

# Chemical Science

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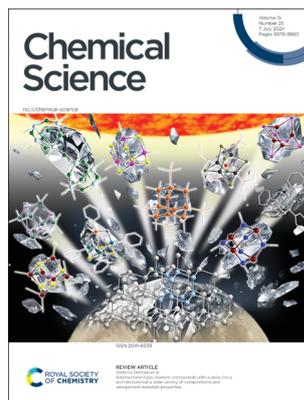
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## IN THIS ISSUE

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**Cover**  
See Ming Xue *et al.*,  
pp. 9557–9565. Image  
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2024, 15, 9557.



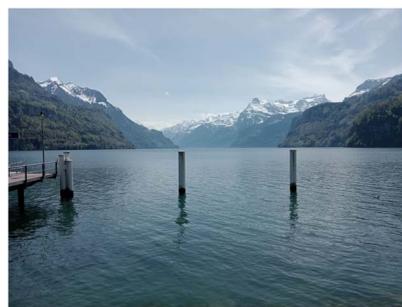
**Inside cover**  
See Stefanie Dehnen *et al.*,  
pp. 9438–9509. Image  
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Stefanie Dehnen from *Chem.*  
*Sci.*, 2024, 15, 9438. Sun  
image: NASA/Goddard/SDO.

## EDITORIAL

9392

### Highlights from the 57th Bürgenstock Conference on Stereochemistry 2024

Jesús Mosquera\* and Alessandro Bismuto\*



## PERSPECTIVES

9397

### Recommendations for life-cycle assessment of recyclable plastics in a circular economy

Sarah L. Nordahl and Corinne D. Scown\*



# RSC Applied Polymers

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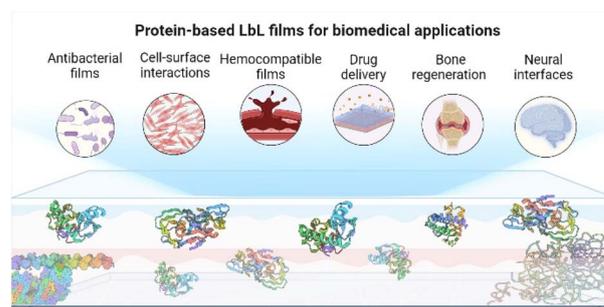
Fundamental questions  
Elemental answers

## PERSPECTIVES

9408

**Protein-based layer-by-layer films for biomedical applications**

Muhammad Haseeb Iqbal,\* Halima Kerdjoudj and Fouzia Boulmedais\*

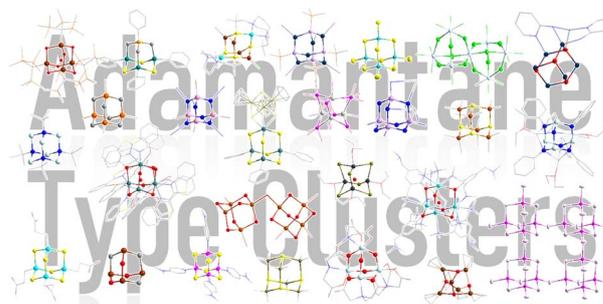


## REVIEWS

9438

**Adamantane-type clusters: compounds with a ubiquitous architecture but a wide variety of compositions and unexpected materials properties**

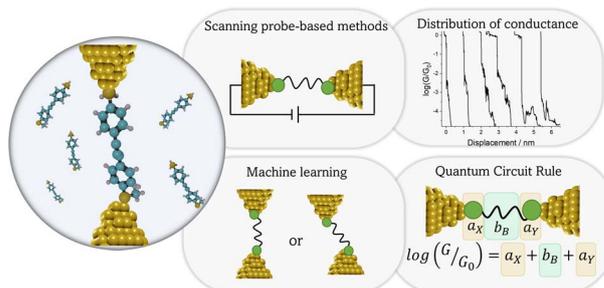
Niklas Rinn, Irán Rojas-León, Benjamin Peerless, Saravanan Gowrisankar, Ferdinand Ziese, Nils W. Rosemann, Wolf-Christian Pilgrim, Simone Sanna, Peter R. Schreiner and Stefanie Dehnen\*



9510

**Methods for the analysis, interpretation, and prediction of single-molecule junction conductance behaviour**

Elena Gorenskaia and Paul J. Low\*

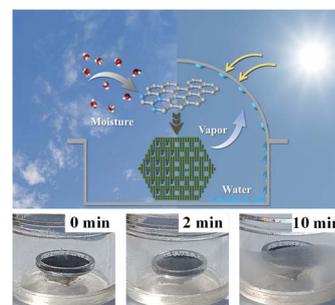


## EDGE ARTICLES

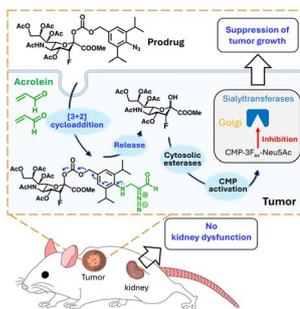
9557

**Rapid solar-driven atmospheric water-harvesting with MAF-4-derived nitrogen-doped nanoporous carbon**

Jin-Hua Feng, Feng Lu, Zhen Chen, Miao-Miao Jia, Yi-Le Chen, Wei-Hai Lin, Qing-Yun Wu, Yi Li, Ming Xue\* and Xiao-Ming Chen



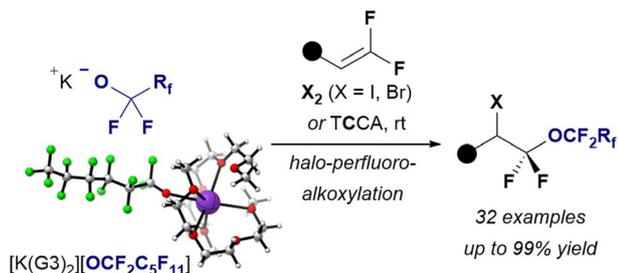
9566



### Anticancer approach by targeted activation of a global inhibitor of sialyltransferases with acrolein

Takatsugu Kasahara, Tsung-Che Chang, Hiromasa Yoshioka, Sayaka Urano, Yasuko Egawa, Michiko Inoue, Tsuyoshi Tahara, Koji Morimoto, Ambara R. Pradipta\* and Katsunori Tanaka\*

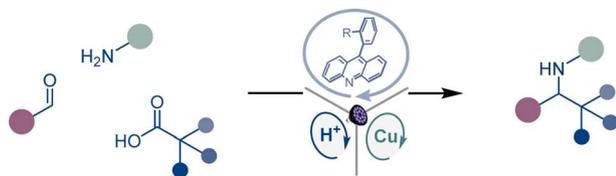
9574



### Halo-perfluoroalkoxylation of *gem*-difluoroalkenes with short-lived alkali metal perfluoroalkoxides in triglyme

Koki Kawai, Yoshimitsu Kato, Taichi Araki, Sota Ikawa, Mai Usui, Naoyuki Hoshiya, Yosuke Kishikawa, Jorge Escorihuela and Norio Shibata\*

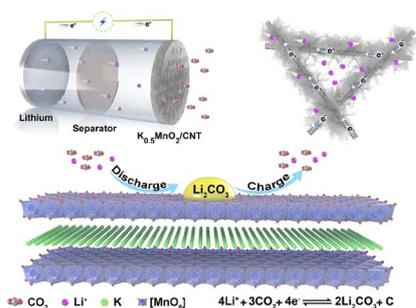
9582



### Acridine photocatalysis enables tricomponent direct decarboxylative amine construction

Xianwei Sui, Hang T. Dang, Arka Porey, Ramon Trevino, Arko Das, Seth O. Fremin, William B. Hughes, William T. Thompson, Shree Krishna Dhakal, Hadi D. Arman and Oleg V. Larionov\*

9591



### Cross-linked $K_{0.5}MnO_2$ nanoflower composites for high rate and low overpotential Li-CO<sub>2</sub> batteries

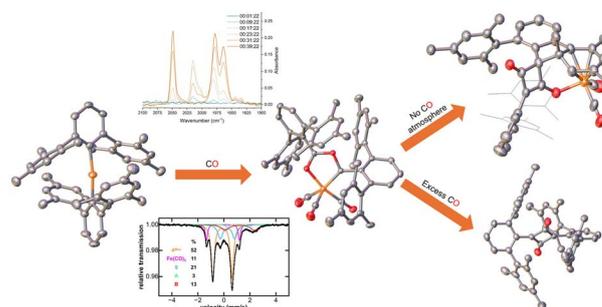
Jiawei Wu, Jian Chen, Xiaoyang Chen, Yang Liu,\* Zhe Hu, Feijian Lou,\* Shulei Chou and Yun Qiao\*



9599

## Mechanistic investigations of the Fe(II) mediated synthesis of squaraines

Yu Liu, Nathan T. Coles,\* Nathalia Cajiao, Laurence J. Taylor, E. Stephen Davies, Alistair Barbour, Patrick J. Morgan, Kevin Butler, Ben Pointer-Gleadhill, Stephen P. Argent, Jonathan McMaster, Michael L. Neidig, David Robinson and Deborah L. Kays\*

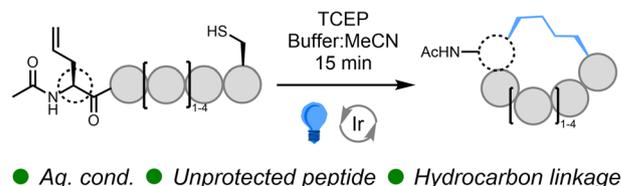


9612

## Peptide macrocyclisation via intramolecular interception of visible-light-mediated desulfurisation

Frances R. Smith, Declan Meehan, Rhys C. Griffiths, Harriet J. Knowles, Peiyu Zhang, Huw E. L. Williams, Andrew J. Wilson and Nicholas J. Mitchell\*

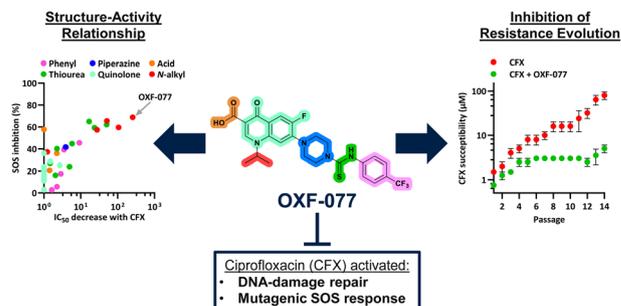
## Peptide cyclisation via interception of cysteine desulfurisation



9620

## Development of an inhibitor of the mutagenic SOS response that suppresses the evolution of quinolone antibiotic resistance

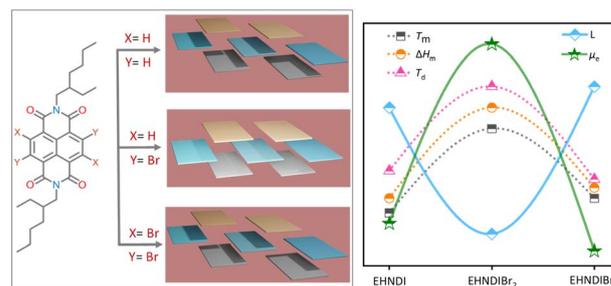
Jacob D. Bradbury, Thomas Hodgkinson, Adam M. Thomas, Omprakash Tanwar, Gabriele La Monica, Vanessa V. Rogga, Luke J. Mackay, Emilia K. Taylor, Kiera Gilbert, Yihua Zhu, Amber Y. Sefton, Andrew M. Edwards, Charlotte J. Gray-Hammerton, Gerald R. Smith, Paul M. Roberts, Timothy R. Walsh and Thomas Lanyon-Hogg\*



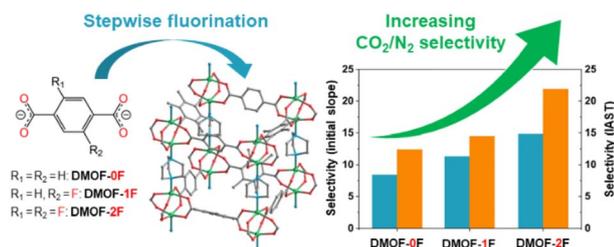
9630

## Engineered solid-state aggregates in brickwork stacks of n-type organic semiconductors: a way to achieve high electron mobility

Indrajit Giri, Shant Chhetri, Jesslyn John P., Madalasa Mondal, Arka Bikash Dey and Ratheesh K. Vijayaraghavan\*



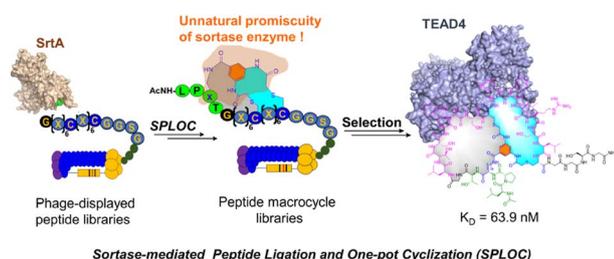
9641



### Increased $\text{CO}_2/\text{N}_2$ selectivity by stepwise fluorination in isorecticular ultramicroporous metal–organic frameworks

Tuo Di, Yukihiro Yoshida,\* Ken-ichi Otake, Susumu Kitagawa and Hiroshi Kitagawa\*

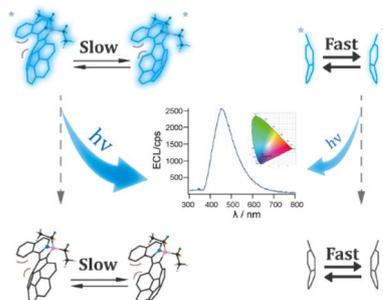
9649



### Employing unnatural promiscuity of sortase to construct peptide macrocycle libraries for ligand discovery

Yan-Ni Zhang, Xiao-Cui Wan, Yang Tang, Ying Chen, Feng-Hao Zheng, Zhi-Hui Cui, Hua Zhang, Zhaocai Zhou and Ge-Min Fang\*

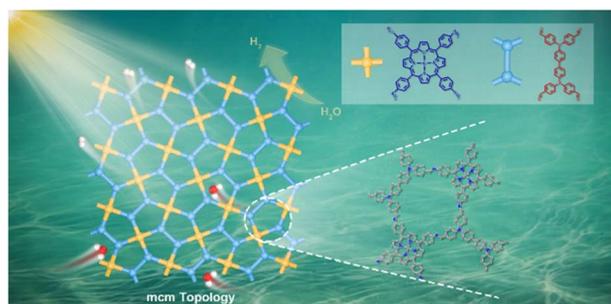
9657



### Enhancing corannulene chemiluminescence, electrochemiluminescence and photoluminescence by means of an azaborene-helicene to slow down its bowl inversion

Xiaoli Qin, Lin Huang, Ziying Zhan, Peng Fu, Qing Wang, Congyang Zhang, Jianhui Huang\* and Zhifeng Ding\*

9669



### Identification of two-dimensional covalent organic frameworks with mcm topology and their application in photocatalytic hydrogen evolution

Peng-Ju Tian, Xiang-Hao Han, Qiao-Yan Qi and Xin Zhao\*

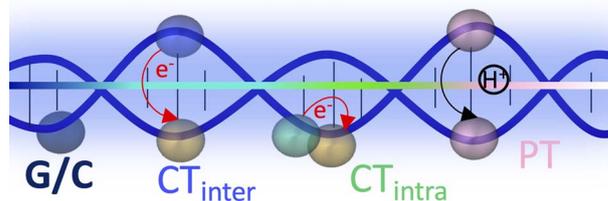


9676

## The photoactivated dynamics of dGpdC and dCpdG sequences in DNA: a comprehensive quantum mechanical study

Lara Martínez-Fernández, James Alexander Green, Luciana Esposito, Martha Yaghoubi Jouybari, Yuyuan Zhang, Fabrizio Santoro, Bern Kohler\* and Roberto Imbrota\*

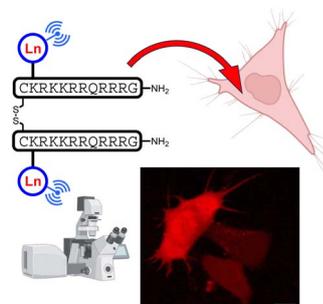
## Photoactivated dynamics of GC and CG in DNA



9694

## Efficient cytosolic delivery of luminescent lanthanide bioprobes in live cells for two-photon microscopy

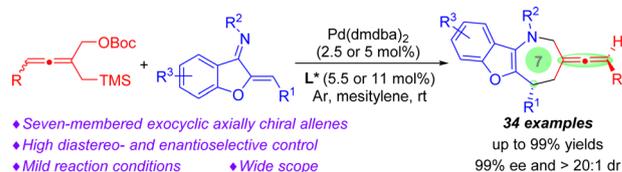
Kyangwi P. Malikidogo, Thibault Charnay, Daouda Ndiaye, Ji-Hyung Choi, Lucile Bridou, Baptiste Chartier, Sule Erbek, Guillaume Micouin, Akos Banyasz, Olivier Maury, Véronique Martel-Frchet, Alexei Grichine and Olivier Sénèque\*



9703

## Palladium-catalyzed asymmetric [4 + 3] cycloaddition of methylene-trimethylenemethane: access to seven-membered exocyclic axially chiral allenes

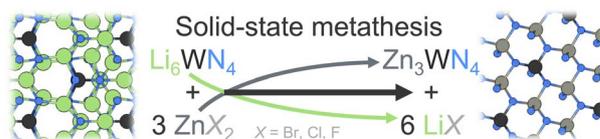
Yafei Wu, Zhuo Wang, Yuqian Shan, Yukun Ma, Teng Li, Chunhao Yuan,\* Hongchao Guo\* and Biming Mao\*



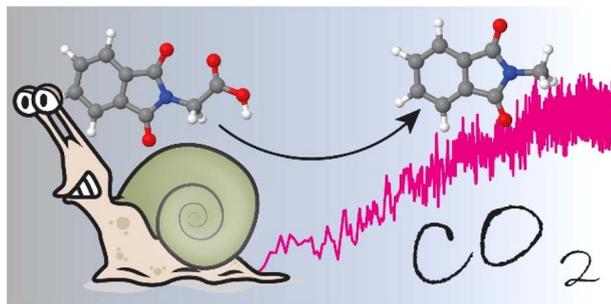
9709

## Low-temperature synthesis of cation-ordered bulk Zn<sub>3</sub>WN<sub>4</sub> semiconductor via heterovalent solid-state metathesis

Christopher L. Rom,\* Shaun O'Donnell, Kayla Huang, Ryan A. Klein, Morgan J. Kramer, Rebecca W. Smaha and Andriy Zakutayev\*



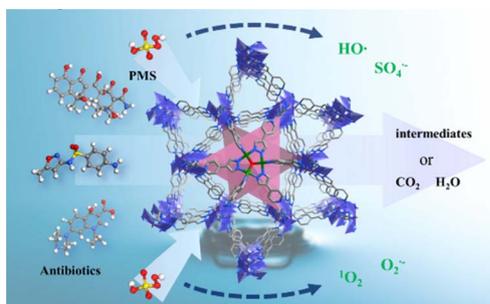
9719



### The slow photo-induced $\text{CO}_2$ release of *N*-phthaloylglycine

Wiebke Haselbach, Oliver Nolden, Nadine Blaise, Tom Förster, Mick Gindorf, Mathieu Kippes, Michelle P. Rademacher, Matthias Jantz, Luuk J. G. W. van Wilderen, Jens Bredenbeck, Josef Wachtveitl and Peter Gilch\*

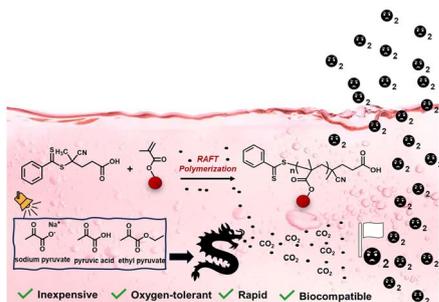
9733



### Boosting the degradation of antibiotics via peroxymonosulfate activation with a Cu-based metal-organic framework

Ying Wu, Gang Liang, Wen-Bin Li, Xiao-Feng Zhong, Yang-Yang Zhang, Jia-Wen Ye, Tao Yang\*, Zong-Wen Mo\* and Xiao-Ming Chen

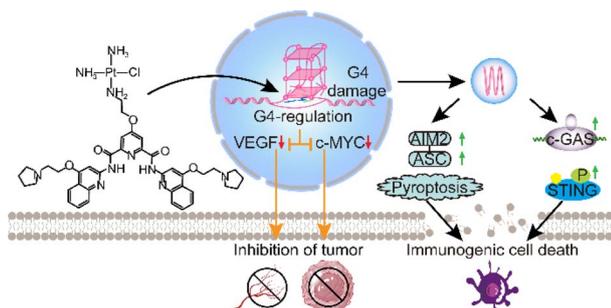
9742



### Aqueous photo-RAFT polymerization under ambient conditions: synthesis of protein-polymer hybrids in open air

Arman Moini Jazani, Hironobu Murata, Martin Cvek, Anna Lewandowska-Andralojc, Rokšana Bernat, Kriti Kapil, Xiaolei Hu, Ferdinando De Luca Bossa, Grzegorz Szczepaniak and Krzysztof Matyjaszewski\*

9756



### G-quadruplex-guided cisplatin triggers multiple pathways in targeted chemotherapy and immunotherapy

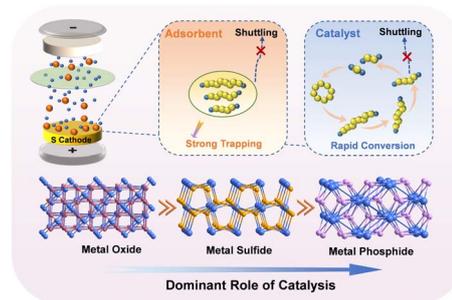
Tian-Zhu Ma, Liu-Yi Liu, You-Liang Zeng, Ke Ding, Hang Zhang, Wenting Liu\*, Qian Cao, Wei Xia, Xushen Xiong\*, Chao Wu\* and Zong-Wan Mao\*



9775

## Effects of O, S, and P in transition-metal compounds on the adsorption and catalytic ability of sulfur cathodes in lithium–sulfur batteries

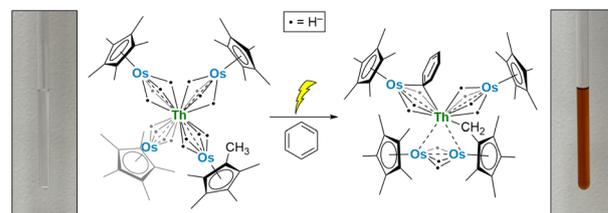
Meng Du, Jiakang Shi, Yuxiao Shi, Guangxun Zhang, Yan Yan, Pengbiao Geng, Ziqi Tian and Huan Pang\*



9784

## Photolysis-driven bond activation by thorium and uranium tetraosmate polyhydride complexes

Christopher Z. Ye, Iker Del Rosal, Sheridan N. Kelly, I. Joseph Brackbill, Laurent Maron, Clément Camp and John Arnold\*

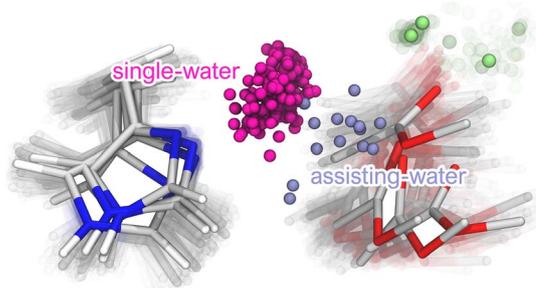


Photoinduced inter- and intramolecular C–H activation!

9793

## Revisiting the reaction pathways for phospholipid hydrolysis catalyzed by phospholipase A2 with QM/MM methods

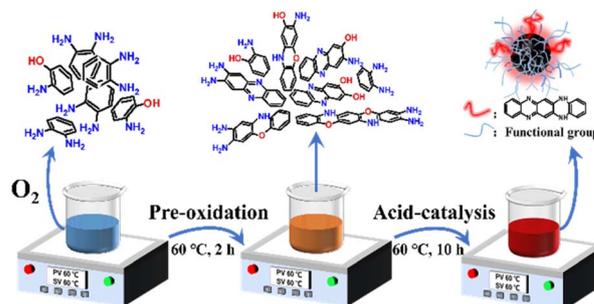
Alexandre V. Pinto, Pedro Ferreira, Ana V. Cunha, Remco W. A. Havenith, Alexandre L. Magalhães, Maria J. Ramos and Pedro A. Fernandes\*



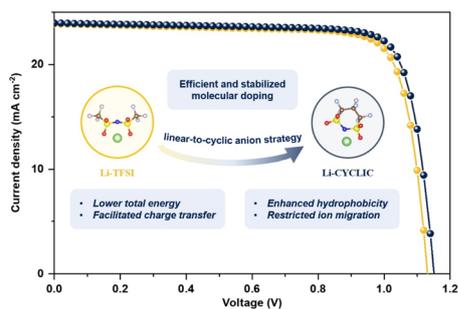
9806

## Intermediate aminophenol enables hectogram-scale synthesis of highly bright red carbon quantum dots under ambient conditions

Xiangyong Meng, Maorong Wang, Jishuai Lin, Lihua Wang, Jin Liu, Yang Song,\* Qiang Jing\* and Haiguang Zhao\*



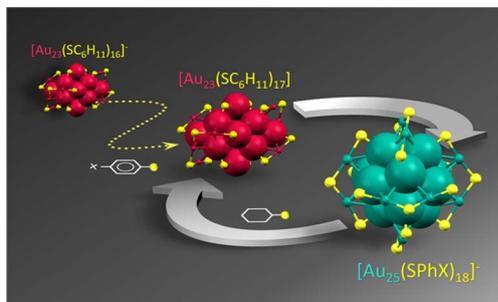
9814



### Efficient and stabilized molecular doping of hole-transporting materials driven by a cyclic-anion strategy for perovskite solar cells

Huaibiao Zeng, Fangyan Lin, Zhongquan Wan,\* Hua Yang, Hui Lu, Shaoliang Jiang, Jinqing Zhu, Haomiao Yin, Runmin Wei, Yuanxi Wang, Junsheng Luo\* and Chunyang Jia\*

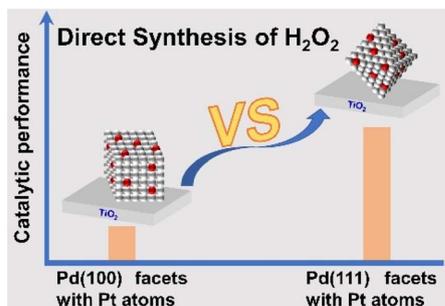
9823



### “Visualizing” the partially reversible conversion of gold nanoclusters via the $\text{Au}_{23}(\text{S}-\text{C}_6\text{H}_{11})_{17}$ intermediate

Saniya Gracious, Afreen, Eti Mahal, Jibin Thomas, Shubhadeep Saha, Akhil S. Nair, K. V. Adarsh, Biswarup Pathak and Sukhendu Mandal\*

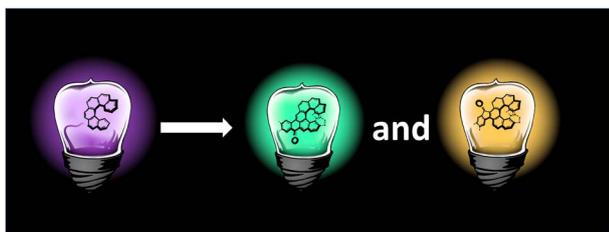
9830



### Facet-dependent synthesis of $\text{H}_2\text{O}_2$ from $\text{H}_2$ and $\text{O}_2$ over single Pt atom-modified Pd nanocrystal catalysts

Ying Zhang, Qingdi Sun, Ziyue Wang, Guanghui Guo, Hao Liu, Xiaohui He\* and Hongbing Ji\*

9842



### Carbonyl mediated fluorescence in aceno[n]helicenes and fluoreno[n]helicenes

Michal Šámal,\* Ludmilla Sturm, Marzena Banasiewicz, Irena Deperasinska, Boleslaw Kozankiewicz, Olaf Morawski, Yuuya Nagata, Pierre Dechambenoit, Harald Bock, Amandine Rossel, Miloš Buděšínský, Anthony Boudier and Andrej Jančářík\*

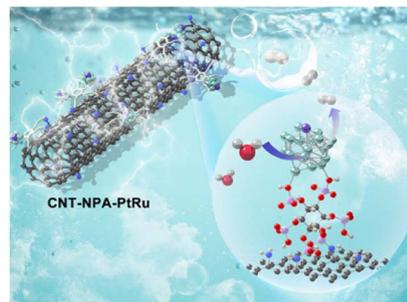


## EDGE ARTICLES

9851

**Engineering the electronic structure of sub-nanometric Ru clusters via Pt single-atom modification for highly efficient electrocatalytic hydrogen evolution**

Yuzhuang Song, Yaowen Zhang, Wenya Gao, Chengcheng Yu, Jun Xing, Kang Liu\* and Dingxuan Ma\*



## CORRECTION

9858

**Correction: Deciphering the chemical bonding of the trivalent oxygen atom in oxygen doped graphene**

Andoni Ugartemendia, Irene Casademont-Reig, Lili Zhao, Zuxian Zhang, Gernot Frenking, Jesus M. Ugalde, Aran Garcia-Lekue\* and Elisa Jimenez-Izal\*

