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(32) 4687-4826 (2023)



Cover

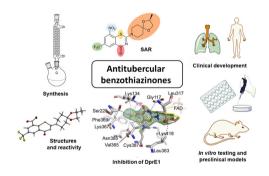
See Yiyong Mai et al., pp. 4742-4745. Image reproduced by permission of Yiyong Mai from Chem. Commun., 2023, **59**, 4742.

FEATURE ARTICLES

4697

Synthesis, structures, reactivity and medicinal chemistry of antitubercular benzothiazinones

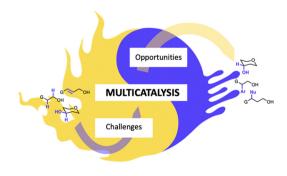
Rüdiger W. Seidel,* Adrian Richter, Richard Goddard and Peter Imming



4716

Variable structure diversification by multicatalysis: the case of alcohols

Bruno Lainer, Kuhali Das and Paweł Dydio*



Editorial Staff

Executive Editor

Richard Kelly

Deputy Editor

Harriet Rilev

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, Donna Smith, Laura Smith, Ramya Vishwanath

Editorial Assistant

Jade Holliday

Publishing Assistant

Natalie Ford

Publisher

Jeanne Andre

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 OWF, 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 Michaele 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

Xiao-Ming Chen, Sun Yat-Sen University Lifeng Chi, Soochow University Arindam Chowdhury, Indian Institute of Technology Bombay

Detrick Clive, University of Alberta
Seth Cohen, University of California, San Diego
Marcetta Darensbourg, Texas A&M University
Sthu Kobayashi, University of Tokyt
Cultivation of Science
Hiroshi Kageyama, Kyoto University
Jong Seung Kim, Korea University
Sthu Kobayashi, University of Tokyt
Mi Hee Lim, Ulsan National Institu
Cultivation of Science
Science and Technology (UNIST)

Gautam R. Desiraju, Indian Institute of Science, Bangalore

Abhishek Dey, Indian Association for the Cultivation of Science (IACS) Josh Figueroa, University of California, San

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 Michaele Hardie, University of Leeds Amanda Hargrove, Duke University Craig Hawker, University of California, Santa

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

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:

submissions snould be made via the journal's nomepa

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

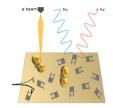


FEATURE ARTICLES

4726

Lab-on-a-DNA origami: nanoengineered single-molecule platforms

Sergio Kogikoski Jr, João Ameixa, Amr Mostafa and Ilko Bald*



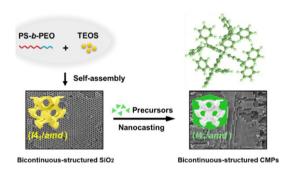


COMMUNICATIONS

4742

A general synthetic method towards conjugated microporous polymers with ordered bicontinuous mesostructures

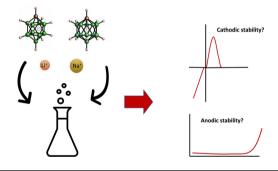
Qiqi Yang, Yamei Liu, Luoxing Xiang, Jiacheng Zhang, Yucheng Yin, Fugui Xu and Yiyong Mai*



4746

Improved synthesis enables assessment of the electrochemical window of monocarborate solid state electrolytes

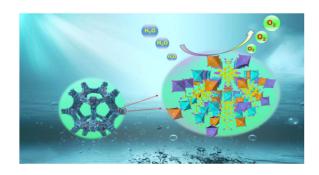
Oscar Tutusaus, Hiroko Kuwata, Michael J. Counihan and Rana Mohtadi*



4750

Altered electronic structure of trimetallic FeNiCo-MOF nanosheets for efficient oxygen evolution

Wenqiang Li, Heng Zhang, Ka Zhang, Zezhong Cheng, Haipeng Chen, Geng Tan, Xun Feng,* Liya Wang and Shichun Mu*



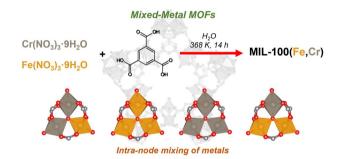
4754



Engineered flavoproteins as bioorthogonal photo-triggers for the activation of metal-based anticancer prodrugs

Laura F. Mazzei, Juan Gurruchaga-Pereda, Álvaro Martínez, Javier Calvo Martínez, Luca Salassa* and Aitziber L. Cortajarena*

4758



Spectroscopic and reactive characterization of mixed-metal Fe-Cr trimer nodes in metal-organic framework MIL-100

Jacklyn N. Hall and Praveen Bollini*

4762



Asymmetric synthesis of highly sterically congested α-tertiary amines via organocatalyzed kinetic resolution

Qianwen Jiang, Wansen Xie and Xiaoyu Yang*

4766



Ultrafine platinum nanoparticles anchored in porous aromatic frameworks for efficient hydrogen evolution reaction

Shulin Li, Yang Xiao, Han Yan, Yuting Yang, Yuyang Tian, Xiaofei Jing* and Guangshan Zhu*

4770

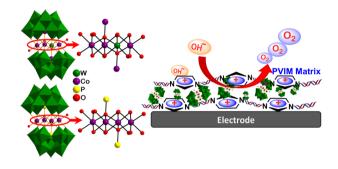
[4+1] cyclization of α -diazo esters and mesoionic N-heterocyclic olefins

Qiuming Liang,* Yimin Zeng, Pedro A. Mendez Ocampo, Hui Zhu, Zheng-Wang Qu,* Stefan Grimme and Datong Song*

4774

Stabilization and activation of polyoxometalate over poly(vinyl butylimidazolium) cations towards electrocatalytic water oxidation in alkaline media

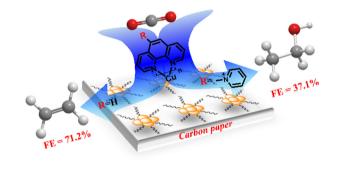
Ganga Singh, Subhasis D. Adhikary and Debaprasad Mandal*



4778

Copper phenanthroline for selective electrochemical CO₂ reduction on carbon paper

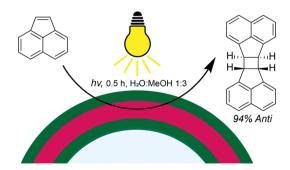
Jiehao Du, Banggui Cheng, Long Jiang and Zhiji Han*



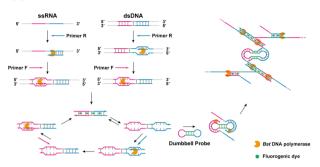
4782

Selective photodimerization of acenaphthylene in polymersome nanoreactors

Sjoerd J. Rijpkema, Sam Vissers and Daniela A. Wilson*



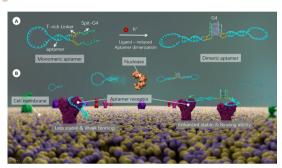
4786



Denaturation bubble-mediated two-stage isothermal nucleic acid amplification in a single closed tube

Jinling Guo, Yang Li, Qing Wang,* Qianqian Jiang, Xinguang Zhang, Peng Zhang, Cuiping Ma and Chao Shi*

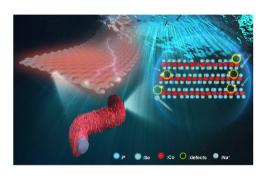
4790



Bioinspired molecular engineering of bivalent aptamers by ligand-induced self-dimerization

Shujuan Xu, Lei He, Fengming Chen, Wenya Dang, Sitao Xie, Long Li, Cheng Cui,* Yu Yang, Yanlan Liu* and Weihong Tan*

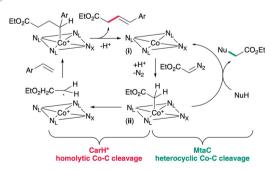
4794



A bean sprout-like cobalt selenium phosphorus nanosheet-composed anode toward fast and high sodium-ion storage

Heng Zhang, Youcun Bai, Jiawang Liu, Juan Li, Zhuo Zou, Wenliang Song, Wei Sun and Chang Ming Li*

4798



First and second sphere interactions accelerate non-native N-alkylation catalysis by the thermostable, methanol-tolerant B₁₂-dependent enzyme MtaC

Amardeep Kumar, Xinhang Yang, Jianbin Li and Jared C. Lewis*

4802

Cysteine-responsive prodrug of the anti-cancer drug amonafide: fluorogenic adjuvant drug delivery with hydrogen sulfide (H2S)

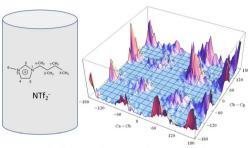
Sulendar K. Mahato, Pallavi Barman, Md. Badirujjaman and Krishna P. Bhabak*



4806

Residual dipolar couplings as a tool for structural analysis of ionic liquids

Higor D. F. de Melo, Daiane S. Carvalho, Fernando Hallwass, Ulrich Sternberg and Armando Navarro-Vázquez*



Compressed gel → RDCs → BMIM conformational landscape

4810

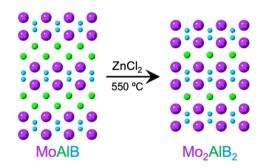
Palladium-catalysed Suzuki-Miyaura coupling of α , β -unsaturated superactive triazine esters

Dezhi Lin, Hongyu Yang, Xiao Zhang, Huaming Sun, Xuepeng Zhang, Yajun Jian, Weiqiang Zhang,* Yunfang Liu* and Ziwei Gao*

4814

One-step topochemical transformation of MoAlB into metastable Mo₂AlB₂ using a metal chloride salt reaction

Katelyn J. Baumler, Owen S. Adams and Raymond E. Schaak*

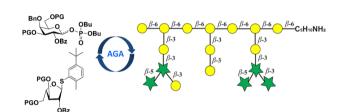


4818 Mechanistic Investigation * Electrokinetic studies Spectroscopic analysis * Isotope labeling experiements Electrosynthesis * Without chemical reagent * High efficiency * No side product

Mechanistic investigation of electrocatalytic reductive amination at copper electrode

Taemin Kim, Dong Il Park, Sojin Kim, Dibya Yadav, Sugyeong Hong, Sun Hee Kim, Hyo Jae Yoon* and Kyoungsuk Jin*

4822



Automated glycan assembly of highly branched heptadecasaccharide repeating unit of arabinogalactan polysaccharide HH1-1 from Carthamus tinctorius

Narayana Murthy Sabbavarapu and Peter H. Seeberger*