

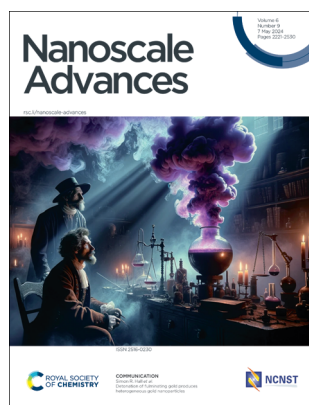
# Nanoscale Advances

An open access journal publishing across the breadth of nanoscience and nanotechnology  
[rsc.li/nanoscale-advances](https://rsc.li/nanoscale-advances)

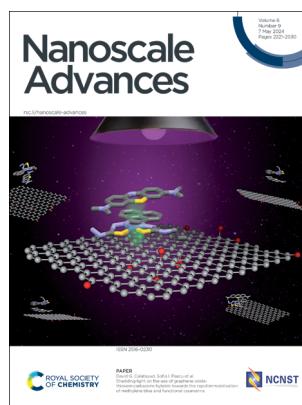
The Royal Society of Chemistry is the world's leading chemistry community. Through our high impact journals and publications we connect the world with the chemical sciences and invest the profits back into the chemistry community.

## IN THIS ISSUE

ISSN 2516-0230 CODEN NAADAI 6(9) 2221–2530 (2024)



**Cover**  
See Simon R. Hall *et al.*, pp. 2231–2233. Image reproduced by permission of Jan Maurycyszko from *Nanoscale Adv.*, 2024, 6, 2231.



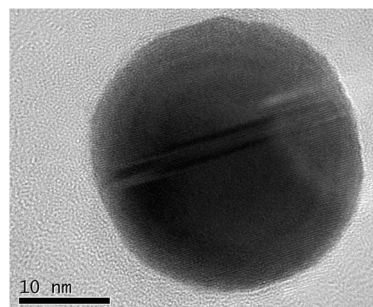
**Inside cover**  
See David G. Calatayud, Sofia I. Pascu *et al.*, pp. 2287–2305. Image reproduced by permission of David G. Calatayud and Ana Castellanos-Aliaga from *Nanoscale Adv.*, 2024, 6, 2287. Ana Castellanos-Aliaga from Instituto de Ceramica y Vidrio - CSIC is acknowledged as coauthor of the cover image.

## COMMUNICATION

2231

### Detonation of fulminating gold produces heterogeneous gold nanoparticles

Jan Maurycyszko, Stephen J. Eichhorn, Avinash J. Patil and Simon R. Hall\*

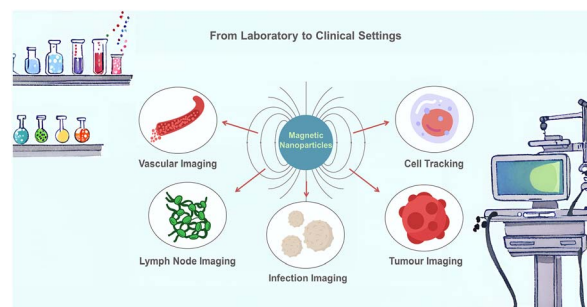


## REVIEWS

2234

### Advancing MRI with magnetic nanoparticles: a comprehensive review of translational research and clinical trials

Radu Lapusan, Raluca Borlan and Monica Focsan\*



# RSC Sustainability

GOLD  
OPEN  
ACCESS

Dedicated to sustainable  
chemistry and new solutions

For an open, green and inclusive future

[rsc.li/RSCSus](https://rsc.li/RSCSus)

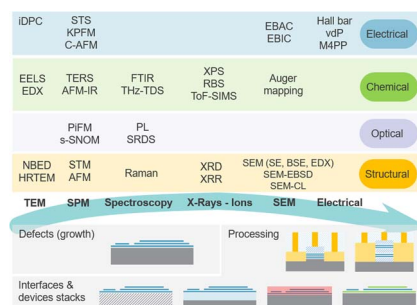
Fundamental questions  
Elemental answers

## REVIEWS

2260

## Metrology for 2D materials: a perspective review from the international roadmap for devices and systems

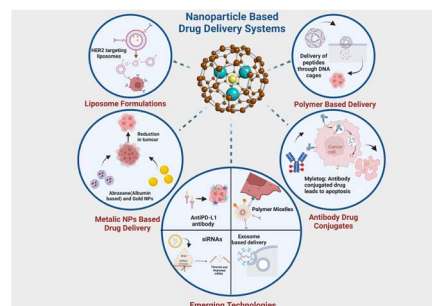
Umberto Celano,\* Daniel Schmidt, Carlos Beitia, George Orji, Albert V. Davydov and Yaw Obeng



2270

## Cutting-edge approaches for targeted drug delivery in breast cancer: beyond conventional therapies

Ramesh Chaudhari, Vishva Patel and Ashutosh Kumar\*

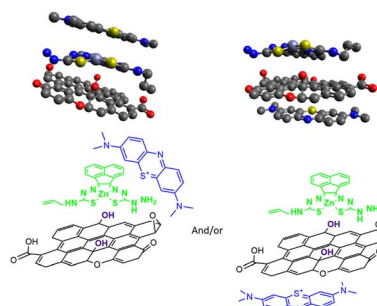


## PAPERS

2287

## Shedding light on the use of graphene oxide-thiosemicarbazone hybrids towards the rapid immobilisation of methylene blue and functional coumarins

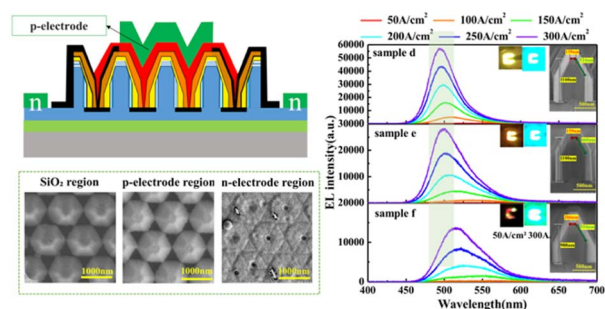
Danielle Bradley, Sophia Sarpaki, Vincenzo Mirabello, Simone Giuseppe Giuffrida, Gabriele I. Kociok-Köhn, David G. Calatayud\* and Sofia I. Pascu\*



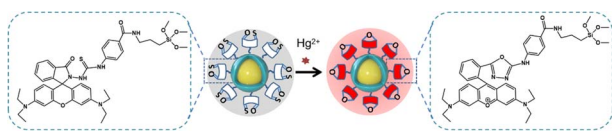
2306

## Investigation of emission plane control in GaInN/GaN multiple-quantum shells for efficient nanowire-based LEDs

Soma Inaba, Weifang Lu,\* Ayaka Shima, Shiori Ii, Mizuki Takahashi, Yuki Yamanaka, Yuta Hattori, Kosei Kubota, Kai Huang, Motoaki Iwaya, Tetsuya Takeuchi and Satoshi Kamiyama



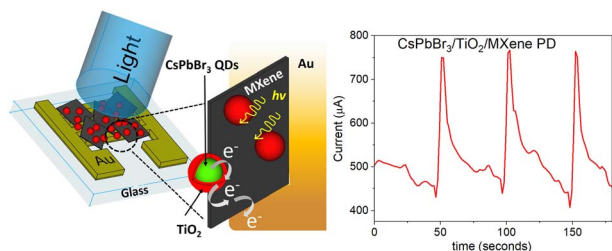
2319



### “Turn-on” and pinhole-free ultrathin core–shell Au@SiO<sub>2</sub> nanoparticle-based metal-enhanced fluorescent (MEF) chemodosimeter for Hg<sup>2+</sup>

Ying Cui, Shanji Fan, Yunran Zhai, Yingjie Liu, Junhua Li, Jiawen Hu\* and Lijia Wang\*

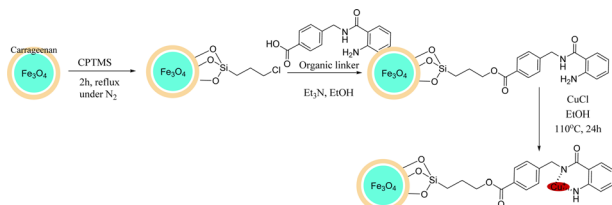
2328



### Stability and photocurrent enhancement of photodetectors by using core/shell structured CsPbBr<sub>3</sub>/TiO<sub>2</sub> quantum dots and 2D materials

Chathurika Maduwanthi, Chao-An Jong, Waleed S. Mohammed and Shu-Han Hsu\*

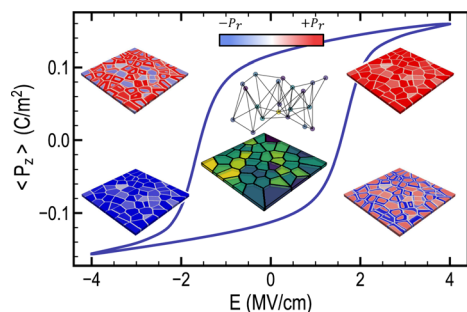
2337



### Copper supported modified magnetic carrageenan as a bio-based catalyst for the synthesis of novel scaffolds bearing the 1,2,3-triazole unit through the click reaction

Nima Khaleghi, Maryam Esmkhani, Milad Noori, Navid Dastyafteh, Minoo Khalili Ghomi, Mohammad Mahdavi, Mohammad Hosein Sayahi\* and Shahrzad Javanshir\*

2350



### Ultrafast and accurate prediction of polycrystalline hafnium oxide phase-field ferroelectric hysteresis using graph neural networks

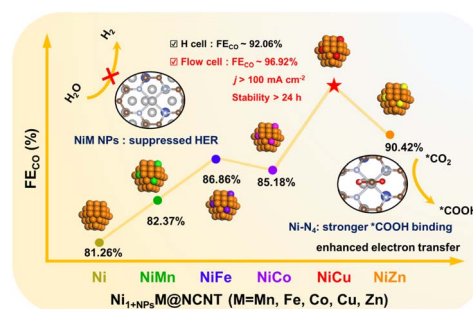
Alhada-Lahbabi Kévin,\* Deleruyelle Damien and Gautier Brice



2363

## Revealing the synergistic effect of Ni single atoms and adjacent 3d metal doped Ni nanoparticles in electrocatalytic CO<sub>2</sub> reduction

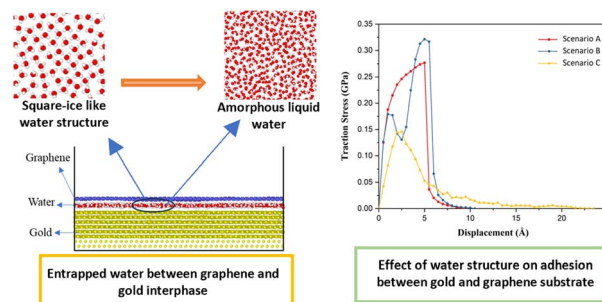
Yingjie Liu, Zhaohui Wu, Sha Bai, Tianyang Shen, Qian Li, Guihao Liu, Xiaoliang Sun, Yihang Hu, Ziheng Song, Jinfeng Chu\* and Yu-Fei Song\*



2371

## Molecular dynamics simulation-based study to analyse the properties of entrapped water between gold and graphene 2D interfaces

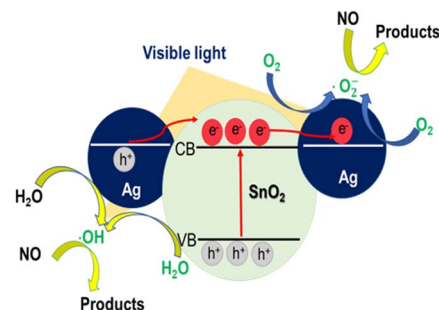
Shashank Mishra,\* Fengyuan Liu, Dhayalan Shakthivel, Beena Rai and Vihar Georgiev



2380

## Visible light photocatalytic NO<sub>x</sub> removal with suppressed poisonous NO<sub>2</sub> byproduct generation over simply synthesized triangular silver nanoparticles coupled with tin dioxide

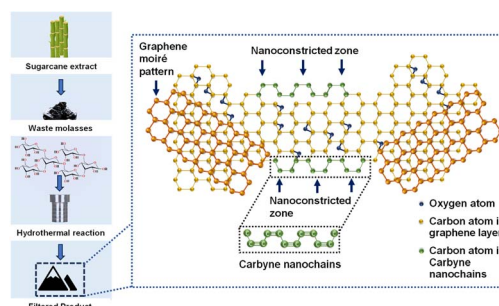
Viet Van Pham,\* Thang Quoc Nguyen, Hai Viet Le and Thi Minh Cao



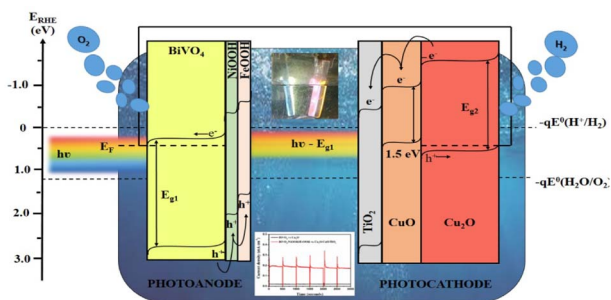
2390

## Unravelling the formation of carbyne nanocrystals from graphene nanoconstrictions through the hydrothermal treatment of agro-industrial waste molasses

Sampathkumar Jeevanandham, Dakshi Kochhar, Omnarayan Agrawal, Siddhartha Pahari, Chirantan Kar, Tamal Goswami, Indra Sulania and Monalisa Mukherjee\*



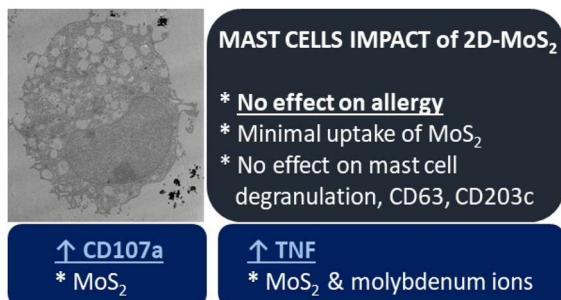
2407



### Photoelectrochemical performance of a nanostructured BiVO<sub>4</sub>/NiOOH/FeOOH–Cu<sub>2</sub>O/CuO/TiO<sub>2</sub> tandem cell for unassisted solar water splitting

S. R. Sitaaraman, A. Nirmala Grace, Jiefang Zhu and Raja Sellappan\*

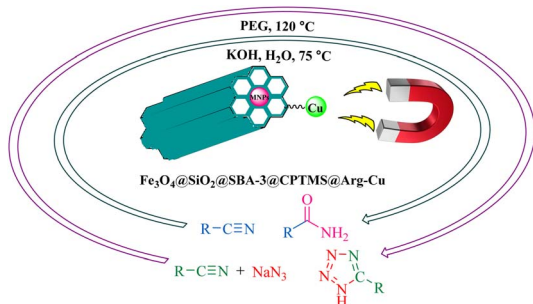
2419



### Cytotoxicity assessment of exfoliated MoS<sub>2</sub> using primary human mast cells and the progenitor cell-derived mast cell line LAD2

Hazel Lin, Antonio Esau del Rio Castillo, Viviana Jehová González, Francesco Bonaccorso, Ester Vázquez, Bengt Fadeel and Alberto Bianco\*

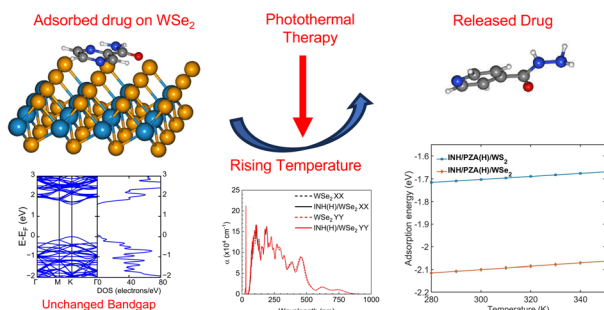
2431



### Fe<sub>3</sub>O<sub>4</sub>@SiO<sub>2</sub>@SBA-3@CPTMS@Arg-Cu: preparation, characterization, and catalytic performance in the conversion of nitriles to amides and the synthesis of 5-substituted 1H-tetrazoles

Zahra Heidarneshad, Arash Ghorbani-Choghmarani\* and Zahra Taherinia

2447



### First-principles calculations on monolayer WX<sub>2</sub> (X = S, Se) as an effective drug delivery carrier for anti-tuberculosis drugs

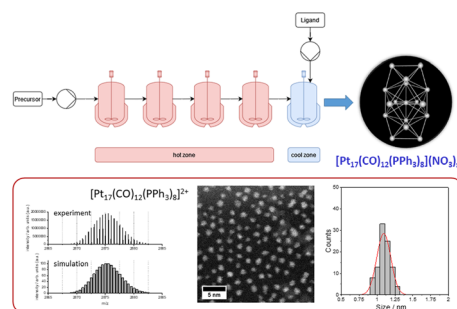
Khaled Mahmud, Taki Yashir and Ahmed Zubair\*



2459

### Continuous flow synthesis of atom-precise platinum clusters

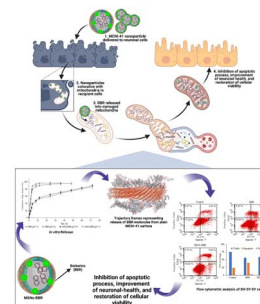
Christian Schmitt, Nicola Da Roit, Marco Neumaier, Carina B. Maliakkal, Di Wang, Thilo Henrich, Christian Kübel, Manfred Kappes and Silke Behrens\*



2469

### In vitro profiling and molecular dynamics simulation studies of berberine loaded MCM-41 mesoporous silica nanoparticles to prevent neuronal apoptosis

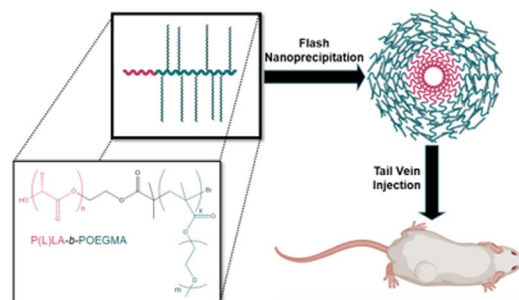
Anurag Kumar Singh, Snigdha Singh, Tarun Minocha, Sanjeev Kumar Yadav, Reema Narayan, Usha Yogendra Nayak, Santosh Kumar Singh\* and Rajendra Awasthi\*



2487

### The effect of comb length on the in vitro and in vivo properties of self-assembled poly(oligoethylene glycol methacrylate)-based block copolymer nanoparticles

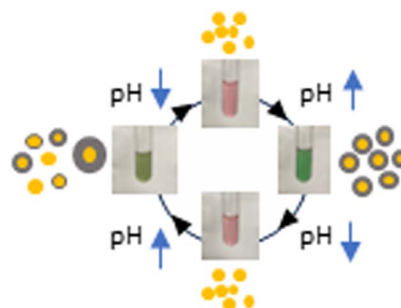
Andrew Singh, Andrew Lofts, Ramya Krishnan, Matthew Campea, Lan Chen, Yonghong Wan and Todd Hoare\*



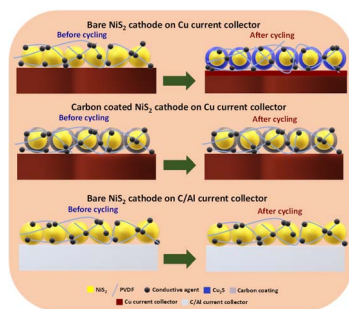
2499

### Gold-copper oxide core-shell plasmonic nanoparticles: the effect of pH on shell stability and mechanistic insights into shell formation

Stephen F. Bartolucci, Asher C. Leff and Joshua A. Maurer



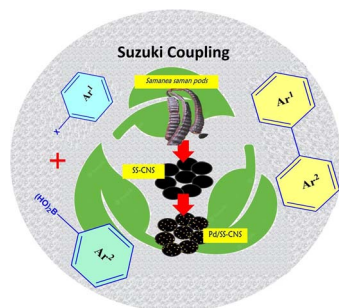
2508



### Overcoming copper-induced conversion reactions in nickel disulphide anodes for sodium-ion batteries

Milan K. Sadan,<sup>\*</sup> Taehong Kim, Anupriya K. Haridas, Hooam Yu, Denis Cumming, Jou-Hyeon Ahn and Hyo-Jun Ahn<sup>\*</sup>

2516



### Sustainable carbonaceous nanomaterial supported palladium as an efficient ligand-free heterogeneous catalyst for Suzuki–Miyaura coupling

Apoorva Shetty, Dhanya Sunil, Thitima Rujiralai, Sanjeev P. Maradur, Abdullah N. Alodhayb and Gurumurthy Hegde<sup>\*</sup>

2527

### Correction: Excitons in metal halide perovskite nanoplatelets: an effective mass description of polaronic, dielectric and quantum confinement effects

Jose L. Movilla, Josep Planelles and Juan I. Climente<sup>\*</sup>

