

ChemComm

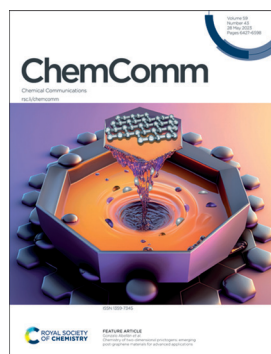
Chemical Communications

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(43) 6427-6598 (2023)



Cover

See Gonzalo Abellán *et al.*, pp. 6453–6474.
Image reproduced by permission of Gonzalo Abellán from *Chem. Commun.*, 2023, 59, 6453.



Inside cover

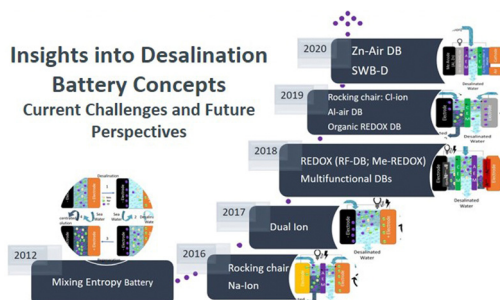
See Cleis Santos and Fabio La Mantia, pp. 6437–6452.
Image reproduced by permission of Fabio La Mantia and Cleis Santos from *Chem. Commun.*, 2023, 59, 6437.

FEATURE ARTICLES

6437

Insights into desalination battery concepts: current challenges and future perspectives

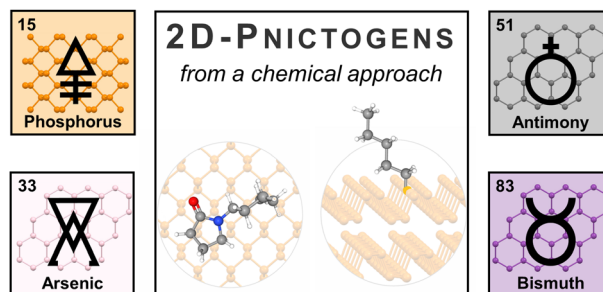
Cleis Santos* and Fabio La Mantia*



6453

Chemistry of two-dimensional pnictogens: emerging post-graphene materials for advanced applications

Matteo Andrea Lucherelli, Víctor Oestreicher, Marta Alcaraz and Gonzalo Abellán*



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 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).

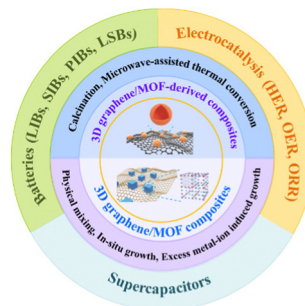
Registered charity number: 207890



6475

Three-dimensional graphene/metal–organic framework composites for electrochemical energy storage and conversion

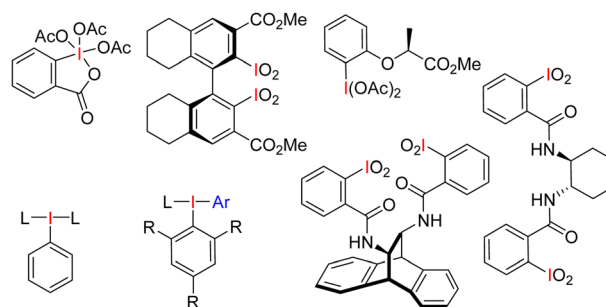
Yumei Ren and Yuxi Xu*



6495

Iodanes as multi-tools for the total synthesis of complex natural products

Camille Rocq, Maxime Denis and Sylvain Canesi*

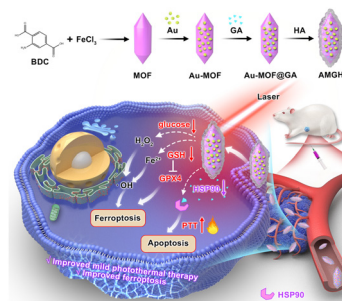


COMMUNICATIONS

6509

A gold nanoparticle engineered metal–organic framework nanoreactor for combined ferroptosis and mild photothermal therapy

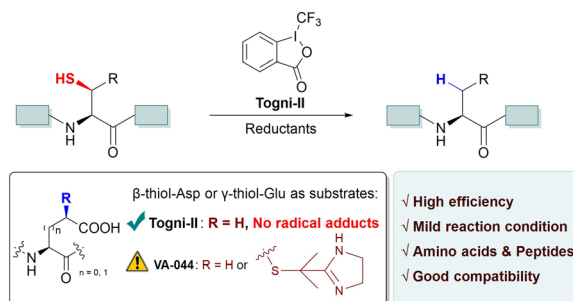
Ruyue Wei, Yanhua Li, Peng Gao, Xia Zhang, Xiaoyu Li,
Kaixian Wang, Wei Pan, Na Li* and Bo Tang*



6513

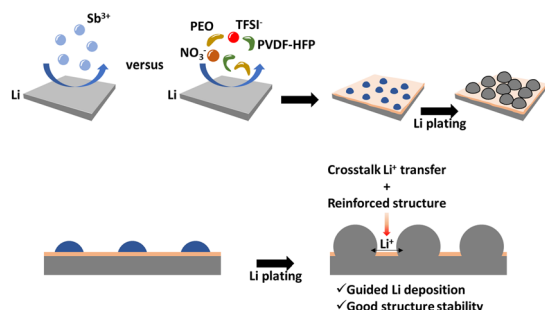
An efficient metal-free desulfurization strategy promoted by Toqni-II reagent

Jun Zhang, Haiyun Liu, Shuang Teng, Zhiwen Liao,
Lingkui Meng,* Qian Wan* and Suwei Dong*



COMMUNICATIONS

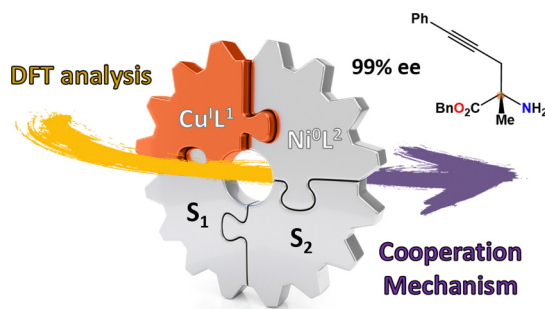
6517



Embedding alloying sites in a lithiated polymer matrix as a stable interphase of lithium electrodes

Tengpeng Xiong, Zhendong Li, Xiayin Yao* and Zhe Peng*

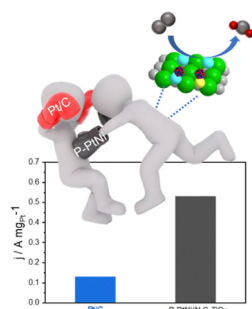
6521



Factors driving the Ni/Cu cooperative asymmetric propargylation of aldimine esters

Giuseppe Sciortino and Feliu Maseras*

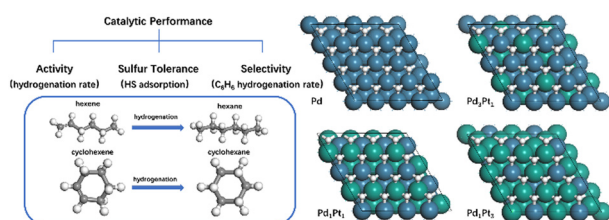
6525



A P-doped PtNi alloy supported on N,C-doped TiO_2 nanosheets as a stable electrocatalyst for the oxygen reduction reaction in an acidic electrolyte

Chen Lu, Chao Xu, Peng-Peng Guo, Kun-Zu Yang, Ying Xu, Hua-Min Chi, Ping-Jie Wei and Jin-Gang Liu*

6529



Identification of PdPt alloys for preferential C_6 olefin hydrogenation over aromatic hydrocarbons through density functional theory and microkinetic modeling

Haowen Ma, Jiayi Wang, Xuecheng Zhan,* Yuan Xie, Limin Sun, Xiaoli Hu, Haoxiang Xu and Daojian Cheng*

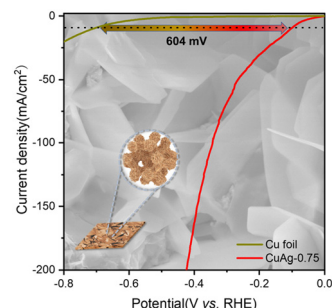


COMMUNICATIONS

6533

Ag-doped Cu nanosheet arrays for efficient hydrogen evolution reaction

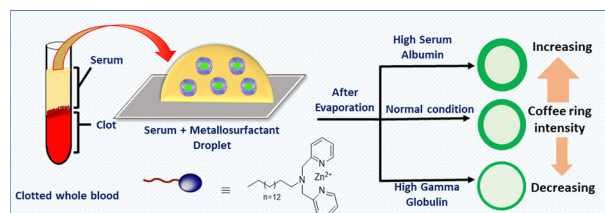
Ling-Jie Kong, Ya-Meng Xie, Xing-Yu Chen, Cong Xi, Fei-Fei Zhang, Min Wang, Long Shang, Yuan Huang,* Xi-Wen Du* and Sergei A. Kulinich*



6536

Simultaneous quantification of serum albumin and gamma globulin using Zn(II)-metallo-surfactant via a coffee ring pattern

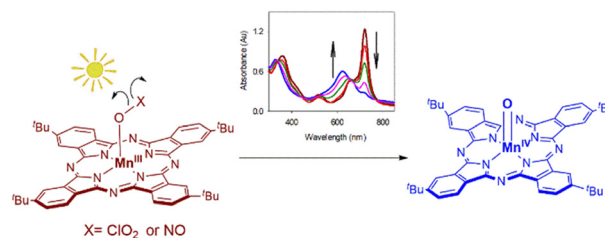
Aastha, Priyanka and Subhabrata Maiti*



6540

Photochemical generation and reactivity of a new phthalocyanine-manganese-oxo intermediate

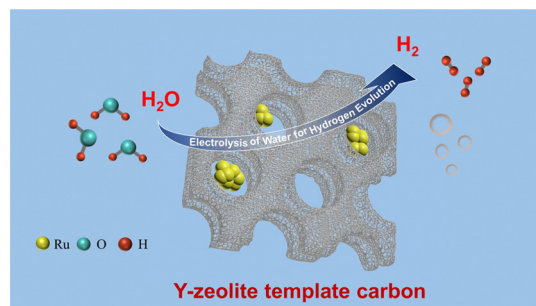
Tristan Skipworth, Seth Klaine and Rui Zhang*



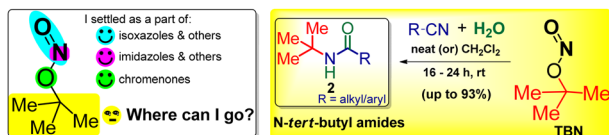
6544

Zeolite-templated carbon-supported Ru-based catalysts for efficient alkaline hydrogen evolution reaction

Xin Wang, Xiaoli Yang,* Junwei Sun, Mingyu Guo, Zhihao Cao, Haoxi Ben, Wei Jiang, Shujun Ming and Lixue Zhang*



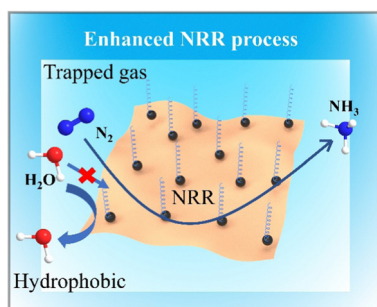
6548



Facile preparation of *N*-tert-butyl amides under heat-, metal- and acid-free conditions by using *tert*-butyl nitrite (TBN) as a practical carbon source

Palani Natarajan* and Onder Metin*

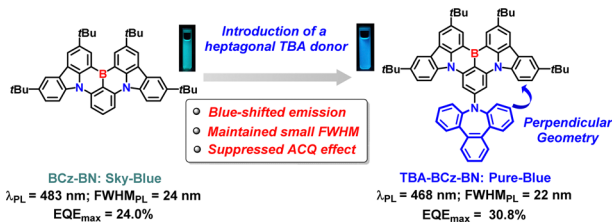
6552



Interfacial engineering of hydrophobic octadecanethiol/Pd metallene toward electrocatalytic nitrogen reduction

Hongjing Wang, Xu Mu, Qiqi Mao, Kai Deng, Hongjie Yu, You Xu, Xiaonian Li, Ziqiang Wang* and Liang Wang*

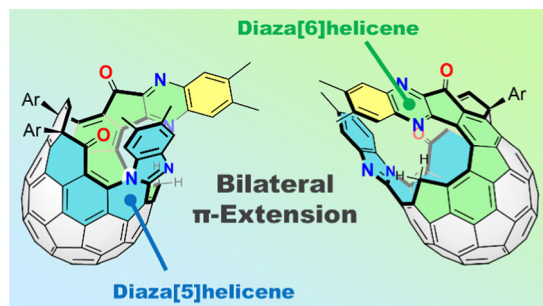
6556



“Medium-ring” strategy enables high-performance narrowband pure-blue multi-resonance emitters: boost provided by a unique perpendicular geometry

Xin Xiao, Bowen Lei, Di Wu* and Zhengyang Bin*

6560



Bilateral π -extension of an open-[60]fullerene in a helical manner

Yoshifumi Hashikawa, Shumpei Sadai and Yasujiro Murata*

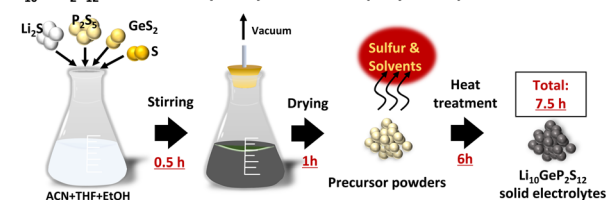


COMMUNICATIONS

6564

Li₁₀GeP₂S₁₂ solid electrolytes synthesised via liquid-phase methods

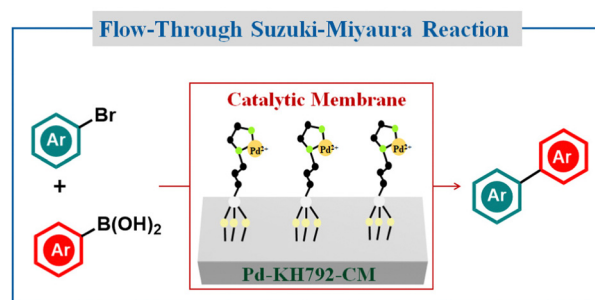
Kazuhiro Hikima,* Kaito Ogawa, Hirotada Gamo and Atsunori Matsuda*

Li₁₀GeP₂S₁₂ Solid Electrolytes Synthesised Rapidly via Liquid-Phase Methods

6568

Palladium-loaded ceramic membrane-catalyzed flow-through Suzuki–Miyaura reaction

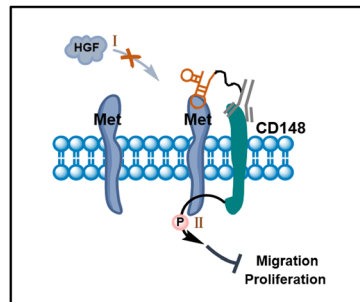
Shuangqiang Wang, Jinliang Chen, Fei Zhang, Yao Zhao, Xiaojin Wu* and Rizhi Chen*



6572

A phosphatase-recruiting bispecific antibody-aptamer chimera for enhanced suppression of tumor growth

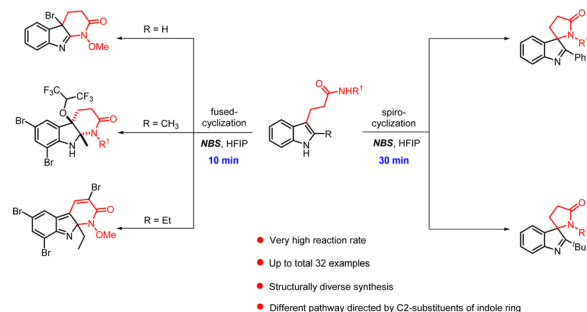
Wei Li, Weihua Lu and Zhen Liu*



6576

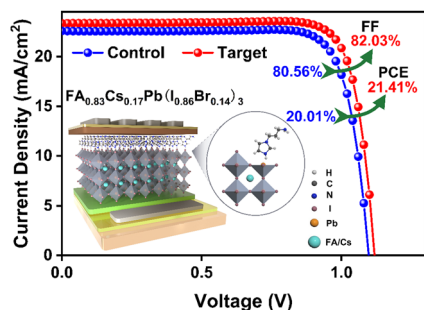
NBS-induced intramolecular annulation reactions for the divergent synthesis of fused- and spirocyclic indolines

Xian Luo, Meng-Meng Xu, Xiao-Ping Xu* and Shun-Jun Ji*



COMMUNICATIONS

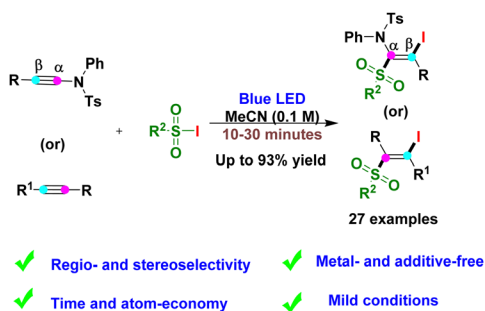
6580



Surface termination passivation of imidazole-based diiodide enabling efficient inverted perovskite solar cells

Yu Wang, Jiaxing Song,* Jingchuan Ye, Yingzhi Jin, Xinxing Yin, Zhen Su, Lin Hu, Yan Wu, Chufeng Qiu, Hao Wang, Wensheng Yan* and Zaifang Li*

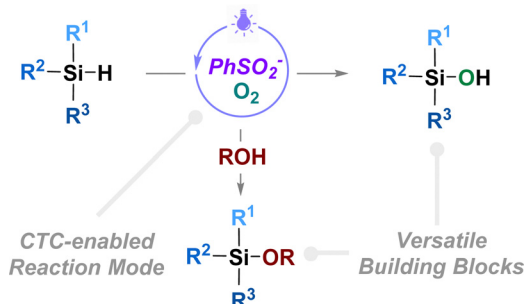
6584



Light-mediated sulfonyl-iodination of ynamides and internal alkynes

Mohana Reddy Mutra, Jing Li and Jeh-Jeng Wang*

6588

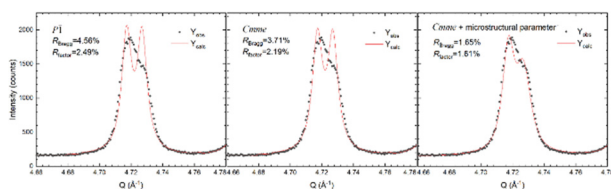


Visible-light-driven oxidation of organosilanes by a charge-transfer complex

Yi-Xuan Chen, Jun-Tao He, Mei-Chun Wu, Zhi-Lin Liu, Peng-Ju Xia, Kai Chen, Hao-Yue Xiang* and Hua Yang*

COMMENT

6592



Comment on "Structural transition and superconductivity in hydrothermally synthesized FeX (X = S, Se)" by U. Pachmayr, N. Fehn and D. Johrendt, *Chem. Commun.*, 2016, 52, 194

Alberto Martinelli

