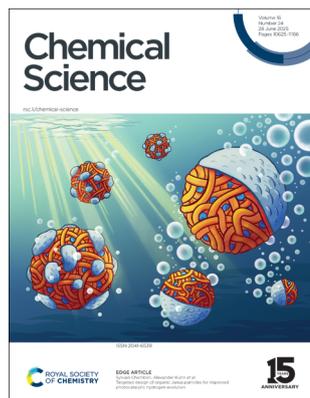


## IN THIS ISSUE

ISSN 2041-6539 CODEN CSHCBM 16(24) 10625–11166 (2025)



**Cover**  
See Sylvain Chambon, Alexander Kuhn *et al.*, pp. 10691–10700. Image reproduced by permission of Nais Coq and Alexander Kuhn from *Chem. Sci.*, 2025, 16, 10691.



**Inside cover**  
See Qingyun Wan, Chi-Ming Che *et al.*, pp. 10701–10713. Image reproduced by permission of Mingyong Xue from *Chem. Sci.*, 2025, 16, 10701.

## PERSPECTIVE

10642

### Synergistic effects of atomically precise Au-based bimetallic nanocluster on energy-related small molecule catalysis

Yuanxin Du,\* Yi Fang, Pei Wang and Manzhou Zhu\*



## REVIEW

10665

### Role of chemistry in nature-inspired skin adhesives

Xiao Yang, Xiaonan Liu, Yeung Yeung Chau, Xuezhi Qin, Hong Zhu, Liang Peng, Kannie W. Y. Chan and Zuankai Wang\*



# RSC Applied Interfaces

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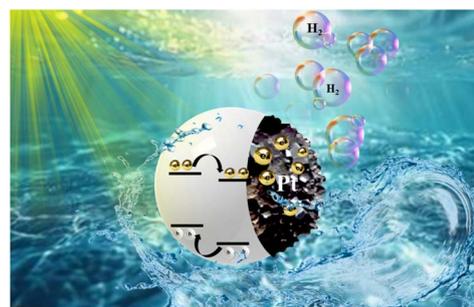
[rsc.li/RSCApplInter](https://rsc.li/RSCApplInter)

Fundamental questions  
Elemental answers

10691

### Targeted design of organic Janus particles for improved photocatalytic hydrogen evolution

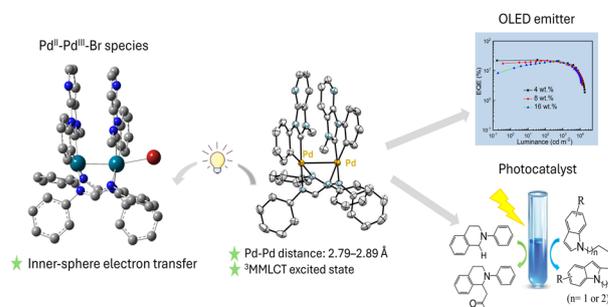
Khaoula Missaoui, Guillaume Wantz, Thierry Toupance, Sylvain Chambon\* and Alexander Kuhn\*



10701

### <sup>3</sup>MMLCT excited states of luminescent binuclear Pd<sup>II</sup> complexes: excited state inner-sphere electron-transfer reactions and application

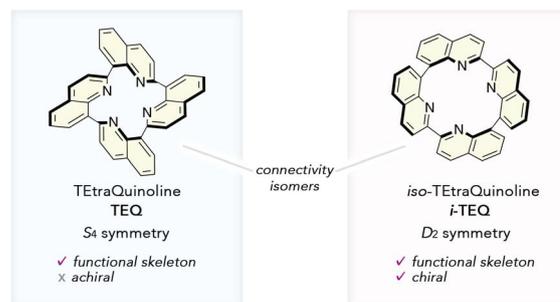
Minying Xue, Wai-Pong To, Gang Cheng, Yuzhen Zhang, Zhou Tang, Lili Du, Kam-Hung Low, Qingyun Wan\* and Chi-Ming Che\*



10714

### iso-TEtraQuinoline (*i*-TEQ): an inherently chiral N4 macrocyclic quinoline tetramer

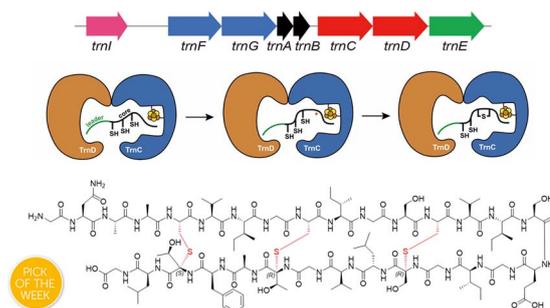
Ryota Yagami, Wei Xu, Toi Kobayashi, Yuuya Nagata and Naoya Kumagai\*



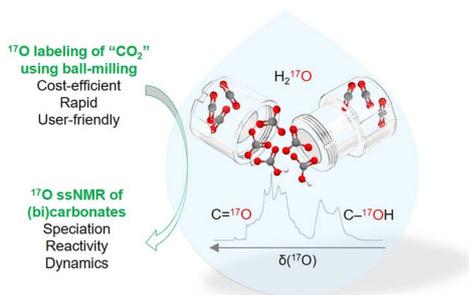
10722

### Synergistic action of two radical SAM enzymes in the biosynthesis of thuricin CD, a two-component sactibiotic

Yifei Jia, Yuanjun Han, Xuxue Liu and Qi Zhang\*



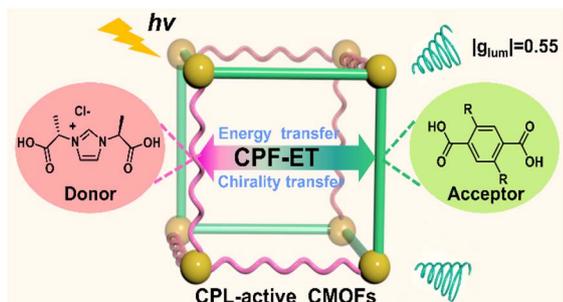
10731



### Capturing and labeling CO<sub>2</sub> in a jar: mechanochemical <sup>17</sup>O-enrichment and ssNMR study of sodium and potassium (bi)carbonate salts

Austin Peach,<sup>\*</sup> Nicolas Fabregue, Célia Erre, Thomas-Xavier Métro, David Gajan, Frédéric Mentink-Vigier, Faith Scott, Julien Trébosc, Florian Voron, Nicolas Patris, Christel Gervais and Danielle Laurencin<sup>\*</sup>

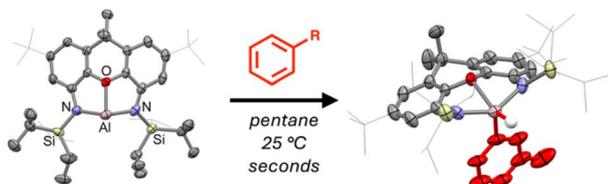
10742



### Rational design of circularly polarized luminescence active chiral metal–organic frameworks for logic devices

Hongrui Zheng, Qingqing Wang, Fei Wang,<sup>\*</sup> Shangda Li<sup>\*</sup> and Jian Zhang<sup>\*</sup>

10750

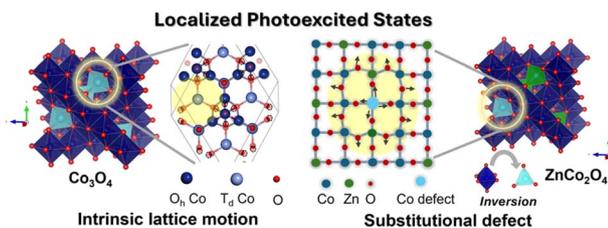


### Enhancing the nucleophilicity of aluminyl anions: targeting selective C–H activation

Fabian Kallmeier, Gareth R. Nelmes, Claire L. McMullin, Alison J. Edwards and Jamie Hicks<sup>\*</sup>

- ✓ Enhanced nucleophilicity
- ✓ Selective C–H activation of arenes @ r.t. in seconds
- ✓ Some functional group tolerance

10759



### Local coordination geometry within cobalt spinel oxides mediates photoinduced polaron formation

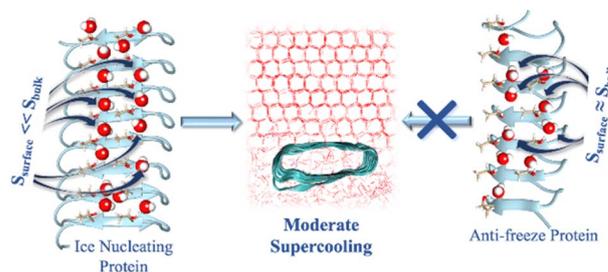
Erica P. Craddock, Jacob L. Shelton, Michael T. Ruggiero and Kathryn E. Knowles<sup>\*</sup>



10771

### Water entropy at the threonine-rich surface of antifreeze and ice-nucleating proteins: small changes make a big difference

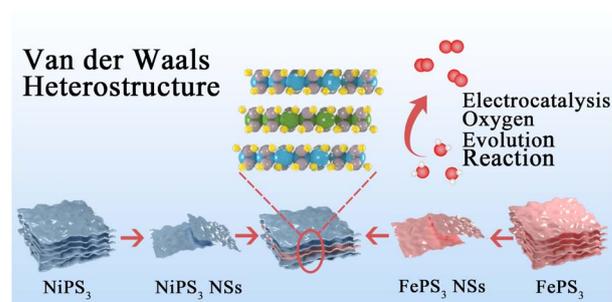
Deabsis Saha, Rahul Aich, Arnab Mukherjee\* and Biman Jana\*



10785

### Van der Waals heterostructures via spontaneous self-restacked assembling for enhanced water oxidation

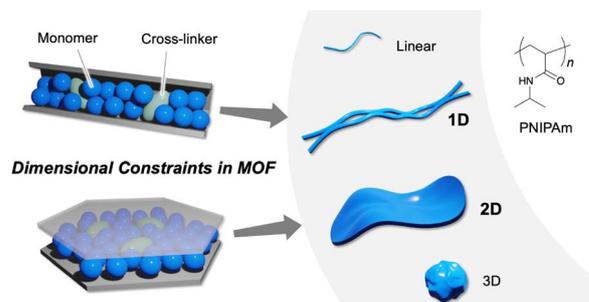
Rui Wang, Shuhui Li, Yang Hu, Shanshan Wu, Jiamin Zhu, Li An,\* Pinxian Xi\* and Chun-Hua Yan



10796

### Fabrication of low-dimensional network polymers with thermoresponsive properties using MOF scaffolds

Yuki Kametani, Ami Nishijima, Shu Hiramoto and Takashi Uemura\*



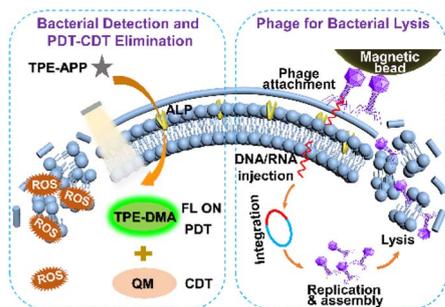
10803

### Atomic Ni-doped ZrO<sub>2</sub> with subnanometric Fe clusters for tandem C–C bond cleavage and coupling

Xin Zhao, Jie Wen, Qian Qiang, Dawang Tang, Fengliang Wang, Ruiqi Fang,\* Changzhi Li and Yingwei Li\*



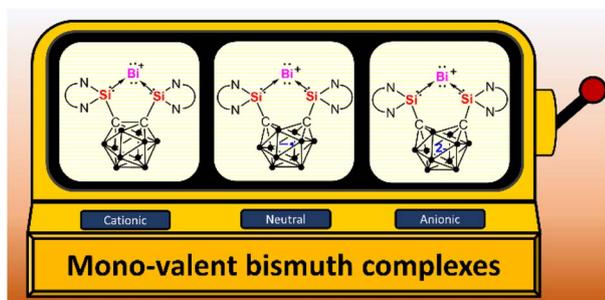
10813



### Targeted recognition, fluorescent tracking and augmented killing of multi-bacterial infections via synergizing a magnetic bead-armed phage cocktail with enzyme-activated AIE probes

Zhenyue Su, Ling-Hong Xiong,<sup>\*</sup> Jing Zhang, Ben Zhong Tang<sup>\*</sup> and Xuewen He<sup>\*</sup>

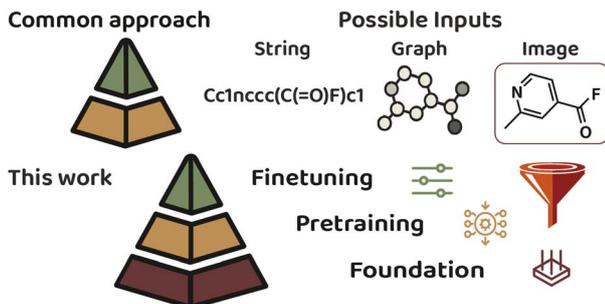
10826



### Isolable monoatomic monovalent bismuth complexes with a redox non-innocent bis-silylenyl carborane ligand

Jian Xu, Shenglai Yao, Verónica Postils, Eduard Matito, Christian Lorent and Matthias Driess<sup>\*</sup>

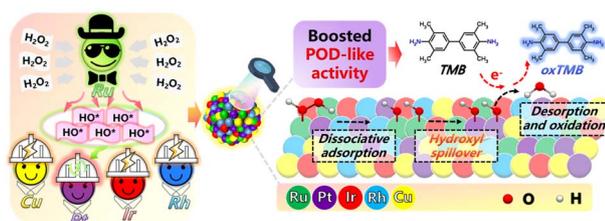
10833



### Data efficient molecular image representation learning using foundation models

Yonatan Harnik, Hadas Shalit Peleg, Amit H. Bermano<sup>\*</sup> and Anat Milo<sup>\*</sup>

10842



### Multi-site orbital coupling in Ru-based high-entropy alloy-enabled hydroxyl spillover for enhanced peroxidase-like activity

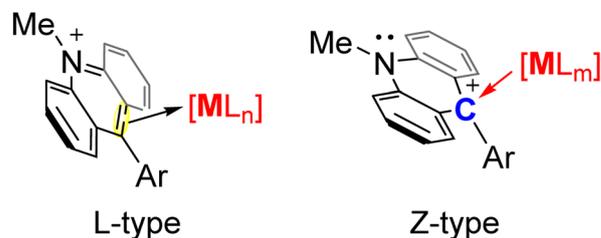
Qi Yang, Jiawei Zhang, Yuxi Tang, Yan Ju, Xuejiao Gao,<sup>\*</sup> Chaoyang Chu, Huimin Jia<sup>\*</sup> and Weiwei He<sup>\*</sup>



10852

**L/Z-ligand type amphotericism of an acridinium unit**

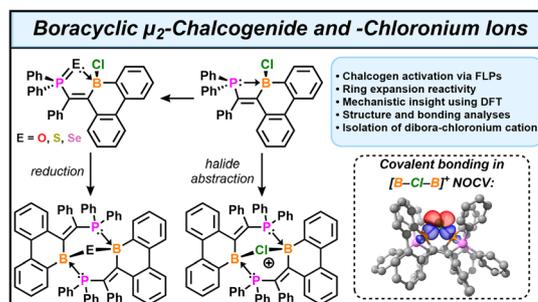
Elishua D. Little, Shantabh Bedajna and François P. Gabbaï\*

**Amphoteric behavior**

10857

**Borinine-FLP ring expansion: isolation of eight-membered B–P rings bridged by  $\mu_2$  chalcogenide and chloronium ions**

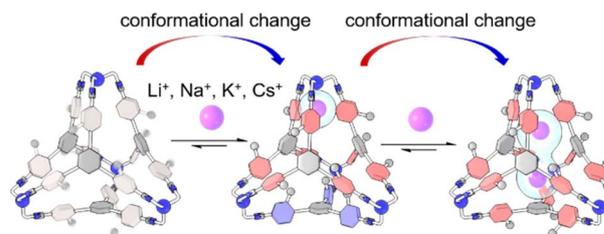
Nathan C. Frey, Samir Kumar Sarkar, Diane A. Dickie, Andrew Molino and Robert J. Gilliard, Jr.\*



10867

**A conformationally adaptable tetrahedral cage with different guest encapsulation models**

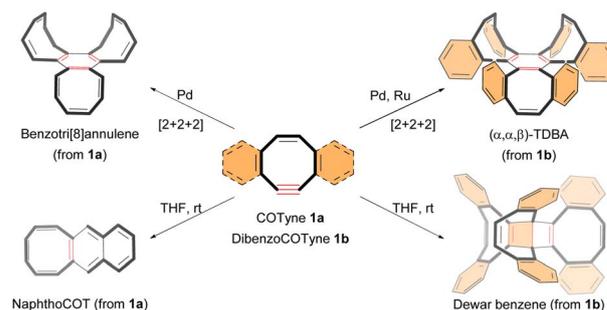
Hua Tang, Yuyang Lu, Yongwei Qian, Chenqi Ge, Jiyong Liu, Hongliang Chen\* and Hao Li\*



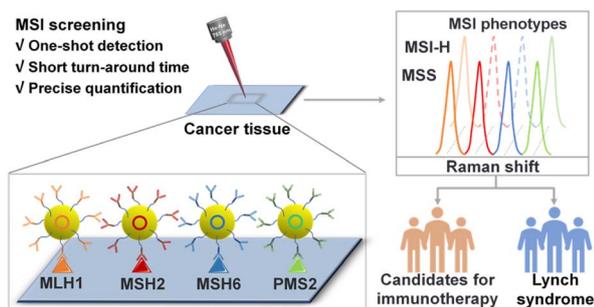
10874

**Transition metal-free vs. metal-catalyzed cyclotrimerization of didehydro[8]annulenes (COTynes): a complex pathway to non-planar PAHs – Dewar benzenes vs. benzotri[8]annulenes**

Jesús Bello-García, Jesús A. Varela\* and Carlos Saá\*



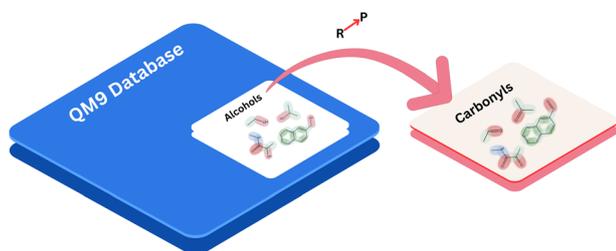
10881



### Detecting microsatellite instability in cancer via multiplexed orthogonal gap-enhanced Raman tags

Guowei Fu, Jin Li,\* Qian Zhang, Changjun Lv, Zhiyang Zhang, Xiaoyan Wang, Rihui Wu\* and Lingxin Chen\*

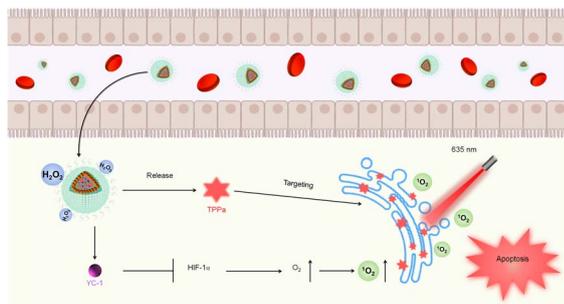
10895



### "Amide – amine + alcohol = carboxylic acid." chemical reactions as linear algebraic analogies in graph neural networks

Amer Marwan El-Samman\* and Stijn De Baerdemacker

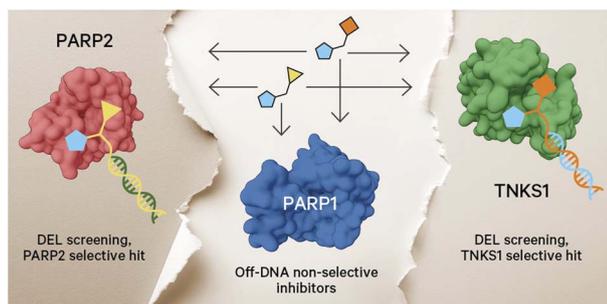
10909



### Endoplasmic reticulum-targeting activatable nanophotosensitizers for hypoxia relief and enhanced photodynamic therapy

Shanchao Diao, Xiaowen He, Ying Wu, Likun Yin, Yuxin Huang, Wen Zhou,\* Chen Xie\* and Quli Fan\*

10918



### Widespread false negatives in DNA-encoded library data: how linker effects impair machine learning-based lead prediction

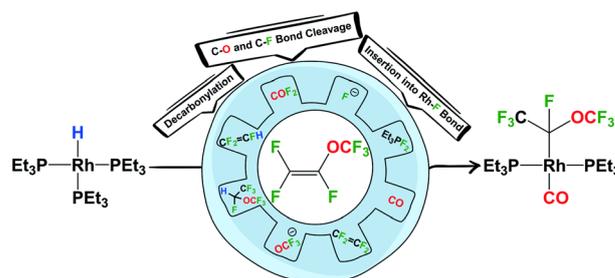
Alba L. Montoya, Adam S. Hogendorf, Steven Tingey, Aadarsh Kuberan, Lik Hang Yuen, Herwig Schüler and Raphael M. Franzini\*



10928

### Activation of perfluoro(methyl vinyl ether) at Rh(I) complexes: metal-centered *versus* phosphine-mediated decarbonylation

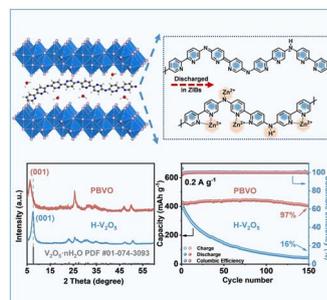
Soodeh Mollasalehi, Mike Ahrens and Thomas Braun\*



10935

### A multinitrogen $\pi$ -conjugated conductive polymer stabilizing ultra-large interlayer spacing in vanadium oxides for high-performance aqueous zinc-ion batteries

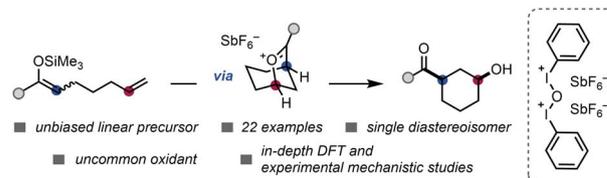
Weijian Li, Kaiyue Zhu,\* Weikang Jiang, Hanmiao Yang, Weili Xie, Zhengsen Wang and Weishen Yang\*



10944

### Diastereoselective Umpolung cyclisation of ketones promoted by hypervalent iodine

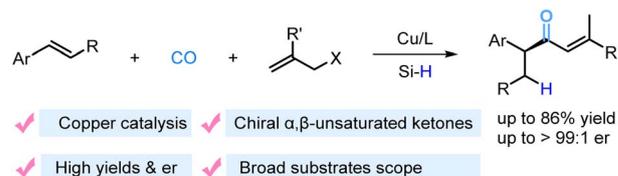
Giulia Iannelli, Philipp Spieß, Ricardo Meyrelles, Daniel Kaiser, Boris Maryasin, Leticia González and Nuno Maulide\*



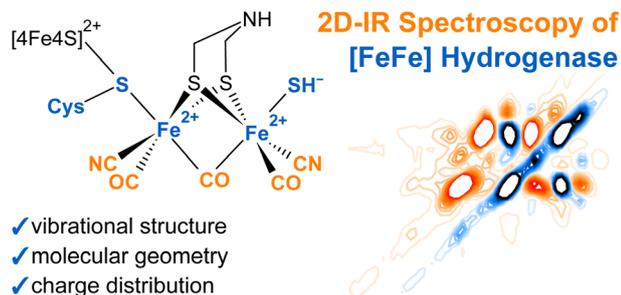
10951

### Copper-catalyzed asymmetric carbonylative hydroallylation of vinylarenes

Sufang Shao, Yang Yuan, Alban Schmall and Xiao-Feng Wu\*



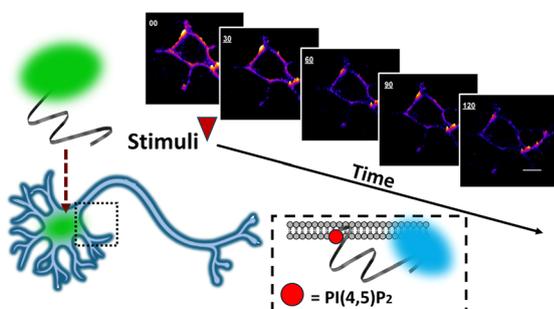
10957



### Two-dimensional infrared spectroscopy as a tool to reveal the vibrational and molecular structure of [FeFe] hydrogenases

Cornelius C. M. Bernitzky, Yvonne Rippers, Denise Poire, Mathesh Vaithyanathan, Solomon L. D. Wrathall, Barbara Procacci, Igor V. Sazanovich, Gregory M. Greetham, Patricia Rodriguez-Macia, Neil T. Hunt, James A. Birrell and Marius Horch\*

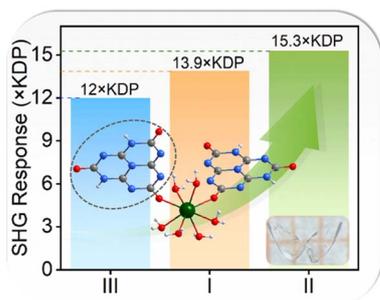
10970



### A cell-permeable fluorescent probe reveals temporally diverse PI(4,5)P<sub>2</sub> dynamics evoked by distinct GPCR agonists in neurons

Rajasree Kundu, Samsuzzoha Mondal, Akshay Kapadia, Antara A. Banerjee, Oleksandr A. Kucherak, Andrey S. Klymchenko, Sandhya P. Koushika, Ravindra Venkatramani, Vidita A. Vaidya and Ankona Datta\*

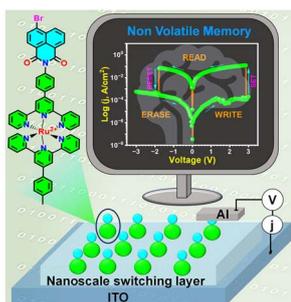
10983



### "Three functions in one": multifunctional rare-earth cyamelurates with magnetism, luminescence, and giant optical nonlinearity

Jing Zhang, Yuxiao Liu, Fangyan Wang, Pifu Gong, Zhaoyi Li, Xinyuan Zhang,\* Fei Liang,\* Shu Guo, Zhanggui Hu and Yicheng Wu

10990



### Electrosynthesis of molecular memory elements

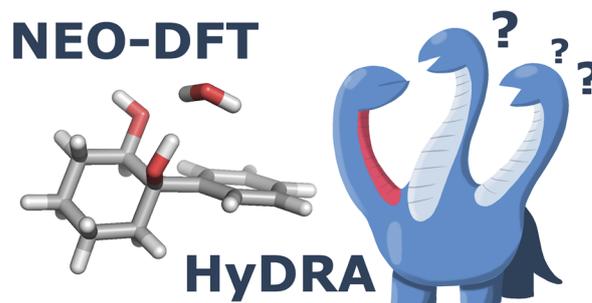
Pradeep Sachan, Anwesha Mahapatra, Lalith Adithya Sai Channapragada, Rajwinder Kaur, Shubham Sahay and Prakash Chandra Mondal\*



11002

### Accurate vibrational hydrogen-bond shift predictions with multicomponent DFT

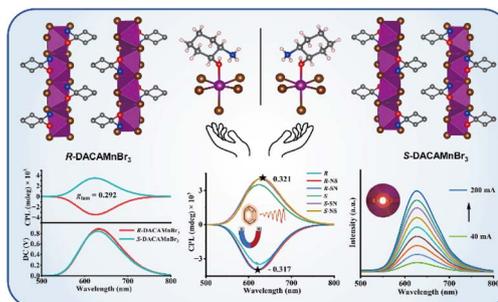
Martí Gimferrer, Lukas Hasecke, Margarethe Bödecker and Ricardo A. Mata\*



11012

### A strategy of chiral cation coordination to achieve a large luminescence dissymmetry factor in 1D hybrid manganese halides

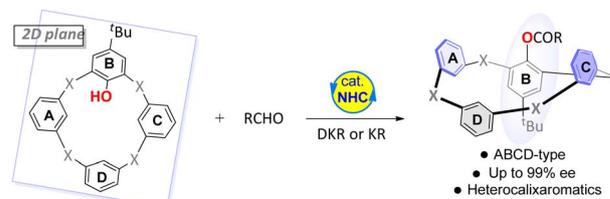
Fei Wang, Xingjun Li,\* Tianqi Chen, Liqing Wang, Chenliang Li, Wei Zhang, Wen Yuan, Shan Lu, Lina Li and Xueyuan Chen



11021

### N-Heterocyclic carbene-catalyzed enantioselective (dynamic) kinetic resolution for the assembly of inherently chiral macrocycles

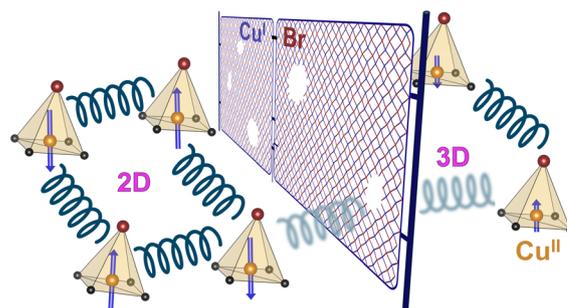
Zhipeng Li, Jingyang Zhang, Wanmeng Zhu, Tianyi Wang, Yefeng Tang and Jian Wang\*



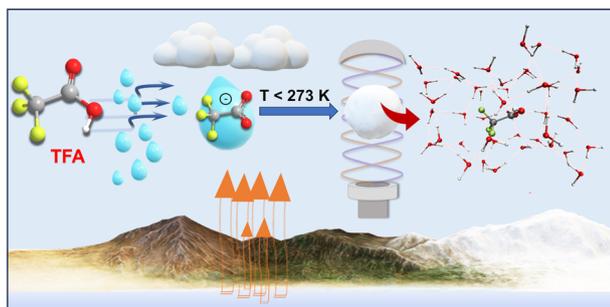
11027

### A competition between 2D and 3D magnetic orderings in novel mixed valent copper frameworks

Yao Abusa, Joshua Greenfield, Gayatri Viswanathan, Smitakshi Goswami, Emma Ross, Philip Yox, Richeal Oppong, Iyanu Ojo, Jifeng Liu, Andrew Ozarowski and Kirill Kovnir\*



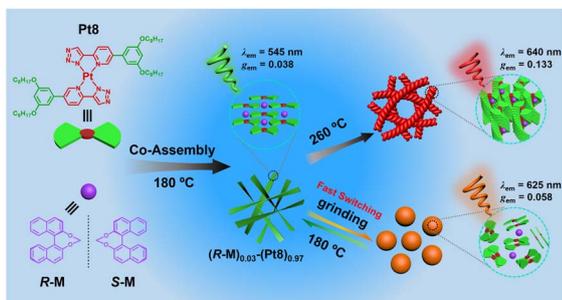
11039



### Probing the freezing chemistry of singly levitated aqueous trifluoroacetic acid droplets in a cryogenically cooled simulation chamber relevant to Earth's upper troposphere

Koushik Mondal, Souvick Biswas, Nils Melbourne, Rui Sun\* and Ralf I. Kaiser\*

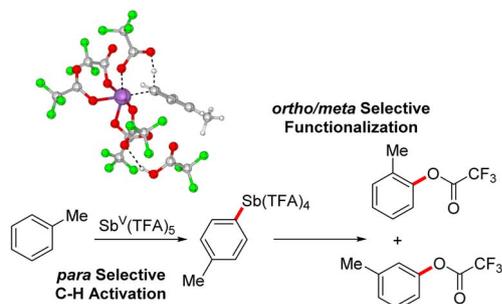
11049



### Fast emission color switching of circularly polarized luminescence in platinum(II) liquid crystalline co-assembly

Guo Zou, Qihuan Li, Zhenhao Jiang, Wentong Gao and Yixiang Cheng\*

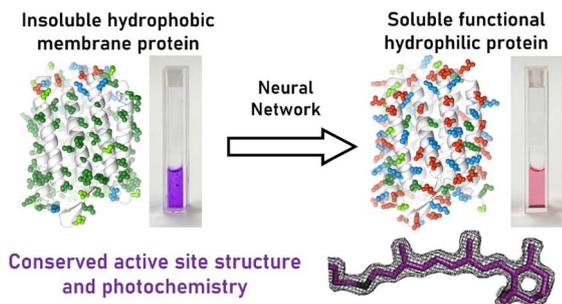
11058



### Computational and experimental evidence for Sb(v) metal mediated C–H activation and oxidative functionalization of arenes

Anjaneyulu Koppaka,\* Shu-Sen Chen, Dongdong Yang, Artem Marchenko, Sanaz Mohammadzadeh Koumleh, David J. Michaelis, Roy A. Periana\* and Daniel H. Ess\*

11067



### Engineering of soluble bacteriorhodopsin

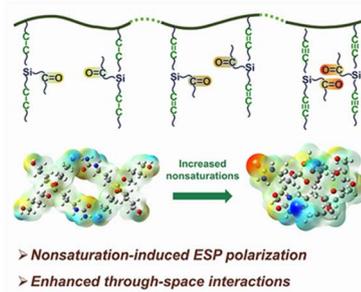
Andrey Nikolaev, Yaroslav Orlov, Fedor Tsybrov, Elizaveta Kuznetsova, Pavel Shishkin, Alexander Kuzmin, Anatolii Mikhailov, Yulia S. Nikolaeva, Arina Anuchina, Igor Chizhov, Oleg Semenov, Ivan Kapranov, Valentin Borschchevskiy, Alina Remeeva and Ivan Gushchin\*



11077

### Tunable luminescence of hyperbranched polysiloxanes by nonsaturation-induced electrostatic potential polarization for activatable fluorescent theranostics

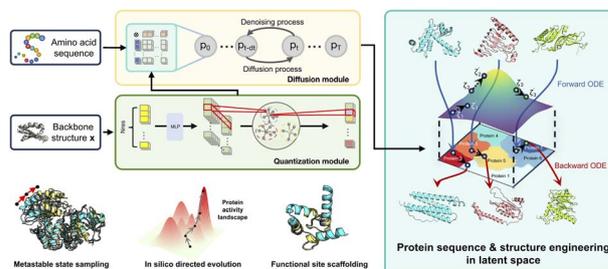
Yan Zhao, Zhixuan Feng, Miaomiao He, Xiangyi Wang, Weixu Feng, Wei Tian and Hongxia Yan\*



11087

### Unifying sequence-structure coding for advanced protein engineering via a multimodal diffusion transformer

Xiaohan Lin, Zhenyu Chen, Yanheng Li, Zicheng Ma, Chuanliu Fan, Ziqiang Cao, Shihao Feng,\* Jun Zhang\* and Yi Qin Gao\*

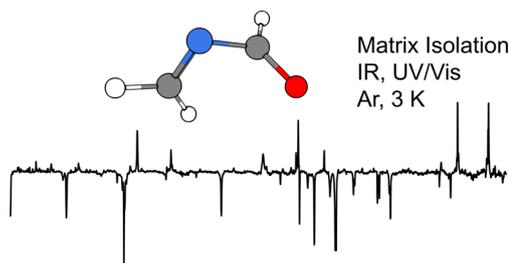


11103

### Generation and UV-photolysis of *N*-methyleneformamide

Viktor Paczelt, Vladimir D. Drabkin, Daniel Kühn and André K. Eckhardt\*

#### *N*-methyleneformamide

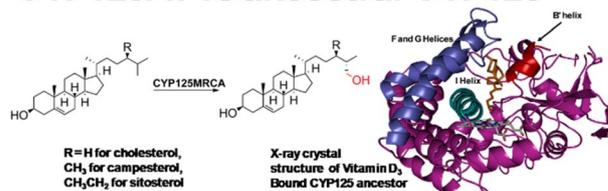


11110

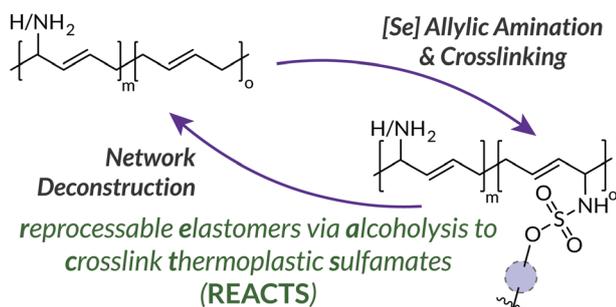
### Evolutionary insights into the selectivity of sterol oxidising cytochrome P450 enzymes based on ancestral sequence reconstruction

Daniel Z. Doherty,\* James J. De Voss, John B. Bruning and Stephen G. Bell\*

#### CYP125A1 vs ancestral CYP125



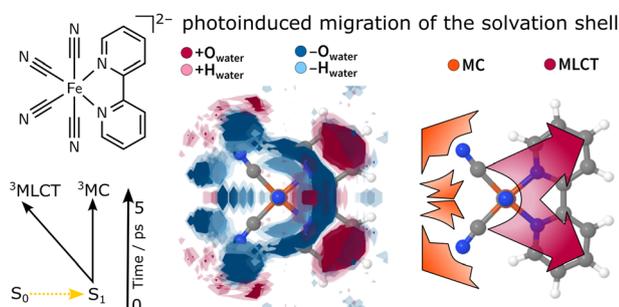
11123



### Crosslinking 1,4-polybutadiene via allylic amination: a new strategy for deconstructable rubbers

Mercie N. Hodges, Ana Paula Kitos Vasconcelos, Laura J. Reed and Matthew R. Golder\*

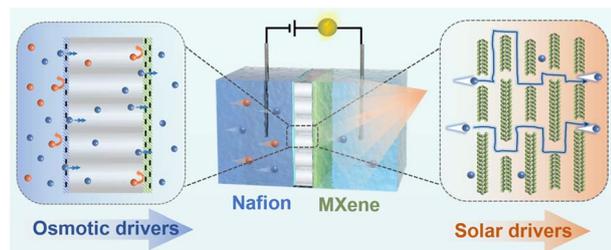
11128



### Ultrafast solvent migration in an iron complex revealed by nonadiabatic dynamics simulations

Severin Polonius, Leticia González\* and Sebastian Mai\*

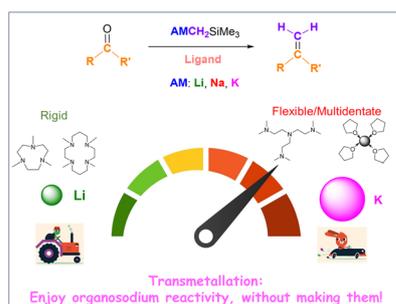
11138



### Two-sided asymmetric nanofluidic membrane for enhanced ion transport and osmotic energy harvesting

Qijun Zheng, Yue Shen, Junjian Lu, Yan Xu, Xing-Hua Xia and Chen Wang\*

11151



### C=O methylenation mediated by organo-alkali metal reagents: metal identity and ligand effects

Xiao Yang, Nathan Davison,\* Matthew E. Lowe, Paul G. Waddell, Roly J. Armstrong,\* Claire L. McMullin,\* Matthew N. Hopkinson and Erli Lu\*



## CORRECTIONS

11161

**Correction: Iron-catalyzed three-component 1,2-azidoalkylation of conjugated dienes via activation of aliphatic C–H bonds**

Zhen-Yao Dai, Chenxi Lin, Derek B. Hu and Jennifer M. Schomaker\*

11162

**Correction: Ultrahigh photocatalytic hydrogen evolution of linear conjugated terpolymers enabled by an ultra-low ratio of the benzothiadiazole monomer**

Zheng-Hui Xie, Gang Ye, Hao Gong, Pachaiyappan Murugan, Can Lang, Yi-Fan Dai, Kai Yang and Shi-Yong Liu\*

11163

**Correction: On-surface synthesis of organometallic nanorings linked by unconventional intermediates of the Ullmann reaction**

Xiaoyang Zhao, Liqian Liu, Zhipeng Zhang, Tianchen Qin, Jun Hu, Lei Ying, Junfa Zhu, Tao Wang\* and Xinrui Miao\*

