

# Dalton Transactions

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ISSN 1477-9226 CODEN DTARAF 52(42) 15135–15610 (2023)



**Cover**  
See Rishav Das and Priyanka Paira, pp. 15365–15376.

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**Inside cover**  
See Tokuhiwa Kawawaki and Yuichi Negishi, pp. 15152–15167.

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## EDITORIAL

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### Introduction to *Dalton Transactions* themed issue – New Talent: Asia-Pacific (2023)

Takashi Uemura,\* Jitendra K. Bera, Sally Brooker and Li-Min Zheng

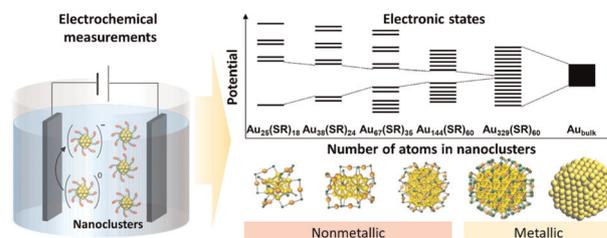


## PERSPECTIVES

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### Elucidation of the electronic structures of thiolate-protected gold nanoclusters by electrochemical measurements

Tokuhiwa Kawawaki\* and Yuichi Negishi\*



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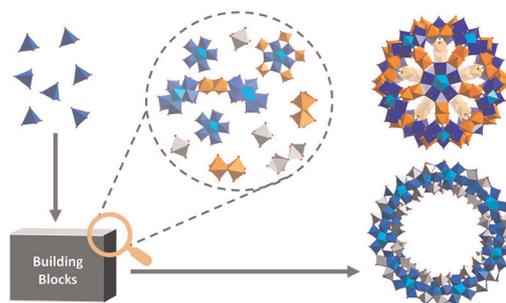


## PERSPECTIVES

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### Insights into the self-assembly of giant polyoxomolybdates from building blocks to supramolecular structures

Ke Li, Kai-Ling Zhu, Li-Ping Cui and Jia-Jia Chen\*



15178

### Olefin-linked covalent organic frameworks: synthesis and applications

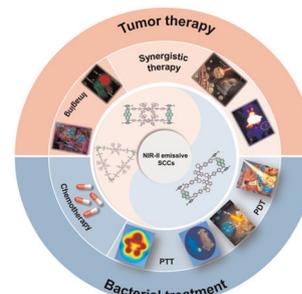
Ting Wang, Yushu Zhang, Zhifang Wang,\* Yao Chen, Peng Cheng and Zhenjie Zhang\*



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### Recent advances on the construction of long-wavelength emissive supramolecular coordination complexes for photo-diagnosis and therapy

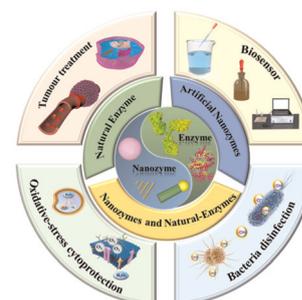
Zhipeng Zhang, Huan Ye, Fei Cai\* and Yao Sun\*



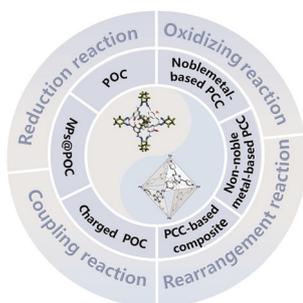
15203

### Emerging enzyme-based nanocomposites for catalytic biomedicine

Minchao Liu, Hongyue Yu, Tiancong Zhao\* and Xiaomin Li\*



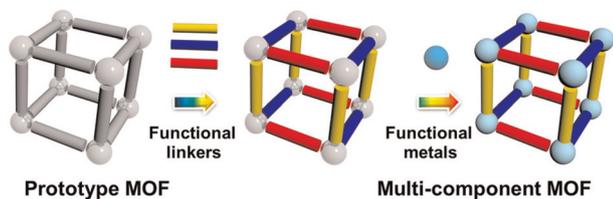
15216



### Recent advances in porous molecular cages for photocatalytic organic conversions

Yaoyao Peng, Zhifang Su, Meng Jin, Lei Zhu,\*  
Zong-Jie Guan\* and Yu Fang\*

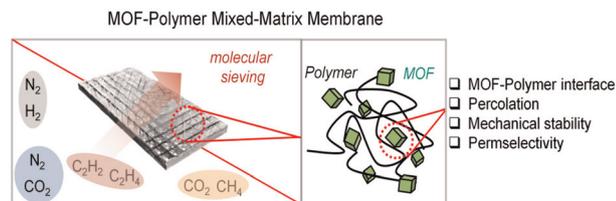
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### Stepwise construction of multi-component metal–organic frameworks

Xinyu Xu, Lei Gao and Shuai Yuan\*

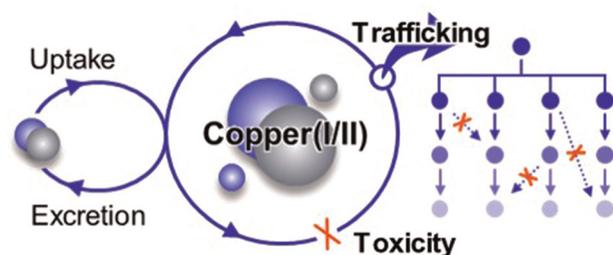
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### A roadmap to enhance gas permselectivity in metal–organic framework-based mixed-matrix membranes

Susmita Kundu and Ritesh Haldar\*

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### Copper trafficking systems in cells: insights into coordination chemistry and toxicity

Jiyeon Han

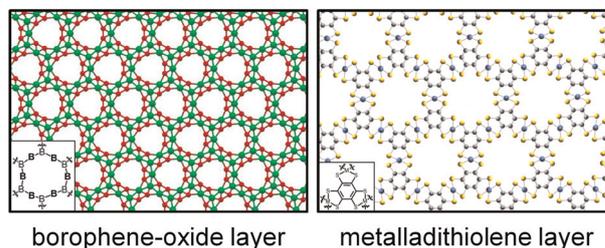


15297

### Chemical bottom-up approach for inorganic single-atomic layers aiming beyond graphene

Tetsuya Kambe,\* Hiroshi Nishihara\* and Kimihisa Yamamoto\*

#### Chemical synthesis of 2D materials



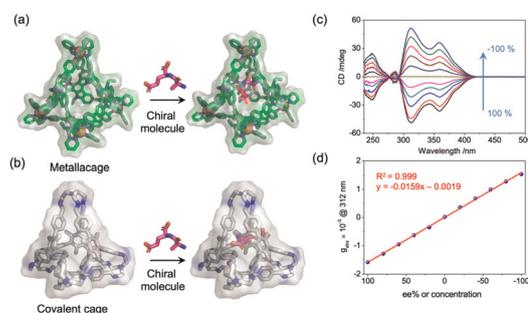
borophene-oxide layer

metalladithiolenene layer

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### Cage-based sensors for circular dichroism analysis

Jianjian Zhao, Chang-Yin Yang, Lianrui Hu,\* Lin Xu and Wei-Tao Dou\*

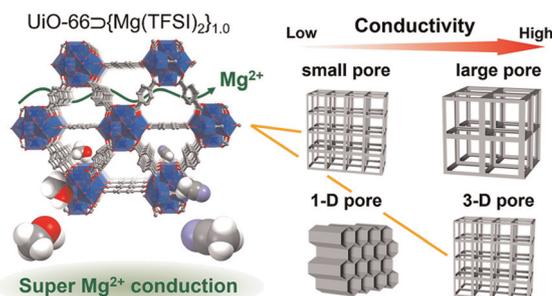


## COMMUNICATIONS

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### High $Mg^{2+}$ conduction in three-dimensional pores of a metal-organic framework under organic vapors

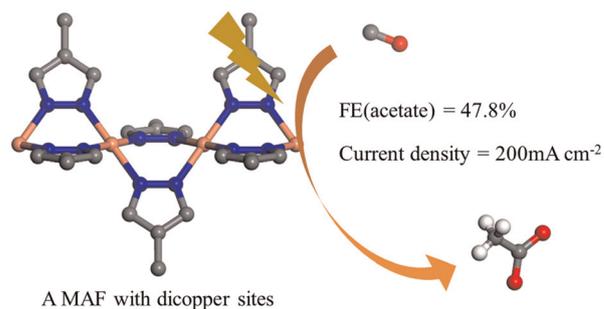
Kouhei Aoki, Kenichi Kato and Masaaki Sadakiyo\*



15317

### Efficient electroreduction of CO to acetate using a metal-azolate framework with dicopper active sites

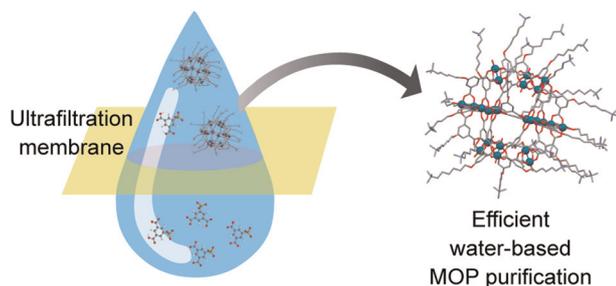
Hao-Lin Zhu, Yu-Xuan Han, Pei-Qin Liao\* and Xiao-Ming Chen



A MAF with dicopper sites



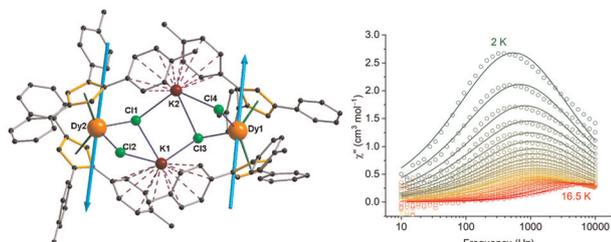
15321



### Efficient water-based purification of metal–organic polyhedra by centrifugal ultrafiltration

Benjamin Le Ouay,\* Tomo Ohara, Ryosuke Minami, Rin Kunitomo, Ryo Ohtani and Masaaki Ohba\*

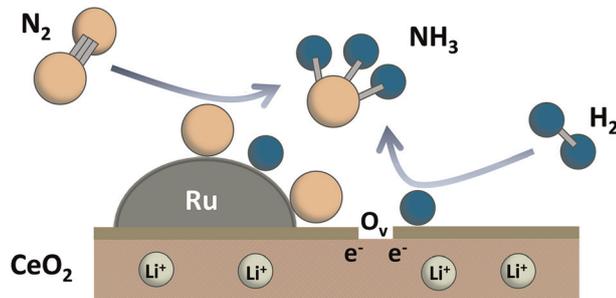
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### Dipotassiumtetrachloride-bridged dysprosium metallocenes: a single-molecule magnet

Selvakumar Arumugam, Björn Schwarz,\* Prathap Ravichandran, Sunil Kumar, Liviu Ungur\* and Kartik Chandra Mondal\*

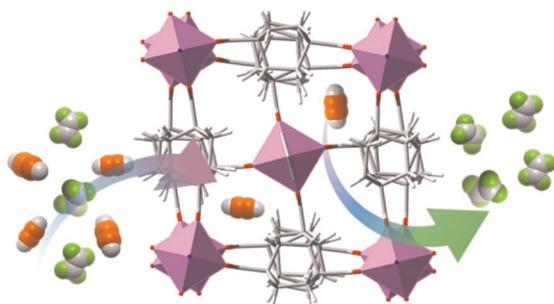
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### Li-intercalated CeO<sub>2</sub> as an ideal substrate for boosting ammonia synthesis

Zhuoyang Gao, Xiaowei Mu, Qingchuan Xiong and Lu Li\*

15338



### An aliphatic MOF with a molecular sieving effect for efficient C<sub>2</sub>H<sub>2</sub>/C<sub>2</sub>H<sub>4</sub> separation

Xianzhen Li, Chen Cao, Ziwen Fan, Jianfa Liu, Tony Pham, Katherine A. Forrest and Zheng Niu\*

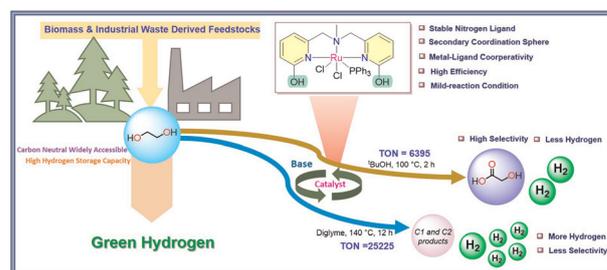


## COMMUNICATIONS

15343

### A switchable route for selective transformation of ethylene glycol to hydrogen and glycolic acid using a bifunctional ruthenium catalyst

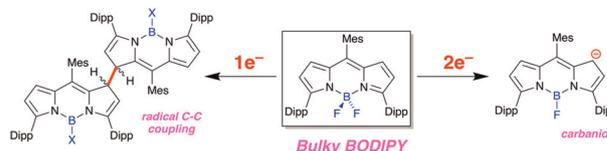
Satabdee Tanaya Sahoo, Aisa Mohanty, Raju Sharma and Prosenjit Daw\*



15348

### One- and two-electron reductions of a bulky BODIPY compound

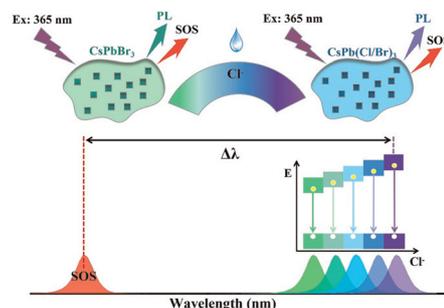
Liam M. Pascoe, Li Feng Lim, Fabian Kallmeier, Nicholas Cox, Penelope J. Brothers and Jamie Hicks\*



15353

### Fluorescence wavelength shifts combined with light scattering for ratiometric sensing of chloride in the serum based on CsPbBr<sub>3</sub>@SiO<sub>2</sub> perovskite nanocrystal composite halide exchanges

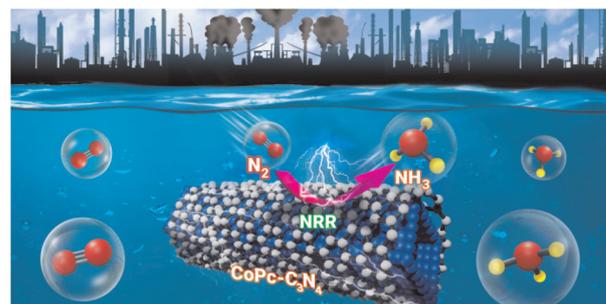
Peng Zhang, Liming Chen, Xiaoyan Cai, Binbin Luo,\* Tianju Chen,\* Haini Chen, Guoliang Chen and Feiming Li\*



15360

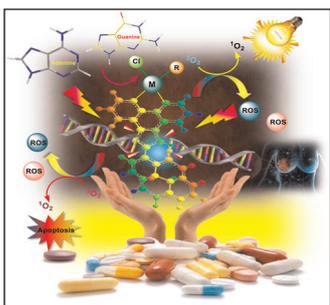
### 1D/2D interface engineering of a CoPc–C<sub>3</sub>N<sub>4</sub> heterostructure for boosting the nitrogen reduction reaction to NH<sub>3</sub>

Sourav Paul, Sougata Sarkar, Dependu Dolui, Debashrita Sarkar, Marc Robert and Uttam Kumar Ghorai\*



## PAPERS

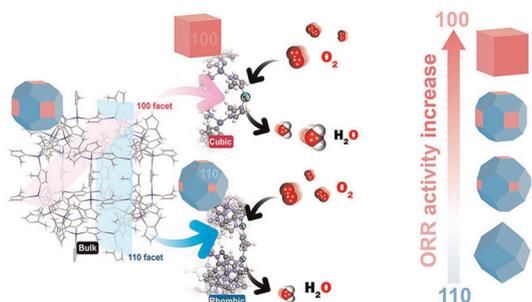
15365



### GSH resistant, luminescent 2-(pyren-1-yl)-1*H*-imidazo[4,5-*f*][1,10]phenanthroline-based Ru(II)/Ir(III)/Re(I) complexes for phototoxicity in triple-negative breast cancer cells

Rishav Das and Priyanka Paira\*

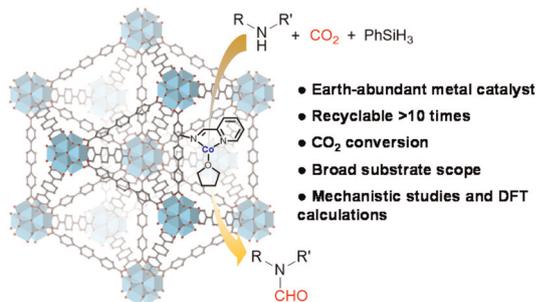
15377



### Impact of exposed crystal facets on oxygen reduction reaction activity in zeolitic imidazole frameworks

Sorawich Pimu, Nuttapon Yodsins, Sirawee Maneewan, Jaruwat Kanthachan, Supawadee Namuangruk\* and Kanokwan Kongpatpanich\*

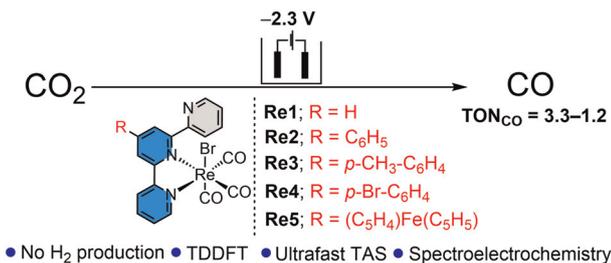
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### A supported pyridylimine-cobalt catalyst for *N*-formylation of amines using CO<sub>2</sub>

Naved Akhtar, Manav Chauhan, Poorvi Gupta, Neha Antil and Kuntal Manna\*

15394



### Electrocatalytic reduction of CO<sub>2</sub> to CO by a series of organometallic Re(I)-tpy complexes

Shriya Saha, Thomas Doughty, Dibyendu Banerjee, Sunil K. Patel, Dibyendu Mallick,\* E. Siva Subramaniam Iyer, Souvik Roy\* and Raja Mitra\*

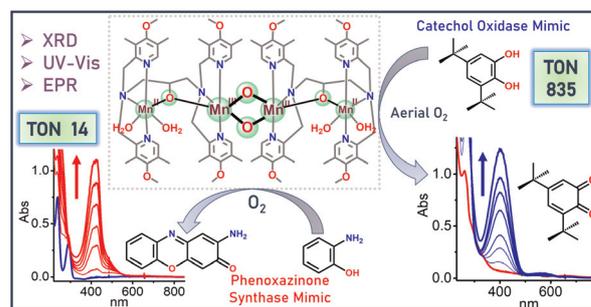


## PAPERS

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### A tetranuclear Mn-diamond core complex as a functional mimic of both catechol oxidase and phenoxazinone synthase enzymes

Rakesh Kumar, Rahul Keshri, Koushik Prodhan, Kanchan Shaikh and Apparao Draksharapu\*

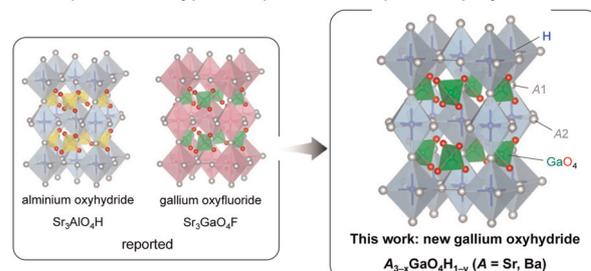


15420

### A new family of anti-perovskite oxyhydrides with tetrahedral GaO<sub>4</sub> polyanions

Nur Ika Puji Ayu, Fumitaka Takeiri,\* Takafumi Ogawa, Akihide Kuwabara, Masato Hagihala, Takashi Saito, Takashi Kamiyama and Genki Kobayashi\*

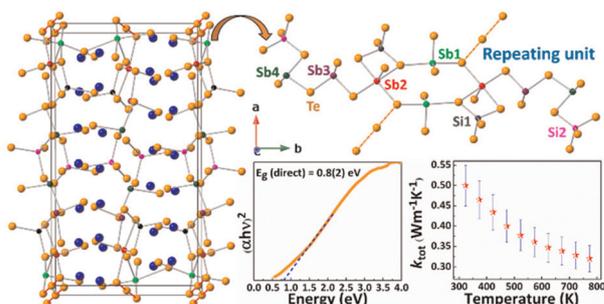
Anti-perovskite type compounds with p-metal polyanions



15426

### Ba<sub>14</sub>Si<sub>4</sub>Sb<sub>8</sub>Te<sub>32</sub>(Te<sub>3</sub>): hypervalent Te in a new structure type with low thermal conductivity

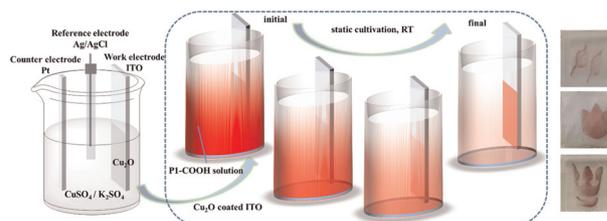
Subhendu Jana, Sweta Yadav, Swati, Manish K. Niranjan and Jai Prakash\*



15440

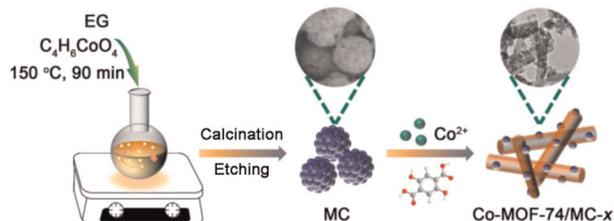
### Soluble polymer facilely self-grown *in situ* on conducting substrates at room temperature towards electrochromic applications

Xiongchao Shao, Yuhua Yang, Qidi Huang, Dacheng Dai, Haichang Fu, Guohua Gong, Cheng Zhang, Mi Ouyang,\* Weijun Li and Yujie Dong\*



## PAPERS

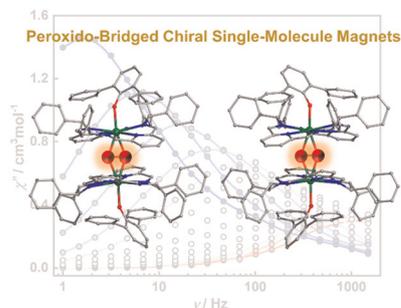
15447



### A non-enzymatic glucose sensor based on a mesoporous carbon sphere immobilized Co-MOF-74 nanocomposite

Xianliang Li,\* Diwei Deng, Lufang He and Yan Xu

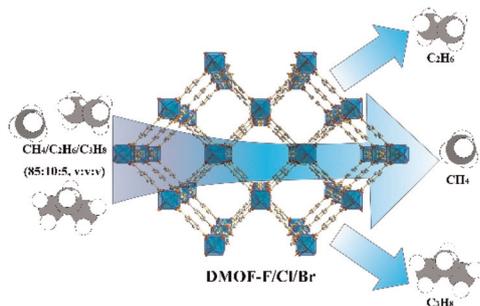
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### Peroxi-do-bridged chiral double-decker dysprosium macrocycles

Chen Zhao, Tingting Wang, Xiaodong Liu, Zhenhua Zhu,\* Xu Ying, Xiao-Lei Li and Jinkui Tang\*

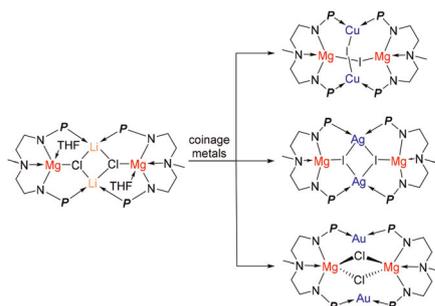
15462



### Halogen-modified metal–organic frameworks for efficient separation of alkane from natural gas

Zhirong Song, Yanchun Zheng, Yiqi Chen, Youlie Cai, Rong-Jia Wei and Junkuo Gao\*

15467



### Magnesium complexes supported by a dianionic double layer nitrogen–phosphorus ligand: a synthesis and reactivity study

Yafei Li, Pengfei Chen, Qin Zhu\* and Congqing Zhu\*

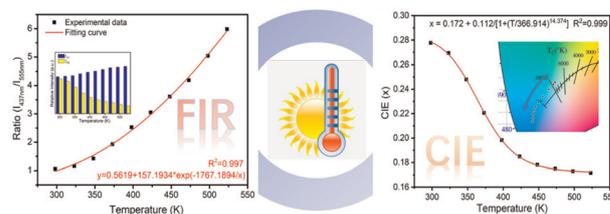


## PAPERS

15475

### White-emitting orthosilicate phosphor $\alpha$ - $\text{Sr}_2\text{SiO}_4$ : $\text{Ce}^{3+}/\text{Eu}^{2+}/\text{K}^+$ : a bimodal temperature sensor with excellent optical thermometric sensitivity

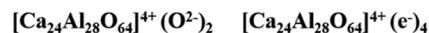
Bin Hui, Kai Zhao, Han Si, Xinlin Tong, Xinyi Wu, Li Yin and Saifang Huang\*



15484

### A simplified and facile preparation method for the $[\text{Ca}_{24}\text{Al}_{28}\text{O}_{64}]^{4+}(\text{e}^-)_4$ electride

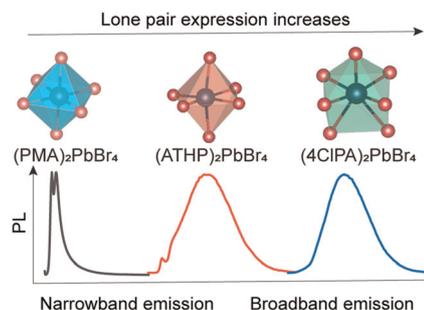
Xiangyu Zhang, Yunlei Chen, Yongfang Sun, Fei Wang, Xiao-Dong Wen\* and Tian-Nan Ye\*



15489

### Broadband emission originating from the stereochemical expression of $6s^2$ lone pairs in two-dimensional lead bromide perovskites

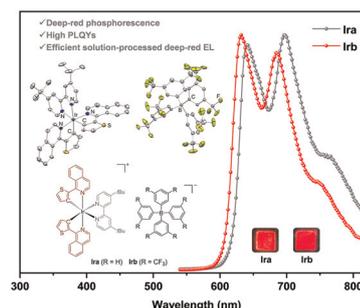
Xiaofan Jiang, Yu Tao, Jiazhen Gu, Leyang Jin, Chen Li, Wenkai Zhang\* and Yongping Fu\*



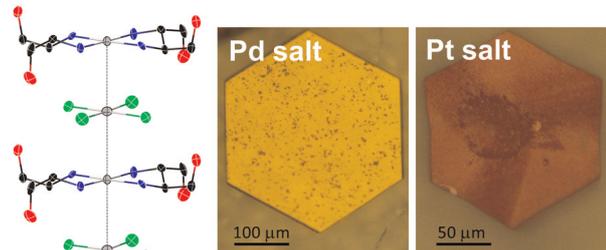
15496

### Efficient 1-(thiophen-2-yl)isoquinoline-based ionic iridophosphors with bulky counterions for solution-processed deep-red electroluminescence

Peng Tao,\* Xiao-Kang Zheng, He Jiang, Xinghao Sheng, Yongjing Deng, Yuk Yin Ian Chan, Qiang Zhao\* and Wai-Yeung Wong\*



15503

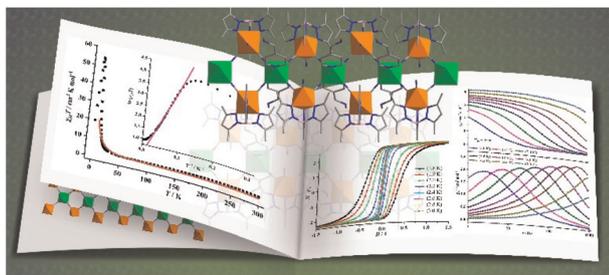


### Hexagonal and Largest Single Crystals in Magnus-Type Salt

### Hexagonal crystalline Magnus' green salt analogues prepared from hydroxy-functionalised Pt and Pd complexes

Mohammad Rasel Mian,\* Unjila Afrin, Shinya Takaishi, Brian K. Breedlove, Masahiro Yamashita\* and Hiroaki Iguchi\*

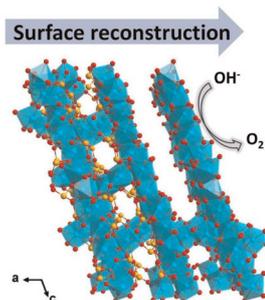
15510



### Ferromagnetically coupled single-chain magnets exhibiting a magnetic hysteresis of 0.42 Tesla in cyano-bridged $\text{Fe}_2^{\text{III}}\text{M}^{\text{II}}$ ( $\text{M} = \text{Ni}, \text{Fe}$ ) coordination polymers

Jin-Hua Wang, Mohammad Khurram Javed, Jia-Xin Li, Yi-Quan Zhang, Zhao-Yang Li\* and Masahiro Yamashita

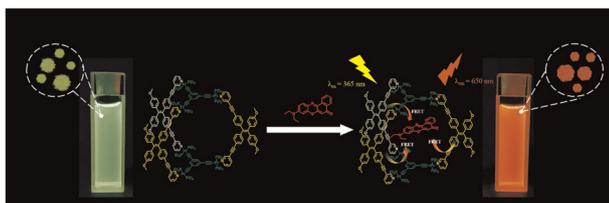
15518



### A layered $\text{CoSeO}_3$ pre-catalyst for electrocatalytic water oxidation

Ting Wang, Shujiao Yang, Haoquan Zheng, Wei Zhang\* and Rui Cao\*

15524



### A supramolecular artificial light-harvesting system based on a luminescent platinum(II) metallacage

Ning Wang, Weiao Yang, Lei Feng, Xing-Dong Xu\* and Shengyu Feng\*

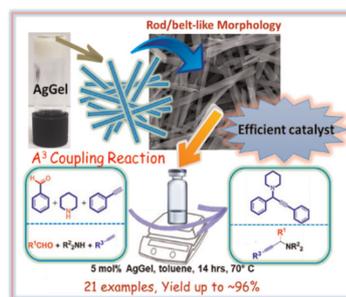


## PAPERS

15530

### Exploring amine-rich supramolecular silver(i) metallogels for autonomous self-healing and as catalysts for a three component coupling reaction

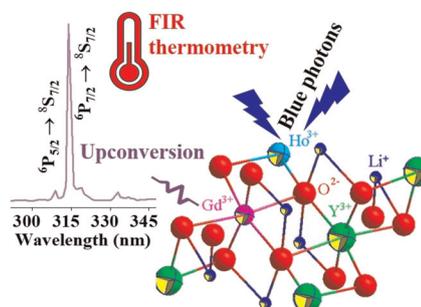
Ekata Saha, Ajjur Rahaman, Sukalyan Bhadra\* and Joyee Mitra\*



15539

### UVB upconversion of LiYO<sub>2</sub>:Ho<sup>3+</sup>,Gd<sup>3+</sup> for application in luminescence thermometry

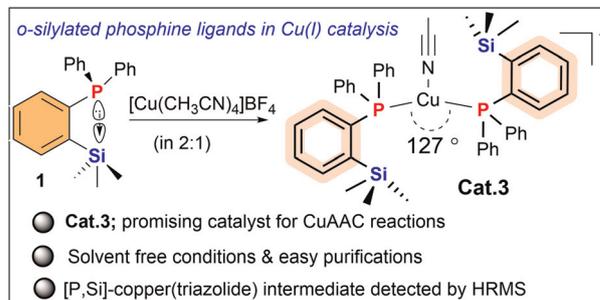
Shanshan Zhao, Benchun Li, Tiantian Shen, Fang Fang, Songlin Zhuang, Dawei Zhang and Dechao Yu\*



15549

### New cationic coinage metal complexes featuring silyl group functionalized phosphine: syntheses, structures and catalytic studies in alkyne-azide cycloaddition reactions

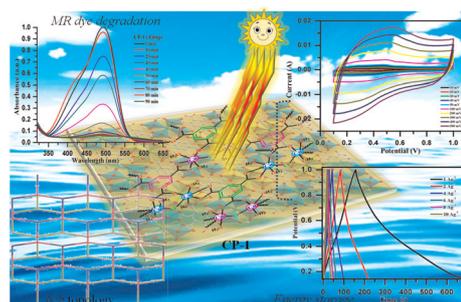
Amiya Kumar Sahoo, Ashish Kumar Sahoo, Bhagyashree Das, Subhra Jyoti Panda, Chandra Shekhar Purohit and Adinarayana Doddi\*



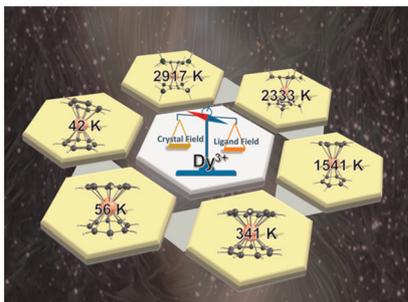
15562

### Bifunctional Cu(II)-based 2D coordination polymer and its composite for high-performance photocatalysis and electrochemical energy storage

Arif Ali, Waris, Basree, Mohammad Zain Khan, Necmi Dege, Musheer Ahmad\* and M. Shahid\*



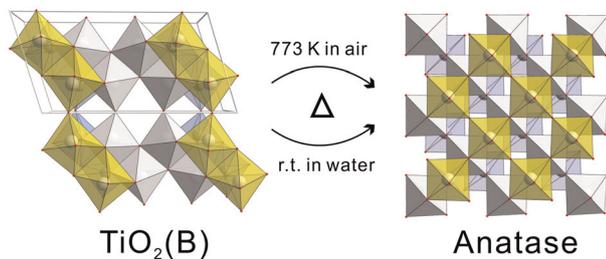
15576



### Understanding electrostatics and covalency effects in highly anisotropic organometallic sandwich dysprosium complexes $[\text{Dy}(\text{C}_m\text{R}_m)_2]$ (where $\text{R} = \text{H}$ , $\text{SiH}_3$ , $\text{CH}_3$ and $m = 4$ to $9$ ): a computational perspective

Ibtesham Tarannum, Shruti Moorthy and Saurabh Kumar Singh\*

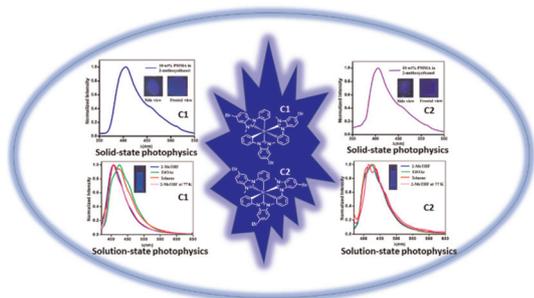
15590



### Phase transition behaviour and mechanism of 2D $\text{TiO}_2(\text{B})$ nanosheets through water-mediated removal of surface ligands

Shirui Xie, Lijing Fan, Yanxin Chen, Jiliang Cai, Fan Wu, Kecheng Cao\* and Pengxin Liu\*

15597



### Effect of substitution on deep-blue $\text{Ir}(\text{III})$ N-heterocyclic carbene (NHC) emitters

Rahat Gupta, Priya Sahnii, Salil K. Jana, Anshul Negi and Amlan K. Pal\*

