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ISSN 1477-9226 CODEN DTARAF 52(47) 17585–18104 (2023)



**Cover**  
See Petr Štěpnička *et al.*,  
pp. 17701–17710.

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**Inside cover**  
See Wenyao Li, Min Zeng,  
Guanjie He *et al.*,  
pp. 17711–17716.

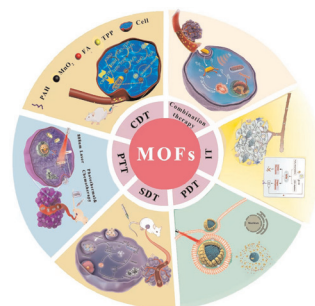
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## PERSPECTIVES

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### Recent advances and prospects of metal–organic frameworks in cancer therapies

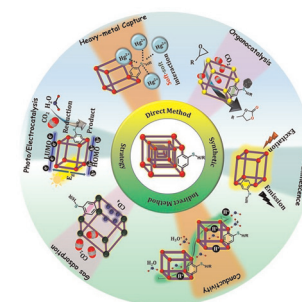
Zhiying Luo, Yu Sheng, Chenyi Jiang, Ying Pan,  
Xiaoxiong Wang, Ali Nezamzadeh-Ejhi, Jie Ouyang,\*  
Chengyu Lu\* and Jianqiang Liu\*



17623

### Thiol and thioether-based metal–organic frameworks: synthesis, structure, and multifaceted applications

Rajesh Patra, Sumit Mondal and Debajit Sarma\*



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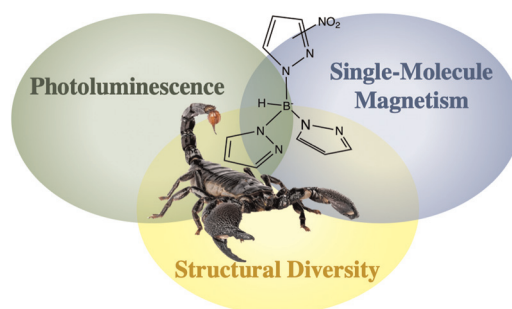
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17656

## Utility of all-pyrazole heteroscorpionates in f-element chemistry

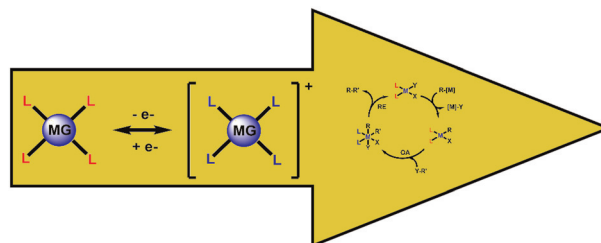
Christopher Hossack, Christopher Cahill\* and Claire Besson\*



17666

## Redox-active ligands – a viable route to reactive main group metal compounds

Glen G. Briand

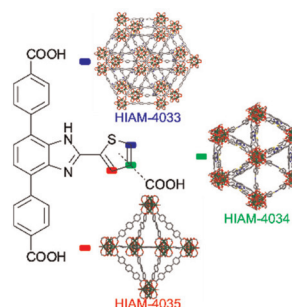


## COMMUNICATIONS

17679

## Carboxyl position-directed structure diversity in zirconium-tricarboxylate frameworks

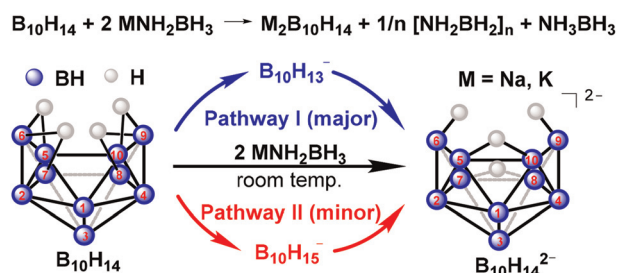
Jun Xia, Jincheng Si, Kang Zhou, Hai-Lun Xia, Jian Zhang, Yingqian Xu,\* Lei Wang\* and Xiao-Yuan Liu\*



17684

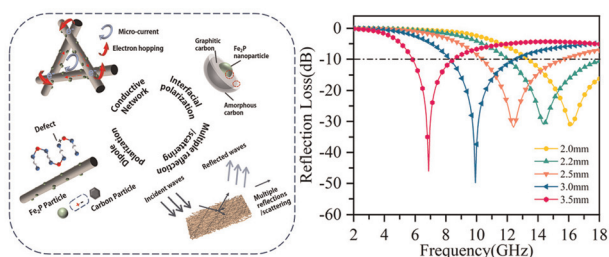
## An improved method for the synthesis and formation mechanism of M<sub>2</sub>B<sub>10</sub>H<sub>14</sub> based on the reactions of B<sub>10</sub>H<sub>14</sub> with MNH<sub>2</sub>BH<sub>3</sub> (M = Na, K)

Xi-Meng Chen, Xing-Chao Yu, Jing-Xian Chi, Yi Jing, Hongju Wang, Na Zhang, Chen Zhang, Yi-Wen Ge and Xuenian Chen\*



## COMMUNICATIONS

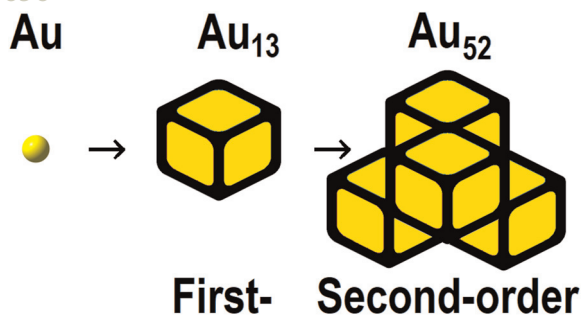
17689



### Fe<sub>2</sub>P nanoparticle-decorated carbon nanofiber composite towards lightweight and highly efficient microwave absorption

Yao Li, Guangguang Guan, Liang Yan, Kaiyin Zhang and Jun Xiang\*

17696

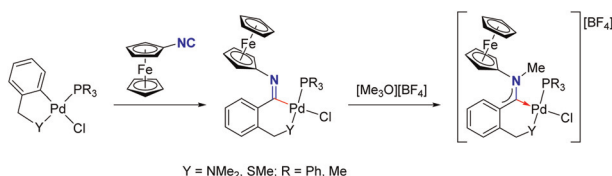


### Second-order superatoms: Au<sub>52</sub>-PAP featuring a three-dimensional cluster-of-clusters core

Alvaro Muñoz-Castro

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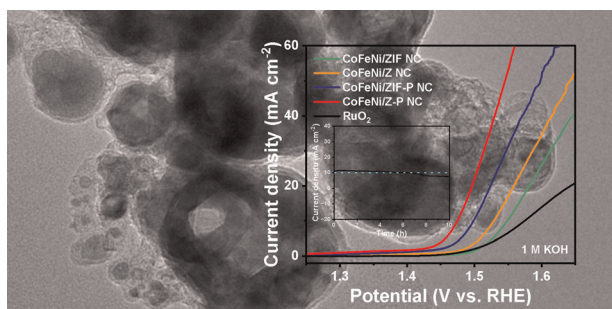
17701



### Synthesis and reactivity of Pd(II) imido complexes obtained by insertion of isocyanoferrrocene into the Pd–C bonds of orthopalladated precursors

Michal Franc, Petr Vosáhlo, Jiří Schulz, Ivana Císařová and Petr Štěpnička\*

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### Trimetallic MOF-derived CoFeNi/Z-P NC nanocomposites as efficient catalysts for oxygen evolution reaction

Xudun Shen, Liping Huang, Shuaishuai Li, Longnian Tang, Qiumei Lei, Bowang Zhao, Huilian Hao, Wenyao Li,\* Min Zeng\* and Guanjie He\*



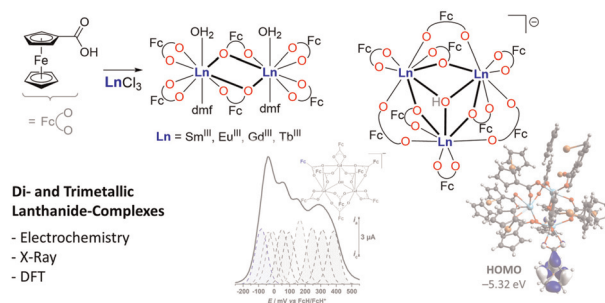


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### Ferrocenyl-based di- and trinuclear lanthanide complexes: solid state structures, (spectro)electrochemical and DFT studies

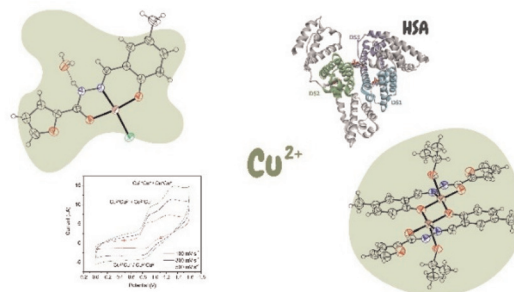
Ahmed Khalladi, Eduard Kovalski, Mohammad A. Abdulmalic, Tobias Rüffer, Qing Yuan, H. Naili, Marcus Korb\* and Heinrich Lang\*



17731

### Copper(II) complexes of a furan-containing aroylhydrazonic ligand: syntheses, structural studies, solution chemistry and interaction with HSA

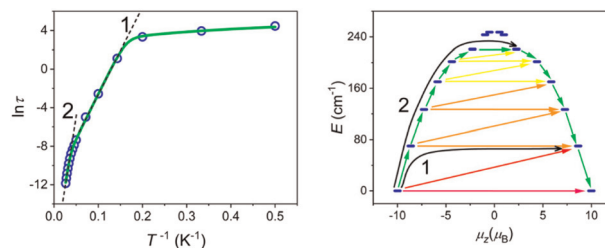
Fagner da Silva Moura, Ygor S. Sobrinho, Carolina Stellet, Jilder D. P. Serna, Carolina B. P. Ligiero, Maurício I. Yoguim, Daphne S. Cukierman, Renata Diniz, Odivaldo C. Alves, Nelson H. Morgon, Aguinaldo R. de Souza and Nicolás A. Rey\*



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### A Dy-based single ion magnet in a SrLaGaO<sub>4</sub> matrix: enhanced parameters in an expanded crystal lattice

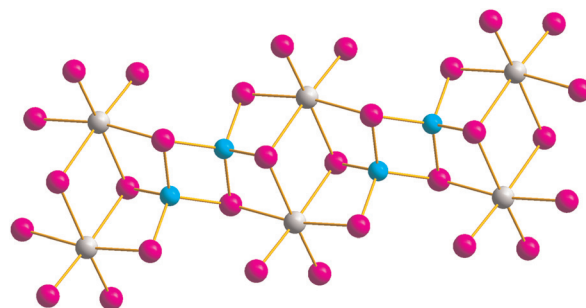
Alexander V. Vasiliev, Timur Z. Sharifullin, Elena D. Demidova, Reinhard K. Kremer and Pavel E. Kazin\*



17752

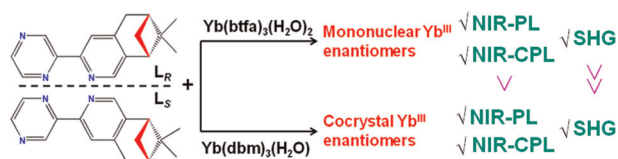
### Copper and silver heterometallic iodoantimonates: structure, thermal stability, and optical properties

Irina A. Shentseva, Andrey N. Usoltsev, Nikita A. Korobeynikov, Maxim N. Sokolov and Sergey A. Adonin\*



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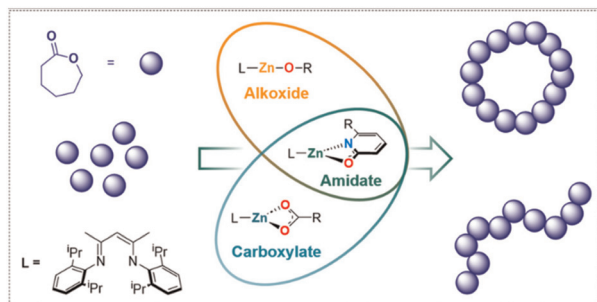
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Two pairs of chiral Yb<sup>III</sup> enantiomers presenting distinct NIR luminescence and circularly polarized luminescence performances with giant differences in second-harmonic generation responses

Xiaodi Du,\* Zhiqiang Zhang, Congli Gao, Fengcai Li and Xi-Li Li\*

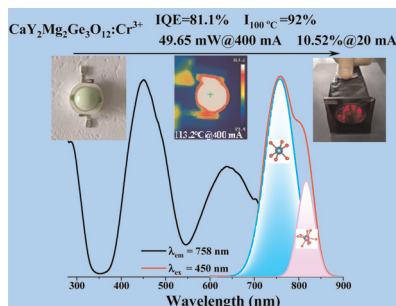
17767



NacNac-zinc-pyridonate mediated  $\epsilon$ -caprolactone ROP

Jack W. J. Hughes, Dawid J. Babula, Findlay Stowers-Veitch, Kang Yuan, Marina Uzelac, Gary S. Nichol, Michael J. Ingleson\* and Jennifer A. Garden\*

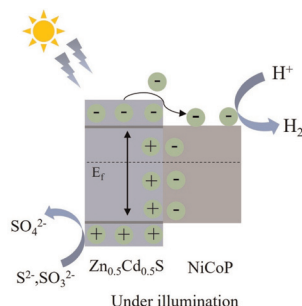
17776



The broadband emission of Cr<sup>3+</sup>-doped CaY<sub>2</sub>Mg<sub>2</sub>Ge<sub>3</sub>O<sub>12</sub> and its applications for NIR detectors

Yuyan Li, Ye Jin,\* Fei Fang, Huayan Lin, Hongtao Chen, Yanbin Xiong, Yongfu Liu, Li Ma and Xiao-jun Wang

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Noble metal-free bimetallic phosphide-decorated Zn<sub>0.5</sub>Cd<sub>0.5</sub>S with efficient photocatalytic H<sub>2</sub> evolution

Lu Chen,\* Feng Chen, Yuzhou Xia, Ruowen Liang, Renkun Huang,\* Guiyang Yan and Shaoming Ying\*

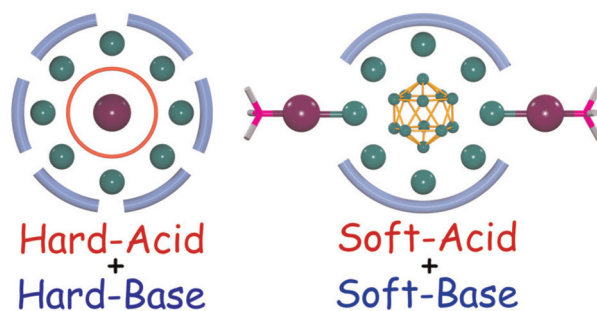


## PAPERS

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### Design and oxidative desulfurization of Ag/Ti heterometallic clusters based on Hard–Soft Acid–Base principle

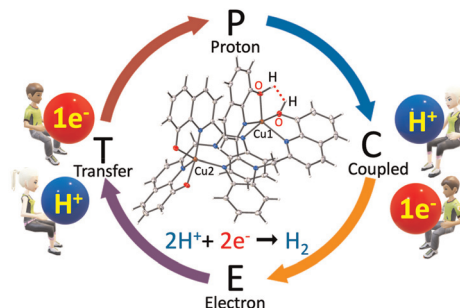
Shuyi Yang, Yaomei Fu, Yiran Tian, Liang Zhao,\*  
Xinlong Wang\* and Baoli Li\*



17797

### Electrocatalytic hydrogen evolution by a dinuclear copper complex and mechanistic elucidation through DFT studies

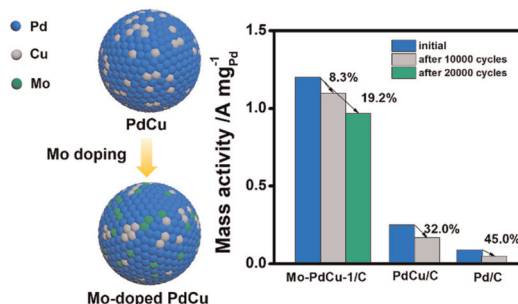
Manaswini Raj, Koushik Makhal, Dev Raj, Aman Mishra,  
Bhabani S. Mallik and Sumanta Kumar Padhi\*



17810

### Mo-doped PdCu nanoparticles as high-performance catalysts for oxygen reduction reactions

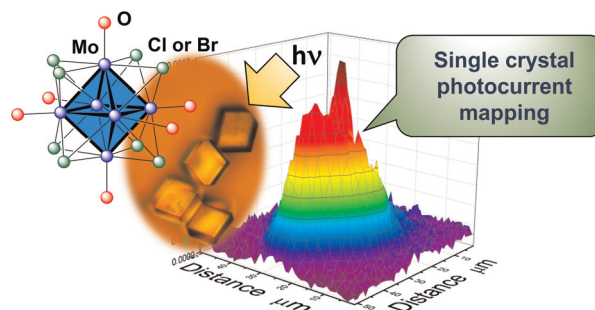
Kailu Kang, Xing Hu, Pei Zhang, Yangyang Zhang,  
Shan Zhu, Kaixiang Lei, Kezhu Jiang\* and  
Shijian Zheng\*



17818

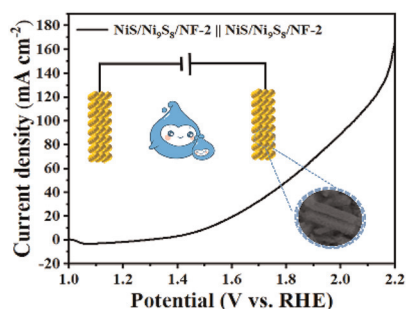
### Optoelectronic properties of octahedral molybdenum cluster-based materials at a single crystal level

Elena Segura-Sanchis, Ana Moreno, Fernando Ramiro-Manzano, Roberto Fenollosa, Marta Feliz\* and Pedro Atienzar\*



## PAPERS

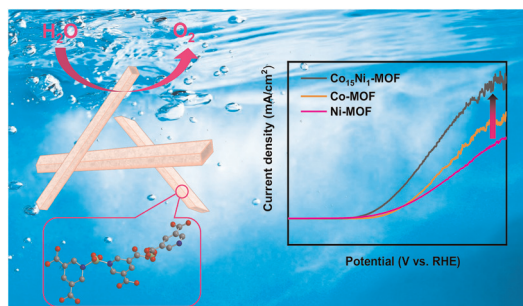
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### Substrate self-derived porous rod-like NiS/Ni<sub>9</sub>S<sub>8</sub>/NF heterostructures as efficient bifunctional electrocatalysts for overall water splitting

Yixuan Li, Peiyan Li, Jiahui Jiang, Ting Zhao, Guancheng Xu\* and Li Zhang\*

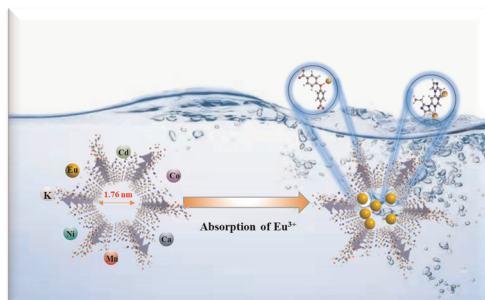
17834



### Enhancing the electrocatalytic activities of metal organic frameworks for the oxygen evolution reaction with bimetallic groups

Yumeng Li, Belvin Thomas, Chaoyun Tang and Tewodros Asefa\*

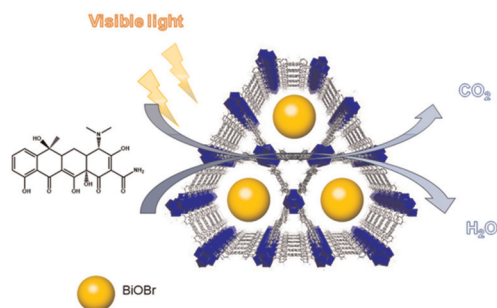
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### Two novel nitrogen-rich metal–organic nanotubes: syntheses, structures and selective adsorption toward rare earth ions

Minli Zhong, Siyao Xia, Sanmei Liu, Caiju Jin, Shengjun Deng,\* Weiming Xiao, Shunmin Ding and Chao Chen\*

17854



### Highly porous BiOBr@NU-1000 Z-scheme heterojunctions for synergistic efficient adsorption and photocatalytic degradation of tetracycline

Bin Zhang, Qing Meng, Ying Lei, Gaigai Wu, Jinghan Xu, Xiangru Meng, Jie Wu\* and Hongwei Hou\*

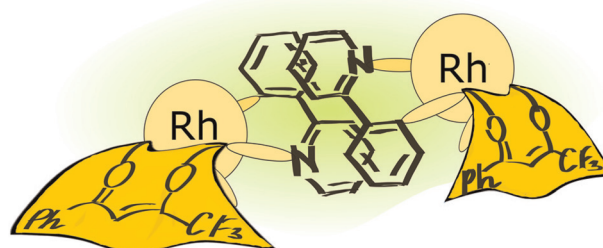


## PAPERS

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### Aggregation-induced emission of cyclometalated rhodium(III) and iridium(III) phenylpyridine complexes with ancillary 1,3-diketones

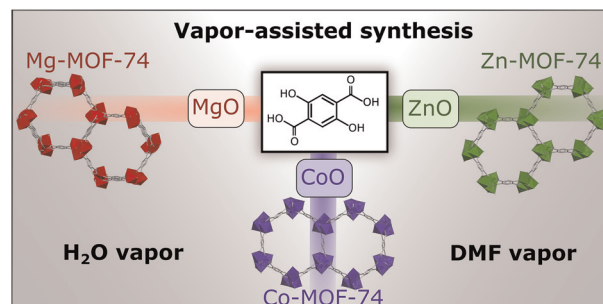
Marina A. Kiseleva, Andrei V. Churakov, Ilya V. Taydakov, Mikhail T. Metlin, Sergey A. Kozyukhin and Stanislav I. Bezzubov\*



17873

### Vapor-assisted synthesis of the MOF-74 metal–organic framework family from zinc, cobalt, and magnesium oxides

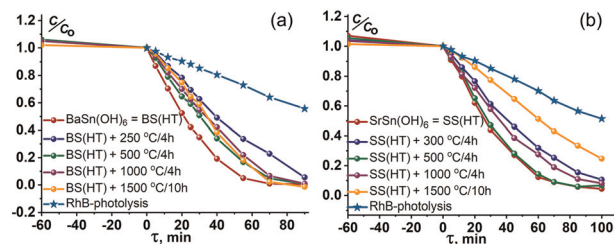
Nathalie Wauteraerts, Min Tu, Nicolas Chanut, Sabina Rodríguez-Hermida, Jesus Gandara-Loe and Rob Ameloot\*



17881

### Evolution of the structure of $\text{MSnO}_3$ ( $\text{M} = \text{Ba}, \text{Sr}$ ) perovskites during hydrothermal synthesis and their photocatalytic activity

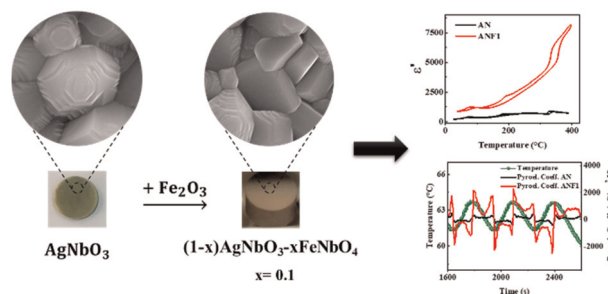
Envyar A. Bikyashev, Stanislav P. Kubrin, Artem V. Popov, Alexandr V. Nazarenko, Nikita V. Ter-Oganessian\* and Igor P. Raevski



17894

### Dielectric, pyroelectric, and ferroelectric studies in $(1-x)\text{AgNbO}_3-x\text{FeNbO}_4$ lead-free ceramics

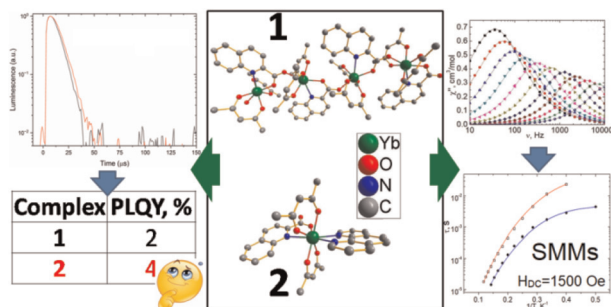
Parastoo Moradi, Ehsan Taheri-Nassaj\*, Amin Yourdkhani, Vasyl Mykhailovych, Andrei Diaconu and Aurelian Rotaru





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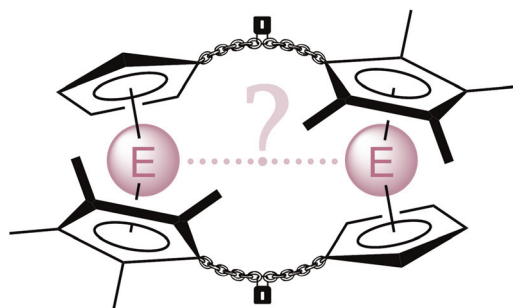
17911



### Novel stable ytterbium acetylacetonate–quinaldinate complexes as single-molecule magnets and surprisingly efficient luminophores

Andrey V. Gavrikov,\* Andrey B. Ilyukhin, Ilya V. Taydakov, Mikhail T. Metlin, Nikolay P. Datskevich, Mikhail E. Buzoverov, Konstantin A. Babeshkin and Nikolay N. Efimov

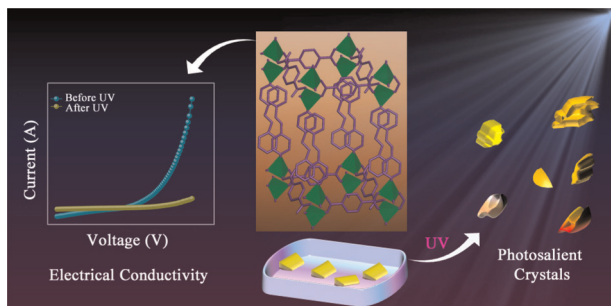
17928



### Bis(tetrellocenes) – fusing tetrellocenes into close proximity

Inga-Alexandra Bischoff, Bernd Morgenstern, Michael Zimmer, Aylin Koldemir, Rainer Pöttgen and André Schäfer\*

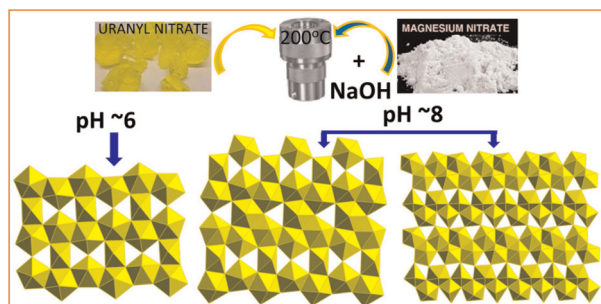
17934



### A dual-functional 2D coordination polymer exhibiting photomechanical and electrically conductive behaviours

Samim Khan, Pubali Das, Sanobar Naaz, Paula Brandão, Aditya Choudhury, Raghavender Medishetty,\* Partha Pratim Ray\* and Mohammad Hedayetullah Mir\*

17942



### Filling the gaps of uranium oxide hydrates with magnesium(II) ions: unique layered structures and the role of additional sodium(I) ions

Yingjie Zhang,\* Kimbal T. Lu, Tao Wei, I. Karatchevtseva and Rongkun Zheng

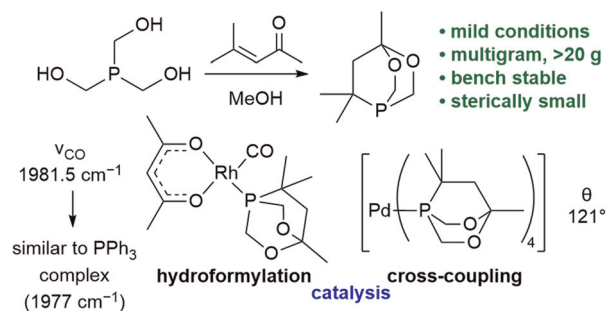


## PAPERS

17954

**Dioxaphosphabicyclooctanes: small caged phosphines from tris(hydroxymethyl)phosphine**

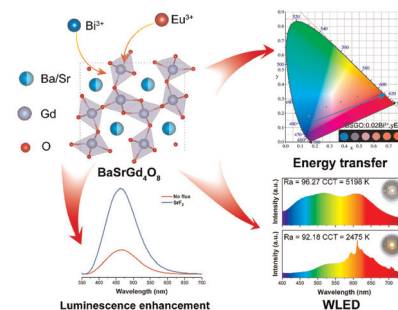
James D. Nobbs,\* Dillon Wei Peng Tay, Yoon Hui Yeap, Yong Lun Tiong, Suming Ye, Srinivasulu Aitipamula, Cun Wang, Choon Boon Cheong and Martin van Meurs\*



17966

**Energy transfer and tunable emission in BaSrGd<sub>4</sub>O<sub>8</sub>:Bi<sup>3+</sup>,Eu<sup>3+</sup> phosphors for warm WLED**

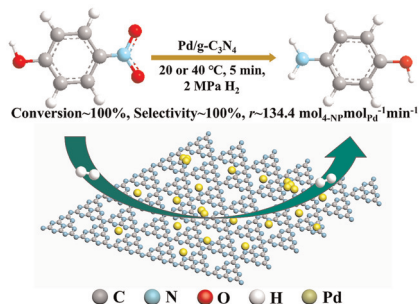
Shuai Wei, Zeyu Lyu,\* Dashuai Sun, Pengcheng Luo, Zheng Lu, Luhui Zhou, Mingrui He, Sida Shen and Hongpeng You\*



17974

**An interfacial synergism effect of Pd–g-C<sub>3</sub>N<sub>4</sub> in Pd/g-C<sub>3</sub>N<sub>4</sub> for highly active and selective hydrogenation of 4-nitrophenol**

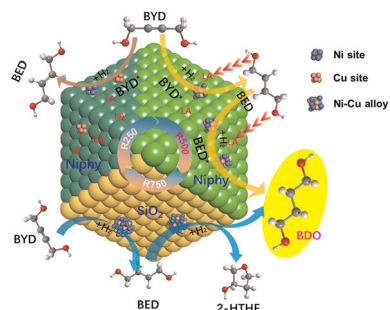
Liqing Li,\* Xin Deng, Jiani He, Huan Zhang, Li Li\* and Lihua Zhu\*



17981

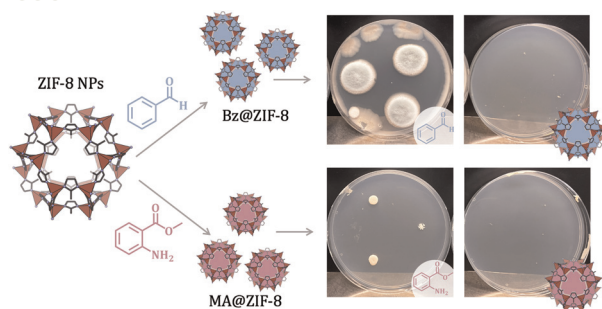
**Investigation of Ni–Cu-acid multifunctional synergism in NiCu-phyllsilicate catalysts toward the 1,4-butyndiol hydrogenation to 1,4-butanediol**

Changzhen Wang,\* Xueqing Hai, Jia Li, Yupeng Liu, Xiaosheng Yu and Yongxiang Zhao\*



## PAPERS

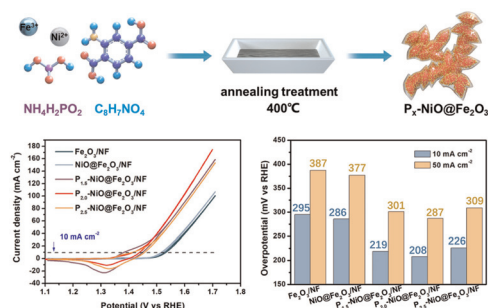
17993



### ZIF-8 encapsulation improves the antifungal activity of benzaldehyde and methyl anthranilate in films

Katia Caamaño, Gracia López-Carballo, Raquel Heras-Mozos, Jana Glatz, Pilar Hernández-Muñoz, Rafael Gavara and Mónica Giménez-Marqués\*

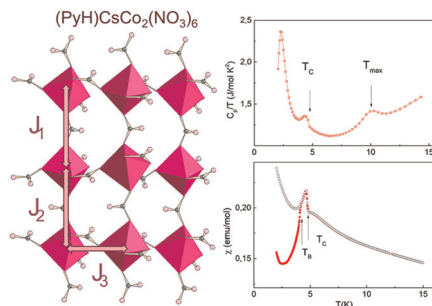
18000



### The *in situ* phosphorization inducing oxygen vacancies in the core-shell structured NiFe oxides boosts the electrocatalytic activity for the oxygen evolution reaction

Weiji Dai, Fengyu Hu, Xuanyu Yang, Bing Wu, Cuijiao Zhao, Yudong Zhang and Saifang Huang\*

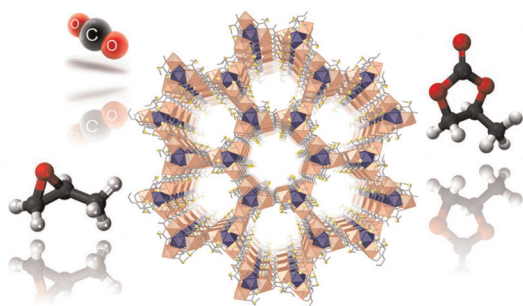
18010



### A combination of organic and inorganic cations in the synthesis of transition metal nitrates: preparation and characterization of canted rectangular Ising antiferromagnet $(\text{PyH})\text{CsCo}_2(\text{NO}_3)_6$

A. A. Vorobyova, K. A. Lyssenko, G. D. Chistyakov, I. V. Morozov, Y. A. Ovchenkov, T. M. Vasilchikova, H.-J. Koo, M.-H. Whangbo, O. S. Volkova and A. N. Vasiliev\*

18018



### Selective cycloaddition of ethylene oxide to $\text{CO}_2$ within the confined space of an amino acid-based metal-organic framework

Cristina Bilanin, Paula Escamilla, Jesús Ferrando-Soria,\* Antonio Leyva-Pérez,\* Donatella Armentano\* and Emilio Pardo\*

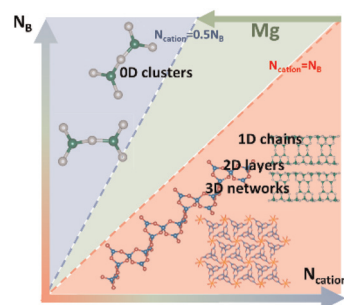


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18027

**Mg assists in modulating the dimensionalities of the anionic frameworks of borates**

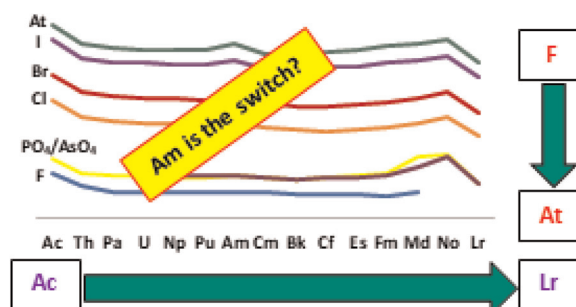
Qianzhen Zhang, Feixiang Wang, Xifa Long and Yun Yang\*



18035

**Periodic trends in trivalent actinide halides, phosphates, and arsenates**

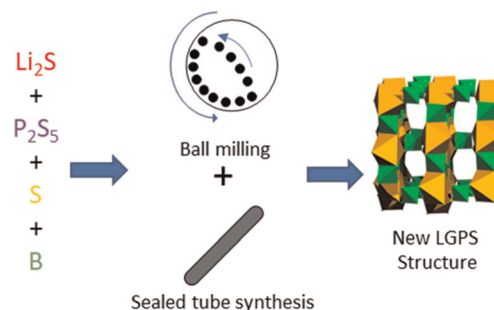
Ashutosh Parimi, Emmalee Mosher and Georg Schreckenbach\*



18045

**Effect of the boron element in a Li–P–S system**

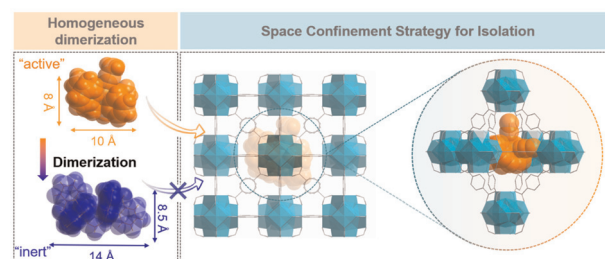
Audric Neveu, Hari Raj, Vincent Pelé, Christian Jordy and Valerie Pralong\*



18053

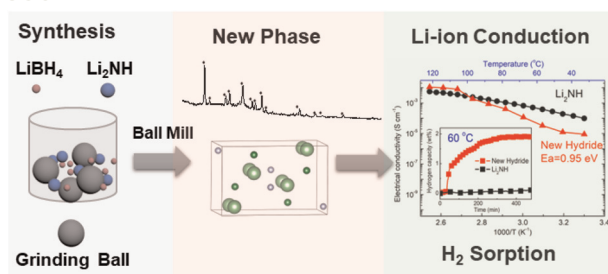
**Assembly of an iron-based complex into a metal–organic framework: a space confinement strategy for isolation of mono-iron complexes to protect from dimerization**

Juan Chen, Lu-Qi Bai, Yi-Fei Dai, Li-Cheng Deng, Yu Wang, Tao Zhang and Kai-Jie Chen\*



## PAPERS

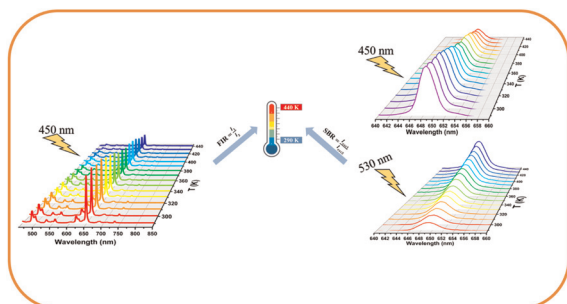
18061



### Evaluation of a new lithium complex hydride: a derivative of $\text{BH}_4^-$ and $\text{NH}_2^-$ for fast Li-ion conduction and $\text{H}_2$ sorption

Han Wang,\* Joshua Adedeji Bolarin, Binpeng Zhang and Wenju Liu

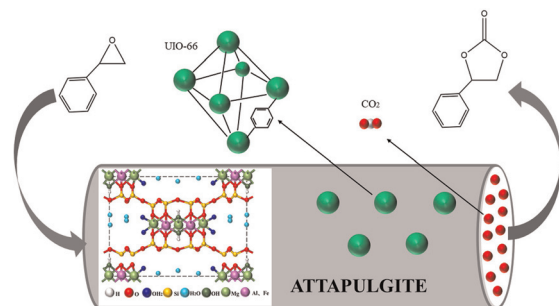
18069



### Dual-mode optical ratiometric thermometry using $\text{Pr}^{3+}$ -doped $\text{NaSrGd}(\text{MoO}_4)_3$ phosphors with tunable sensitivity

Zein El Abidine Aly Taleb, Kamel Saidi\* and Mohamed Dammak

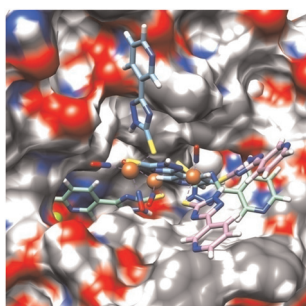
18082



### Enhancement of the catalytic performance of UiO-66 for the $\text{CO}_2$ synthesis of cyclic carbonate using natural nanomaterials as a carrier

Yunshuai Bi, Zibei Yao, Zhen Zhu and Weisheng Liu\*

18090



### Synthesis of a tetranitrosyl iron complex with unique structure and properties as an inhibitor of phosphodiesterases

N.A. Sanina,\* A. N. Utenyshev, P. V. Dorovatovskii, N. S. Emel'yanova, N. S. Ovanesyan, A. V. Kulikov, I. V. Sulimenkov, V. B. Luzhkov, O. V. Pokidova and S. M. Aldoshin

