

# ChemComm

Chemical Communications

rsc.li/chemcomm

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 1359-7345 CODEN CHCOFS 59(56) 8607-8748 (2023)



### Cover

See Chunman Jia, Jianwei Li *et al.*, pp. 8676–8679. Image reproduced by permission of Jianwei Li from *Chem. Commun.*, 2023, 59, 8676.



### Inside cover

See Paola Vivo *et al.*, pp. 8616–8625. Image reproduced by permission of Laura Canil from *Chem. Commun.*, 2023, 59, 8616.

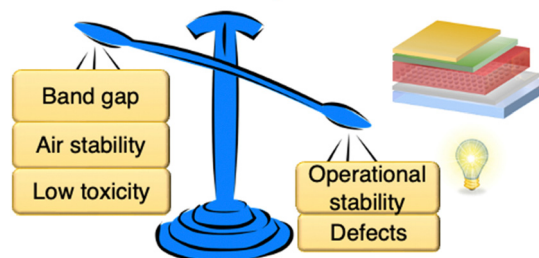
## FEATURE ARTICLES

8616

### Lead-free perovskite-inspired semiconductors for indoor light-harvesting – the present and the future

G. Krishnamurthy Grandhi, Lethy Krishnan Jagadamma, Vipinraj Sugathan, Basheer Al-Anesi, Debjit Manna and Paola Vivo\*

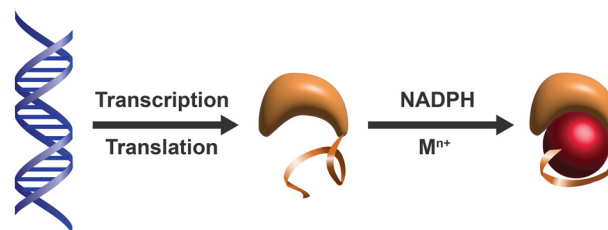
### Perovskite-inspired materials



8626

### Cloneable inorganic nanoparticles

Alexander R. Hendricks, Bradley F. Williams, Rachel S. Cohen, Tony Tien, Gavin A. McEwen, Kanda M. Borgognoni and Christopher J. Ackerson\*



## Editorial Staff

### Executive Editor

Richard Kelly

### Deputy Editor

Harriet Riley

### Editorial Production Manager

Helen Saxton

### Development Editors

Danny Andrews, Ershad Abubacker

### 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 Rowell, Donna Smith, Laura Smith

### Editorial Assistant

Jade Holliday

### Publishing Assistant

Natalie Ford

### Publisher

Jeanne Andres

For queries about submitted papers, please contact Helen Saxton, Editorial Production Manager in the first instance. E-mail [chemcomm@rsc.org](mailto:chemcomm@rsc.org)

For pre-submission queries please contact

Richard Kelly, Executive Editor.

Email [chemcomm-rsc@rsc.org](mailto:chemcomm-rsc@rsc.org)

Chemical Communications (print: ISSN 1359-7345; electronic: ISSN 1364-548X) is published 100 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 0WF, UK  
Tel +44 (0)1223 432398; E-mail [orders@rsc.org](mailto:orders@rsc.org)

2023 Annual (electronic) subscription price: £3,553 / US\$6,258. 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)

# ChemComm

Chemical Communications

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

## Editorial Board

### Chair

Douglas Stephan, University of Toronto

### Associate Editors

Lutz Ackermann, University of Göttingen

Daive Bonifazi, University of Vienna

Rachel Caruso, RMIT University

Fengtao Fan, Chinese Academy of Sciences

Itaru Hamachi, Kyoto University

Michael Hardie, University of Leeds

Kim Jelfs, Imperial College London

Chao-Jun Li, McGill University

Connie Lu, University of Minnesota, US

Marinella Mazzanti, EPFL, Switzerland

Amy Prieto, Colorado State University

Yang Tian, East China Normal University

Sandeep Verma, Indian Institute of

Technology Kanpur

## Advisory Board

Brendan Abrahams, University of Melbourne

Polly Arnold, University of Edinburgh

Louise Berben, University of California, Davis

Penny Brothers, Australian National University

Wesley Browne, University of Groningen

Raffaella Buonsanti, EPFL

Luiz Henrique Catalani, University of São Paulo

Xiao-Ming Chen, Sun Yat-Sen University

Lifeng Chi, Soochow University

Arindam Chowdhury, Indian Institute of

Technology Bombay

Derrick Clive, University of Alberta

Seth Cohen, University of California, San Diego

Marcetta Darensbourg, Texas A&M University

Jyotirmayee Dash, Indian Association for the

Cultivation of Science

Gautam R. Desiraju, Indian Institute of

Science, Bangalore

Abhishek Dey, Indian Association for the

Cultivation of Science (IACS)

Josh Figueroa, University of California, San

Diego

Lutz Gade, University of Heidelberg

Sujit Ghosh, Indian Institute of Science

Education of Research, India

Nathan Gianneschi, University of California,

San Diego

Robert Gilliard Jr., University of Virginia

David Gonzalez-Rodriguez, Autonomous

University of Madrid

Rebecca Goss, University of

St Andrews

Mike Greaney, University of Manchester

Shaojun Guo, Peking University

Michael Hardie, University of Leeds

Amanda Hargrove, Duke University

Craig Hawker, University of California, Santa

Barbara

Feihe Huang, Zhejiang University

Todd Hudnall, Texas State University

Ilich A. Ibarra Alvarado, National University

of Mexico

Hiroshi Kageyama, Kyoto University

Jong Seung Kim, Korea University

Shu Kobayashi, University of Tokyo

Mi Hee Lim, Ulsan National Institute of

Science and Technology (UNIST)

Teck-Peng Loh, Nanyang

Technological University

Tien-Yau Luh, National Taiwan University

Doug MacFarlane, Monash University

Hiromitsu Maeda, Ritsumeikan University

Silvia Marchesan, University of Trieste

Nazario Martin, Complutense University of

Madrid

Keiji Maruoka, Kyoto University

Alexander Miller, University of North Carolina

at Chapel Hill

Wonwoo Nam, Ewha Womans University

Jean-Francois Nierengarten, University of

Strasbourg

Thalappil Pradeep, Indian Institute of

Technology Madras

S Ramakrishnan, Indian Institute of Science

Erwin Reisner, University of Cambridge

Robin Rogers, McGill University

Paolo Samori, University of Strasbourg

Ellen Sletten, University of California, Los

Angeles

David Smith, University of York

Mizuki Tada, Nagoya University

Christine Thomas, Ohio State University

Zhong-Qun Tian, Xiamen University

Tomas Torres, Autonomous University of

Madrid

Helma Wennemers, ETH Zurich

Judy Wu, University of Houston

Yi Xie, University of Science and Technology

of China

Xianran Xing, University of Science and

Technology Beijing

Shuli Yu, Shanghai Institute of Organic

Chemistry, Chinese Academy of Sciences

Atsuo Yamada, University of Tokyo

Qiang Zhang, Tsinghua University

Xi Zhang, Tsinghua University

Wenwan Zhong, University of California,

Riverside

Eli Zysman-Colman, University of St. Andrews

## Information for Authors

Full details on how to submit material for publication in Chemical Communications 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/chemcomm](http://rsc.li/chemcomm)

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.

© The paper used in this publication meets the requirements of ANSI/NISO Z39.48-1992 (Permanence of Paper).

Registered charity number: 207890

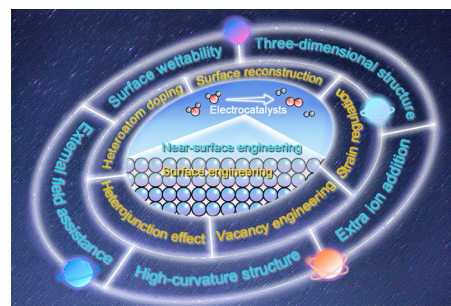


## FEATURE ARTICLES

8644

### Surface and near-surface engineering design of transition metal catalysts for promoting water splitting

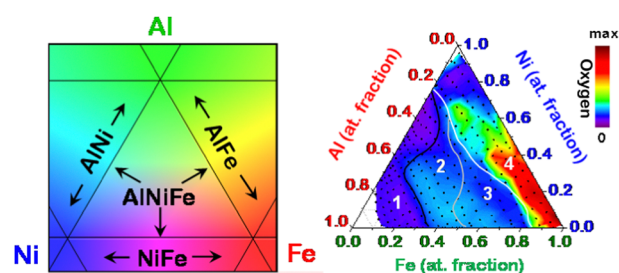
Yanmin Wang, Chao Meng,\* Lei Zhao, Jialin Zhang, Xuemin Chen and Yue Zhou\*



8660

### Alloy corrosion and passivation spanning composition space

Camille Ferris, Nicholas Golio, Herve Martinez and Andrew J. Gellman\*

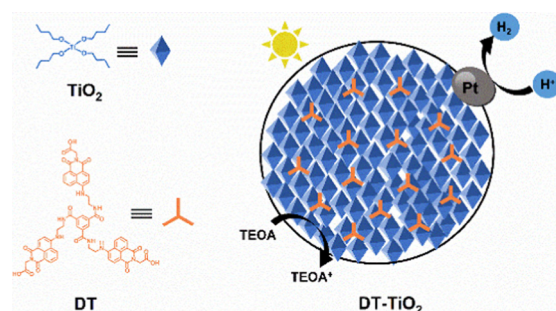


## COMMUNICATIONS

8676

### Visible light-driven highly-efficient hydrogen production by a naphthalene imide derivative-sensitized TiO<sub>2</sub> photocatalyst

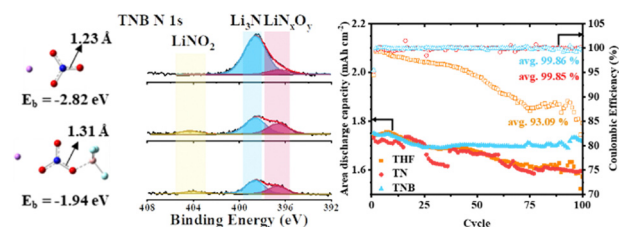
Dan Wei, Kang Yang, Chunman Jia\* and Jianwei Li\*



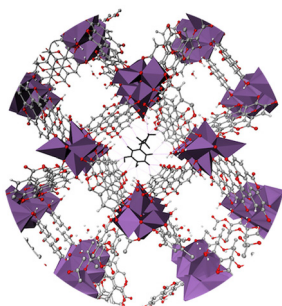
8680

### Activation of trace LiNO<sub>3</sub> additives by BF<sub>3</sub> in high-concentration electrolytes towards stable lithium metal batteries

He-yi Xia, Yu-ke Wang and Zheng-wen Fu\*



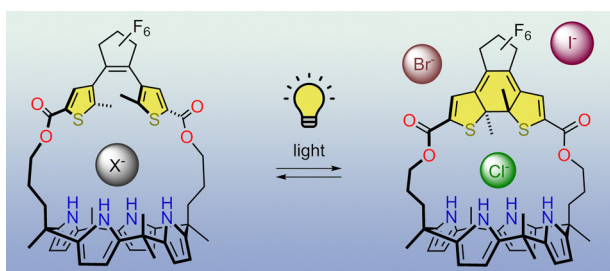
8684



### Encapsulation of dopamine within SU-101: insights by computational chemistry

Erika Medel, Juan L. Obeso, Camilo Serrano-Fuentes, Jorge Garza,\* Ilich A. Ibarra, Carolina Leyva, A. Ken Inge, Ana Martínez\* and Rubicelia Vargas\*

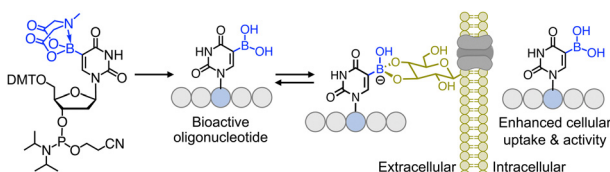
8688



### Photoswitching of halide-binding affinity and selectivity in dithienylethene-strapped calix[4]pyrrole

David Villarón, Guido E. A. Brugman, Maxime A. Siegler and Sander J. Wezenberg\*

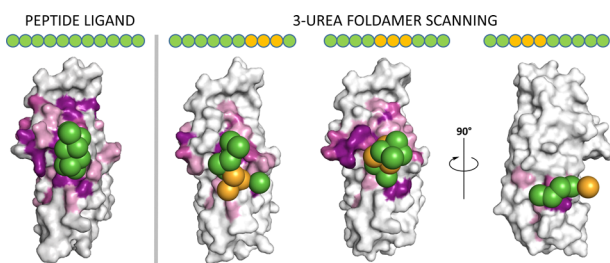
8692



### 5-Dihydroxyboryluridine enhances cytosolic penetration of antisense oligonucleotides

Sam Kavooosi, Kirsten Deprey, Joshua A. Kritzer\* and Kabirul Islam\*

8696



### Unexpected binding modes of inhibitors to the histone chaperone ASF1 revealed by a foldamer scanning approach

Marie E. Perrin, Bo Li, Johanne Mbianda, May Bakail, Christophe André, Gwenaëlle Moal, Pierre Legrand, Virginie Ropars, Céline Douat, Françoise Ochsenbein\* and Gilles Guichard\*

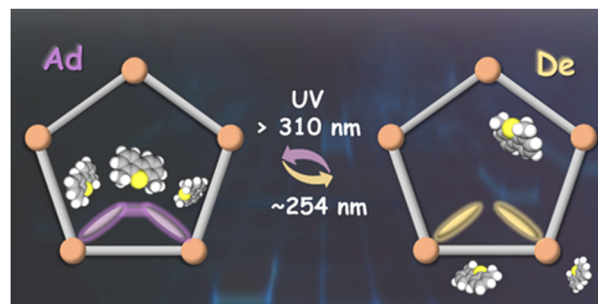


## COMMUNICATIONS

8700

### Coumarin-functionalized metal–organic frameworks: adsorbents with photo-responsive active sites for adsorptive desulfurization

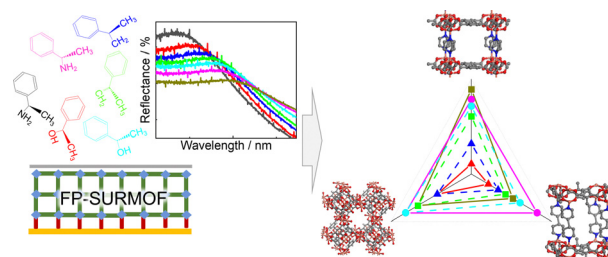
Jing Zhu,\* Shi-Chao Qi, Xiao-Qin Liu and Lin-Bing Sun\*



8704

### Optical sensor array of chiral MOF-based Fabry–Pérot films for enantioselective odor sensing

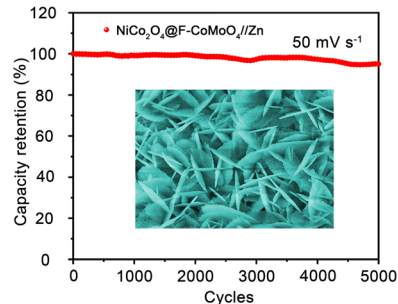
Kuo Zhan, Yunzhe Jiang and Lars Heinke\*



8708

### F-doped NiCo<sub>2</sub>O<sub>4</sub>@CoMoO<sub>4</sub> as an advanced electrode for aqueous Zn-ion batteries

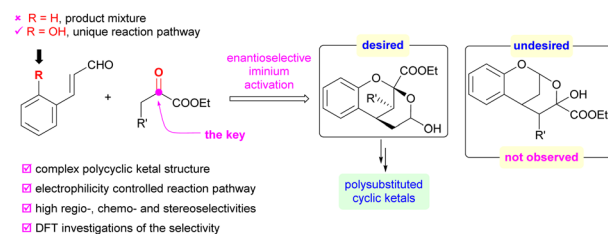
Ze Cen, Fang Yang,\* Jie Wan and Kaibing Xu



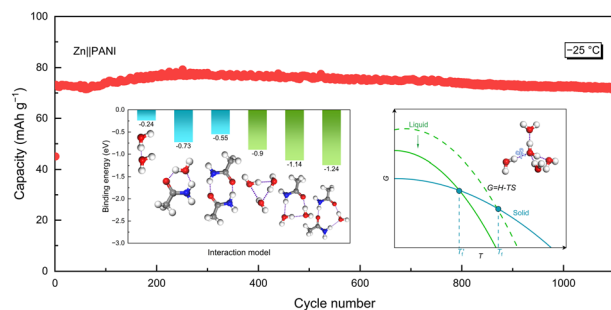
8711

### Asymmetric iminium ion-catalyzed conjugate addition of 2-hydroxycinnamaldehydes and 2-oxocarboxylic esters: synthesis of chiral polysubstituted bridged bicyclic ketals

Yong-Chao Ming, Xue-Jiao Lv, Ying-Han Chen and Yan-Kai Liu\*



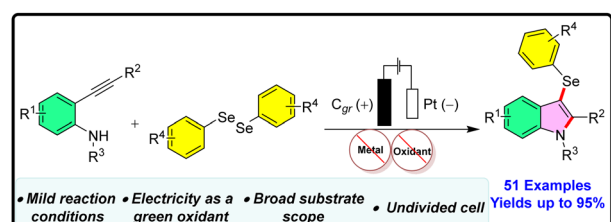
8715



### High-entropy solvent design enabling a universal electrolyte with a low freezing point for low-temperature aqueous batteries

Huimin Ji, Chunlin Xie, Tingqing Wu, Hao Wang, Zhiwen Cai, Qi Zhang, Wenbin Li, Liang Fu,\* Huanhuan Li and Haiyan Wang\*

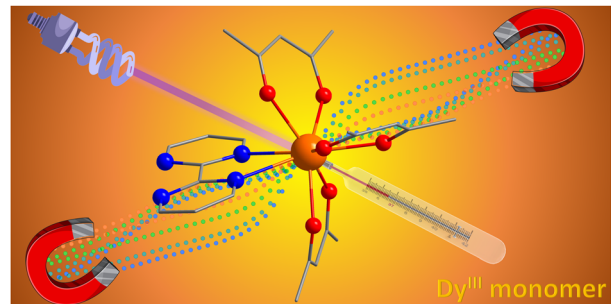
8719



### An electrochemical cascade process: synthesis of 3-selenylindoles from 2-alkynylanilines with diselenides

Anil Balajirao Dapkekar and Gedu Satyanarayana\*

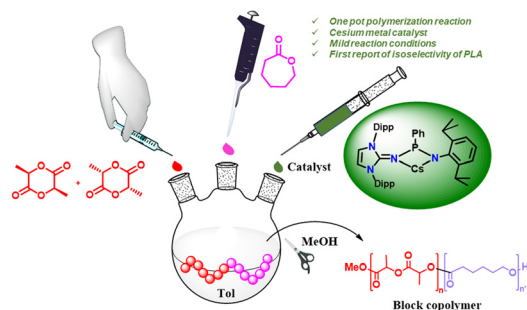
8723



### Improving the performance of $\beta$ -diketonate-based Dy<sup>III</sup> single-molecule magnets displaying luminescence thermometry

Airton Germano Bispo-Jr, Laurence Yeh, Dylan Errulat, Diogo Alves Gálico, Fernando Aparecido Sigoli and Muralee Murugesu\*

8727



### Highly efficient and well-controlled ROP and copolymerization of cyclic esters using a cesium complex

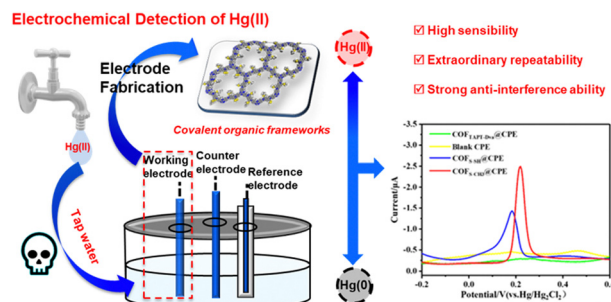
Shweta Sagar, Himadri Karmakar, Priyanku Nath, Alok Sarkar,\* Vadapalli Chandrasekhar\* and Tarun K. Panda\*



8731

### Thiol-grafted covalent organic framework-based electrochemical platforms for sensitive detection of Hg(II) ions

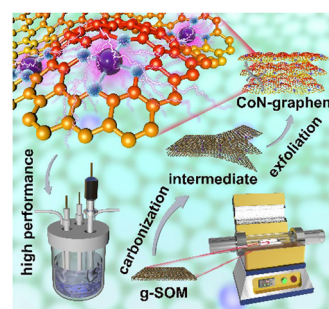
Xiang Tang, Qingqing Zhang, Dongyang Chen, Lifeng Deng, Yaxu He, Jianxiu Wang, Chunyue Pan, Juntao Tang\* and Guipeng Yu\*



8735

### Synthesis of graphene anchored with atomically isolated cobalt from a promising graphite-like supramolecule

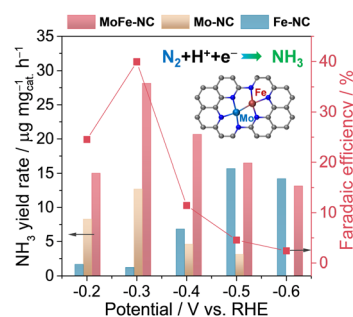
Guoli Zheng, Shunfa Zhou, Xuan Zhou, Ding Wen, Jinhui Xu, Lingling Li, Danyong Jiang, WeiWei Cai,\* Weiqiang Fan,\* Weidong Shi\* and Shuyan Song



8739

### A biomimetic MoFe-NC for efficient N<sub>2</sub> electroreduction to NH<sub>3</sub>

Yingna Chang, Jiawei Li, Yuxiang Zuo, Jindi Wang, Kefan Song, Yu Liu, Rong Xing\* and Guoxin Zhang\*



8743

### Hierarchical Mn-Ni<sub>2</sub>P/NiFe LDH nanosheet arrays as an efficient bifunctional electrocatalyst for energy-saving hydrogen production via urea electrolysis

Bin Sang, Yu Liu, Xiaoyu Wan,\* Shuixiang Xie, Guangyu Zhang, Mingzheng Ge, Jiamu Dai, Wei Zhang\* and Rui-Qing Li\*

