

# Materials Advances

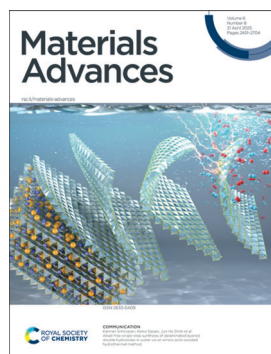
An open access journal publishing across the breadth of materials science

[rsc.li/materials-advances](https://rsc.li/materials-advances)

The Royal Society of Chemistry is the world's leading chemistry community. Through our high impact journals and publications we connect the world with the chemical sciences and invest the profits back into the chemistry community.

## IN THIS ISSUE

ISSN 2633-5409 CODEN MAADC9 6(8) 2451-2704 (2025)



### Cover

See Kannan Srinivasan, Keiko Sasaki, Jun Ho Shim *et al.*, pp. 2503–2506. Image reproduced by permission of Jun Ho Shim from *Mater. Adv.*, 2025, 6, 2503.



### Inside cover

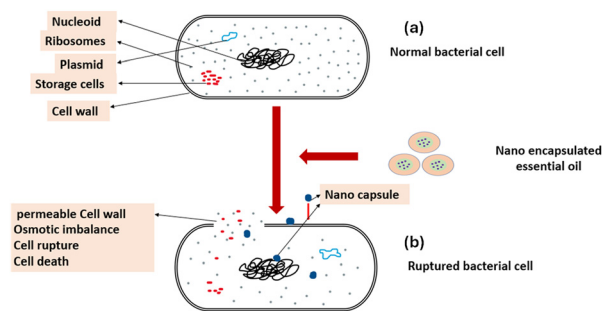
See Chia-Ching Wu *et al.*, pp. 2507–2520. Image reproduced by permission of Chia-Ching Wu from *Mater. Adv.*, 2025, 6, 2507.

## REVIEWS

2460

### Recent advances in polymer nanoencapsulation of essential oils for multi-functional textile finishing

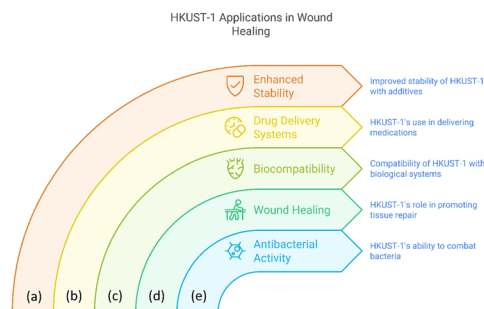
Sumera Naz, Sana Javaid,\* Shafi Ur Rehman and Humair Razzaq



2477

### Harnessing the power of copper-based metal–organic framework (HKUST-1) nanostructures for advanced wound healing

Dorsa Davoodian, Shirin Khaleghnia Rashkhar and Ali Es-haghi\*



# RSC Advances

At the heart of open access for  
the global chemistry community

## Editor-in-chief

Russell J Cox

Leibniz Universität Hannover, Germany

## We stand for:



**Breadth** We publish work in all areas of chemistry and reach a global readership



**Affordability** Low APCs, discounts and waivers make publishing open access achievable and sustainable



**Quality** Research to advance the chemical sciences undergoes rigorous peer review for a trusted, society-run journal

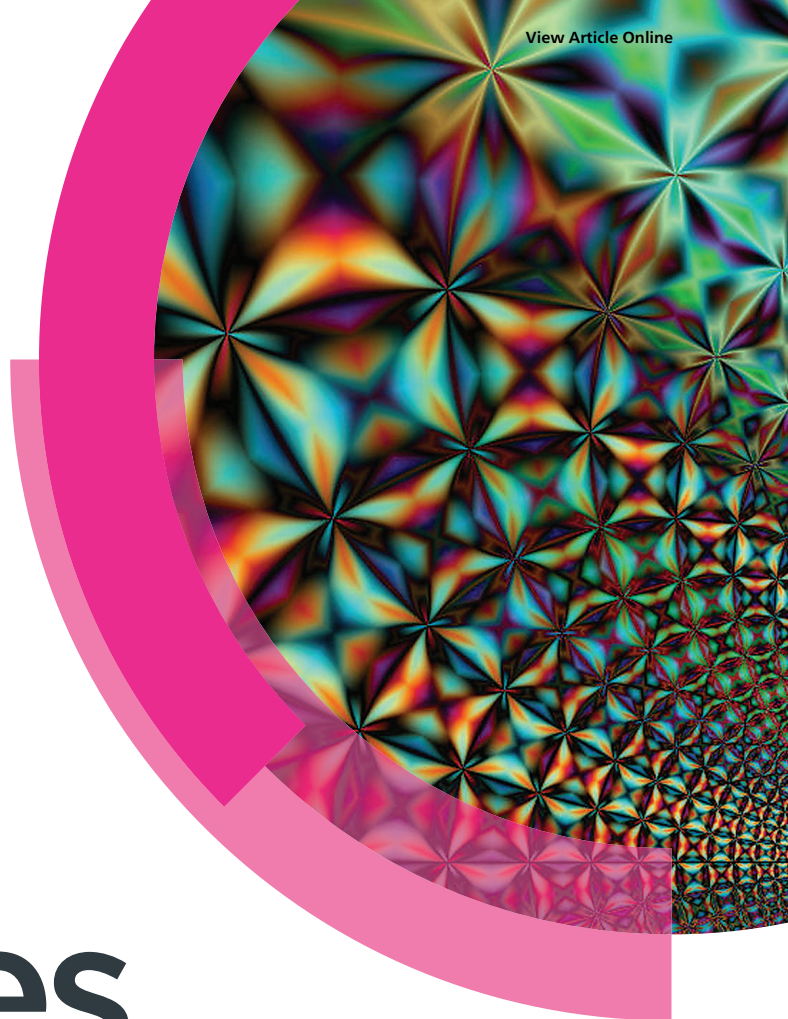


**Community** Led by active researchers, we publish quality work from scientists at every career stage, and all countries

Submit your work now

[rsc.li/rsc-advances](https://rsc.li/rsc-advances)

@RSC\_Adv

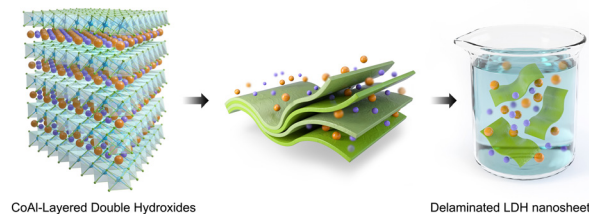


## COMMUNICATION

2503

Alkali-free single-step synthesis of delaminated layered double hydroxides in water *via* an amino acid-assisted hydrothermal method

Paulmanickam Koilraj, Rajathsing Kalusulingam, Kannan Srinivasan,\* Keiko Sasaki\* and Jun Ho Shim\*

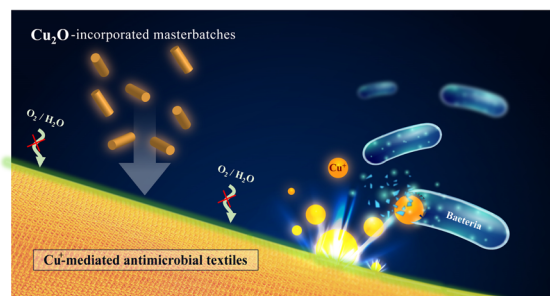


## PAPERS

2507

## Industrially compatible manufacturing process of wash-durable antimicrobial textiles using cuprous oxide–polymer composites

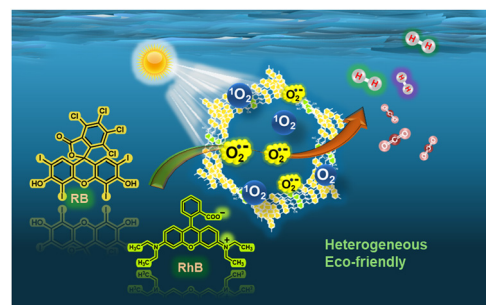
Hung-Tung Chen, Ming-Cai Huang, Yi-Ying Chiang, Yong Chang and Chia-Ching Wu\*



2521

A carbazole-based fully conjugated sp<sup>2</sup>c D–A covalent organic polymer for visible light mediated photocatalytic degradation of rhodamine B and Rose Bengal

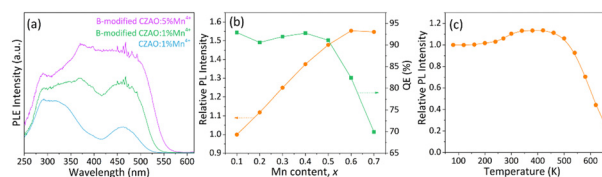
Kamal Verma and K. R. Justin Thomas\*



2530

High-concentration Mn<sup>4+</sup> doping in boron-modified Ca<sub>14</sub>Zn<sub>6</sub>Al<sub>10</sub>O<sub>35</sub> – based phosphors: decoding superior luminescence performances

Jiquan Huang,\* Ting Lv, Yuqing Lin, Zhonghua Deng, Zhuguang Liu and Wang Guo\*

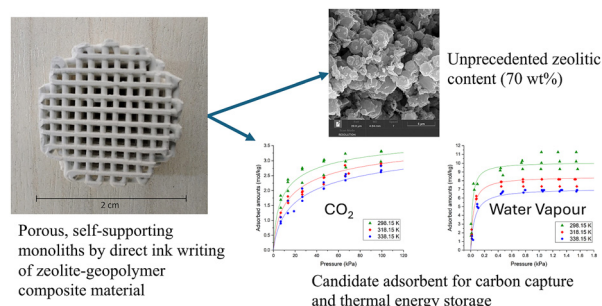




2579

### Equilibrium adsorption behaviour of a 3D-printed zeolite–geopolymer composite with high faujasitic content

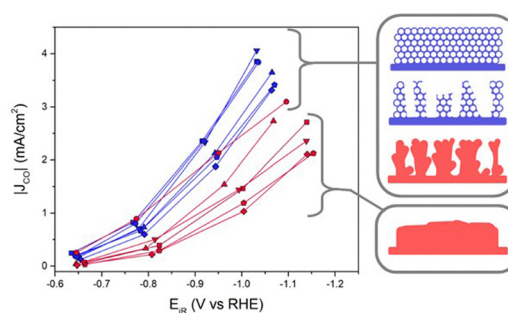
Carlo Gravino, Nicola Gargiulo,\* Antonio Peluso, Paolo Aprea, Marco D'Agostini, Giorgia Franchin, Paolo Colombo and Domenico Caputo



2588

### Decoupling multiscale morphological effects in templated porous Ag electrodes for electrochemical CO<sub>2</sub> reduction

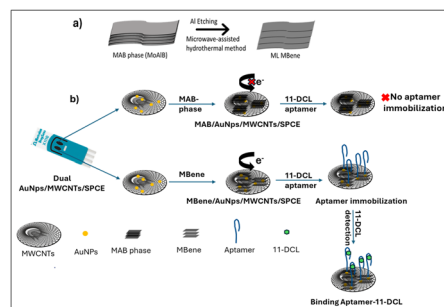
Maaik E. T. Vink-van Ittersum, Karen van den Akker, Peter Ngene and Petra E. de Jongh\*



2600

### Electrochemical aptasensing platform based on nanolaminated MAB/MBene phases for the efficient detection of 11-deoxycortisol

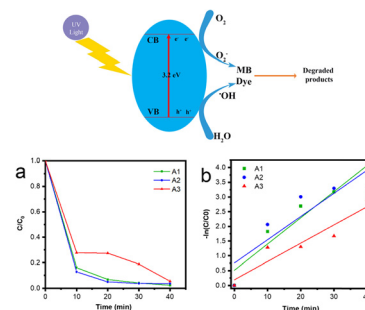
Amina Rhouati, Rawan Ramadan Mohamed, Madhurya Chandel, Karamullah Eisawi, Michael Naguib, Agnieszka Jastrzębska and Mohammed Zourab\*



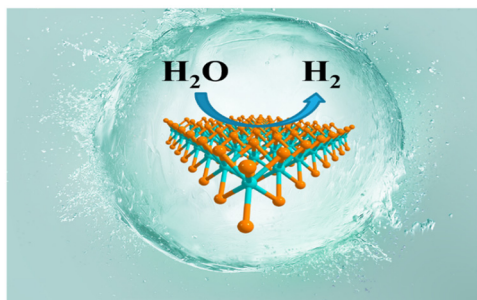
2611

### Enhanced photocatalytic efficiency of eco-friendly synthesized ZnO for rapid full degradation of methylene blue dye

Mohammad Tashakkori Masuleh, Masood Hasheminasari and Rouholah Ashiri\*



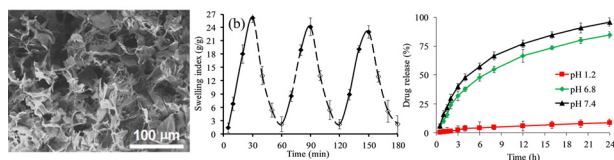
2622



## 2D monolayer molybdenum(IV) telluride TMD: an efficient electrocatalyst for the hydrogen evolution reaction

Vikash Kumar and Srimanta Pakhira\*

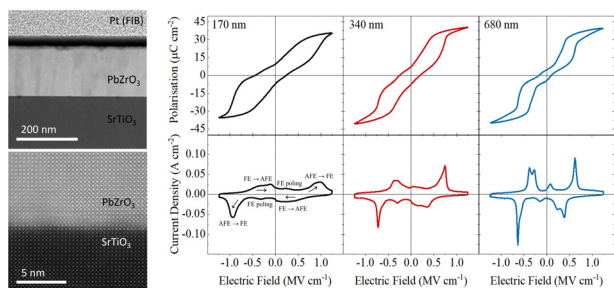
2636



## A chia (*Salvia hispanica* L.) seed mucilage-based glucoxytan-grafted-acrylic acid hydrogel: a smart material for pH-responsive drug delivery systems

Maria Khatoon, Arshad Ali, Muhammad Ajaz Hussain,\*  
 Muhammad Tahir Haseeb, Gulzar Muhammad,  
 Muhammad Sher, Syed Zajif Hussain, Irshad Hussain and  
 Munawar Iqbal

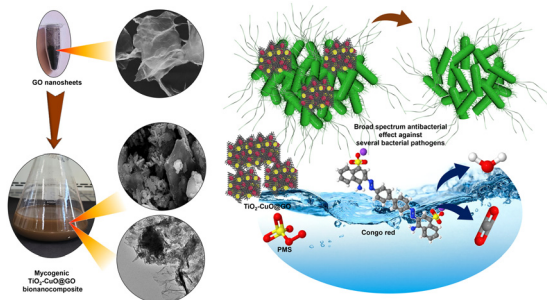
2648



## Epitaxial PbZrO<sub>3</sub> films from chemical solutions

Alfredo Blázquez Martínez,\* Andreas Ost, Goran Dražić,  
 Maja Koblar, Andreja Benčan, Torsten Granzow,  
 Yves Fleming, Alexander Ost, Emmanuel Defay,  
 Mael Guennou and Sebastjan Glinšek\*

2654



## Synthesis of TiO<sub>2</sub>-CuO@graphene oxide hybrid bionanocomposite with enhanced antibacterial and organic dye degradation activities

Basma A. Omran,\* M. O. Abdel-Salam,  
 Hebatullah H. Farghal, Mayyada M. H. El-Sayed\* and  
 Kwang-Hyun Baek\*

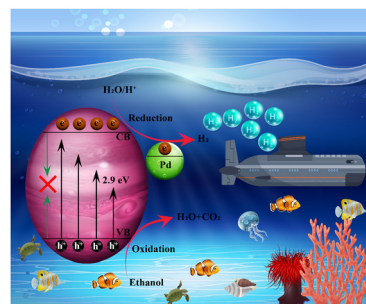


## PAPERS

2677

### Rectification of charges on r-TiO<sub>2</sub> via Pd-cocatalysts and Schottky junctions to produce H<sub>2</sub> for green energy systems

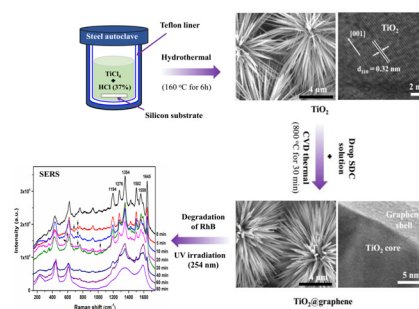
Ejaz Hussain,\* Muhammad Jalil, Mehreen Qurban, Muhammad Zeeshan Abid, Muhammad Asif Khan, Minhas Nazir and Khezina Rafiq\*



2691

### A new and facile preparation of 3D urchin-like TiO<sub>2</sub>@graphene core@shell SERS substrates for photocatalytic degradation of RhB

Nguyen Thi Huyen, Tran Ai Suong Suong, Cao Thi Thanh, Pham Van Trinh, Nguyen Van Tu, Bui Hung Thang, Tran Van Hau, Pham Thanh Binh, Vu Duc Chinh, Pham Van Hai, Vu Xuan Hoa, Tran Van Tan, Phan Ngoc Minh, Hiroya Abe and Nguyen Van Chuc\*



## CORRECTION

2701

### Correction: High-performance BiVO<sub>4</sub> photoanodes: elucidating the combined effects of Mo-doping and modification with cobalt polyoxometalate

Fan Feng, Dariusz Mitoraj, Ruihao Gong, Dandan Gao, Mohamed M. Elnagar, Rongji Liu, Radim Beranek\* and Carsten Streb\*

