Open Access Article. Published on 31 March 2025. Downloaded on 1/30/2026 11:13:17 PM.
This article is licensed under a Creative Commons Attribution 3.0 Unported Licence.

Materials Advances

An open access journal publishing across the breadth of materials science

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(7) 2113–2450 (2025)

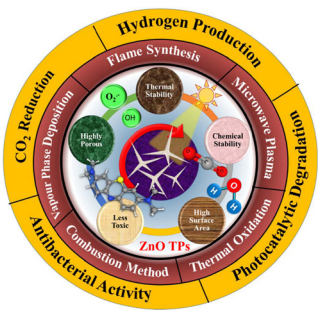
Cover
See Ioana M. Ilie *et al.*, pp. 2160–2169. Image reproduced by permission of Ashique Lal from *Mater. Adv.*, 2025, **6**, 2160.

REVIEW

2123

Novel zinc oxide 3D tetrapod nano-microstructures: recent progress in synthesis, modification and tailoring of optical properties for photocatalytic applications

Astha Pujara, Rupam Sharma, Samriti, Mikhael Bechelany, Yogendra Kumar Mishra and Jai Prakash*

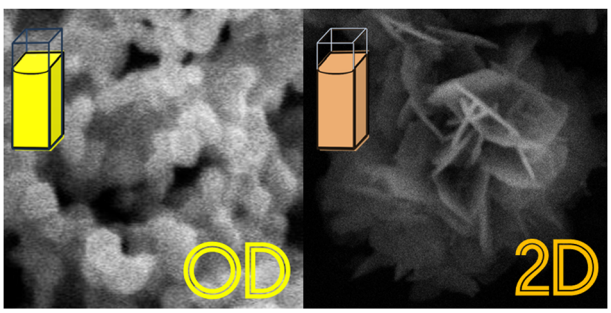


COMMUNICATION

2154

Templating effect travelling on the edge between an ionic liquid and a DES: the case of fluorescent ZnO nanostructures in choline nitrate

Lorenzo Gontrani,* Lorenzo Casoli, Olga Russina, Elvira Maria Bauer* and Marilena Carbone



View Article Online

ROYAL SOCIETY OF CHEMISTRY

GOLD OPEN ACCESS

EES Solar

Exceptional research on solar energy and photovoltaics

Part of the EES family

Join in | Publish with us

rsc.li/EESSolar

Registered charity number: 207890

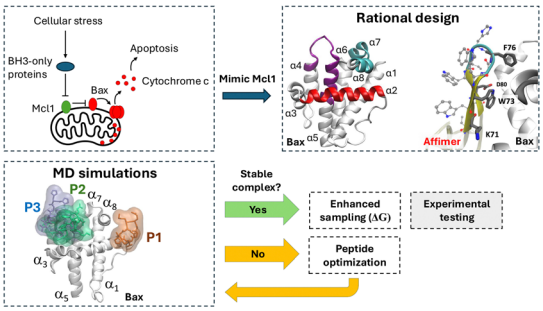
Open Access Article. Published on 31 March 2025. Downloaded on 1/30/2026 11:13:17 PM.
This article is licensed under a Creative Commons Attribution 3.0 Unported Licence.

PAPERS

2160

Computational design of Bax-inhibiting peptides

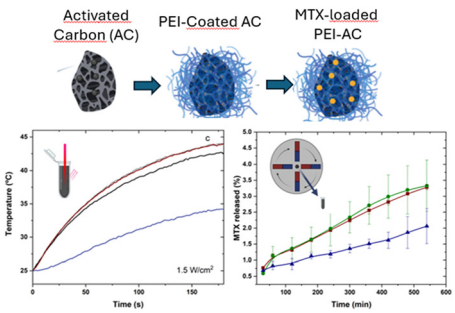
Tom Vlaar, Bernadette Mayer, Lars van der Heide and Ioana M. Ilie*



2170

Magnetic activated carbon particles as stimuli-responsive vehicles for methotrexate

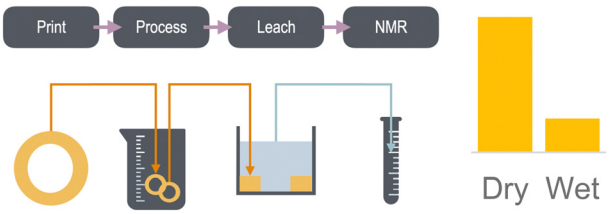
J. A. Lirio Piñar, M. Lázaro, G. R. Iglesias, Tania Romacho, A. V. Delgado, Gracia García-García* and S. Ahualli*



2180

Enhanced biocompatibility of 3D printed resin parts *via* wet autoclave postprocessing: implications for stem cell organ-on-a-chip culture

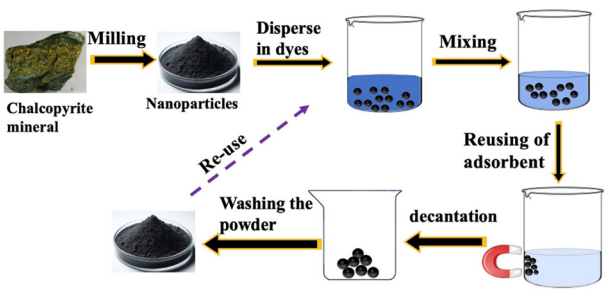
Alexander Jönsson, Antonia Iatrou, Louise Wildfang, Dana J. Neumann, Hakan Gürbüz, Carina A. A. Schoenmaker, Marlene Danner Dalgaard, Pernille Rose Jensen and Martin Dufva*



2192

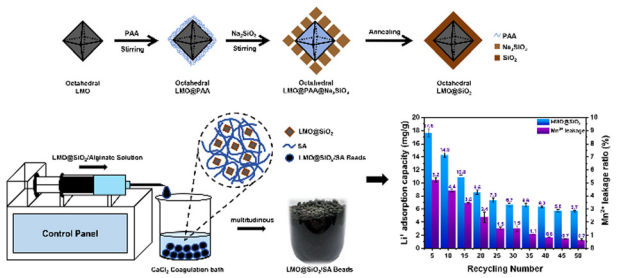
Natural-based chalcopyrite nanoparticles as high-performance mineral adsorbers for organic dye removal in water

Sameera Sh. Mohammed Ameen,* Dilsouz D. Hassan, Dlzhar S. Mohammed, Khalid M. Omer,* Dunya A. Latif and Yousif O. Mohammad



Open Access Article. Published on 31 March 2025. Downloaded on 1/30/2026 11:13:17 PM.
This article is licensed under a Creative Commons Attribution 3.0 Unported Licence.

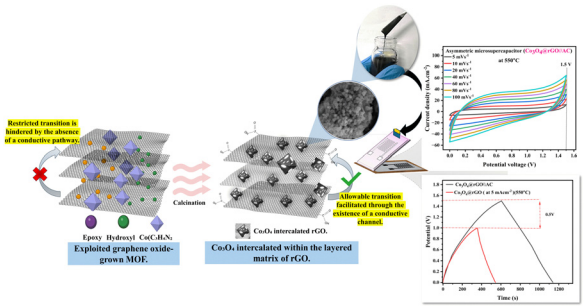
2202



Continuous flow extraction of lithium from brine using silica-coated LMO beads

Jialun Su, Qiyue Fan, Xiangting Hu, Yue Sun, Jie Lin, Jiayue Xu, Bingcai Pan and Zhenda Lu*

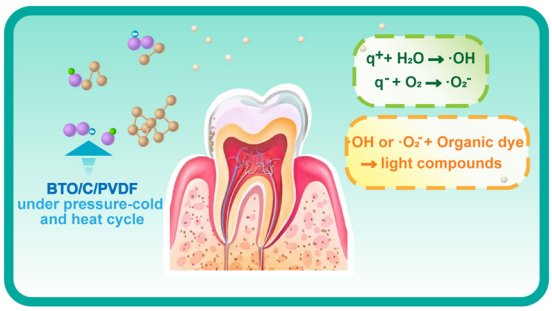
2211



Engineered flexible microsupercapacitors with MOF-derived Co_3O_4/rGO nanocomposite optimized *via* response surface methodology for enhanced energy storage

Mohammad Saquib, Shilpa Shetty, S. G. Siddanth, Nagaraja Nayak, Chandra Sekhar Rout, Ramakrishna Nayak, Ahipa T. N. and M. Selvakumar*

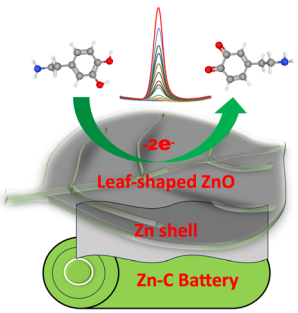
2231



A reusable BTO-based composite film for safe and convenient tooth whitening

Sihan Wang, Yang Zhou, Yunan Zhang, Zhongyi Yan, Liping Chen and Ling Guo*

2243



Dopamine detection using leaf-shaped ZnO synthesized from zinc shells of recycled batteries

Md Yeasin Pabel, Md Humayun Kabir,* Md. Sanwar Hossain, Fahima Mojumder, Sourav Datta, Muhammad Shahriar Bashar and Sabina Yasmin*

This journal is © The Royal Society of Chemistry 2025

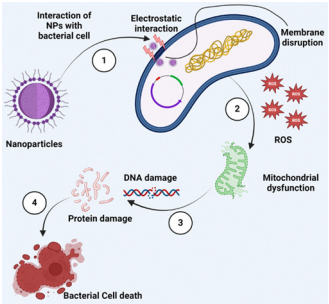
Open Access Article. Published on 31 March 2025. Downloaded on 1/30/2026 11:13:17 PM.
This article is licensed under a Creative Commons Attribution 3.0 Unported Licence.

PAPERS

2253

Multifunctional oleic acid functionalized iron oxide nanoparticles for antibacterial and dye degradation applications with magnetic recycling

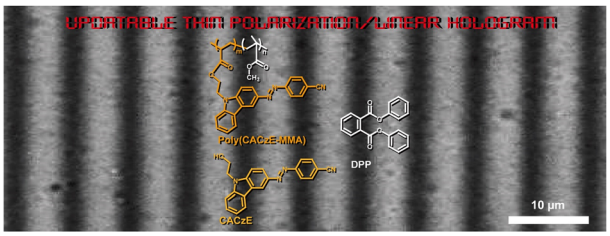
Shreya Sinha, Rahul Sharma, Mohd Rehan Ansari, Rahul Singh, Saurabh Pathak,* Noor Jahan* and Koteswara Rao Peta



2269

Highly efficient rewritable thin polarization holograms through paraxial recording in azo-carbazole copolymer-based composite films

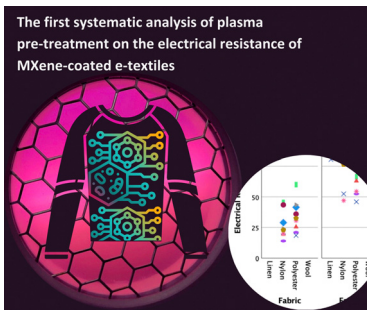
Kenji Kinashi,* Ikuma Yamazaki, Sumit Kumar Singh, Naoto Tsutsumi, Wataru Sakai and Boaz Jessie Jackin*



2278

The effect of plasma pre-treatment on the electrical resistance of MXene ($Ti_3C_2T_x$) coated fabrics

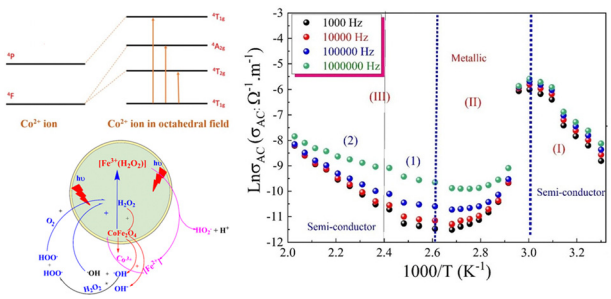
Ashleigh Naysmith,* Timothy Smith, Naeem Mian and Andrew Hewitt



2297

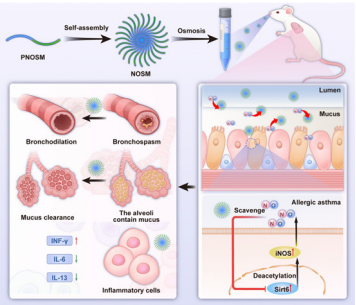
Eco-friendly $CoFe_2O_4$ ferrite nanoparticles prepared using greek yogurt solution: deep insights into optical properties and abnormal semiconductor–insulator–semiconductor transitions for optoelectronics and catalytic applications

Heba Hussein,* S. S. Ibrahim and Sherif A. Khairy



Open Access Article. Published on 31 March 2025. Downloaded on 1/30/2026 11:13:17 PM.
This article is licensed under a Creative Commons Attribution 3.0 Unported Licence.

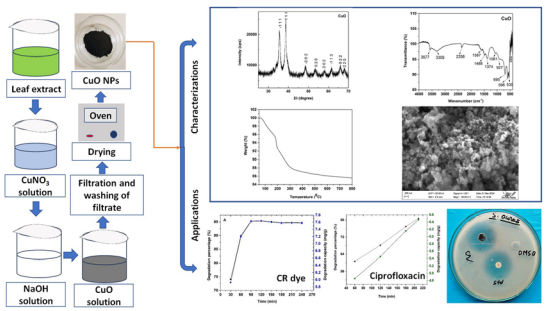
2328



Nitric oxide-scavenging micelles alleviate airway inflammation in asthma *via* Th2 cytokine modulation

Daoxiang Rong, Shanshan Fang, Shaohu Huo, Paiyu Lin, Jian Cheng,* Jingfang Hong* and Shenggang Ding*

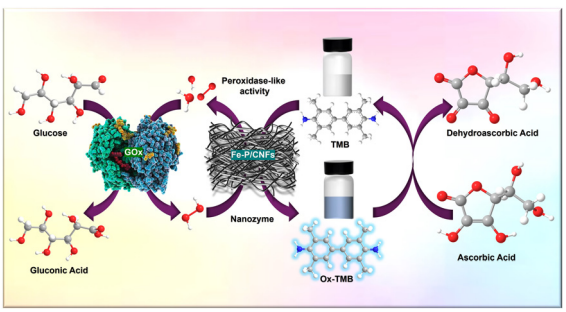
2338



Exploration of the antibacterial and photocatalytic properties of copper oxide (CuO) nanoparticles synthesized from *Azadirachta indica* leaf extract and electronic waste cable

Sumaya Tabassum, Md. Sahadat Hossain,* Md. Abu Saeed, Md. Najem Uddin and Samina Ahmed*

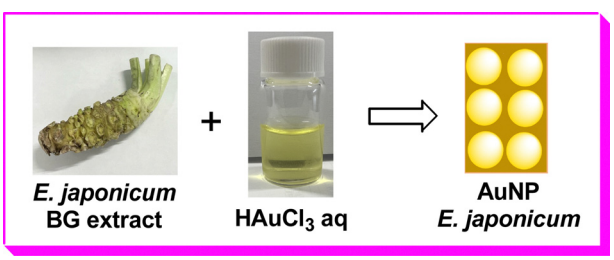
2356



Fe-porphyrin-derived carbon nanofiber-based nanozymes: enhanced peroxidase-like activity for ultrasensitive glucose and ascorbic acid sensing

Pradeep Singh Thakur and Muniappan Sankar*

2365



Synthesis of gold nanoparticles using *Eutrema japonicum* (Wasabi): antioxidant and anti-inflammatory studies

Christian Nanga Chick,* Mahiro Takano, Francois Eya'ane Meva and Toyonobu Usuki*

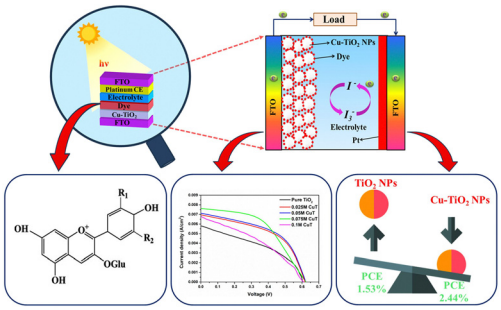
This journal is © The Royal Society of Chemistry 2025

Open Access Article. Published on 31 March 2025. Downloaded on 1/30/2026 11:13:17 PM.
This article is licensed under a Creative Commons Attribution 3.0 Unported Licence.

2371

Anthocyanin-sensitized Cu-doped TiO_2 nanoparticles for efficient and sustainable DSSCs

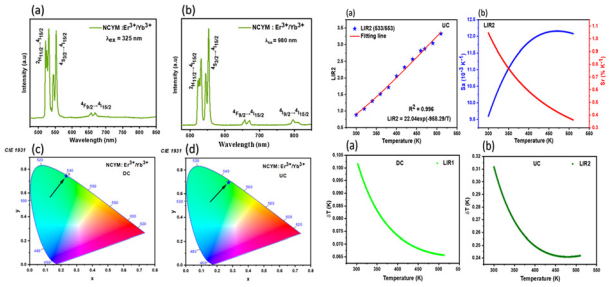
Kamal Prajapat, Ujjwal Mahajan, Mahesh Dhonde,* Kirti Sahu, P. Sakthivel, Shweta Vyas and P. M. Shirage



2385

Advanced dual-mode Er^{3+}/Yb^{3+} phosphors for high-precision optical thermometry across broad temperature ranges

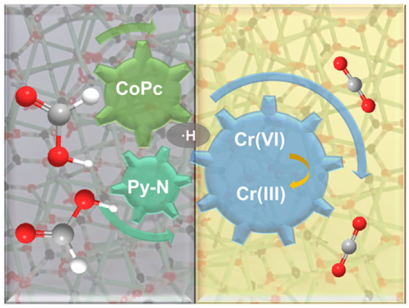
Zein El Abidine Aly Taleb, Ikhlas Kachou, Kamel Saidi, Mohamed Dammak,* Irene Mediavilla and Juan Jiménez



2397

Efficient advanced reduction with cobalt phthalocyanine-decorated N-doped mesoporous carbon

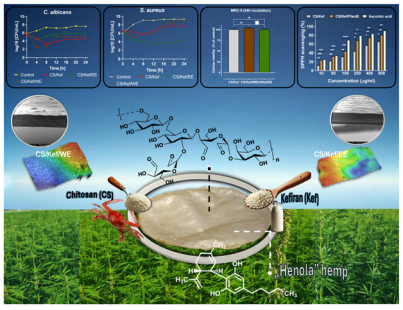
Mengjiao Xu, Kaizhi Wang, Wendi Guo, Zehui Sun, Mugeng Chen, Yongmei Liu* and Yong Cao*



2405

The role of dialdehyde kefiran as a crosslinking agent in chitosan/kefiran-based materials with "Henola" extracts: a biocompatible strategy in wound care

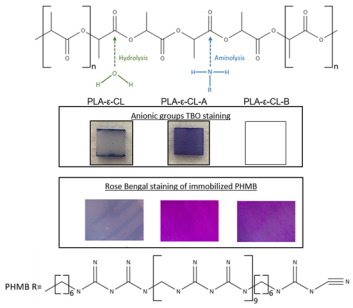
Dorota Chelminiak-Dudkiewicz,* Miloslav Machacek, Jolanta Dlugaszewska, Kinga Mylkie, Aleksander Smolarkiewicz-Wyczachowski, Magdalena Kozlikova, Sebastian Druzynski, Rafal Krygier and Marta Ziegler-Borowska



Open Access Article. Published on 31 March 2025. Downloaded on 1/30/2026 11:13:17 PM.
This article is licensed under a Creative Commons Attribution 3.0 Unported Licence.

PAPERS

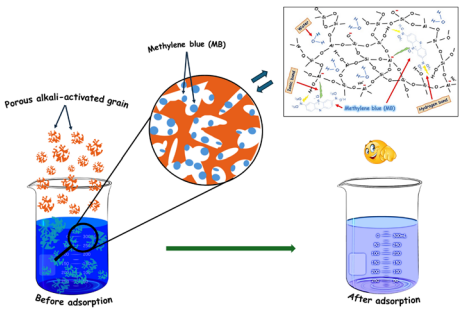
2423



A biocompatible polylactide-ε-caprolactone polymer coated with poly(hexamethylene biguanide) displays antibacterial properties against slime-producing *S. epidermidis*

Paula Zwicker,* Melanie Hornschuh, Thomas Schmidt, Jan Schäfer, Carsten Becker-Willinger, Marlon Jochum, Axel Kramer and Gerald Müller

2435



Optimized porous alkali-activated material for superior dye removal: synthesis and performance analysis

Youssef Ettahiri,* Abdessalam Bouddouch, Brahim Akhsassi, Anass Khali, Lahcen Bouna, Abdeljalil Benlhachemi and Luis Pérez-Villarejo*

CORRECTION

2448

Correction: Characterization and assessment of cleaning systems based on fatty acid methyl esters (FAMEs) for the removal of wax-based coatings from cultural heritage objects

Chiara Biribicchi,* Michael Doutre and Gabriele Favero

This journal is © The Royal Society of Chemistry 2025