

ChemComm

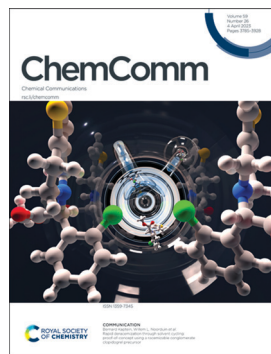
Chemical Communications

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.

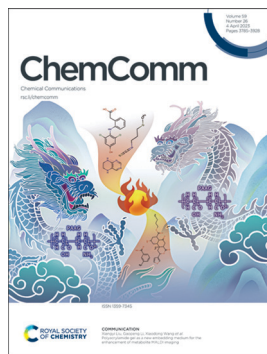
IN THIS ISSUE

ISSN 1359-7345 CODEN CHCOFS 59(26) 3785-3928 (2023)



Cover

See Bernard Kaptein, Willem L. Noorduin *et al.*, pp. 3838-3841. Image reproduced by permission of Max Postma and Sjoerd van Dongen from *Chem. Commun.*, 2023, 59, 3838.



Inside cover

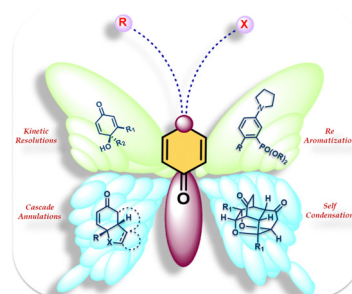
See Xiangyi Liu, Gaopeng Li, Xiaodong Wang *et al.*, pp. 3842-3845. Image reproduced by permission of Xiaodong Wang from *Chem. Commun.*, 2023, 59, 3842.

HIGHLIGHTS

3795

Site-selective and stereoselective transformations on *p*-quinols & *p*-quinamines

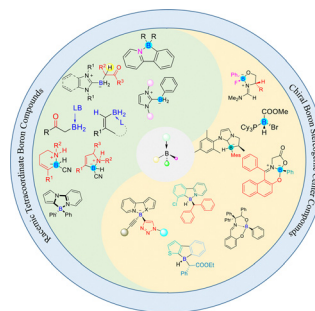
Satish B. Thopate, Mandalaparthi Phanindrudu, Sandip B. Jadhav and Rambabu Chegondi*



3812

Recent advances in the construction of tetracoordinate boron compounds

Xue Li, Guan Zhang and Qiuling Song*



Editorial Staff

Executive Editor

Richard Kelly

Deputy Editor

Harriet Riley

Editorial Production Manager

Helen Saxton

Development Editor

Danny Andrews

Senior Publishing Editor

Becky Webb

Publishing Editors

Kirstine Anderson, Matthew Bown, Laura Cooper, Emily Cuffin-Munday, Hannah Fielding, Clare Fitzgerald, Anoushka Handa, Claire Harding, Alan Holder, Rosie Rothwell, 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

For pre-submission queries please contact Richard Kelly, Executive Editor.

Email 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 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: £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

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

ChemComm

Chemical Communications

rsc.li/chemcomm

Editorial Board

Chair

Douglas Stephan, University of Toronto

Associate Editors

Lutz Ackermann, University of Göttingen

Davide 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)

Tek-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 You, 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

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

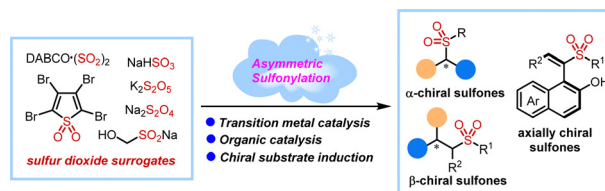


FEATURE ARTICLES

3821

Asymmetric sulfonylation with sulfur dioxide surrogates: a new access to enantiomerically enriched sulfones

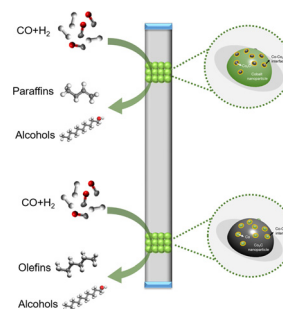
Jun Zhang, Peiqi Wang, Yanzhi Li and Jie Wu*



3827

A review of Co/Co₂C-based catalysts in Fischer–Tropsch synthesis: from fundamental understanding to industrial applications

Ziang Zhao, Yihui Li, Hejun Zhu,* Yuan Lyu and Yunjie Ding*

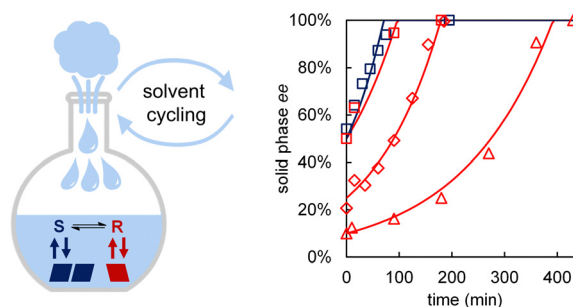


COMMUNICATIONS

3838

Rapid deracemization through solvent cycling: proof-of-concept using a racemizable conglomerate clopidogrel precursor

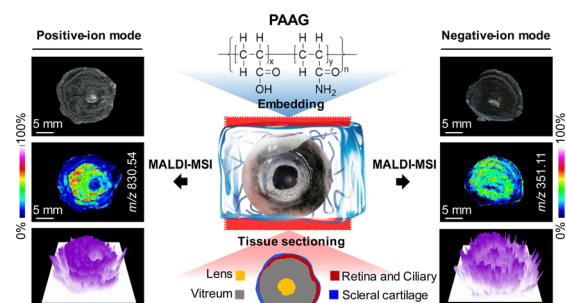
Sjoerd W. van Dongen, Iaroslav Baglai, Michel Leeman, Richard M. Kellogg, Bernard Kaptein* and Willem L. Noorduin*



3842

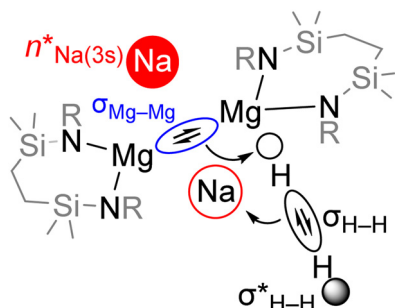
Polyacrylamide gel as a new embedding medium for the enhancement of metabolite MALDI imaging

Chenyu Yang, Ran Wu, Haiqiang Liu, Liang Qin, Lulu Chen, Hualei Xu, Hao Hu, Jinrong Li, Hua Guo, Yiyang Shi, Dongxu Jiang, Qichen Hao, Jinchao Feng, Yijun Zhou, Xiangyi Liu,* Gaopeng Li* and Xiaodong Wang*



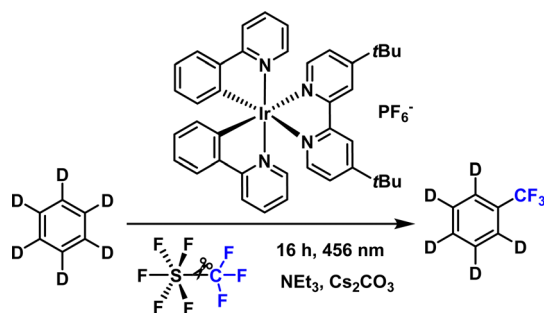
COMMUNICATIONS

3846

**Cooperative dihydrogen activation at a Na(l)₂/Mg(l)₂ ensemble**

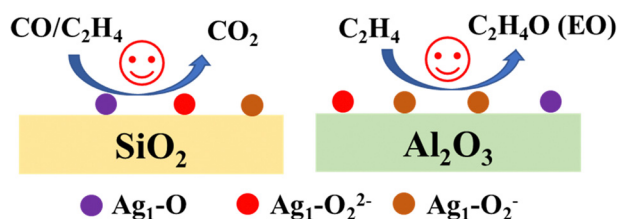
Han-Ying Liu, Samuel E. Neale, Michael S. Hill,*
Mary F. Mahon, Claire L. McMullin* and
Benjamin L. Morrison

3850

**Reduction of SF₅CF₃ via iridium catalysis: radical trifluoromethylation of aromatics**

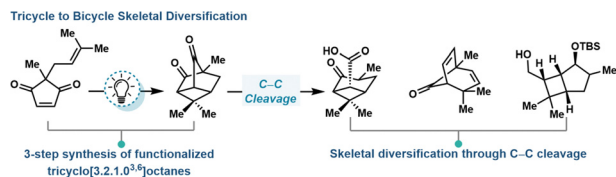
Domenique Herbstritt and Thomas Braun*

3854

**Metal–oxide interactions modulating the activity of active oxygen species on atomically dispersed silver catalysts**

Rongtan Li, Conghui Liu, Yamei Fan, Qiang Fu* and
Xinhe Bao*

3858

**Skeletal diversification by C–C cleavage to access bicyclic frameworks from a common tricyclooctane intermediate**

Ian Bakanas, Jess C. Tang and Richmond Sarpong*

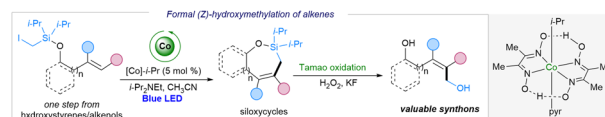


COMMUNICATIONS

3862

Photoexcited cobalt catalysed *endo*-selective alkyl Heck reaction

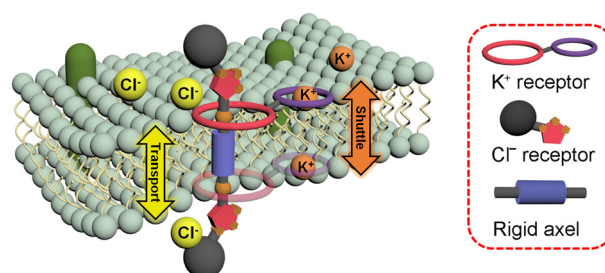
Chenyang Wang, Luis Miguel Azofra, Phong Dam, Edelman J. Espinoza-Suarez, Hieu Trung Do, Jabor Rabeah, Angelika Brückner and Osama El-Sepelgy*



3866

A rigid-axle-based molecular rotaxane channel facilitates K^+/Cl^- co-transport across a lipid membrane

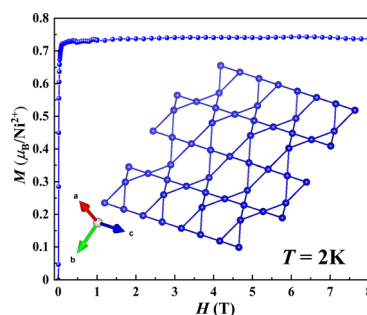
Shihao Pang, Xiaonan Sun, Zexin Yan, Chuantao Wang, Kai Ye, Shinan Ma, Linyong Zhu and Chunyan Bao*

Rotaxane-based channel for K^+/Cl^- cotransport

3870

 $Ba_4Ni_3F_{14} \cdot H_2O$: a ferrimagnetic compound with a staircase kagomé lattice

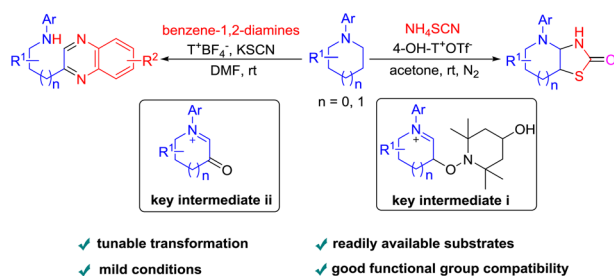
Yanqi Wang, Zhiying Zhao, Meiyan Cui and Zhangzhen He*



3874

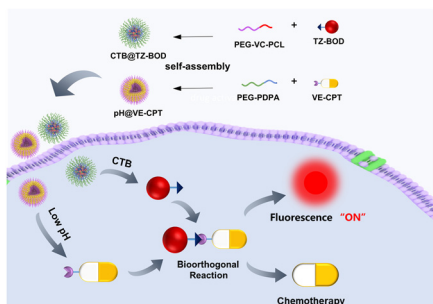
Oxoammonium salt-promoted diverse functionalization of saturated cyclic amines with dinucleophiles

Yan He,* Qimeng Liu, Jintao Yang, Yunfei Liu, Xinying Zhang and Xuesen Fan*



COMMUNICATIONS

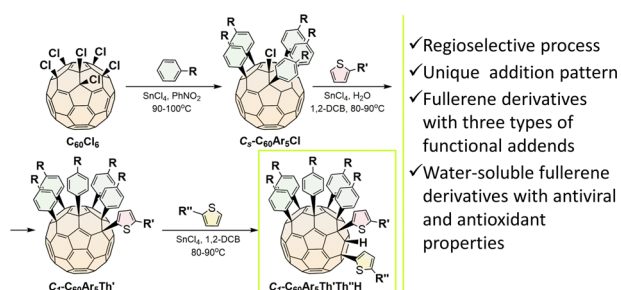
3878



Dual stimulus-triggered bioorthogonal nanosystem for spatiotemporally controlled prodrug activation and near-infrared fluorescence imaging

Zhongyi Zhao, Qingyu Zong, Jun Li, Maolin Jiang, Kewei Wang and Youyong Yuan*

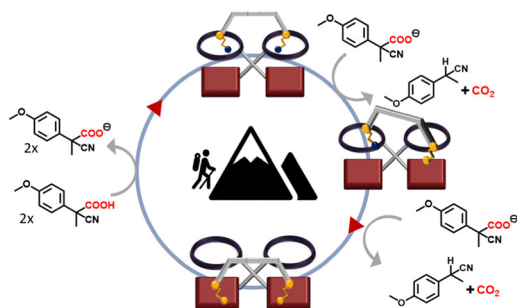
3882



A regioselective step-by-step C₆₀Cl₆ functionalization approach affords a novel family of C₆₀Ar₅Th''H fullerene derivatives with promising antiviral properties

Valeriya S. Bolshakova, Olga A. Kraevaya,* Alexander S. Peregodov, Vitaliy Yu. Markov, Svetlana V. Kostyuk, Dominique Schols, Alexander F. Shestakov and Pavel A. Troshin

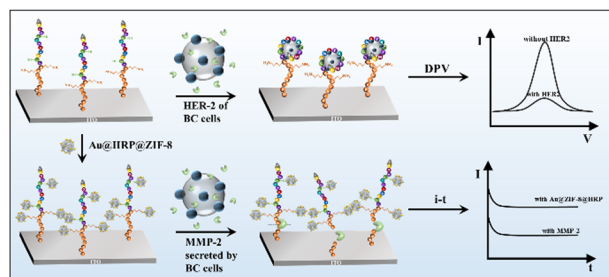
3886



Fast and slow walking driven by chemical fuel

Vishnu Verman Rajasekaran, Emad Elramadi, Isa Valiyev, Prodip Howlader and Michael Schmittl*

3890



An electrochemical biosensor to identify the phenotype of aggressive breast cancer cells

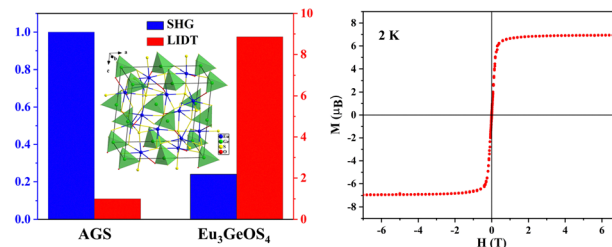
Lin Wang, Haojie Xie, Xinyi Zhou, Yuxin Lin, Yujia Qin, Jie Yang, Jing Zhao* and Genxi Li*



3894

The first quaternary rare-earth oxythiogermanate with second-harmonic generation and ferromagnetic behavior

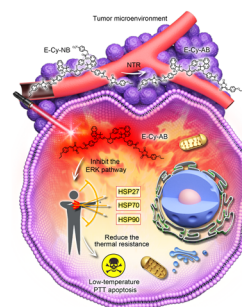
Mei Yang, Wen-Dong Yao, Wenlong Liu* and Sheng-Ping Guo*



3898

A hypoxia-activated photothermal agent inhibits multiple heat shock proteins for low-temperature photothermal therapy

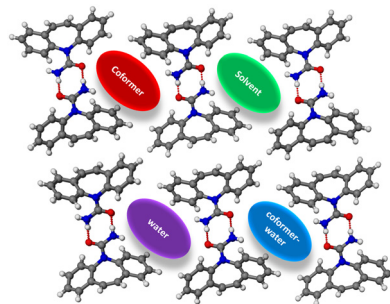
Xinhao Zhang, Shan-Shan Xue, Wei Pan,* Kaiye Wang, Na Li* and Bo Tang*



3902

Non-stoichiometric carbamazepine cocrystal hydrates of 3,4-/3,5-dihydroxybenzoic acids: coformer–water exchange

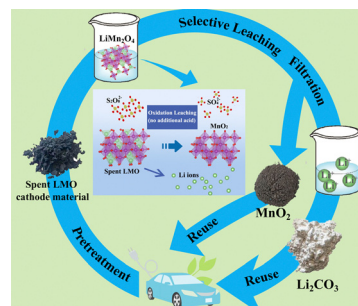
Trishna Rajbongshi, Kashyap Kumar Sarmah, Susobhan Das, Poonam Deka, Arijit Saha, Binoy K. Saha, Horst Puschmann, C. Malla Reddy* and Ranjit Thakuria*



3906

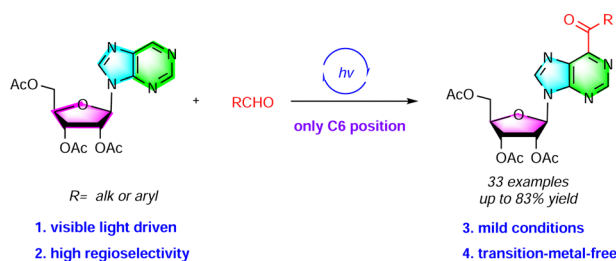
Facile and efficient recycling of cathode materials of spent lithium manganese batteries

Zhenhao Zhou, Yijie Liu, Zhiyong Tang, Jinghui Xia, Hao Jin, Jialiang Zhang,* Yongqiang Chen and Chengyan Wang*



COMMUNICATIONS

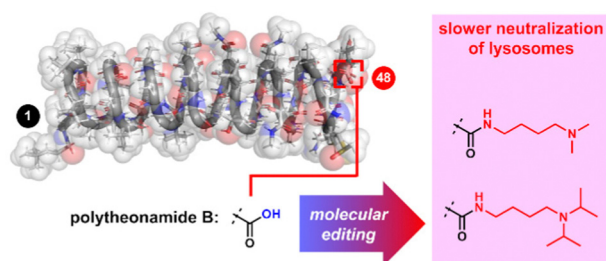
3910



Photocatalyst-free visible-light-induced highly selective acylation of purine nucleosides at the C6 position

Luohao Li, Huiqin Zheng, Feixiang Guo, Zehui Fang, Qianqian Sun, Jing Li, Qinghe Gao, Tao Zhang and Lizhen Fang*

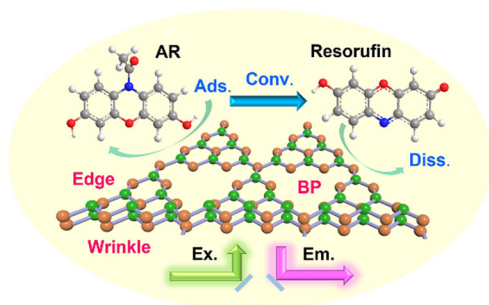
3914



C-Terminal modification of polytheonamide B uncouples its dual functions in MCF-7 cancer cells

Yun-Wei Xue, Kensuke Miura, Hiroaki Itoh and Masayuki Inoue*

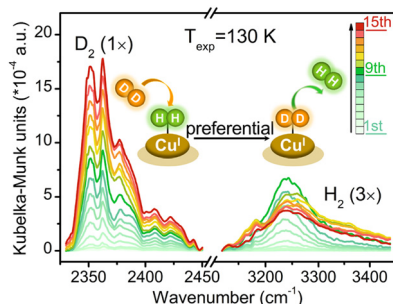
3918



Quantitative single-molecule study reveals site-specific photo-oxidation activities and kinetics on 2D g-C₃N₄

Shuyang Wu, Jenica Marie L. Madridejos, Jinn-Kye Lee, Rong Xu, Yunpeng Lu* and Zhengyang Zhang*

3922



Direct observation of highly effective hydrogen isotope separation at active metal sites by *in situ* DRIFT spectroscopy

Xiayan Yan, Yaqi Song, Degao Wang, Tifeng Xia, Xinxin Tan, Jingwen Ba, Tao Tang, Wenhua Luo, Ge Sang* and Renjin Xiong*

