

Journal of Materials Chemistry C

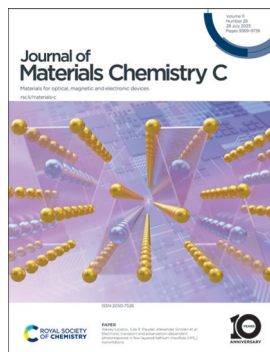
Materials for optical, magnetic and electronic devices

rsc.li/materials-c

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 2050-7526 CODEN JMCCCX 11(28) 9369–9736 (2023)



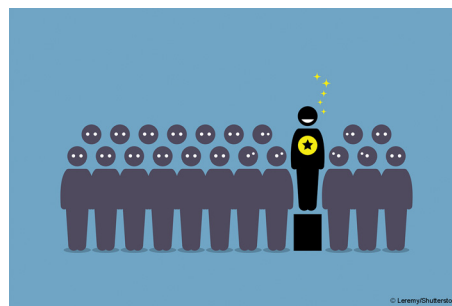
Cover

See Alexey Lipatov,
Tula R. Paudel,
Alexander Sinitskii *et al.*,
pp. 9425–9437.
Image reproduced
by permission of
Alexey Lipatov from
J. Mater. Chem. C,
2023, **11**, 9425.

EDITORIAL

9381

Outstanding Reviewers for *Journal of Materials Chemistry C* in 2022

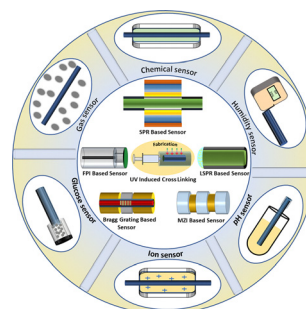


REVIEW

9383

Hydrogel-integrated optical fiber sensors and their applications: a comprehensive review

Md. Sazid Bin Sadeque, Hussain Kawsar Chowdhury,
Muzaffar Rafique, Mehmet Atif Durmuş,
Md. Kawsar Ahmed, Md. Mehdi Hasan, Aykut Erbaş,
İbrahim Sarpkaya, Fatih Inci and Mustafa Ordu*



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, Ella White

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, 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

Neil Robertson, University of Edinburgh, UK

Federico Rosei, University of Trieste, Italy

Yana Vayznof, Technical University of

Dresden, 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

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.

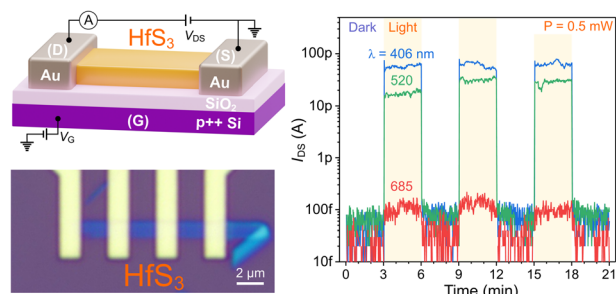
Registered charity number: 207890



9425

Electronic transport and polarization-dependent photoresponse in few-layered hafnium trisulfide (HfS₃) nanoribbons

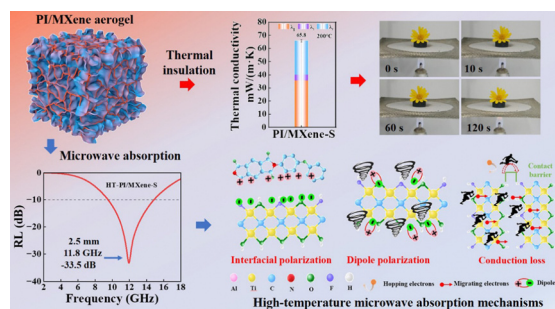
Alexey Lipatov,* Jehad Abourahma, Gauthami Viswan, Khimananda Acharya, Tula R. Paudel,* Michael J. Loes, Saman Bagheri, Alpha T. N'Diaye, Esha Mishra, Thilini Kumari Ekanayaka, Mohammad Zaz, Jack Rodenburg, Archit Dhingra, Robert Streubel, Peter A. Dowben and Alexander Sinitskii*



9438

Microstructure controllable polyimide/MXene composite aerogels for high-temperature thermal insulation and microwave absorption

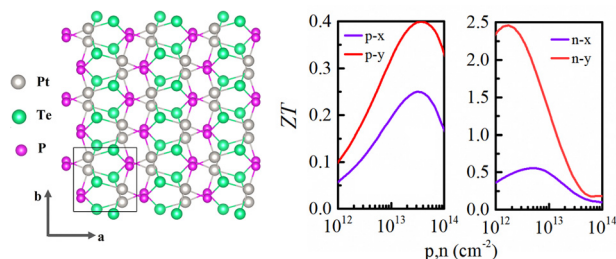
Wenting Zhang, Enjie Ding, Wenxi Zhang, Jiaqiang Li, Chuyang Luo and Liying Zhang*



9449

Promising novel thermoelectric materials: two-dimensional penta-like PtPX (X = S, Se, Te) nanosheets

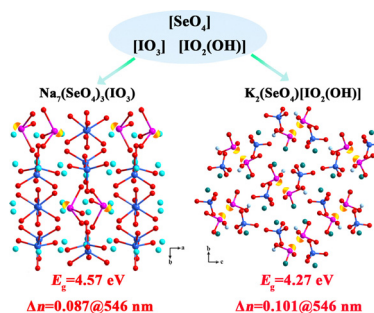
Haihua Huang, Wei Li, Chengchao Hu and Xiaofeng Fan*



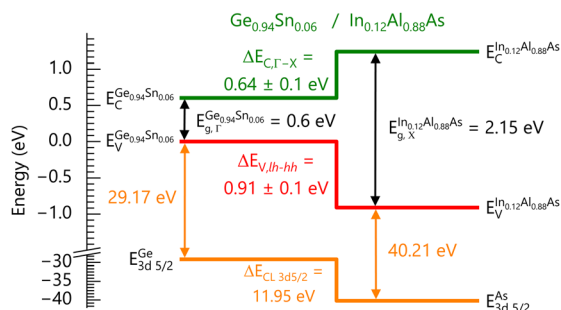
9465

Na₇(SeO₄)₃(IO₃) and K₂(SeO₄)[IO₂(OH)]: two new iodate-selenates with short-wave UV cutoff edge and large birefringence

Wen Song, Jinxuan Ren, Jinwen Tan, Liling Cao, Xuehua Dong, Ling Huang,* Daojiang Gao and Guohong Zou*



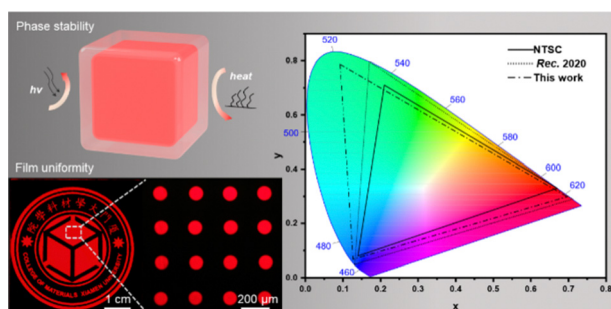
9472



Lattice matched GeSn/InAlAs heterostructure: role of Sn in energy band alignment, atomic layer diffusion and photoluminescence

Sengunthar Karthikeyan, Rutwik Joshi, Jing Zhao, Robert J. Bodnar, Brenden A. Magill, Yannick Pleimling, Giti A. Khodaparast and Mantu K. Hudait*

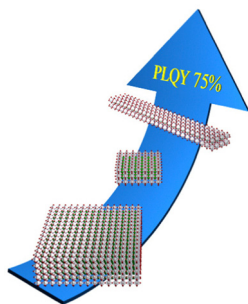
9486



Pure red CsPbBr_{0.96}I_{2.04}/SiO₂ core/shell nanocrystals with simultaneous high efficiency and stability for Mini-LEDs

Yixin Cai, Yang Yang, Haorui Dong, Tongtong Xuan,* Xueyuan Tang* and Rong-Jun Xie*

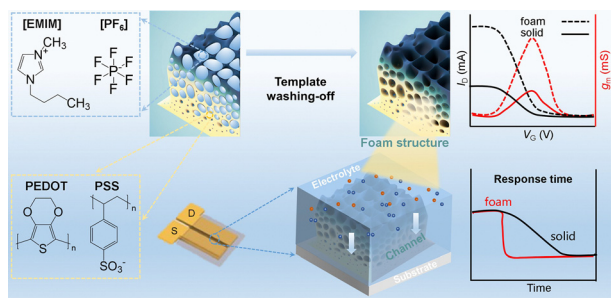
9495



Shape- and excitation-dependent charge-carrier dynamics in colloidal MAPbI perovskites as nanostripes, nanosheets and nanoplatelets

Eugen Klein, Chris Rehagen, Rostyslav Lesyuk and Christian Klinker*

9504



A high-performance organic electrochemical transistor based on foam-structured channels prepared using a template washing-off method

Shunhao He, Shanglin Xiang, Junjie Wang, Kaili Wang, Liuyingzi Yu, Yaxin Song, Chengcheng Zhu, Zhongyan Gong, Yulong Zhang, Kun Gao, Xing Kang, Tingwei Wang,* Hai-Dong Yu* and Gang Lu*

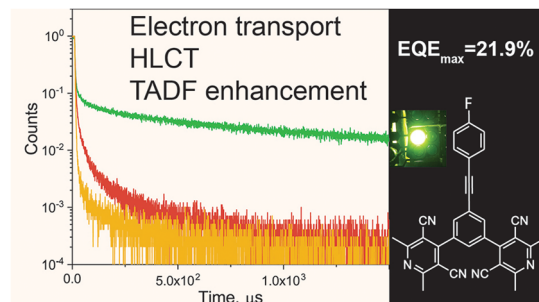


PAPERS

9514

3,5-Dicyanopyridine motifs for electron-transporting semiconductors: from design and synthesis to efficient organic light-emitting diodes

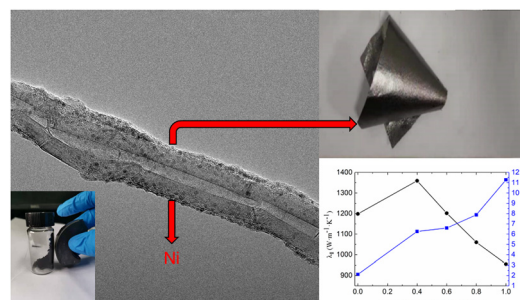
Karolis Leitonas, Brigita Vigante, Dmytro Volyniuk, Audrius Bucinskas, Rasa Keruckiene, Pavels Dimitrijevs, Tien-Lung Chiu, Juozas Vidas Grazulevicius* and Pavel Arsenyan*



9527

Flexible graphite films with high cross-plane thermal conductivity prepared by graphitization of polyimide catalyzed by Ni-coated-CNTs

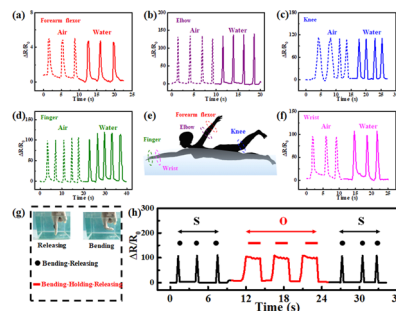
Shuaizhen Li, Zhibo Zheng, Siwei Liu,* Zhenguo Chi, Yi Zhang* and Jiarui Xu



9539

Micro-/nanofiber-coupled superhydrophobic and conductive textile for underwater wearable strain sensors with full-scale human motion detection ability

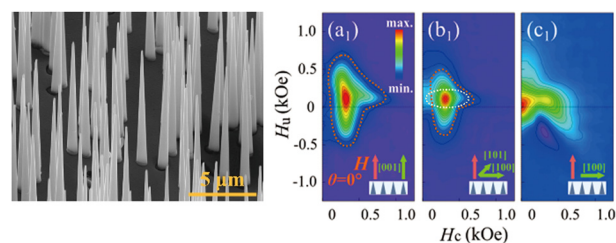
Junchi Ma, Yongquan Qing,* Haoyang Song, Yuxuan Yao, Xinyu Xu, Cai Long, Niu Liu, Hengjun Li and Changsheng Liu



9552

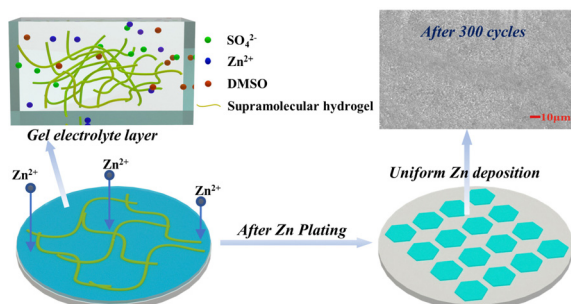
A perfect conical nanoshape meets large magnetocrystalline anisotropy: unusual magnetic configurations

Jianzhuang Jiang, Wentao Wang, Xiaochan Fu, Xinyan Wang, Yuhui Hu, Kaizhou He, Xiangqian Wang* and Xia Ni*



PAPERS

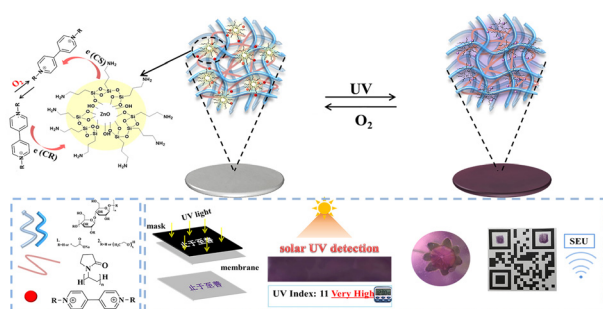
9559



Study of a novel supramolecular hydrogel electrolyte for aqueous zinc ion batteries

Ying Yang, Changmiao Huang, Hui Li, Zixuan Teng, Heng Zhang, Xi Wei, Hong Zhang, Lili Wu, Chaocan Zhang and Wanyu Chen*

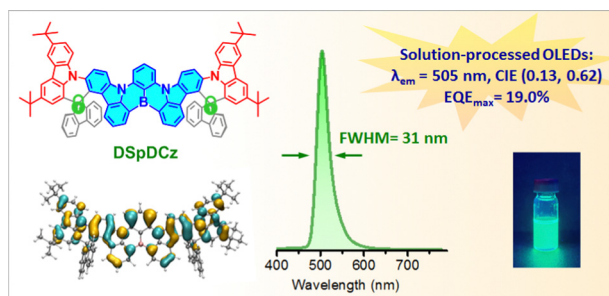
9570



A novel ZnO/viologen photochromic composite film with a rapid UV response for rewritable paper, solar UV detection, smart windows and anti-counterfeiting

Na Chen, Wan-Xiong Yong, Tuo-Dong Xiong and Guo-Dong Fu*

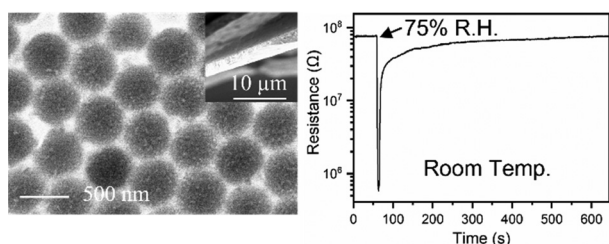
9578



Spirofluorene-locked carbazole based multiple resonance thermally activated delayed fluorescence emitters for efficient solution-processed narrowband green OLEDs

Baoyun Du, Kaiyuan Zhang, Penglong Wang, Xingdong Wang, Shumeng Wang, Shiyang Shao* and Lixiang Wang*

9586



Ordered porous RGO/SnO₂ thin films for ultrasensitive humidity detection

Zhou Li, David W. Gardner, Yong Xia, Sikai Zhao, Aifei Pan, Nishit Goel, Stephen Bart, Chen Liu, Jianxin Yi, Carlo Carraro and Roya Maboudian*

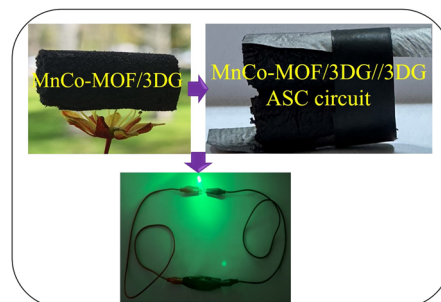


PAPERS

9593

Design and synthesis of a MnCo-MOF modified flexible 3D graphene sponge electrode for an asymmetric supercapacitor with high power and energy density

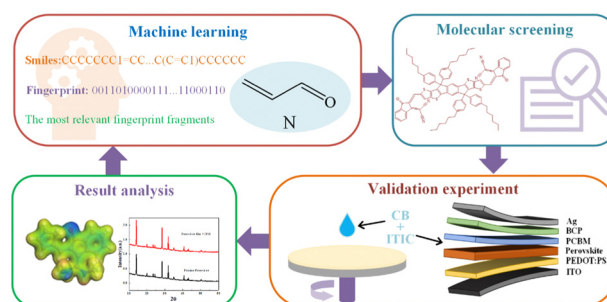
Elif Erçarıkçı, Ezgi Topçu and Kader Dağcı Kıranşan*



9602

Machine learning-assisted screening of effective passivation materials for P–I–N type perovskite solar cells

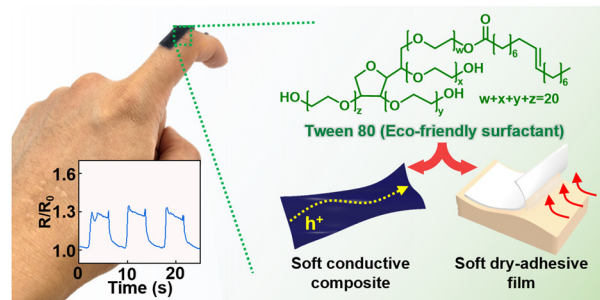
Di Huang, Chaorong Guo, Zhennan Li, Haixin Zhou, Xiaojie Zhao, Zhimin Feng, Rui Zhang, Menglong Liu, Jiaojiao Liang,* Ling Zhao* and Juan Meng*



9611

A skin-friendly soft strain sensor with direct skin adhesion enabled by using a non-toxic surfactant

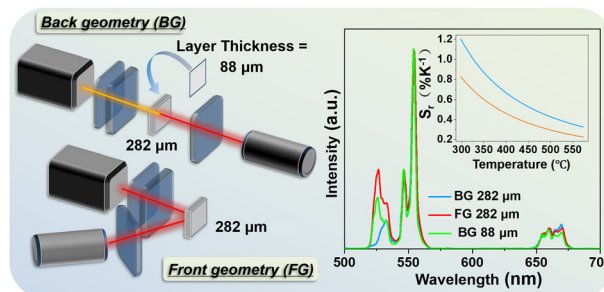
Haechan Park, Myeonghyeon Na, Donghyung Shin, Daeun Kim, Euna Kim, Sehyun Kim, Donghyun Lee and Kyoseung Sim*



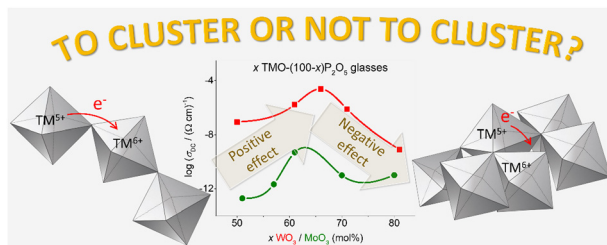
9620

Influence of excitation and detection geometry on optical temperature readouts – reabsorption effects in luminescence thermometry

Natalia Stopikowska,* Przemysław Woźny, Markus Suta, Teng Zheng,* Stefan Lis and Marcin Runowski*



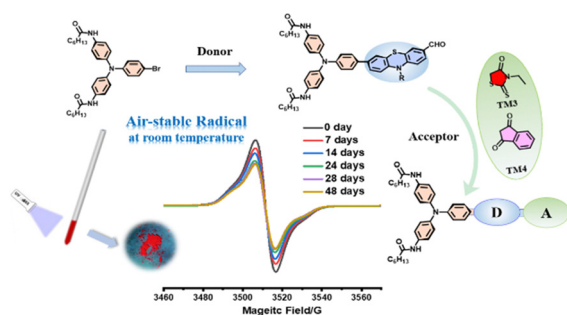
9628



Glass structure as a driver of polaronic conductivity in phosphate glasses containing MoO_3 and WO_3

Sanja Renka, Radha D. Banhatti, Grégory Tricot, Petr Kalenda, Luka Pavić, Petr Mošner, Ladislav Koudelka and Ana Šantić*

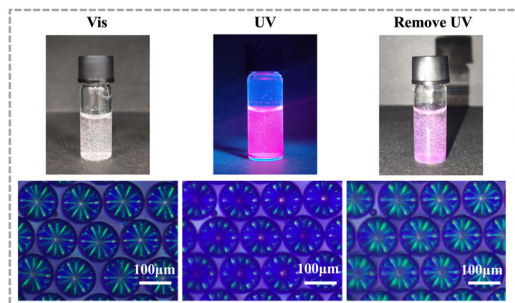
9640



A feasible strategy to obtain air-stable triphenylamine radicals in the solid state by introducing conjugated donor-acceptor modules

Xugang Rong, Jueshan Liu, Jianglin Wu, Chuan Li, Kexin Wang, Zhiyun Lu,* Yingzhe Liu, Mingjie Gu and Yan Huang*

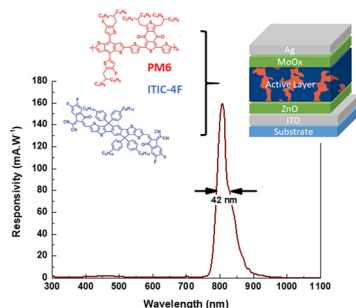
9649



A three-state label programmed using a three-color microsphere of structural, fluorescent and dye colors

Chaofeng Qu, Xiaolan Li, Na Zhao, Sijie Zhou, Jiaming Wang, Lishuang Yao* and Yongjun Liu*

9657



Towards efficient NFA-based selective near-infrared organic photodetectors: impact of thermal annealing of polymer blends

Q. Eynaud, Y. A. Avalos Quiroz, T. Koganezawa, R. Sato, N. Yoshimoto, O. Margeat, C. M. Ruiz, J. Ackermann and C. Vidolot-Ackermann*

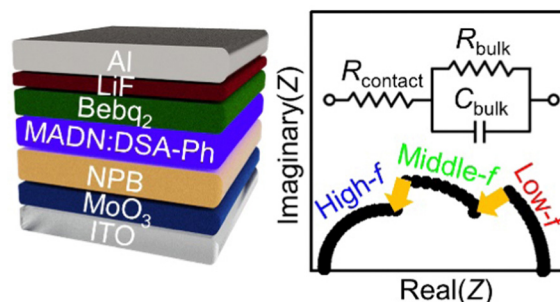


PAPERS

9670

Frequency-triggered circuit transition in organic light-emitting diodes probed by impedance spectroscopy

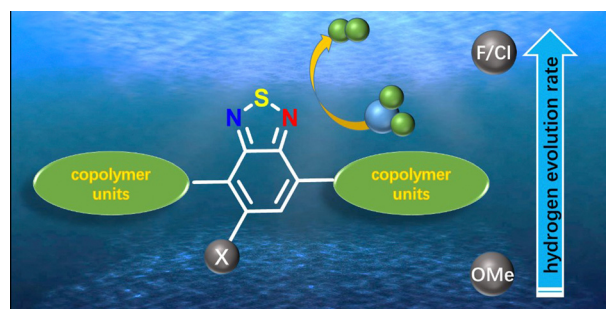
Joon Hyung Park, Ye Ji Shin, Ioannis Kymissis, Yongmin Jeon* and Chang-Hyun Kim*



9678

Improving the photocatalytic performance of conjugated polyelectrolytes via substituent optimization

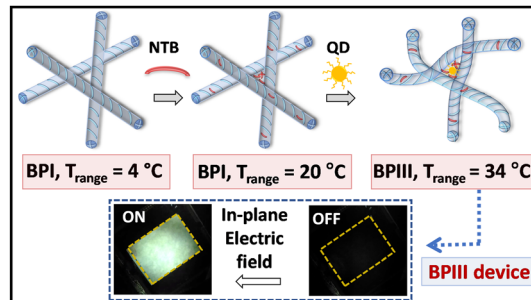
Li Tian,* Haowei Lin, Mengya Shang, Xi Zhang, XueFei Zhou, Shanhong Xu, Cheng-Xing Cui* and Airong Wang*



9686

Topological defects stabilized by a soft twist-bend dimer and quantum dots lead to a wide thermal range and ultra-fast electro-optic response in a liquid crystalline amorphous blue phase

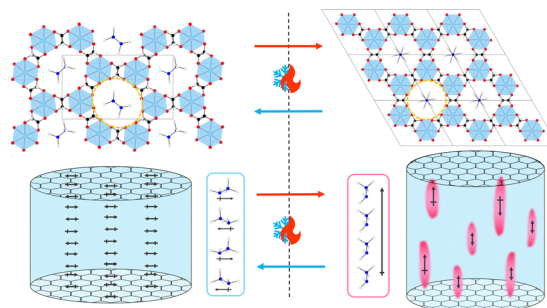
Nurjahan Khatun, Vimala Sridurai, Katalin F. Csorba and Geetha G. Nair*



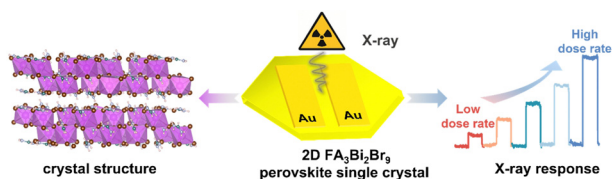
9695

A new avenue to relaxor-like ferroelectric behaviour found by probing the structure and dynamics of $[\text{NH}_3\text{NH}_2]\text{Mg}(\text{HCO}_2)_3$

Thomas J. Hitchings, Helen M. Wickins, George U. L. Peat, Paul Hodgkinson, Anant Kumar Srivastava, Teng Lu, Yun Liu, Ross O. Piltz, Franz Demmel, Anthony E. Phillips and Paul J. Saines*



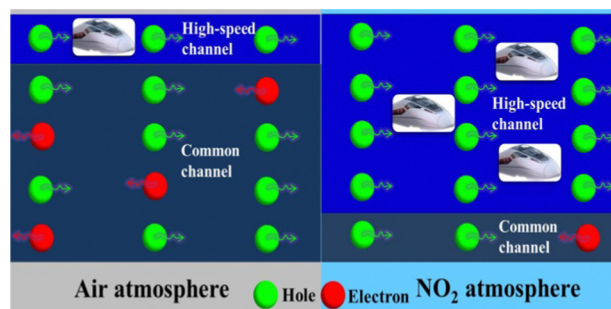
9707



A centimeter-scaled lead-free two-dimensional perovskite FA₃Bi₂Br₉ single crystal for X-ray detection

Xiuting Luo, Lei Gao, Kezheng Tao, Qiang Li and Qingfeng Yan*

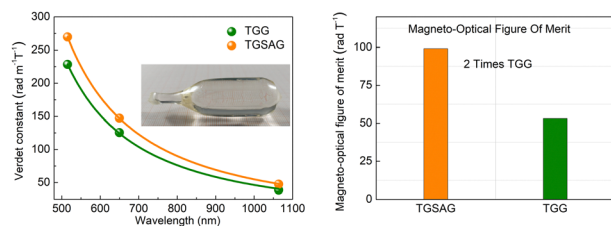
9715



Ternary alloyed MoS_{2-x}Se_x nanocomposites with a carrier mobility-dominated gas sensing mode: a superior room temperature gas sensing material for NO₂ sensors

Mingli Yin,* Kexin Wang, Liaochuan Zhang, Chunxiao Gao, Juan Ren and Lingmin Yu

9727



Reporting a novel visible near-infrared {Tb₃}[Ga_{0.1}Sc_{1.9}](Al₃)O₁₂ single crystal for Faraday isolators

Yuankai Hao, Xianhui Xin, Xianxian Yang, Zhen Zhang, Xiuwei Fu,* Zhitai Jia* and Xutang Tao

