

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.

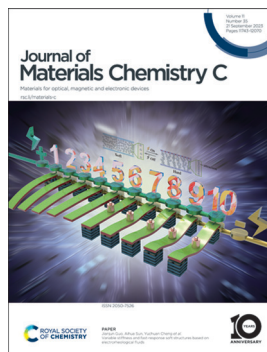
IN THIS ISSUE

ISSN 2050-7526 CODEN JMCCCX 11(35) 11743–12070 (2023)



Cover

See Ying Zhong *et al.*, pp. 11834–11841. Image reproduced by permission of Ying Zhong and Zijian Weng from *J. Mater. Chem. C*, 2023, **11**, 11834.



Inside cover

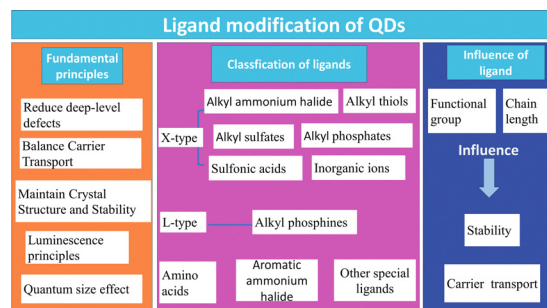
See Jianjun Guo, Aihua Sun, Yuchuan Cheng *et al.*, pp. 11842–11850. Image reproduced by permission of Yuchuan Chen from *J. Mater. Chem. C*, 2023, **11**, 11842.

REVIEWS

11755

Ligand modification enhanced quantum dot LEDs: principles and methods

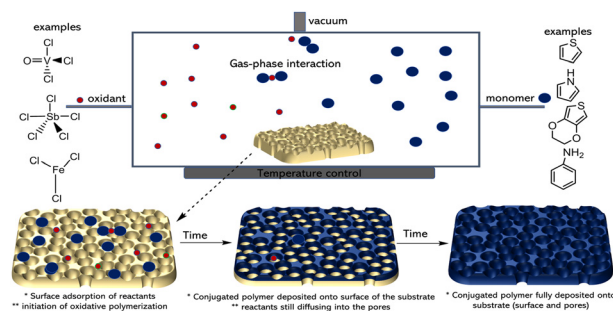
Xiangyuan Dong, Kaili Wang, Yanyan Bu* and Xiangfu Wang*



11776

Oxidative chemical vapor deposition for synthesis and processing of conjugated polymers: a critical review

Afshin Dianatdar and Ranjita K. Bose*



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@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 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: £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

Federico Rosei, University of Trieste, Italy

Yana Vaynzof, 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

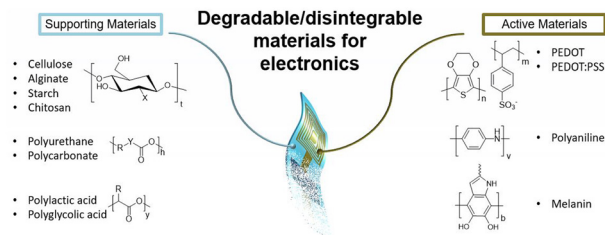


PERSPECTIVE

11803

The future of electronic materials is...degradable!

Rajat Rai and Daniele Mantione*

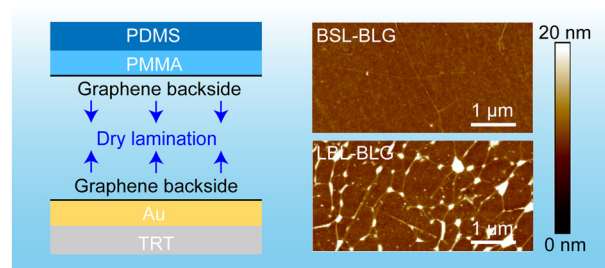


COMMUNICATIONS

11814

Towards bubble-free, centimeter-sized bilayer graphene enabled by backside lamination

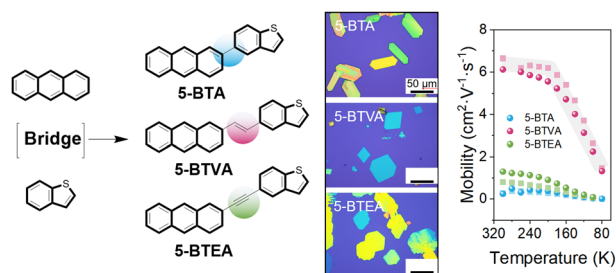
Mingzhi Yan, Xin Gao, Jun Qian, Xiaoyin Gao, Jilin Tang, Yuechen Wang, Yani Wang, Junchuan Tang, Liming Zheng, Kaicheng Jia, Fei Jia, Hongtao Liu,* Guanghui Gao* and Hailin Peng*



11822

The effect of bridging groups on the charge transport properties of benzothiophene-substituted anthracenes

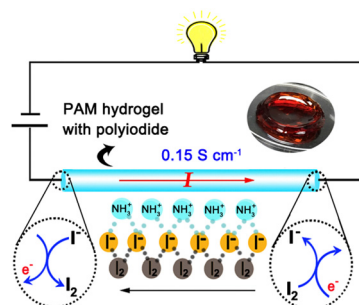
Xiaosong Shi, Yanan Sun, Jie Liu,* Yicai Dong, Yanjun Shi,* Yuanping Yi and Lang Jiang*



11828

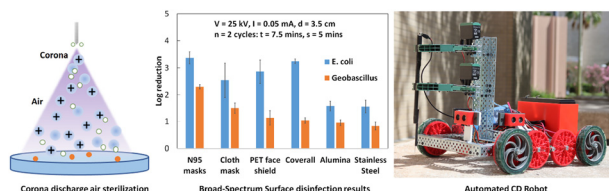
Facile fabrication of a highly-conductive hydrogel through filling with polyiodide

Ji-Hua Zhu, Hongtao Yu* and Hong Meng



PAPERS

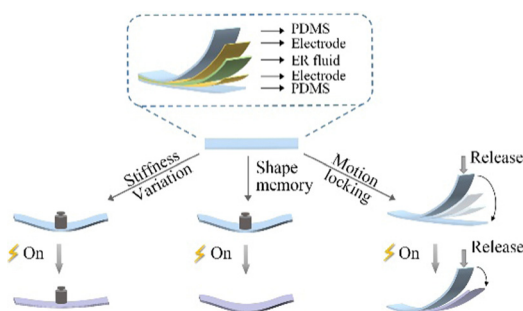
11834



Automated corona discharge (CD) for efficient and broad-spectrum surface and air sterilization

Sriram S. K. S. Narayanan, Zijian Weng, Andrew Tenjo, Marcelo Farfan, Parinitha Giridharan, Xudong Wang, Valerie Zapata, Xing Ma, Libin Ye, Ehsan Sheybani and Ying Zhong*

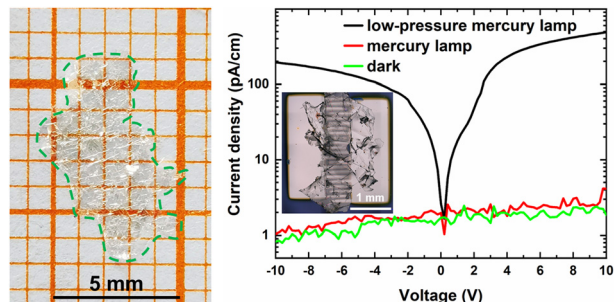
11842



Variable stiffness and fast-response soft structures based on electrorheological fluids

Huilan Jing, Letian Hua, Fei Long, Bojin Lv, Bing Wang, Hewen Zhang, Xunye Fan, Hongru Zheng, Chengyi Chu, Gaojie Xu, Jianjun Guo,* Aihua Sun* and Yuchuan Cheng*

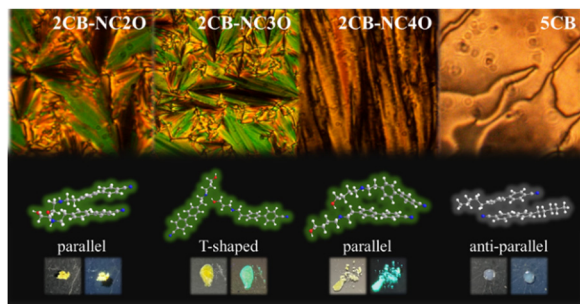
11851



Rapid growth of a 24 mm² scale hexagonal boron nitride crystal in Ni-Cr solution

Jianguo Zhao,* Haichao Wang, Yue Yu, Minhui Yang, Ru Xu, Hui Zhang, Jiangyong Pan, Yuanyuan Li, Xiang Liu, Tao Tao,* Zhe Zhuang, Bin Liu and Jianhua Chang*

11857



Aggregation-induced emission mesogens formed by intermolecular hydrogen bonding of 4-alkyl-4'-cyanobiphenyl molecules

Po-Ting Chou, Tsung Yang Ho, Jia-Ying Cai, Huang-Teng Lin, Chung-Hung Hsieh and Chih-Hsin Chen*

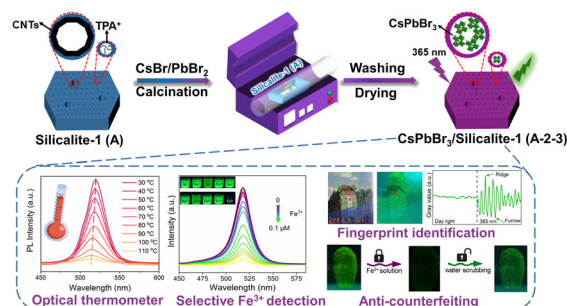


PAPERS

11865

High-loading ultrastable CsPbBr₃ perovskite quantum dots in hierarchical silicalite-1 by elimination of co-templates for multimodal optical applications

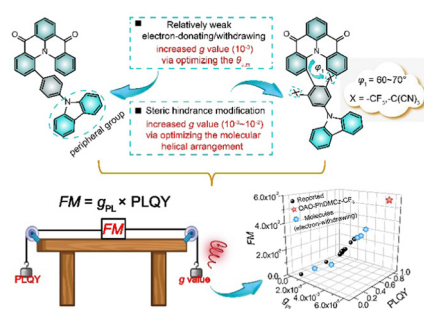
Xiandi Yu, Yuchi Zhang, Le Han and Yan Xu*



11876

Construction of high-performance circularly polarized multiple-resonance thermally activated delayed fluorescence materials via the structural optimization of peripheral groups

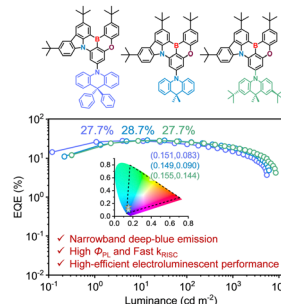
Wenjing Li, Qixin Lv, Chengxi Sun, Junyuan Deng, Cefeng Zhou, Yewen Zhang, Ping Li* and Runfeng Chen*



11885

Donor-modified multiple resonance emitters with accelerated reverse intersystem crossing towards high-efficiency and narrowband deep-blue OLEDs

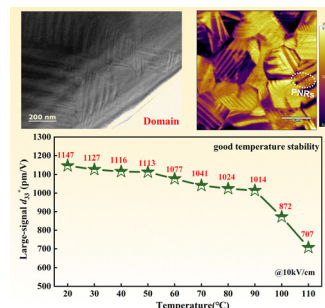
Xingyu Huang, Yulin Xu, Jingsheng Miao, Yan-Yun Jing, Shuni Wang, Zeyuan Ye, Zhongyan Huang, Xiaosong Cao* and Chuluo Yang



11895

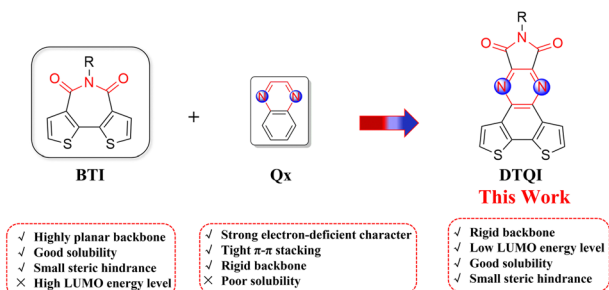
A synergistic approach to attain high piezoelectricity in a Pb(Ni, Nb)O₃-Pb(Lu, Nb)O₃-PbTiO₃ system

Mengdi Cheng, Yangxi Yan, Zhimin Li, Pangpang Wang, Ri-ichi Murakami and Dongyan Zhang*



PAPERS

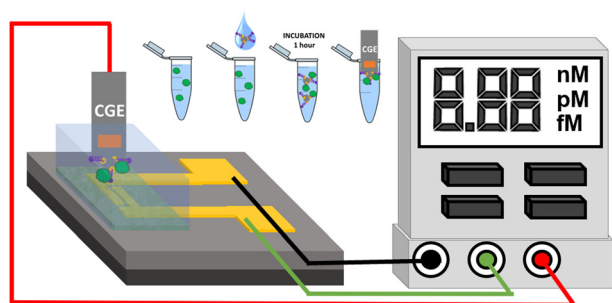
11905



Dithiene-fused quinoxalineimide-based all-acceptor polymers for n-type organic semiconductors

Lijun Tu, Hao Wang, Xiangya Li, Xin Wang, Mingwei Li, Yang Wang* and Yongqiang Shi*

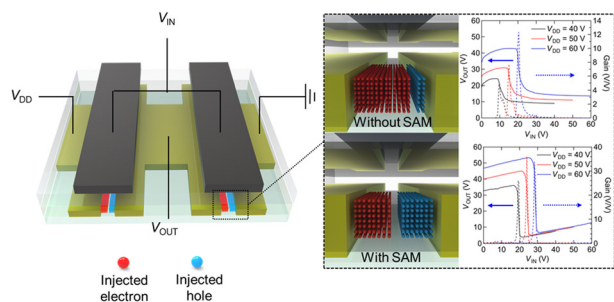
11912



Magnetic carbon gate electrodes for the development of electrolyte-gated organic field effect transistor bio-sensing platforms

Adrián Tamayo, Jose Muñoz, Carme Martínez-Domingo and Marta Mas-Torrent*

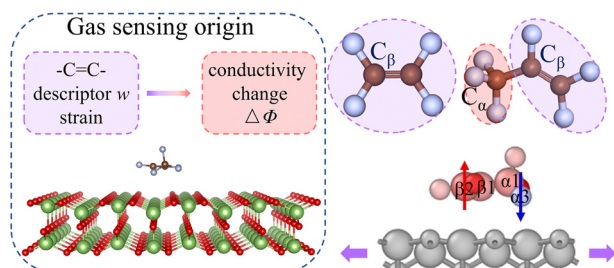
11920



Solution-processed ambipolar organic thin-film transistors and inverters in a single substrate through self-assembled monolayer-treated electrodes

Yeon Jun Kim, Swarup Biswas, Jeong Han Song, Seunghoon Song, Yun-Hi Kim,* Hyeok Kim* and Jeonghun Kwak*

11928

Theoretical insights into the two-dimensional gallium oxide monolayer for adsorption and gas sensing of C₄F₇N decomposition products

Rong Han, Zhaofu Zhang, Wei Liu, Fengxiang Ma, Hailing Guo, Zhuo Jiang, Xuhao Wan, Anyang Wang, Chao Yuan, Wenjun Zhou, Yu Zheng* and Yuzheng Guo*

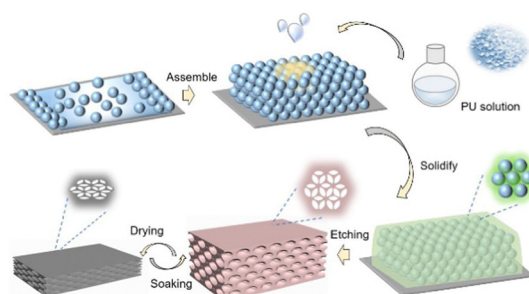


PAPERS

11936

Dual-responsive PU inverse photonic crystal film with high flexibility for anti-counterfeiting

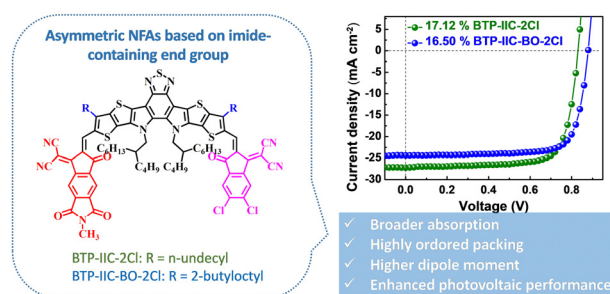
Xin Zhang,* Ziyuan Zhang and Fuchang Yu



11943

Asymmetric non-fullerene acceptors with an imide-containing end group for high-performance organic solar cells

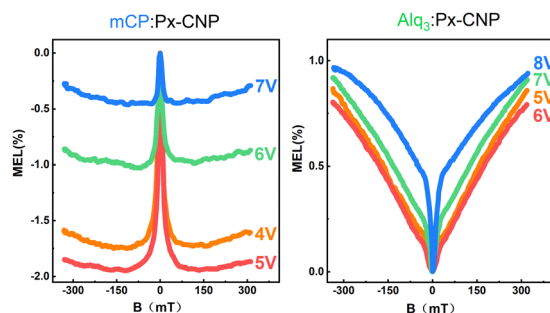
Shiling Shi, Shimin Zhang, Xiang Yao,* Kaihu Xian, Dexia Han, Yuxuan Zhu, Yanru Li, Xueyang Tu, Zheng Tang, Long Ye, Hongliang Zhong* and Zhuping Fei*



11952

Mediation of energy transfer on magnetic field effects in Px-CNP-based OLEDs

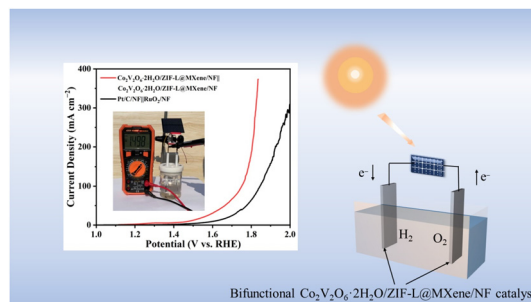
Jiayi Song, Yunxia Guan,* Cheng Wang, Xi Bao, Wanjiao Li, Keao Peng, Shuang Xu, Lijia Chen and Lianbin Niu*



11960

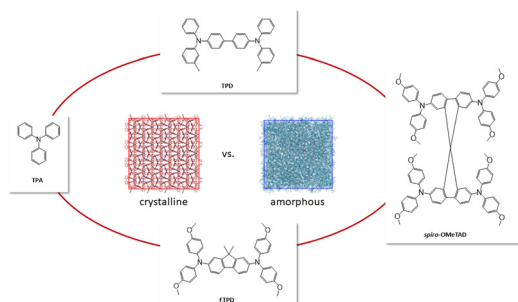
CoV₂O₆ coupled with MXenes as a highly efficient electrocatalyst for water splitting

Yin Huang, Guangzheng Xu, Xiaoyu Huang, Hao Wu and Xiuhua Wang*



PAPERS

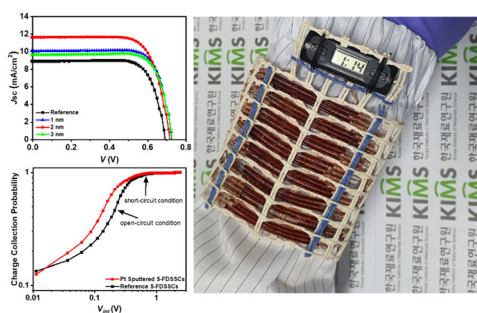
11969



Revealing the interplay between the structural complexity of triphenylamine redox derivatives and their charge transport processes *via* computational modeling

Robert Herzhoff, Fabrizia Negri, Klaus Meerholz* and Daniele Fazzi*

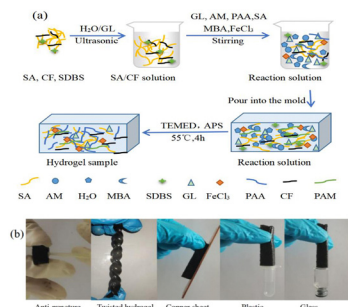
11980



Efficient charge transport in a solid electrolyte with percolated Pt for solid-state fiber dye-sensitized solar cells

Jae Ho Kim, Drajad Satrio Utomo, Daseul Lee, Sungok Cho, Myungkwan Song* and Jin Woo Choi*

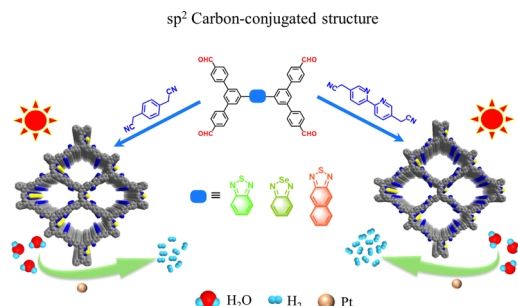
11988



A self-healing and wearable hydrogel sensor with a dynamic physical cross-linking structure can detect strain stimulus in a wide temperature range

Xiaomin Zhang* and Juan Pang

12000



Benzothiadiazole and its derivative-based sp^2 carbon-conjugated covalent organic frameworks for photocatalytic hydrogen generation

Chao-Qin Han, Xiaokang Sun, Xiao Liang, Lei Wang,* Hanlin Hu and Xiao-Yuan Liu*

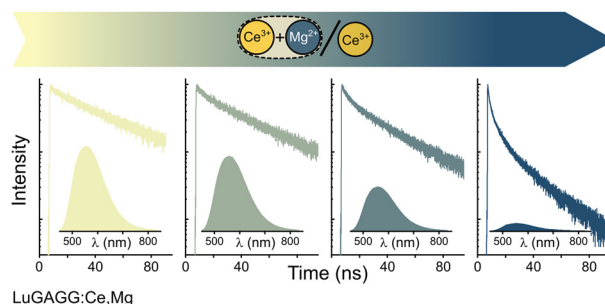


PAPERS

12007

Influence of heavy magnesium codoping on emission decay in Ce-doped multicomponent garnet scintillators

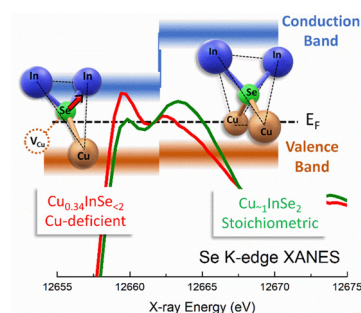
Saulius Nargelas,* Arnoldas Solovjovas,
Yauheni Talochka, Žydrūnas Podlipskas, Miroslav Kucera,
Zuzana Lucenicova and Gintautas Tamulaitis



12016

Chemical states and local structure in Cu-deficient $\text{Cu}_x\text{InSe}_{2-x}$ thin films: insights into engineering and bandgap narrowing

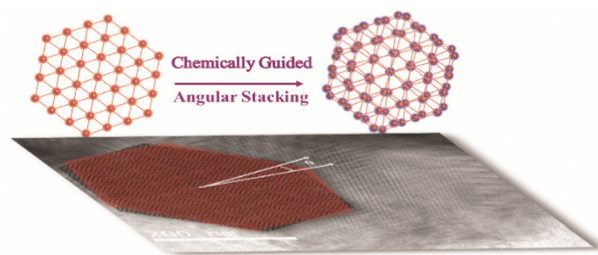
Ahmed Yousef Mohamed,* Byoung Gun Han,
Hyeonseo Jang, Jun Oh Jeon, Yejin Kim,
Haeseong Jang, Min Gyu Kim, Kug-Seung Lee and
Deok-Yong Cho*



12029

Moiré superlattices of two-dimensional copper nanocluster assemblies with tuneable twin emissions from hierarchical components leading to white light emission

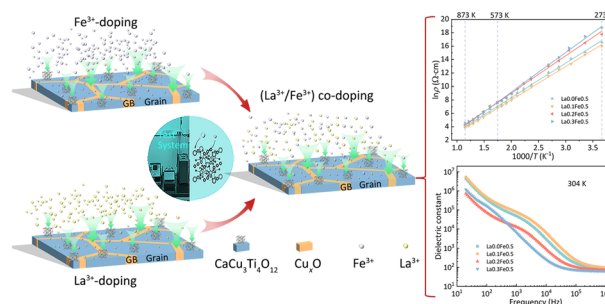
Priya Das and Arun Chattopadhyay*



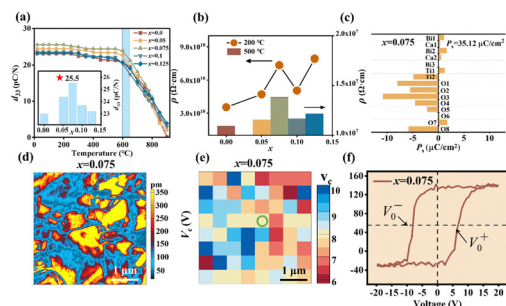
12037

Enhanced thermal and dielectric properties of $\text{CaCu}_3\text{Ti}_4\text{O}_{12}$ by (Fe, La)-co-doping

Ruifeng Wu, Haibing Li, Yafei Liu, Aimin Chang* and
Bo Zhang*



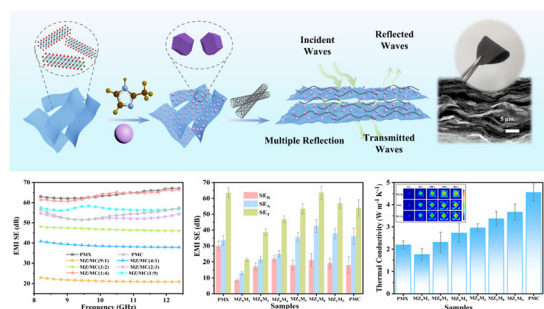
12048



Decoding intrinsic and extrinsic contributions for high piezoelectricity of CBT-based piezoelectric ceramics

Hao Chen, Jingwen Xi, Zhi Tan, Fei Wang, Xu Li, Ning Chen, Hongjiang Li, Qiang Chen, Jie Xing* and Jianguo Zhu*

12057



Anchoring magnetic ZIF-67 on $\text{Ti}_3\text{C}_2\text{T}_x$ MXene to form composite films with high electromagnetic interference shielding performance

Zhenping Ma, Lei Zhang, Xianzhen Wang, Guang Xiao, Yongbao Feng,* Wei Wang, Konghu Tian, Dewei Liang, Yagang Yao and Qiulong Li*

