

# Chemical Science

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## IN THIS ISSUE

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### Cover

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### Inside cover

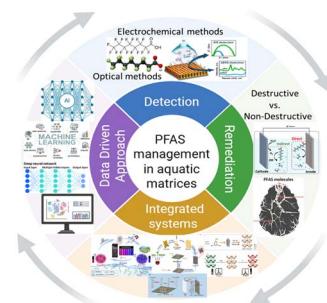
See Julia M. Stauber *et al.*, pp. 13636–13645. Image reproduced by permission of Julia M. Stauber from *Chem. Sci.*, 2025, **16**, 13636.

## PERSPECTIVE

13564

### A perspective of emerging trends in integrated PFAS detection and remediation technologies with data driven approaches

Samaneh Yaghoobian, Manuel A. Ramirez-Ubillus, Lei Zhai\* and Jae-Hoon Hwang\*

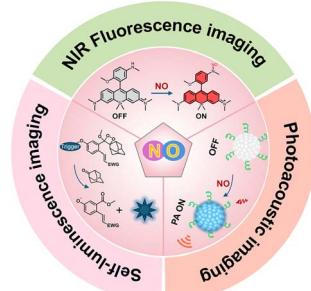


## REVIEWS

13574

### Organic probes for NO-activatable biomedical imaging: NIR fluorescence, self-luminescence, and photoacoustic imaging

Weihao An, Zhongkun Wang, Qingqing Miao\* and Qing Li\*



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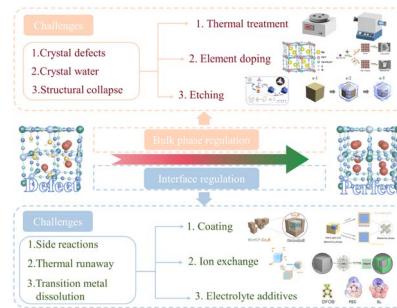


## REVIEWS

13594

**Bulk and interface engineering of Prussian blue analogue cathodes for high-performance sodium-ion batteries**

Boao Zhou, Yun Gao, Xihao Lin, Bin Yang, Ning Kang, Yun Qiao, Hang Zhang,\* Li Li\* and Shulei Chou\*

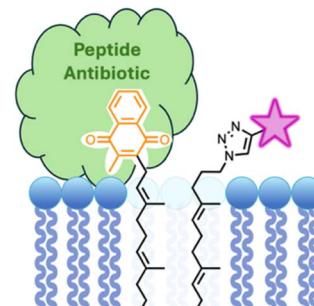


## EDGE ARTICLES

13629

**Chemical diversification of polyprenyl quinones for mechanistic studies on menaquinone-binding peptide antibiotics**

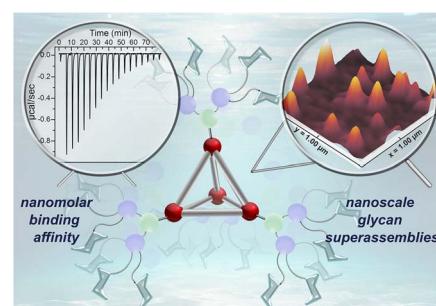
Eilidh J. Matheson, Roy A. M. van Beekveld, Paolo Innocenti, Nathaniel I. Martin, Markus Weingarth and Stephen A. Cochrane\*



13636

**Precision dendritic-supramolecular glycan assemblies for probing multivalent lectin interactions**

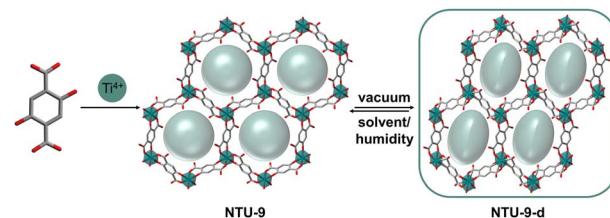
Tanvi M. Bhide, Garrett J. Musil, Wade Shipley, Emerson Hall, Alex J. Guseman, Andrea R. Tao and Julia M. Staubert\*



13646

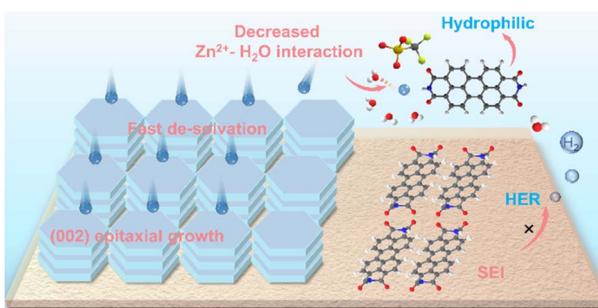
**Dynamic breathing behaviour of the titanium-based metal–organic framework NTU-9 upon adsorption of water and organic solvents**

Julia E. Knapp, Borja Ortín-Rubio, Fabian Heck, Kristina Gjorgjevikj, Anastasia Sleptsova, Simon Krause, Sebastian Bette\* and Bettina V. Lotsch\*



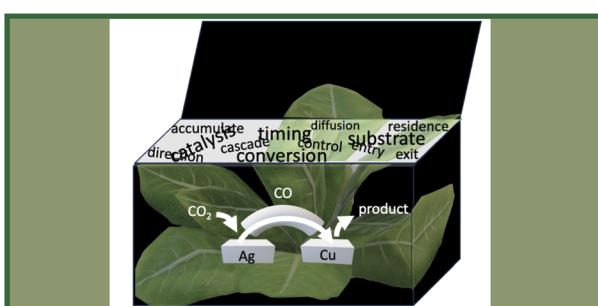
## EDGE ARTICLES

13655

**A dynamic amphiphilic additive with dual solubility modulates Zn<sup>2+</sup> solvation and *in situ* SEI for a dendrite-free zinc anode**

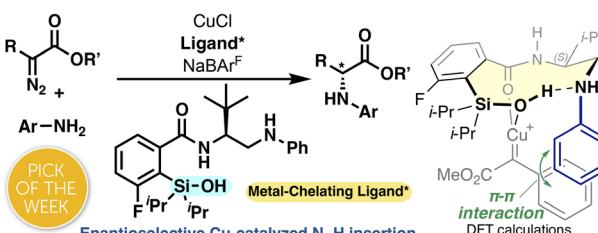
Can-Fei Xiao, Yong-Xia Lu, Ming Lu, Dongxiang Luo, Kang Xiao,\* Yongke Wang and Zhao-Qing Liu\*

13667

**Insights from designing an artificial cascade catalysis system using principles from substrate channeling in enzymes**

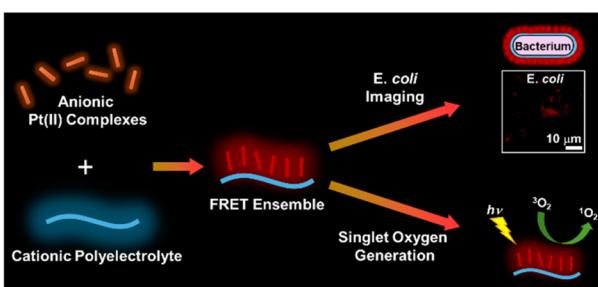
Frances A. Houle,\* Peter Agbo and Junko Yano

13678

**Multifunctional chiral silanol ligands for enantioselective catalysis**

Yun-Pu Chang, Kevin Blanco-Herrero, Turki M. Alturaifi, James C. Fettinger, Peng Liu and Annaliese K. Franz\*

13684

**Ensembles of cationic conjugated polymer and anionic platinum(II) complexes: from FRET properties to application studies in *E. coli* imaging and singlet oxygen generation**

Angela Lok-Yin So, Jungu Guo, Huanxiang Yuan, Qi Shen, Eric Ka-Ho Wong, Shu Wang\* and Vivian Wing-Wah Yam\*

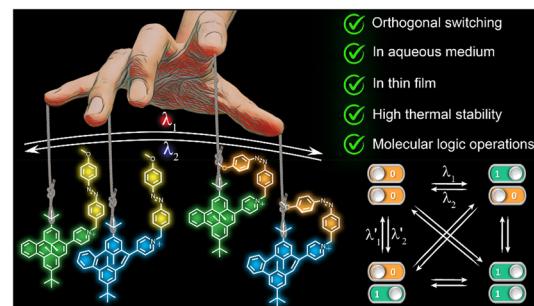


## EDGE ARTICLES

13694

**All-photonic switching of a benzo[e]-fused dimethyldihydropyrene–azobenzene dyad in the solid-state for logic operations**

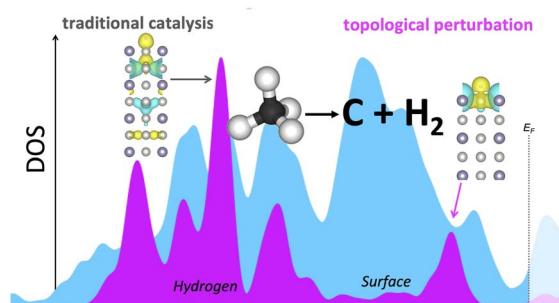
Sariful Molla, Jakir Ahmed and Subhajit Bandyopadhyay\*



13704

**Topological perturbation to a standard dehydrogenation catalyst, Pt<sub>3</sub>Sn**

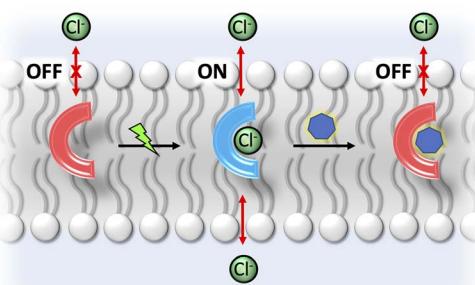
William T. Laderer, Xuance Jiang, Vojtech Vlcek, Harry W. T. Morgan and Anastassia N. Alexandrova\*



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**Responsive anion transport with a Hamilton receptor-based anionophore controlled by photo-activation and host–guest competitive inhibition**

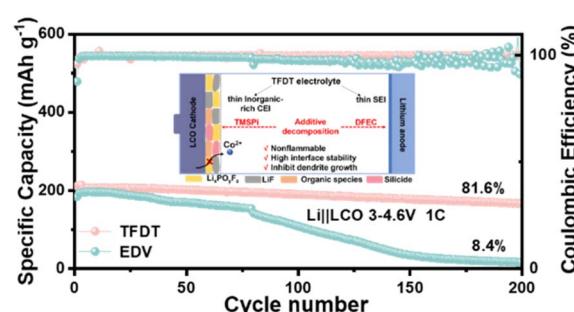
Manzoor Ahmad, Andrew Docker and Matthew J. Langton\*



13723

**Stabilizing the electrode–electrolyte interface for high-voltage Li||LiCoO<sub>2</sub> cells using dual electrolyte additives**

Jiwei Ding, Chao Yang, Wenxi Hu, Xiaowei Liu, Anran Zhang, Deda Peng, Jin Han\* and Ya You\*



## EDGE ARTICLES

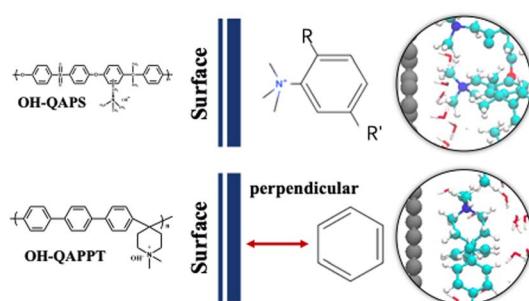
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**Photosalient effect and reversible photochromic photoluminescence driven by cascade [2 + 2] cycloaddition reaction and water adsorption in a 0D hybrid metal halide**

Chudong Chen, Ziquan Li, Yonghong Xiao, Chenghao Ye, Jianwu Wei, Ruosheng Zeng, Qi Pang and Binbin Luo\*

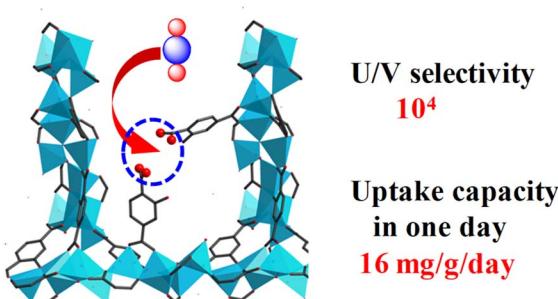
13741



**Decoding the influence of monomer structures on the electrical double layer of alkaline fuel cells**

Xiao-Hui Yang, Lin Zhuang and Jun Cheng\*

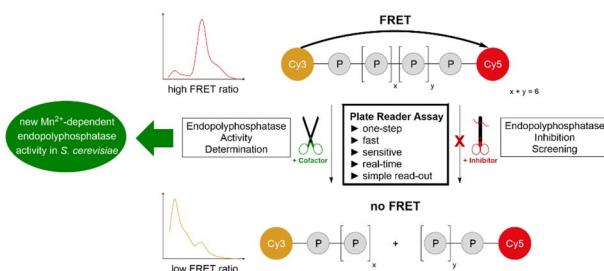
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**Robust biomimetic MOF featuring a negative pocket for precise recognition of uranyl, enabling ultrahigh U/V selectivity and rapid uranium extraction from seawater**

Anni Ye, Yuxuan Liu, Lele Gong, Xianqing Xie and Feng Luo\*

13760



**A screening approach unveils an unknown  $Mn^{2+}$ -dependent endopolyphosphatase activity in yeast**

Sandra Moser, Gloria Hans, Anuj Shukla, Adolfo Saiardi, Samuel Bru, Asli Aras Taskin, Chris Meisinger and Henning J. Jessen\*

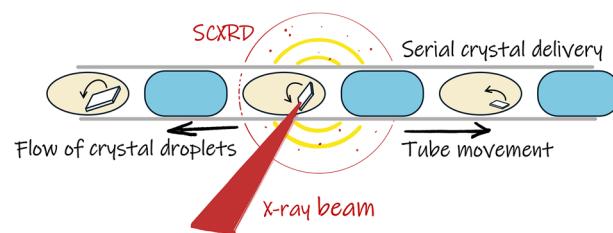


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**Segmented milli-fluidic crystallisation of paracetamol with *in situ* single-crystal X-ray diffraction**

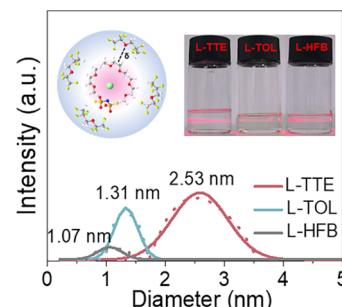
Lois E. Wayment, C. Daniel Scott, Lucy K. Saunders, Pollyanna Payne, Lauren E. Hatcher, Graeme Winter, Benjamin Williams, David R. Allan, Chick C. Wilson, Mark R. Warren\* and Karen Robertson\*



13774

**Solvation structure modulation *via* dipole–dipole interactions for high-rate lithium metal batteries exceeding 400 Wh kg<sup>-1</sup>**

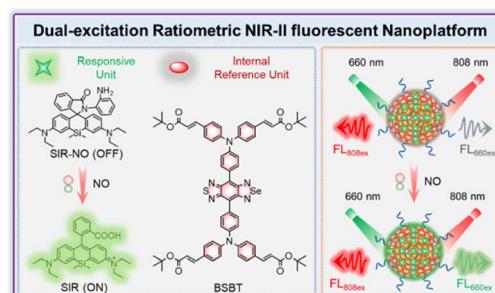
Liwen Zhang, Hongyu Liu, Tingting Wang, Hao Wang, Dong Yan, Min Li, Xiaodi Ren, Hong Li and Liping Wang\*



13784

**A dual-excitation ratiometric NIR-II fluorescent nanoplatform enables high contrast *in vivo* imaging**

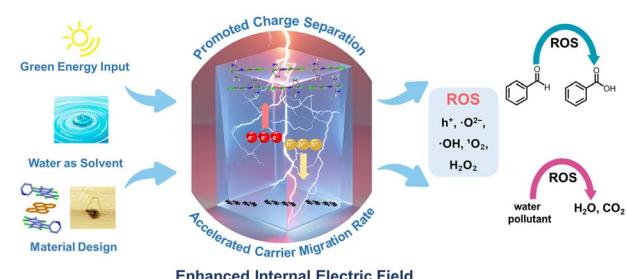
Yongchao Liu,\* Lili Teng, Bo Zhang, Xiao-Bing Zhang and Guosheng Song\*



13794

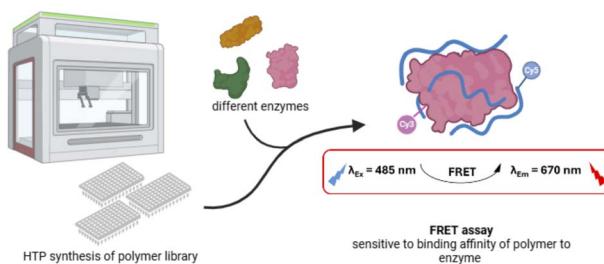
**Perfluoroarene–arene interaction cocrystal of perfluorocarbazoles toward IEF-enhanced photocatalysis**

Wenbo Hu, Heng Li and Bingxin Yuan\*



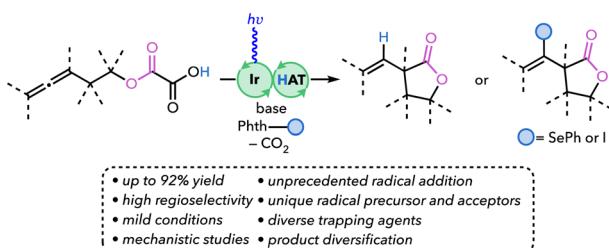
## EDGE ARTICLES

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**High throughput screening for the design of protein binding polymers**

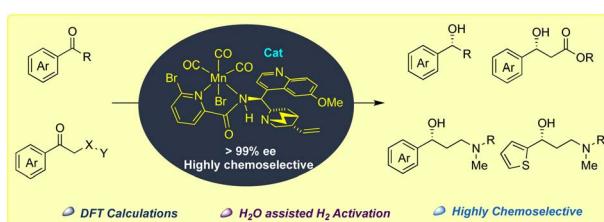
Carolin Bapp, Ahmed Z. Mustafa, Cheng Cao, Erica J. Wanless, Martina H. Stenzel\* and Robert Chapman\*

13816

**Photoredox-catalyzed regioselective allene alkoxycarbonylations for the synthesis of  $\alpha$ -allyl- $\gamma$ -lactones**

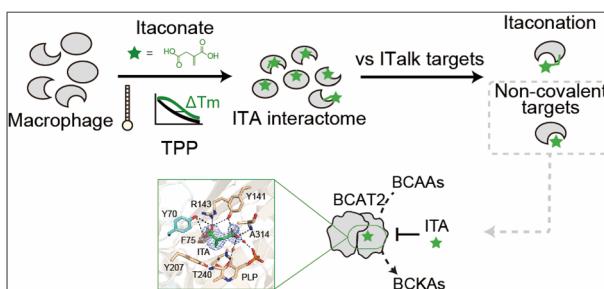
Elijah T. Marris, Ashley L. Palecek, Federico Barbieri, Derek B. Hu, Ken S. Lee and Jennifer M. Schomaker\*

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**A priori Design of [Mn(i)-Cinchona] catalyst for Asymmetric Hydrogenation of Ketones and  $\beta$ -Keto carbonyl Derivatives**

Soumen Paira, Nupur Jain, Debarsee Adhikari, Raghavan B. Sunoj\* and Basker Sundararaju\*

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**Thermal proteome profiling of itaconate interactome in macrophages**

Yunzhu Meng, Tiantian Wei, Chenlin Zhang, Anqi Yu, Yuan Liu, Junyu Xiao and Chu Wang\*

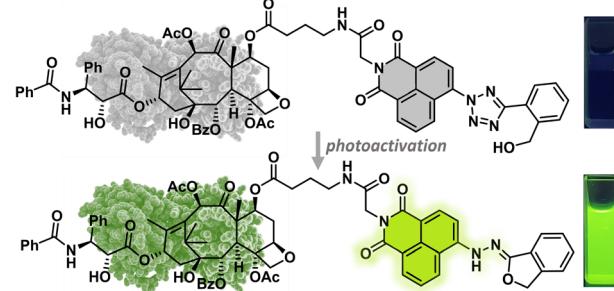


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**Hydroxy-pendant tetrazole as the cage group for photoactivatable push–pull fluorophores**

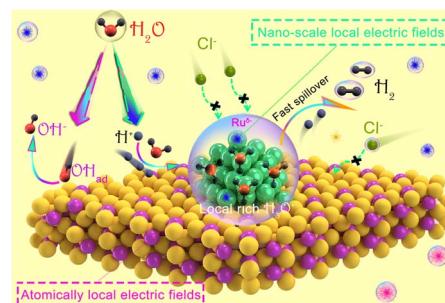
Meng Li, Maoting He and Peng An\*



13855

**Tailoring the local acid-like microenvironment with the synergism of nanoscale and atomically local electric fields for enhanced hydrogen spillover in alkaline seawater electrolysis**

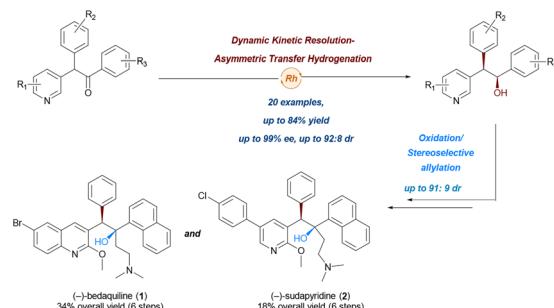
Lei Jin, Zhiyuan Wang, Hui Xu,\* Kun Wang, Xingyue Qian, Haiqun Chen\* and Guangyu He\*



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**Catalytic enantioselective total synthesis of antitubercular agents (−)-bedaquiline and (−)-sudapyridine enabled by dynamic kinetic resolution-asymmetric transfer hydrogenation**

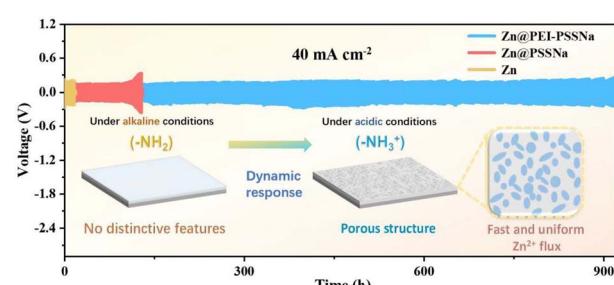
Jiyao Han, Dongliang Zhang, Yuan Tao, Pei Tang\* and Fen-er Chen\*



13873

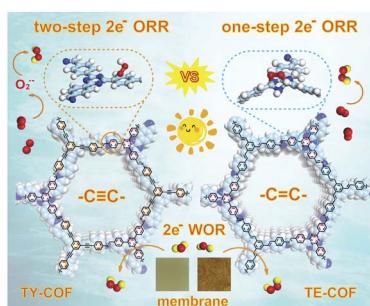
**A weak acid-responsive porous polyelectrolyte membrane enables the high efficiency of a zinc anode interface**

Wenbin Li, Changhao Wang, Wenxuan Hu, Yongkang Wang, Congcong Li, Xiao Liu, Linyan Su, Beibei Yang,\* Yunsong Li,\* Duan Bin\* and Hongbin Lu\*



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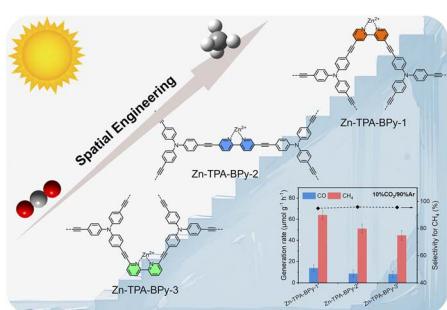
13883



### Distinct oxygen reduction pathways for solar H<sub>2</sub>O<sub>2</sub> production by regulating unsaturated bonds in covalent organic frameworks

Jie-Yu Yue,\* Zi-Xian Pan, Yan Guo, Peng Yang\* and Bo Tang\*

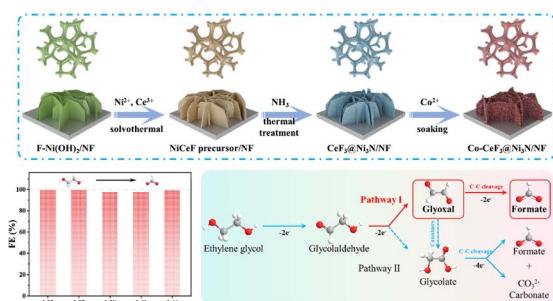
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### Spatially programmed regioisomeric conjugated microporous polymers modulating zinc sites for selective CO<sub>2</sub> photoreduction to CH<sub>4</sub>

Xingwang Lan,\* Juan Wang, Lu Chen, Haobo Xu, Tianjun Zhang and Yong Chen\*

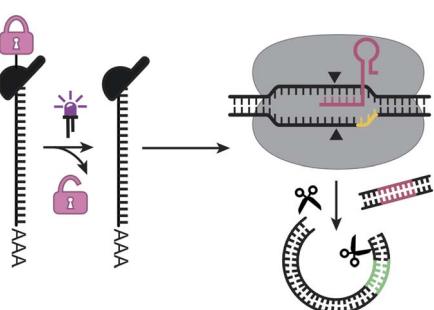
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### Stable and highly selective Co-CeF<sub>3</sub>@Ni<sub>3</sub>N sheet-on-sheet heterostructures for PET electro-upgrading and hydrogen production

Kuan Deng, Xuesong Liu, Peng Liu, Xingbin Lv, Wen Tian and Junyi Ji\*

13916



### Light-controlled genome editing by activation of Cas9-mRNA translation

Helena Schepers, Greta Charlotte Dahm, Martin Sumser, Sabine Hüwel and Andrea Rentmeister\*

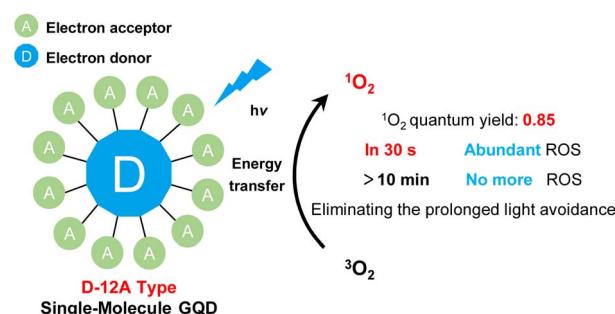


## EDGE ARTICLES

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**A single-molecule graphene quantum dot: a novel efficient photosensitizer for photodynamic cancer therapy**

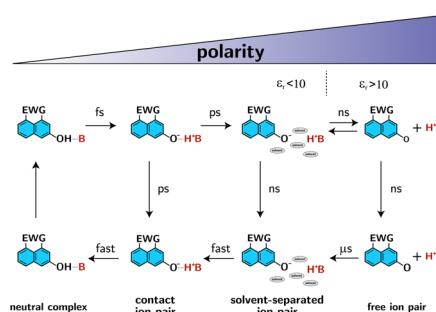
Jintao Chen, Shiru Yin, Futing Yang, Shengnan Guo, Jiaojiao Zhang, Zhenming Lu and Tian Gao\*



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**Dielectric stabilization controls excited-state proton transfer and ion pair dynamics in organic solvents**

Amar Raj, Pragya Verma, Andrei Beliaev, Pasi Myllyperkiö and Tatu Kumpulainen\*



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**Promoting electrocatalytic  $\text{CO}_2$  reduction to *n*-propanol over ethanol at Cu step sites**

Yuanyuan Xue, Ximeng Lv, Chao Yang, Lu Song, Lijuan Zhang\* and Gengfeng Zheng\*

