

## IN THIS ISSUE

ISSN 1144–0546 CODEN NJCHES 47(45) 20673–21120 (2023)



### Cover

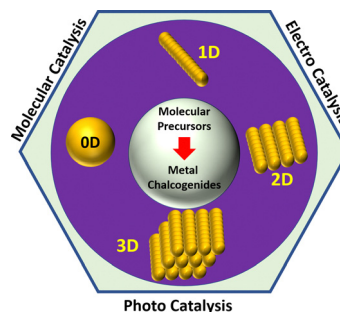
See Shanmugam Sivakumar *et al.*, pp. 20723–20732. Image reproduced by permission of Shanmugam Sivakumar from *New J. Chem.*, 2023, 47, 20723.

## PERSPECTIVE

20688

### Molecular precursor approach to develop catalytically relevant nanosized metals, palladium chalcogenides and ternary/quaternary metal chalcogenides

G. Kedarnath\* and Vimal K. Jain

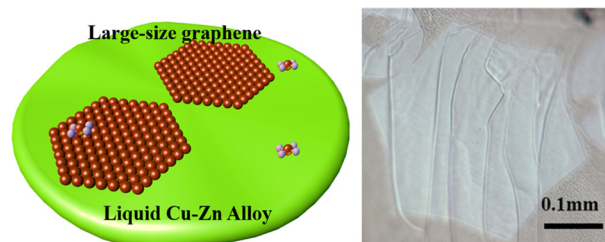


## COMMUNICATIONS

20703

### Liquid Cu–Zn catalyzed growth of graphene single-crystals

Lin Li,\* Minghui Li, Ruijie Zhang, Qing Zhang, Hang Li and Dechao Geng\*



## Editorial Staff

### Executive Editor

Sally Howells-Wyllie

### Deputy Editor

Mike Andrews

### Development Editors

Michelle Canning, Emily Cuffin-Munday

### Assistant Editor

Eva Balentova

### Editorial Production Manager

Susannah Davies

### Publishing Editors

Debora Giovannelli, Helen Lunn, Samuel Oldknow, Kate Tustain

### Editorial Assistant

Daphne Houston

### Publishing Assistant

Huw Hedges

### Publisher

Jeanne Andres

For queries about submitted articles please contact Susannah Davies, Editorial Production Manager in the first instance. E-mail [njc@rsc.org](mailto:njc@rsc.org)  
For pre-submission queries please contact Sally Howells-Wyllie (RSC), Executive Editor. E-mail [njc-rsc@rsc.org](mailto:njc-rsc@rsc.org)

New Journal of Chemistry (electronic: ISSN 1369-9261) is published 48 times a year by the Centre National de la Recherche Scientifique (CNRS), 3 rue Michel-Ange, 75794 Paris cedex 16, France, and the Royal Society of Chemistry (RSC), 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](mailto:orders@rsc.org)

2023 Annual (electronic) subscription price: £2306; US\$3880. 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](http://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](mailto:advertising@rsc.org)

For marketing opportunities relating to this journal, contact [marketing@rsc.org](mailto:marketing@rsc.org)

# NJC

New Journal of Chemistry

A journal for new directions in chemistry

[rsc.li/njc](http://rsc.li/njc)

*NJC* solicits innovative and cutting-edge reports of high quality and broad appeal that have a strong chemical component. Cross-disciplinary papers are welcome.

*NJC* contains reports of original research (Communications, Papers) as well as reviews (Focuses, Perspectives).

## Editorial Board

### Editor-in-chief

Jean-François Gérard, INSA Lyon, University of Lyon, France

### Associate Editors

Yutaka Amao, Graduate School of Science  
Osaka Metropolitan University, Japan  
Annie Castonguay, INRS (University of Quebec), Canada  
Alexander J. Andre Cobb, Kings College London, UK  
Vera R. L. Constantino, University of São Paulo, Brazil  
Debbie Crans, Colorado State University, USA  
Catharine Esterhuysen, University of Stellenbosch, South Africa  
David Farrusseng, IRCELYON, France

Yannick Guari, Université Montpellier, France  
Suman L. Jain, CSIR Indian Institute of Petroleum, India  
Peter Junk, James Cook University, Australia  
Hee-Je Kim, Pusan National University, Korea  
Venkata Krishnan, School of Chemical Sciences, Indian Institute of Technology Mandi, India  
Dai-Wen Pang, Wuhan University, China  
Karine Philippot, ICC, France  
Luca Prodi, University of Bologna, Italy  
Maarten Roeflaers, Katholieke Universiteit Leuven, Belgium  
Edina Rosta, University College London, UK  
Akhila K. Sahoo, University of Hyderabad, India

Jianji Wang, Henan Normal University, China  
Gregory Welch, University of Calgary, Canada  
Kazunari Yoshizawa, Kyushu University, Japan  
Jinghua Yu, University of Jinan, China

### Consulting Editor

Odile Eisenstein, Université Montpellier, France

## Advisory Board

David Aitken, Université Paris-Sud, France  
Martyn Coles, Victoria University, New Zealand  
Qiang Cui, Boston University, USA  
Marijana Daković, University of Zagreb, Croatia  
Parthasarathi Das, Indian Institute of Technology (ISM) Dhanbad, India  
Pablo Andres Denis, Universidad de la República Facultad de Química, Uruguay  
R. Dario Falcone, Consejo Nacional de Investigaciones Científicas y Técnicas, Argentina  
Dinorah Gambino, University of the Republic (Uruguay), Uruguay  
Yulia G. Gorbunova, Russian Academy of Sciences, Russia  
Barnaby Greenland, University of Sussex, UK  
Delia Haynes, Stellenbosch University, South Africa  
Hendrik Heinz, University of Colorado

Boulder, USA  
Mir Wais Hosseini, Université de Strasbourg, France  
Takashi Kato, University of Tokyo, Japan  
Vladimir Kouznetsov, Universidad Industrial de Santander, Columbia  
Eder Joao Lenardao, Universidade Federal de Pelotas, Brazil  
Benoit Lessard, University of Ottawa, Canada  
Mi Hee Lim, KAIST, Korea  
Paul Low, University of Western Australia, Australia  
Jean-Pierre Majoral, University of Toulouse, France  
Tebello Nyokong, Rhodes University, South Africa  
David Reinholdt, University of Twente, The Netherlands  
Marie-Cristine Schermann, Université Paris-

Saclay, France  
Jonathan W. Steed, Durham University, UK  
Consiglia Tedesco, University of Salerno, Italy  
William Tiznado, Universidad Andres Bello, Chile  
Hai-Yan Xie, Beijing Institute of Technology, China  
Lin Xu, East China Normal University, China  
Yi-Jun Xu, Fuzhou University, China  
Vivian Yam, University of Hong Kong, PR China  
Edwin Yeow, Nanyang Technological University, Singapore  
David Zargarian, Université de Montréal, Canada  
Yuming Zhao, Memorial University of Newfoundland, Canada  
**Founding Editor**  
Lionel Salem

## Information for Authors

Full details on how to submit material for publication in New Journal of Chemistry 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/njc](http://rsc.li/njc)

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 with permission from the Centre National de la Recherche Scientifique (CNRS) and the Royal Society of Chemistry.

This journal is © The Royal Society of Chemistry and the Centre National de la Recherche Scientifique 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

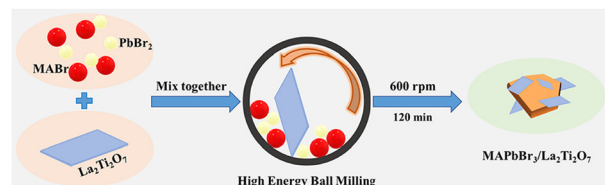


## COMMUNICATIONS

20708

### The construction of a MAPbBr<sub>3</sub>/La<sub>2</sub>Ti<sub>2</sub>O<sub>7</sub> organic–inorganic dual perovskite heterojunction for photocatalytic CO<sub>2</sub> reduction

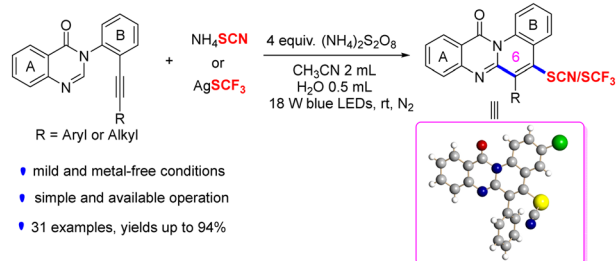
Liying Yin, Zhongzheng Wang, Danyang Zhou, Fuhai Guo, Xiao Zhang and Kui Li\*



20713

### Photo-promoted cascade cyclization of aryl alkynes: access to thiocyanate/trifluoromethylthio-containing quinolino[2,1-*b*]quinazolinones

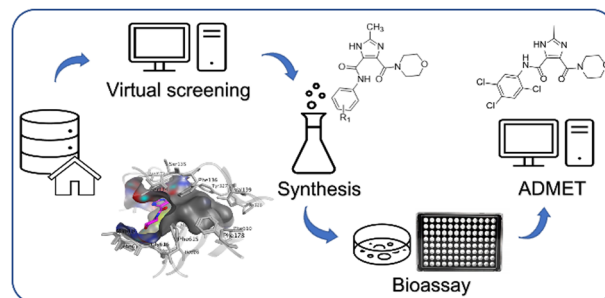
Jie Fan, Qinqin Yan, Huaqing Liu, Lijun Li\*, Zhong-Quan Liu\* and Zejiang Li\*



20718

### Discovery of a novel AcrAB-TolC pump inhibitor using the multistep virtual screening, synthesis and biological evaluation of asymmetric imidazole-4,5-dicarboxamide derivatives

Thien-Vy Phan, Phuong Nguyen Hoai Huynh, Vu-Thuy-Vy Nguyen, Thanh-Phuc Nguyen, Thanh-Thao Vu, Cam-Van Thi Vo, Minh-Tri Le, Bao Gia Dang Nguyen, Phuong Truong and Khac-Minh Thai\*

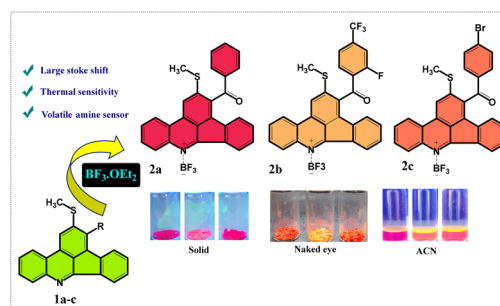


## PAPERS

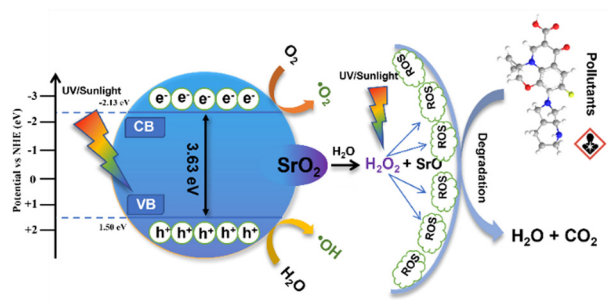
20723

### Synthesis of Lewis adduct-based indenophenanthridine and study of its tunable optoelectronic properties toward an amine sensor

Kannan Jamuna, Prasannamani Govindharaj, Rajaram Kamalakkannan, Aravind Krishnan, Amal Tom Sebastian, Przemyslaw Data, Natarajan Savitha Devi and Shanmugam Sivakumar\*



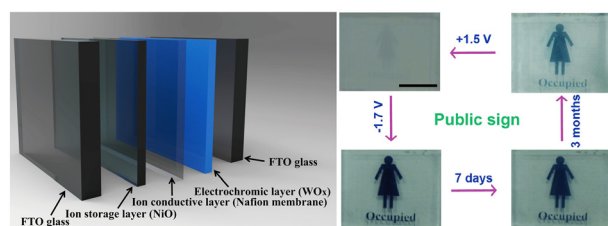
20733



### Strontium peroxide as a potential photocatalyst: rapid degradation of organic and pharmaceutical pollutants

Dhakshnamoorthi Harikaran and Vijayaraghavan R.\*

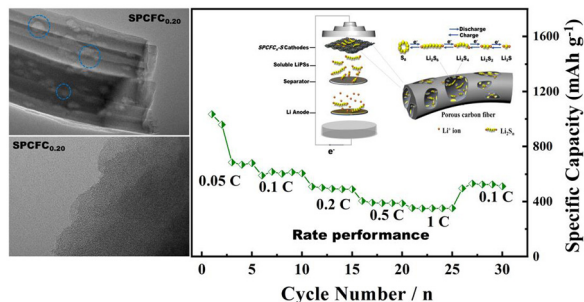
20744



### An all-solid-state bistable electrochromic device based on an amorphous $\text{WO}_{3-x}$ nanostructured film

Yang Yu,\* Aiyun Shi, Tongtong Wang, Fei Xu and Tiefeng Wang

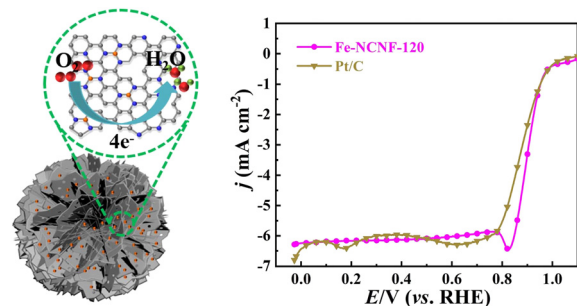
20752



### Makeup cotton pads derived-hierarchically porous carbon fibers for constructing a free-standing carbon/sulfur hybrid cathode

Shixun Yang, Yuyun Li, Qian Su, Zhe Hu, Mingwu Xiang,\* Junming Guo, Wei Bai and Shuping Deng

20762



### A gas diffusion strategy to engineer hierarchically porous Fe–N–C electrocatalysts for high-performance cathodes of Zn–air batteries

Yunxiao Zhang, Wenhua Xiao, Jingqiang Zhang, Tiantian Hu, Shanxia Hu, Minjie Zhou, Zhaohui Hou, Yu Liu\* and Binhong He\*

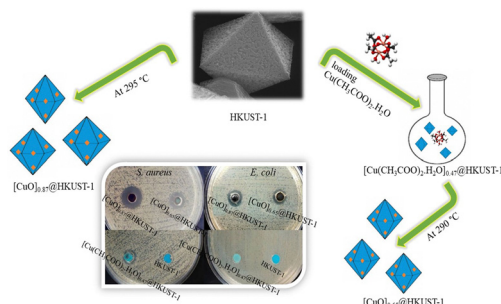


## PAPERS

20770

# Modulating the antibacterial activity of a CuO@HKUST-1 nanocomposite by optimizing its synthesis procedure

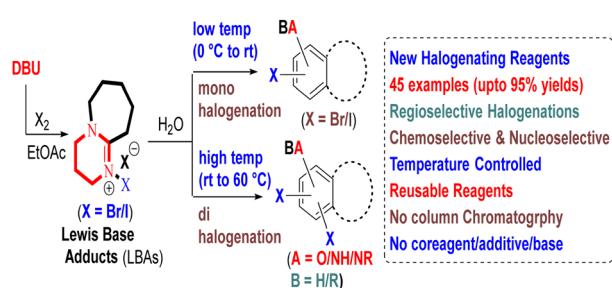
Afsaneh Arshadi Edlo and Kamran Akhbari\*



20777

# A thermo-regulated highly regioselective mono and dihalogenations of phenols and anilines in water employing new Lewis base adducts (LBAs) [DBUBr]<sup>+</sup>Br<sup>−</sup> and [DBUI]<sup>+</sup>I<sup>−</sup> as green reagents: a simple approach

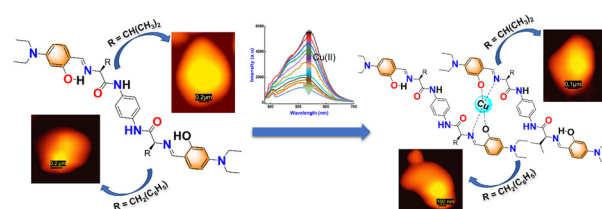
Vijayalaxmi Gavinolla, Swathi Thangalipalli, Siddarama Goud Bandalla, Ramaraju Panduga and Chandra Kiran Neella\*



20785

# Copper-guided tuning of supramolecular nano-assembly in pseudopeptide-based soft bioinspired materials

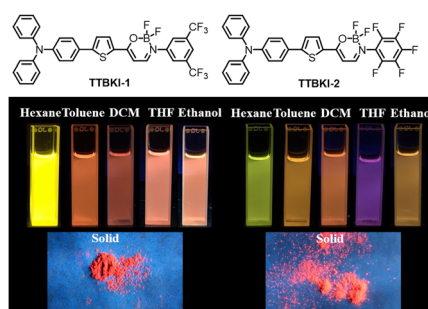
Arpna Tamrakar, Kamlesh Kumar Nigam and Mrituanjay D. Pandey\*



20793

# Triphenylamine-based *N,O*-bidentate BF<sub>2</sub> complexes: synthesis and photophysical properties

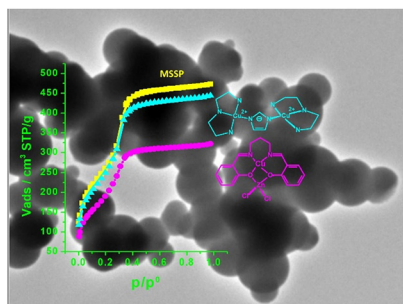
Dong Yang\* and Shuanglong Li





## PAPERS

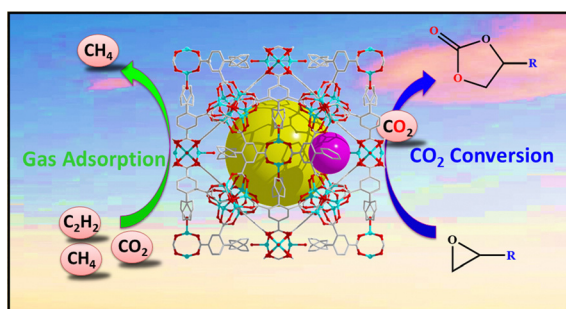
20800



### Exploring the effect of pore size on the activity of superoxide dismutase mimics immobilized in mesoporous spherical silica particles

Matías Patriarca, Marcelo Lombardelli, Nora Pellegri, Verónica Daier\* and Sandra R. Signorella\*

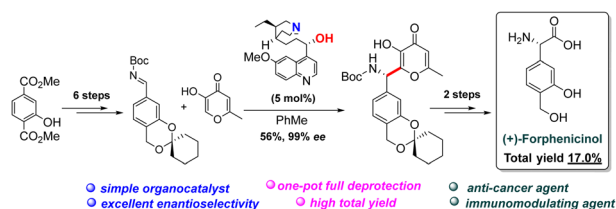
20807



### Porous Zn-MOF with two diverse cages synthesized using functionalized biphenyl tricarboxylic acid: CO<sub>2</sub> selective adsorption and fixation

Nan An, Lu-Lu Ma, Fan Yang, Wen-Yan Zhang, Guo-Ping Yang\* and Yao-Yu Wang\*

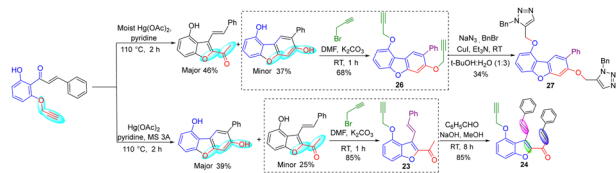
20814



### Total synthesis of (*S*)-forphenicinol *via* asymmetric organocatalysis

R. A. Kovalevsky, A. S. Kucherenko\* and S. G. Zlotin\*

20818



### Unusual participation of *O*-propargyl group during the cyclization of 6-hydroxy-2-propargyl ethers of aryl chalcones: one-pot synthesis of 2-acyl-3-styrylbenzofuran and 7-aryldibenzo[*b,d*]furan-1,7-diols

Arimalai Dinakararaja Samyuktha, Kannatt Radhakrishnan Ethiraj\* and Ponnusamy Shanmugam\*

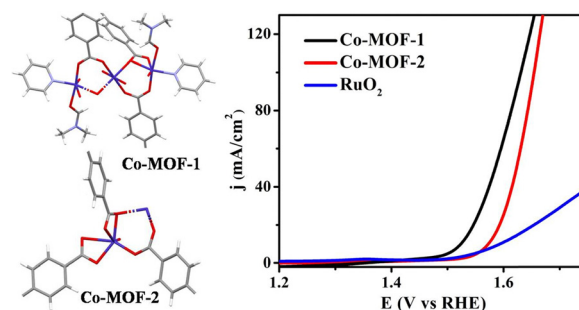


## PAPERS

20831

### Enhancing the electrocatalytic OER activity of Co-MOFs through labile solvents coordination

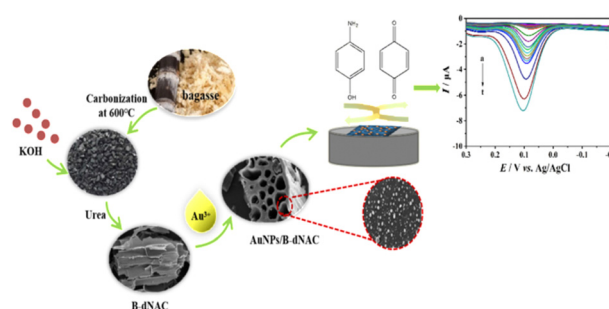
Pandi Muthukumar, Gunasekaran Arunkumar, Mehboobali Pannipara, Abdullah G. Al-Sehemi, Dohyun Moon\* and Savarimuthu Philip Anthony\*



20838

### The preparation of AuNPs/B-dNACNs and their application in *p*-aminophenol electrochemical sensing

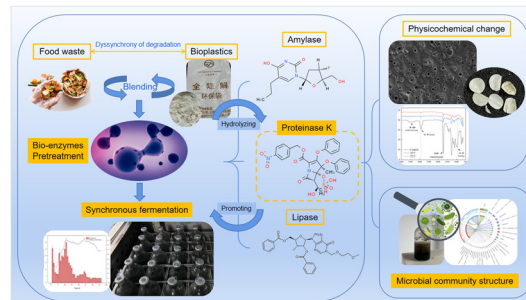
Wenli Hou, Xianyu Kang, Jiajie Lin, Mengying Xie and Yancai Li\*



20846

### Enzyme pretreatments for anaerobic co-digestion of food waste blended with bioplastics: effects on methane production and microbial community structure

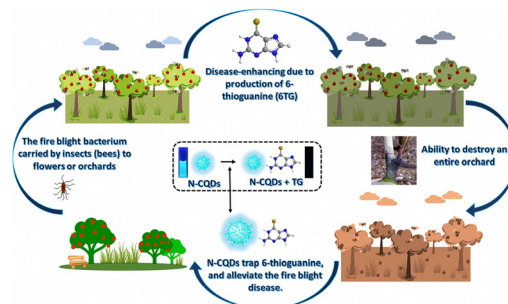
Xintong Jiang, Dongsu Bi, Yu Cheng, Shizhuo Wang, Bo-yu Peng, Haowen Shen, Tao Zhang,\* Xuefen Xia, Zheng Shen\* and Yalei Zhang



20859

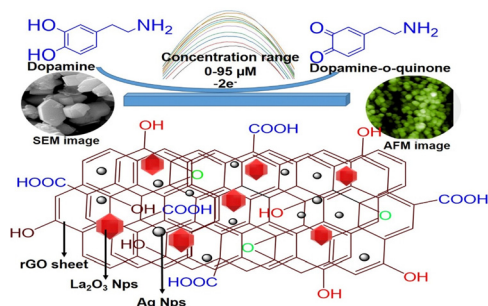
### Exigent carbon nanodots for trapping 6-thioguanine to resist fire blight caused by *Erwinia amylovora* in an orchard

Shrodha Mondal, Jiko Raut, Olivia Sarkar, Santi M Mandal, Ansuman Chattopadhyay and Prithidipa Sahoo\*



## PAPERS

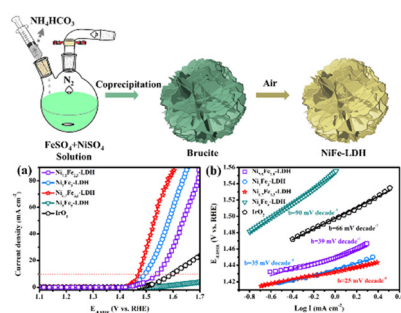
20866



### Quantum-sized Ag nanoparticle conjugates on biofunctionalized $\text{La}_2\text{O}_3$ -rGO ternary nanocomposite-based platform for the electrocatalytic determination of dopamine

Ankur Srivastava, Kshitij RB Singh, Mrituanjay D. Pandey\* and Jay Singh\*

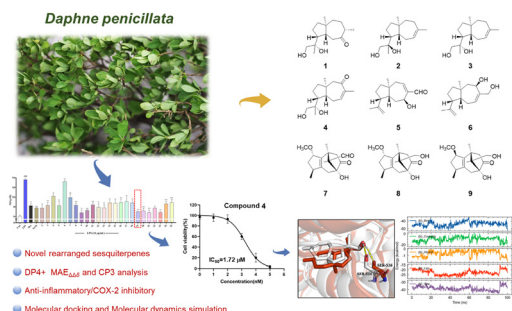
20881



### Facile topochemically prepared hierarchical Ni-Fe LDH nanoflowers for the electrochemical oxygen elution reaction

Zairan Liu, Yifei Yang, Jiaoning Tang and Yuanming Deng\*

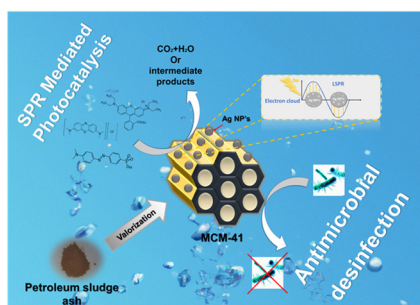
20890



### Nine undescribed sesquiterpenoids from the aerial parts of *Daphne penicillata*: cyclooxygenase-2 inhibition, molecular docking, and molecular dynamics studies

Peng Zhao, Ben-Song Xin, Feng-Ming He, Li Ye, Zhen-Tao Ma, Jin-Le Hao, Rui Shi, Xia-Hong He, Guo-Dong Yao, Bin Lin, Xiao-Xiao Huang and Shao-Jiang Song\*

20900



### Petroleum sludge ash-derived MCM-41-silver nanocomposites for enhanced photocatalysis and antimicrobial effect in water treatment

Nor el houda Goual\*, Chakib Alaoui, Abdelaziz Bendraoua, Cheikh Reda Bernaoui, Lamia Ahlem Benzemat, Abdelaziz Naceri, Abdelhalim Zoukel and Mehdi Adjdir\*

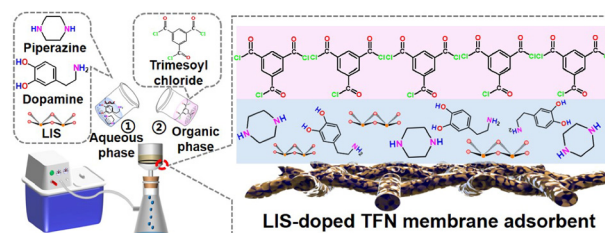




20910

## LIS-doped thin-film nanocomposite membrane adsorbent with low shielding effect for effective lithium recovery from geothermal water

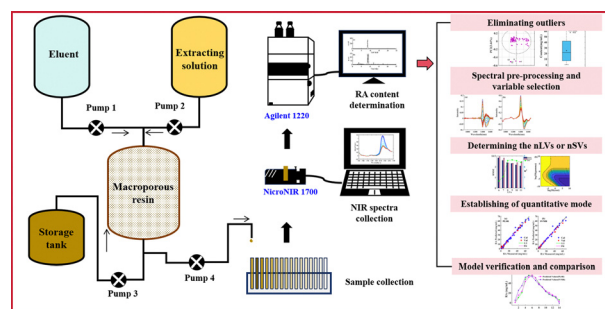
Ju Miao, Feng Guo, Lina Xu\* and Tianlong Deng\*



20920

## Rapid determination of rebaudioside A content in the macroporous resin elution process using a portable near-infrared spectrometer

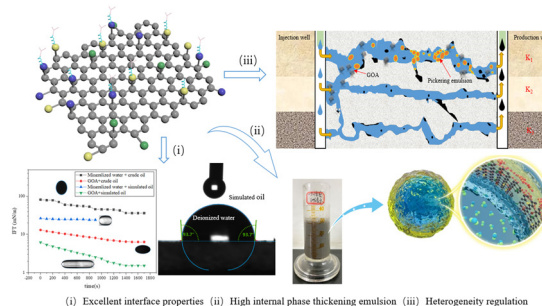
Lele Gao, Difan Wang, Liang Zhong, Jianan Yue, Lei Nie, Lian Li, Zhaoqing Meng, Guiyun Cao, Yuqiang Lai and Hengchang Zang\*



20928

## Experimental study on the self-expanding sweep and microscopic oil displacement of amphiphilic carbon-based nanofluids

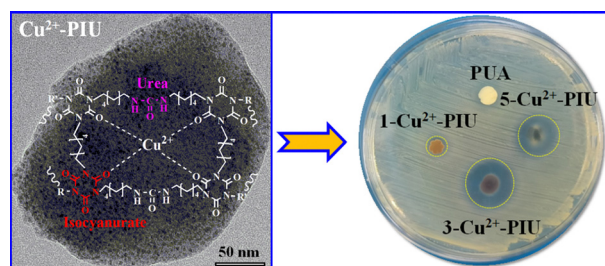
Rui Liu,\* Jipeng Shi, Bo Wang, Bin Ma, Tao Dong, Zezhou Chen and Wanfen Pu



20943

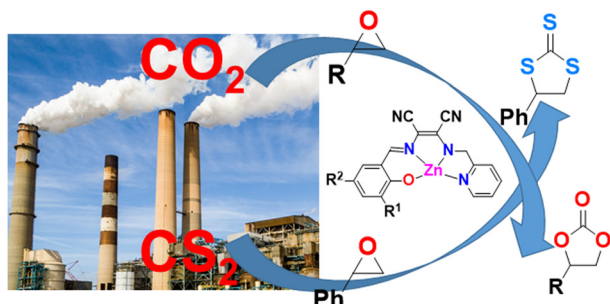
## In situ copper-ion catalyzed synthesis of copper containing poly(isocyanurate-urea) xerogels with antibacterial activity and biocompatibility for biomedical applications

Seethalakshmi Selvaraj, Arya Ganesan, Sreya P V, Vengatesan Singaram,\* Deepak K. Pattanayak\* and Naveen Chandrasekaran\*



## PAPERS

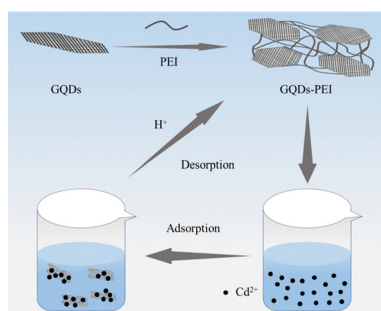
20952



### Highly selective solvent free catalysis of CO<sub>2</sub> and CS<sub>2</sub> fixation under mild conditions using electronically varied zinc complexes

Souvik Barman, Jayanta Bag, Dhiraj Das and Kuntal Pal\*

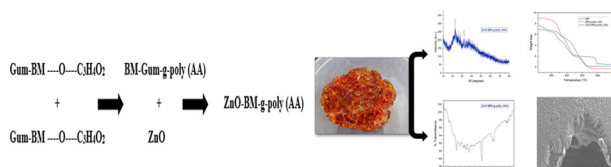
20966



### Polyethylenimine-functionalized graphene quantum dots for Cd<sup>2+</sup> ion adsorption

Wenyi Lu, Ning Shen, Christian Celia, Yijun Xie, Qing Chang\* and Xiaoyong Deng\*

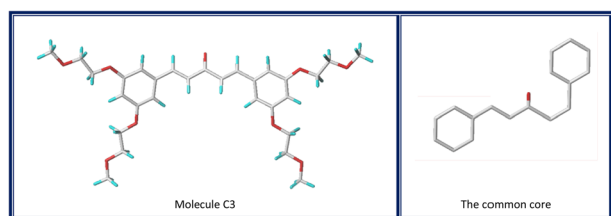
20976



### Polar moiety functionalized, controlled gelation to obtain highly efficient hydrogel nanocomposite: an expansion of green synthetic strategy

Anuradha Sandhu, Vivek Pandey and Tejasvi Pandey\*

20987



### Computational approach: 3D-QSAR, molecular docking, ADMET, molecular dynamics simulation investigations, and retrosynthesis of some curcumin analogues as PARP-1 inhibitors targeting colon cancer

Jamal Zrinej,\* Larbi Elmchichi, Marwa Alaqarbeh, Tahar Lakhlihi and Mohammed Bouachrine

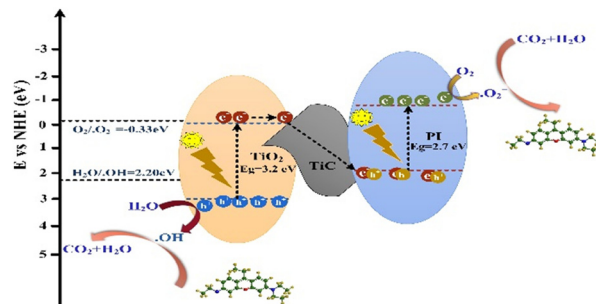


## PAPERS

21010

**PI/TiC/TiO<sub>2</sub> with Z-scheme heterostructure for the photocatalytic degradation of organic dyes**

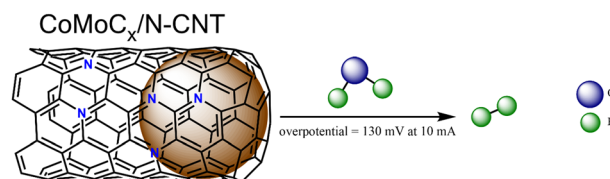
Taoming Yu, Li Liu, Yuehui Wang, Shiwen Zhang, Lili Li\* and Ce Liang\*



21024

**Co–MoC<sub>x</sub> supported on N-doped CNTs for efficient hydrogen evolution reaction under alkaline medium conditions**

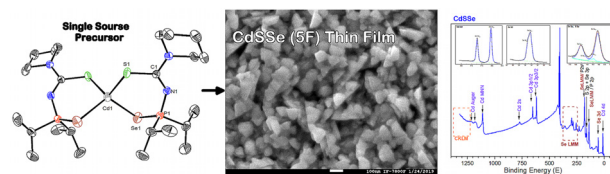
Weilin Shen, Dawson Wai-Shun Suen, Eric Tung-Po Sze, Xiao Chen,\* Changhai Liang and Chi-Wing Tsang\*



21033

**Aerosol-assisted chemical vapor deposition of MSE and MSe thin films using zinc(II) and cadmium(II) single source precursors containing hybrid Se,X-PNC ligands**

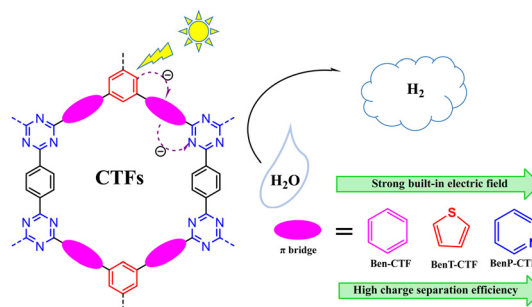
Oscar L. García-Guzmán, Victor Flores-Romero, Iván D. Rojas-Montoya, Verónica García-Montalvo,\* Margarita Rivera, Omar Jiménez-Sandoval, Miguel Ángel Muñoz-Hernández and Simón Hernández-Ortega



21049

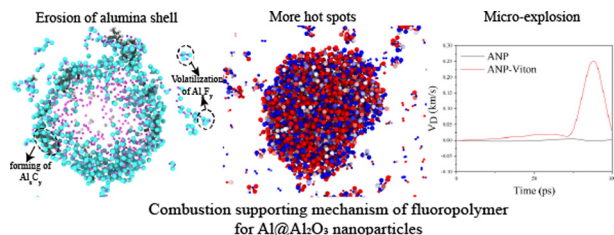
**Photocatalytic hydrogen production by donor– $\pi$ –acceptor type covalent triazine frameworks involving different  $\pi$  bridges**

Xiangyu Li, Minghui Chen, Quan Shi, Ji Xiong, Ting Li, Yu Jiang, Yaqing Feng and Bao Zhang\*



## PAPERS

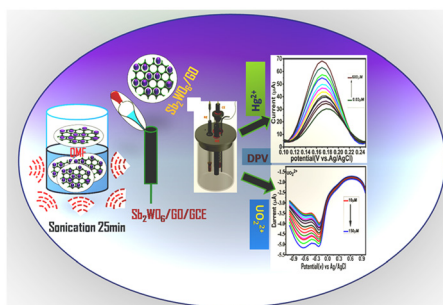
21055



### The combustion-supporting mechanism of fluoropolymers on aluminum particles studied using reactive dynamics simulations

Jingyan Wang, Yaning Li, Zhiwei Han,\* Biao He and Sen Xu

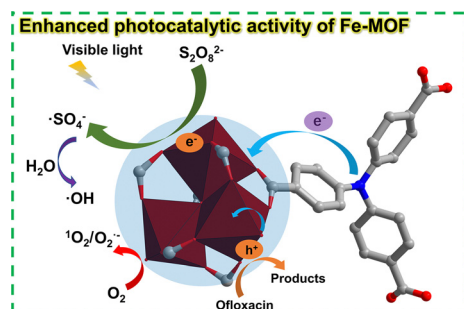
21067



### Design and development of a Sb<sub>2</sub>WO<sub>6</sub>/graphene oxide (2D) nanocomposite as novel electrochemical metal-ion sensor and improved photocatalyst for the degradation of tetracycline

Zia ul haq, Irfan Nazir, Aaliya Qureashi, Firdous Ahmad Ganaie, Arshid Bashir, Kaniz Fatima, Wajaht Amin Shah and Masood Ahmad Rizvi\*

21081



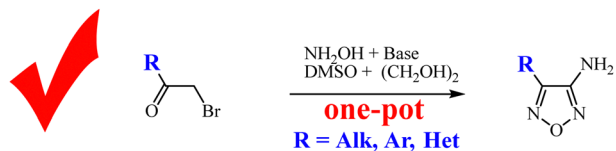
### Photocatalytic activation of peroxodisulfate using iron-containing MOFs synthesized by single-crystal-to-single-crystal transformation for ofloxacin degradation

Hao Zhang, Feng-Yu Chen, Zhi-Yong Liu, Yu-Hui Luo,\* Zi-Lin Zhou, Xue-Meng Jia, Xin Wang and Yun-Qiong Yang\*

21091

### A mild and efficient synthesis of aminofurazans

Aleksei B. Sheremetev,\* Andrei S. Kozeev, Nadezhda V. Palysaeva and Kyrill Yu. Suponitsky

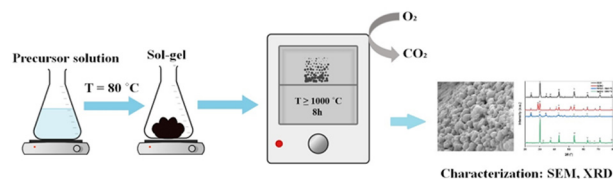


## PAPERS

21098

Investigation of the physicochemical properties of Bi,Ca-doped BaZrO<sub>3</sub> perovskites

Serra Melek Akyuz, Halit Eren Figen and Meltem Karaismailoglu Elibol\*



21107

Synthesis, optical properties and conduction mechanism study of  $\alpha$ - and  $\gamma$ -NaMnO<sub>2</sub> materials

Mansour Boukthir, Moufida Krimi, Karim Karoui, Saleh M. Altarifi, Abdelfattah Mahmoud, Frédéric Boschini, Ayten Ates and Abdallah Ben Rhaïem\*

