

## IN THIS ISSUE

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### Cover

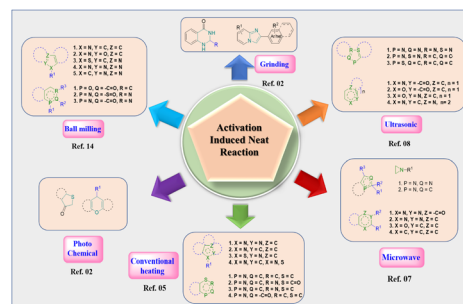
See Zuzana Klepcová et al., pp. 13088-13097.  
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## PERSPECTIVE

13035

### Recent developments in the solvent-free synthesis of heterocycles

Nilabrata Dey, Arabinda Mandal, Rathin Jana, Anirban Bera, Sk Abulkalam Azad, Soumen Giri,\* Mohammed Ikbal\* and Shubhankar Samanta\*

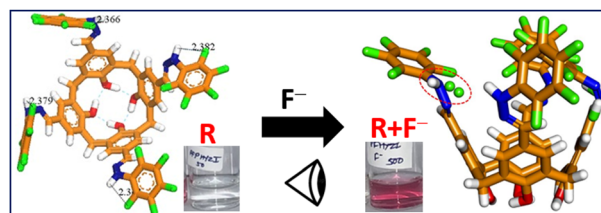


## COMMUNICATIONS

13080

### Rapid naked eye sensing of fluoride by calix[4]arene upper rim tetra functionalized pentafluorophenyl hydrazone

Anita Nehra, Apoorva Malik, Pragati R Sharma, Sateesh Bandaru\* and Rakesh K Sharma\*



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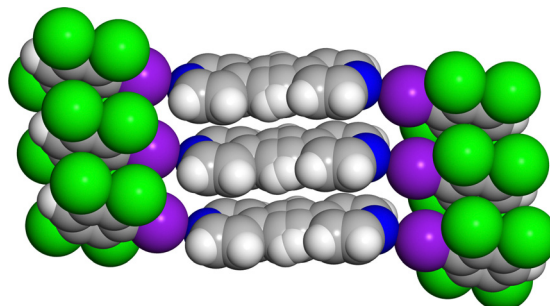


## COMMUNICATIONS

13084

### Preference of halogen bonds over hydrogen bonds within a discrete three-component co-crystal that undergo a [2+2] cycloaddition reaction

Conrad J. Powell, Eric Bosch, Herman R. Krueger Jr and Ryan H. Groeneman\*

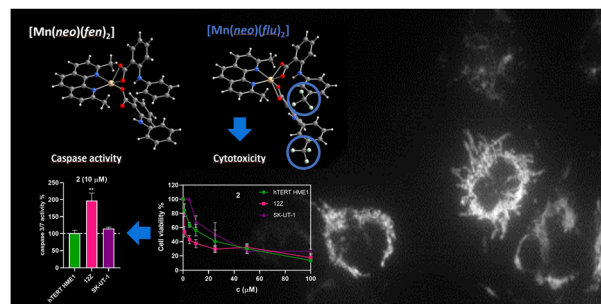


## PAPERS

13088

### Investigation of novel Mn(II) fenamate complexes with neocuproine and their effects on endometrial cell lines

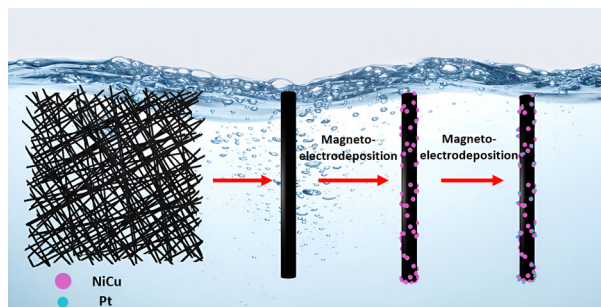
Zuzana Klepcová, Ivana Špaková, Corina T. Madreiter-Sokolowski, Wolfgang Graier, Katarína Kalinová, Erika Samoľová, Romana Smolková, Lukáš Smolko\* and Miroslava Rabajdová



13098

### Homogenizing of Pt on NiCu films for enhanced HER activity by two-step magneto-electrodeposition

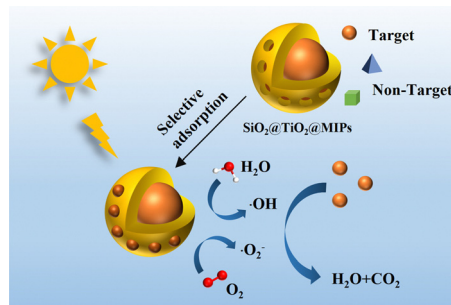
Donggang Li,\* Tianlong Shan, Chongguo Liu, Can Zhao, Andrew Doherty, Ali Reza Kamali and Qiang Wang



13106

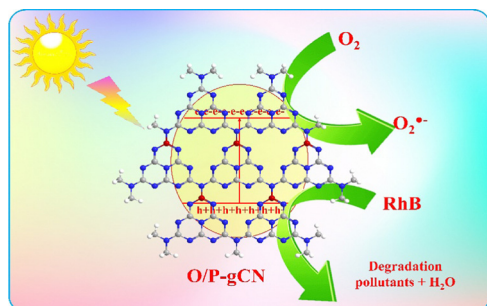
### Efficient identification and degradation of tetracycline hydrochloride from water by molecularly imprinted core-shell structured SiO<sub>2</sub>@TiO<sub>2</sub>

Zimu Li, Xicheng Li, Shoufang Xu,\* Hao Tian and Changzheng Wang\*



## PAPERS

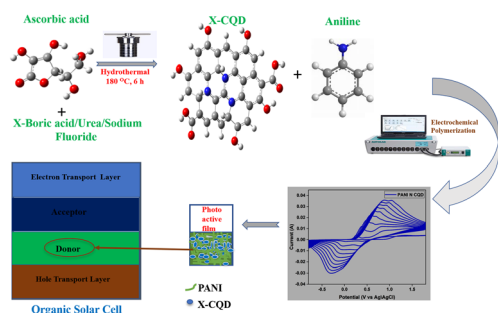
13117



### Oxygen-phosphorus-codoped graphitic carbon nitride nanosheets with better photocatalytic ability towards the degradation of rhodamine-B dyes

Zhen-Yuan Lan, Dhanapal Vasu, Yung-Chieh Liu, Yu-Feng You, Te-Wei Chiu\* and Po Chou Chen

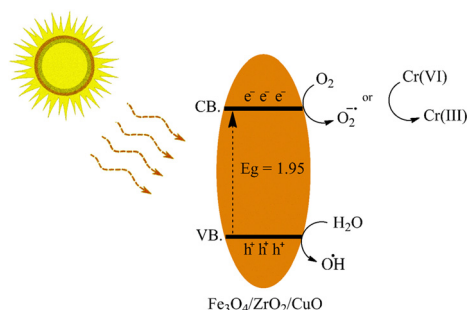
13127



### Heteroatom (boron, nitrogen, and fluorine) quantum dot-doped polyaniline-photoactive film preparation and characterization for organic solar cell applications

Esakkimuthu Shanmugasundaram, Vigneshkumar Ganesan, Vimalasruthi Narayanan, Kannan Vellaisamy, Rajaram Rajamohan,\* Yong Rok Lee,\* Selvam Kaliyamoorthy and Stalin Thambusamy\*

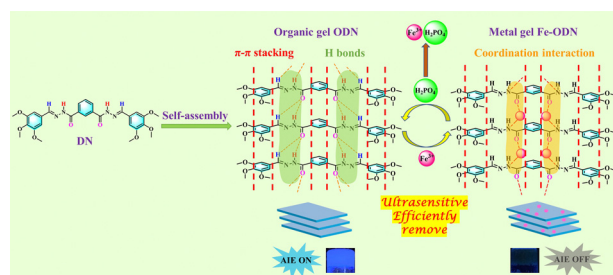
13138



### Synthesis of Fe<sub>3</sub>O<sub>4</sub>/ZrO<sub>2</sub>/CuO magnetic nanohybrids and their applications in reducing chromium(vi) and degrading methylene blue under sunlight

Mohammad Amin Arayesh, Ali Hossein Kianfar\* and Gholamhossein Mohammadnezhad

13152



### A novel acylhydrazone-based self-assembled supramolecular gel for ultrasensitive alternating fluorescence detection of Fe<sup>3+</sup> and H<sub>2</sub>PO<sub>4</sub><sup>-</sup>

Shang Wu,\* Jutao Liu, Shuaishuai Fu, Jiajia Wang, Penghui Zhang, Chaoyang Liu, Yanbin Wang, Qiong Su,\* Yuzhi Sun and Quanlu Yang\*



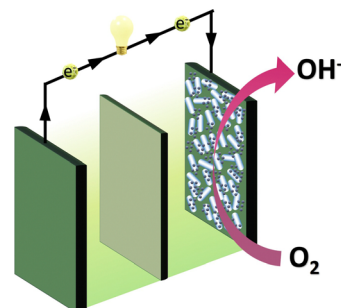


## PAPERS

13160

### Augmented and sustained oxygen reduction reaction activity of $\text{NiCo}_2\text{O}_4$ by the incorporation of Ag

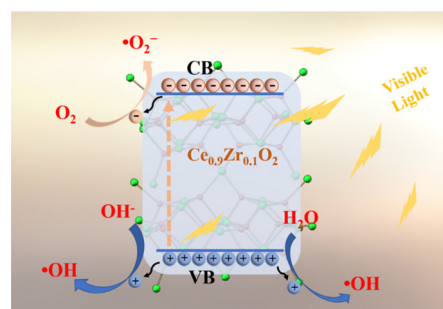
Karuvatta Nubla, Vadakkanethu Sadasivan Anju, Aiswarya Sidharthan K. and N. Sandhyarani\*



13169

### Photodegradation of methylene blue using $\text{Ce}_x\text{Zr}_{1-x}\text{O}_2$ nanocomposites prepared via a non-stoichiometry method

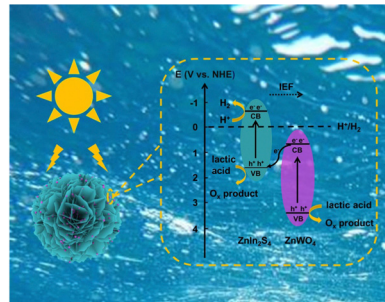
Xingmin Chen, Peishen Li, Shuai Gao, Mingming Sun, Qiang Wang,\* Wen Liu and Sihui Zhan\*



13177

### Boosting the photocatalytic activity of $\text{ZnIn}_2\text{S}_4$ -based photocatalyst for $\text{H}_2$ evolution using porous $\text{ZnWO}_4$ nanoflakelets as a cocatalyst

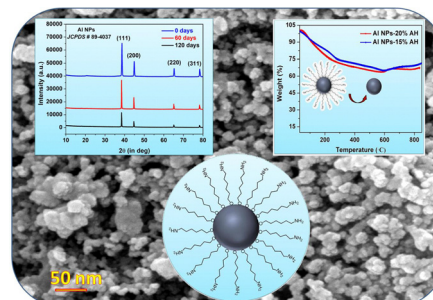
Fengchun Dong, Hui Liu, Lixia Qin, Taiyang Zhang,\* Xiangqing Li and Shi-Zhao Kang\*



13186

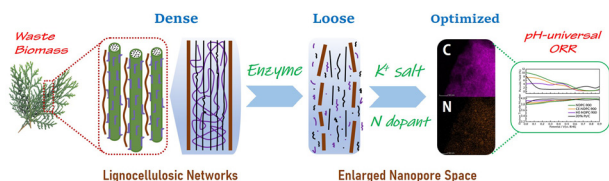
### Dual-functional organic surfactant for the effective stabilization of nano aluminium

Billakanti Srinivas, Bantumelli Prachuritha, Vepa Kameswara Rao and Krishnamurthi Muralidharan\*



## PAPERS

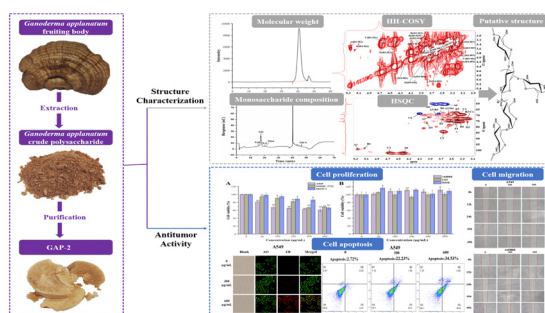
13193



### Exploiting enzymes to optimize the pH-universal electrocatalytic ORR performance of biomass-based nanoporous carbons

Huifen Wang, Xiao Kong, Wendu Zhang, Peiyao Bai, Chuangchuang Yang, Weiqi Liu, Shilin Wei and Lang Xu\*

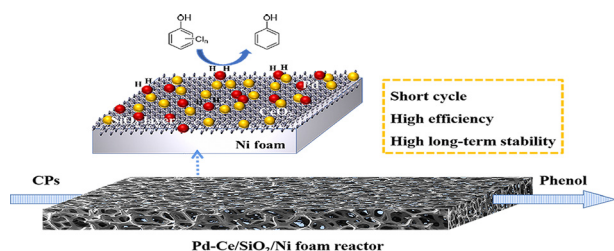
13205



### Structural features and *in vitro* antitumor activity of a water-extracted polysaccharide from *Ganoderma applanatum*

Zan Gong, Meng Liu, Hui Liu, Zhiwei Deng, Xiangxiang Qin, Jing Nie, Zhe Qiao, Hua Zhu\* and Shian Zhong\*

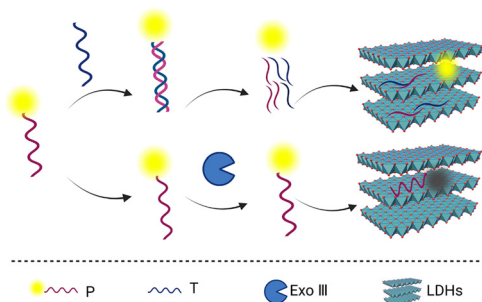
13218



### Highly efficient and stable hydrodechlorination of chlorophenols in a flow Pd–Ce/SiO<sub>2</sub>/Ni foam reactor

Ruijie Cheng, Linyu Li, Lizhi Tan, Haozhen Feng, Guangyan Xiang and Jun Xiong\*

13228



### A versatile fluorescence sensor for DNA detection based on layered double hydroxides and exonuclease III

Yuanyi Wu, Shihan Liu, Yumei Xiao, Qian Li, Qin Xiang, Xianqin Song, Shanglin Wu, Kaiyong Wang\* and Yi Yang\*

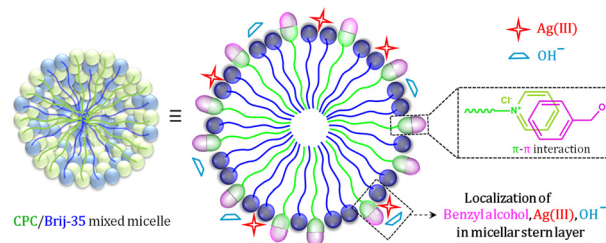


## PAPERS

13235

### An efficient mixed micellar strategy for the catalytic oxidation of benzyl alcohol by diperiodatoargentate(III) in aqueous media

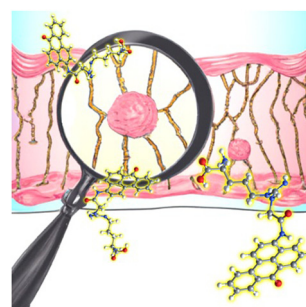
Priya Karmakar, Sandip Kundu, Mousumi Layek, Kripasindhu Karmakar, Mandira Mitra, Arnab Mukherjee, Debasis Dhak, Ujjwal Mandal,\* Pintu Sar\* and Bidyut Saha\*



13247

### Computational assessment of amino acid-coupled benzanthrone 2-aminoacetamides as molecular probes for insulin amyloid fibril visualization

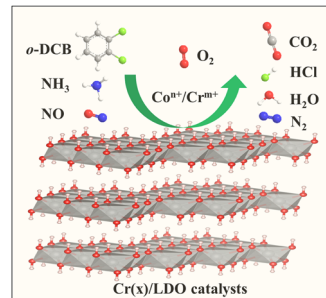
Reshma Rensil Francis, Cheriyan Ebenezer, Rajadurai Vijay Solomon\* and Paul Wilson\*



13260

### *In-situ* DRIFTS study for synergistic removal of NO<sub>x</sub> and *o*-DCB over hydrotalcite-like structured Cr(x)/LDO catalysts

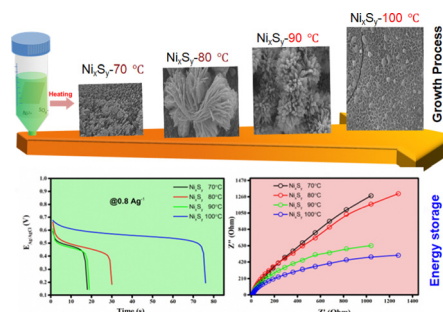
Jiaqing Wang, Yi Xing,\* Hui Zhang, Wei Su,\* Jinglei Tian, Wenbo Zhang, Haoqi Jia, Yan Wang and Mengying Ma



13269

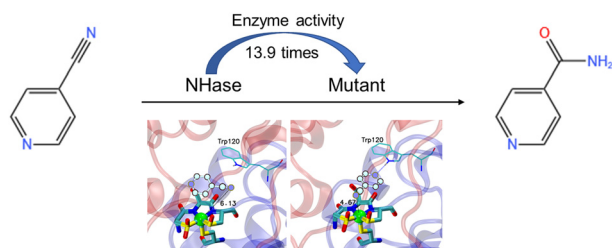
### Shape controlled growth of hierarchical Ni<sub>x</sub>S<sub>y</sub> on stainless steel by solution processing with enhanced electrochemical energy storage performance

Amjad Khan, Gul Rahman,\* Anwar ul Haq Ali Shah, Sang Youn Chae and Shabeer Ahmad Mian



## PAPERS

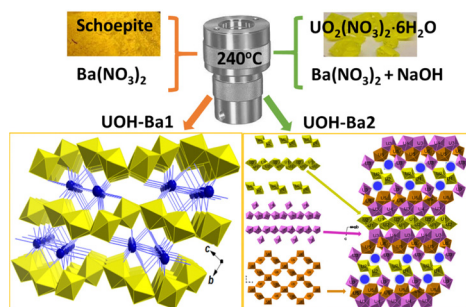
13279



### Highly efficient biosynthesis of isonicotinamide through a substrate access tunnel engineered nitrile hydratase from *Carbonactinospira thermoautotrophicus*

Junling Guo, Zhongyi Cheng, Lukasz Peplowski\* and Zhemin Zhou\*

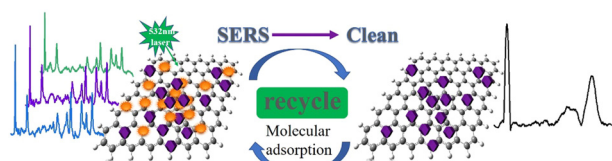
13286



### Investigation of uranium oxide hydrates with barium(II) ions: structural diversity, uranium valences and implications

Kimbal T. Lu, Yingjie Zhang,\* Tao Wei, Timothy A. Ablott, Jakub Plášil, Inna Karatchevtseva and Rongkun Zheng

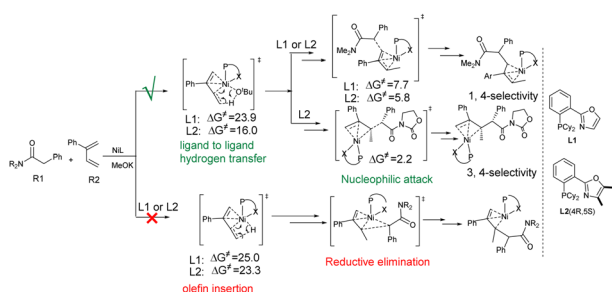
13297



### Recyclable non-metal surface-enhanced Raman scattering substrate based on graphene oxide/ZIF-67 nanocomposites

Shuang Wang, Xiaoya Zhang, Qun Xiang, Sijie Zhou, Jun Zheng, Ruiwen Yan\* and Guiqi Gao\*

13303



### Theoretical studies on substrate-controlled selectivity of nickel-catalyzed hydroalkylation of 1,3-dienes

Yuhua Liu, Difei Liu, Senyu He, Xiaofeng Huang, Feiqing Ding\* and Yang Zhang\*

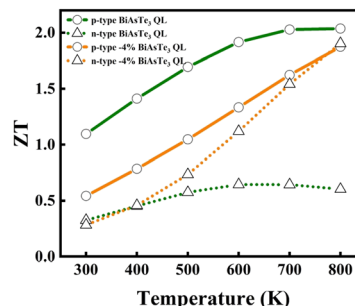


## PAPERS

13309

### Substituted (P, As, Sb, S and Se) two-dimensional $\text{Bi}_2\text{Te}_3$ monolayer under stress at high temperature: achieving high thermoelectric performance

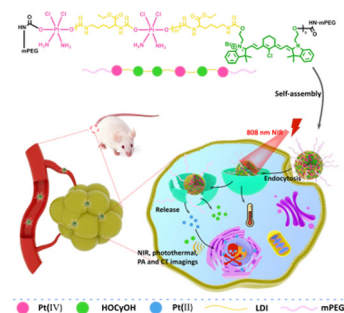
Ting Li, Jie Pu, Tianwen Yu, Ziyu Hu\* and Xiaohong Shao\*



13320

### Tailoring dual drug-backboned polyurethane prodrug nanoparticles as all-in-one nanomedicine for precise multimodal imaging-guided PTT-chemotherapy

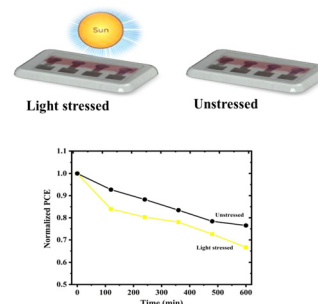
Guozheng Liu, Jiazhen Wu, Siyuan Liu, Mingming Luan, Jing Xu and Yanjuan Wu\*



13331

### Effect of an ambient environment on light-induced degradation of organic solar cells based on a benzodithiophene–quinoxaline copolymer in air

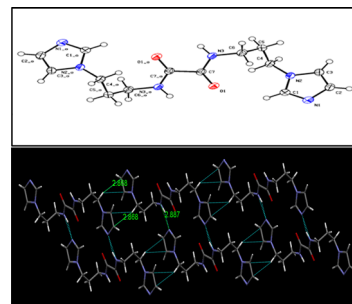
Kidan G. Gebremariam, Fikadu G. Hone, Jane Dai, Genene T. Mola, Wendimagegn Mammo and Newayemedhin A. Tegegne\*



13342

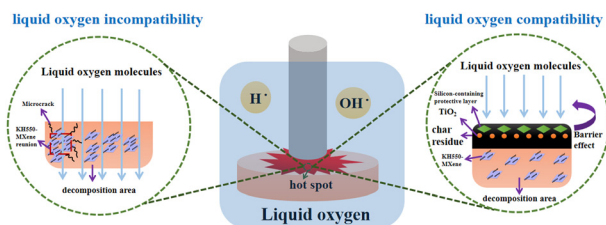
### An oxalamide-bridged imidazole based 'turn off' fluorescent receptor for copper(II) and iron(III) ions

Parvathavarthini Murugaperumal, Praveena Rajendran, Sengottuvelan Nallathambi,\* Siva Ayyanar, Franc Perdih, Ashokkumar Balasubramaniam and Arun Alagarsamy





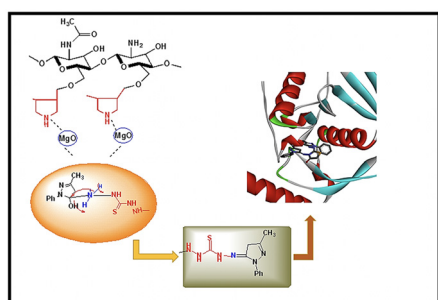
13353



### Siloxane-decorated MXene nanosheet-reinforced EP composites with outstanding flame retardancy and liquid-oxygen compatibility for ultra-low-temperature applications

Hui Wang, Ni Liu, Lijie Qu\* and Baosheng Xu\*

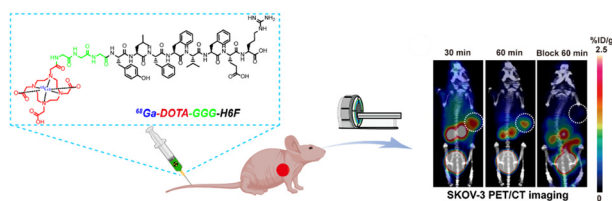
13367



### Use of a bioresource nanocomposite as a heterogeneous base catalyst for the green synthesis of novel bioactive pyrazoles: antibacterial evaluation using molecular docking

Sarah Aldulaijan, Sara Nabil, Salha Alharthi, Bushra AL Abdullatif and Abir S. Abdel-Naby\*

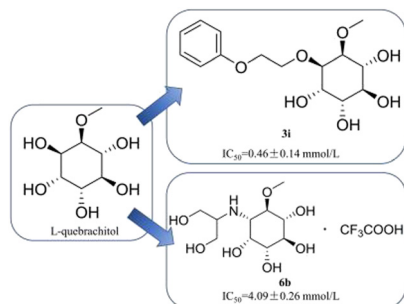
13378



### A preliminary study of a $^{68}\text{Ga}$ -labeled PET probe for HER2 imaging

Kaiwen Chen, Xiangwei Wang, Xiaoping Xu,\* Xiao Wang, Simin He, Jianping Zhang, Yuyun Sun, Shiping Yang and Shaoli Song\*

13387



### Design, synthesis and evaluation of L-quebrachitol derivatives against $\alpha$ -glucosidase

Maoying Zhang, Xinjie Liang, Pengcheng Cai, Qixun Feng, Yongsong Chen, Xiaoxi Yu, Kuo Zhang,\* Xuefei Bao\* and Guoliang Chen\*

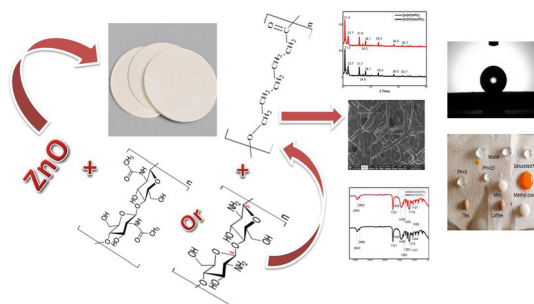


## PAPERS

13397

### ZnO nano grafted chitin–chitosan based hybrid composite coated super hydrophobic filter paper for water flow cleaning and oil–water separation applications

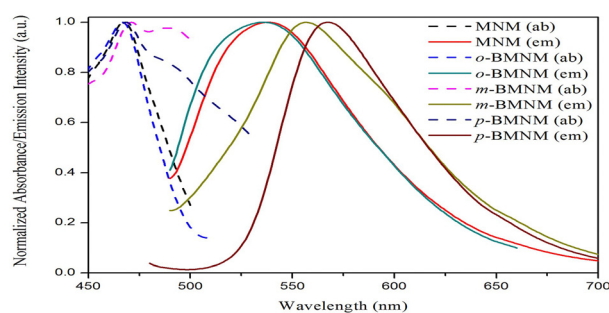
V. Selvaraj,\* T. Swarna Karthika, C. Mansiya and M. Alagar



13409

### Evaluating the isomeric effects of donors on the structures and photophysical properties of donor–acceptor– $\pi$ bridge–donor (D1–A– $\pi$ –D2) prototype fluorophores

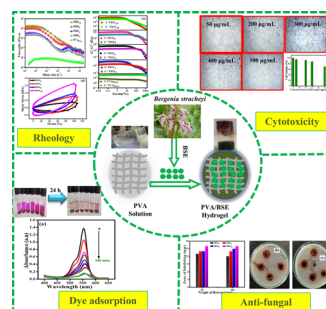
Dong-En Wu and Qing-Hui Guo\*



13422

### A composite polyvinyl alcohol–medicinal plant extract crosslinked hydrogel: a novel soft system with excellent rhodamine B adsorption and significant antifungal activity

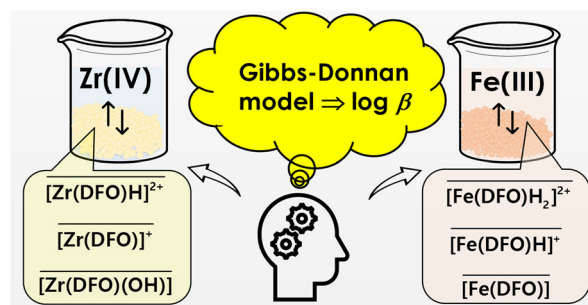
Umar Nabi Tak, Showkat Rashid, Firdaus Ahmad Ahangar, Pawandeep Kour, Arjumund Shaheen, Saima Sidiq, Gousia, Ayaz Ahmad Manhas, Nighat Nazir and Aijaz Ahmad Dar\*



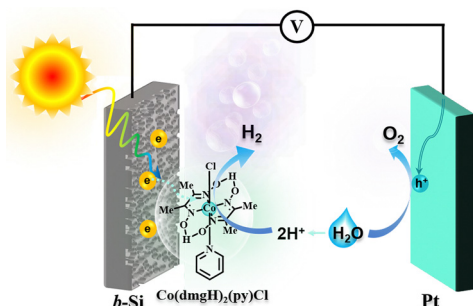
13436

### Kinetic and thermodynamic sorption studies of Fe(III) and Zr(IV) by DFO@Purolite, a desferrioxamine B based chelating resin

Giancarla Alberti,\* Camilla Zanoni, Vittorio Losi, Sara Rovertoni, Lisa Rita Magnaghi, Osian Fonquernie, Stéphane Brandès, Agnese Amati, Jean-Claude Chambron, Nicolas Maudoux, Raffaella Biesuz and Michel Meyer\*



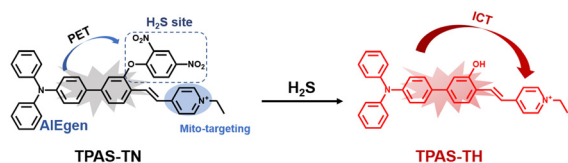
13450



### Nanoporous silicon photocathodes with [Co] molecular catalyst for enhanced solar-driven hydrogen generation

Luo-Han Xie, Fentahun Wondu Dagnaw, Ming-Ming Yao, Yi-Jing Chen, Jing Chen, Jing-Xin Jian\* and Qing-Xiao Tong\*

13456

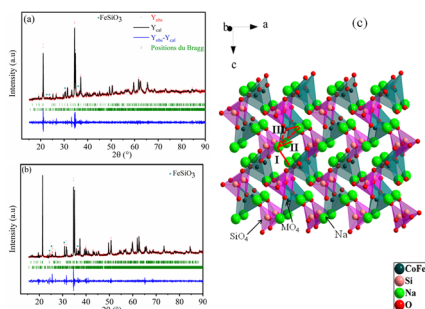


- AIE property
- High selectivity
- High-contrast imaging
- Large Stokes shift (213 nm)
- Low limit detection (69.5 nM)
- Excellent mitochondrial targeting ability

### A mitochondria-targeting “off-on” AIE probe with large Stokes shift for high-contrast H<sub>2</sub>S imaging in living cells

Yun Chen, Qiqi Xu, Weijun Zhao\* and Chengyun Wang\*

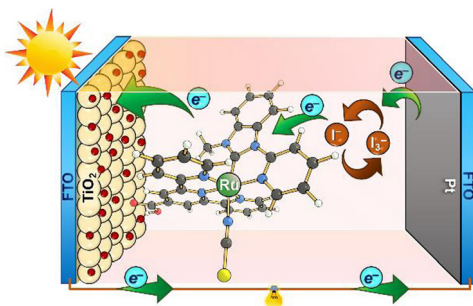
13462



### Doping Fe at the Co-tetrahedra site to improve the microstructure, optical, and Na-ion migrations in Na<sub>2</sub>Co<sub>1-x</sub>Fe<sub>x</sub>SiO<sub>4</sub>

Kawthar Trabelsi\*, Karim Karoui, Abdelfattah Mahmoud, Frédéric Boschini and Abdallah Ben Rhaiem

13476



### Heteroleptic ruthenium(II) complexes featuring N-heterocyclic carbene-based C<sup>N</sup> donor sets for solar energy conversion

Nimisha Jain, Angelina Mary, Tanu Singh, Srushti Gadiyaram, D. Amilan Jose and Abbas Raja Naziruddin\*

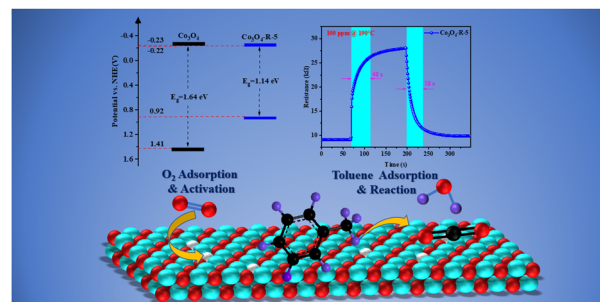


## PAPERS

13486

# Enhanced toluene sensing performances over commercial $\text{Co}_3\text{O}_4$ modulated by oxygen vacancy via $\text{NaBH}_4$ -assisted reduction approach

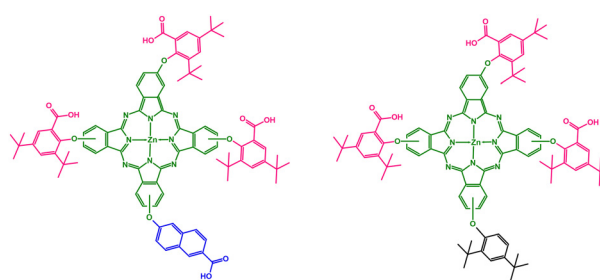
Liang Zhao, Congcong Xin, Zhimin Yang, Yaqing Zhang, Yunpeng Xing, Zefeng Wei, Teng Fei, Sen Liu\* and Tong Zhang\*



13497

# Effects of anchoring and spacer groups of asymmetric zinc phthalocyanines on the photovoltaic performance of dye-sensitized solar cells

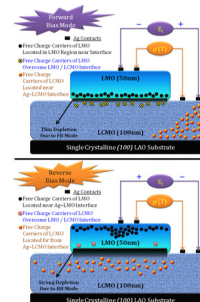
Gülşah Gümrükçü Köse, Gülnur Keser Karaoğlu, Yaren Erdağ Maden and Atif Koca\*



13508

# Interface based field effect configuration and charge conduction mechanisms for manganite thin film heterostructures

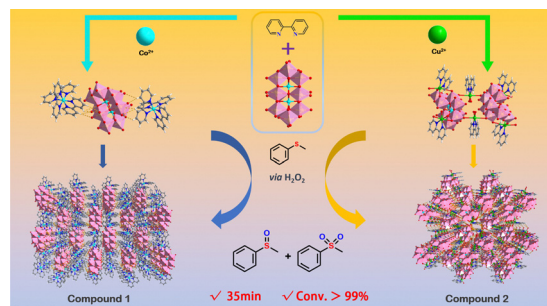
Bhargav Rajyaguru, Hardik Gohil, Himanshu Dadhich, Keval Gadani, V. G. Shrimali, R. J. Choudhary, D. M. Phase, N. A. Shah and P. S. Solanki\*



13528

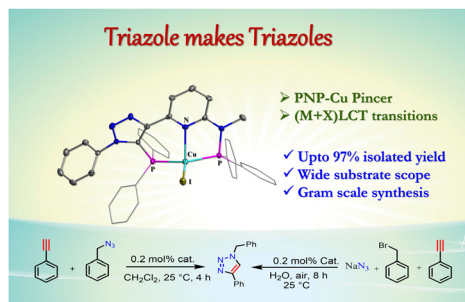
# Two novel supramolecular structures of Evans–Showell type polyoxometalate for heterogeneous and efficient catalytic conversion of different sulfides

Haiyan An,\* Yaohui Huang, Yanhong Chen, Qingshan Zhu and Yuting Wei



## PAPERS

13538



### 1,2,3-Triazolyl bisphosphine with pyridyl functionality: synthesis, copper(I) chemistry and application in click catalysis

Sonu Sheokand, Manali A. Mohite, Dipanjan Mondal, Shalini Rangarajan and Maravanji S. Balakrishna\*

13547

