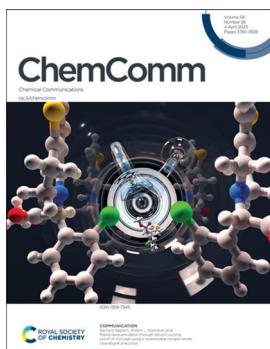


IN THIS ISSUE

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

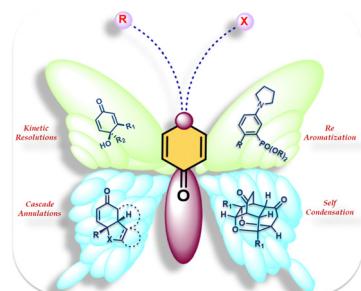
See Xiangyi Liu, Gaopeng Li, Xiaodong Wang et al., pp. 3842–3845.
Image reproduced by permission of Xiaodong Wang from *Chem. Commun.*, 2023, 59, 3842.

HIGHLIGHTS

3795

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

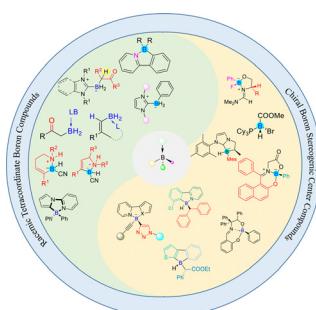
Satish B. Thopate, Mandalaparthi Phanindrudu, Sandip B. Jadhav and Rambabu Chegondi*



3812

Recent advances in the construction of tetracoordinate boron compounds

Xue Li, Guan Zhang and Qiuling Song*



ChemComm

Chemical Communications

rsc.li/chemcomm

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-Mundy, 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

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	Rebecca Goss, University of St Andrews	Technology Madras
Polly Arnold, University of Edinburgh	Mike Greaney, University of Manchester	S Ramakrishnan, Indian Institute of Science
Louise Berben, University of California, Davis	Shaojun Guo, Peking University	Erwin Reisner, University of Cambridge
Penny Brothers, Australian National University	Michael Hardie, University of Leeds	Robin Rogers, McGill University
Wesley Browne, University of Groningen	Amanda Hargrove, Duke University	Paolo Samori, University of Strasbourg
Raffaella Buonsanti, EPFL	Craig Hawker, University of California, Santa Barbara	Ellen Sletten, University of California, Los Angeles
Luiz Henrique Catalani, University of São Paulo	Feihe Huang, Zhejiang University	David Smith, University of York
Xiao-Ming Chen, Sun Yat-Sen University	Todd Hudnall, Texas State University	Mizuki Tada, Nagoya University
Lifeng Chi, Soochow University	Illich A. Ibarra Alvarado, National University of Mexico	Christine Thomas, Ohio State University
Arindam Chowdhury, Indian Institute of Technology Bombay	Hiroshi Kageyama, Kyoto University	Zhong-Qun Tian, Xiamen University
Derrick Clive, University of Alberta	Jong Seung Kim, Korea University	Tomas Torres, Autonomous University of Madrid
Seth Cohen, University of California, San Diego	Shu Kobayashi, University of Tokyo	Helma Wennemers, ETH Zurich
Marcetta Darenbourg, Texas A&M University	Mi Hee Lim, Ulsan National Institute of Science and Technology (UNIST)	Judy Wu, University of Houston
Jyotirmayee Dash, Indian Association for the Cultivation of Science	Teck-Peng Loh, Nanyang Technological University	Yi Xie, University of Science and Technology of China
Gautam R. Desiraju, Indian Institute of Science, Bangalore	Tien-Yau Luh, National Taiwan University	Xianran Xing, University of Science and Technology Beijing
Abhishek Dey, Indian Association for the Cultivation of Science (IACS)	Doug MacFarlane, Monash University	Shuli You, Shanghai Institute of Organic Chemistry, Chinese Academy of Sciences
Josh Figueroa, University of California, San Diego	Hiromitsu Maeda, Ritsumeikan University	Atsuo Yamada, University of Tokyo
Lutz Gade, University of Heidelberg	Silvia Marchesan, University of Trieste	Qiang Zhang, Tsinghua University
Sujit Ghosh, Indian Institute of Science Education of Research, India	Nazario Martin, Complutense University of Madrid	Xi Zhang, Tsinghua University
Nathan Gianneschi, University of California, San Diego	Keiji Maruoka, Kyoto University	Wenwan Zhong, University of California, Riverside
Robert Gilliard Jr., University of Virginia	Alexander Miller, University of North Carolina at Chapel Hill	Eli Zysman-Colman, University of St. Andrews
David Gonzalez-Rodriguez, Autonomous University of Madrid	Wonwoo Nam, Ewha Womans University	
	Jean-Francois Nierengarten, University of Strasbourg	
	Thalappil Pradeep, Indian Institute of	

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/repubish 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

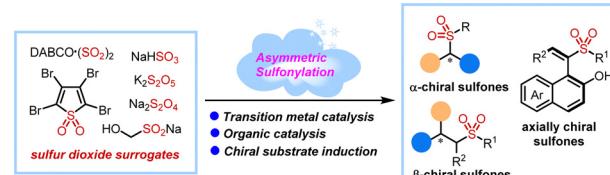


FEATURE ARTICLES

3821

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

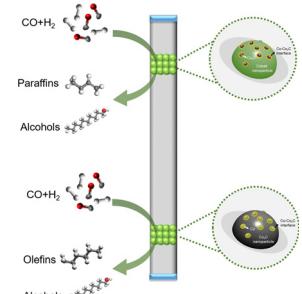
Jun Zhang, Peiqi Wang, Yanzhi Li and Jie Wu*



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*

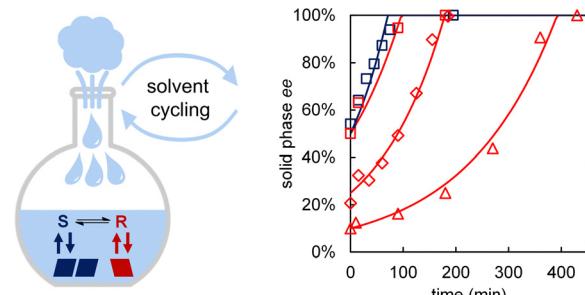


COMMUNICATIONS

3838

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

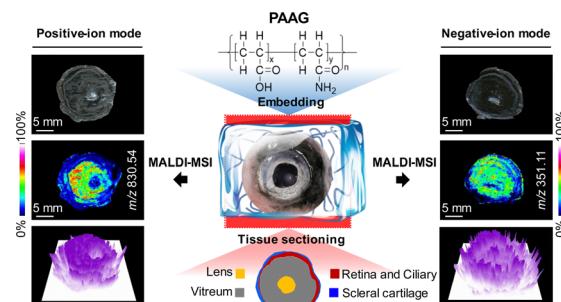
Sjoerd W. van Dongen, Jaroslav Baglai, Michel Leeman, Richard M. Kellogg, Bernard Kaptein* and Willem L. Noorduin*



3842

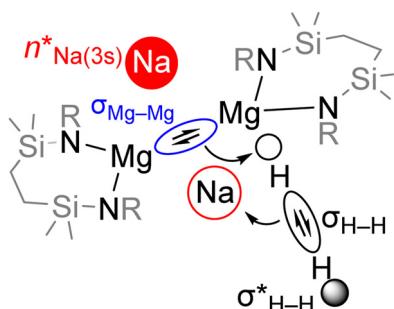
Polyacrylamide gel as a new embedding medium for the enhancement of metabolite MALDI imaging

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*



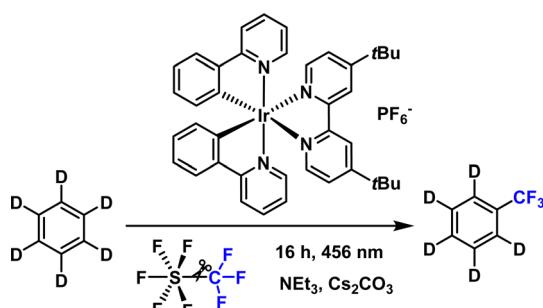
COMMUNICATIONS

3846

Cooperative dihydrogen activation at a $\text{Na(i)}_2/\text{Mg(i)}_2$ ensemble

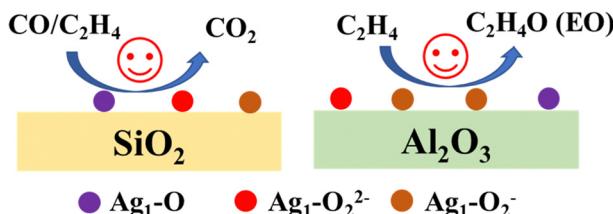
Han-Ying Liu, Samuel E. Neale, Michael S. Hill,* Mary F. Mahon, Claire L. McMullin* and Benjamin L. Morrison

3850

Reduction of SF_5CF_3 via iridium catalysis: radical trifluoromethylation of aromatics

Domenique Herbstritt and Thomas Braun*

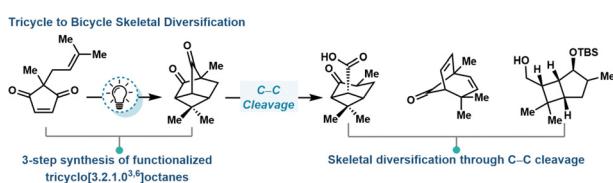
3854



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*

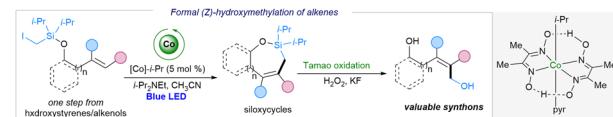


COMMUNICATIONS

3862

Photoexcited cobalt catalysed *endo*-selective alkyl Heck reaction

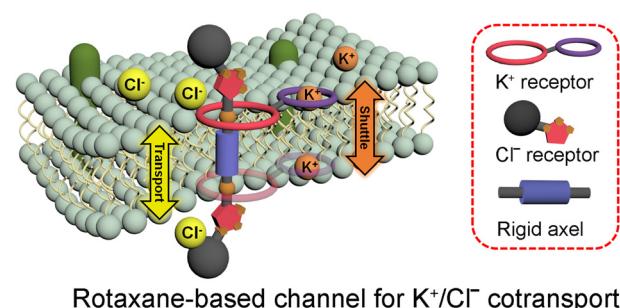
Chenyang Wang, Luis Miguel Azofra, Phong Dam, Edelman J. Espinoza-Suarez, Hieu Trung Do, Jabor Rabeah, Angelika Brückner and Osama El-Sepelgy*[†]



3866

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

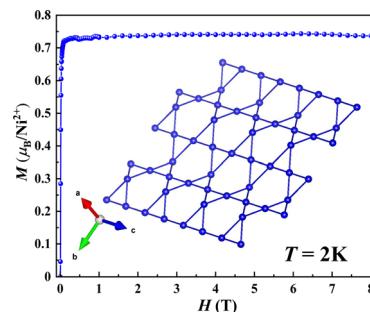
Shihao Pang, Xiaonan Sun, Zexin Yan, Chuantao Wang, Kai Ye, Shinan Ma, Linyong Zhu and Chunyan Bao*[†]



3870

Ba₄Ni₃F₁₄·H₂O: a ferrimagnetic compound with a staircase kagomé lattice

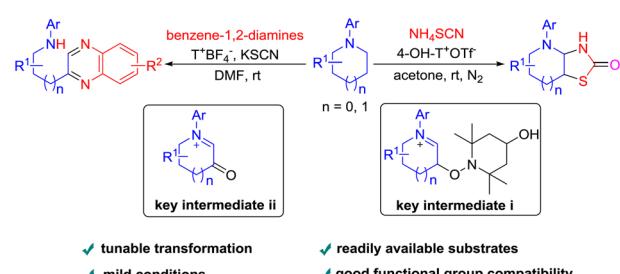
Yanqi Wang, Zhiying Zhao, Meiyuan Cui and Zhangzhen He*[†]



3874

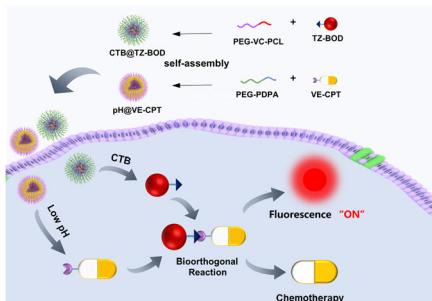
Oxoammonium salt-promoted diverse functionalization of saturated cyclic amines with dinucleophiles

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



COMMUNICATIONS

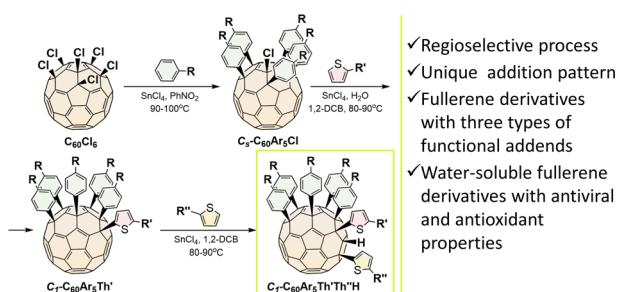
3878



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*

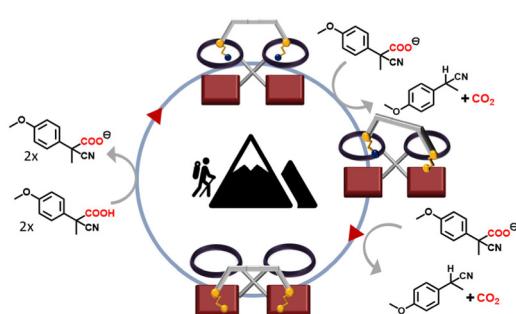
3882



A regioselective step-by-step $C_{60}Cl_6$ functionalization approach affords a novel family of $C_{60}Ar_5Th/Th''H$ fullerene derivatives with promising antiviral properties

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

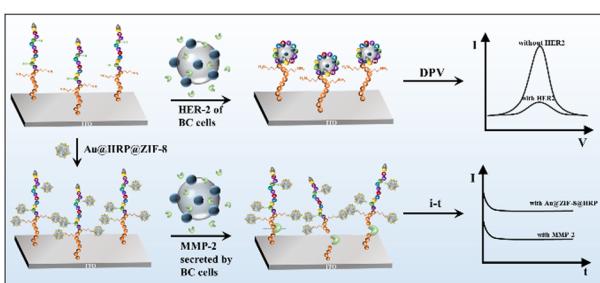
3886



Fast and slow walking driven by chemical fuel

Vishnu Verma Rajasekaran, Emad Elramadi, Isa Valiyev, Prodip Howlader and Michael Schmittel*

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*

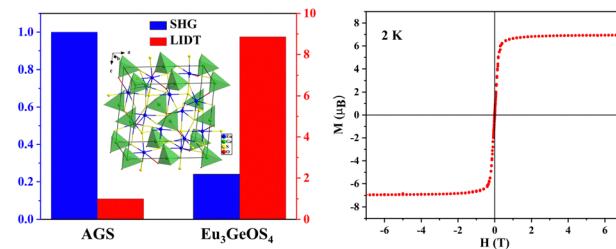


COMMUNICATIONS

3894

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

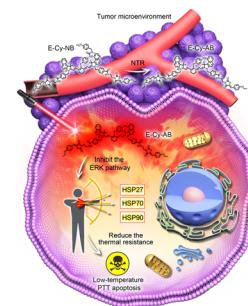
Mei Yang, Wen-Dong Yao, Wenlong Liu* and Sheng-Ping Guo*



3898

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

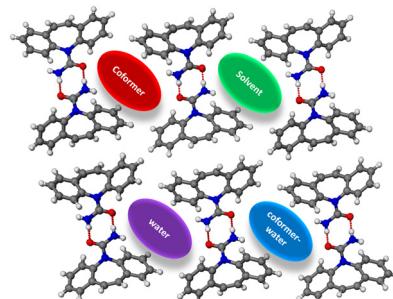
Xinhao Zhang, Shan-Shan Xue, Wei Pan,* Kaiye Wang, Na Li* and Bo Tang*



3902

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

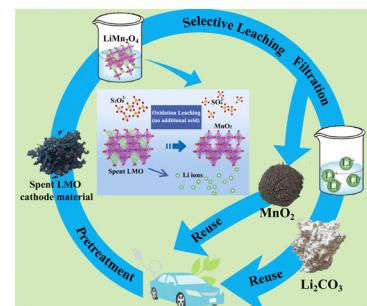
Trishna Rajbongshi, Kashyap Kumar Sarmah, Susobhan Das, Poonam Deka, Arjjit Saha, Binoy K. Saha, Horst Puschmann, C. Malla Reddy* and Ranjit Thakuria*



3906

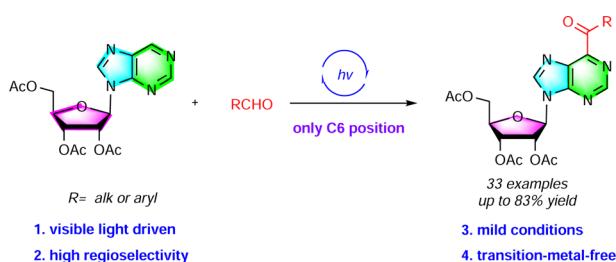
Facile and efficient recycling of cathode materials of spent lithium manganate batteries

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



COMMUNICATIONS

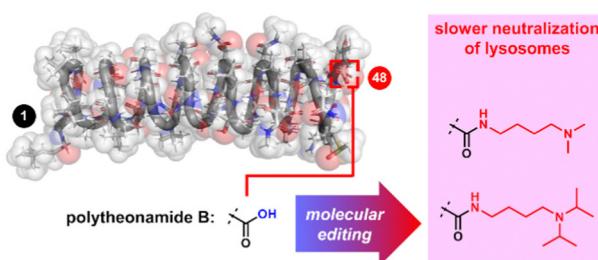
3910



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

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

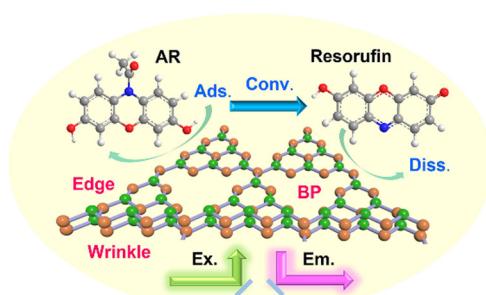
3914



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*

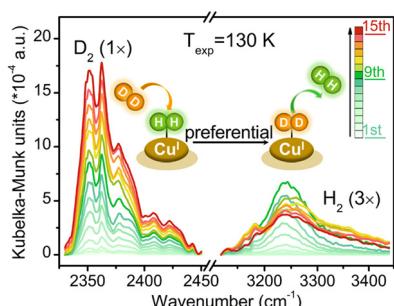
3918



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*

