Chemical Science

rsc.li/chemical-science

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 2041-6539 CODEN CSHCBM 14(14) 3695-3950 (2023)



Cover

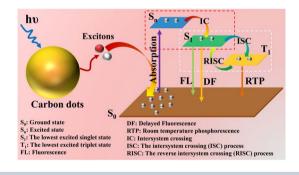
See Torsten John, Lisandra L. Martin et al., pp. 3730-3741. Image reproduced by permission of Ella Maru Studio from Chem. Sci., 2023, 14, 3730. Artwork by Ella Maru Studio.

REVIEW

3705

Evolution and fabrication of carbon dot-based room temperature phosphorescence materials

Jiurong Li, Yongzhong Wu and Xiao Gong*

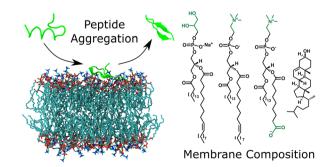


EDGE ARTICLES

3730

Lipid oxidation controls peptide self-assembly near membranes through a surface attraction mechanism

Torsten John,* Stefania Piantavigna, Tiara J. A. Dealey, Bernd Abel, Herre Jelger Risselada and Lisandra L. Martin*



Editorial Staff

Executive Editor

May Copsey

Deputy Editor

Samantha Apps

Senior Editor

James Moore

Scientific Editors

Ellis Crawford, Jingtao Huang, Esther Johnston, Sophie Orchard, Richard Thompson and Amy Welch

Editorial Assistant Karina Webster

Publishing Assistant David Bishop

For queries about submitted articles please contact James Moore, Senior Editor, in the first instance. E-mail chemicalscience@rsc.org

For pre-submission queries please contact May Copsey, Executive Editor.

E-mail chemicalscience-rsc@rsc.org

Chemical Science (electronic: ISSN 2041-6539) is published 48 times a year by the Royal Society of Chemistry, Thomas Graham House, Science Park, Milton Road, Cambridge, CB4 0WF, UK.

Chemical Science is a Gold Open Access journal and all articles from 2015 onwards are free to read.

Please email orders@rsc.org to register your interest or contact 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

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

Chemical Science

rsc.li/chemical-science

Editorial Board

Editor-in-Chief

Andrew Cooper, University of Liverpool

Associate Editors

Vincent Artero, CEA-Grenoble Luis M. Campos, Columbia University Michelle Chang, University of California,

Lin X. Chen. Northwestern University Graeme Day, University of Southampton Serena DeBeer, Max Planck Institute for Chemical Energy Conversion

Mircea Dincă MIT Vy Dong, University of California, Irvine François Gabbaï, Texas A&M University Subi George, JNCASR Jinlong Gong, Tianjin University Stephen Goldup, University of Southampton Zaiping Guo, University of Adelaide Christopher A. Hunter, University of Cambridge

Malika Jefferies-EL, Boston University Ning Jiao, Peking University Tanja Junkers, Monash University

Hemamala Karunadasa Stanford University Maja Köhn, University of Freiburg Yi-Tao Long, Nanjing University Gabriel Merino, CINVESTAV Merida James K. McCusker, Michigan State University Thomas Meade, Northwestern University Paolo Melchiorre, University of Bologna Carsten Schultz, Oregon Health & Science University Dmitri Talanin The University of Chicago Toshiharu Teranishi, Kyoto University

Advisory Board

Dave Adams, University of Glasgow Ayyappanpillai Ajayaghosh, NIIST Ulf-Peter Apfel, Ruhr-University Bochum Polly Arnold, University of California, Berkeley Xinhe Bao, Dalian Institute of Chemical

Zhenan Bao, Stanford University Gonçalo Bernardes, University of Cambridge Frank Biedermann, Karlsruhe Institute of Technology

Donna Blackmond, Scripps Research Institute Jeffrey Bode, ETH Zurich Jennifer S. Brodbelt, University of Texas at

Austin, USA Christopher Chang, University of California,

Chi-Ming Che, University of Hong Kong Jun Chen, Nankai University R. Graham Cooks, Purdue University Christophe Copéret, ETH Zurich Eugenio Coronado, University of Valencia Leroy Cronin, University of Glasgow James Crowley, University of Otago Christopher C. Cummins, Massachusetts Institute of Technology Ben Davis, University of Oxford

Jillian Dempsey, University of North Carolina at Chapel Hill Kazunari Domen, University of Tokyo James Durrant, Imperial College London Xinlang Feng, TU Dresden Ben Feringa, University of Groningen

Makoto Fujita, University of Tokyo Phillip Gale, University of Technology Sydney Song Gao, Peking University Jeremiah Gassensmith, University of Texas at Dalls

Elizabeth Gibson, Newcastle University Ryan Gilmour, WWU Münster Hubert Girault, EPFL Frank Glorius, WWU Münster Leticia González, University of Vienna Duncan Graham, University of Strathclyde Vicki Grassian, University of California, San Diego

Alexis Grimaud, Boston College Christian Hackenberger, FMP Berlin Buxing Han, Chinese Academy of Sciences Christy Haynes, University of Minnesota Patrick Holland, Yale University Kim Jelfs, Imperial College London Yousung Jung, KAIST Stephanie Kath-Schorr, University of Cologne

Takashi Kato, University of Tokyo Christopher Kelly, Janssen Research & Development

Jérôme Lacour, University of Geneva Ai-Lan Lee, Heriot-Watt University Daniele Leonori, RWTH Aachen University Chao-Jun Li, McGill University Yi Li, Jilin University Mi Hee Lim, KAIST Wenbin Lin, University of Chicago Kopin Liu, Academia Sinica Watson Loh, UNICAMP Bettina Lotsch, Max Planck Institute

Xiong Wen (David) Lou, Nanyang Technological University Kazuhiko Maeda, Tokyo Institute of Technology Satoshi Maeda, Hokkaido University Swadhin Mandal, IISER Kolkata Ellen Matson, University of Rochester

Scott Miller, Yale University Daniel Mindiola, University of Pennsylvania Wonwoo Nam, Ewha Womans University Jonathan Nitschke, University of Cambridge Allie Obermeyer, Columbia University Martin Oestreich, Technical University of Berlin

Takashi Ooi, Nagoya University Rachel O'Reilly, University of Birmingham Oleg Ozerov, Texas A&M University Xiulian Pan, Dalian Institute of Chemical

Nicolas Plumeré, Technical University of

Munich

Rasmita Rayal, University of Liverpool Erwin Reisner, University of Cambridge Andrea Rentmeister, WWU Münster Jeffrey Rinehart, University of California, San Diego

Andrei Yudin, University of Toronto

Stuart Rowan, University of Chicago Richmond Sarpong, University of California, Berkeley

Danielle Schultz, Merck Dwight Seferos, University of Toronto Oliver Seitz, Humboldt University of Berlin Roberta Sessoli, University of Florence Kay Severin, Federal Polytechnic School of

Mikiko Sodeoka, RIKEN Galo Soler-Illia, Universidad Nacional de San

David Spring, University of Cambridge Brian Stoltz, California Institute of Technology Brent Sumerlin, University of Florida Raghavan B. Sunoj, IIT Bombay Yogesh Surendranath, MIT Mizuki Tada, Nagoya University Ben Zhong Tang, The Hong Kong University of Science and Technology

Zhiyong Tang, National Center for Nanoscience and Nanotechnology Christine Thomas, Ohio State University He Tian, East China University of Science & Technology

Zhong-Qun Tian, Xiamen University F. Dean Toste, University of California, Berkley Takashi Uemura, University of Tokyo Jan van Hest, Radboud University Latha Venkataraman, Columbia University Chu Wang, Peking University Julia Weinstein, University of Sheffield Tom Welton, Imperial College London Charlotte Williams, University of Oxford Vivian Yam, University of Hong Kong Qi-Lin Zhou, Nankai University Jenny Zhang, University of Cambridge

Information for Authors

Full details on how to submit material for publication in Chemical Science 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/chemical-science

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.

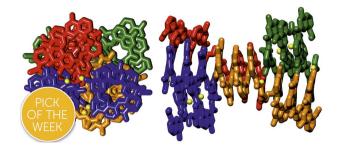
Registered charity number: 207890



3742

An abiotic, tetrameric, eight-helix bundle

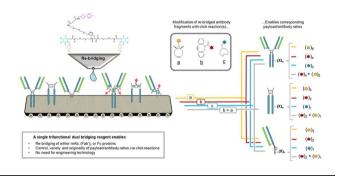
Friedericke S. Menke, Barbara Wicher, Lars Allmendinger, Victor Maurizot and Ivan Huc*



3752

Enabling the formation of native mAb, Fab' and Fcconjugates using a bis-disulfide bridging reagent to achieve tunable payload-to-antibody ratios (PARs)

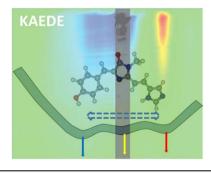
Fabien Thoreau,* Léa N. C. Rochet, James R. Baker* and Vijay Chudasama*



3763

Photophysics of the red-form Kaede chromophore

Kiri Addison, Palas Roy, Giovanni Bressan, Karolina Skudaite, Josh Robb, Philip C. Bulman Page, Eleanor K. Ashworth, James N. Bull and Stephen R. Meech*

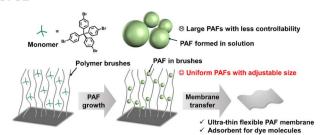


3776

Fluorocarbyne complexes *via* electrophilic fluorination of carbido ligands

Richard A. Manzano and Anthony F. Hill*

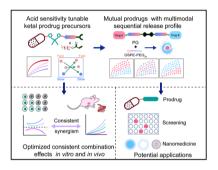
3782



Tailored preparation of porous aromatic frameworks in a confined environment

Ruihe Yu, Lin Liu, Liying Yin, Yege Jing, Ning Zhang,* Hang Bian* and Guangshan Zhu*

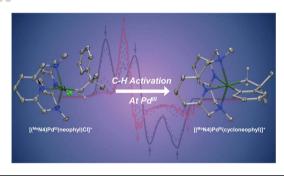
3789



Fine-tuning the sequential drug release of nanoformulated mutual prodrugs dictates the combination effects

Haiping Zhong, Xingwei Li, Na Yu, Xi Zhang, Jingqing Mu, Tao Liu, Bo Yuan, Xiaoyong Yuan and Shutao Guo*

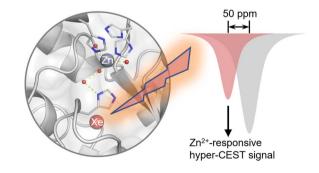
3800



C-H bond activation *via* concerted metalation—deprotonation at a palladium(III) center

Bailey S. Bouley, Fengzhi Tang, Dae Young Bae and Liviu M. Mirica*

3809



Rational design of a genetically encoded NMR zinc sensor

Zhuangyu Zhao, Mingyang Zhou, Serge D. Zemerov, Ronen Marmorstein and Ivan J. Dmochowski*

3816

Probing the donor strength of yldiide ligands: synthesis, structure and reactivity of rhodium complexes with a $PC_{vlide}N$ pincer ligand

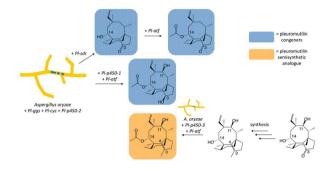
Sébastien Lapointe, Prakash Duari and Viktoria H. Gessner*



3826

Biosynthesis of pleuromutilin congeners using an Aspergillus oryzae expression platform

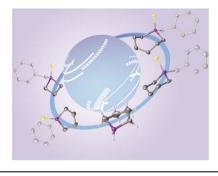
Fabrizio Alberti,* Khairunisa Khairudin, Jonathan A. Davies, Suphattra Sangmalee, Christine L. Willis, Gary D. Foster and Andy M. Bailey*



3834

Novel synthetic route for (parent) phosphetanes, phospholanes, phosphinanes and phosphepanes

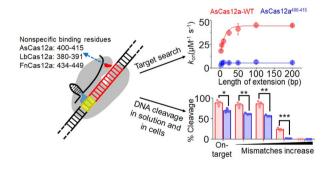
Stephan Reichl, Gábor Balázs and Manfred Scheer*



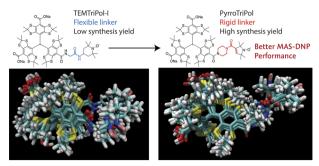
3839

Nonspecific interactions between Cas12a and dsDNA located downstream of the PAM mediate target search and assist AsCas12a for DNA cleavage

Ruirui Sun, Yuqian Zhao, Wenjuan Wang, Jun-Jie Gogo Liu and Chunlai Chen*



3852



PyrroTriPol: a semi-rigid trityl-nitroxide for high field dynamic nuclear polarization

Thomas Halbritter, Rania Harrabi, Subhradip Paul, Johan van Tol, Daniel Lee, Sabine Hediger, Snorri Th. Sigurdsson,* Frédéric Mentink-Vigier* and Gaël De Paëpe*

3865

Modifiable Directing Groups in Electrophilic Borylation

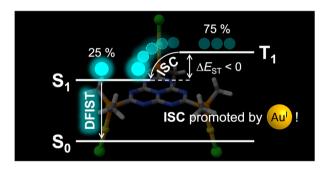


One-pot Borylation - Reduction

Amides as modifiable directing groups in electrophilic borylation

Saqib A. Iqbal, Marina Uzelac, Ismat Nawaz, Zhongxing Wang, T. Harri Jones, Kang Yuan, Clement R. P. Millet, Gary S. Nichol, Ghayoor Abbas Chotana and Michael J. Ingleson*

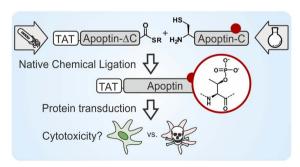
3873



Gold(i)-containing light-emitting molecules with an inverted singlet-triplet gap

Daniel Blasco, Rinat T. Nasibullin, Rashid R. Valiev and Dage Sundholm*

3881



Semisynthesis reveals apoptin as a tumour-selective protein prodrug that causes cytoskeletal collapse

Jasmine Wyatt, Yuen Ka Chan, Mateusz Hess, Mahvash Tavassoli* and Manuel M. Müller*

3893

Novel N(SCF₃)(CF₃)-amines: synthesis, scalability and stability

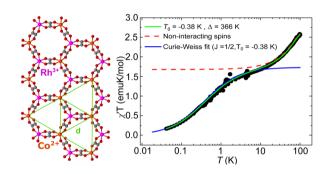
Yi Yang, Nathalie Saffon-Merceron, Julien C. Vantourout and Anis Tlili*

- New motif - 2 sets of conditions - Scalable

3899

A quantum spin liquid candidate isolated in a twodimensional Co^{II}Rh^{III} bimetallic oxalate network

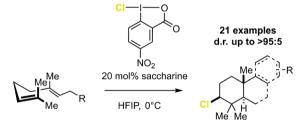
Enrique Burzurí,* María José Martínez-Pérez, Carlos Martí-Gastaldo, Marco Evangelisti, Samuel Mañas-Valero, Eugenio Coronado, Jesús I. Martínez, Jose Ramon Galan-Mascaros and Fernando Luis*



3907

Biomimetic chlorine-induced polyene cyclizations harnessing hypervalent chloroiodane—HFIP assemblies

Julia Binder, Aniruddha Biswas and Tanja Gulder*



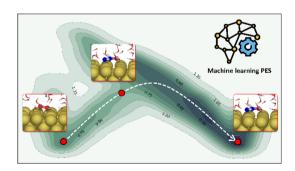
Bio-inspired concept for emulating the cyclization phase

+ activating Cl[⊕] + controling conformation + stabilizing polar intermediates

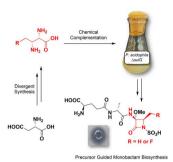
3913

Neural network potentials for accelerated metadynamics of oxygen reduction kinetics at Auwater interfaces

Xin Yang, Arghya Bhowmik, Tejs Vegge and Heine Anton Hansen*



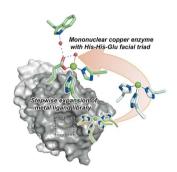
3923



Synthesis of functionalized 2,3-diaminopropionates and their potential for directed monobactam biosynthesis

Michael S. Lichstrahl, Lukas Kahlert, Rongfeng Li, Trevor A. Zandi, Jerry Yang and Craig. A. Townsend*

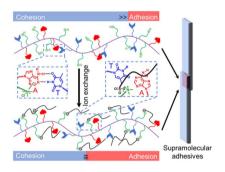
3932



An artificial metallolyase with pliable 2-His-1-carboxylate facial triad for stereoselective Michael addition

Ryusei Matsumoto, Saho Yoshioka, Miho Yuasa, Yoshitsugu Morita, Genji Kurisu and Nobutaka Fujieda*

3938



Bioinspired nucleobase-containing polyelectrolytes as robust and tunable adhesives by balancing the adhesive and cohesive properties

Zhi Dong, Jiang Wu, Xinyi Shen, Zan Hua* and Guangming Liu*