

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.

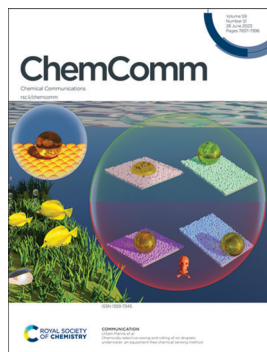
IN THIS ISSUE

ISSN 1359-7345 CODEN CHCOFS 59(51) 7837-7996 (2023)



Cover

See Akihiko Kudo *et al.*, pp. 7911–7914.
Image reproduced by permission of Akihiko Kudo from *Chem. Commun.*, 2023, 59, 7911.



Inside cover

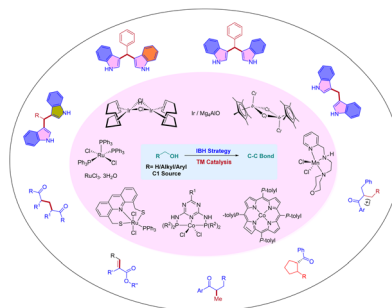
See Uttam Manna *et al.*, pp. 7915–7918.
Image reproduced by permission of Uttam Manna from *Chem. Commun.*, 2023, 59, 7915.

HIGHLIGHT

7847

Transition metal-catalysis in interrupted borrowing hydrogen strategy

Madhu Nallagangula, Murugan Subaramanian, Rohit Kumar and Ekambaram Balaraman*

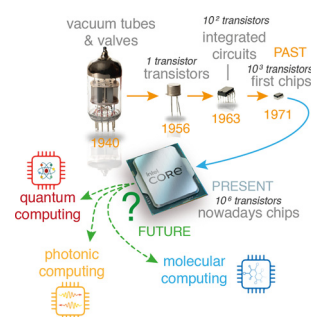


FEATURE ARTICLES

7863

Lanthanide-based logic: a venture for the future of molecular computing

Sofia Zanella, Miguel A. Hernández-Rodríguez, Rute A. S. Ferreira and Carlos D. S. Brites*



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)

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 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.

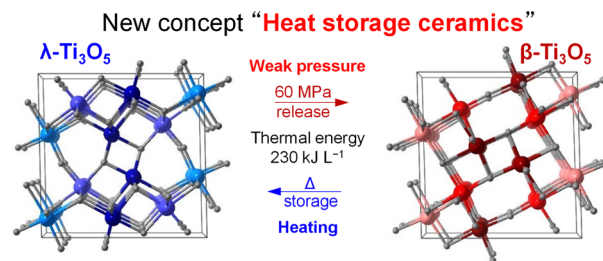
© The paper used in this publication meets the requirements of ANSI/NISO Z39.48-1992 (Permanence of Paper).

Registered charity number: 207890



FEATURE ARTICLES

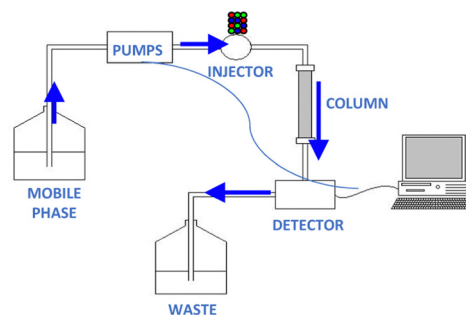
7875

Long-term heat-storage materials based on λ - Ti_3O_5 for green transformation (GX)Shin-ichi Ohkoshi,* Marie Yoshikiyo,*
Jessica MacDougall, Yusuke Ikeda and Hiroko Tokoro*

7887

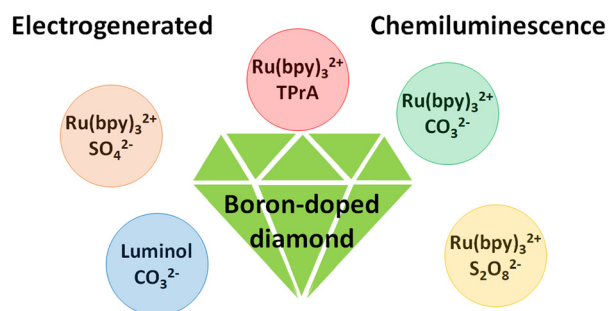
Understanding and managing peak shape for basic solutes in reversed-phase high performance liquid chromatography

David Victor McCalley



7900

Electrogenerated chemiluminescence at boron-doped diamond electrodes

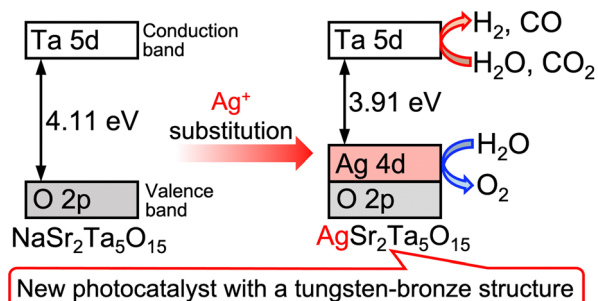
Andrea Fiorani,* Giovanni Valenti, Francesco Paolucci
and Yasuaki Einaga

COMMUNICATIONS

7911

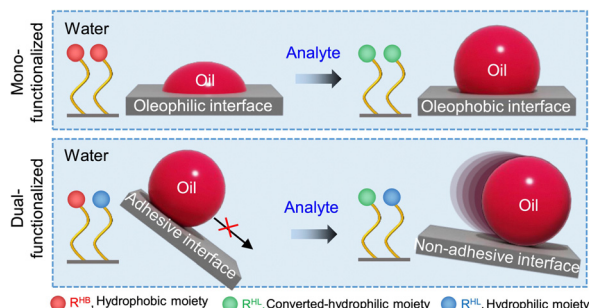
Water splitting and CO_2 reduction over an $\text{AgSr}_2\text{Ta}_5\text{O}_{15}$ photocatalyst developed by a valence band control strategy

Tomoaki Takayama, Akihito Iwase and Akihiko Kudo*



COMMUNICATIONS

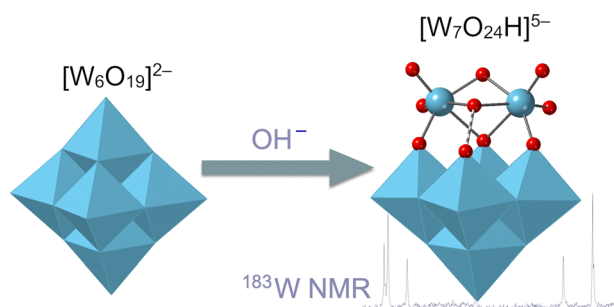
7915



Chemically selective raising and rolling of oil-droplets underwater: an equipment-free chemical sensing method

Angana Borbora, Jaysri Das and Uttam Manna*

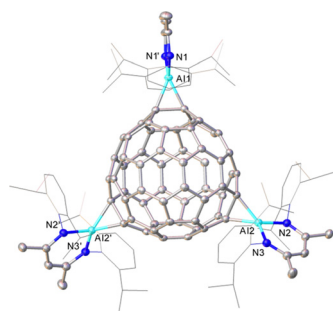
7919



A thirty-year old mystery solved: identification of a new heptatungstate from non-aqueous solutions

Dominic Shiels, Magda Pascual-Borràs, Paul G. Waddell, Corinne Wills, Josep-Maria Poblet and R. John Errington*

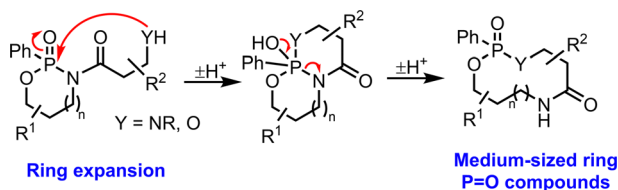
7923



A molecular aluminium fulleride

Samuel Ray Lawrence, Tobias Rüffer, Andreas Stasch* and Robert Kretschmer*

7927



Ring expansion reactions of P=O-containing molecules

Zhongzhen Yang, Jerry K. F. Tam, Jack M. Wootton, Jason M. Lynam* and William P. Unsworth*

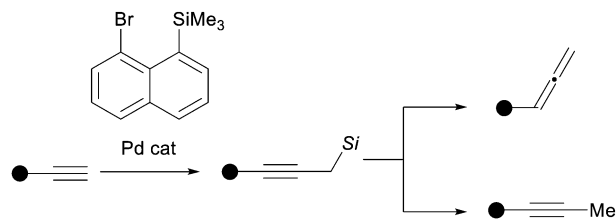


COMMUNICATIONS

7931

Synthesis of propargyl silanes from terminal alkynes via a migratory Sonogashira reaction

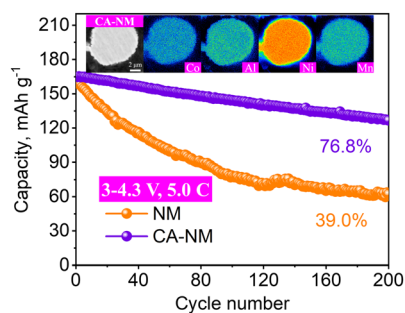
Mikus Puriņš, Lucas Eichenberger and Jérôme Waser*



7935

Cobalt/aluminum co-substitution in a $\text{LiNi}_{0.9}\text{Mn}_{0.1}\text{O}_2$ layered cathode for improving kinetics

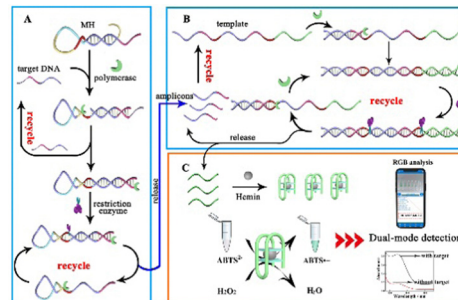
Zhiming Xiao, Bao Zhang, Xinyou He and Xing Ou*



7939

Target-switched artificial biochemical circuit for a versatile and sensitive colorimetric detection platform

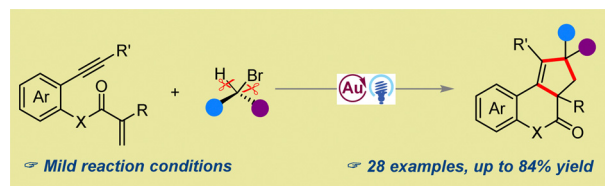
Xianzhu Meng, Huiwen Gu, Xiaoli Yin, Hongchao Yi and Ying Chen*



7943

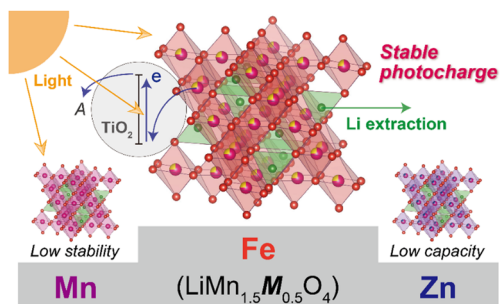
Dinuclear-gold-catalyzed cyclization of 1,7-enynes with alkyl bromides

Jiajun Li, Xinyi Zhai, Cheng-Long Ji, Weipeng Li and Jin Xie*



COMMUNICATIONS

7947



Optimizing $\text{LiMn}_{1.5}\text{M}_{0.5}\text{O}_4$ cathode materials for aqueous photo-rechargeable batteries

Kohei Shimokawa,* Shogo Matsubara,
Tomoya Kawaguchi, Akihiro Okamoto and
Tetsu Ichitsubo*

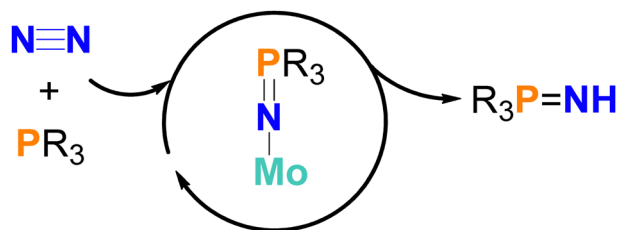
7951



$\text{B}(\text{C}_6\text{F}_5)_3$ -catalyzed regio- and stereoselective thiosulfonylation of terminal alkynes with thiosulfonates

Wenjie Qin, Qian Ni, Wenjun Jiao and Yuanhong Ma*

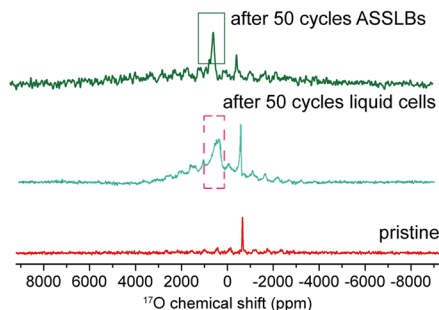
7955



A synthetic cycle for iminophosphorane synthesis involving direct intermolecular $\text{N}=\text{P}$ bond formation on N_2 -derived molybdenum nitride

Li Jin, Guoqiang Zhang, Xiaoqin Yang, Jinyi Song,
Jin Wang* and Qian Liao*

7959



Probing the degradation of LiCoO_2 in batteries subjected to high-voltage cycling with ^{17}O solid-state NMR spectroscopy

Guozhong Lu, Fushan Geng, Nianrui Guo,
Shouquan Yao, Ming Shen* and Bingwen Hu*

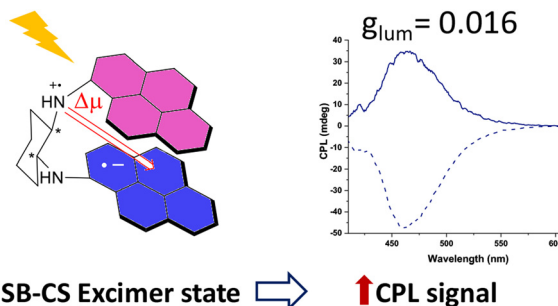


COMMUNICATIONS

7963

Strong circularly polarized luminescence via intramolecular excited-state symmetry-breaking charge separation

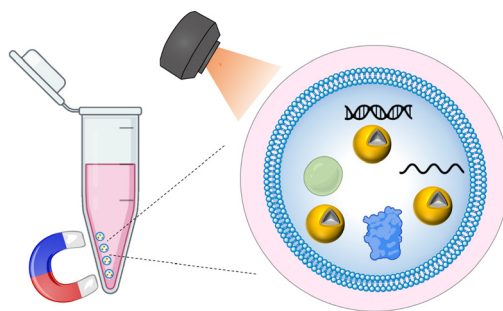
Maria João Álvaro-Martins, Chloé Billiaux, Pascale Godard, Reiko Oda, Guillaume Raffy and Dario M. Bassani*



7967

Integrated separation and detection of exosomes via a label-free magnetic SERS platform

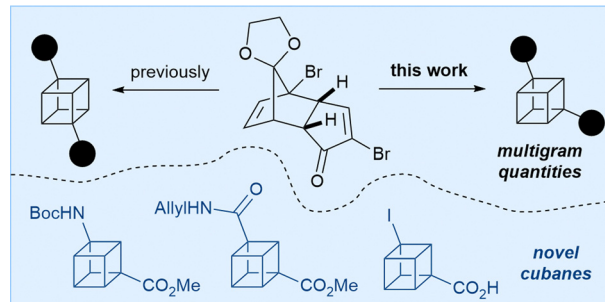
Lingfei Han, Chengcheng Zhu, Zheng Tan, Jin Wang, Xuewei Liao,* Xing-Hua Xia and Chen Wang*



7971

A practical synthesis of 1,3-disubstituted cubane derivatives

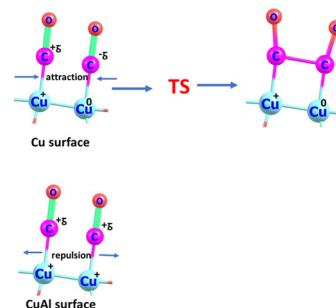
Nahin Kazi, Marine C. Aublette, Sarah L. Allinson and Susannah C. Coote*



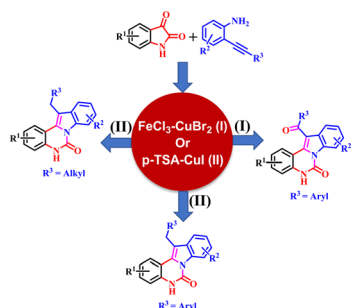
7974

Boosting selectivity towards formate production using CuAl alloy nanowires by altering the CO₂ reduction reaction pathway

Ibrahim M. Badawy, Ghada E. Khedr, Ahmed Hafez, Elsayed A. Ashour and Nageh K. Allam*



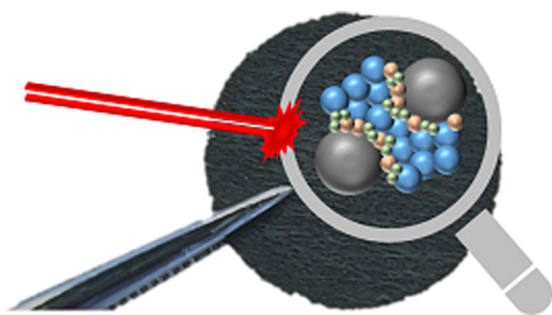
7978



Ring expansion and fused cyclization catalysis to construct indoloquinazolinones with functionalization

Ramlal Baidya, Prasenjit Das, Pintu Pratihari and Dilip K. Maiti*

7982



Localised degradation within sulfide-based all-solid-state electrodes visualised by Raman mapping

Jungwoo Lim, Yundong Zhou, Rory H. Powell, Tugce Ates, Stefano Passerini and Laurence J. Hardwick*

7986

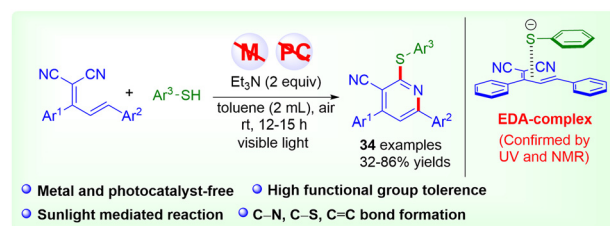


- radical dual difunctionalization of two different alkenes
- ordered-assembly by the intrinsic nucleo/electrophilicity of radicals and alkenes
- abundant aromatic/aliphatic aldehydes as acyl radical source
- readily available alkene substrates
- convenient synthesis of chain elongated β,δ -functionalized ketones
- Fe-catalyzed four-component acylative azidation at 35 °C

D–A–D–T-type four-component radical dual-difunctionalization and acylative azidation of two different alkenes

Ren-Xiang Liu, Xin Chen and Luo Yang*

7990



Visible-light driven electron–donor–acceptor (EDA) complex-initiated synthesis of thio-functionalized pyridines

Hirendra Nath Dhara, Amitava Rakshit, Dinabandhu Barik, Koustuv Ghosh and Bhisma K. Patel*

