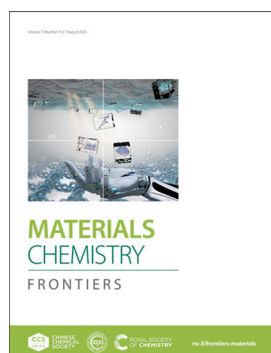


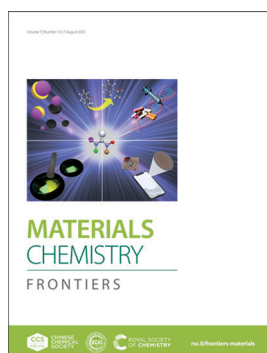
IN THIS ISSUE

ISSN 2052-1537 CODEN MCFAC5 7(15) 2917-3174 (2023)



Cover

See Wei Wu *et al.*, pp. 2925–2957.
Image reproduced by permission of Wei Wu from *Mater. Chem. Front.*, 2023, 7, 2925.



Inside cover

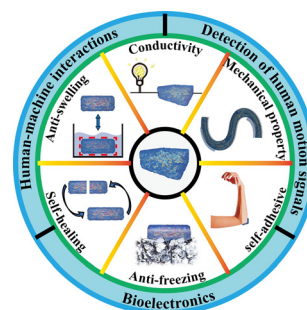
See Chi-Chiu Ko *et al.*, pp. 2958–2972.
Image reproduced by permission of Chi-Chiu Ko from *Mater. Chem. Front.*, 2023, 7, 2958.

REVIEWS

2925

Functional conductive hydrogels: from performance to flexible sensor applications

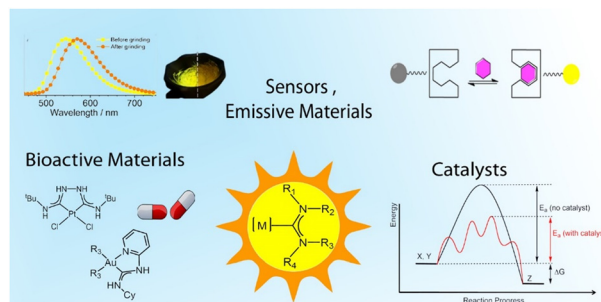
Quancai Li, Bin Tian, Jing Liang and Wei Wu*



2958

Transition-metal acyclic carbene complexes: building blocks for luminescent, stimuli-responsive, bioactive materials and catalysts

Shing-Lun Chan, Yuen-Kiu Chun and Chi-Chiu Ko*



EDITORIAL STAFF

Executive Editor

Wenjun Liu

Deputy Editor

Kailin Deng

Development Editor

Cheng Du

Editorial Production Manager

Helen Saxton

Senior Publishing Editor

Becky Webb

Publishing Editors

Kirstine Anderson, Matthew Bown, Laura Cooper, Hannah Fielding, Clare Fitzgerald, Anoushka Handa, Claire Harding, Alan Holder, Charlie Palmer, Rosie Rethwell, Donna Smith, Laura Smith

Assistant Editors

Jie Gao, Yu Zhang

Publisher

Jeanne Andres

For queries about submitted papers, please contact Helen Saxton, Editorial Production Manager, in the first instance. E-mail: MaterChemFrontiersPROD@rsc.org

For pre-submission queries please contact Wenjun Liu, Executive Editor. Email: MaterChemFrontiersED@rsc.org

Materials Chemistry Frontiers (electronic: ISSN 2052-1537) is published 24 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 RSC 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: £1,369; US\$2,247. 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

MATERIALS CHEMISTRY

FRONTIERS

An international, high impact journal for cutting-edge researches from all disciplines of materials chemistry.



CHINESE
CHEMICAL
SOCIETY



rsc.li/frontiers-materials

Published in collaboration with the Chinese Chemical Society and Institute of Chemistry, Chinese Academy of Sciences

Editorial Board

Editor-in-Chief

Shu-Hong Yu, University of Science and Technology of China, China

Associate Editors

Shu Seki, Kyoto University, Japan
Andrea Tao, University of California, San Diego, USA

Dan Wang, Institute of Process Engineering, Chinese Academy of Sciences, China
Guillaume Wantz, Université de Bordeaux, France
Huanghao Yang, Fuzhou University, China

Members

Feihe Huang, Zhejiang University, China
Zhen Li, Wuhan University, China
Marina A. Petrunkina, University at Albany, USA
Emilie Ringe, University of Cambridge, UK
Kazuo Tanaka, Kyoto University, Japan

Advisory Board

Takuzo Aida, The University of Tokyo, Japan
J Paul Attfield, University of Edinburgh, UK
Guillermo C Bazan, UC Santa Barbara, USA
Liming Ding, National Center for Nanoscience and Technology, China
Xinliang Feng, Technische Universität Dresden, Germany
Jiaxing Huang, Northwestern University, USA
Parameswar K. Iyer, Indian Institute of Technology Guwahati, India
Samson Jenekhe, University of Washington, USA
Hua Kuang, Jiangnan University, China
Mario Leclerc, Université Laval, Canada
Xingjie Liang, National Center for Nanoscience and Technology, China
Bin Liu, National University of Singapore, Singapore
Dongsheng Liu, Tsinghua University, China
Shaoqin Liu, Harbin Institute of Technology, China
Xianjun Loh, Institute of Materials Research

and Engineering, Singapore
Mark J MacLachlan, University of British Columbia, Canada
Krzysztof Matyjaszewski, Carnegie Mellon University, USA
Klaus Mullen, Max Planck Institute for Polymer Research, Germany
Thuc Quyen Nguyen, University of California, Santa Barbara, USA
Kyoko Nozaki, The University of Tokyo, Japan
Anjun Qin, South China University of Technology, China
Olof Ramström, University of Massachusetts Lowell, USA
John Reynolds, Georgia Institute of Technology, USA
Ulrich Scherf, University of Wuppertal, Germany
Patrick Théato, Karlsruhe Institute of Technology, Germany
Christoph Weder, University of Fribourg, Switzerland

Karen L. Wooley, Texas A&M University, USA
James Wuest, Université de Montréal, Canada
Dongsheng Xu, Peking University, China
Jiannian Yao, Institute of Chemistry, Chinese Academy of Sciences, China
Juyoung Yoon, Ewha Womans University, South Korea
Jihong Yu, Jilin University, China
Deqing Zhang, Institute of Chemistry, Chinese Academy of Sciences, China
Hua Zhang, City University of Hong Kong, China
Qichun Zhang, City University of Hong Kong, China
Tierui Zhang, Technical Institute of Physics and Chemistry, China
Xi Zhang, Tsinghua University, China
Yuliang Zhao, National Center for Nanoscience and Technology, China
Wei Hong Zhu, East China University of Science & Technology, China

Community Board

Tayeb Ameri, University of Munich, Germany
Derya Baran, King Abdullah University of Science and Technology, Saudi Arabia
Xiaoyu Cao, Xiamen University, China
Changle Chen, University of Science and Technology of China, China
Sijie Chen, Karolinska Institutet, Hong Kong, China
Dan Ding, Nankai University, China
Kenneth Graham, University of Kentucky, USA

Xinggui Gu, Beijing University of Chemical Technology, China
Yuning Hong, La Trobe University, Australia
Zhong'an Li, Huazhong University of Science and Technology, China
Yingying Lu, Zhejiang University, China
T. N. Narayanan, Tata Institute of Fundamental Research, India
Shohei Saito, Kyoto University, Japan
Youhong Tang, Flinders University, Australia
Takaya Terashima, Kyoto University, Japan
Reji Varghese, Indian Institute of Science Education and Research, India

Jiangyan Wang, Institute of Process Engineering, Chinese Academy of Sciences, China
Yan Wei, Peking University School and Hospital of Stomatology, China
Haihua Xiao, Institute of Chemistry, Chinese Academy of Sciences, China
Yurui Xue, Shandong University, China
Jing Yu, Nanyang Technological University, Singapore
Guoqing Zhang, University of Science and Technology of China, China

Information for Authors

Full details on how to submit material for publication in Materials Chemistry Frontiers 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/frontiers-materials

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 Partner Organisations 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

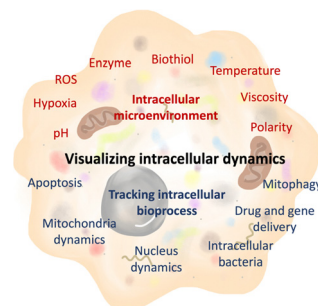


REVIEWS

2973

Visualizing intracellular dynamics with AIE probes

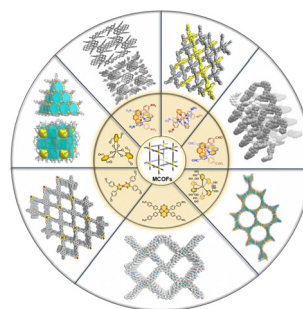
Michelle M. S. Lee, Eric Y. Yu, Joe H. C. Chau,
Jacky W. Y. Lam, Ryan T. K. Kwok,* Dong Wang* and
Ben Zhong Tang*



2995

Coordination directed metal covalent organic frameworks

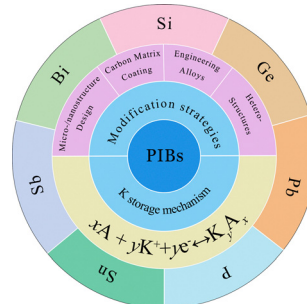
Wang-Kang Han, Yong Liu, Xiaodong Yan and
Zhi-Guo Gu*



3011

State-of-art progress and perspectives on alloy-type anode materials for potassium-ion batteries

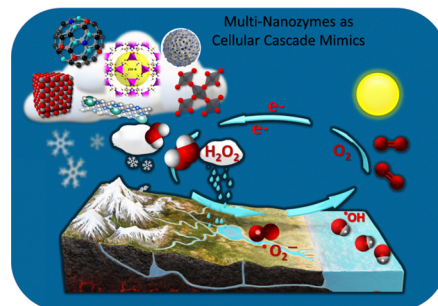
Gang Luo, Xiaoyong Feng, Miaomiao Qian,
Wenzhe Zhang, Wei Qin,* Chun Wu and Likun Pan*



3037

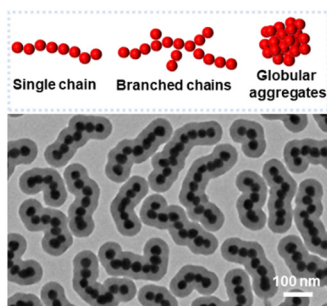
Multi-enzyme mimics – cracking the code of subcellular cascade reactions and their potential biological applications

Shafaq Sahar, Shichao Sun, Akif Zeb, Lulu Jin, Yong Gao,
Liangfei Tian, Wei Wang,* An-Wu Xu* and
Zhengwei Mao*



RESEARCH ARTICLES

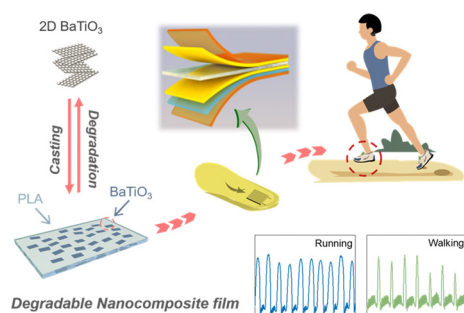
3073



A general method for precise chain assembly of noble metal nanoparticles

Xudong Peng, Mengmeng Zhang, Feng Xue, Aodi Zhang, Yue Xu, Yi Huang, Hong Wang* and Hongyu Chen*

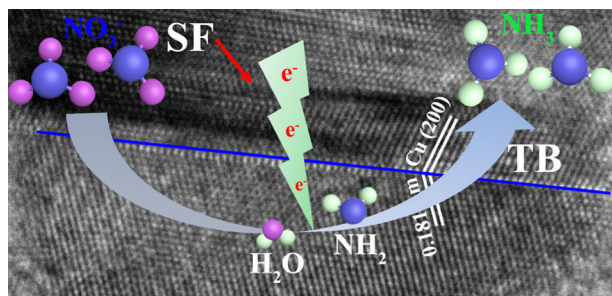
3082



Degradable flexible piezoelectric nanogenerator based on two-dimensional barium titanate nanosheets and polylactic acid

Bo Zhao, Yao Su, Ruixuan Xue, Yan Wang, Lei Miao, Minggang Yao, Han Yu,* Weixing Zhao and Dengwei Hu*

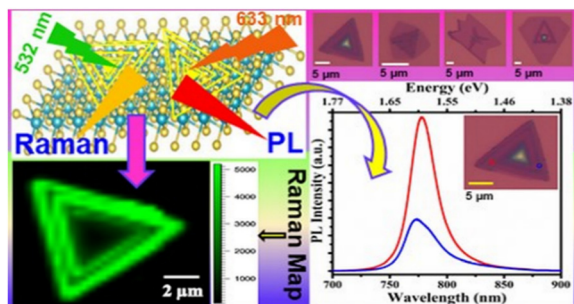
3093



Halogen-induced planar defects in Cu catalysts for ammonia electrocatalysis at an ampere-level current density

Yan Wang, Shuai Xia, Jianfang Zhang,*
Ashok Kumar Ummireddi, Zhengyuan Li, Xu Yuan,
Cuiping Yu, Yong Zhang, Jingjie Wu* and Yucheng Wu*

3102



Spectroscopic studies on CVD-grown monolayer, bilayer, and ribbon structures of WSe₂ flakes

Girija Shankar Papanai and Bipin Kumar Gupta*

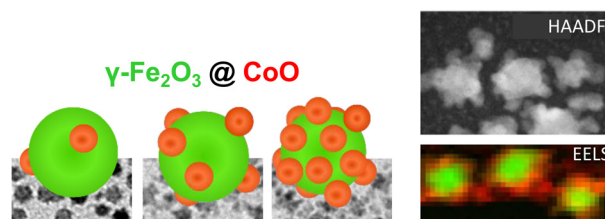


RESEARCH ARTICLES

3116

Tuning the exchange-coupling effect in raspberry-like $\gamma\text{-Fe}_2\text{O}_3\text{@CoO}$ nanoparticles engineered through the single variation of the surfactant concentration in the synthesis process

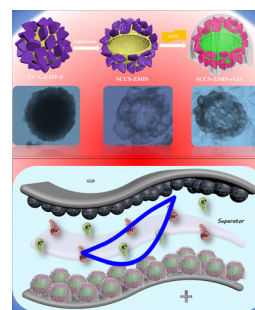
Clémentine Bidaud, David Garcia-Soriano, Elena H. Sánchez, Jean-Marc Grenèche, José A. De Toro, Maria Varela, Mónica Dhanjani, Alberto Bollero* and Gorka Salas*



3127

Engineering raspberry-like $\text{CuCo}_2\text{S}_4\text{@ZnS}$ hollow particles encapsulated with reduced graphene oxide for hybrid supercapacitors

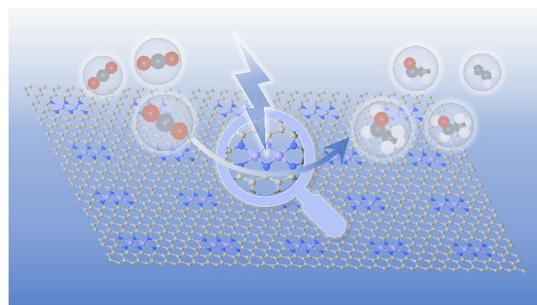
Bahareh Ameri, Akbar Mohammadi Zardkhoshoui* and Saied Saeed Hosseiny Davarani*



3146

Distance produces beauty? regulating the distance of Fe atomic pairs to enhance electrocatalytic CO_2 reduction

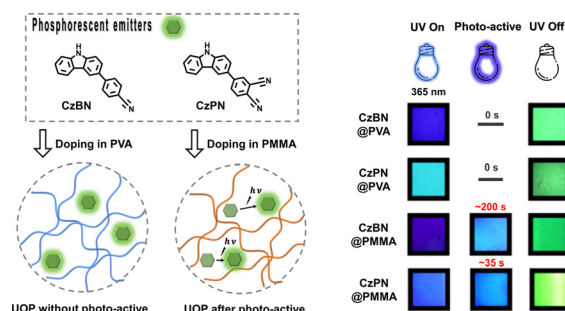
Xiaofei Wei, Huakai Xu, Chuanhai Jiang, Zhifei Wang, Yuguo Ouyang, Chunyu Lu, Yuan Jing, Shiwei Yao, Xiaoqing Lu and Fangna Dai*

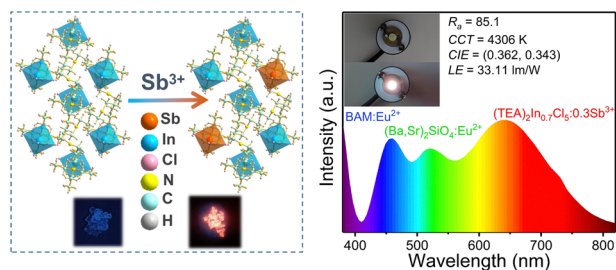


3156

Regulation of various photo-active UOPs in a polymer matrix by tuning intermolecular charge transfer

Haodong Sun, Xiaoyu Wei, Yunfei He, Yuxin Xiao, Yazhang Wu, Zongliang Xie and Tao Yu*





Zero-dimensional indium hybrids and modulated photoluminescence by Sb doping

Chen Fang, Yingjie Mao, Guojun Zhou, Zhichao Zhang, Yaohui Zhu, Denghui Xu, Xiong Li, Aicong Geng and Jun Zhou*

