

## IN THIS ISSUE

ISSN 1144–0546 CODEN NJCHES 48(1) 1–420 (2024)



## Cover

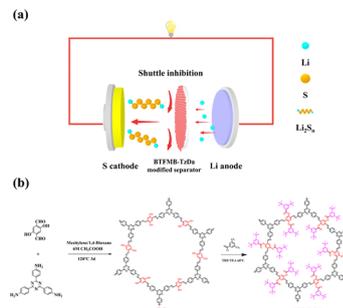
See Beena G. Singh, Claudio Santi *et al.*, pp. 36–44. Image reproduced by permission of Micol Santi from *New J. Chem.*, 2024, **48**, 36. The authors thank Dr Micol Santi who produced this original artwork.

## COMMUNICATIONS

16

### 3,5-Bis(trifluoromethyl)benzyl modified triazine-based covalent organic frameworks suppressing the shuttle effect of polysulfides in lithium-sulfur batteries

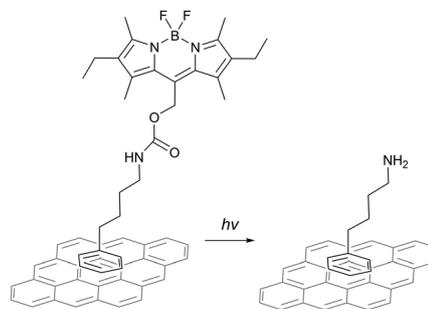
Shirui Pang, Yuxin Liu, Zhe Zhang, Yuxin Li, Chunguang Li, Zhan Shi\* and Shouhua Feng



21

### Non-covalent attachment of BODIPY-caged amines to graphene and their localized photocleavage

Erich See, Elsa Korhonen, Maija Nissinen and Mika Pettersson\*



# Advance your career in science

with professional recognition that showcases  
your **experience, expertise and dedication**

## Stand out from the crowd

Prove your commitment  
to attaining excellence in  
your field

## Gain the recognition you deserve

Achieve a professional  
qualification that inspires  
confidence and trust

## Unlock your career potential

Apply for our professional  
registers (RSci, RSciTech)  
or chartered status  
(CChem, CSci, CEnv)

## Apply now

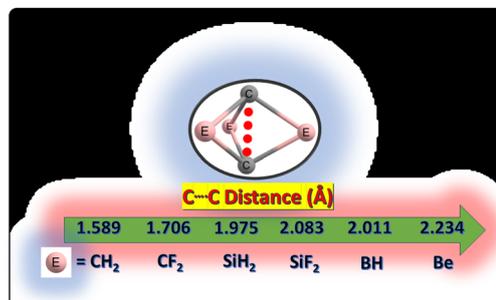
[rsc.li/professional-development](https://rsc.li/professional-development)



26

### Quest for ultralong C–C bonds in [1.1.1]propellane derivatives: a theoretical study

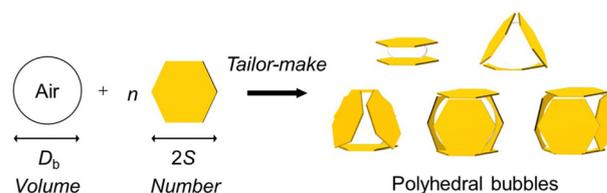
Nargish Sultana, Amlan J. Kalita and Ankur K. Guha\*



31

### Shape design of aqueous bubbles stabilized with millimeter-sized polymer plates

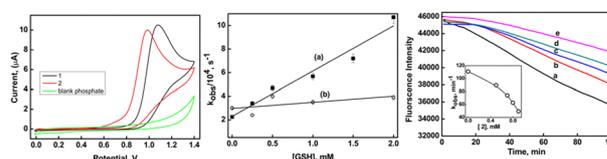
Yuri Sakurai, Rina Kakiuchi, Masaki Hayashi, Tomoyasu Hirai, Yoshinobu Nakamura and Syuji Fujii\*



36

### Reactivity of oxidants towards phenyl and benzyl substituted 5-selanylpentanoic acids: radiolytic and theoretical insights

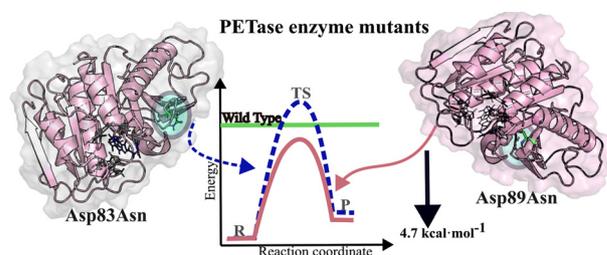
Beena G. Singh,\* Kavanal P. Prasanthkumar, Francesca Mangiavacchi, Francesca Marini and Claudio Santi\*



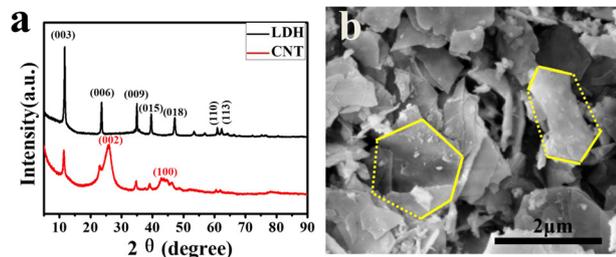
45

### Rate-enhancing PETase mutations determined through DFT/MM molecular dynamics simulations

Carola Jerves, Rui P. P. Neves, Saulo L. da Silva, Maria J. Ramos and Pedro A. Fernandes\*



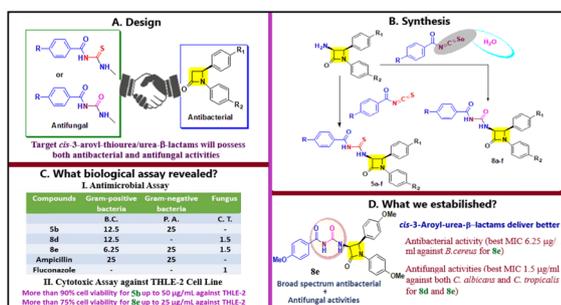
55



### High-rate carbon nanotube/magnetic-sheet composites *in situ* synthesized using a fluidized bed for high-frequency microwave absorption

Lele Xu, Chenghui Sun, Chen Liang, Jinsong Yang, Xinxin Yuan and Minghai Chen\*

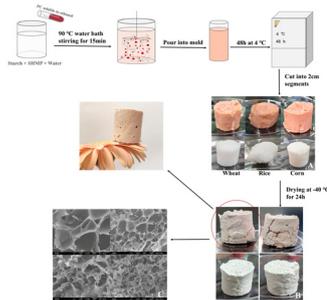
67



### Aroyl-isothiocyanates/isoselenocyanates as precursors to obtain novel *cis*-3-aryl-thiourea/urea- $\beta$ -lactams: design, synthesis, docking and biological evaluation

Pankaj Kumar, Jaswinder Kaur, Sumeeta Kumari, Sakshi Paliwal, Shiwani Berry, Anil Kumar Pinnaka\* and Aman Bhalla\*

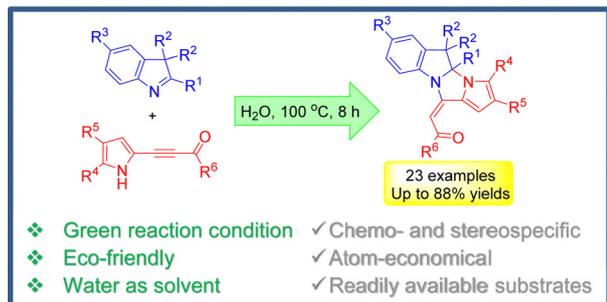
79



### Preparation and characterisation of wheat starch-based aerogels for procyanidin encapsulation to enhance stability

Tian-Xiao Yang, Hang Li, Yuan Zhu, Yu Gao, Hong-Ning Lv, Sheng-Hua Zha, Xiao-Li Sun\* and Qing-Sheng Zhao\*

89



### Eco-friendly, in-water, and catalyst-free assembly of acylethenylpyrroloimidazoindoles from 3H-indoles and acylpyrrolylacetylenes

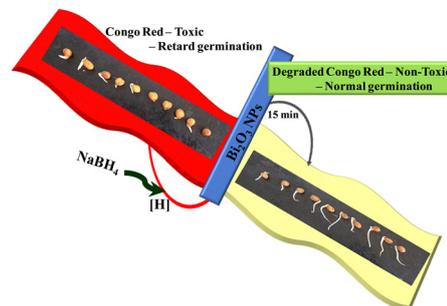
Ludmila A. Oparina, Kseniya V. Belyaeva, Nikita A. Kolyvanov, Igor A. Ushakov, Denis N. Tomilin, Lyubov N. Sobenina, Anton V. Kuzmin and Boris A. Trofimov\*



96

### Micelle assisted synthesis of bismuth oxide nanoparticles for improved chemocatalytic degradation of toxic Congo red into non-toxic products

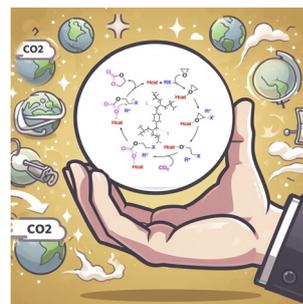
Aleena Pious, Shreya Muthukumar, Dharshini Karnan Singaravelu, Periyappan Nantheeswaran, Mariappan Mariappan, Arvind Sivasubramanian, Fuad Ameen, Marek Gancarz and Anbazhagan Veerappan\*



105

### Guanidinium iodide salts as single component catalysts for CO<sub>2</sub> to epoxide fixation

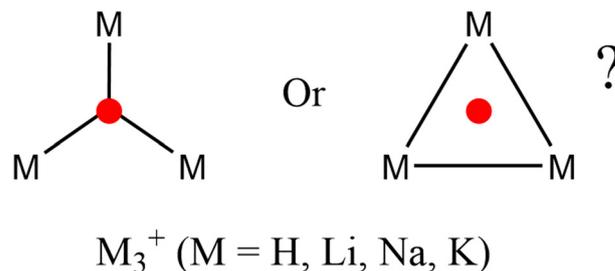
Ángela Mesías-Salazar, René S. Rojas,\* Fernando Carrillo-Hermosilla,\* Javier Martínez, Antonio Antiñolo, Oleksandra S. Trofymchuk, Fabiane M. Nachtigall, Leonardo S. Santos and Constantin G. Daniliuc



112

### Revealing charge-shift bonds in H<sub>3</sub><sup>+</sup> and their metallic analogs M<sub>3</sub><sup>+</sup> (M = Li, Na, K) through electron density topology

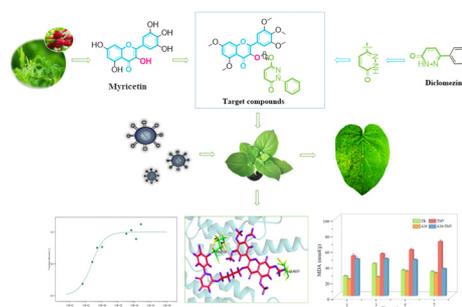
Ricardo Pino-Rios\*



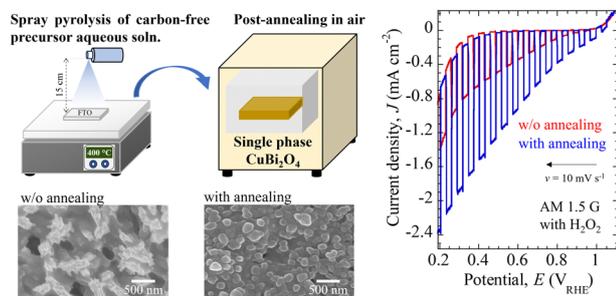
117

### Design, synthesis, and antiviral activities of myricetin derivatives containing pyridazinone

Li Xing, Youshan An, Yishan Qin, Hui Xin, Tianyu Deng, Kaini Meng, Da Liu\* and Wei Xue\*



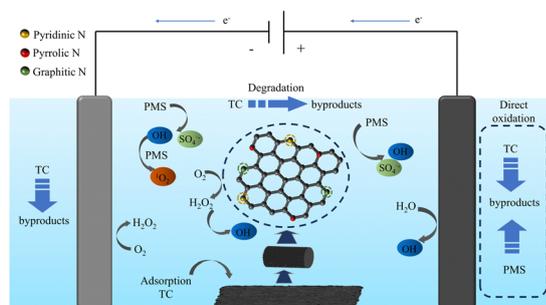
131



### Photoelectrochemical properties of p-type $\text{CuBi}_2\text{O}_4$ prepared by spray pyrolysis of carbon-free precursor aqueous solution combined with post-annealing treatment

Kaisei Wakishima, Tomohiro Higashi,\* Akira Nagaoka and Kenji Yoshino\*

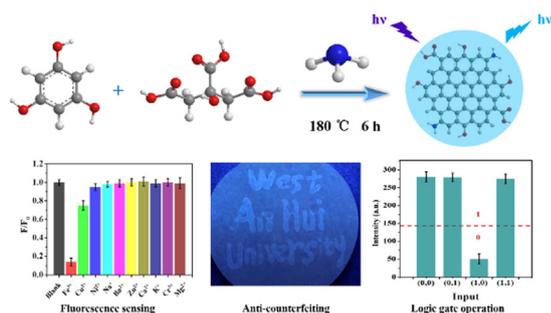
144



### Three-dimensional N-doped carbon electrodes activate peroxymonosulfate for tetracycline degradation

Jieyu Zhao and Yonggang Zhang\*

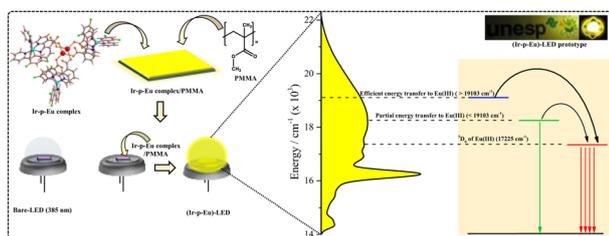
155



### Nitrogen-doped carbon quantum dots for fluorescence sensing, anti-counterfeiting and logic gate operations

Li Xu, Yi Qian, Lei Bao, Wei Wang, Nengmei Deng, Li Zhang, Guanglin Wang, Xucheng Fu\* and Wei Fu\*

162



### Heterobimetallic iridium<sup>III</sup>-europium<sup>III</sup> complex: the role of donor energy on sensitising the Eu<sup>III</sup> ion

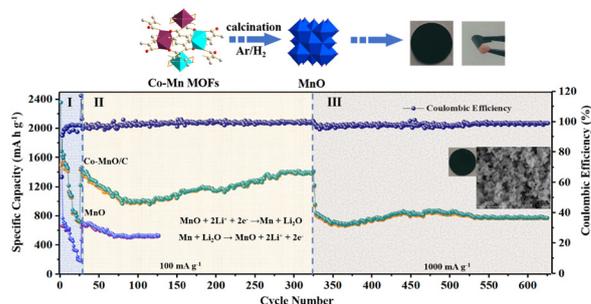
Felipe da Silva Manrique Canisares, Renan Caike Silva, Marian Rosaly Davolos, Ana Maria Pires and Sergio Antonio Marques Lima\*



171

### Co–MnO/C nanoparticles derived from MOFs with improved conductivity and reduced volume change for lithium-ion batteries

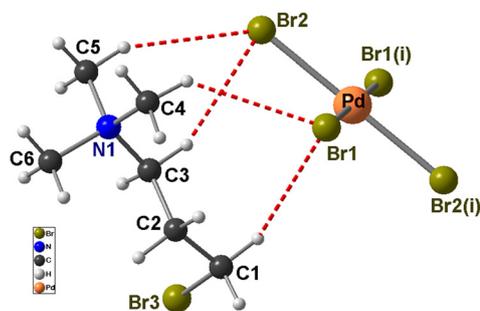
Yiting Wang, Jie Zheng, Changjian He, Xiaochun Li, Yichuan Rui\* and Bohejin Tang\*



182

### Bromination of organic spacer impacts on the structural arrangement, phase transitions, and optical and electrical properties of a hybrid halide compound: $[(\text{CH}_3)_3\text{N}(\text{CH}_2)_3\text{Br}]_2\text{PdBr}_4$

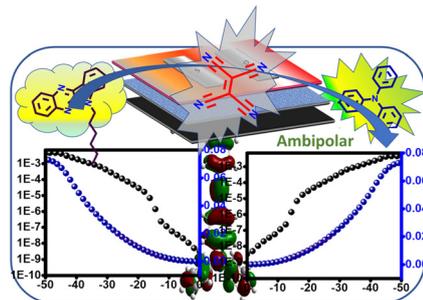
Mohamed Saadi, Imen Dakhlaoui, Fadhel Hajlaoui, Nidhal Drissi, Mustapha Zighrioui, Fethi Jomni, Nathalie Audebrand, Marie Cordier and Karoui Karim\*



193

### $\pi$ -Extended indoloquinoline functionalized triaryl amines with ethynyl and tetracyanobutadiene bridges for p-channel and ambipolar OFETs

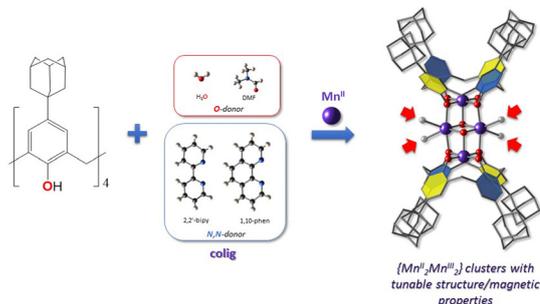
Panneerselvam Devibala, Balu Balambiga, Predhanekar M. Imran and Samuthira Nagarajan\*



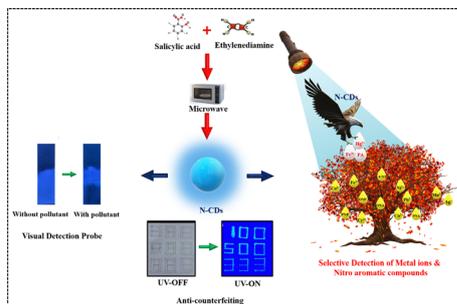
203

### Influence of neutral auxiliary ligands on crystal structure and magnetic behaviour of new $[\text{Mn}_2^{\text{II}}\text{Mn}_2^{\text{III}}]$ clusters supported by *p*-adamantylcalix[4]arene

Alexander S. Ovsyannikov,\* Iuliia V. Strelnikova, Aida I. Samigullina, Daut R. Islamov, Mikhail A. Cherosov, Ruslan G. Batulin, Airat G. Kiiamov, Aidar T. Gubaidullin, Pavel V. Dorovatovskii, Svetlana E. Solovieva and Igor S. Antipin



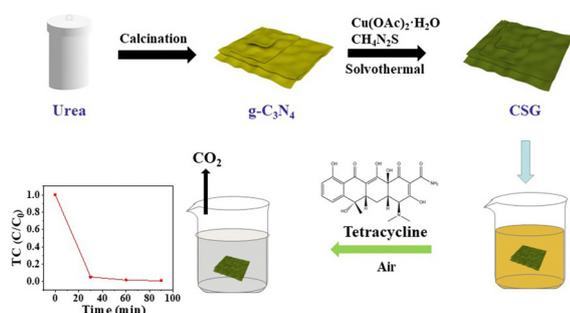
216



### Simple devising of N-doped carbon dots (N-CDs) as a low-cost probe for selective environmental toxin detection and security applications

Kumaresan Annamalai, Arun Annamalai, Ramya Ravichandran, Anandhavalli Jeevarathinam, Padmanaban Annamalai, Hector Valdes and Sundaravadivel Elumalai\*

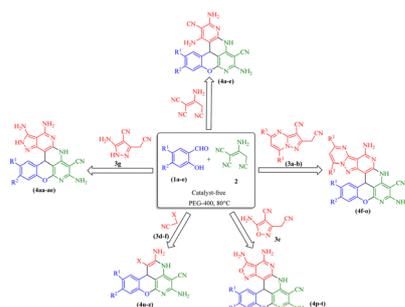
228



### Enhanced oxidative degradation of tetracycline by visible light-promoted g-C<sub>3</sub>N<sub>4</sub> modified Cu<sub>3</sub>(OH)<sub>4</sub>SO<sub>4</sub>/Cu<sub>7</sub>S<sub>4</sub> composites under an air atmosphere

Yan Wang, Haoran Li, Daqing Chen, Danhua Ge\* and Xiaojun Chen\*

237



### Synthesis of novel chromeno[1,6]naphthyridine derivatives in PEG-400 via catalyst-free, one-pot, and multicomponent reactions

Fatemeh Asilpour, Dariush Saberi\* and Alireza Hasaninejad\*

244

### oxa-Michael addition reaction as an organosilicon synthetic methodology



### Synthesis of functionalized disiloxanes with nonconventional fluorescence via oxa-Michael addition reaction

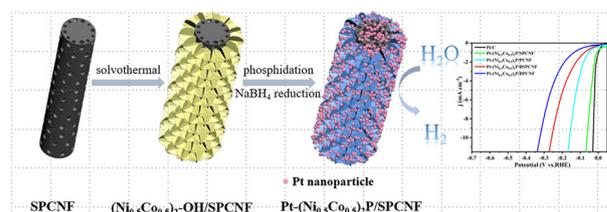
Rui Wang, Shengyu Feng, Hailong Liu, Gang Yi and Dengxu Wang\*



252

## Pt nanoparticles on $(\text{Ni}_{0.5}\text{Co}_{0.5})_2\text{P/S}$ -doped carbon nanofibers as electrocatalysts for an efficient hydrogen evolution reaction

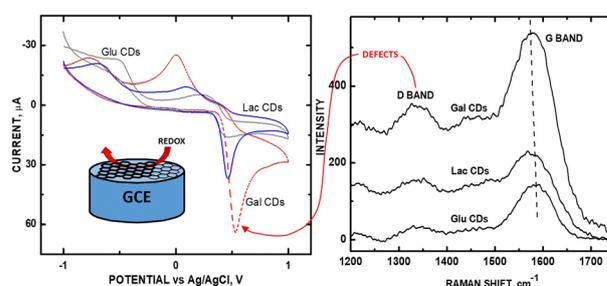
Anqi Ju, Shuxian Zhang, Dong Li, Kunming Li, Xuepeng Ni, Yi Li and Yang Jiang\*



260

## Role of defects and exposed graphene in carbon nanomaterial-based electrocatalysts

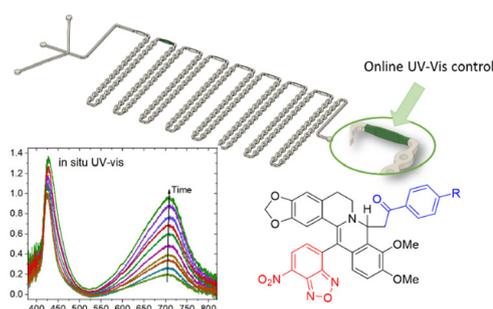
Charles C. Chusuei\* and Ram Chandra Nepal



268

## Optimal synthesis conditions for NBF-modified 8,13-dihydroberberine derivatives

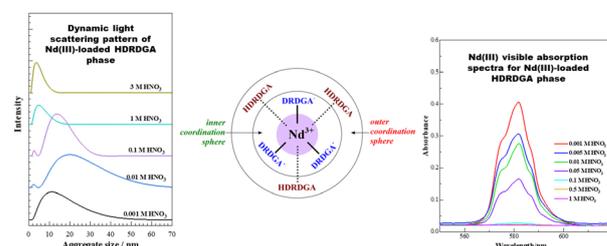
A. D. Zagrebaev,\* V. V. Butova, A. A. Guda,\* S. V. Chapek, O. N. Burov, S. V. Kurbatov, E. Yu. Vinyukova, M. E. Neganova, Yu. R. Aleksandrova, N. S. Nikolaeva, O. P. Demidov and A. V. Soldatov



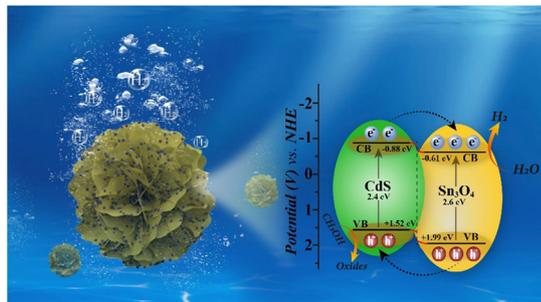
281

## Diglycolamic acid for the mutual separation of lanthanides and actinides from dilute nitric acid solution: solvent extraction, dynamic light scattering, and spectroscopic investigations

Anjan Dhawa, Jammu Ravi, R. Puspallata, N. R. Jawahar and K. A. Venkatesan\*



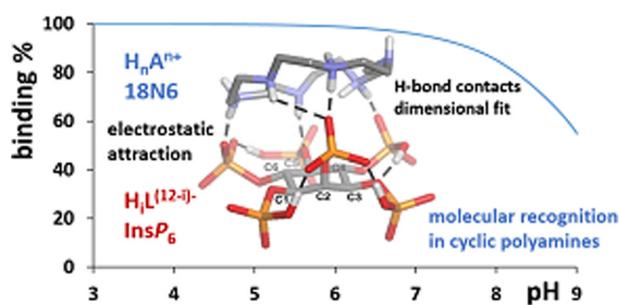
300



### CdS QDs decorated on 3D flower-like $\text{Sn}_3\text{O}_4$ : a hierarchical photocatalyst with boosted charge separation for hydrogen production

Pengfei Tan, Lu Yang,\* Hele Liu, Yi Zhang, Binhua Zhou and Jun Pan\*

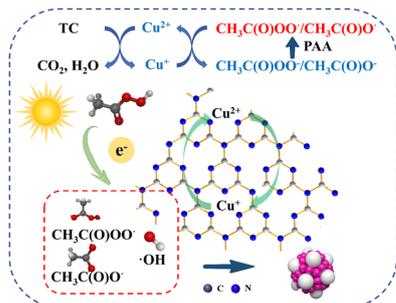
309



### Interaction of phytate with cyclic polyamines

Julia Torres,\* Nicolás Veiga, Matteo Savastano, Carlos Kremer and Antonio Bianchi

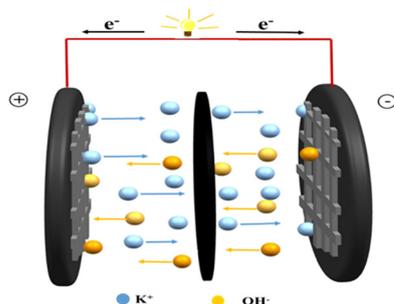
322



### Photocatalysis enhancement and $\text{Cl}^-$ boosting mechanisms of peracetic acid-based advanced oxidation processes for antibiotic removal by using HOF-Cu-g- $\text{C}_3\text{N}_4$

Xijiang Chang, Haoyu Zhang, Xiaoling Liu, Wenxin Li, Shifei Kang, Di Sun\* and Zilan Xiong\*

332



### Sorghum-derived porous carbon for outstanding green supercapacitors

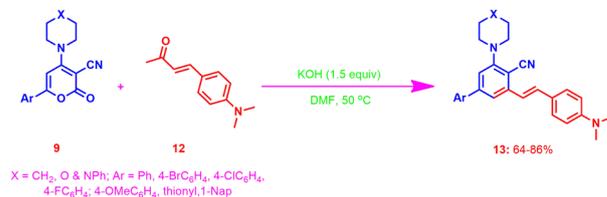
Fuming Zhang, Hongchao Lang, Jinggao Wu and Jing Huang\*



342

### Transition-metal-free synthesis and photophysical studies of highly functionalized (*E*)-stilbenes

Ritu Mangain, Gana R. J., Abhrajeeet Malik and Fateh V. Singh\*



351

### A self-assembled nanoprobe based on Schiff base for the rapid and selective detection of serum albumin with cell imaging applications

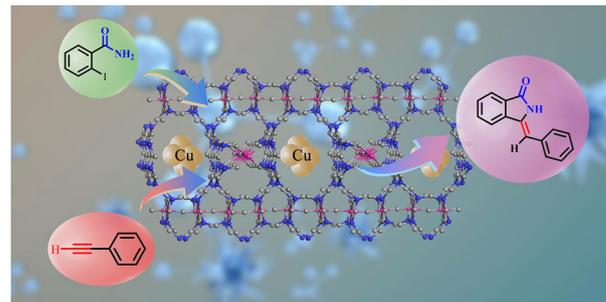
Dolan Moni, Mihir Sasmal, Abu Saleh Musha Islam, Ananya Dutta, Debjani Maiti, Rousunara Khatun, Atul Katarkar and Mahammad Ali\*



359

### High stereoselectivity synthesis of Z-3-methyleneisindolin-1-ones on a Cu/ETS-10 catalyst via domino coupling–cyclization without the use of protective groups and ligands

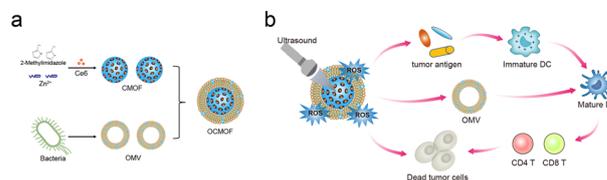
Huiling Hu, Changjun Liu,\* Chaojie Zhu, Chenghong Liu and Tiandi Tang\*



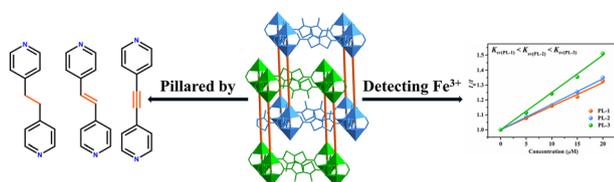
367

### Bacterial outer membrane vesicle-modified metal–organic frameworks for sonodynamic therapy–immunotherapy of breast cancer

Ziwen Zhang, Jiawei Tu, Xiufeng Kuang, Mengya Shi, Yumeng Zhang, He Li, Jiesheng Huang, Li Wang and Huafang Yuan\*



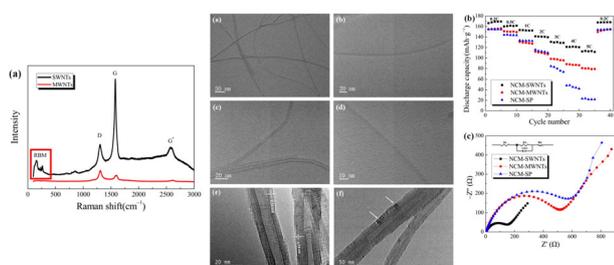
377



### Tuning the fluorescence sensing for Fe<sup>3+</sup> ions by using different dipyrpyridyl linkers in pillar-layered metal–organic frameworks

Yan-E Liu, Ye Zhou, Xiao-Yu Li, Jun Yao, Qiu-Xia Li, Quan-Qing Xu, Rong-Rong Zhu\* and Ai-Xin Zhu\*

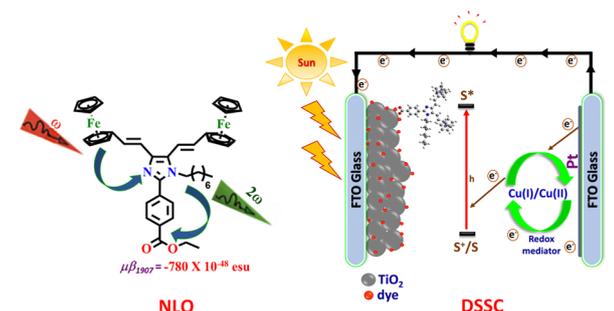
384



### Conductive single-walled carbon nanotubes synthesized using a Fe–Mo/MgO catalyst for LiNi<sub>0.5</sub>Co<sub>0.2</sub>Mn<sub>0.3</sub>O<sub>2</sub> lithium-ion batteries

Ziting Guo, Qingmei Xiao, Jinchao Huang and Shengwen Zhong\*

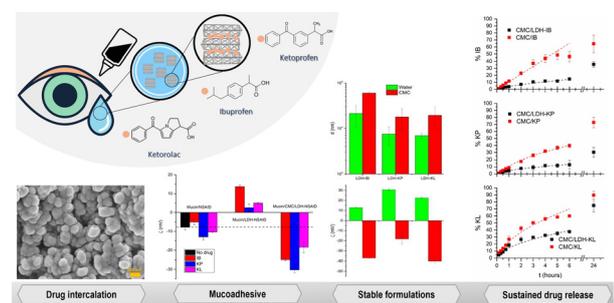
394



### Nonlinear optical-active ferrocene conjugated Y-shaped imidazole donor–π–acceptor [(D–π)<sub>2</sub>–IM–π–A] compounds for dye-sensitized solar cells using non-corrosive copper complexes as a redox mediator

Selvam Prabu, Fagnani Francesco,\* Alessia Colombo, Claudia Dragonetti, Paolo Biagini, Fabio Melchiorre and Nallasamy Palanisami\*

406



### Carboxymethylcellulose/layered double hydroxide dispersions for topical ocular delivery of non-steroidal anti-inflammatory drugs

Giuliana Mosconi, Maria Lina Formica, Santiago D. Palma and Ricardo Rojas\*



## CORRECTIONS

416

**Correction: Developing a biocatalyst showcasing the synergistic effect of rice husk biochar and bacterial cells for the removal of heavy metals**

Soumya Koippully Manikandan and Vaishakh Nair\*

417

**Correction: Kinetics and mechanism of halide exchange in reactions of  $\text{CpRu}(\text{PPh}_3)_2\text{Cl}$  with alkyl halides: evidence for radical pairs**

Katherine Carney, Lauren Polito, Kamilya Reid, Surbhi Srinivas, Gabrielle Blake, Nithin Chintala, Sijia S. Dong\* and Rein U. Kirss\*

