

# Dalton Transactions

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## IN THIS ISSUE

ISSN 1477-9226 CODEN DTARAF 53(11) 4859–5304 (2024)



### Cover

See István Boldog, Christoph Janiak et al., pp. 4937–4951.

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### Inside cover

See Arnab Bhattacharyya, Ray J. Butcher, Samya Banerjee, Kandarpa K. Saikia, Akhtar Hussain et al., pp. 4952–4961.

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## PERSPECTIVE

4874

### Reactivity of metal dioxo complexes

Cody A. Canote and Stefan M. Kilyanek\*

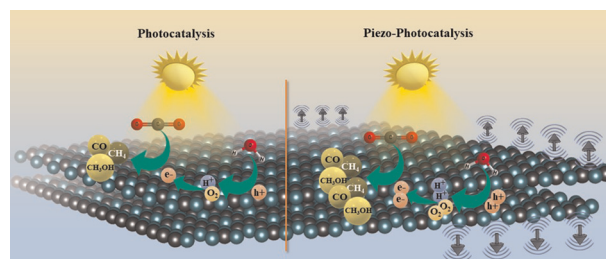


## FRONTIER

4890

### Recent developments in piezo-photocatalytic CO<sub>2</sub> reduction: concepts, mechanism, and advances

Atul Verma and Yen-Pei Fu\*



# Environmental Science: Atmospheres

GOLD  
OPEN  
ACCESS

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and inspiring new ideas

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Fundamental questions  
Elemental answers

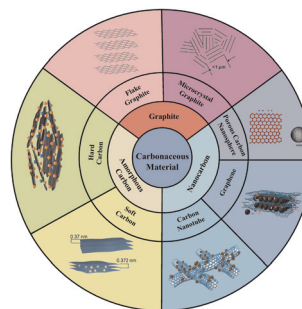


## REVIEW

4900

## A comprehensive review of various carbonaceous materials for anodes in lithium-ion batteries

Zhiyuan Chen, Yifei Li, Longzhen Wang, Yiting Wang, Jiali Chai, Jiakai Du, Qingmeng Li, Yichuan Rui,\* Lei Jiang\* and Bohejin Tang\*

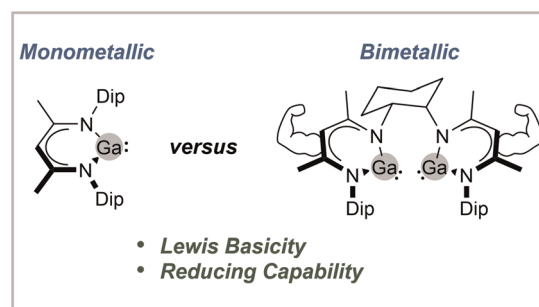


## COMMUNICATIONS

4922

Metal–metal cooperativity boosts Lewis basicity and reduction properties of the bis(gallanediyl)  $\text{CyL}_2\text{Ga}_2$ 

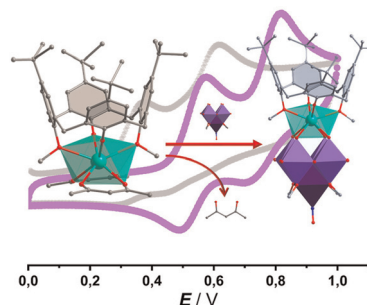
Christoph Helling, Lotta Döhler, Oleksandr Kysliak, Helmar Görls, Phil Liebing, Christoph Wölper, Robert Kretschmer\* and Stephan Schulz\*



4930

## Coordination-triggered redox activity of early and late lanthanide calix[4]arene complexes

Yushu Jiao, Sergio Sanz,\* Lucie Koláčná, Jan van Leusen, Natalya V. Izarova, Sidra Sarwar, Jiří Ludvík\* and Paul Kögerler\*

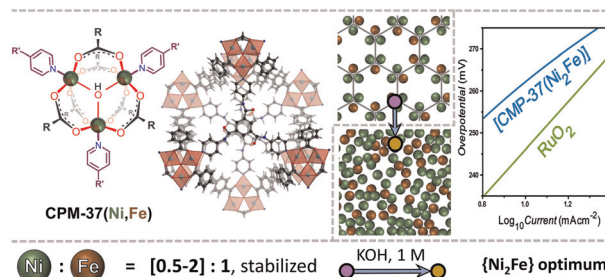


## PAPERS

4937

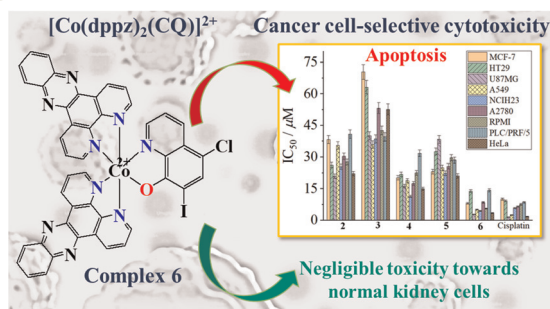
## Bimetallic CPM-37(Ni,Fe) metal–organic framework: enhanced porosity, stability and tunable composition

Soheil Abdpour, Marcus N. A. Fetzer, Robert Oestreich, Thi Hai Yen Beglau, István Boldog\* and Christoph Janiak\*



## PAPERS

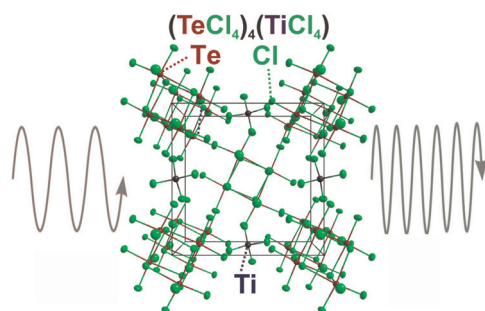
4952



### Synthesis, characterization, and cancer cell-selective cytotoxicity of mixed-ligand cobalt(III) complexes of 8-hydroxyquinolines and phenanthroline bases

Banashree Deka, Tukki Sarkar, Arnab Bhattacharyya,\* Ray J. Butcher,\* Samya Banerjee,\* Sasanka Deka, Kandarpa K. Saikia\* and Akhtar Hussain\*

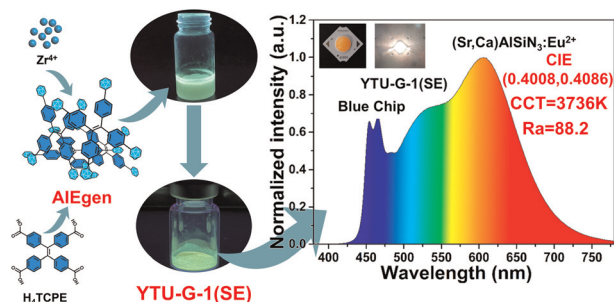
4962



### (TeCl<sub>4</sub>)(TiCl<sub>4</sub>) with isolated Te<sub>4</sub>Cl<sub>16</sub> and TiCl<sub>4</sub> molecules and second-harmonic-generation

Maxime A. Bonnin, Klaus Beier, Lkhamsuren Bayarjargal, Björn Winkler\* and Claus Feldmann\*

4968

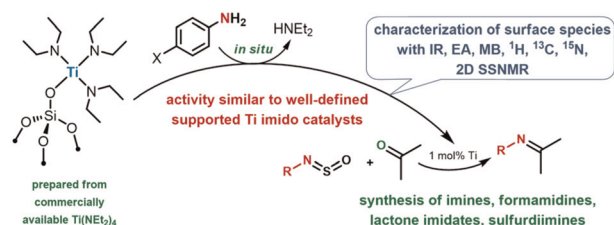


### Realization of white-light-emitting diodes from a high-brightness zirconium-based metal-organic gel driven by the AIE effect

Jianxin Song, Lisha Jiang,\* Xiaoze Wang, Chuanxin Hou,\* Xuemin Wang, Zijun Xu, Chao Liang, Mengnan Yuan, Chuan Tan, Jing Yang, Enhai Song, Yanlong Wang\* and Wei Liu\*

4976

### Active *in situ* generated Ti oxo/imido heterometathesis catalyst



### Readily available Ti-based *in situ* catalytic system for oxo/imido heterometathesis

Andrey V. Rumyantsev, Nikolai S. Bushkov, Margarita A. Ryzhikova, Anton A. Zhizhin, Rina U. Takazova, Valeria N. Talanova, Evgenii I. Gutsul, Roman A. Novikov, Pavel A. Zhizhko\* and Dmitry N. Zarubin\*

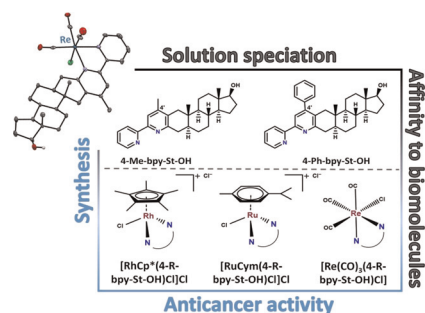


## PAPERS

4984

# Organometallic Ru(II), Rh(III) and Re(I) complexes of sterane-based bidentate ligands: synthesis, solution speciation, interaction with biomolecules and anticancer activity

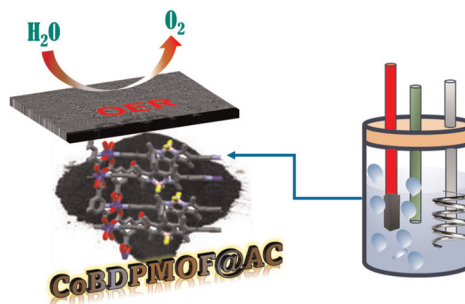
Tamás Pivarcsik, Márton A. Kiss, Uroš Rapuš, Jakob Kljun, Gabriella Spengler, Éva Frank, Iztok Turel and Éva A. Enyedy\*



5001

# A mixed-ligand Co metal–organic framework and its carbon composites as excellent electrocatalysts for the oxygen evolution reaction in green-energy devices

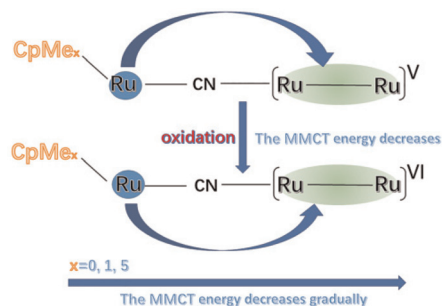
Gajendra Gupta,\* Filipe Gusmão, Anup Paul,\* Biljana Šljukić, Diogo M. F. Santos, Junseong Lee, M. Fátima C. Guedes da Silva, Armando J. L. Pombeiro and Chang Yeon Lee\*



5010

# Syntheses, crystal structures and MMCT properties of diruthenium-based cyanido-bridged Ru<sup>V/VI</sup>–NC–Ru<sup>II</sup> complexes

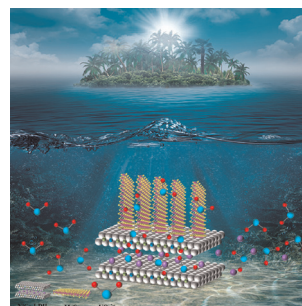
Ting-Ya Li, Shao-Dong Su, Yong He, Xin-Tao Wu and Tian-Lu Sheng\*



5020

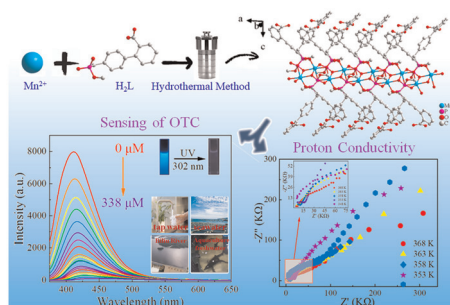
# A strategy for the preparation of super-hydrophilic molybdenum disulfide composites applied to remove uranium from wastewater

De-Bin Ji,\* Shao-Xian Hao, Xue-Qi Fan, Rui-Long Liang, Zhi-Qiang Qiao, Zi-Heng Bai, De-Qiang Ji,\* Qing-He Gao\* and Hong-Jun Wu



## PAPERS

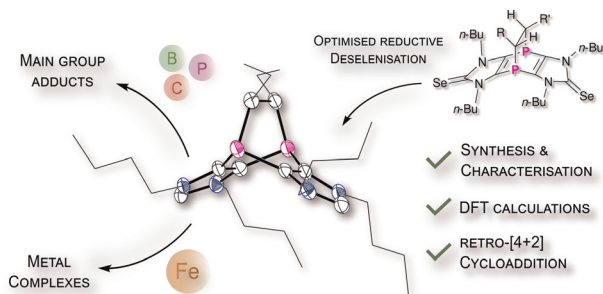
5034



### A stable Mn(II) coordination polymer demonstrating proton conductivity and quantitative sensing of oxytetracycline in aquaculture

Xu Zhang, Yana Zhang, Xin Li, Jiahui Yu, Weijia Chi, Zikang Wang, Hanwen Zheng, Zhengang Sun,\* Yanyu Zhu\* and Chengqi Jiao\*

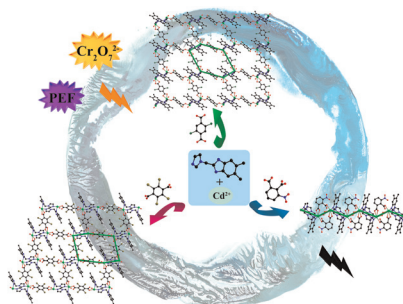
5043



### Application of phosphorus-bridged rigid, bent bis(NHCs) as dipodal ligands in main group and transition metal chemistry

Tatjana Terschüren, Gregor Schnakenburg and Rainer Streubel\*

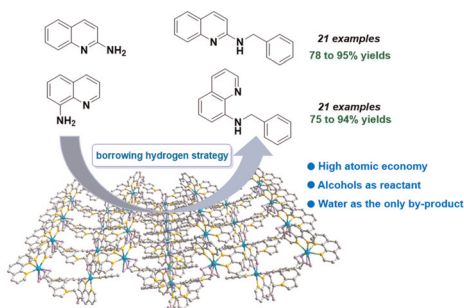
5051



### Three robust Cd(II) coordination polymers as bifunctional luminescent probes for efficient detection of pefloxacin and $\text{Cr}_2\text{O}_7^{2-}$ in water

Xiao-Fei Fan, Lianshe Fu and Guang-Hua Cui\*

5064



### Preparation of a novel cadmium-containing coordination polymer and catalytic application in the synthesis of *N*-alkylated aminoquinoline derivatives *via* the borrowing hydrogen approach

Jiahao Li, Anruo Mao, Xinyu Hu, Likui Wang, Dawei Wang\* and Zheng-Chao Duan\*

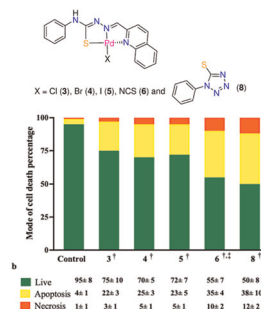


## PAPERS

5073

### Role of the auxiliary ligand in determining the genotoxicity and mode of cell death of thiosemicarbazone Pd(II) complexes

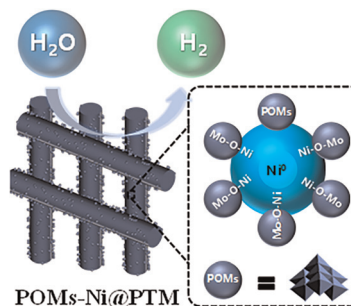
Ahmed M. Mansour,\* Rabaa M. Khaled, Krzysztof Radacki, Mona A. M. Abo-Zeid, Ola R. Shehab, Gamal A. E. Mostafa, Essam A. Ali and Mahmoud T. Abo-Elfadl



5084

### Interfacial engineering of POM-stabilized Ni quantum dots on porous titanium mesh for high-rate and stable alkaline hydrogen production

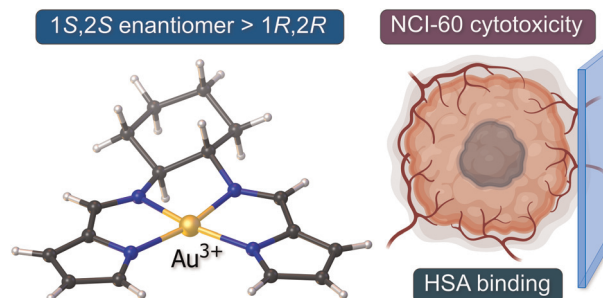
Meihong Liao,\* Huawei Shen, Xiaorui Lin, Zhengji Li, Muzi Zhu, Kefei Liu, Shuaishuai Zhou, Jingjie Dai\* and Yichao Huang\*



5089

### Chiral Au(III) chelates exhibit unique NCI-60 cytotoxicity profiles and interactions with human serum albumin

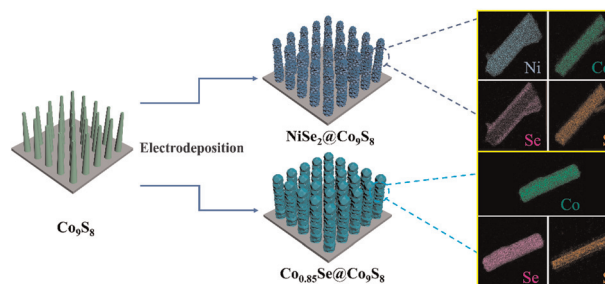
Sheldon Sookai,\* Matthew P. Akerman and Orde Q. Munro\*



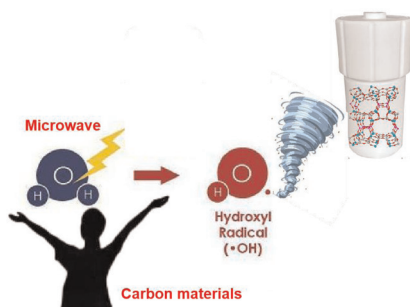
5105

### Design and construction of hollow metal sulfide/selenide core-shell heterostructure arrays for hybrid supercapacitor

Shuangxing Cui, Guochang Li, Xunwen Xiao,\* Lei Wu and Lei Han\*



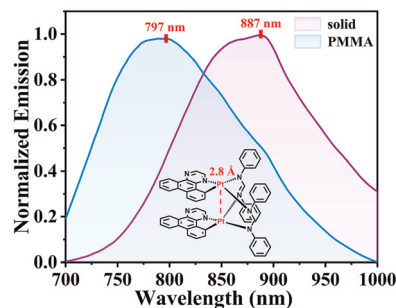
5117



### Ultra-fast synthesis of hierarchical SAPO-11 molecular sieves with the assistance of hydroxyl radicals

Dejiang Zheng, Xinchun Liu, Yuling Shan, Shitao Yu, Xiaosheng Wang and Yuxiang Liu\*

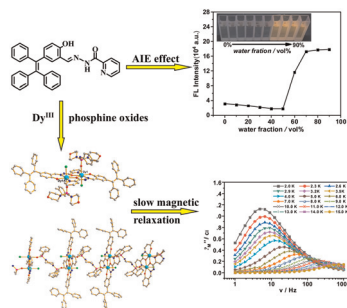
5125



### A cyclometalated Pt(II)–Pt(II) clamshell dimer with a triplet emission at 887 nm

Lequn Yuan, Haibo Yao, Yunjun Shen and Yuzhen Zhang\*

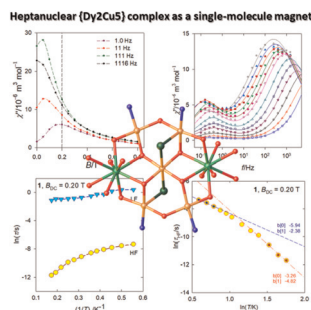
5133



### The effect of magnetic coupling along the magnetic axis on slow magnetic relaxation in Dy<sup>III</sup> complexes with $D_{5h}$ configuration based on an aggregation-induced-emission-active ligand

Min-Xia Yao,\* Yu-Qi Gao, Zhong-Wu An and Dong-Mei Zhu\*

5147



### A heptanuclear {Dy<sub>2</sub>Cu<sub>5</sub>} complex as a single-molecule magnet

Romana Mičová, Cyril Rajnák,\* Ján Titiš, Ján Moncol, Jana Nováčiková, Alina Bieňko and Roman Boča

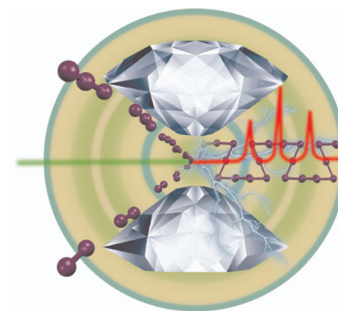


## PAPERS

5152

### Pressure stabilization effect on the donor–acceptor polyiodide chains in tetraethylammonium bis(diiodine) triiodide – insights from Raman spectroscopy

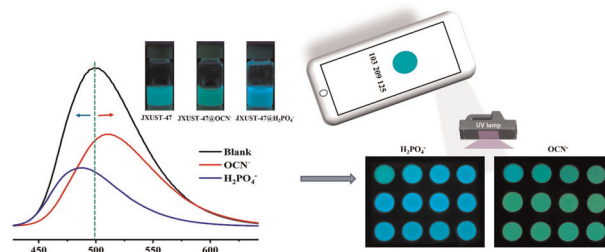
Tomasz Poręba,\* Piero Macchi, Nicola Casati and Tomasz Sierański



5160

### A dinuclear Cd<sup>II</sup> cluster-based stable luminescent metal–organic framework for the consecutive and visual detection of H<sub>2</sub>PO<sub>4</sub><sup>−</sup> and OCN<sup>−</sup>

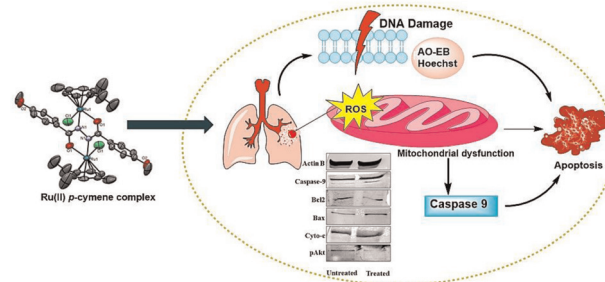
Na Lu, Li Wang, Teng-Fei Zheng,\* Yan Peng, Sui-Jun Liu\* and He-Rui Wen



5167

### Exploring the cytotoxicity of dinuclear Ru(II) *p*-cymene complexes appended *N,N'*-bis(4-substituted benzoyl)hydrazines: insights into the mechanism of apoptotic cell death

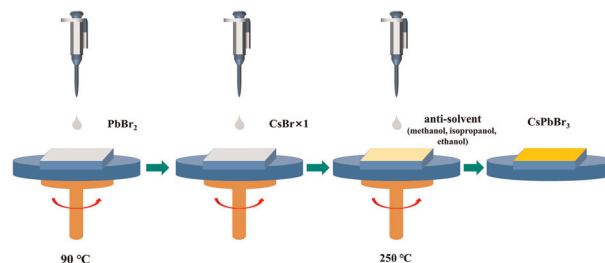
Arunachalam Abirami, Umapathy Devan, Rengan Ramesh,\* Arockiam Antony Joseph Velanganni and Jan Grzegorz Matecki



5180

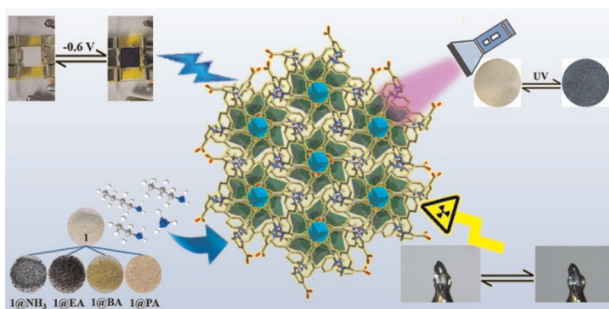
### Methanol as an anti-solvent to improve the low open-circuit voltage of CsPbBr<sub>3</sub> perovskite solar cells prepared with water

Jiajie Cheng, Zhisheng Gui, Yufan Jiang, Jiaming Wang and Jingjing Dong\*



## PAPERS

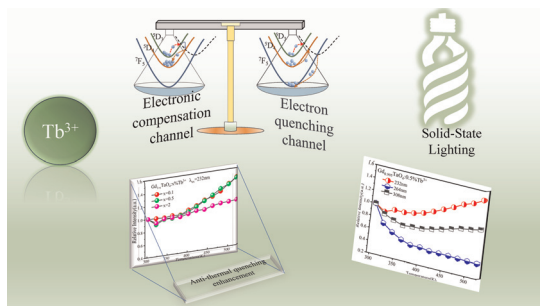
5192



### Zinc tungstate encapsulated into a scarce Zn(II)-viologen framework with photochromic, electrochromic and chemochromic properties

Li Huang, Xiao-Nan Li, Yuan Shen, Run-Hong Song, Wen-Bo Cui and Hong Zhang\*

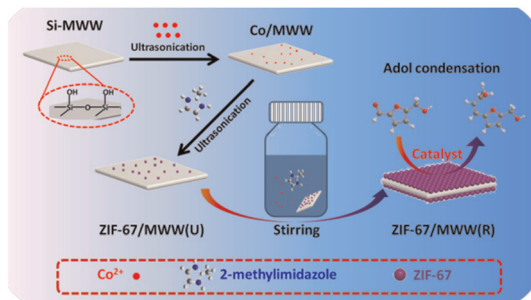
5202



### Construction of thermally stable Tb<sup>3+</sup>-activated green-emitting phosphors: dual driving strategy of doping concentration and excitation wavelength

Die Hu, Ran Xiao, Xiang Lv, Chunwei Yang, Jianxia Liu, Yuefeng Zhao and Ning Guo\*

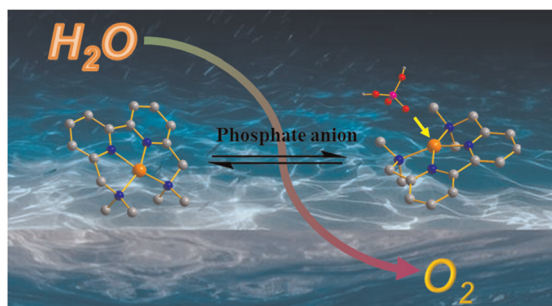
5212



### Fabrication of a ZIF-on-lamella-zeolite architecture as a highly efficient catalyst for aldol condensation

Tianlong Wang, Lin-an Liu, Huifang Wu, Jiaxing Zhang, Ziyi Feng, Xin Yan, Xinyu Wang, Guoying Han, Xiao Feng, Limin Ren\* and Xinwen Guo\*

5222



### Improvement of electrocatalytic water oxidation activity of novel copper complex by modulating the axial coordination of phosphate on metal center

Jieying Wang, Yezi Ping, Yanmei Chen, Shanshan Liu, Jinfeng Dong, Zhijun Ruan,\* Xiangming Liang\* and Junqi Lin\*

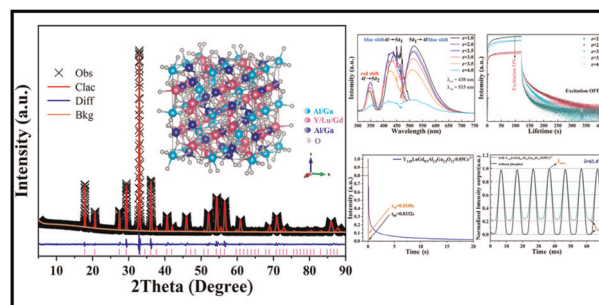


## PAPERS

5230

# The effects of $\text{Lu}^{3+}$ , $\text{Gd}^{3+}$ and $\text{Ga}^{3+}$ substitution on the photoluminescence of $\text{Y}_{2.95-x-y}\text{Lu}_x\text{Gd}_y\text{Al}_z\text{Ga}_{5-z}\text{O}_{12}:0.05\text{Ce}^{3+}$ phosphors for high-power white AC-LEDs

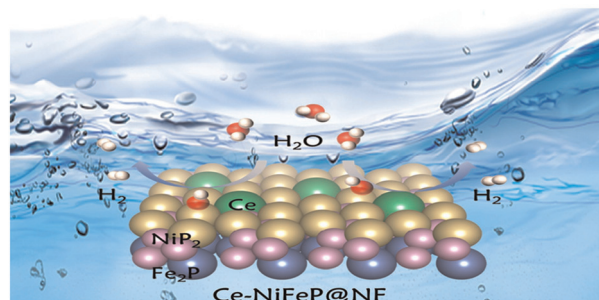
Senyu Wang, Ming Wang,\* Xianzhuang Qin, Zusheng Xu, Jingtao Wang, Shan Zhang and Rui Zhang\*



5241

# Ce-doping induces rapid electron transfer in a bimetallic phosphide heterostructure to achieve efficient hydrogen production

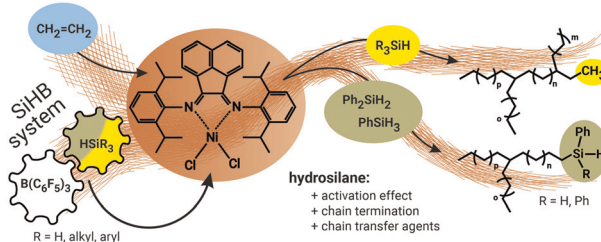
Maobin Wang, Zhaochen Liu, Shiyu Guo, Wenzhe Liu, Changpeng Ji, Lu Wang and Daohong Yao\*



5249

# Preparation of silyl-terminated branched polyethylenes catalyzed by Brookhart's nickel diimine complex activated with hydrosilane/ $\text{B}(\text{C}_6\text{F}_5)_3$

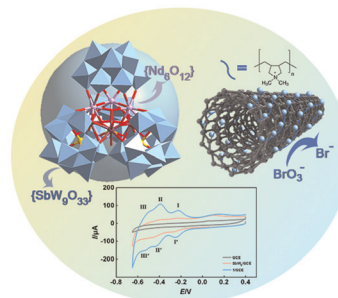
Vojtech Varga, Kristýna Pokorná, Martin Lamač, Michal Horáček and Jiří Pinkas\*



5258

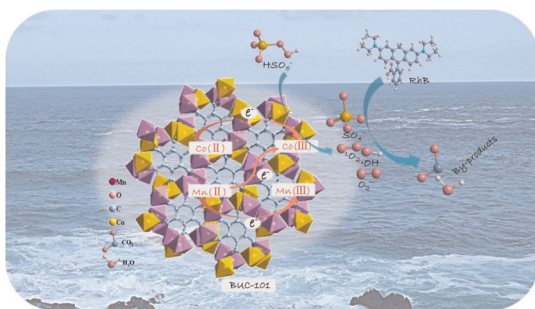
# A tetrahedron-shaped polyoxoantimotungstate encapsulating a hexanuclear octahedral lanthanide-oxo cluster for an amperometric bromate sensor

Lan Yu, Jing Ye, Da-Huan Li, Yan-Qiong Sun,\* Xin-Xiong Li and Shou-Tian Zheng\*



## PAPERS

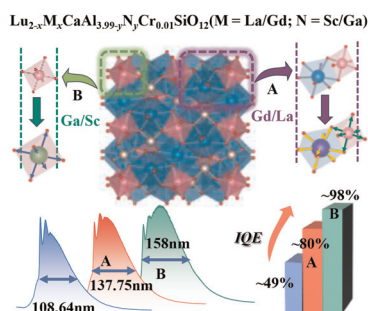
5266



### Efficient pollutant degradation by peroxymonosulfate activated by a Co/Mn metal–organic framework

Ya Li, Chong-Chen Wang,\* Fu-Xue Wang, Xing-Yuan Liu, Peng Wang, Fei Wang, Mingyi Sun and Baoyi Yu

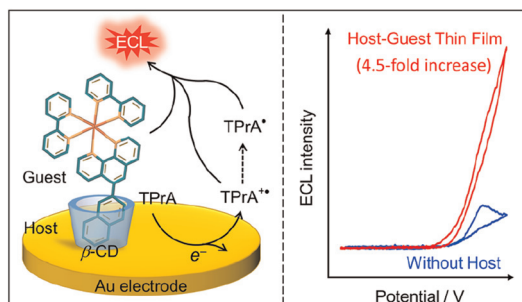
5274



### Thermal stability and quantum efficiency improvement of Cr<sup>3+</sup>-activated garnet phosphors via regulating A/B sites for near-infrared LED applications

Boxin Ma, Siyuan Xie, Ting Yu, Qingguang Zeng, Xiaoguang Liu, Yue Guo,\* Ling Li\* and Dawei Wen\*

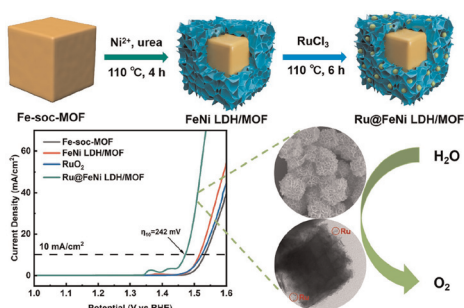
5284



### Electrochemiluminescence of iridium(III)/ruthenium(II) complexes with naphthyl tags in solutions and host–guest thin films

Weiyu Qu, Xinrui Yang, Xiaojin Huang, Weiliang Guo\* and Zhihui Dai\*

5291



### Doping Ru on FeNi LDH/Fe<sup>II/III</sup>–MOF heterogeneous core–shell structure for efficient oxygen evolution

Yijia Cao, Yusong Wen, Yanrong Li, Mengya Cao, Bao Li, Qing Shen and Wen Gu\*



## CORRECTIONS

5301

**Correction: Zeolitic imidazolate framework-derived composites with SnO<sub>2</sub> and ZnO phase components for electrocatalytic carbon dioxide reduction**

Yayu Guan, Yuyu Liu,\* Jin Yi and Jiujun Zhang\*

5302

**Correction: Post-synthetic molecular modifications based on Schiff base condensation reactions for designing functional paddlewheel diruthenium(II,II) complexes**

Chisa Itoh, Haruka Yoshino, Taku Kitayama, Wataru Kosaka and Hitoshi Miyasaka\*

