

# 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(62) 9415-9546 (2023)



### Cover

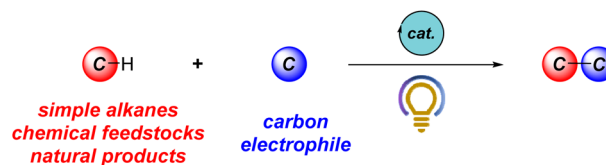
See Manuel Ferrer *et al.*, pp. 9469–9472. Image reproduced by permission of Manuel Ferrer and Design Cells from *Chem. Commun.*, 2023, 59, 9469.

## HIGHLIGHT

9424

### C–C bond formation *via* photocatalytic direct functionalization of simple alkanes

Álvaro Velasco-Rubio, Pol Martínez-Balart, Andrés M. Álvarez-Constantino and Martín Fañanás-Mastral\*

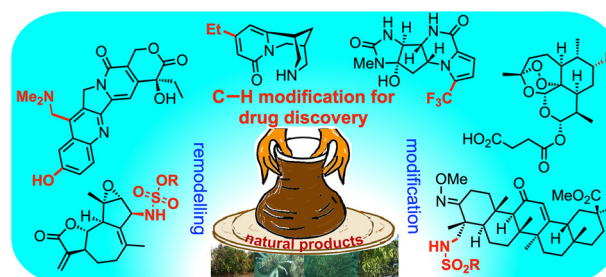


## FEATURE ARTICLES

9445

### C–H modification of natural products: a minimalist enabling tactic for drug discovery, API processing and bioconjugation

Saumitra Sengupta,\* Srihari Pabbaraja\* and Goverdhan Mehta\*



## 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 Palmer, 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](mailto:chemcomm@rsc.org)

For pre-submission queries please contact

Richard Kelly, Executive Editor.  
Email [chemcomm-rsc@rsc.org](mailto: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 0WE.

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 0WE, UK  
Tel +44 (0)1223 432398; E-mail [orders@rsc.org](mailto: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](http://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](mailto:advertising@rsc.org)

For marketing opportunities relating to this journal, contact [marketing@rsc.org](mailto:marketing@rsc.org)

# ChemComm

Chemical Communications

[rsc.li/chemcomm](http://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

Micheale Hardie, University of Leeds

Kim Jelfs, Imperial College London

Chao-Jun Li, McGill University

David Lou, City University of Hong Kong

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

Micheale 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](http://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

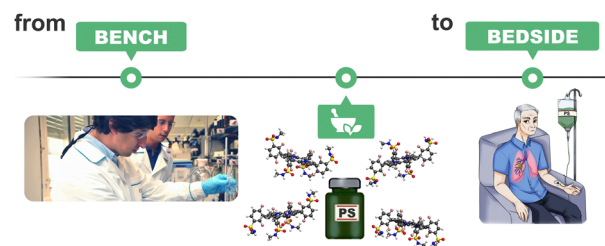


## FEATURE ARTICLES

9457

### Overcoming the challenges of infrared photosensitizers in photodynamic therapy: the making of redaporfin

Luis G. Arnaut\* and Mariette M. Pereira\*

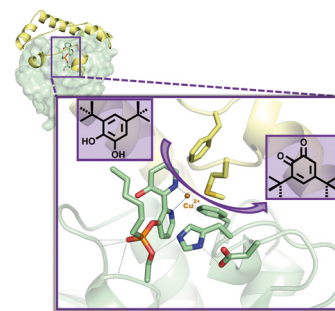


## COMMUNICATIONS

9469

### Transforming an esterase into an enantioselective catecholase through bioconjugation of a versatile metal-chelating inhibitor

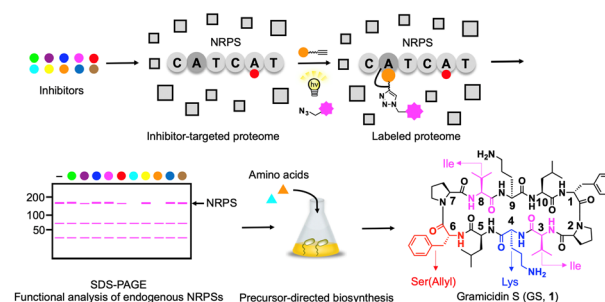
Laura Fernandez-Lopez, Isabel Cea-Rama, Julia Alvarez-Malmagro, Anna K. Ressmann, Jose L. Gonzalez-Alfonso, Cristina Coscolin, Patrick Shahgaldian, Francisco J. Plou, Jan Modregger, Marcos Pita, Julia Sanz-Aparicio and Manuel Ferrer\*



9473

### Biosynthetic diversification of non-ribosomal peptides through activity-based protein profiling of adenylation domains

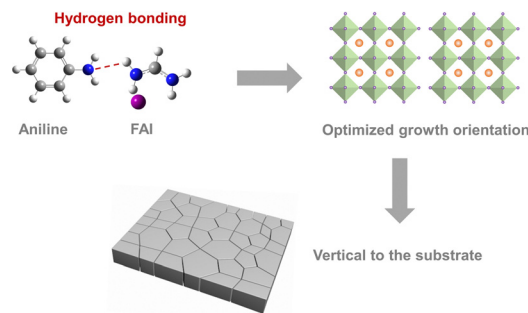
Fumihiro Ishikawa,\* Natsumi Tsukumo, Erika Morishita, Shumpei Asamizu, Saaya Kusuhara, Shinsuke Marumoto, Katsuki Takashima, Hiroyasu Onaka and Genzoh Tanabe\*



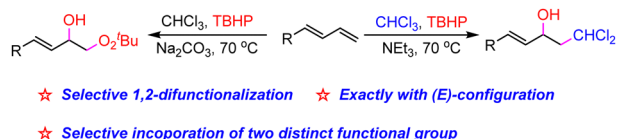
9477

### Regulating the crystallization dynamics through hydrogen bonding for high efficiency tin halide perovskite solar cells

Zhiyue Tang, Cheng Wu, Shurong Wang, Yu Xiao, Liming Ding and Feng Hao\*



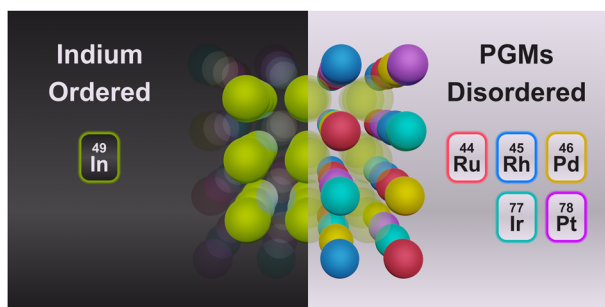
9481



### Base-tuned selective 1,2-dichloromethyl-hydroxylation and 1,2-peroxyhydroxylation of 1,3-dienes via a tandem radical process

Jiantao Zhang, Weiming Zhu, Peng Zhou,\* Cui Chen and Weibing Liu\*

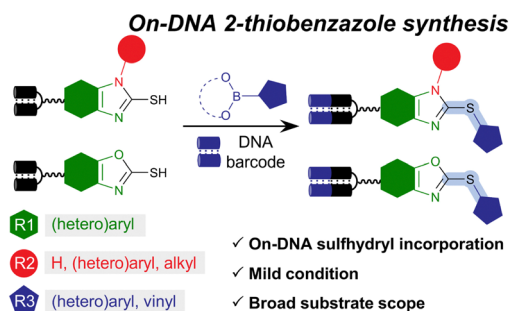
9485



### B2-structured indium–platinum group metal high-entropy intermetallic nanoparticles

Masashi Nakamura, Dongshuang Wu,\* Megumi Mukoyoshi, Kohei Kusada, Takaaki Toriyama, Tomokazu Yamamoto, Syo Matsumura, Yasukazu Murakami, Shogo Kawaguchi, Yoshiki Kubota and Hiroshi Kitagawa\*

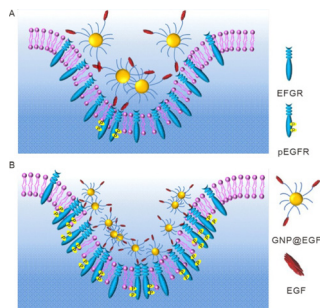
9489



### DNA-compatible combinatorial synthesis of functionalized 2-thiobenzazole scaffolds

Xianfeng Li, Changyang Liu, Yuting Gao, Gong Zhang,\* Yangfeng Li\* and Yizhou Li\*

9493



### In situ decrypting plasmonic nanoparticle size-controlled phosphorylation of epidermal growth factor receptor in living cells

Hongyan Wang, Yan Ding, Yu Zhang, Xiaoqi Shi and Honglin Liu\*

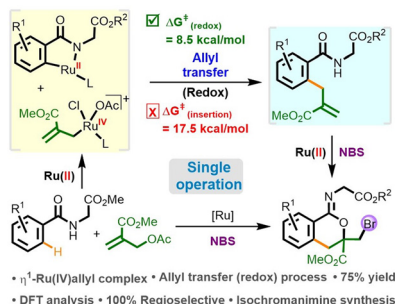


## COMMUNICATIONS

9497

### Ru(II)/Ru(IV)-catalyzed C(sp<sup>2</sup>)-H allylation with alkene difunctionalization to access isochroman-1-imines

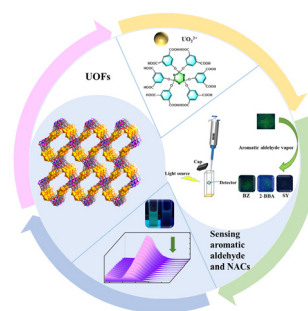
Ashish Joshi, Shruti Moorthy, Lilesh Rambhai Chavada, Saurabh Kumar Singh\* and Ashok Kumar Pandey\*



9501

### A UOF based on a cyclotriphosphazene skeleton: fluorescence sensing of different substituted aldehydes and NACs

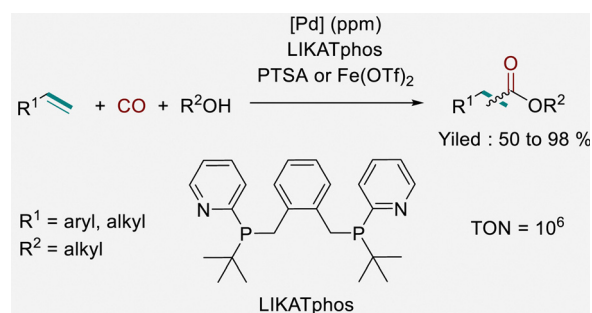
Yao Xiao, Zi-Xin You, Qing-lin Guan, Li-Xian Sun, Yong-Heng Xing\* and Feng-Ying Bai\*



9505

### Towards “homeopathic” palladium-catalysed alkoxycarbonylation of aliphatic and aromatic olefins

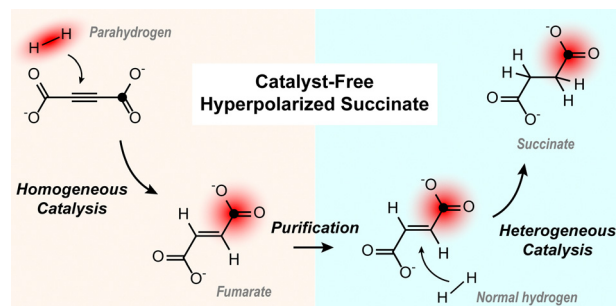
Weiheng Huang, Ralf Jackstell,\* Robert Franke\* and Matthias Beller\*



9509

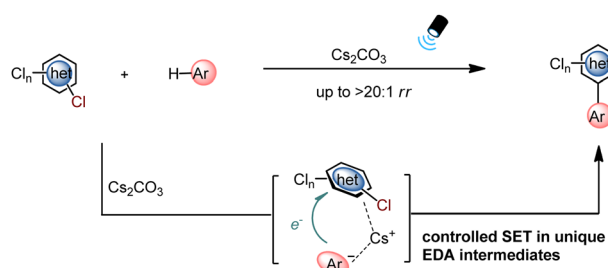
### Combined homogeneous and heterogeneous hydrogenation to yield catalyst-free solutions of parahydrogen-hyperpolarized [1-<sup>13</sup>C]succinate

James Eills,\* Román Picazo-Frutos, Dudari B. Burueva, Larisa M. Kovtunova, Marc Azagra, Irene Marco-Rius, Dmitry Budker and Igor V. Koptyug\*



## COMMUNICATIONS

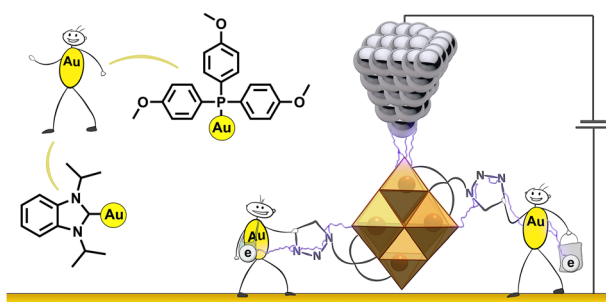
9513



### A transition metal- and photosensitizer-free approach for site-selective (hetero)arylation of polychlorinated heteroarenes

Xiuliang Cheng, Yuhang He, Silin Song, Yu-Mei Lin\* and Lei Gong\*

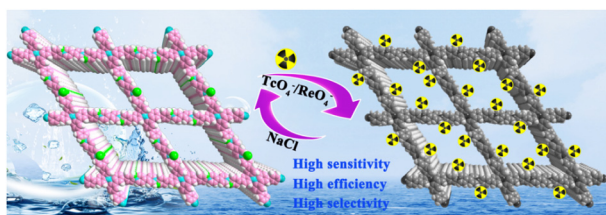
9517



### Increasing the redox switching capacity of Lindqvist-type hexavanadates by organogold post-functionalisation

Stanislav K. Petrovskii, Marco Moors, Sebastian Schmitz, Elena V. Grachova\* and Kirill Yu. Monakhov\*

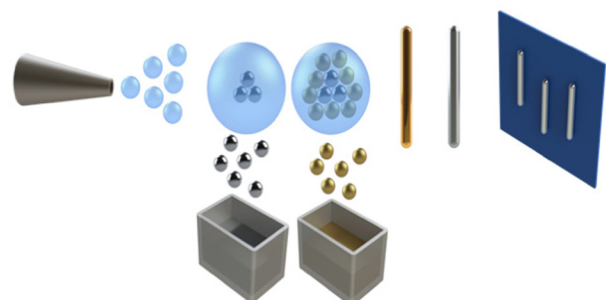
9521



### Ionic covalent organic framework for selective detection and adsorption of $\text{TcO}_4^-/\text{ReO}_4^-$

Xiao-Rong Chen, Cheng-Rong Zhang, Xin Liu, Ru-Ping Liang\* and Jian-Ding Qiu\*

9525



### Strong metal-support bonding enhanced thermal stability in Au- $\text{Al}_2\text{O}_3$ core-shell nanowires characterized by *in situ* transmission electron microscopy

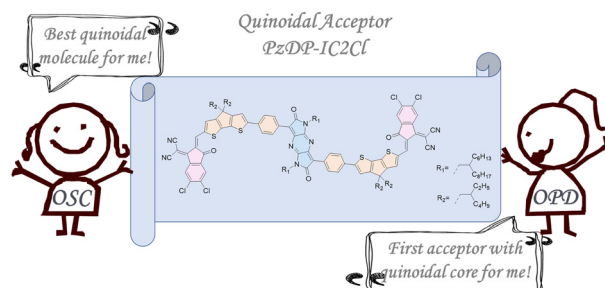
Haotian Yang, Claron J. Ridge, Kyle Overdeep, C. Michael Lindsay, Xiao Tong and Alexander Orlov\*



9529

### An electron acceptor with an intrinsic quinoidal core for bulk-heterojunction organic solar cells and photodetectors

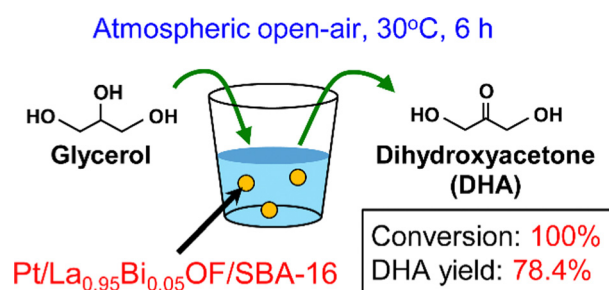
Haozhe Feng, Bingyan Yin, Langheng Pan, Xinyuan Liu, Seoyoung Kim, Yanfei Zhao,\* Xuelong Huang,\* Changduk Yang and Chunhui Duan\*



9533

### Dihydroxyacetone production by glycerol oxidation under moderate condition using Pt loaded on La<sub>1-x</sub>Bi<sub>x</sub>OF solids

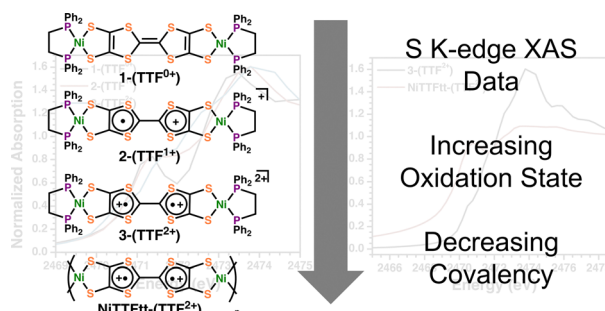
Naoyoshi Nunotani, Masanari Takashima, Yeon-Bin Choi, Yuta Uetake, Hidehiro Sakurai and Nobuhito Imanaka\*



9537

### Tetrathiafulvalene-2,3,6,7-tetrathiolate linker redox-state elucidation via S K-edge X-ray absorption spectroscopy

Ningxin Jiang, Jan-Niklas Boyn, Arun Ramanathan, Henry S. La Pierre\* and John S. Anderson\*



9541

### Selective synthesis of boron-substituted enynes via a one-pot diboration/protodeboration sequence

Jakub Szyling,\* Aleksandra Szymańska and Jędrzej Walkowiak\*

