

# Chemical Science

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### Inside cover

See Tomoki Nishimura *et al.*, pp. 16522–16533. Image reproduced by permission of Tomoki Nishimura from *Chem. Sci.*, 2025, **16**, 16522.

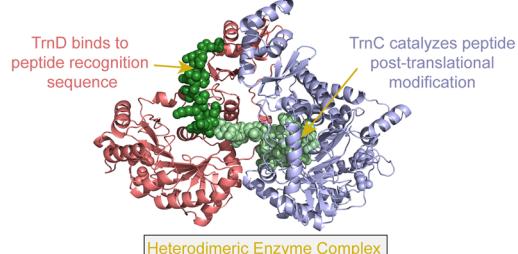
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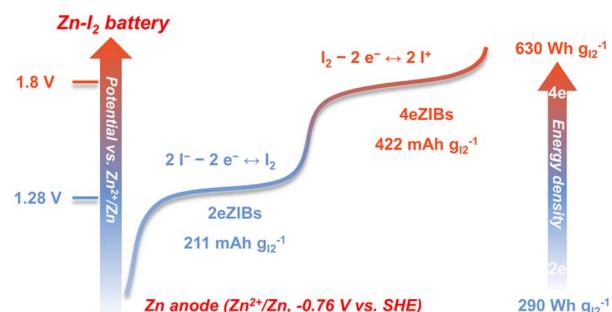


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Yangyang Liu, Kuan Zhou, Rui Wang, Quanwei Ma, Peng Xiong, Longhai Zhang\* and Chaofeng Zhang\*



# RSC Advances

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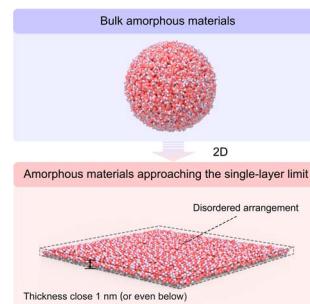
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## PERSPECTIVES

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**The emergence of amorphous materials approaching the single-layer limit**

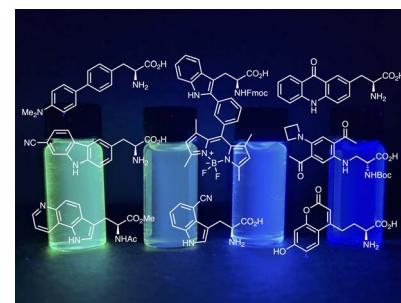
Zude Shi, Haowei Ge and Yongmin He\*



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**Expanding the fluorescence toolkit: molecular design, synthesis and biological application of unnatural amino acids**

Olivia Marshall and Andrew Sutherland\*

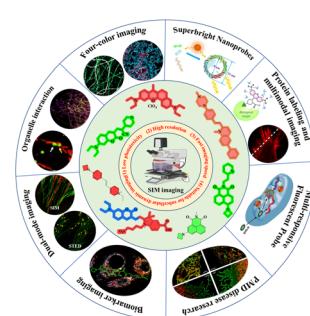


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**Advancements and perspectives on organelle-targeted fluorescent probes for super-resolution SIM imaging**

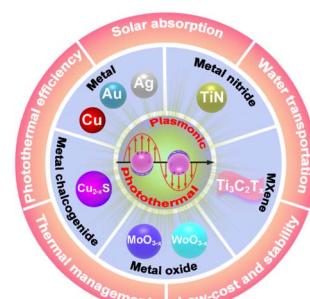
Guofang Li, Enxiang Ge, Hua Zheng and Weiying Lin\*



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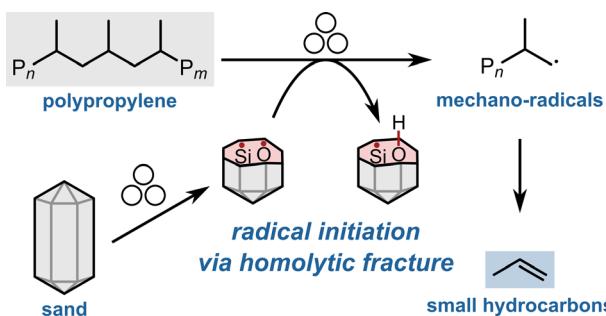
**Plasmonic photothermal nanomaterials for solar steam generation**

Yong Wang, Guozhu Chen, Mohamed Chaker and Dongling Ma\*



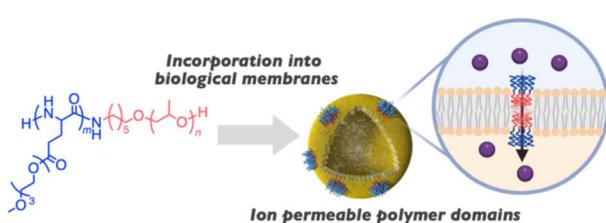
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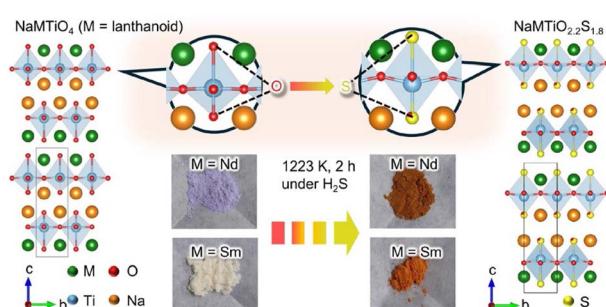
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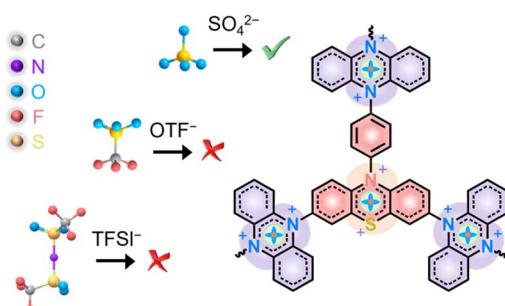
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Yusuke Ishii, Hajime Suzuki,\* Daichi Kato, Osamu Tomita, Akinobu Nakada and Ryu Abe\*

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**Unlocking the potential of a multi-electron p-type polyheterocycle cathode: when it meets a small-size and high-charge anion**

Ziyang Song, Wenbo Liu, Qi Huang, Yaokang Lv, Lihua Gan and Mingxian Liu\*

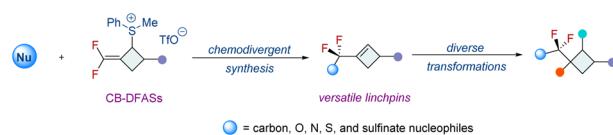


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**Difluoromethylene cyclobutyl sulfonium salts: versatile reagents for chemodivergent synthesis of difluoroalkylated cyclobutenes and cyclobutanes**

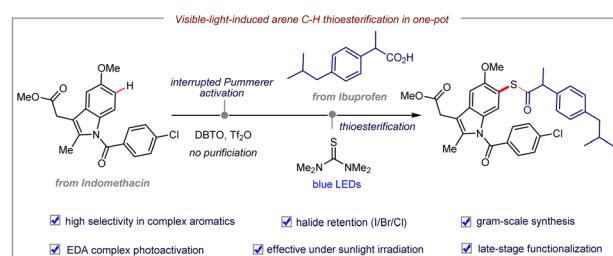
Xiao-Tian Feng, Qiao-Qiao Min, Song-Yu Zhang,  
Hai-Yang Zhao and Xingang Zhang\*



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**Thiol-free arene C–H thioesterification enabled by a photoactive electron donor–acceptor complex**

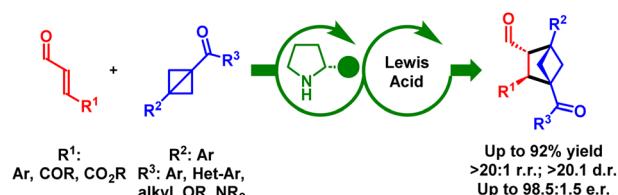
Yan-Qiu Jiang, Ang Gao and Ming-Chen Fu\*



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**Aminocatalytic enantioselective [2 + 2] cycloaddition of Bicyclo[1.1.0]butanes and  $\alpha,\beta$ -unsaturated aldehydes**

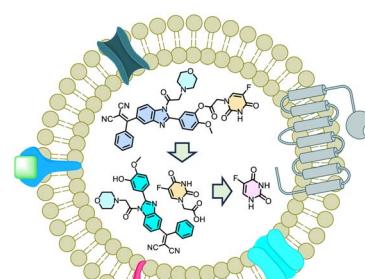
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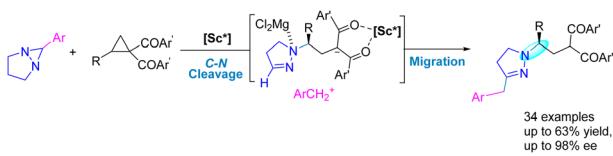
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Sourav Dutta, Sanchita Tripathy, Somnath Bej,  
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and Amitava Das\*



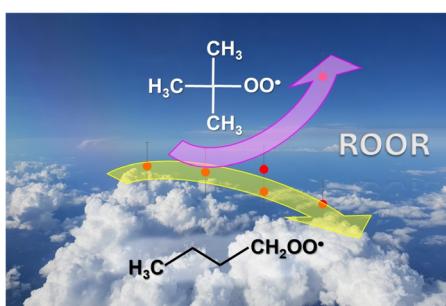
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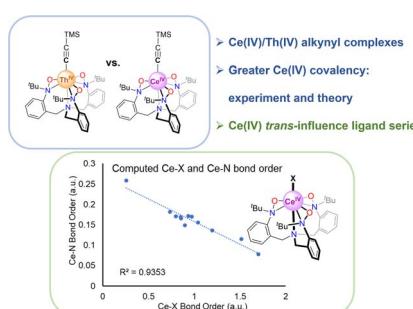
**Unveiling the migration reactivity of bicyclic diaziridines: enantioselective synthesis of chiral pyrazolines**

Zhili Liu, Lichao Ning, Bingqian Yang, Kaixuan Wang, Lili Lin\* and Xiaoming Feng\*

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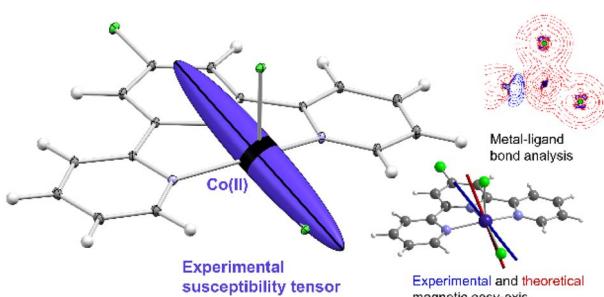
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Hannah H. Slavensky, Vijay S. Parmar,\* Sofie S. Leiszner, Andreas M. Thiel, Helene Lassen, Stuart Calder, Iurii Kibalin and Bo B. Iversen\*

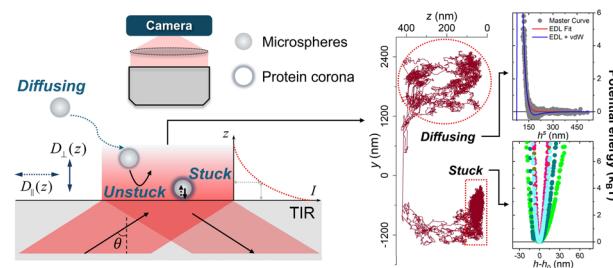


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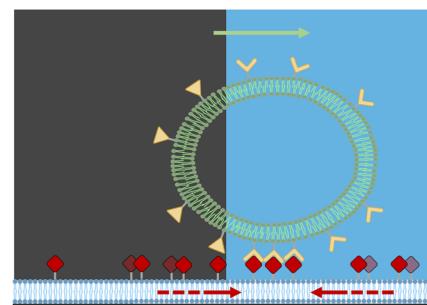
Wei Liu, Zuwei Zhao, Jinwei Zhong, Pui Wo Felix Yeung, Jiahao Wu, Yinan Li, Hang Jiang, Yuwei Zhu\* and To Ngai\*



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**Design rules for adhesion-driven synthetic cell motility on dynamic membranes**

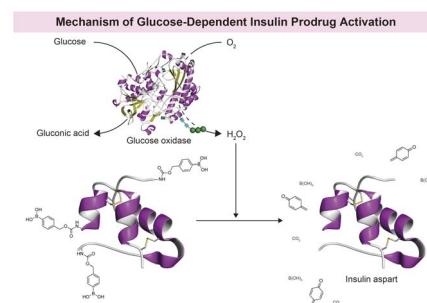
Daniele Di Iorio,\* Ali Heidari and Seraphine V. Wegner\*



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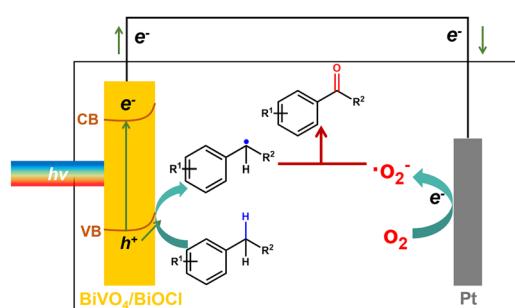
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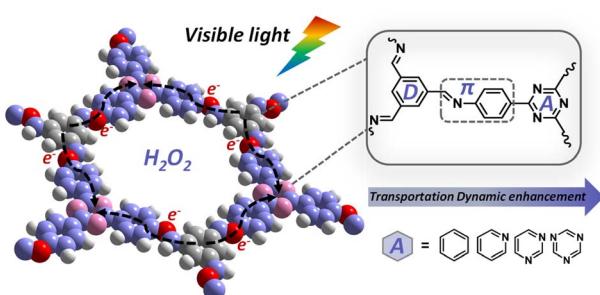
**BiVO<sub>4</sub>/BiOCl heterostructure photoanodes for highly selective photoelectrochemical oxidation of benzylic C(sp<sup>3</sup>)–H bonds**

Haiwen Shi, Qingjie Wang, Youai Qiu and Jingshan Luo\*



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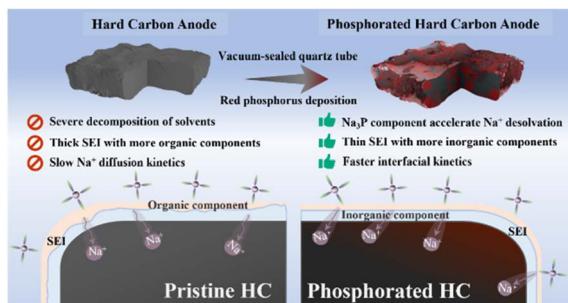
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### Regulation of charge carrier transportation in D- $\pi$ -A type covalent organic frameworks for promoting photocatalytic H<sub>2</sub>O<sub>2</sub> production

Hailing Ma, Yangpeng Zhang, You Wu, Qianfeng Gu, Zhonghua Li\* and Qichun Zhang\*

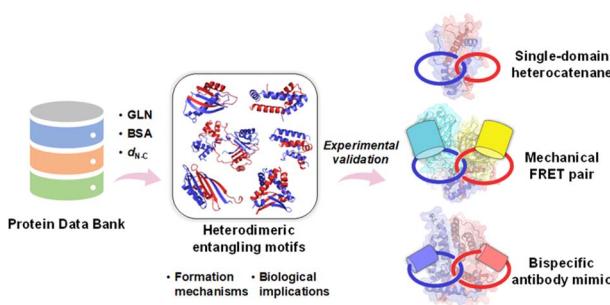
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Haihan Zhang, Zhenxin Huang, Siyuan Lin, Jiawu Cui, Qianyu Zhang,\* Xiansheng Luo, Rui Wang, Chaofeng Zhang,\* Chengyong Shu and Wei Tang\*

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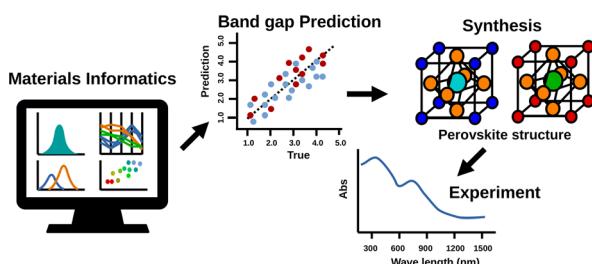


### Heterodimeric protein entangling motifs: systematic discovery, feature analysis, and topology engineering

Lianjie Xu, Xibao Tian and Wen-Bin Zhang\*

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#### Data Driven Synthesis of Perovskite



### Designing and synthesizing perovskites with targeted bandgaps via tailored descriptors

Kenshin Shibata, Fernando Garcia-Escobar,\* Tomoya Tashiro, Lauren Takahashi and Keisuke Takahashi\*

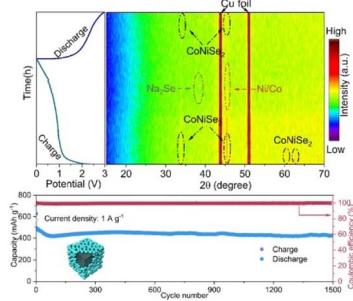


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**Designing mesostructured bimetallic selenide derived from room-temperature prepared metal-organic frameworks as a sodium-ion battery anode with high performance and fast reaction kinetics**

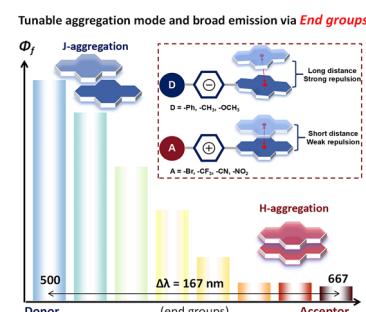
Huizi Songtian, Ting Zhou, Fan Zhou, Yajun Zhu, Xulai Yang,\* Tianli Han,\* Jinjin Li\* and Jinyun Liu\*



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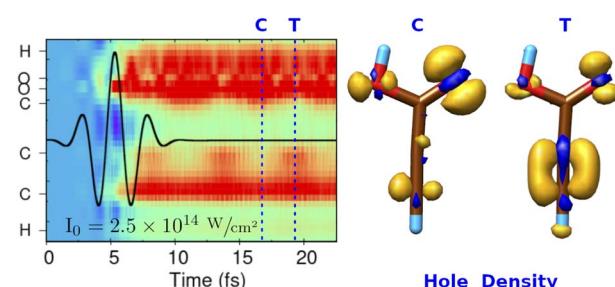
Chongyang Zeng, Shan Liang, Jieyu Lin, Wei Liu, Zhixin Xie, Wenzuan Cai, Carl Redshaw, Xing Feng\* and Ben Zhong Tang\*



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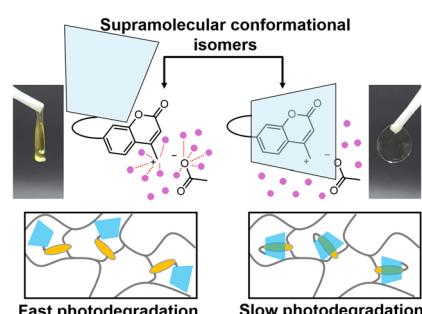
Clément Guiot du Doignon, Rajarshi Sinha-Roy,\* Franck Rabilloud and Victor Despré\*



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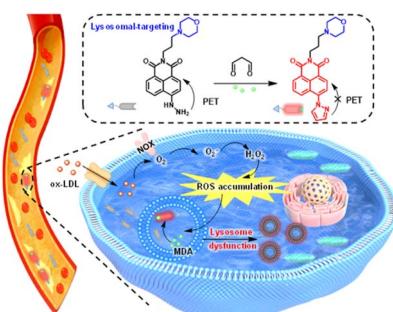
**Supramolecular conformational control of photolability in polymer networks crosslinked with a kinetically stable pseudo[1]rotaxane based on a coumarinylmethyl ester**

Hiroshi Masai,\* Naoki Niikura, Go M. Russell, Yutaro Kawano, Susumu Tsuda, Tomohiro Iwai and Jun Terao\*



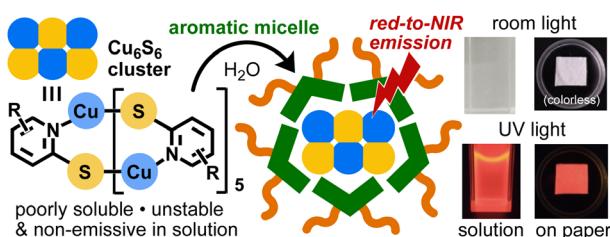
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**A malondialdehyde-activated fluorescent probe reveals lysosomal dysfunction in atherosclerosis**

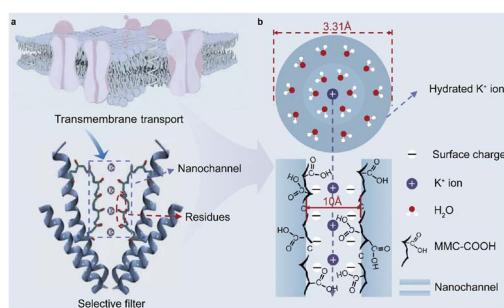
Xia Zhang, Guocheng Li, Yanhua Li,\* Na Li,\* Wei Pan\* and Bo Tang

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**Multinuclear Cu<sub>n</sub>S<sub>m</sub> clusters encapsulated by aromatic micelles as aqueous red-to-NIR phosphorescent ink**

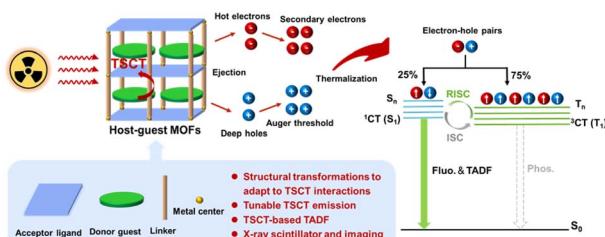
Kazuki Toyama, Yuya Tanaka\* and Michito Yoshizawa\*

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**Regulating through-space charge transfer interactions in donor–acceptor MOFs for thermally activated delayed fluorescence and X-ray scintillators**

Xinyue Yan, Shi-Yu Song, Shicong Liang, Kai-Kai Liu, Xiao-Ting Liu\* and Chao Lu\*

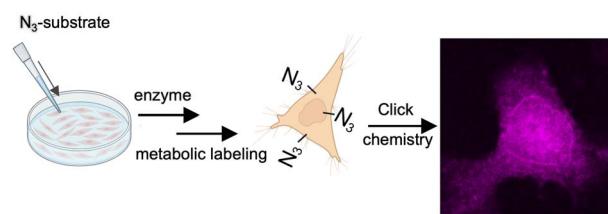


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**Detecting ALDH2 activity in live cells via conditional metabolic labeling**

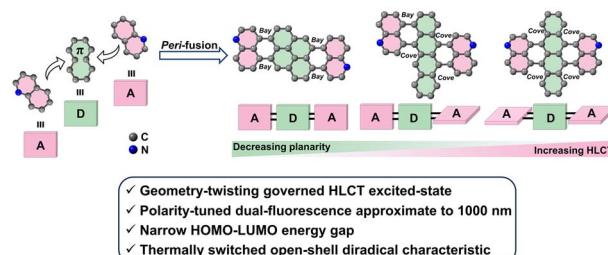
Weisong Lv, Zheng Wang, Can Zhang, Taorui Yang, Tao Liu, Jia Li, Xiaohui Fan\* and Xin Li\*



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**Dual-channel deep-NIR-emissive N-embedded PAHs with hybridized local and charge-transfer excited-state**

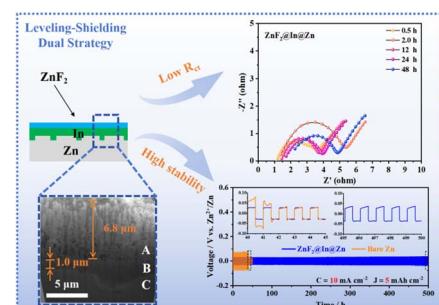
Zuhao Li, Zhiruo Zhou, Kun Yang,\* Yifan Yao, Yixin Zhai, Dong Wang\* and Zebing Zeng\*



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**A leveling–shielding dual strategy enabling stable zinc anodes to exhibit ultra-low interfacial impedance**

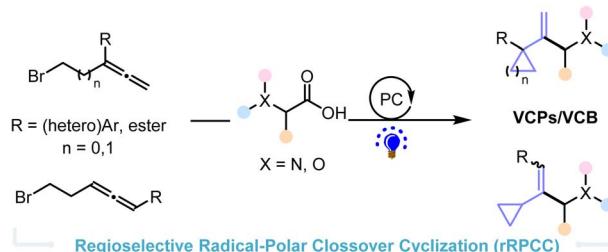
Qing Wen, Taixu Hao, Tian Chen, Dinghao Le, Pei Yang, Hezhang Chen, Linbo Tang, Qing Wu, Xiahui Zhang\* and Junchao Zheng\*



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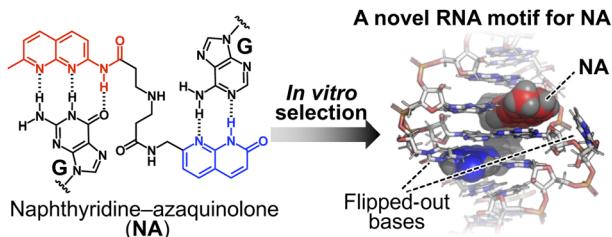
**Photoredox-catalyzed cyclopropanation of allenes towards vinyl-cyclopropanes**

Hui Xie, Yan Zhang and Bernhard Breit\*



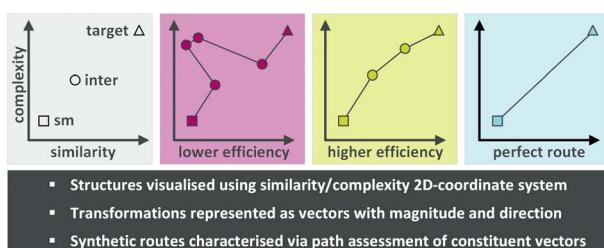
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**Identification and structural insights into RNA motifs targeted by a CAG repeat DNA-binding small molecule**

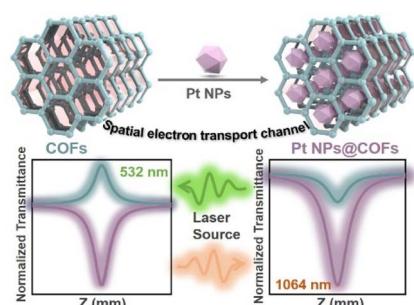
Qingwen Chen, Aina Fujiwara, Kazuhiko Nakatani, Gota Kawai and Asako Murata\*

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**Measuring the efficiency of synthetic routes and transformations using vectors derived from similarity and complexity**

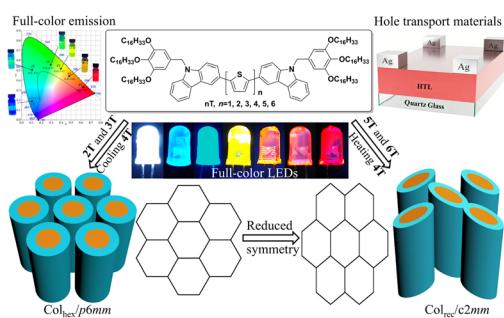
Samuel Genheden and Gareth P. Howell\*

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**Improving the optical nonlinearity of covalent organic frameworks through spatial electron transport channels within the pore environment**

Kangshuai Geng, Yi Wei, Yupei Sun, Jing Huang, Jie Wu\* and Hongwei Hou\*

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**Tilted vs. parallel assembly caused birefringent reversal in columnar phases of oligothiophene as well as applications for LEDs and hole transport materials**

Shibo Chen, Xuyang Du, Qingqing Han, Jingjing Luo, Fen Wang, Jiaming Liu, Yang Yu and Xiaohong Cheng\*

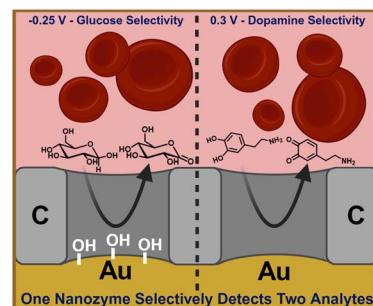


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**A nanozyme that can go beyond an enzyme: the selective detection of two species in the same whole blood sample**

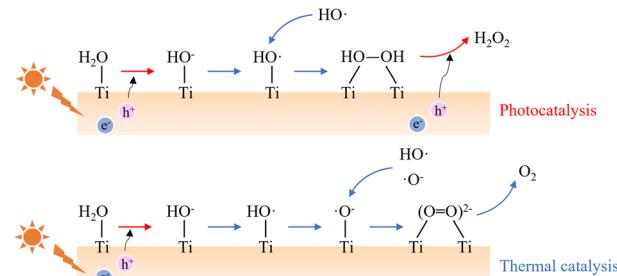
Samuel V. Somerville, Tania M. Benedetti, Zeno R. Ramadhan, Yin Yao, Richard D. Tilley\* and J. Justin Gooding\*



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**Revealing the photocatalytic dissociation of water molecules on rutile  $\text{TiO}_2$  surface via hybrid functional based linear response time-dependent density functional theory**

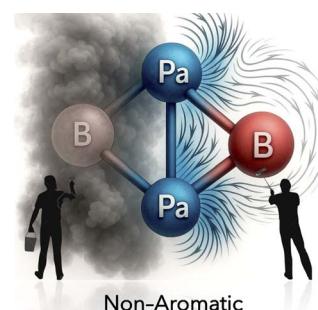
Lei Wang, Xiaofeng Liu,\* Qunxiang Li,\* Jinlong Yang and Wei Hu\*



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**Revisiting aromaticity and stability in the diboron actinide compound  $\text{Pa}_2\text{B}_2$**

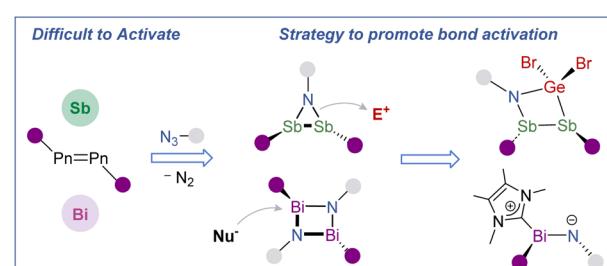
Chengxiang Ding, Lina Ruiz, Alejandro Vásquez-Espinal, Ricardo Pino-Ríos, Dayán Pérez-Hernández, Sudip Pan,\* Luis Leyva-Parra,\* Luis Alvarez-Thon\* and William Tiznado\*



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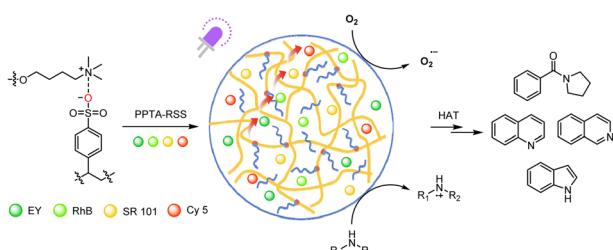
**Azadistiboridines and stabilised-iminobismuthane: reactivity of small inorganic rings in heavy main group chemistry**

Prasenjit Palui, Matthias Bollenbeck, Daniel Meleschko, Philipp Brehm, Rosa M. Gomila, Gregor Schnakenburg, Antonio Frontera and Alessandro Bismuto\*



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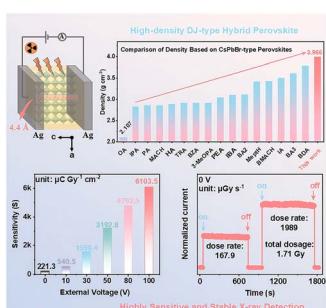
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**A biomimetic supramolecular platform enables sequential four-step energy transfer and reactive oxygen species modulation for selective photocatalytic oxidations**

Yu-Song Bi, Wen-Qiang Liu,\* Hui Liu and Ling-Bao Xing\*

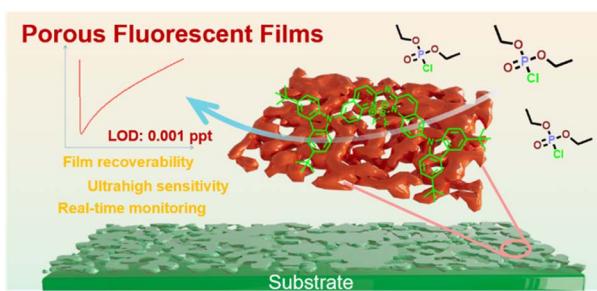
16915



**Stable and highly sensitive self-powered X-ray detection via high-density CsPbBr-type Dion-Jacobson trilayer hybrid perovskites**

Huawei Yang, Hang Li, Jianbo Wu, Zeng-Kui Zhu,\* Guirong Chen, Guanghui Li, Panpan Yu, Ying Zeng, Yueying Wang, Wenhui Wu and Junhua Luo\*

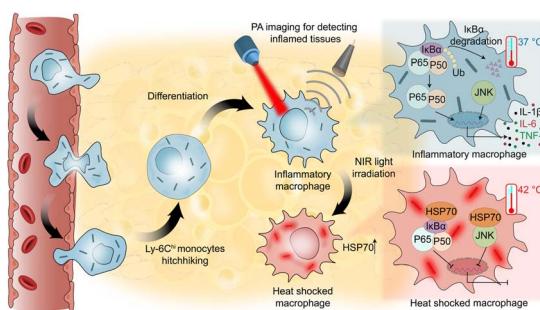
16924



**Steric hindrance-engineered porous fluorescent films for ultrafast and ultrasensitive detection of nerve agent simulants**

Yuxuan Liu, Min Qiao, Jiali Liu, Gege Wang, Siyue Wang, Ruijuan Wen, Yixin Zhai,\* Liping Ding,\* Xiaolin Zhu\* and Yu Fang

16936



**Single-walled carbon nanotubes hitchhike on Ly-6C<sup>hi</sup> monocytes for photoacoustic image-guided photothermal shock therapy of metabolic inflammation**

Ruixi Peng, Mengyun He, Yi Yuan, Li-Juan Tang, Jianhui Jiang and Xia Chu\*

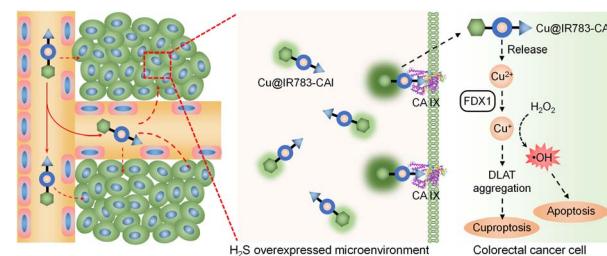


## EDGE ARTICLES

16947

**Cascade-activatable NIR-II fluorescent carbonic anhydrase inhibitors for imaging-guided cuproptosis/chemodynamic combination therapy of colorectal cancer**

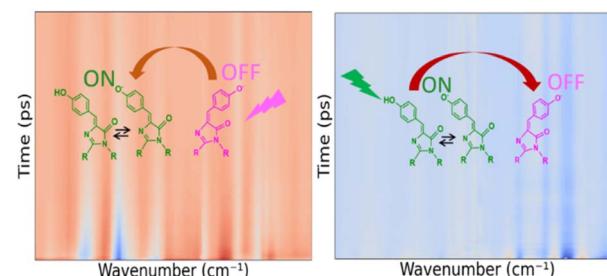
Pu Xu, Yuxin Huang, Gaoyuan Liu, Xuxuan Gu, Xupeng Sun, Yingna Bi, Wen Zhou,\* Chen Xie\* and Quli Fan\*



16955

**Ultrafast photophysics of a positive reversibly switchable fluorescent protein**

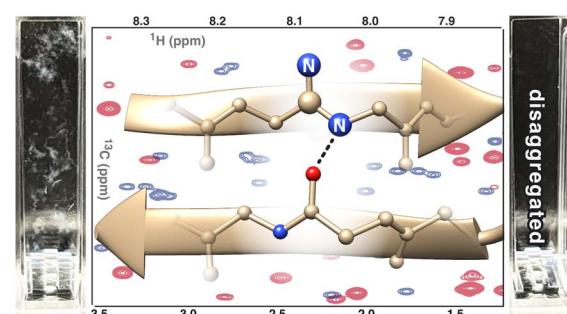
Anam Fatima, YongLe He, James N. Iuliano, Gregory M. Greetham, Partha Malakar, Christopher Hall, Helena A. Woroniecka, Brian C. Richardson, Jarrod B. French, Andras Lukacs,\* Peter J. Tonge\* and Stephen R. Meech\*



16970

**The 'ins' and 'outs' of amidines in  $\beta$ -sheet folding and fibril disaggregation**

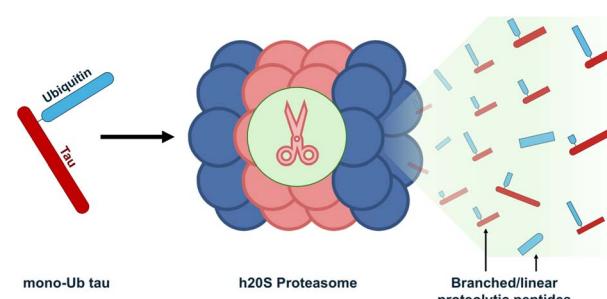
Emily A. O'Brien, Mohaddeseh Abbasi, Jeffrey A. Purslow and Brett VanVeller\*



16979

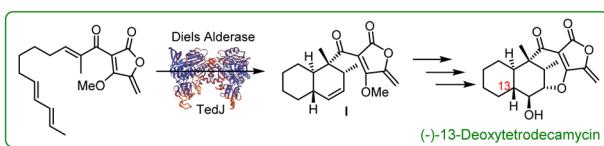
**SpectraSage unveils specific proteolytic patterns of 20S on mono-ubiquitylated Tau proteoforms involved in neurodegeneration**

Gabriele Antonio Zingale,\* Irene Pandino, Daniele Trivellato, Dario Cavaterra, Francesca Munari, Giuseppe Grasso, Peter A. Bell, Francesco Oddone, Alessio Bocedi, Massimiliano Coletta, Michael Assfalg, Mariapina D'Onofrio, Grazia Raffaella Tundo and Diego Sbardella\*



## EDGE ARTICLES

16993



### Chemoenzymatic total synthesis of the antibiotic (-)-13-deoxytetrodecamycin using the Diels–Alderase TedJ

S. Joe Russell, Catherine R. Back, Christopher Perry, Kaiman A. Cheung, Laurence Maschio, Sacha N. Charlton, Nicholas R. Lees, Monserrat Manzo-Ruiz, Martin A. Hayes, Marc W. van der Kamp, Paul R. Race\* and Christine L. Willis\*

## CORRECTIONS

17000

### Correction: Esterase-induced release of a theranostic prodrug in lysosomes for improved therapeutic efficacy and lower systemic toxicity

Sourav Dutta, Sanchita Tripathy, Somnath Bej, Sabana Parvin, Batakrishna Jana,\* Chitta Ranjan Patra\* and Amitava Das\*

17001

### Correction: Cationic pillar[6]arene/ATP host–guest recognition: selectivity, inhibition of ATP hydrolysis, and application in multidrug resistance treatment

Guocan Yu, Jiong Zhou, Jie Shen, Guping Tang and Feihe Huang\*