

## IN THIS ISSUE

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### Cover

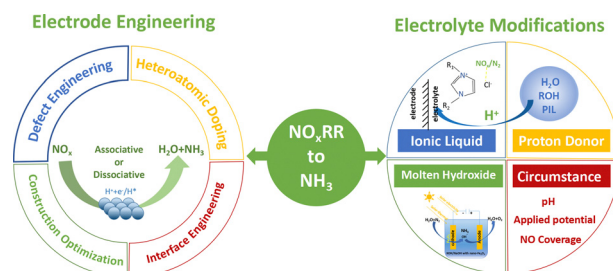
See Bin Li, Guangjin Zhang et al., pp. 6058-6065.  
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## PERSPECTIVE

6018

### The state-of-the-art in the electroreduction of $\text{NO}_x$ for the production of ammonia in aqueous and nonaqueous media at ambient conditions: a review

Yuxian Fan, Xiang Xue, Lingyue Zhu, Yuwei Qin, Dandan Yuan, Di Gu and Baohui Wang\*

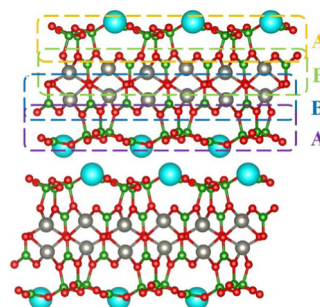


## COMMUNICATIONS

6041

### Discovery of $\text{SrZn}_2\text{B}_6\text{O}_{12}$ with an unprecedented quadruple-layered configuration

Xiangyu Long, Yan Lv and Xueyan Wu\*



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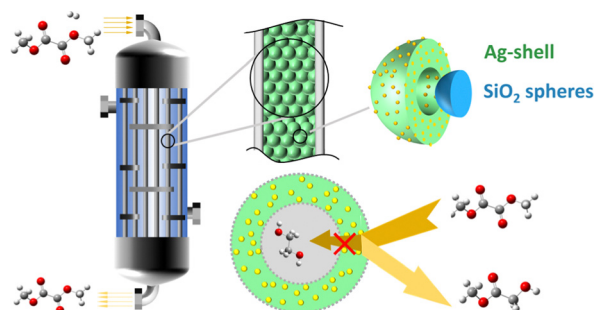


## COMMUNICATIONS

6045

### Engineering an egg-shell structure for the Ag/SiO<sub>2</sub> pellet catalyst for selective hydrogenation of dimethyl oxalate to methyl glycolate

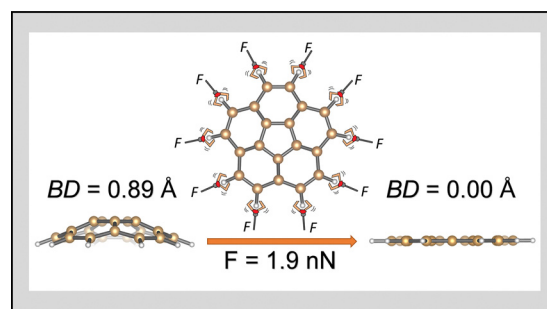
Xiaofeng Xu, Xin Hu, Zuwei Luo, Yueqiang Cao,\*  
Yi-An Zhu, Wei Li, Jinghong Zhou\* and Xinggui Zhou



6050

### Bowl-shaped carbon skeletons under tensile stress: quantum mechanochemistry of corannulene

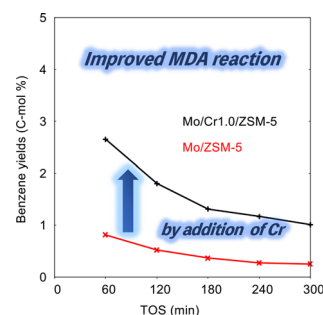
Zi-Yang Qiu, Xiang Zhao\* and Jing-Shuang Dang\*



6054

### Improved methane dehydroaromatization reaction over Mo and Cr co-doped ZSM-5 catalyst

Koji Miyake,\* Tomoka Sumi, Shinya Kokuryo,  
Haruna Kitamura, Jose A. Hernandez Gaitan,  
Yoshiaki Uchida and Norikazu Nishiyama

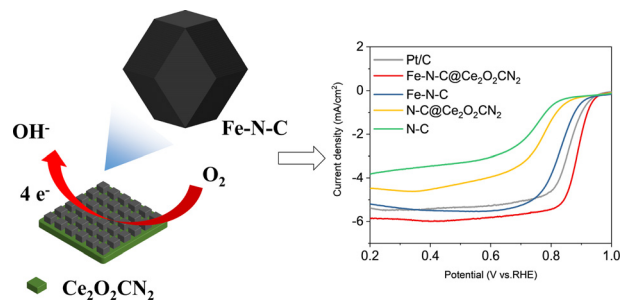


## PAPERS

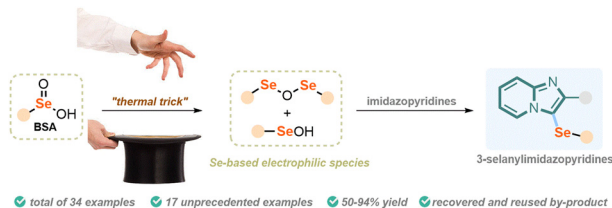
6058

### Coupling of cerium oxide cyanamide with Fe–N–C for enhanced oxygen reduction reaction

Xu Zhang, Jingxian Zhang, Shi Zeng, Haifan Wang,  
Yiling Bai, Huaming Hou, Ke Zhang, Bin Li\* and  
Guangjin Zhang\*



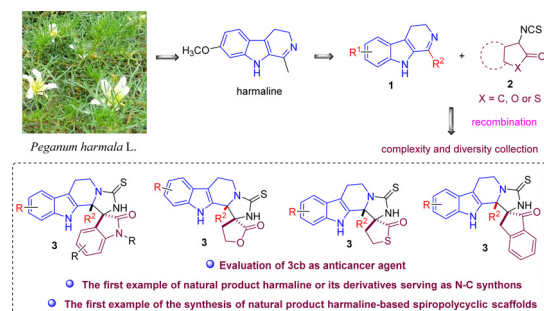
6066



### Arylseleninic acid derivative decomposition towards Se(II)-based electrophiles: an elegant approach to construct 3-selanyl-imidazopyridines

João M. Anghinoni, Sabrina S. Ferreira, Ricardo F. Schumacher, Bernardo A. Iglesias, Gelson Perin, Filipe Penteadó\* and Eder J. Lenardão\*

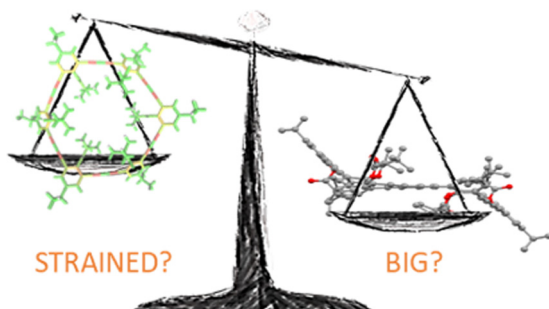
6073



### Design, synthesis and evaluation of multi-pharmacophore-containing spirocyclic harmaline-based hybrids as anticancer agents

Shuang Chen, Ze-Hua Yu, Wei-Na Wang, Zi-Yue Chen, Bo-Wen Pan, Lin Chen,\* Ying Zhou, Xiong-Wei Liu and Xiong-Li Liu\*

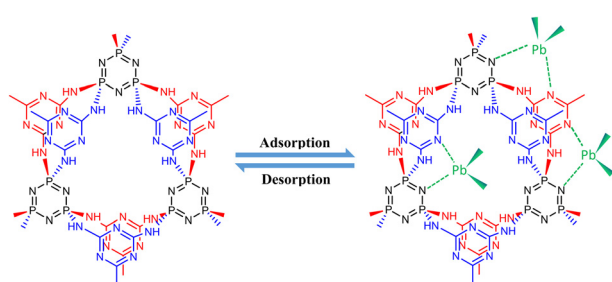
6086



### Better big or strained? Deformations of shape persistent arylene butadiynylene macrocycles

Marcin S. Matecki, Przemysław Dopieralski, Nurbey Gulia, Bartłomiej Pigulski, Tadeusz Lis and Sławomir Szafert\*

6095



### Nitrogen-rich covalent phosphazene-based framework for efficient removal of lead(II) ions

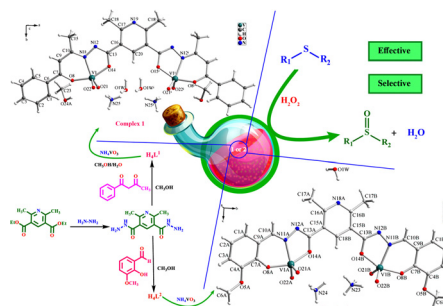
Lin-ling Peng, Wei-Fang Zhou, Wei-Feng Xu, Yu Liu, Cong-Shan Zhou, Jun Xie\* and Ke-Wen Tang



6102

### Dinuclear oxidovanadium complexes with dihydrazone ligands derived from diethyl 2,6-dimethylpyridine-3,5-dicarboxylate obtained from Hantzsch reaction; crystal structure and catalytic activity

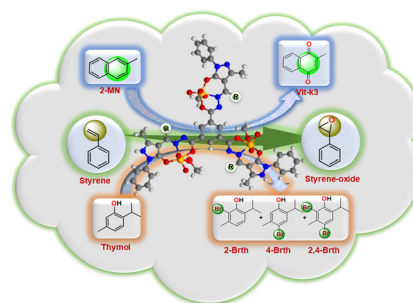
Fatemeh Soltani, Rahman Bikas,\* Neda Heydari and Anna Kozakiewicz-Piekarz



6114

### Trinuclear dioxidomolybdenum(vi) complexes derived from benzene-1,3,5-tricarbohydrazone and study of the catalytic activity

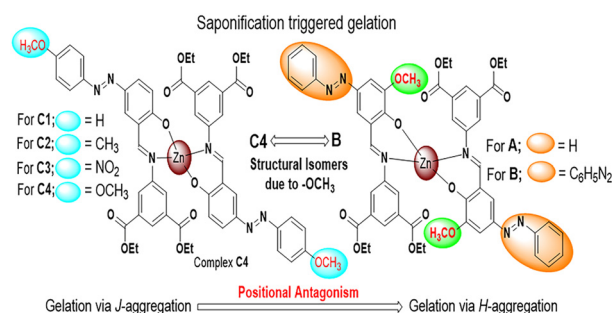
Mannar R. Maurya,\* Devesh Singh, Fernando Avecilla, Akhilesh Sharma and Puneet Gupta



6135

### Acquiring preferred mode of aggregation through positional antagonism for saponification triggered gelation

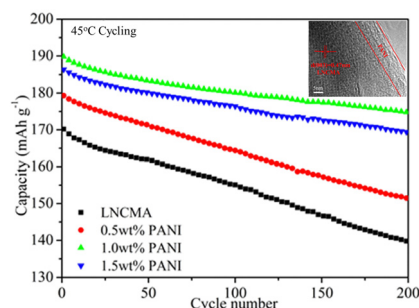
Prem Chand and Ashish Kumar\*



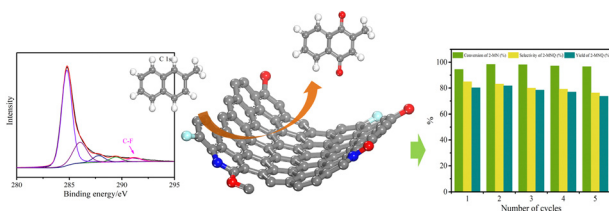
6144

### Conductive polymer polyaniline covering promotes the electrochemical properties of a nickel-rich quaternary cathode $\text{LiNi}_{0.88}\text{Co}_{0.06}\text{Mn}_{0.03}\text{Al}_{0.03}\text{O}_2$

Xiaodie Li, Junchao Qian, Zhengying Wu, Chengbao Liu, Xiaodong Guan, Yang Zhou, Zhigang Chen and Feng Chen\*



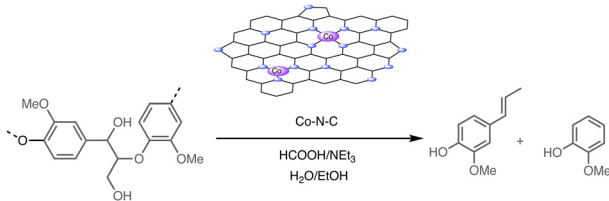
6155



### Nitrogen and fluorine co-doped mesoporous carbon as an efficient metal-free catalyst for selective oxidation of 2-methylnaphthalene

Yi Yu, Qingxin Zhang, Jiarui Li, Li Xu\* and Guoji Liu\*

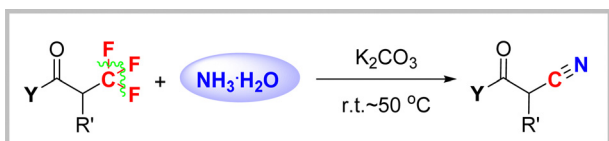
6164



### Cobalt catalysts (Co–N–C) for C–O bond cleavage in lignin-derived aryl ethers and lignin

Daniel Bautista-García, David Macías-José, Paola Aguillón-Rodríguez, Obed Pérez-Reyes and Carmen Ortiz-Cervantes\*

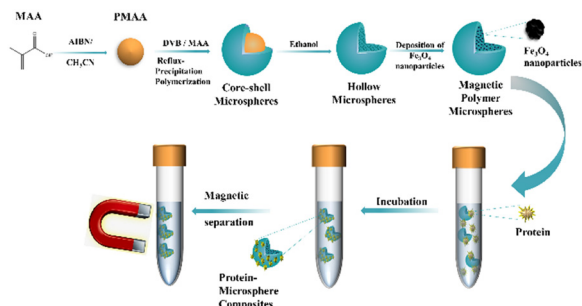
6171



### Metal-free synthesis of ketonitriles *via* C–F bond cleavage

Ge Gao and Zhiping Li\*

6176



### Fabrication of magnetic Fe<sub>3</sub>O<sub>4</sub>@P(DVB-co-MAA) microspheres using hollow microspheres as templates for protein separation

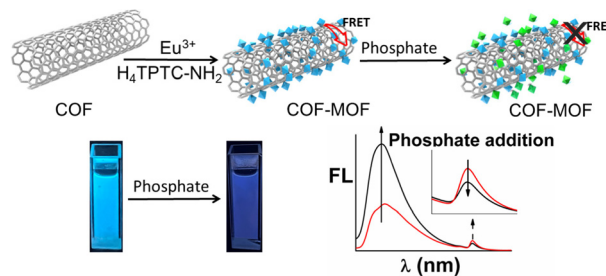
Fengjie Bu, Qianrui Xu, Wenjie Jiang, Yingying Wei, Zhifei Wang and Yong Jiang\*



6186

### Rational design of COF–MOF composites for ratiometric fluorescence detection of phosphate

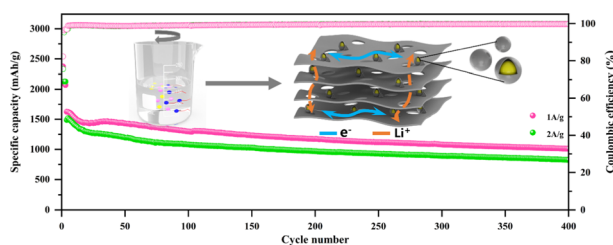
Yun-Jie Yu, Wei Li, Shi-Bin Ren, Xian-Jing Zhou and De-Man Han\*



6191

### A self-sacrificing strategy to fabricate a fluorine-modified integrated silicon/carbon anode for high-performance lithium-ion batteries

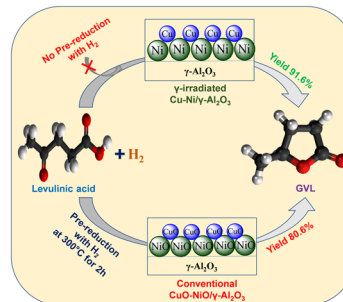
Jiangzhi Xiong, Peng Xiao,\* Jian Luo, Yangjie Li, Peng Zhou, Liang Pang, Xilei Xie and Yang Li



6201

### Utilization of $\gamma$ -radiation in the synthesis of bimetallic Cu–Ni catalysts for selective vapour phase hydrogenation of levulinic acid to $\gamma$ -valerolactone

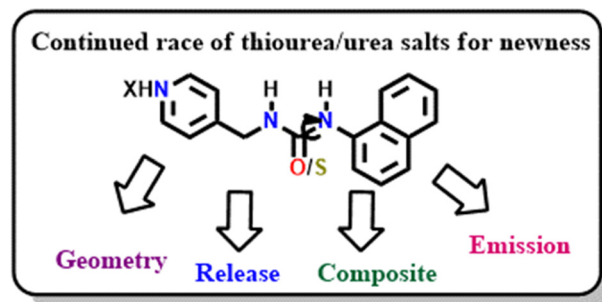
Gadamani Suresh Babu, Sanju Francis, Dasari Padmakar, Paka Rajitha, Challapalli Subrahmanyam and Nakka Lingaiah\*



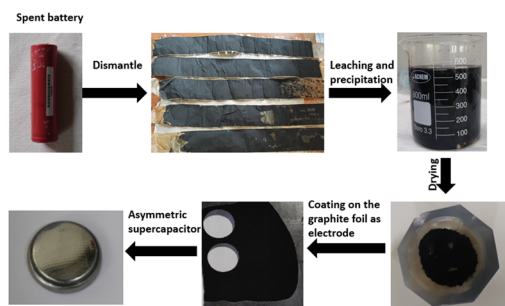
6211

### Assemblies of salts of urea and thiourea derivatives and release of hosts from composites with calcium oxide

Rinki Brahma and Jubaraj Bikash Baruah\*



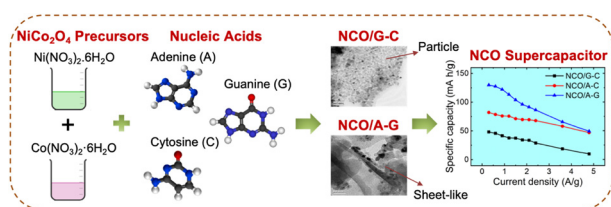
6224



### Recovery of cobalt as CoS from spent Li-ion batteries and investigation of its use as an electrode material for supercapacitors

Sezgin Yasa, Burak Birol and Metin Gencten\*

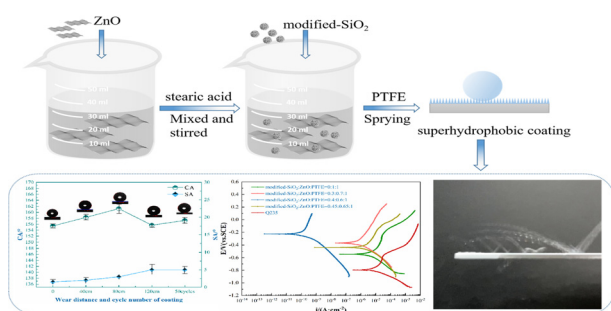
6235



### Exploring the electrochemical characteristics of the nucleobase-templated assisted $\text{NiCo}_2\text{O}_4$ electrode for supercapacitors

Karthik Krishnan,\* Amuthan Dekshinamoorthy, Saranyan Vijayaraghavan and Selvakumar Karuthapandi\*

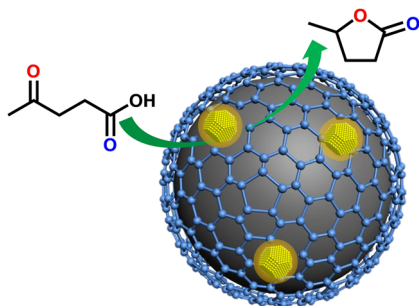
6246



### Study of nano-ZnO improvement of the mechanical properties and corrosion resistance of modified-SiO<sub>2</sub>/PTFE superhydrophobic nanocomposite coatings by one-step spraying

Jiansan Li, Ziping Liu\* and Zhenyu Wang

6258



### Modulating the surface structure of nanodiamonds to enhance the electronic metal-support interaction of efficient ruthenium catalysts for levulinic acid hydrogenation

Guojun Lan,\* Zhenqing Li, Xiaojia Han, Liping Zhang, Yiyang Qiu, Xiucheng Sun, Zaizhe Cheng and Ying Li\*

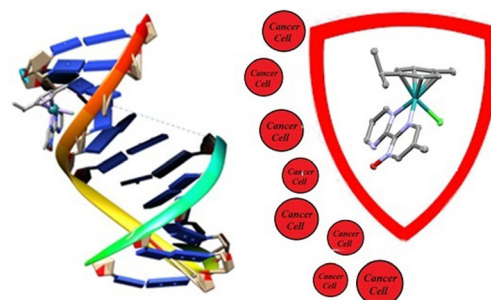


## PAPERS

6266

### Synthesis of a half-sandwich complex of ruthenium(II) with a nonsymmetric bis-nitrogen donor ligand: biological investigations

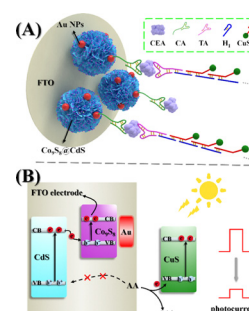
Sana Yarahmadi, Elham Jokar, Zahra Shamsi, Dalia Nahieh, Mehrnoosh Moosavi, Masood Fereidoonzezhad\* and Hamid R. Shahsavari\*



6275

### Co<sub>9</sub>S<sub>8</sub> nanoparticle-functionalized CdS nanoflowers for signal-off photoelectrochemical bioanalysis of carcinoembryonic antigens with hybridization chain reaction

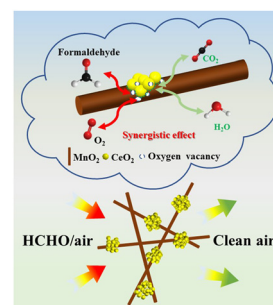
Kangyao Zhang,\* Kejun Wang, Jianhui Zhang, Meirong Tan, Mingdi Xu,\* Wenqiang Lai and Dianping Tang



6282

### Construction of strongly-coupled CeO<sub>2</sub>/MnO<sub>2</sub> heterogeneous catalysts for highly-efficient removal of formaldehyde

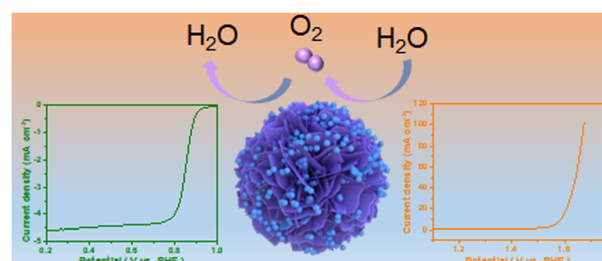
Shuaishuai Zhang, Lingling Zhang, Li Liu, Xiang Chu, Xiao Wang,\* Shuyan Song\* and Hongjie Zhang\*



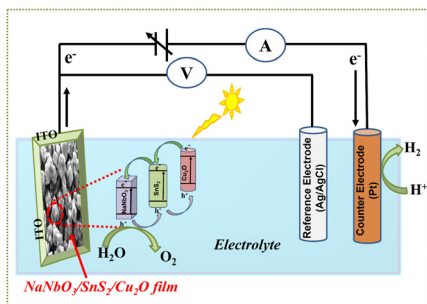
6287

### Dopamine-coated layered Co<sub>0.85</sub>Se as an efficient bifunctional oxygen electrocatalyst

Jin Li, Yu Zhang, Wenjie Wei, Gaochao Fan, Zumin Wang,\* Lingbo Zong\* and Lei Wang



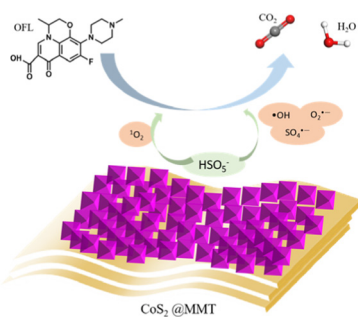
6294



### Enhancing the activity and stability of Cu<sub>2</sub>O nanorods *via* coupling with a NaNbO<sub>3</sub>/SnS<sub>2</sub> heterostructure for photoelectrochemical water-splitting

Shalini Tiwari, Priyanka Yadav and Ashok K. Ganguli\*

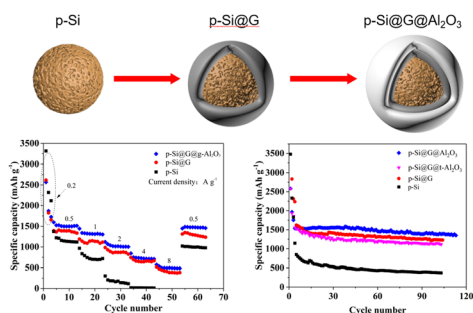
6305



### Adsorption-enhanced rapid catalytic degradation of ofloxacin by a CoS<sub>2</sub>@montmorillonite catalyst *via* peroxymonosulfate activation

Peiping Hong, Lian Wu, Yifang Zhao, Yue Yu, Shuxi Gao, Bing Liao\* and Hao Pang\*

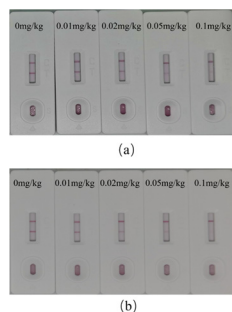
6313



### Construction of a core–double-shell structured Si@graphene@Al<sub>2</sub>O<sub>3</sub> composite for a high-performance lithium-ion battery anode

Fei Zhou, Zhitong Shang, Xiaoyu Zhao, Qiang Yu, YiChen Mu, Haoran Xu, Xiaojun Tang, Siyuan Huang and Xiaocheng Li\*

6323



### Development of immunochromatographic strips for the rapid detection of diquat in apples and strawberries

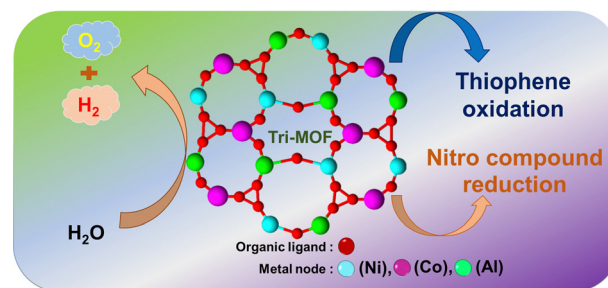
Jian Zhou, Aihong Wu, Liguang Xu, Hua Kuang, Liqiang Liu, Chuanlai Xu and Xinxin Xu\*



6330

### One pot synthesis and characterization of binary and ternary metal organic frameworks (MOFs) as tri-modal catalysts for thiophene electrooxidation, water splitting and 4-nitrophenol reduction

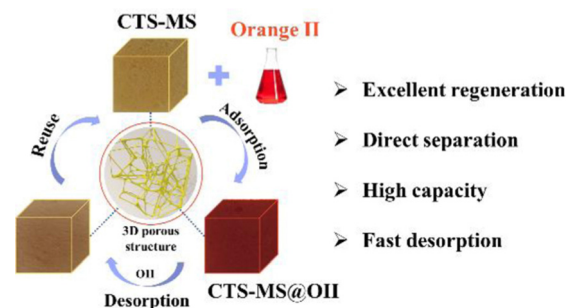
Mahendran Manivannan, Venkatachalam Rajagopal, Lalithambigai Krishnamoorthy, Selvam Dhanasurya, Vembu Suryanarayanan,\* Murugavel Kathiresan, Thasan Raju and Lathe A. Jones



6342

### Excellent regeneration, easy separation and high capacity of 3D chitosan–melamine sponge composites for anionic dye removal

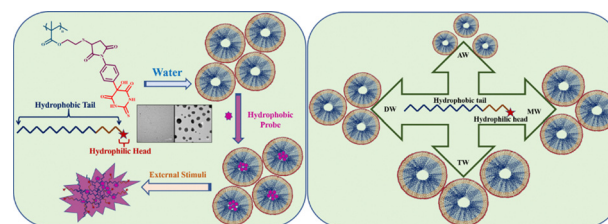
Yang Zeng, Xin Liu,\* Yimo Zhang, Yan Qin, Xiangtao Tang, Wenqing Zhang and Lingfan Zhang\*



6353

### Efficient route to synthesizing a biocompatible delivery system undergoing morphological changes upon solvent variation

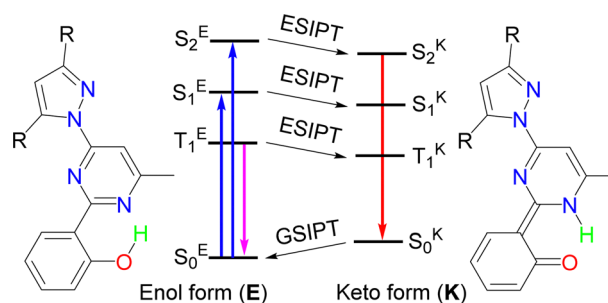
Piyali Mandal,\* Madhumita Mukherjee and Raja Shunmugam\*



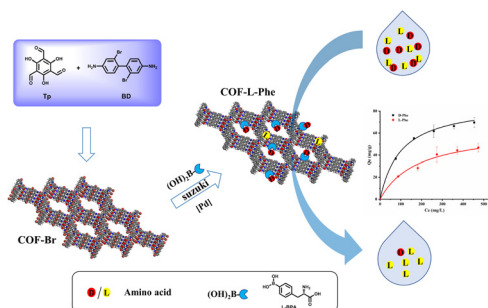
6361

### Dual emission of ESIPT-capable 2-(2-hydroxyphenyl)-4-(1H-pyrazol-1-yl)pyrimidines: interplay of fluorescence and phosphorescence

Nikita A. Shekhovtsov,\* Elena B. Nikolaenkova, Alexey A. Ryadun, Sofia N. Vorobyeva, Viktor P. Krivopalov and Mark B. Bushuev\*



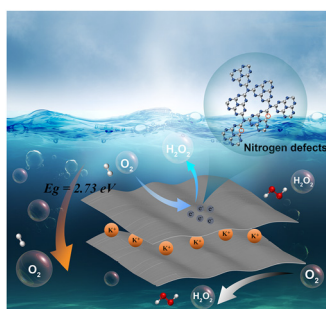
6378



### Chiral covalent organic frameworks synthesized via a Suzuki–Miyaura-coupling reaction: enantioselective recognition of D/L-amino acids

Dongdong Tan, Tianmiao Wang, Jing Hu, Donglian Deng, Tingting Li and Ruijun Li\*

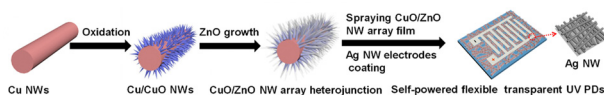
6385



### K-intercalated polymeric carbon nitride with nitrogen defects for efficient photocatalytic $\text{H}_2\text{O}_2$ production

Qinyuan Wang, Lulu Bai, Qiang Wu\* and Weifeng Yao\*

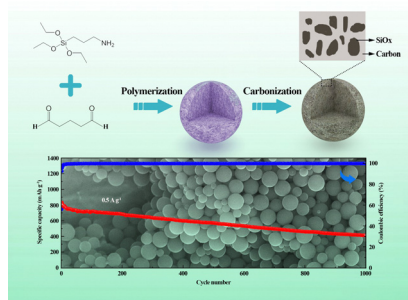
6397



### Fast-response self-powered flexible transparent ultraviolet photodetectors based on a CuO/ZnO nanowire array heterojunction

Yi Li, Xiaojing Wei, Qiuyue Yang, Jie Zhang, Wencai Wang, Linlin Dong, Bokai Gao, Chen Li, Xiaolin Sun and Yanwen Ma\*

6405



### Designing a simple polymerisation route for homogeneous $\text{SiO}_x/\text{C}$ spheres as a lithium-ion battery anode

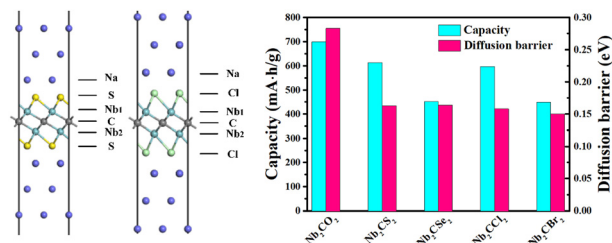
Xiaoming Zhou, Yang Liu,\* Liming Chen and Guohui Yuan\*



6412

### S- and Cl-functionalized Nb<sub>2</sub>C MXenes as novel anode materials for sodium-ion batteries: a first-principles study

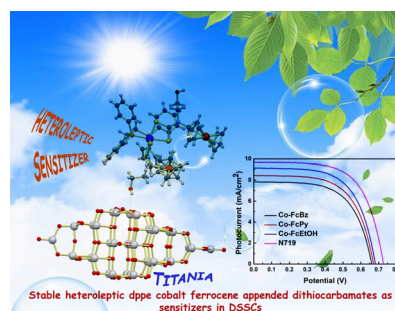
Tongxin Yan, Meixia Xiao,\* Haiyang Song,\* Ying Lv, Zhao Li and Beibei Xiao



6420

### New heteroleptic 1,2-bis(diphenylphosphino)ethane appended cobalt(III) ferrocene dithiocarbamates as sensitizers in dye-sensitized solar cells (DSSCs)

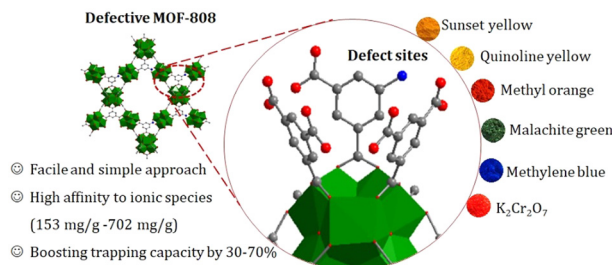
Devyani Srivastava, Amita Singh, Gabriele Kociok-Köhn, Suresh W. Gosavi, Ratna Chauhan,\* Muthupandian Ashokkumar, Abhinav Kumar\* and Mohd. Muddassir



6433

### Defect-engineered metal–organic frameworks (MOF-808) towards the improved adsorptive removal of organic dyes and chromium (vi) species from water

Khoa D. Nguyen, Nhi T. Vo, Khanh T. M. Le, Khanh V. Ho, Nam T. S. Phan, Phuoc H. Ho\* and Ha V. Le\*



6448

### A novel electrochemical sensor based on an Fe–N–C/AuNP nanohybrid for rapid and sensitive gallic acid detection

Wanqing Zhang,\* Xijiao Li, Xinxin Hu, Chunxiang Li, Shanqin Liu, Jingjing Ma, Jichao Wang,\* Renlong Li, Qing Wang, Xiaoman Ding and Zhiyuan Wang\*

