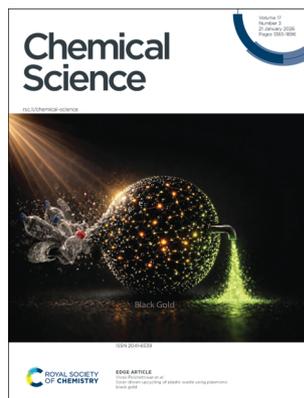


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ISSN 2041-6539 CODEN CSHCBM 17(3) 1383–1896 (2026)



**Cover**  
See Xueliang Shi *et al.*, pp. 1583–1591. Image reproduced by permission of Jialin Zhao, Qiongyan Hong, Xueliang Shi from *Chem. Sci.*, 2026, 17, 1583.



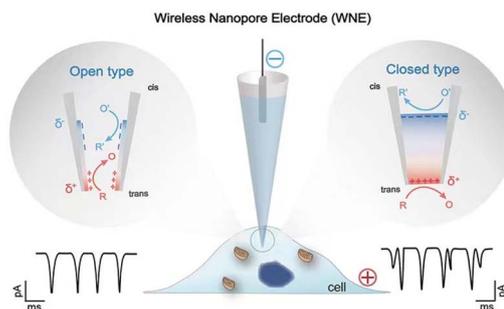
**Inside cover**  
See Vivek Polshettiwar *et al.*, pp. 1592–1603. Image reproduced by permission of Vivek Polshettiwar from *Chem. Sci.*, 2026, 17, 1592. Image generated using Google Gemini.

## PERSPECTIVES

1398

### Wireless nanopore electrodes (WNEs): from a non-contact conductive tip to applications in electroanalysis and electrocatalysis

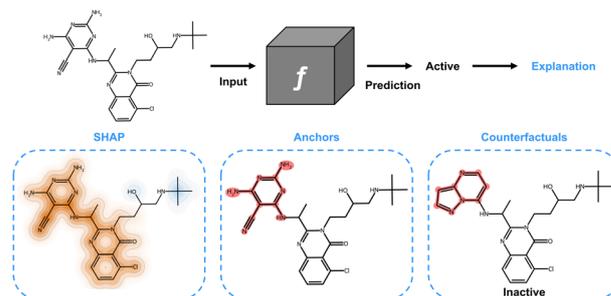
Jinjin Li, Hengchen Liu, Ke-Le Chen, Hao-Wei Wang, Juan Tang,\* Yi-Tao Long and Yi-Lun Ying\*



1411

### Explainable artificial intelligence for molecular design in pharmaceutical research

Alec Lamens and Jürgen Bajorath\*



# RSC Applied Polymers

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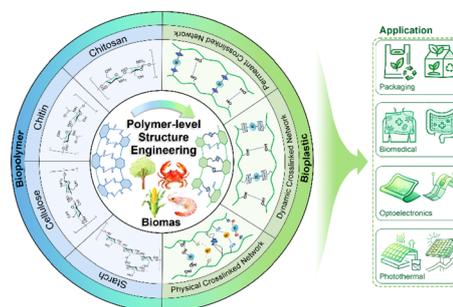
Fundamental questions  
Elemental answers

## REVIEWS

1423

### Converting natural biopolymers to sustainable bioplastics via structure engineering

Xinlei Ji, Keyi Zhou, My Ha Tran, Xi Chen\* and Ning Yan\*



1461

### Exploring and expanding the chemical multiverse of peptides

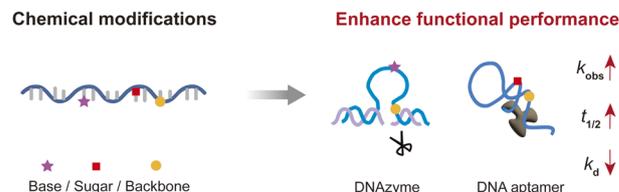
Edgar López-López, Jean Paul Sánchez-Castañeda, Massyel S. Martínez-Cortés, Cesar de la Fuente-Nunez\* and José L. Medina-Franco\*



1480

### Chemically modified DNA aptamers and DNAzymes for expanded functional capabilities

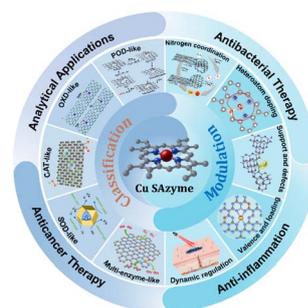
Canyu Zhang, Ke-siyi Ma, Zifan Zhang, Wenyong Lou,\* Hongzhou Gu\* and Yufei Cao\*



1495

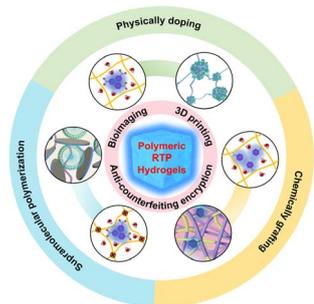
### Copper-based single-atom nanozymes: from fundamental insights to biomedical applications

Dong Peng, Shanshan Huang, Mingming Que, Xiulong Deng, Zhonggao Zhou\* and Hongdeng Qiu\*



## REVIEWS

1518



### Confining chromophores by rigidification of polymer conformation for room-temperature phosphorescence hydrogels

Weihao Feng, Muqing Si, Kuangzheng Cao, Wei Lu,\*  
Xiaoye Zhang\* and Tao Chen\*

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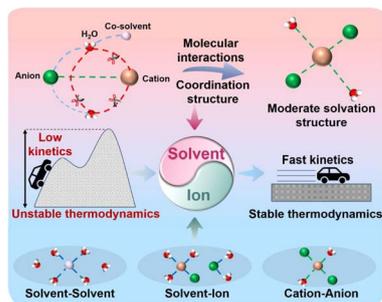


- Catalytic strategies
- Synthetic application
- Critical challenges and future directions

### Metal-free radical borylations: mechanisms, catalytic strategies, and synthetic applications

Ziyi Quan, Yaxu Liu, Qidi Zhong\* and Bo Wang\*

1569

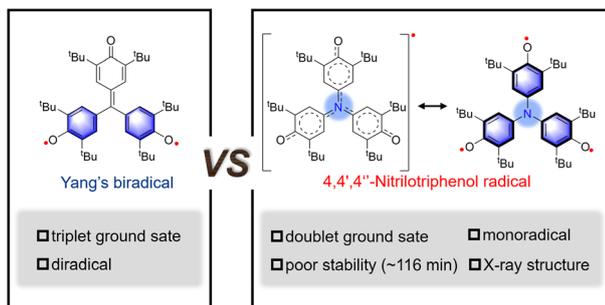


### Electrolyte coordination environments in wide-temperature aqueous metal batteries: mechanisms and design strategies

Jiashuo Zhang, Tao Liu, Xusheng Dong, Zhongju Chen,  
Bin Tang, Fanxing Bu, Hongpeng Li, Zhen Zhou,  
Dongliang Chao\* and Ruizheng Zhao\*

## EDGE ARTICLES

1583



### A 4,4',4''-nitrioltriphenoxyl radical derived from Yang's biradical

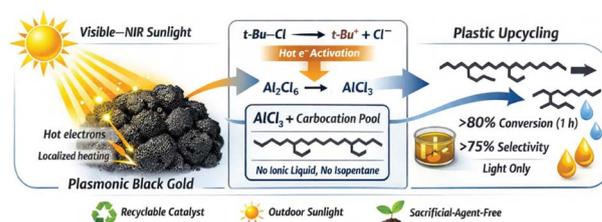
Qiong-Yan Hong, Bin Huang, Yanfei Niu, Cuihong Wang,  
Xiao-Li Zhao, Hai-Bo Yang and Xueliang Shi\*



1592

### Solar-driven upcycling of plastic waste using plasmonic black gold

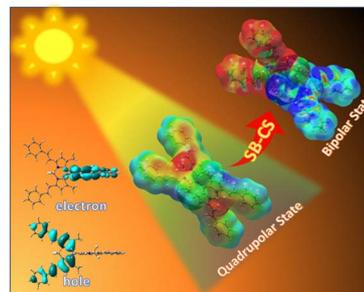
Saideep Singh, Gunjan Sharma, Mamata Joshi and Vivek Polshettiwar\*



1604

### Isoenergetic symmetry breaking charge separation in far-red absorbing orthogonal BODIPY dimer – a classic case of no energy loss during the process of light capture and conversion

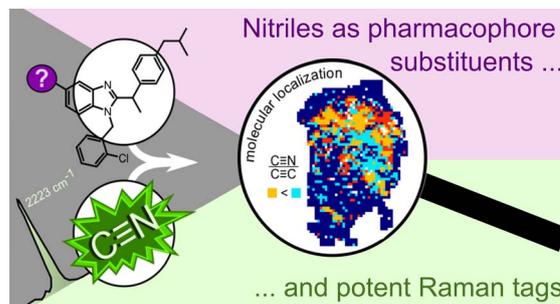
Ram R. Kaswan, Aida Yahagh and Francis D'Souza\*



1613

### Unveiling the molecular dynamics of a nitrile-containing 5-lipoxygenase-activating protein antagonist in primary macrophages through Raman spectroscopy

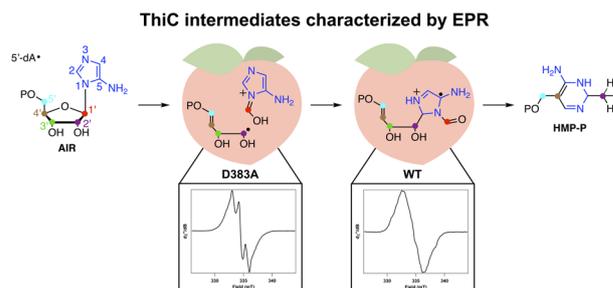
Constanze Schultz, Paul Mike Jordan, Philipp Dahlke, Zehra Tuğçe Gür Maz, Erden Banoğlu, Tobias Meyer-Zedler, Michael Schmitt, Oliver Werz and Juergen Popp\*



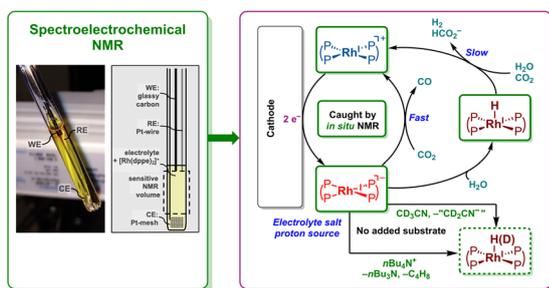
1624

### Insights into the initial steps of the thiamin pyrimidine synthase (ThiC)-catalyzed reaction through EPR spectroscopic characterization of radical intermediates

Melissa M. Bollmeyer, Vishav Sharma, Dmytro Fedoseyenko, Yumeng Cao, Guodong Rao, Dean J. Tantillo, Tadhg P. Begley\* and R. David Britt\*



1637

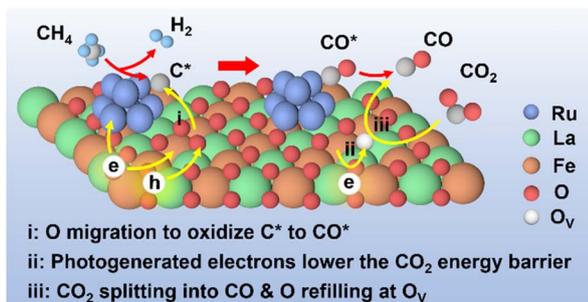


Spectroelectrochemical NMR sheds light on molecular electrocatalysis

### Mapping proton and carbon dioxide electrocatalytic reductions at a Rh complex by *in situ* spectroelectrochemical NMR

A.-C. Kick, M. Schatz, C. Kahl, M. Hölscher, R.-A. Eichel, J. Granwehr,<sup>\*</sup> N. Kaeffer<sup>\*</sup> and W. Leitner<sup>\*</sup>

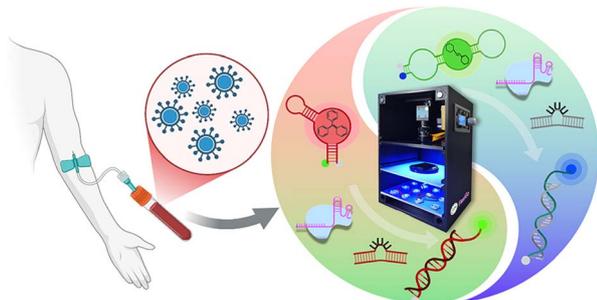
1647



### Light-induced electronic structure modulation in perovskite ferrite for efficient photothermal dry reforming of methane

Jilong Li, Xiang Hao, Jiwu Zhao, Jinyu Li, Bo Su, Zhengxin Ding,<sup>\*</sup> Meirong Huang, Zhi-An Lan, Min-Quan Yang<sup>\*</sup> and Sibowang<sup>\*</sup>

1656



### Enhanced detection of HBV and HCV using Cas13a-FLAP and FGoAI platforms

Xijuan Gu, Tianyi Wang, Lingwei Wu, Jiayun Guan, Xiaoxia Kang, Wenjun Ming, Yidan Zhu, Qian Xu,<sup>\*</sup> Yuling Qin<sup>\*</sup> and Li Wu<sup>\*</sup>

1666



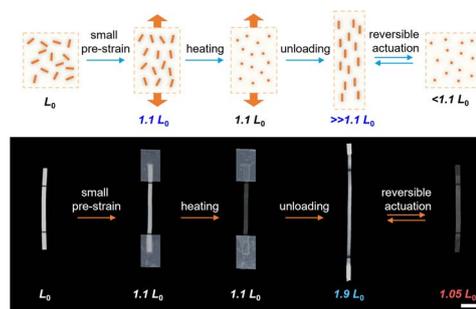
### Grammar-driven SMILES standardization with TokenSMILES

Luis Armando Gonzalez-Ortiz,<sup>\*</sup> Lisset Noriega, Filiberto Ortiz-Chi, Gabriela Vidales-Ayala, Emmanuel Soberanis-Câceres, Amilcar Meneses-Viveros,<sup>\*</sup> Alan Aspuru-Guzik<sup>\*</sup> and Gabriel Merino<sup>\*</sup>

1676

### Fabricating liquid crystal actuators: from small pre-strain to large actuation strain

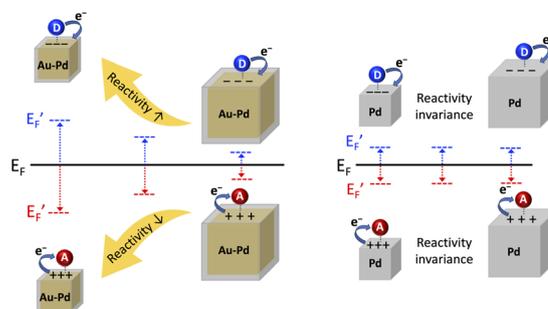
Enjian He, Yixuan Wang, Yanjin Yao, Yang Yang, Zhijun Yang, Hongtu Xu, Huan Liang, Jiujiang Ji, Guoli Wang, Yen Wei and Yan Ji\*



1688

### Buried electrostatic modulation enables size-dependent reactivity in Pd-based nanocatalysts

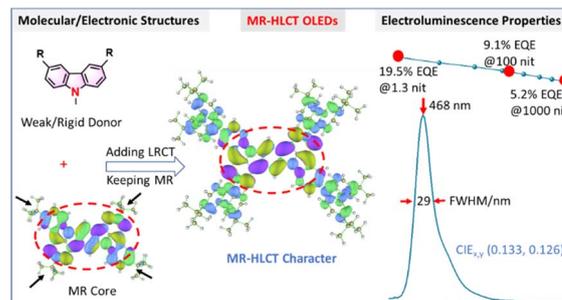
Tzu-An Chou, Hsiang-Yu Yu, Hui-Yun Lo, Yu-Ting Chen, Zhi-Wei Wang and Hsin-Lun Wu\*



1694

### High-performance narrowband blue electroluminescence with EQE approaching 20% based on hybridized local and charge-transfer multi-resonant molecules

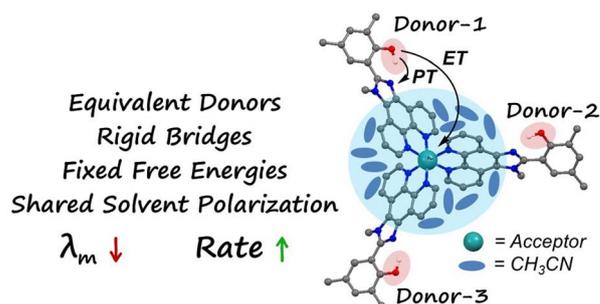
Huihui Li, Jiayi Qin, Taotao Ma, Jiajie Zeng, Ziwei Chen, Yan Fu, Hua Lu,\* Zujin Zhao\* and Xin Jiang Feng\*



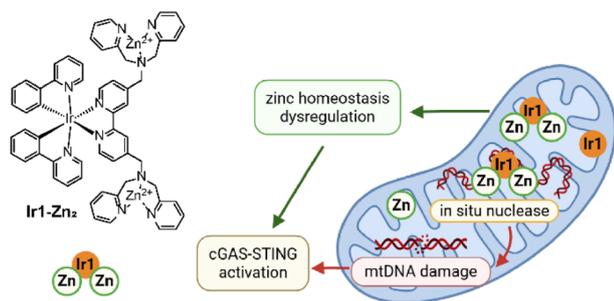
1703

### Correlated solvent coordinates accelerate multi-donor proton-coupled electron transfer

Gerald F. Manbeck,\* Brian N. DiMarco, Laura Rotundo, Dmitry E. Polyansky and Mehmed Z. Ertem



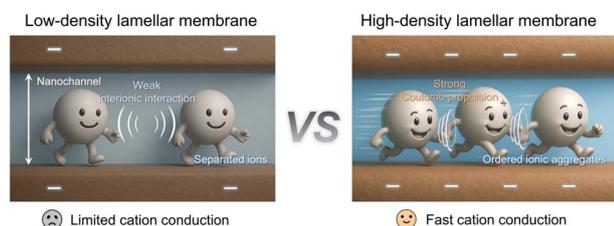
1721



### Phosphorescent iridium complexes activated by endogenous zinc as a mitochondrial DNA nuclease for stimulation of the cGAS-STING pathway

Zhi-Yuan Li, Long-Bo Yu, Qing-Hua Shen, Liang Hao, Peng Wang, Xiao-Xiao Chen, Yu-Yi Ling\* and Cai-Ping Tan\*

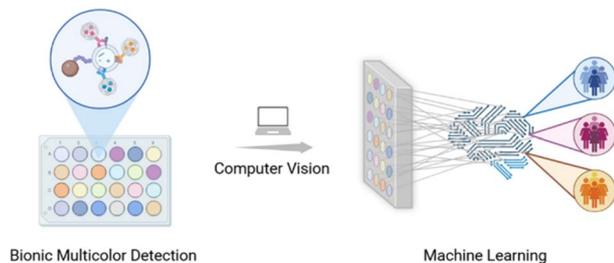
1735



### Charged two-dimensional nanochannels with high ion density enabling ultrafast monovalent and multivalent ion conductivity

Lingjie Zhang, Yunjia Ling, Jianglin Yan, Zhenlei Wang, Yanhui Miao, Haoyu Bai, Tingting Zhang, Shaoxian Song, Mildred Quintana and Yunliang Zhao\*

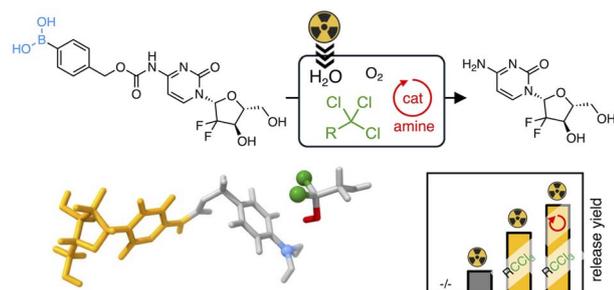
1745



### AI-enabled new sensing technology: colorimetric analysis of exosomes for precise diagnosis of breast cancer

Xinyu Qu, Bingqian Lu, Chengge Gao, Weizun Zhao, Yujing Zeng, Shuai Wu,\* Chenbo Ji\* and Genxi Li\*

1752



### Organochloride mediated prodrug activation induced by ionizing radiation

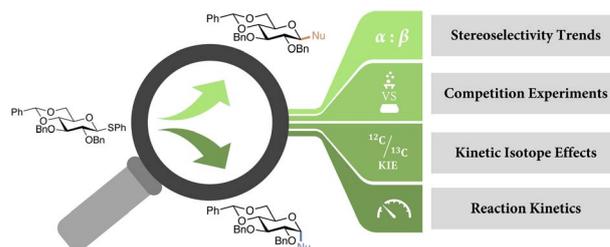
Juncheng Liu, Bing Xu, Mark A. R. de Geus, Antonia G. Denkova\* and Rienk Eelkema\*



1761

## How electronic and steric effects in acceptor alcohols shape $S_N1$ - and $S_N2$ -type glycosylation reactions

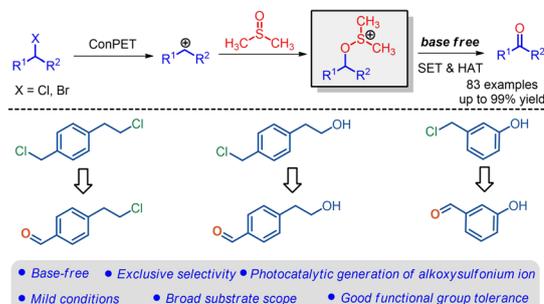
Daan Hoogers, Koen N. A. van de Vrande, Dennis van der Meij, Wouter A. Remmerswaal, Coralie Tugny, Gijsbert A. van der Marel and Jeroen D. C. Codée\*



1771

## Photocatalytic generation of alkoxy-sulfonium ions for selective oxidation of benzylic/allylic halides to carbonyls under base-free conditions

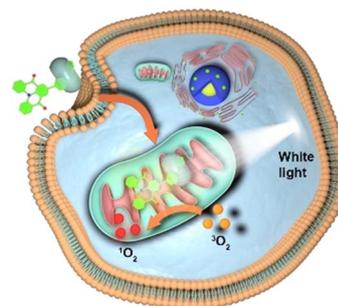
Yuanzhen Mao, Xiaofang Zhang, Wei-Yu Shi, Hongyu Guo and Rong Zhou\*



1778

## Supramolecular host-guest modulated thermally activated delayed fluorescence for photodynamic therapy

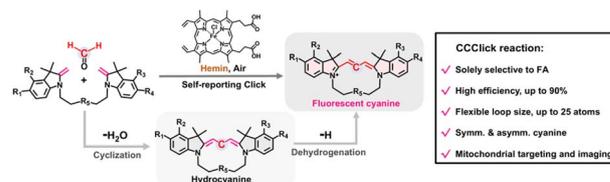
Xujun Qiu, Peiqi Hu, Angelica Sevilla-Pym, Jana R. Caine and Zachary M. Hudson\*



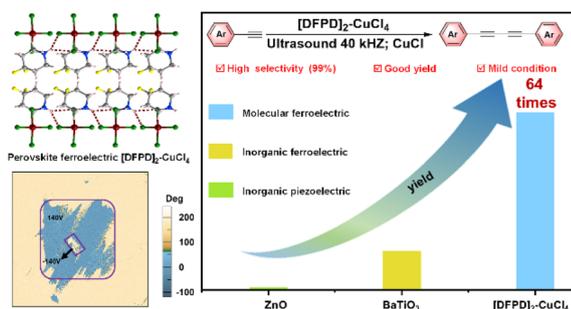
1785

## Activatable self-reporting cyclization reaction for in-cell synthesis of cyclocyanines

He Hang, Xia Wang, Zhaobin Wang, Chi Meng, Qihang Sun, Ziyue Yang and Fude Feng\*



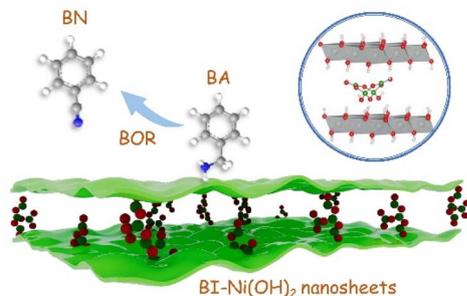
1792



### Organic-inorganic perovskite ferroelectric catalytic selective alkyne coupling under ultrasound sonication

Jun-Chao Qi, Xiao-Gang Chen, Zhen-Yu Wang, Yuan-Yuan Tang, Xian-Jiang Song, Yan Qin, Hui-Peng Lv, Ren-Gen Xiong and Wei-Qiang Liao\*

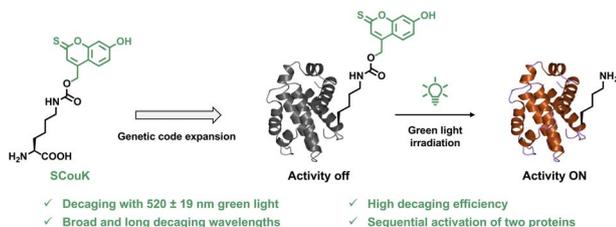
1801



### Borate intercalation optimizes the electro-oxidation kinetics of $\alpha$ -Ni(OH)<sub>2</sub> nanosheets for selective electrochemical conversion of benzylamine to benzonitrile

Zhongcheng Wang, Fengjuan Guo, Xusheng Zhang, Hongtao Gao and Wenlong Yang\*

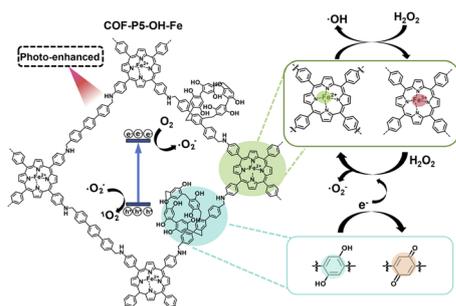
1808



### Genetically encoded green-light-responsive photocaged lysine for sequential control of protein function

Manjia Li, Minghao Lu, Lijun Wang, Yuqing Zhang, Long Yan, Shushu Wang and Tao Peng\*

1822



### Regulating the photoelectric properties of porphyrin-based COF nanozymes by pillararene with polyphenol structure for efficient photo-enhanced antibacterial effect

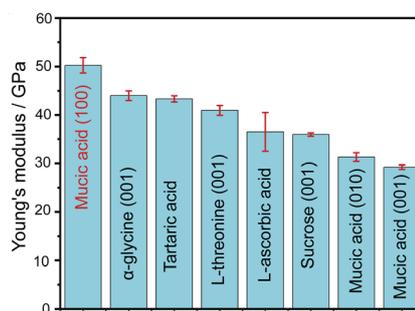
Yahui Liu, Jia Wen,\* Bingqian Ge, Tingting Guo, Jiaqi Li, Lingshan Jia, Shoupeng Cao, Wei Li\* and Kui Yang\*



1831

**The ultrastiff crystals of mucic (galactaric) acid**

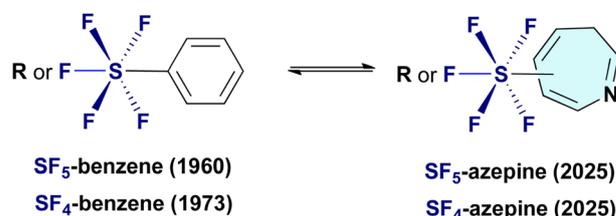
Durga Prasad Karothu,\* Ibrahim Tahir, Sanjit Manohar Majhi, Ejaz Ahmed, Luca Catalano, Niamh T. Hickey, James Weston, Sarah Guerin and Panče Naumov\*



1840

**High-valent sulfur fluorides as reactivity switches for PFAS-free benzene–azepine skeletal editing**

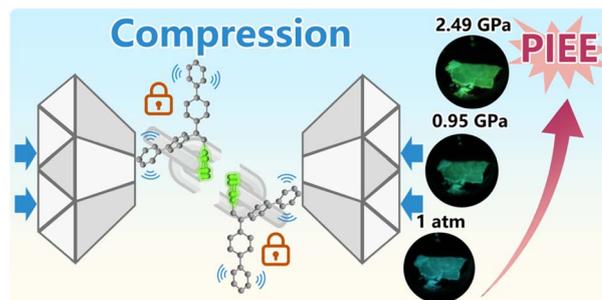
Chavakula Nagababu, Takuya Muramatsu, Muhamad Zulfaqr Bacho, Shiwei Wu, Seishu Ochiai, Jorge Escorihuela and Norio Shibata\*



1850

**Pressure-induced emission enhancement through a synergistic effect between suppression of excimer formation and activation of aggregation-induced emission**

Xinqi Yang, Yuxiang Dai, Xiaoxiang Zhang, Daojie Yang, Ru Guo, Hai-Le Yan, Lili Zhang, Kai Wang,\* Haichao Liu\* and Bing Yang\*



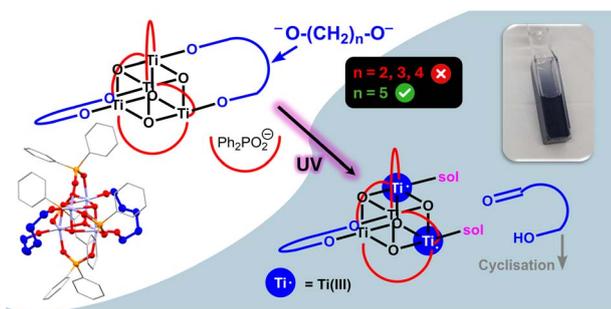
1859

**Programmed intralayer Co and interlayer Ni atoms in a covalent organic framework for synergistic CO<sub>2</sub> photoreduction**

Jie-Yu Yue,\* Rui-Zhi Zhang, Xi Chen, Chengcheng Liu, Peng Yang\* and Bo Tang\*



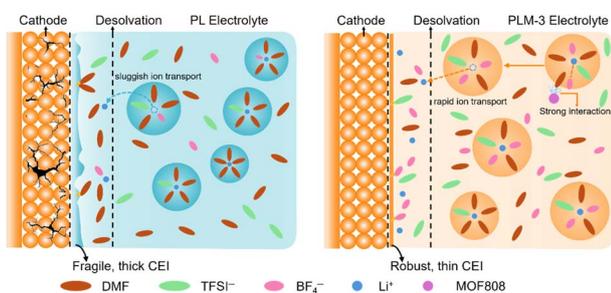
1870



### Switching on photoreactivity in $Ti_4$ -oxo clusters by increasing the size of $1,n$ -alkane diolate bridging ligands

Ashwani Chikara, Alexander R. Veale, Stephen E. Brown, Jack M. Woolley, Frank De Proft and Sebastian D. Pike\*

1880



### Tailoring electrolyte coordination structure for high-rate polymer-based solid-state batteries

Zexi Wang, Zhencheng Huang, Hao Guo, Tao Huang, Jingguo Gao, Junzheng Lai, Na Feng, Ziqi Wang, Xuming Yang, Yongliang Li, Jianhong Liu, Yi Wang,\* Qianling Zhang, Jiangtao Hu\* and Xiangzhong Ren\*

## CORRECTIONS

1892

### Correction: A novel fully conjugated COF adorned on 3D-G to boost the "D- $\pi$ -A" electron regulation in oxygen catalysis performance

Yinggang Sun, Wenjie Duan, Jigang Wang, Peng Sun, Yanqiong Zhuang and Zhongfang Li\*

1893

### Correction: THRUST: translesion synthesis-driven hierarchical regulation using a template-activator construct for Cas12a activity

Lulu Qin, Wen-Jin Wang, Xinyi Xia, Tongshan Zuo, Yilin Cai, Guanhong Xu, Fangdi Wei, Suling Wang, Qin Hu, Zheng Zhao, Fan Zhang,\* Ben Zhong Tang\* and Yao Cen\*



1894

**Correction: Understanding the formation mechanism of crystalline hydrated polymorphs of carbonic acid from CO<sub>2</sub> clathrate hydrate**Selene Berni, Demetrio Scelta,<sup>\*</sup> Sebastiano Romi, Samuele Fanetti, Frederico Alabarse, Bjorn Wehinger and Roberto Bini<sup>\*</sup>