

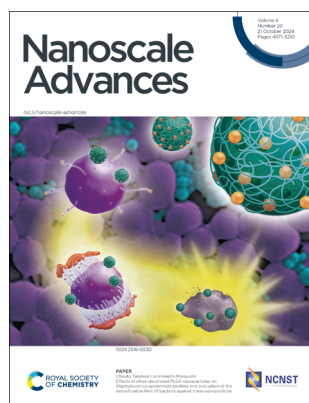
# Nanoscale Advances

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.

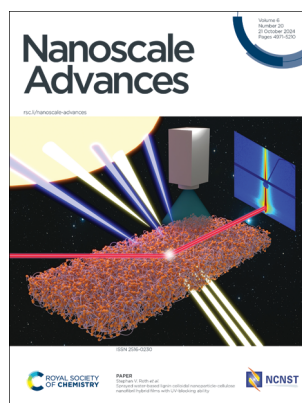
## IN THIS ISSUE

ISSN 2516-0230 CODEN NAADAI 6(20) 4971–5210 (2024)



### Cover

See Chisato Takahashi and Keiichi Moriguchi, pp. 5020–5030. Image reproduced by permission of Chisato Takahashi and Keiichi Moriguchi from *Nanoscale Adv.*, 2024, 6, 5020. Image created by Yuka Naraki.



### Inside cover

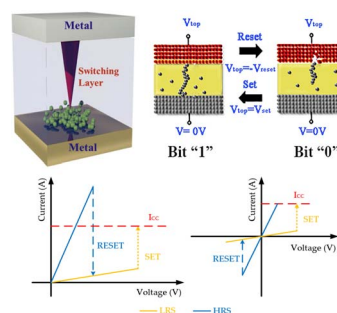
See Stephan V. Roth *et al.*, pp. 5031–5041. Image reproduced by permission of Shouzheng Chen and Stephan V. Roth from *Nanoscale Adv.*, 2024, 6, 5031.

## REVIEWS

4980

### An overview of critical applications of resistive random access memory

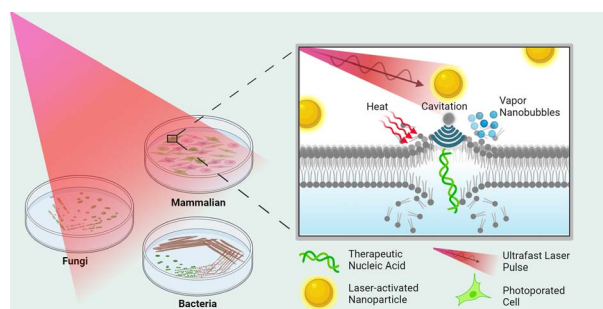
Furqan Zahoor, Arshid Nisar, Usman Isyaku Bature, Haider Abbas,\* Faisal Bashir,\* Anupam Chattopadhyay, Brajesh Kumar Kaushik, Ali Alzahrani and Fawnizu Azmadi Hussin



5007

### Nanoparticle-Mediated Photoporation: Expanding Horizons in Drug Delivery

Erin McGraw, Guillaume M. Laurent and L. Adriana Avila\*



# Environmental Science journals

One impactful portfolio for  
every exceptional mind

Harnessing the power of interdisciplinary  
science to preserve our environment

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

Fundamental questions  
Elemental answers

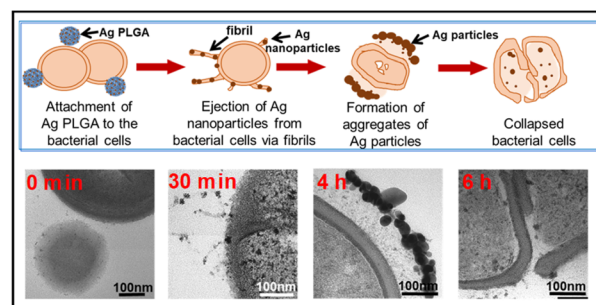




5020

## Effects of silver-decorated PLGA nanoparticles on *Staphylococcus epidermidis* biofilms and evaluation of the detoxification limit of bacteria against these nanoparticles

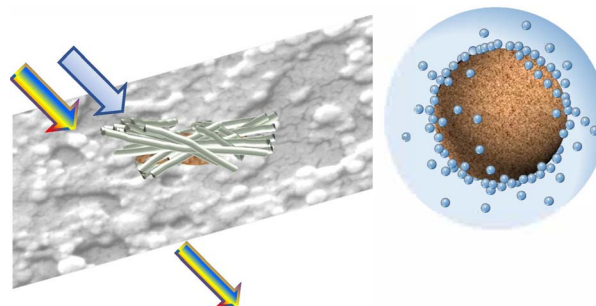
Chisato Takahashi\* and Keiichi Moriguchi



5031

## Sprayed water-based lignin colloidal nanoparticle-cellulose nanofibril hybrid films with UV-blocking ability

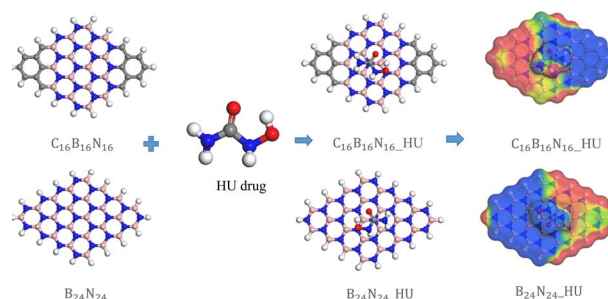
Shouzheng Chen, Constantin Harder, Iuliana Ribca, Benedikt Sochor, Elisabeth Erbes, Yusuf Bulut, Luciana Pluntke, Alexander Meinhardt, Bernhard Schummer, Markus Oberthür, Thomas F. Keller, L. Daniel Söderberg, Simone A. Techert, Andreas Stierle, Peter Müller-Buschbaum, Mats K. G. Johansson, Julien Navarro and Stephan V. Roth\*



5042

## Assessment of the drug delivery potential of graphene, boron nitride and their in-plane doped structures for hydroxyurea anti-cancer drug via DFT study

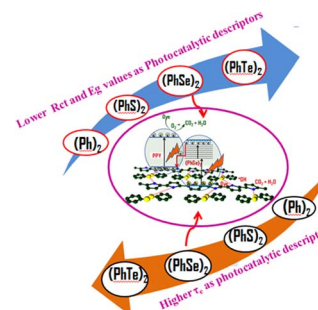
Mehedi Hasan Opi, Tanvir Ahmed, Mithila Roy Swarna, Afiya Akter Piya and Siraj Ud Daula Shamim\*



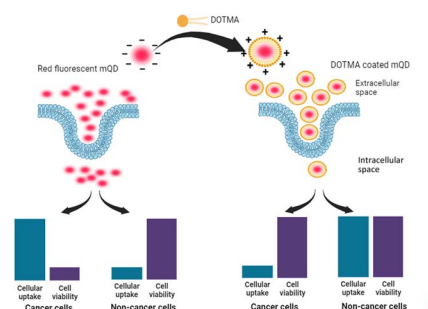
5055

## Design and development of symmetric aromatic bischalcogenide-based photocatalysts for water treatment application: a concise study of diphenyl diselenide polypyrrole nanocatalysis

Tabee Jan, Shabnam Raheem and Masood Ahmad Rizvi\*



5069

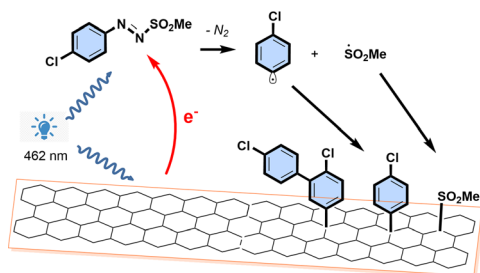


### Cellular uptake and viability switching in the properties of lipid coated carbon quantum dots for potential bioimaging and therapeutics

Sweny Jain, Nidhi Sahu, Dhiraj Bhatia\* and Pankaj Yadav\*

5080

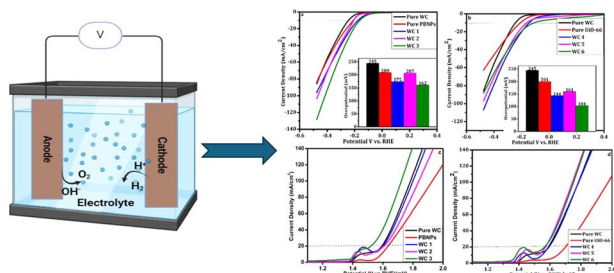
### Covalent Functionalization of graphene by blue light



### Covalent functionalization by using blue light activated radicals: on the reaction mechanisms of arylazo sulfone binding on graphene

Alessandro Mameli, Alessandro Kovtun,\* Derek Jones, Vasiliki Benekou, Vincenzo Palermo, Marco Bandini and Manuela Melucci

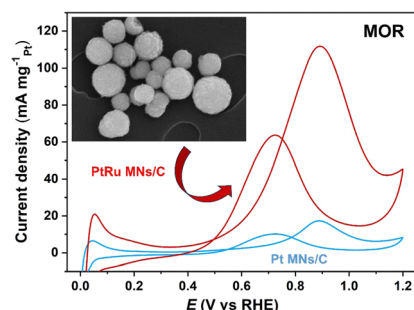
5092



### Electrocatalytic activity of tungsten carbide hybrids with two different MOFs for water splitting: a comparative analysis

Umair Sohail, Erum Pervaiz,\* Rafiq Khosa and Maryum Ali

5106



### PtRu mesoporous nanospheres as electrocatalysts with enhanced performance for oxidation of methanol

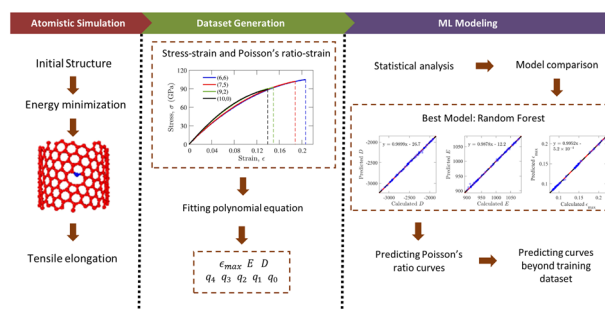
Jiangbin Guo, Qiyu Yan, Man Zhang, Jun Fang, Shuiyuan Luo and Jing Xu\*



5112

## Predicting the mechanical properties of pristine and defective carbon nanotubes using a random forest model

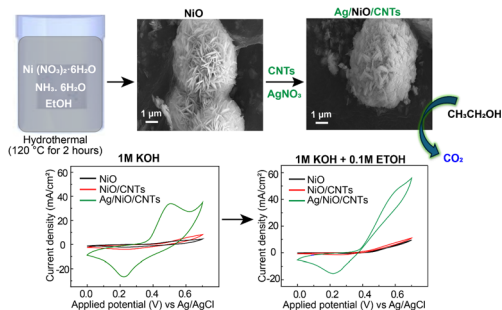
Ihtesham Ibn Malek, Koushik Sarkar and Ahmed Zubair\*



5133

## Silver decorated nickel oxide nanoflake/carbon nanotube nanocomposite as an efficient electrocatalyst for ethanol oxidation

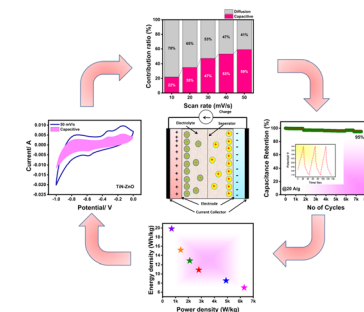
Nada Gamal ElSayed, Ahmed A. Farghali, Waleed M. A. El Rouby and Mai F. M. Hmamm\*



5145

## Facile synthesis and electrochemical analysis of TiN-based ZnO nanoparticles as promising cathode materials for asymmetric supercapacitors

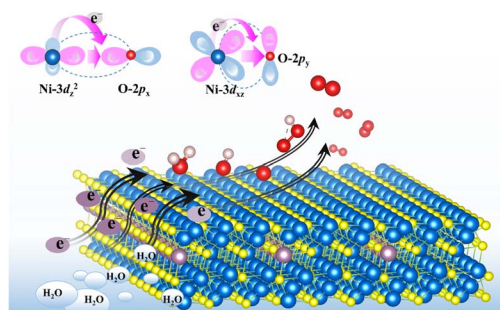
Junaid Riaz, Jianchun Cao,\* Yongguo Zhang, Amina Bibi\* and Xiaolong Zhou\*



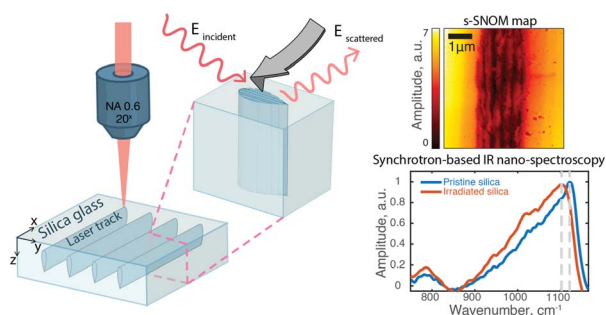
5158

## TM-doping modulated p-d orbital coupling to enhance the oxygen evolution performance of $\text{Ni}_3\text{S}_2$

Qiuhong Li, Minghao Zhang, Rui Wang, Jing Pan\* and Huailiang Fu\*



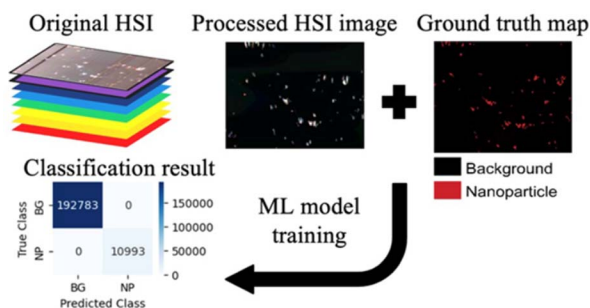
5164



### Nano-FTIR spectroscopy reveals SiO<sub>2</sub> densification within fs-laser induced nanogratings

Nadezhda Shchedrina,<sup>\*</sup> Gergely Nemeth,  
Ferenc Borondics, Nadege Ollier and Matthieu Lancry

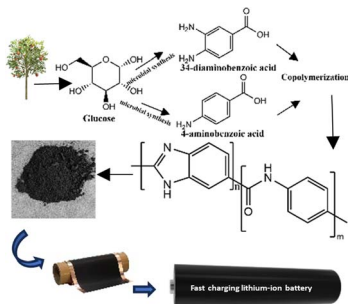
5171



### Hyperspectral enhanced imaging analysis of nanoparticles using machine learning methods

Kaeul Lim and Arezoo Ardekani<sup>\*</sup>

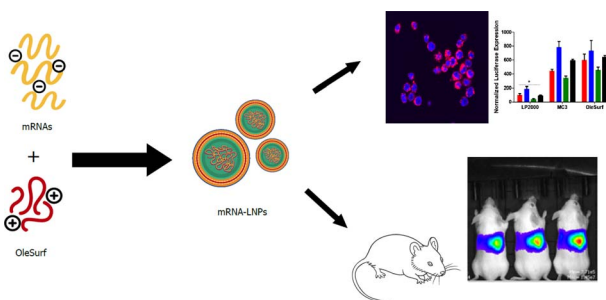
5181



### Bio-based poly(benzimidazole-co-amide)-derived N, O co-doped carbons as fast-charging anodes for lithium-ion batteries

Kottisa Sumala Patnaik, Bharat Srimitra Mantripragada,  
Rajashekar Badam, Koichi Higashimine, Xianzhu Zhong,  
Tatsuo Kaneko and Noriyoshi Matsumi<sup>\*</sup>

5193



### Synthesis and bioactivity of a novel surfactin-based lipopeptide for mRNA delivery

Mohammed S. Alqahtani,<sup>\*</sup> Rabbani Syed, Ali S. Alqahtani,  
Omer M. Almarfadi, Monzurul A. Roni and Satya S. Sadhu



5207

**Expression of concern: Decoration of graphene oxide nanosheets with carboxymethylcellulose hydrogel, silk fibroin and magnetic nanoparticles for biomedical and hyperthermia applications**

Mostafa Ghafori Gorab, Hooman Aghamirza Moghim Aliabadi, Amir Kashtiaray, Mohammad Mahdavi, Milad Salimi Bani, Andisheh Etminan, Nabi Salehpour, Reza Eivazzadeh-Keihan\* and Ali Maleki\*

