

## IN THIS ISSUE

ISSN 2041-6539 CODEN CSHCBM 16(14) 5757–6122 (2025)



**Cover**  
See Daniel Maspoch, Inhar Imaz *et al.*, pp. 5770–5775.  
Image reproduced by permission of Daniel Maspoch from *Chem. Sci.*, 2025, **16**, 5770. Image created by Maria Àngels Vilella, @art\_of\_valkyrie.



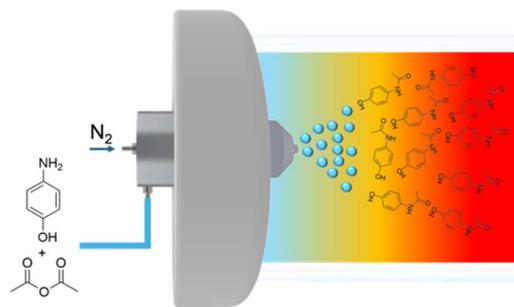
**Inside cover**  
See Walter Leitner, Alexis Bordet *et al.*, pp. 5776–5785.  
Image reproduced by permission of Johannes Zenner, Manisha Durai and Alexis Bordet from *Chem. Sci.*, 2025, **16**, 5776.

## EDGE ARTICLES

5770

### Synthesis of organic molecules *via* spray-drying

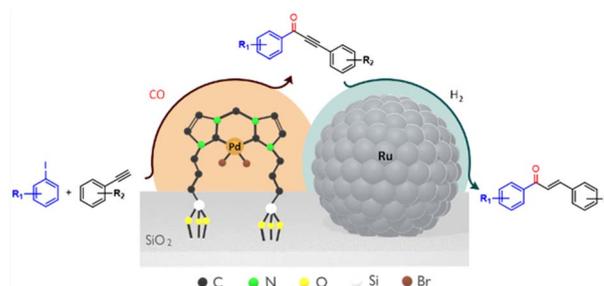
Gerard Pena, Jorge Albalad, Daniel Maspoch\* and Inhar Imaz\*



5776

### One-pot synthesis of *E*-chalcones using a multifunctional catalyst comprised of ruthenium nanoparticles and palladium N-heterocyclic carbene complexes immobilized on silica

Manisha Durai, Yufei Wu, Jacob Johny, Walid Hetaba, Thomas Wiegand, Walter Leitner\* and Alexis Bordet\*



# RSC Applied Interfaces

GOLD  
OPEN  
ACCESS

Interfacial and surface research  
with an applied focus

Interdisciplinary and open access

[rsc.li/RSCApplInter](https://rsc.li/RSCApplInter)

Fundamental questions  
Elemental answers



## PERSPECTIVES

5819

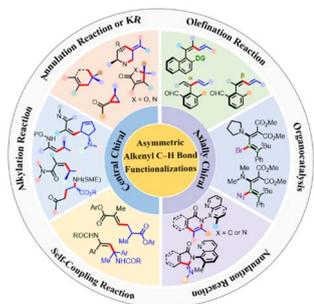


### Material needs for power-to-X systems for CO<sub>2</sub> utilization require a life cycle approach

Aloka Kumar Sahu, Thomas E. Rufford,\* Saleem H. Ali,\* Ruth Knibbe, Simon Smart, Feng Jiao, Alexis T. Bell and Xiwang Zhang

## REVIEW

5836



### Recent advances in catalytic asymmetric alkenyl C(sp<sup>2</sup>)-H bond functionalizations

Xiao-Ju Si, Tian-Ci Wang, Teck-Peng Loh\* and Ming-Zhu Lu\*

## EDGE ARTICLES

5849

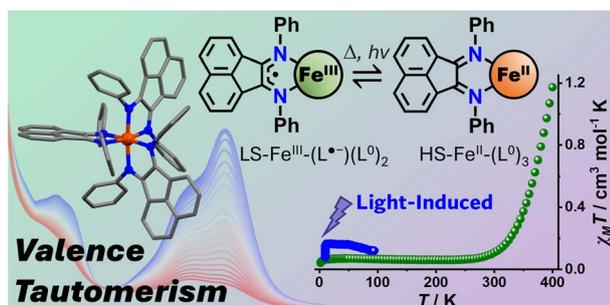


- 47 examples, up to 78% yield
- unsymmetrical 1,3-difunctionalization
- chemo-, regio- & diastereoselective
- C-F/C-O/C-H bond cleavage
- two C-C bonds formation
- difluorinated adipic acid moieties

### Photocatalytic 1,3-difluoroalkylcarboxylation of alkenes by triple kinetic-controlled radical self-ordering

Hong Fu, Zuo-Shuai Wang, Si-Jia Li, Lin-Yuan Zhu, Xiao-Jian Wang, Hong-Chen Wang and Bing Han\*

5857



### Thermal- and light-induced valence tautomerism with a concerted spin transition in an iron tris(diimine) complex

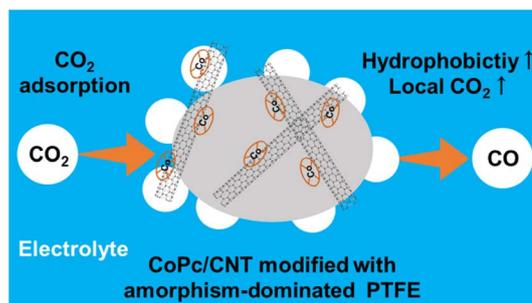
Jett T. Janetzki, Dominic S. Brown, Florian Daumann, I. Haseena Ismail, Robert W. Gable, Moya A. Hay, Roger J. Mulder, Alyona A. Starikova, Birgit Weber, Marcus J. Giansiracusa and Colette Boskovic\*



5872

### Tuning the microenvironment of immobilized molecular catalysts for selective electrochemical CO<sub>2</sub> reduction

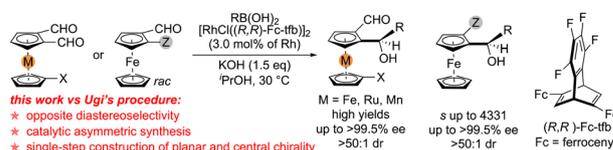
Ziying Qin, Haocheng Zhuang, Dayou Song, Gong Zhang, Hui Gao, Xiaowei Du, Mingyang Jiang, Peng Zhang\* and Jinlong Gong\*



5880

### Asymmetric synthesis of metallocenes with planar and central chirality by rhodium-catalyzed desymmetrization reactions

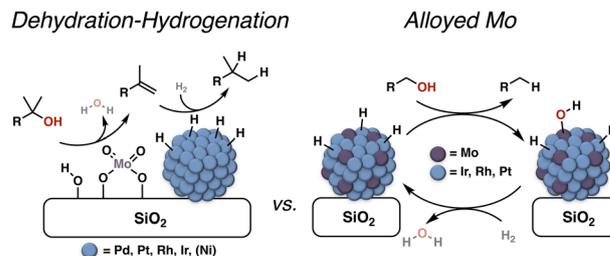
Nan-Nan Hang, En-Guang Tong, Ting Qi, Chao Sun and Jialin Ming\*



5887

### Alloyed molybdenum enables efficient alcohol hydrodeoxygenation with supported bimetallic catalysts

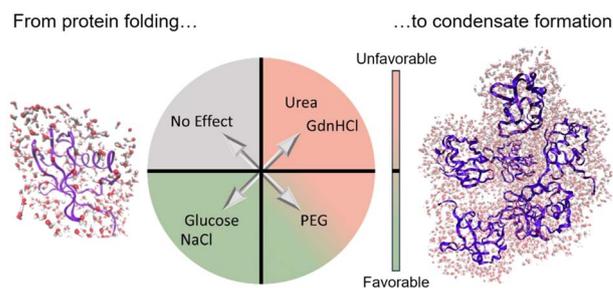
Christian Ehinger, Stephan Pollitt, Jordan De Jesus Silva, Xiaoyu Zhou, Kazutaka Sakamoto, Maarten Nachtegaal, Olga Safonova\* and Christophe Copéret\*



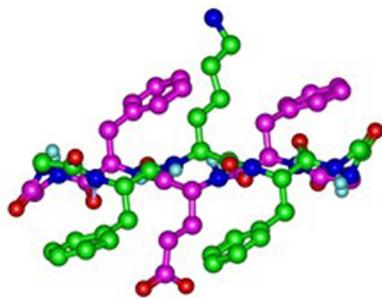
5897

### Tuning biological processes via co-solutes: from single proteins to protein condensates – the case of $\alpha$ -elastin condensation

B. König, S. Pezzotti, G. Schwaab and M. Havenith\*



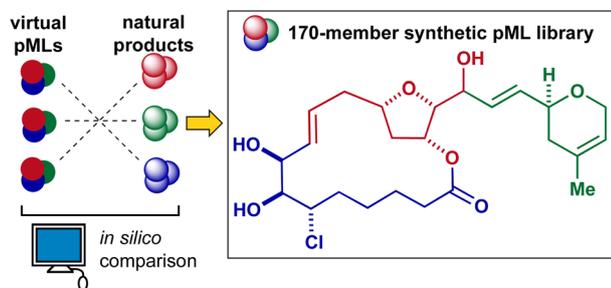
5907



### Formation of rippled $\beta$ -sheets from mixed chirality linear and cyclic peptides—new structural motifs based on the pauling-corey rippled $\beta$ -sheet

Amaruka Hazari,<sup>\*</sup> Michael R. Sawaya, Hyeonju Lee, Maria Sajimon, Hyungjun Kim, William A. Goddard III, David Eisenberg and Jevgenij A. Raskatov<sup>\*</sup>

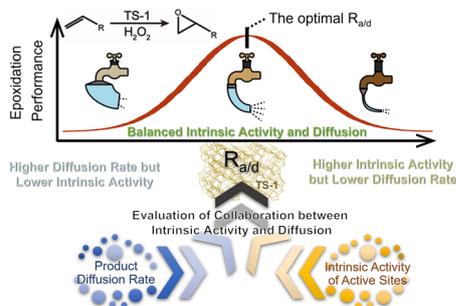
5918



### A sequential esterification-ring closing metathesis-Nozaki–Hiyama–Kishi strategy for constructing a natural product-like library of tetrahydrofuran-containing macrolides

Daniel Driedger, Darryl M. Wilson and Robert Britton<sup>\*</sup>

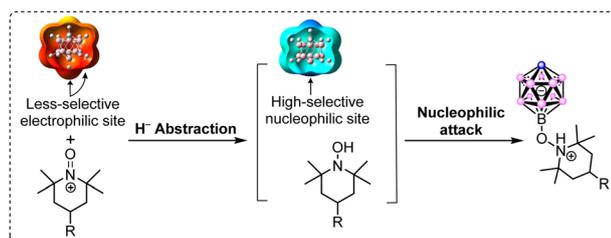
5931



### Evaluation of the collaboration between intrinsic activity and diffusion: a descriptor for alkene epoxidation catalyzed by TS-1

Di Pan, Jiayu Yu, Ke Du, Kexin Yan, Ling Ding, Yahong Zhang<sup>\*</sup> and Yi Tang<sup>\*</sup>

5942



### Oxidation-induced nucleophilic substitution at the electron-rich B(12) vertex in $[CB_{11}H_{12}]^-$ under catalyst-free conditions

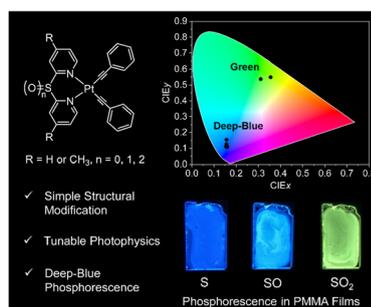
Wanqi Sun, Yujie Jin, Yongtao Wang,<sup>\*</sup> Zeyu Wen, Jizeng Sun, Jia Yao, Simon Duttwyler and Haoran Li<sup>\*</sup>



5948

## Deep-blue phosphorescence from platinum(II) bis(acetylide) complexes with sulfur-bridged dipyridyl ligands

Ka-Ming Tong, Jessica Toigo and Michael O. Wolf\*



5957

## Asymmetric copper-catalyzed hydrophosphinylation of ethynylazaarenes to access *P*-chiral 2-azaaryl-ethylphosphine oxides

Jialiang Zhang, Jiajia Guo, Ruhui Xu, Di Zheng, Kai Lian, Zhaoxia Zhang, Shanshan Cao\* and Zhiyong Jiang\*

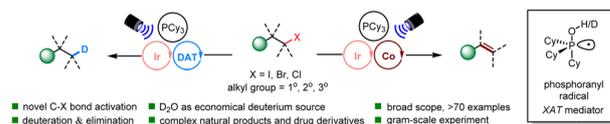


- Readily accessible feedstocks • Easily modulating the types of phosphines and azaarenes
- Key intermediates of 1,5-hybrid *P,N*-ligands featuring central chirality and *P*-chirality
- High enantioselectivity • Broad substrate scope (*R* = alkyl, aryl) • Novel copper catalysis platform

5967

## Photo-induced dehalogenative deuteration and elimination of alkyl halides enabled by phosphine-mediated halogen-atom transfer

Wei Shi, Bin Guan, Jian Tian, Chao Yang, Lin Guo, Yating Zhao\* and Wujiong Xia\*

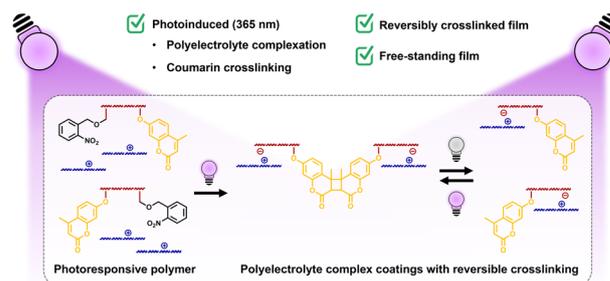


- novel C-X bond activation
- D<sub>2</sub>O as economical deuterium source
- broad scope, >70 examples
- deuteration & elimination
- complex natural products and drug derivatives
- gram-scale experiment

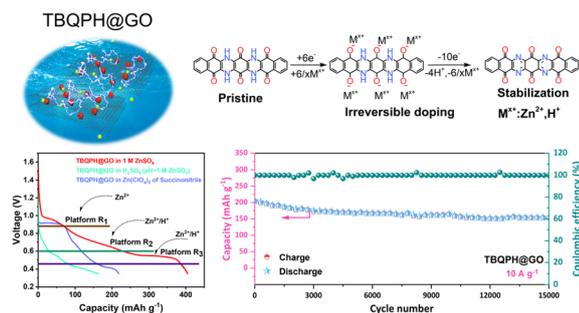
5976

## Photoinduced polyelectrolyte complexation for the formation of stable films with reversible crosslinking

Krisada Auepattana-Aumrung, Lauren M. Bishop, Kaden C. Stevens, Kevin A. Stewart, Daniel Crespy\* and Brent S. Sumerlin\*



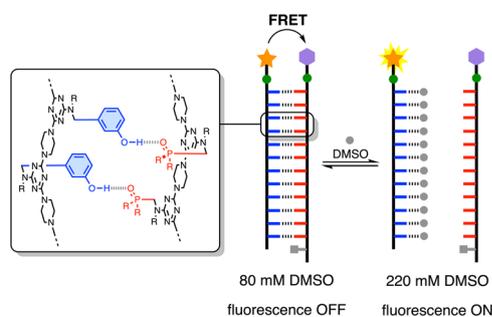
5986



### High-capacity organic cathode boosted by coordination chemistry for energy-dense aqueous zinc-organic batteries

Guanzhong Ma, Zhengyu Ju, Yutong Chen, Runmo Wang, Zihao Yuan, Huiping Du, Mian Cai, Meng Gao, Yaqun Wang\* and Guihua Yu\*

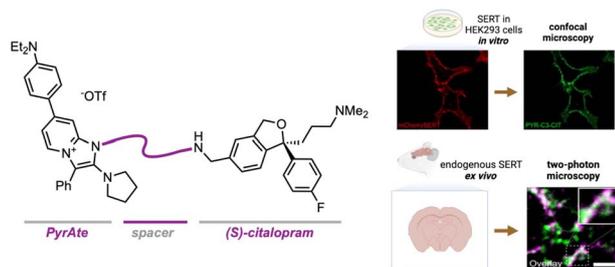
5995



### Cooperativity in the assembly of H-bonded duplexes of synthetic recognition-encoded melamine oligomers

Mohit Dhiman, Luis Escobar, Joseph T. Smith and Christopher A. Hunter\*

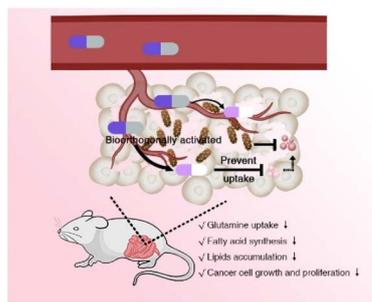
6003



### Fluorescent PyrAte-(S)-citalopram conjugates enable imaging of the serotonin transporter in living tissue

Oliver J. V. Belleza, Iakovos Saridakis, Nadja K. Singer, Xavier Westergaard, Sergio Armentia Matheu, Miran Lemmerer, Margaux Riomet, Pedro A. Sánchez-Murcia, Nina Kastner, Stefanie Rukavina, Yi Xiao, Kathrin Jäntschi, Marco Niello, Klaus Schicker, David Sulzer, Leticia González\*, Nuno Maulide\* and Harald H. Sitte\*

6014



### A bacteria-based bioorthogonal platform disrupts the flexible lipid homeostasis for potent metabolic therapy

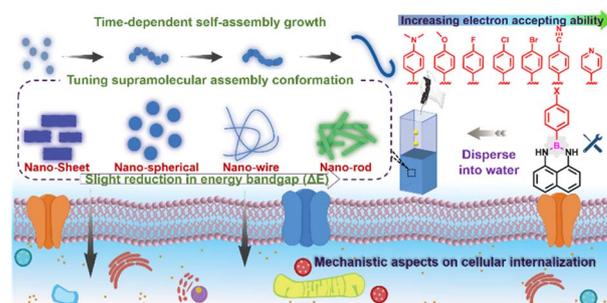
Jiadao Yi, Huan Wang\*, Qingqing Deng, Congcong Huang, Lu Zhang, Mengyu Sun, Jinsong Ren\* and Xiaogang Qu\*



6023

### Mechanistic investigation on cellular internalization triggering structure-induced conformational modulation of boron–nitrogen luminogens

Retwik Parui, Hirakjyoti Roy, Niranjan Meher, Siddhartha Sankar Ghosh and Parameswar Krishnan Iyer\*



6035

### Reversible enzyme-catalysed NAD<sup>+</sup>/NADH electrochemistry

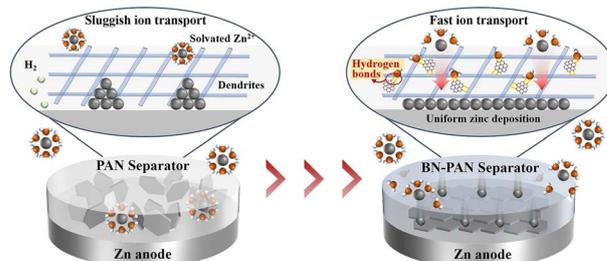
Peter D. Giang, Dimitri Niks, Sheron Hakopian, Russ Hille and Paul V. Bernhardt\*



6050

### Dissecting ionic favorable hydrogen bond chemistry in hybrid separators for aqueous zinc-ion batteries

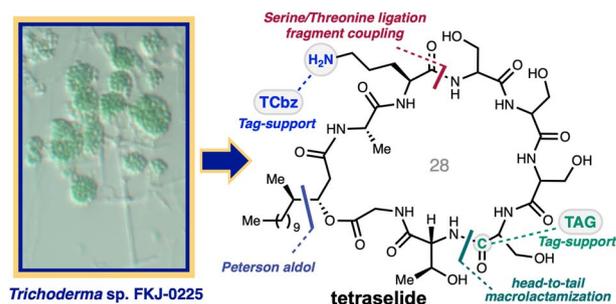
Yixiu Wang, Heng Zhou, Shiqiang Wei,\* Hengjie Liu, Shuangming Chen,\* Xin Chen, Kefu Zhu, Xunshuang Zhang, Yang Si, Xiaojun Wu, Ran Long, Liangbin Li and Li Song\*



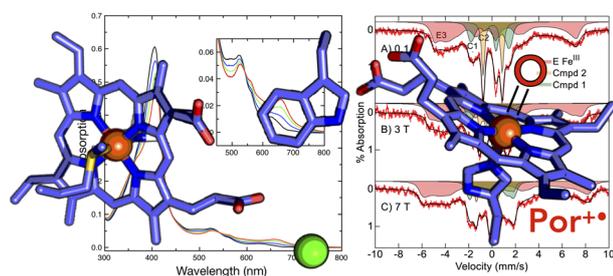
6060

### Isolation, total synthesis and structure determination of antifungal macrocyclic depsipeptide, tetraselide

Hiroki Nakahara, Goh Sennari, Haruki Azami, Hayama Tsutsumi, Yoshihiro Watanabe, Yoshihiko Noguchi, Yuki Inahashi, Masato Iwatsuki, Tomoyasu Hirose\* and Toshiaki Sunazuka\*



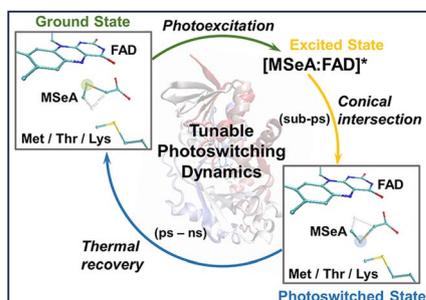
6070



## Reactivity of canonical bacterial cytochrome *c* peroxidases: insights into the electronic structure of compound I

Patrick Hewitt, Michael P. Hendrich and Sean J. Elliott\*

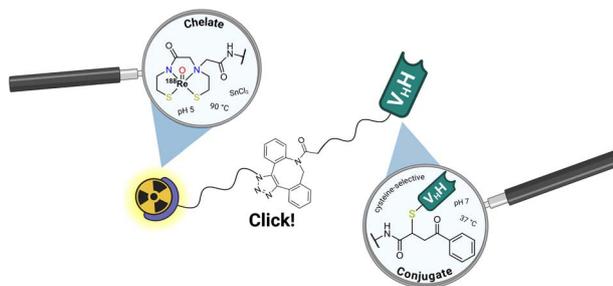
6079



## Mechanism and dynamics of photoswitchable flavoprotein charge-transfer complexes

Bo Zhuang,\* Guangliu Ran, Wenkai Zhang\* and Feng Gai\*

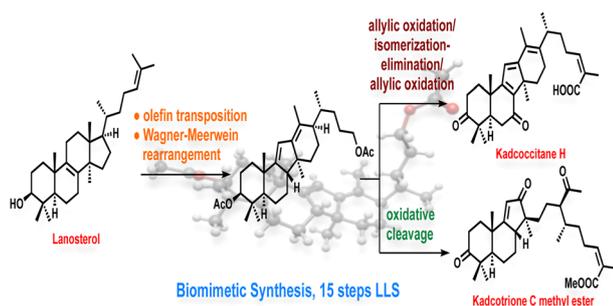
6089



## Cysteine-selective [<sup>188</sup>Re]Re(v) radiolabelling of a Nanobody® for targeted radionuclide therapy using a "chelate-then-click" approach

Diana R. Melis, Charlotte Segers, Jasmien Wellens, Michiel Van de Voorde, Olivier Blacque, Maarten Ooms, Gilles Gasser\* and Tomas Opsomer\*

6099



## Biomimetic syntheses of kadcoccitane H and kadcotrone C methyl ester

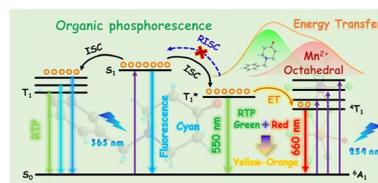
Dattatraya H. Dethe,\* Salman A. Siddiqui and Chirantan Singha



6104

## Efficient energy transfer from organic triplet states to $Mn^{2+}$ dopants for dynamic tunable multicolor afterglow in 1D hybrid cadmium chloride

Ke Zhang, Zhikai Qi,\* Nan Zhang, Xingxing Zhao, Yanli Fan, Long Sun, Guojun Zhou, Shi-Li Li and Xian-Ming Zhang\*



6114

## Configurational control of low-symmetry heteroleptic metal–organic cages with asymmetric ligands

Hao Yu, Ziteng Guo, Jie Tang, Ningxu Han, Junjuan Shi, Meng Li, Houyu Zhang and Ming Wang\*

