 Unported Licence.

REVIEWS

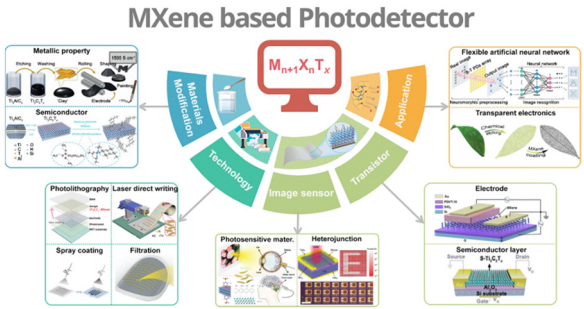
5436



Machine learning-based inverse design methods considering data characteristics and design space size in materials design and manufacturing: a review

Junhyeong Lee, Donggeun Park, Mingyu Lee, Hugon Lee, Kundo Park, Ikjin Lee and Seunghwa Ryu*

5457

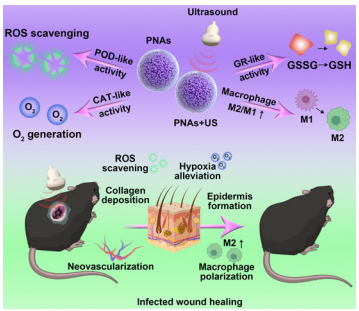


MXene based flexible photodetectors: progress, challenges, and opportunities

La Li and Guozhen Shen*

COMMUNICATIONS

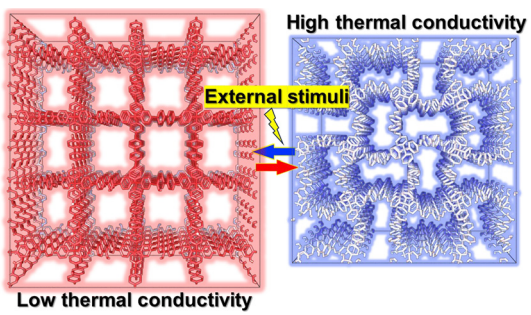
5474



Infected wound repair with an ultrasound-enhanced nanozyme hydrogel scaffold

Fan Zhang, Yong Kang, Liwen Feng, Guan Xi, Wei Chen, Na Kong, Wei Tao,* Tiangang Luan,* Seyoung Koo* and Xiaoyuan Ji*

5484



Reversible and high-contrast thermal conductivity switching in a flexible covalent organic framework possessing negative Poisson's ratio

Sandip Thakur and Ashutosh Giri*

This journal is © The Royal Society of Chemistry 2023

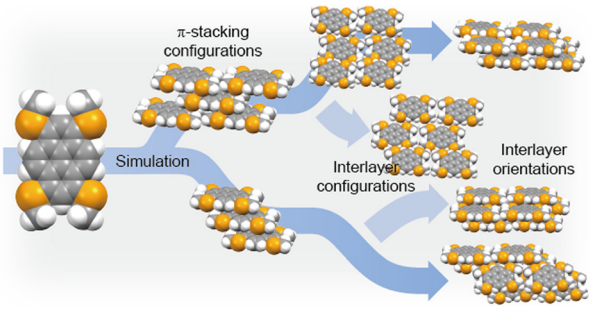
Open Access Article. Published on 27 November 2023. Downloaded on 3/17/2026 2:29:22 PM.
This article is licensed under a Creative Commons Attribution 3.0 Unported Licence.

COMMUNICATIONS

5492

Crystal-structure simulation of molecular semiconductors: brickwork-related crystal structures of methylthiolated *peri*-condensed polycyclic aromatic hydrocarbons

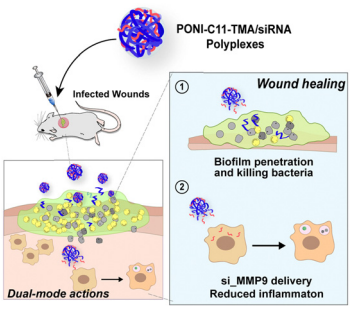
Kirill Bulgarevich and Kazuo Takimiya*



5500

Antimicrobial polymer-siRNA polyplexes as a dual-mode platform for the treatment of wound biofilm infections

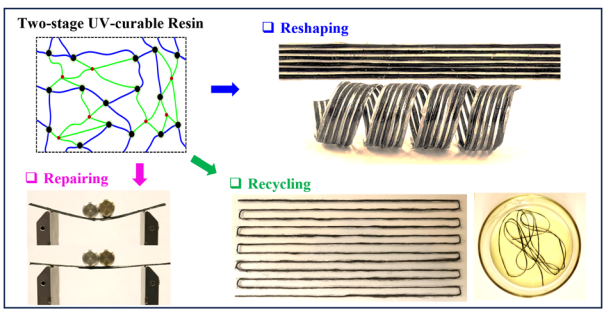
Taewon Jeon, Jessa Marie V. Makabenta, Jungmi Park, Ahmed Nabawy, Yagiz Anil Cicek, Sarah S. Mirza, Janelle Welton, Muhammad Aamir Hassan, Rui Huang, Jesse Mager and Vincent M. Rotello*



5508

3D Printing of continuous fiber composites using two-stage UV curable resin

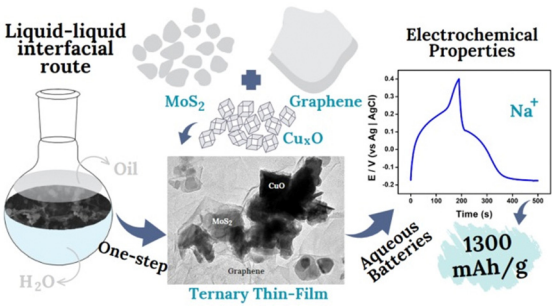
Huan Jiang, Arif M. Abdullah, Yuchen Ding, Christopher Chung, Martin L. Dunn* and Kai Yu*



5521

Nanoarchitected graphene/copper oxide nanoparticles/MoS_2 ternary thin films as highly efficient electrodes for aqueous sodium-ion batteries

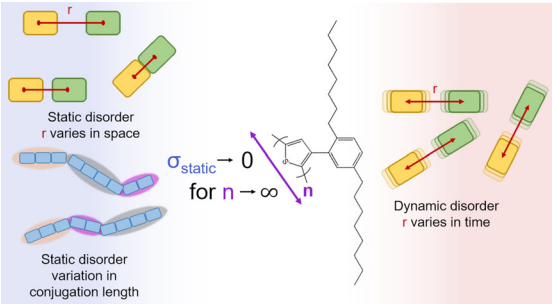
Maria K. Ramos, Gustavo Martins, Luiz H. Marcolino-Junior, Márcio F. Bergamini, Marcela M. Oliveira and Aldo J. G. Zarbin*



Open Access Article. Published on 27 November 2023. Downloaded on 3/17/2026 2:29:22 PM.
This article is licensed under a Creative Commons Attribution 3.0 Unported Licence.

COMMUNICATIONS

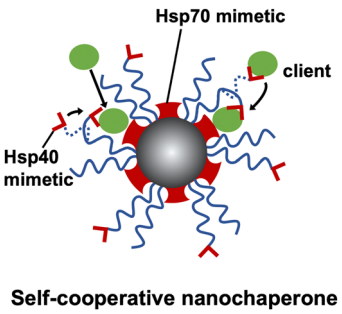
5538



A spectroscopic assessment of static and dynamic disorder in a film of a polythiophene with a planarized backbone

Konstantin Schötz, Fabian Panzer, Michael Sommer, Heinz Bässler and Anna Köhler*

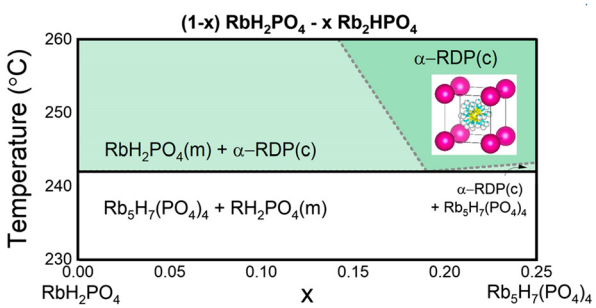
5547



Development of self-cooperative nanochaperones with enhanced activity to facilitate protein refolding

Menglin Yang, Yanli Zhang, Fei Deng, Xiaohui Wu, Yujie Chen, Feihe Ma* and Linqi Shi*

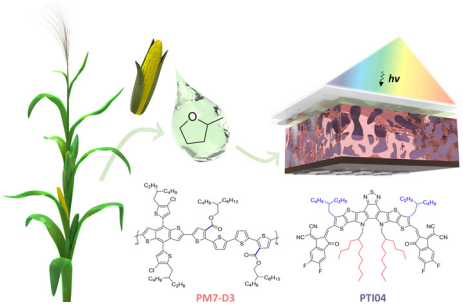
5555



Superprotonic conductivity in $RbH_{2-3y}(PO_4)_{1-y}$: a phosphate deficient analog to cubic CsH_2PO_4 in the $(1-x)RbH_2PO_4 - xRb_2HPO_4$ system

Grace Xiong, Louis S. Wang and Sossina M. Haile*

5564



Additive-free molecular acceptor organic solar cells processed from a biorenewable solvent approaching 15% efficiency

Zhifang Du, Hoang Mai Luong, Sina Sabury, Pattarawadee Therdkatanyuphong, Sangmin Chae, Claire Welton, Austin L. Jones, Junxiang Zhang, Zhengxing Peng, Ziyue Zhu, Sadisha Nanayakkara, Veaceslav Coropceanu, Dylan G. Choi, Steven Xiao, Ahra Yi, Hyo Jung Kim, Jean-Luc Bredas, Harald Ade, G. N. Manjunatha Reddy,* Seth R. Marder,* John R. Reynolds* and Thuc-Quyen Nguyen*

This journal is © The Royal Society of Chemistry 2023

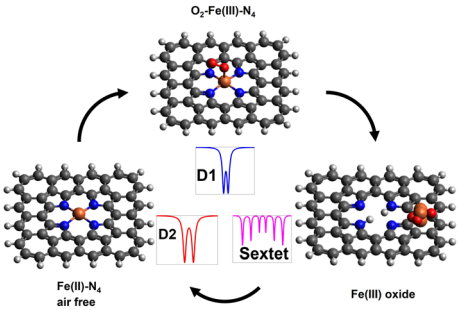
Open Access Article. Published on 27 November 2023. Downloaded on 3/17/2026 2:29:22 PM.
This article is licensed under a Creative Commons Attribution 3.0 Unported Licence.

COMMUNICATIONS

5577

Life cycle of single atom catalysts: a Mössbauer study on degradation and reactivation of tetrapyrrolic Fe–N–C powders

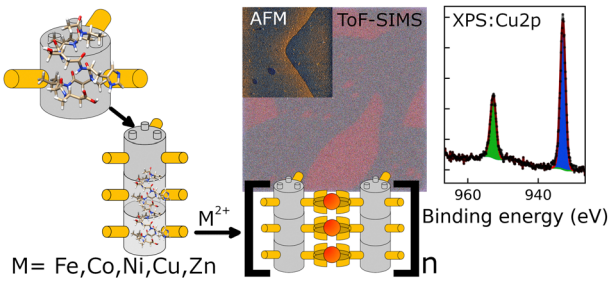
Davide Menga, Friedrich E. Wagner and Tim-Patrick Fellinger*



5584

Controllable hierarchical self-assembly: systematic study forming metallosupramolecular frameworks on the basis of helical beta-oligoamides

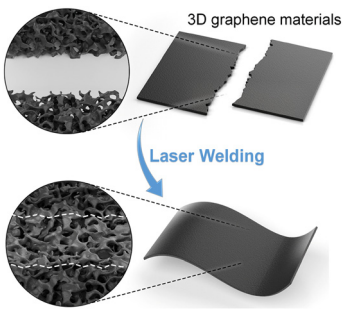
Norton G. West,* Sarah E. Bamford, Paul J. Pigram, Jisheng Pan,* Dong-Chen Qi and Adam Mechler*



5597

Pulsed laser welding of macroscopic 3D graphene materials

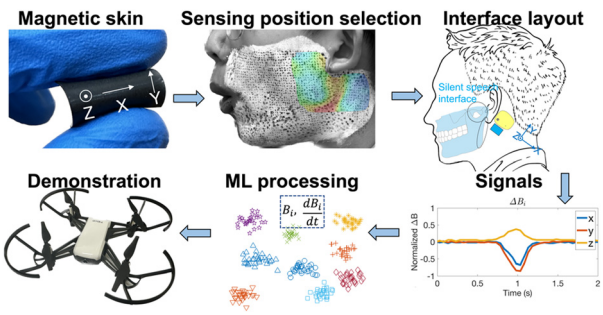
Wenjie Yu, Weiwei Zhao and Xiaoqing Liu*



5607

Decoding silent speech commands from articulatory movements through soft magnetic skin and machine learning

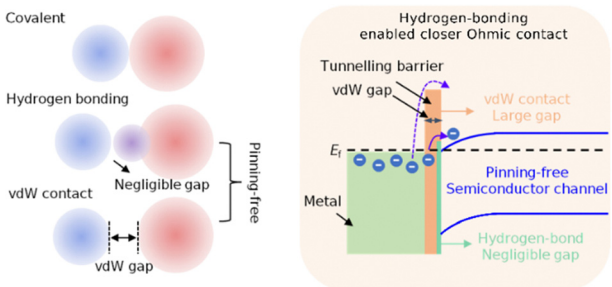
Penghao Dong, Yizong Li, Si Chen, Justin T. Grafstein, Irfaan Khan and Shanshan Yao*



Open Access Article. Published on 27 November 2023. Downloaded on 3/17/2026 2:29:22 PM.
This article is licensed under a Creative Commons Attribution 3.0 Unported Licence.

COMMUNICATIONS

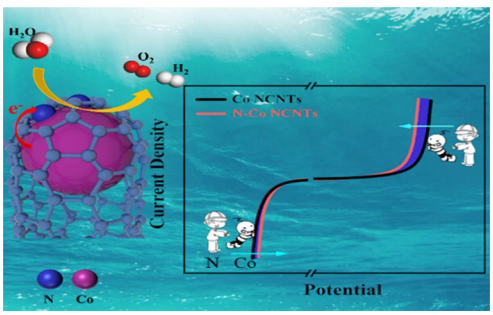
5621



Hydrogen-bonding enables two-dimensional metal/semiconductor tunable contacts approaching the quantum limit and the modified Schottky–Mott limit simultaneously

Dexing Liu, Ziyi Liu, Jiahao Zhu and Min Zhang*

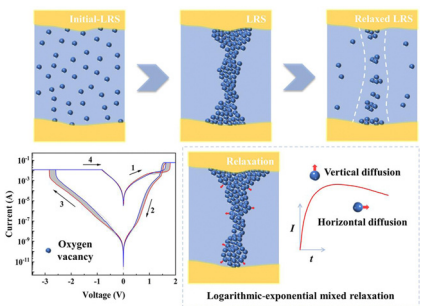
5633



Anion-induced electronic localization and polarized cobalt clusters for highly efficient water splitting

Yucheng Wu, Yanli Yu, Wei Shen, Yimin Jiang, Rongxing He* and Ming Li*

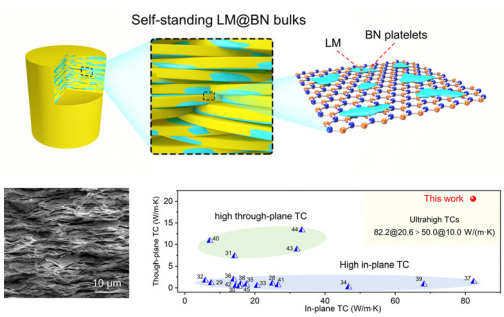
5643



Gradual conductance modulation by defect reorganization in amorphous oxide memristors

Siqin Li, Jigang Du, Bojing Lu, Ruqi Yang, Dunan Hu, Pingwei Liu, Haiqing Li, Jingsheng Bai, Zhizhen Ye* and Jianguo Lu*

5656



Self-standing boron nitride bulks enabled by liquid metals for thermal management

Li-Chuan Jia,* Zhi-Xing Wang, Lei Wang, Jian-Feng Zeng, Pei-Yao Du, Yun-Fei Yue, Li-Hua Zhao* and Shen-Li Jia*

This journal is © The Royal Society of Chemistry 2023

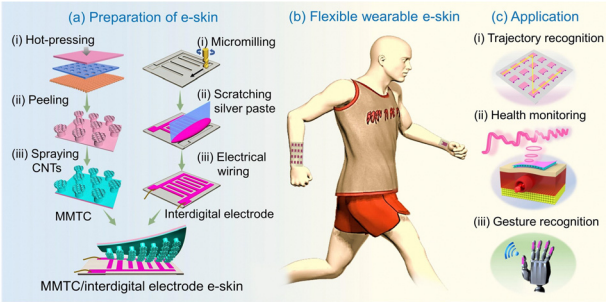
Open Access Article. Published on 27 November 2023. Downloaded on 3/17/2026 2:29:22 PM.
This article is licensed under a Creative Commons Attribution 3.0 Unported Licence.

COMMUNICATIONS

5666

Mushroom-mimetic 3D hierarchical architecture-based e-skin with high sensitivity and a wide sensing range for intelligent perception

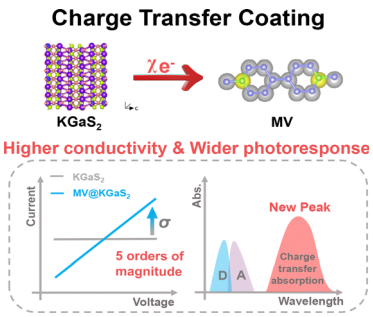
Yajie Zhang, Xinyu Zhang, Chuan Ning, Kun Dai, Guoqiang Zheng,* Chuntai Liu and Changyu Shen



5677

Significant increase of the photoresponse range and conductivity for a chalcogenide semiconductor by viologen coating through charge transfer

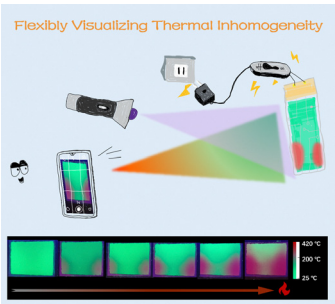
Tian-Tian Song, Wei-Qiang Huang, Kai-Bin Jiang, Wen-Fa Chen, Yu Zhou, Hong-Yi Bian, Ming-Sheng Wang* and Guo-Cong Guo*



5684

Visualizing temperature inhomogeneity using thermo-responsive smart materials

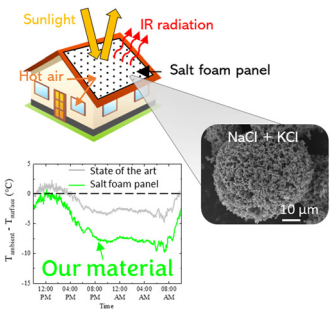
Panqin Wang, Jiaren Du,* Tengyue Wang, Shaoxing Lyu, Rik Van Deun, Dirk Poelman and Hengwei Lin*



5694

All-day passive radiative cooling using common salts

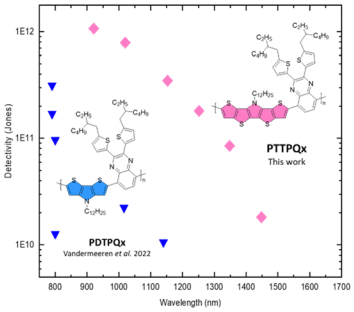
Mariana Desireé Reale Batista, Alyssa L. Troksa, Hannah V. Eshelman, Michael Bagge-Hansen and John D. Roehling*



Open Access Article. Published on 27 November 2023. Downloaded on 3/17/2026 2:29:22 PM.
This article is licensed under a Creative Commons Attribution 3.0 Unported Licence.

COMMUNICATIONS

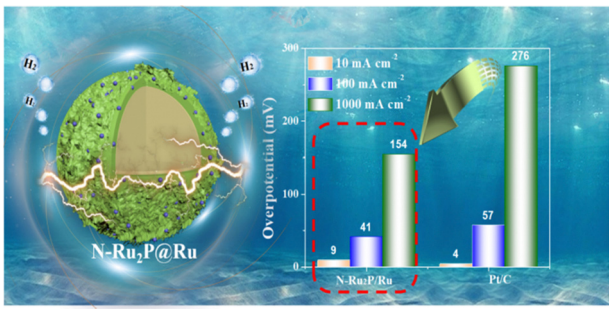
5704



A tetrathienopyrrole-based ladder-type donor polymer for high-performance organic near-infrared cavity detectors

Kaat Valkeneers, Jorne Raymakers, Quan Liu,* Jochen Vanderspikken, Yuming Wang, Jurgen Kesters, Tyler James Quill, Zhen Liu, Niko Van den Brande, Laurence Lutsen, Koen Vandewal* and Wouter Maes*

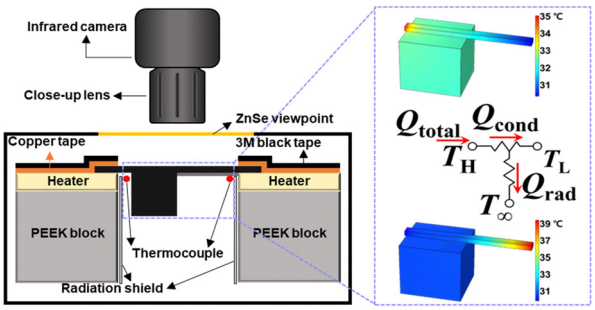
5712



Developing energy-efficient N-doping technology to controllably construct N-Ru_2P@Ru nanospheres for highly efficient hydrogen evolution at an ampere-level current density

Mengmeng Wang, Yunmei Du,* Shuangshuang Li, Xiaoli Sun, Bin Li, Yuanxiang Gu and Lei Wang*

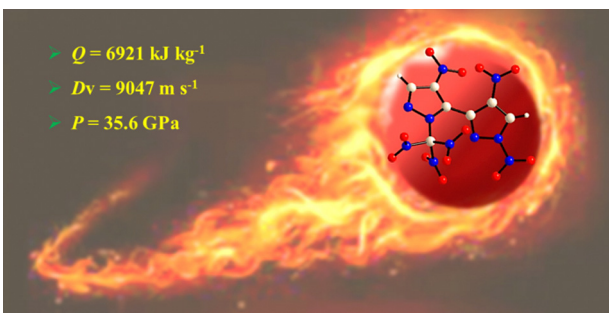
5720



Giant thermal rectification efficiency by geometrically enhanced asymmetric non-linear radiation

Seongkyun Kim, Taeyeop Kim, Jaehyun Sung, Yongjun Kim, Dongwoo Lee* and Seunghyun Baik*

5729



Pushing the limits of the heat of detonation *via* the construction of polynitro bipyrazole

Yaqun Dong, Miao Li, Jing Liu, Yuji Liu, Wei Huang, Jean'ne M. Shreeve and Yongxing Tang*

This journal is © The Royal Society of Chemistry 2023

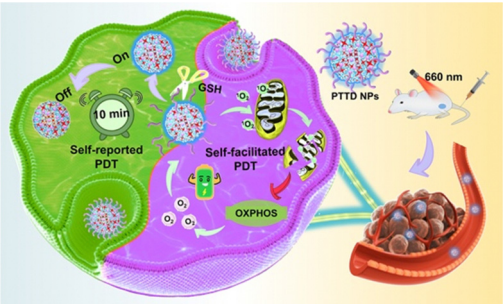
Open Access Article. Published on 27 November 2023. Downloaded on 3/17/2026 2:29:22 PM.
This article is licensed under a Creative Commons Attribution 3.0 Unported Licence.

COMMUNICATIONS

5734

Self-reported and self-facilitated theranostic oxygen nano-economizer for precise and hypoxia alleviation-potentiated photodynamic therapy

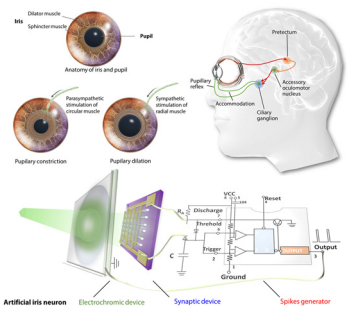
Shumeng Li, Fujun Yang, Yongdan Wang, Linshan Jia and Xiaohong Hou*



5753

A retinomorphic neuron for artificial vision and iris accommodation

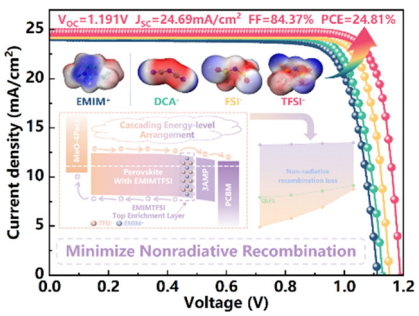
Lin Sun, Shangda Qu and Wentao Xu*



5763

***In situ* dipole formation to achieve high open-circuit voltage in inverted perovskite solar cells *via* fluorinated pseudohalide engineering**

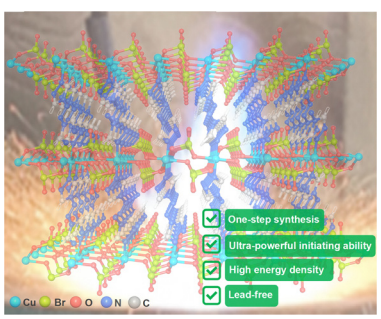
Yuan Liu, Chen Tang, Anxin Sun, Rongshan Zhuang, Yiting Zheng, Congcong Tian, Xueyun Wu, Zihao Li, Beilin Ouyang, Jiajun Du, Ziyi Li, Yong Hua and Chun-Chao Chen*



5775

A three-dimensional energetic coordination compound (BLG-1) with excellent initiating ability for lead-free primary explosives

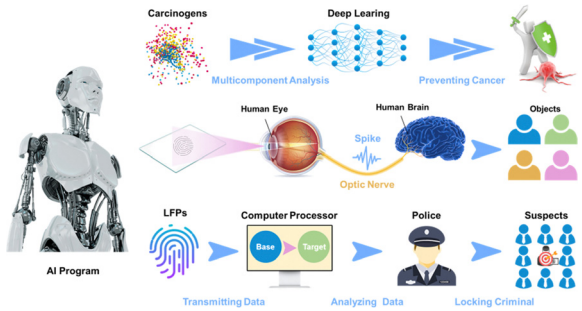
Guorong Lei, Wenchuan Cheng, Zujia Lu, Tonglai Zhang, Zhimin Li* and Jianguo Zhang*



Open Access Article. Published on 27 November 2023. Downloaded on 3/17/2026 2:29:22 PM.
This article is licensed under a Creative Commons Attribution 3.0 Unported Licence.

COMMUNICATIONS

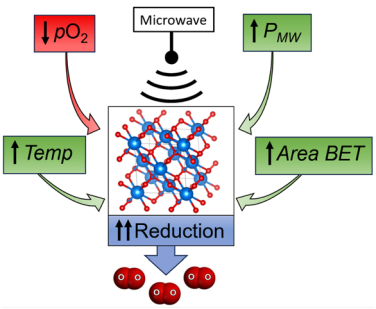
5782



Multifunctional Eu(III)-modified HOFs: roxarsone and aristolochic acid carcinogen monitoring and latent fingerprint identification based on artificial intelligence

Kai Zhu and Bing Yan*

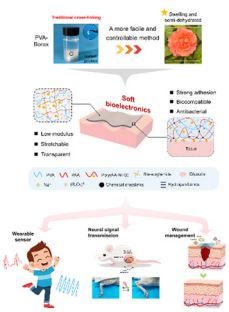
5796



Modulating redox properties of solid-state ion-conducting materials using microwave irradiation

J. M. Serra,* M. Balaguer, J. Santos-Blasco, J. F. Borras-Morell, B. Garcia-Baños, P. Plaza-Gonzalez, D. Catalán-Martínez, F. Penaranda-Foix, A. Domínguez, L. Navarrete and J. M. Catala-Civera*

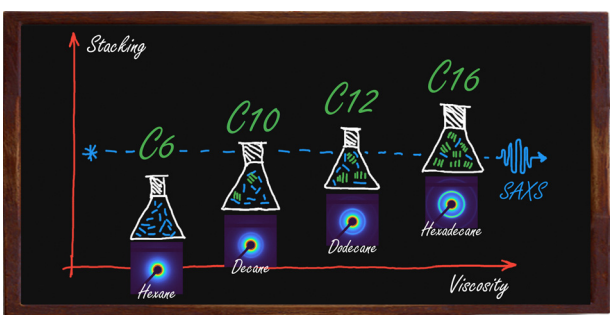
5805



Conductive and antibacterial dual-network hydrogel for soft bioelectronics

Huiqi Sun, Sai Wang, Fan Yang, Mingyi Tan, Ling Bai, Peipei Wang, Yingying Feng, Wenbo Liu, Rongguo Wang* and Xiaodong He

5822



Self-assembly of perovskite nanoplates in colloidal suspensions

Raphael F. Moral, Antônio A. Malfatti-Gasperini, Luiz G. Bonato, Brener R. C. Vale, André F. V. Fonseca, Lazaro A. Padilha, Cristiano L. P. Oliveira and Ana F. Nogueira*

This journal is © The Royal Society of Chemistry 2023

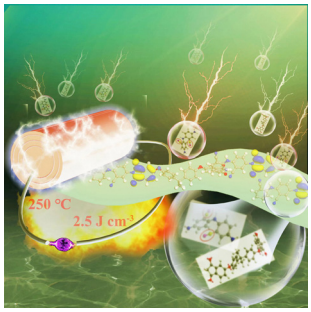
Open Access Article. Published on 27 November 2023. Downloaded on 3/17/2026 2:29:22 PM.
This article is licensed under a Creative Commons Attribution 3.0 Unported Licence.

COMMUNICATIONS

5835

Intrinsic-designed polyimide dielectric materials with large energy storage density and discharge efficiency at harsh ultra-high temperatures

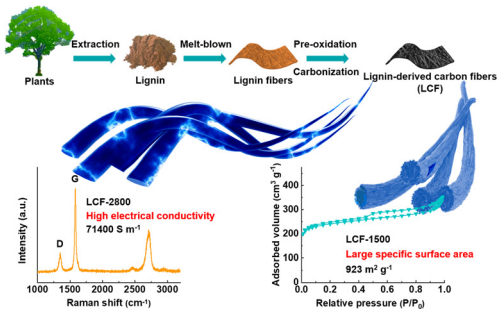
Yaya Tian, Ming-Sheng Zheng,* Yuchao Li,* Chuqi Xu, Yiyi Zhang, Wei Liu, Zhi-Min Dang and Jun-Wei Zha*



5847

Highly conductive and porous lignin-derived carbon fibers

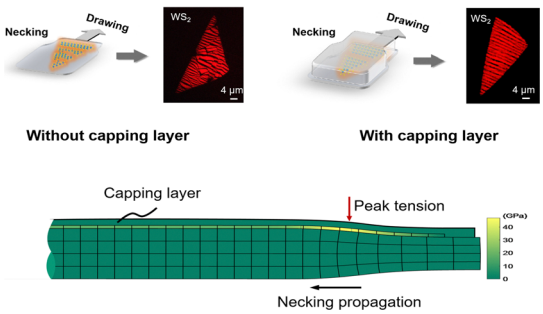
Guosheng Jia, Yan Yu, Xuefen Wang, Chao Jia,* Zexu Hu, Senlong Yu, Hengxue Xiang* and Meifang Zhu



5859

Capping layer enabled controlled fragmentation of two-dimensional materials by cold drawing

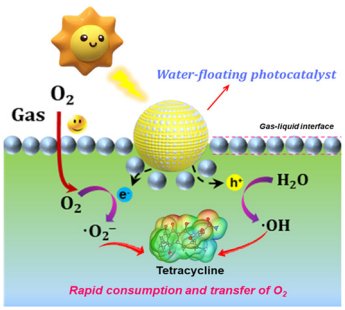
Ming Chen,* Dong Li, Yuxin Hou, Mengxi Gu, Qingsheng Zeng, De Ning, Weimin Li, Xue Zheng, Yan Shao, Zhixun Wang,* Juan Xia, Chunlei Yang,* Lei Wei* and Huajian Gao*



5869

Fabrication of water-floating litchi-like polystyrene-sphere-supported TiO_2/Bi_2O_3 S-scheme heterojunction for efficient photocatalytic degradation of tetracycline

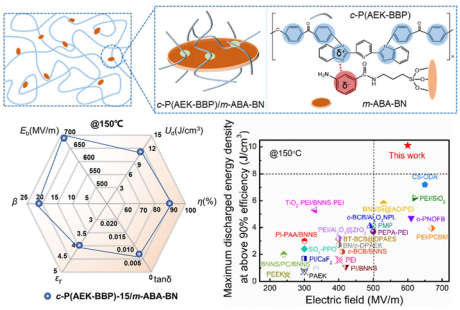
Wensheng Zhang, Qingmei Tan, Tianren Liu, Ying He, Gang Chen, Ke Chen, Dongxue Han,* Dongdong Qin and Li Niu*



Open Access Article. Published on 27 November 2023. Downloaded on 3/17/2026 2:29:22 PM.
This article is licensed under a Creative Commons Attribution 3.0 Unported Licence.

COMMUNICATIONS

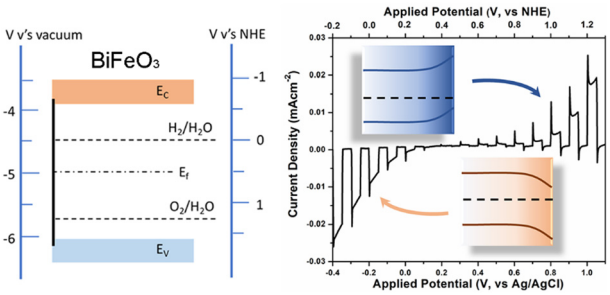
5881



Superior high-temperature capacitive performance of polyaryl ether ketone copolymer composites enabled by interfacial engineered charge traps

Xinyi Li, Yunchuan Xie, Jie Xiong, Bofeng Zhu, Xiao Zhang,* Xinhua Duan, Bo Dong* and Zhicheng Zhang*

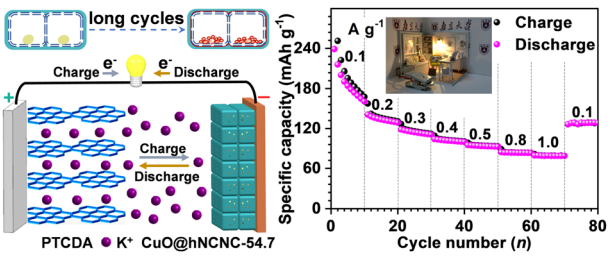
5892



Origin of the switchable photocurrent direction in $BiFeO_3$ thin films

Yaqiong Wang, Matyas Daboczi, Man Zhang, Joe Briscoe, Ji-Seon Kim, Haixue Yan* and Steve Dunn*

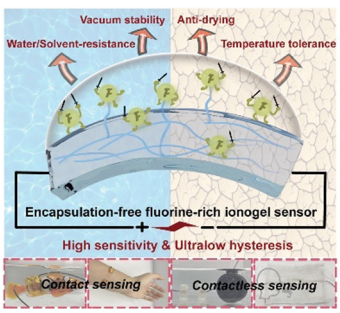
5898



Loss-free pulverization by confining copper oxide inside hierarchical nitrogen-doped carbon nanocages toward superb potassium-ion batteries

Guanghai Chen, Jia Liu, Shenglan Ma, Changkai Zhou, Jietao Jiang, Zhen Shen, Lijie Yan, Yue Guo, Lijun Yang, Qiang Wu,* Xizhang Wang* and Zheng Hu*

5907



High-sensitivity and ultralow-hysteresis fluorine-rich ionogel strain sensors for multi-environment contact and contactless sensing

Faqi Hu, Zhenkai Huang, Chuan Luo and Kan Yue*

This journal is © The Royal Society of Chemistry 2023

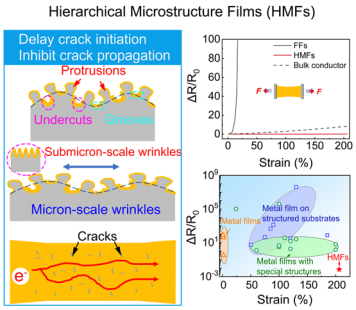
Open Access Article. Published on 27 November 2023. Downloaded on 3/17/2026 2:29:22 PM.
This article is licensed under a Creative Commons Attribution 3.0 Unported Licence.

COMMUNICATIONS

5920

Highly stable and strain-insensitive metal film conductors *via* manipulating strain distribution

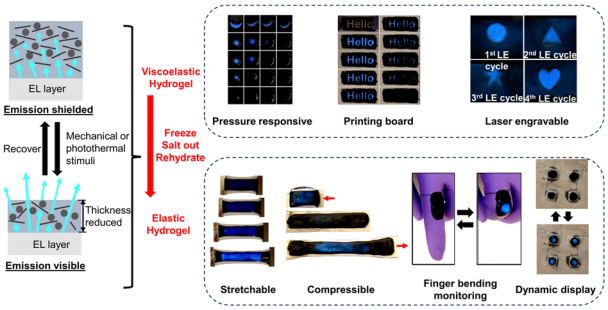
Ting Zhu, Kai Wu,* Yaqiang Wang, Jinyu Zhang, Gang Liu* and Jun Sun*



5931

Interactive deformable electroluminescent devices enabled by an adaptable hydrogel system with optical/photothermal/mechanical tunability

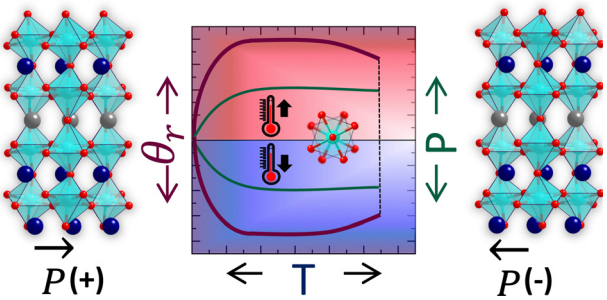
Zaili Hou, Songshan Zeng,* Kuangyu Shen, Patrick R. Healey, Holly J. Schipper, Luqi Zhang, Miranda Zhang, Michael D. Jones and Luyi Sun*



5942

Design of high polarization low switching barrier hybrid improper ferroelectric perovskite oxide superlattices

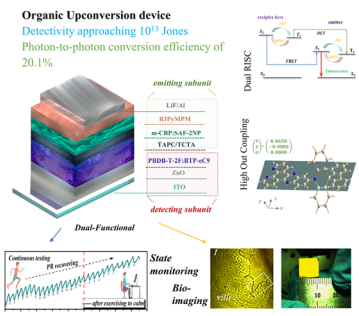
M. J. Swamynadhan, Ayana Ghosh and Saurabh Ghosh*



5950

A high-performance dual-functional organic upconversion device with detectivity approaching 10^{13} Jones and photon-to-photon efficiency over 20%

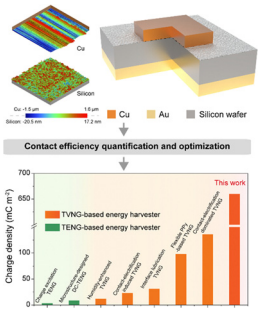
Zeyu He, Heng-yuan Zhang, Xiaoyang Du,* Xin Yu, Jiayue Han, Luye Cao, Hui Lin, Jun Wang, Caijun Zheng and Silu Tao*



Open Access Article. Published on 27 November 2023. Downloaded on 3/17/2026 2:29:22 PM.
This article is licensed under a Creative Commons Attribution 3.0 Unported Licence.

COMMUNICATIONS

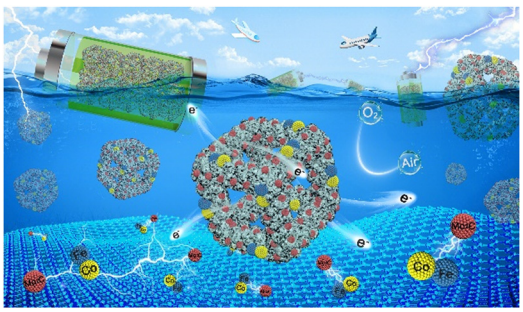
5962



Contact efficiency optimization for tribovoltaic nanogenerators

Zhihao Zhao, Jiayue Zhang, Wenyan Qiao, Linglin Zhou, Ziting Guo, Xinyuan Li, Zhong Lin Wang* and Jie Wang*

5969



A macroporous carbon nanoframe for hosting Mott–Schottky Fe–Co/Mo_2C sites as an outstanding bi-functional oxygen electrocatalyst

Jie Hong, Lei Zhang,* Qiliang Zhu, Ziang Du, Yingtang Zhou,* Thomas Wågberg and Guangzhi Hu*

CORRECTIONS

5983

Correction: A wearable colorimetric sweat pH sensor-based smart textile for health state diagnosis

Ji-Hwan Ha, Yongrok Jeong, Junseong Ahn, Soonhyoung Hwang, Sohee Jeon, Dahong Kim, Jiwoo Ko, Byeongmin Kang, Young Jung, Jungrak Choi, Hyeonseok Han, Jimin Gu, Seokjoo Cho, Hyunjin Kim, Moonjeong Bok, Su A. Park, Jun-Ho Jeong* and Inkyu Park*

5984

Correction: A super-high brightness and excellent colour quality laser-driven white light source enables miniaturized endoscopy

Shuxing Li, Linhui Huang, Yuqin Guo, Le Wang* and Rong-Jun Xie*

This journal is © The Royal Society of Chemistry 2023