

# Dalton Transactions

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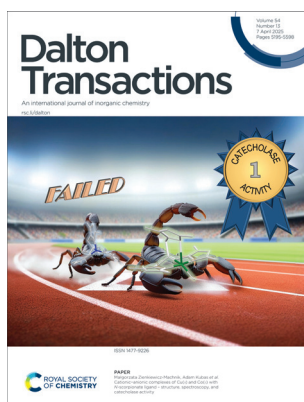
## IN THIS ISSUE

ISSN 1477-9226 CODEN DTARAF 54(13) 5195–5598 (2025)



**Cover**  
See Xianglei Kong et al.,  
pp. 5259–5267.

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5259.



**Inside cover**  
See Małgorzata Zienkiewicz-  
Machnik, Adam Kubas et al.,  
pp. 5268–5285.

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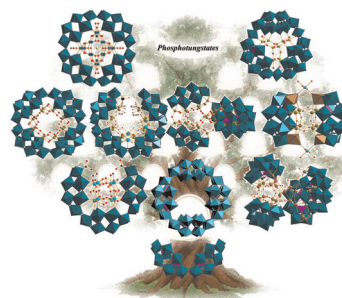
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## PERSPECTIVE

5208

**The cyclic 48-tungsto-8-phosphate  
[H<sub>7</sub>P<sub>8</sub>W<sub>48</sub>O<sub>184</sub>]<sup>33−</sup> Contant–Tézé polyanion and its  
derivatives [H<sub>6</sub>P<sub>4</sub>W<sub>24</sub>O<sub>94</sub>]<sup>18−</sup> and [H<sub>2</sub>P<sub>2</sub>W<sub>12</sub>O<sub>48</sub>]<sup>12−</sup>:  
structural aspects and reactivity**

Sib Sankar Mal,\* Abhishek Banerjee and Ulrich Kortz\*

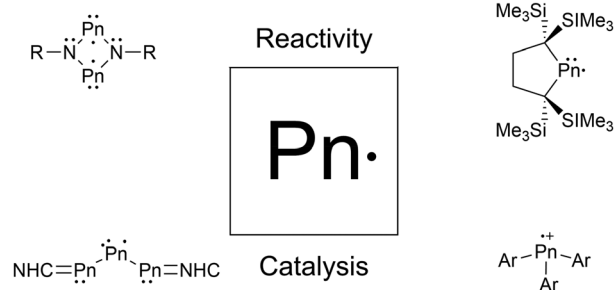


## FRONTIER

5234

**Recent advances in heavier group 15 (P, As, Sb, Bi)  
radical chemistry – frameworks, small molecule  
reactivity, and catalysis**

Deana L. G. Symes and Jason D. Masuda\*



# EES Batteries

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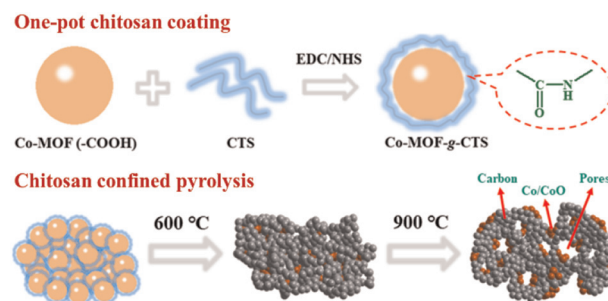


## COMMUNICATIONS

5250

### The chitosan confined pyrolysis strategy enhances the catalytic performance of a carbon material based on a novel carboxyl functionalized MOF

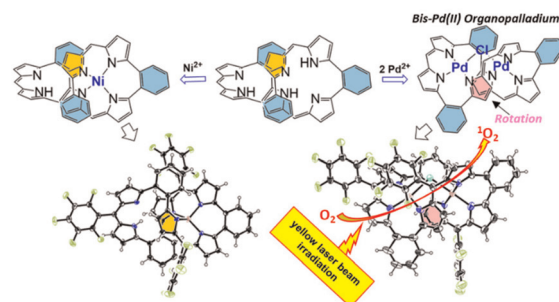
Dongsheng Wang, Tingyu He, Mingyue Fan, Tuotuo Li, Haina Qi, Zihan Lin,\* Xiaoli Hu\* and Zhongmin Su\*



5255

### Metal ions control configuration and $^1\text{O}_2$ generation capacity of hexaphyrin(2.1.2.1.2.1) with embedded benzene

Jinrong Wu, Xiaojuan Lv, Zhaoli Xue,\* Yue Wang, Fengxian Qiu\* and Songlin Xue\*

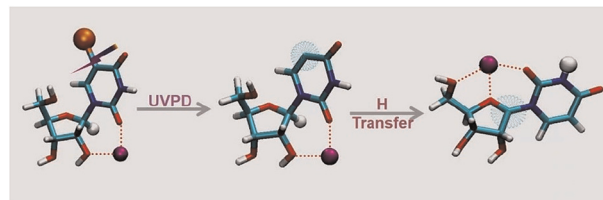


## PAPERS

5259

### Transition of the coordination modes in sodiated uridine radicals revealed by infrared multiphoton dissociation spectroscopy and theoretical calculations

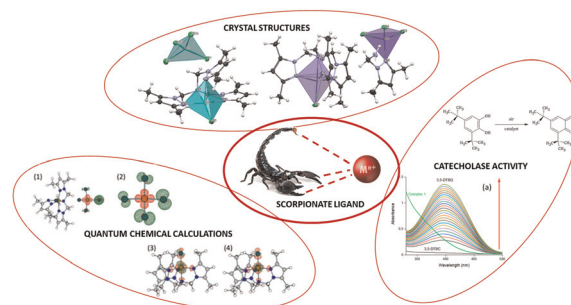
Kairui Yang, Min Kou, Zicheng Zhao, Jinyang Li and Xianglei Kong\*



5268

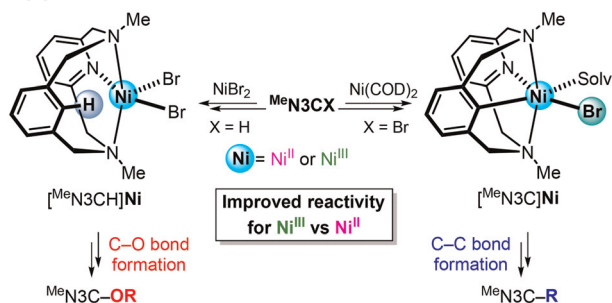
### Cationic–anionic complexes of Cu(II) and Co(II) with *N*-scorpionate ligand – structure, spectroscopy, and catecholase activity

Małgorzata Zienkiewicz-Machnik,\* Roman Luboradzki, Justyna Mech-Piskorz, Gonzalo Angulo, Wojciech Nogala, Tomasz Ratajczyk, Pavlo Aleshkevych and Adam Kubas\*



## PAPERS

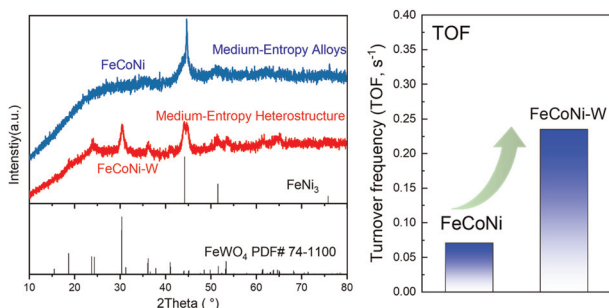
5286



### C–C and C–O bond formation reactivity of nickel complexes supported by the pyridinophane <sup>Me</sup>N3C ligand

Joshua Ji-Nung Leung, Dae Young Bae, Yusuff Moshood and Liviu M. Mirica\*

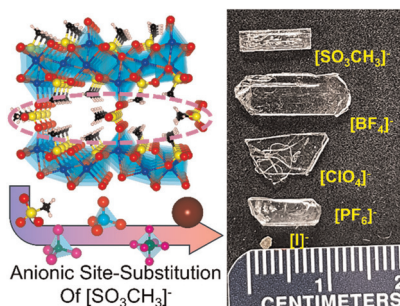
5293



### Tungsten regulated medium-entropy heterostructure as a highly efficient electrocatalyst for oxygen evolution reaction

Jianliang Yuan, Qianglong Qi, Qingwen Wan, Jiangli Gong, Yue Zhang, Yuebin Feng, Chengxu Zhang\* and Jue Hu\*

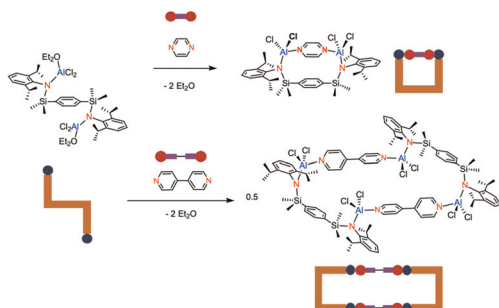
5301



### Synthesis and large crystal growth of a family of mixed-anionic methanesulfonate salts by anionic site-substitution: Na<sub>5</sub>(SO<sub>3</sub>CH<sub>3</sub>)<sub>4</sub>(X) (X = BF<sub>4</sub><sup>-</sup>, ClO<sub>4</sub><sup>-</sup>, PF<sub>6</sub><sup>-</sup>, I<sup>-</sup>)

Eric A. Gabilondo and P. Shiv Halasyamani\*

5311



### Flexible bidentate aluminum Lewis acids for host–guest complex formation

Tz-Ching Tsui, Hao-Yuan Lan, Han-Jung Li, Ting-Shen Kuo and Hsueh-Ju Liu\*

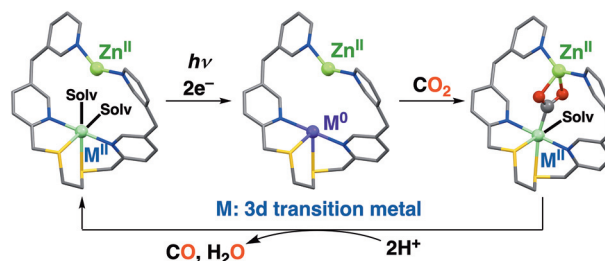


## PAPERS

5319

**Photocatalytic CO<sub>2</sub> reduction catalysed by 3d transition metal complexes bearing an S<sub>2</sub>N<sub>2</sub> ancillary ligand equipped with pyridine pendants as binding sites for Lewis acids**

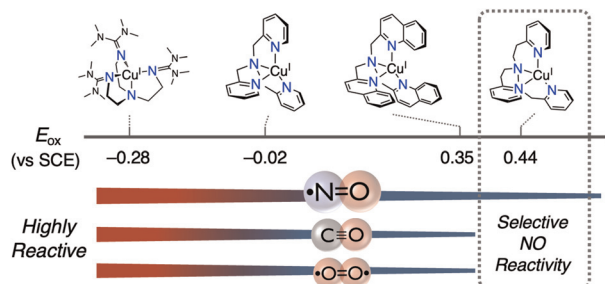
Tomoya Ishizuka, Asuka Hamaguchi, Yuki Hayashi, Yuto Tsukakoshi, Hiroaki Kotani, Takuya Kawanishi and Takahiko Kojima\*



5327

**Reactivity of copper(I) complexes supported by tripodal nitrogen-containing tetradentate ligands toward gaseous diatomic molecules, NO, CO and O<sub>2</sub>**

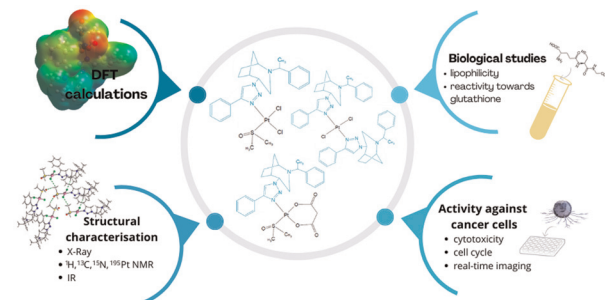
Yuma Morimoto,\* Keisuke Inoue and Shinobu Itoh\*



5334

**Unveiling the promising *in vitro* anticancer activity of lipophilic platinum(II) complexes containing (1*S*,4*R*,5*R*)-4-(4-phenyl-1*H*-1,2,3-triazol-1-yl)-2-((*S*)-1-phenylethyl)-2-azabicyclo[3.2.1]octane: a spectroscopic characterization and DFT calculation**

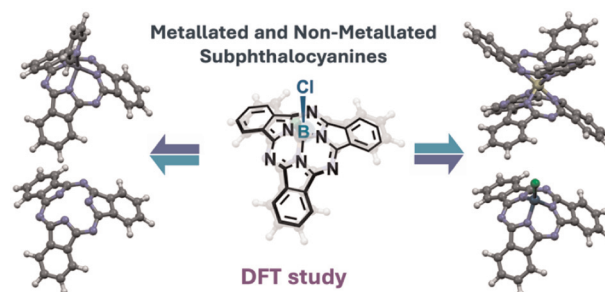
Adriana Kaszuba, Jerzy Sitkowski, Tadeusz Muzioł, Karolina Pokrzywka, Łukasz Kaźmierski, Małgorzata Maj, Franz Steppeler, Elżbieta Wojaczyńska, Marcin Hoffmann and Iwona Łakomska\*



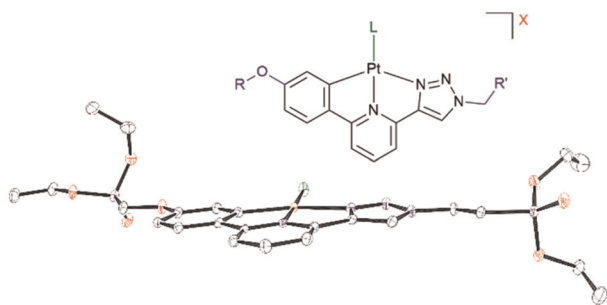
5355

**Effects of removing boron from subphthalocyanines: a theoretical perspective**

Jorge Labella,\* Jorge Labrador-Santiago, Daniel Holgado and Tomás Torres\*



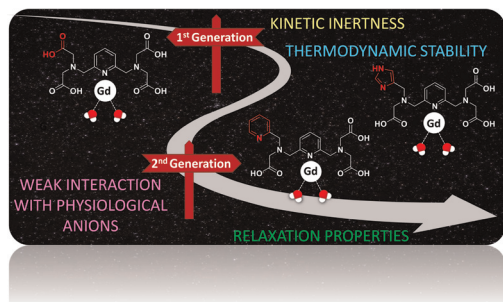
5367



### Water-soluble luminescent platinum(II) complexes for guanine quadruplex binding

Simon Kroos, Marian Hebenbrock, Alexander Hepp, Marcus Layh, Joschua Lüke, Ali R. Tonkul, Cristian A. Strassert and Jens Müller\*

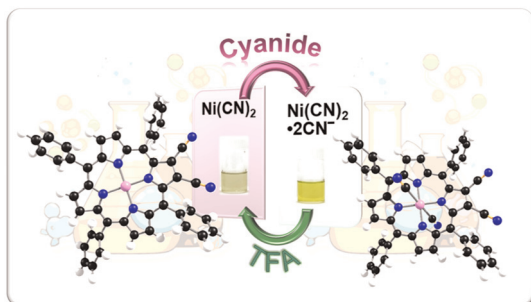
5391



### Tailoring the local environment of $\text{Ln}^{3+}$ in pyridine-based complexes: effect on the thermodynamic, kinetic, structural and relaxation properties

Martina Sanadar, Loëza Collobert, Harlei Martin, Jean-François Morfin, Zoltán Garda, Agnès Pallier, Serge Gambarelli, Andrea Melchior and Célia S. Bonnet\*

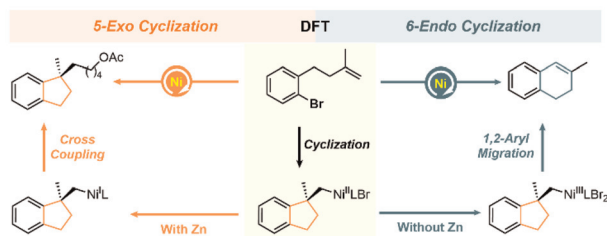
5406



### Synthesis, spectral and electrochemical studies of electron-deficient nitrile porphyrins and their utilization in selective cyanide sensing

Varusha Bhardwaj and Muniappan Sankar\*

5419



### Nickel-catalyzed reductive arylalkylation of alkenes: 5-exo cyclization vs. 6-endo cyclization vs. 1,2-aryl migration to 6-endo product

Yuxin Du, Hongli Wu, Miao Yang, Yuanbin She\* and Yun-Fang Yang\*

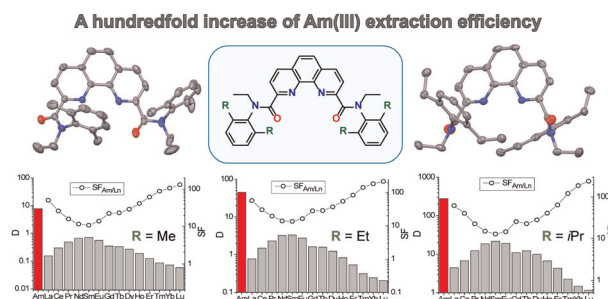


## PAPERS

5425

### Steric hindrance of phenanthroline diamides enables a hundredfold increase in Am(III) extraction efficiency

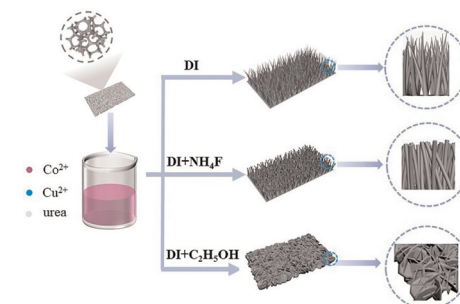
Nane A. Avagyan, Roman V. Zonov, Pavel S. Lempert, Mariia V. Evsiunina, Petr I. Matveev, Vitaly A. Roznyatovsky, Alexei D. Averin, Paulina Kalle, Victor A. Tafeenko, Svetlana A. Soloveva, Yulia V. Nelyubina, Vladimir G. Petrov, Yuri A. Ustynyuk and Valentine G. Nenajdenko\*



5438

### Facile and controllable synthesis of sea urchin-like $\text{CuCo}_2\text{O}_4$ on Ni foam for high-performance supercapacitors

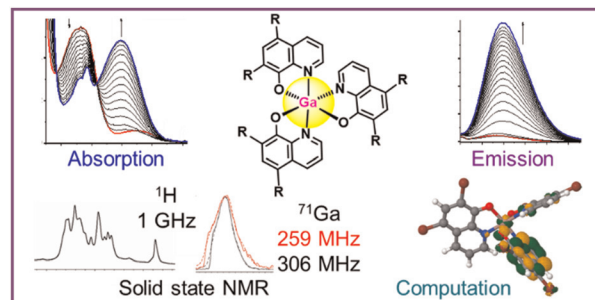
Bo Sun, Man Li, Linwen Li, Qijian Li, Xiaowen Chen, Fuxiang Wei,\* Yanwei Sui, Jie He and Zunyang Zhang



5446

### New insights into bioactive Ga(III) hydroxyquinolate complexes from UV-vis, fluorescence and multinuclear high-field NMR studies

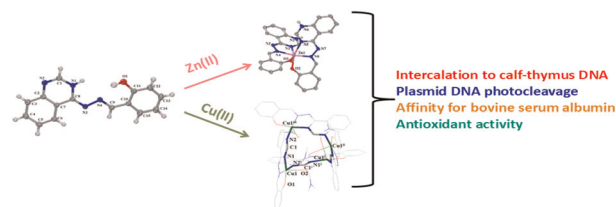
Vanessa V. Gaensicke, Stephanie Bachmann, Luca Craciunescu, Andrew W. Prentice, Martin J. Paterson, Dinu Iuga, Peter J. Sadler\* and Rafael Cavalieri Marchi\*



5458

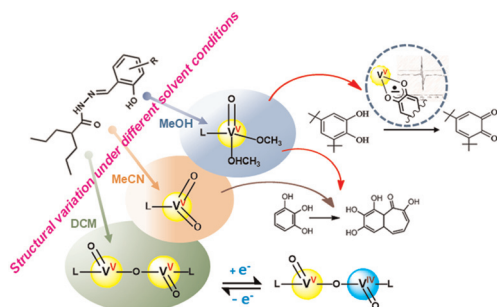
### A mononuclear zinc(II) complex and a tetranuclear copper(II) azametallacoronate with (*E*)-2-((2-(quinazolin-4-yl)hydrazono)methyl)phenol: structure and biological activity

Chrisoula Kakoulidou, Antonios G. Hatzidimitriou, Konstantina C. Fylaktakidou\* and George Psomas\*





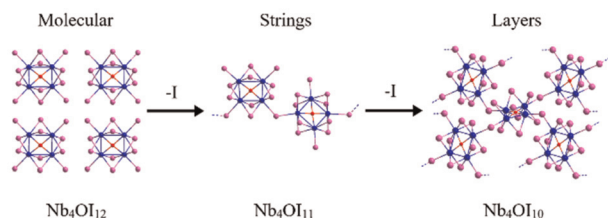
5471



### New $V^V O_2$ , $V^V O$ , $V^V O V^V O$ and electrogenerated $V^{IV} O V^V O$ systems of valproic acid hydrazones: a study of catalytic activity

Roumi Patra, Debopam Sinha, Sandip Mondal and Kajal Krishna Rajak\*

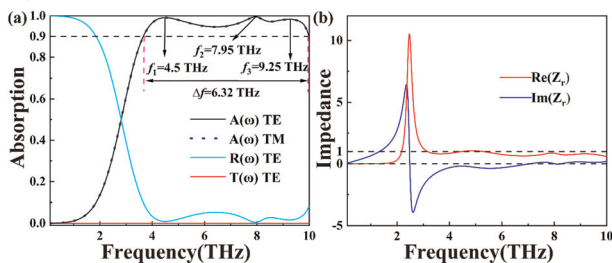
5486



### The family of tetranuclear $Nb_4 O I_{12-x}$ clusters ( $x = 0, 1, 2$ ): from the molecular $Nb_4 O I_{12}$ cluster to extended chains and layers

Jan Beitzlberger, Mario Martin, Marcus Scheele, Patrick Schmidt, Markus Ströbele and H.-Jürgen Meyer\*

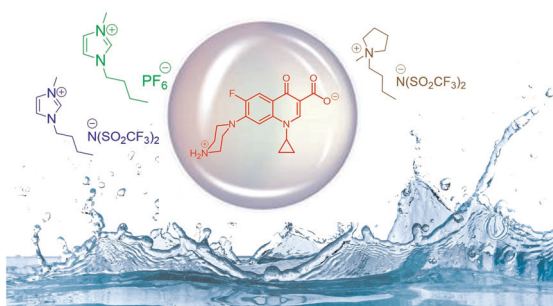
5494



### A terahertz band multifunctional metamaterial transmission–absorption switching device based on vanadium dioxide

Xinmei Wang, Xianding He, Chaojun Tang,\* Bin Shui and Zao Yi\*

5502



### Unravelling the optical properties and self-assembly behavior of ciprofloxacin in ionic liquid environments: probing the role of cationic residues and counter anions

Swapan Patra and Nilanjan Dey\*



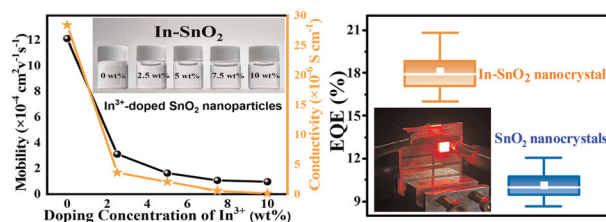


## PAPERS

5511

# Tuning charge transportation balance in quantum dot light emitting diodes by decreasing the mobility and conductivity of In-doped SnO<sub>2</sub> nanocrystal electron transport layers

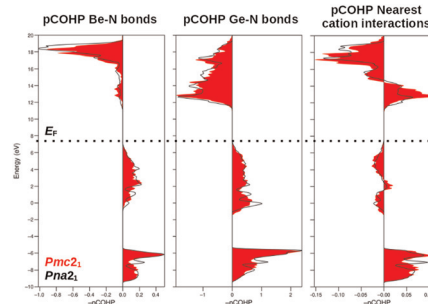
Chen Lin, Mengxin Liu, Yuhui Liu, Xinan Shi\* and Daocheng Pan\*



5521

# Why is BeGeN<sub>2</sub> different? A computational bonding analysis

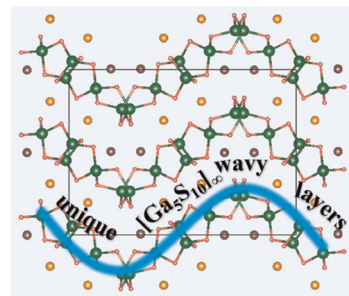
Joachim Breternitz



5526

# NaCaGa<sub>3</sub>S<sub>6</sub>: a mixed alkali metal and alkaline earth metal sulfide with a distinctive [Ga<sub>5</sub>S<sub>10</sub>]<sub>∞</sub> layered framework

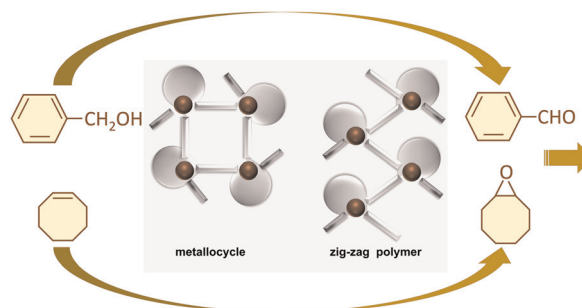
Jiale Chen, Haipeng Zhou, Huimin Sha, Jinfeng Liu, Xiu Zhu, Guisheng Xu\* and Jiankang Wang\*



5532

# Influence of ancillary ligands on the formation and functionality of oxovanadium(v) metallocsupramolecular assemblies: advanced computational and catalytic analyses

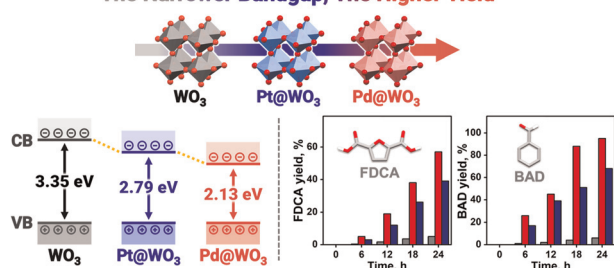
Edi Topić, Josipa Sarjanović, Danijela Musija, Mirna Mandarić, Andrea Cocut, Tomica Hrenar, Dominique Agustin, Jana Pisk\* and Višnja Vrdoljak\*



## PAPERS

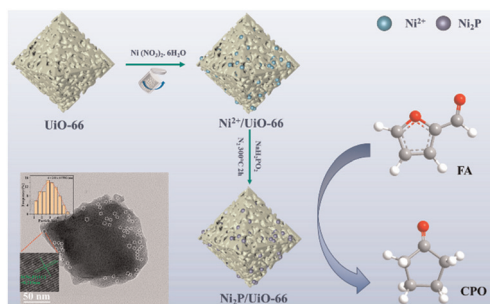
5546

## The Narrower Bandgap, The Higher Yield

Enhancing visible-light-driven photocatalysis of Pd- and Pt-doped WO<sub>3</sub> nanoparticles: the role of oxygen vacancies and bandgap narrowing

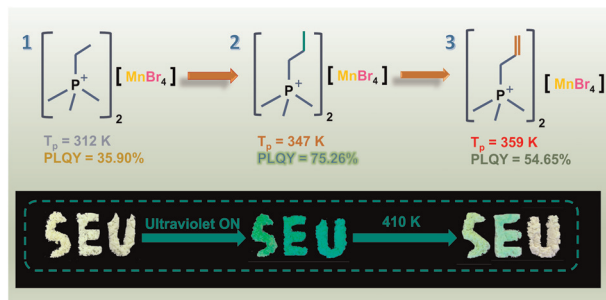
Hyeri Jeon, Dung Thanh Hoang, Hyejin Yu, Sunyoung Hwang, Hyun Sung Kim,\* Seungwoo Hong\* and Hangil Lee\*

5554

Solvent-free fabrication of an Ni<sub>2</sub>P@UiO-66 catalyst for the hydrogenation of furfural to cyclopentanone

Fanglin Liu, Luyao Li, Hui Hu, Mengting Yu, Dan Zhao, Shengjun Deng, Shunmin Ding, Weiming Xiao,\* Shuhua Wang and Chao Chen

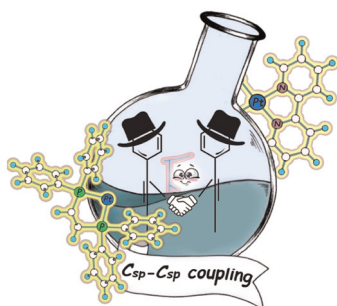
5560



## Tuning phase transition and fluorescence quenching in 0D organic–inorganic hybrid materials by precise organic cation modification

Leqi Chen, Zining Zhou, Yawen Yang and Qiong Ye\*

5568

Facile C<sub>sp</sub>–C<sub>sp</sub> bond formation prompted by an electrophilic fluorinating reagent from bis(alkynyl) platinum complexes

Somayeh Kochebaghi, Shabnam Borji, Mohsen Golbon Haghighi\* and Elin Sarkissian

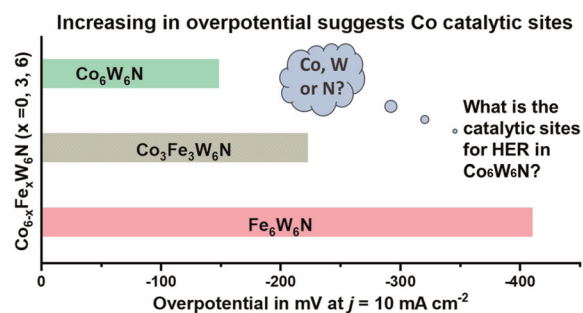


## PAPERS

5577

# The investigation of $\text{Co}_{6-x}\text{Fe}_x\text{W}_6\text{N}$ ( $x = 0, 3, 6$ ) as electrocatalysts for the hydrogen evolution reaction

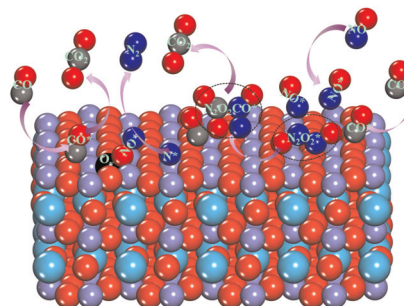
Youyi Sun,\* Zhengxin Yang, Weihao Li and Alexey Y. Ganin



5584

# Combined insights from DFT and microkinetics into NO reduction by CO over an $\text{LaFeO}_3$ perovskite

Liming Zhao, Yingju Yang and Jing Liu\*



## CORRECTION

5595

# Correction: Two-step spin transition around room temperature in a $\text{Fe}^{\text{III}}$ complex

Jianfeng Wu,\* Mengtao Li, Qianqian Yang, Baoliang Zhang\* and Jinkui Tang\*

