

# Nanoscale Advances

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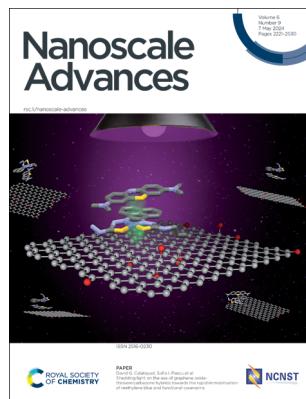
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ISSN 2516-0230 CODEN NAADAI 6(9) 2221–2530 (2024)



### Cover

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



### Inside cover

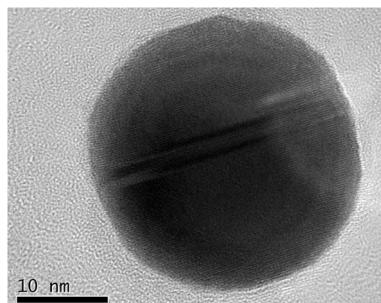
See David G. Calatayud, Sofia I. Pascu *et al.*, pp. 2287–2305. Image reproduced by permission of David G. Calatayud and Ana Castellanos-Aliaga from *Nanoscale Adv.*, 2024, 6, 2287. Ana Castellanos-Aliaga from Instituto de Ceramica y Vidrio - CSIC is acknowledged as coauthor of the cover image.

## COMMUNICATION

2231

### Detonation of fulminating gold produces heterogeneous gold nanoparticles

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

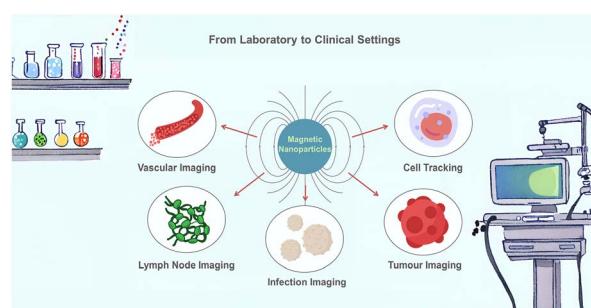


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### Advancing MRI with magnetic nanoparticles: a comprehensive review of translational research and clinical trials

Radu Lăpușan, Raluca Borlan and Monica Focșan\*





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Elemental answers

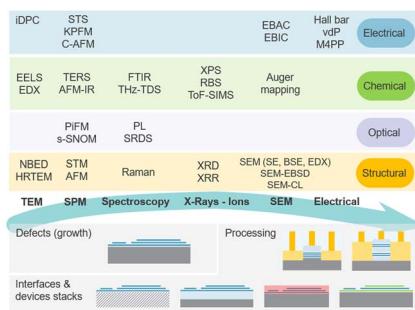
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## Metrology for 2D materials: a perspective review from the international roadmap for devices and systems

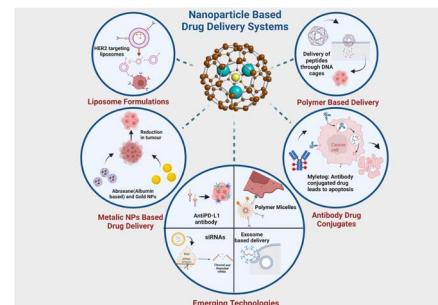
Umberto Celano,\* Daniel Schmidt, Carlos Beitia, George Orji, Albert V. Davydov and Yaw Obeng



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

Ramesh Chaudhari, Vishva Patel and Ashutosh Kumar\*

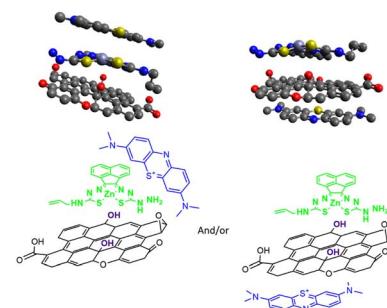


## PAPERS

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

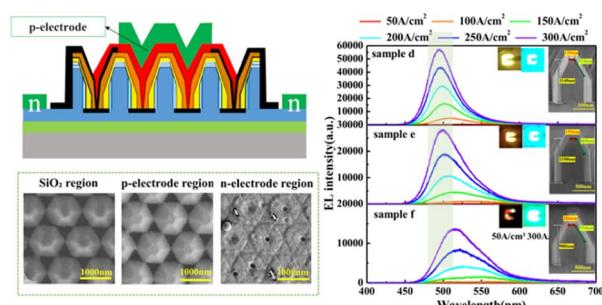
Danielle Bradley, Sophia Sarpaki, Vincenzo Mirabello, Simone Giuseppe Giuffrida, Gabriele I. Kociok-Köhn, David G. Calatayud\* and Sofia I. Pascu\*



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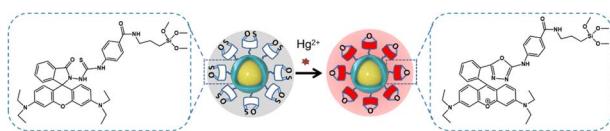
## Investigation of emission plane control in GaInN/GaN multiple-quantum shells for efficient nanowire-based LEDs

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



## PAPERS

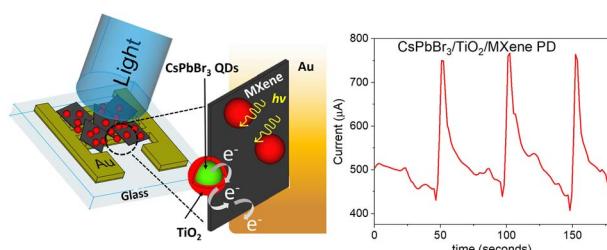
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**“Turn-on” and pinhole-free ultrathin core–shell Au@SiO<sub>2</sub> nanoparticle-based metal-enhanced fluorescent (MEF) chemodosimeter for Hg<sup>2+</sup>**

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

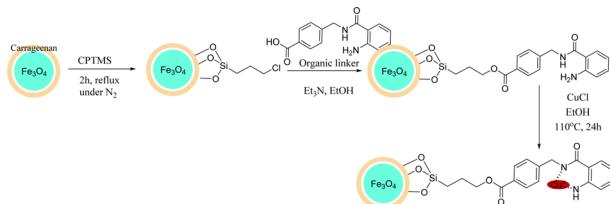
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**Stability and photocurrent enhancement of photodetectors by using core/shell structured CsPbBr<sub>3</sub>/TiO<sub>2</sub> quantum dots and 2D materials**

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

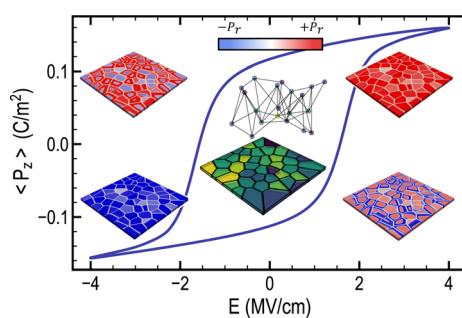
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**Copper supported modified magnetic carrageenan as a bio-based catalyst for the synthesis of novel scaffolds bearing the 1,2,3-triazole unit through the click reaction**

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

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

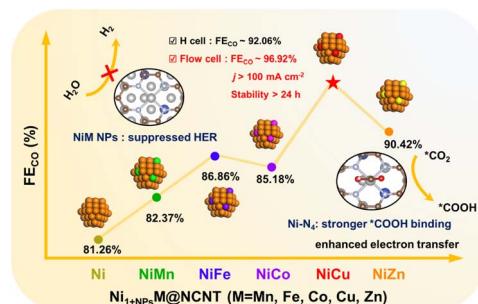


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## Revealing the synergistic effect of Ni single atoms and adjacent 3d metal doped Ni nanoparticles in electrocatalytic $\text{CO}_2$ reduction

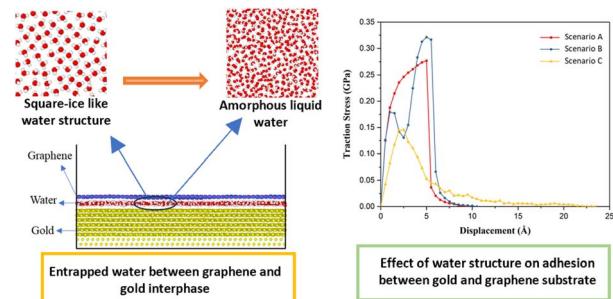
Yingjie Liu, Zhaohui Wu, Sha Bai, Tianyang Shen, Qian Li, Guihao Liu, Xiaoliang Sun, Yihang Hu, Ziheng Song, Jinfeng Chu\* and Yu-Fei Song\*



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

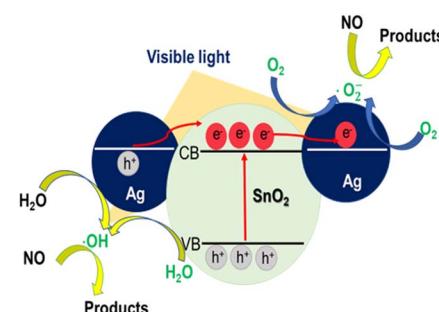
Shashank Mishra,\* Fengyuan Liu, Dhayalan Shakthivel, Beena Rai and Vihar Georgiev



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## Visible light photocatalytic $\text{NO}_x$ removal with suppressed poisonous $\text{NO}_2$ byproduct generation over simply synthesized triangular silver nanoparticles coupled with tin dioxide

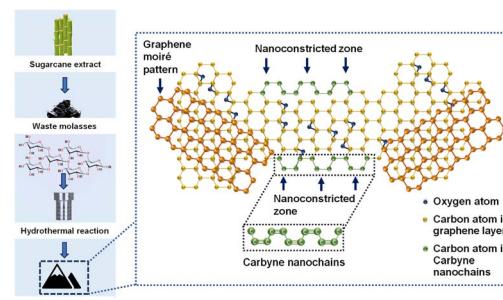
Viet Van Pham,\* Thang Quoc Nguyen, Hai Viet Le and Thi Minh Cao



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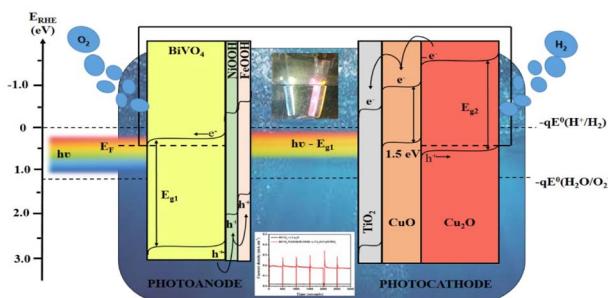
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Sampathkumar Jeevanandham, Dakshi Kochhar, Omnarayan Agrawal, Siddhartha Pahari, Chirantan Kar, Tamal Goswami, Indra Sulania and Monalisa Mukherjee\*



## PAPERS

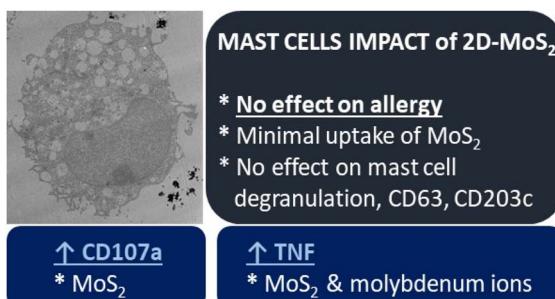
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**Photoelectrochemical performance of a nanostructured  $\text{BiVO}_4/\text{NiOOH}/\text{FeOOH}-\text{Cu}_2\text{O}/\text{CuO}/\text{TiO}_2$  tandem cell for unassisted solar water splitting**

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

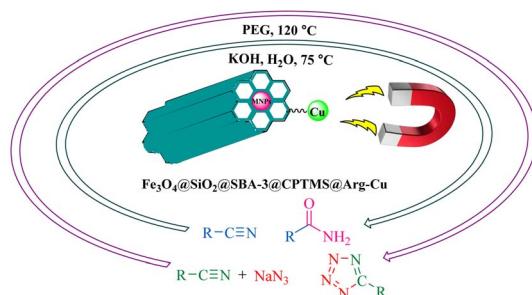
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**Cytotoxicity assessment of exfoliated  $\text{MoS}_2$  using primary human mast cells and the progenitor cell-derived mast cell line LAD2**

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

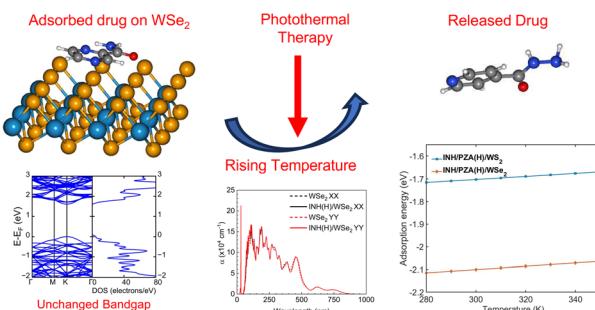
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**$\text{Fe}_3\text{O}_4@\text{SiO}_2@\text{SBA-3}@\text{CPTMS}@\text{Arg-Cu}$ : preparation, characterization, and catalytic performance in the conversion of nitriles to amides and the synthesis of 5-substituted 1*H*-tetrazoles**

Zahra Heidarnezhad, Arash Ghorbani-Choghamarani\* and Zahra Taherinia

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**First-principles calculations on monolayer  $\text{WX}_2$  ( $\text{X} = \text{S}, \text{Se}$ ) as an effective drug delivery carrier for anti-tuberculosis drugs**

Khaled Mahmud, Taki Yashir and Ahmed Zubair\*

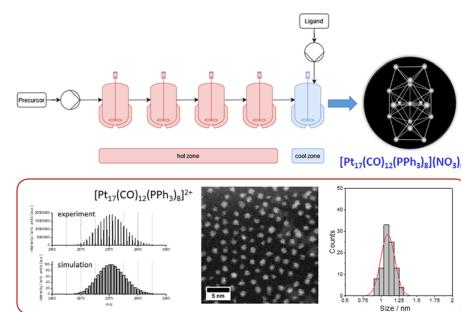


## PAPERS

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

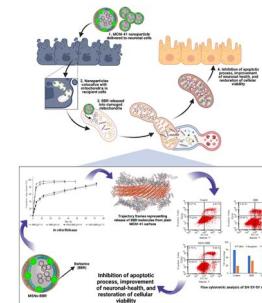
Christian Schmitt, Nicola Da Roit, Marco Neumaier, Carina B. Maliakkal, Di Wang, Thilo Henrich, Christian Kübel, Manfred Kappes and Silke Behrens\*



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

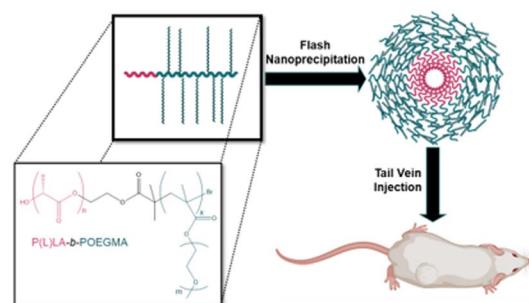
Anurag Kumar Singh, Snigdha Singh, Tarun Minocha, Sanjeev Kumar Yadav, Reema Narayan, Usha Yogendra Nayak, Santosh Kumar Singh\* and Rajendra Awasthi\*



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

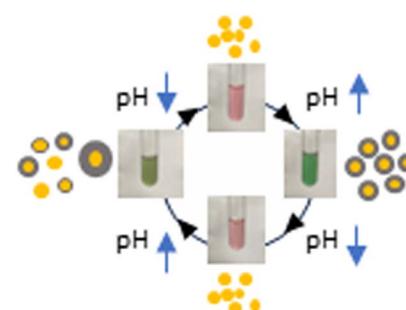
Andrew Singh, Andrew Loft, Ramya Krishnan, Matthew Campea, Lan Chen, Yonghong Wan and Todd Hoare\*



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**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



## PAPERS

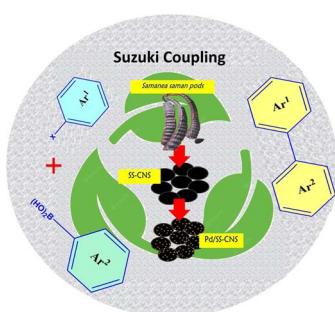
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## Overcoming copper-induced conversion reactions in nickel disulphide anodes for sodium-ion batteries

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

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## 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\*

## CORRECTION

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## 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\*