

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.

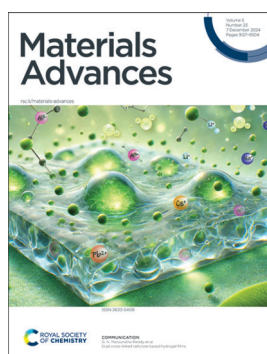
IN THIS ISSUE

ISSN 2633-5409 CODEN MAADC9 5(23) 9127-9504 (2024)



Cover

See Guang Yang *et al.*, pp. 9138–9159. Image reproduced by permission of Guang Yang from *Mater. Adv.*, 2024, 5, 9138.



Inside cover

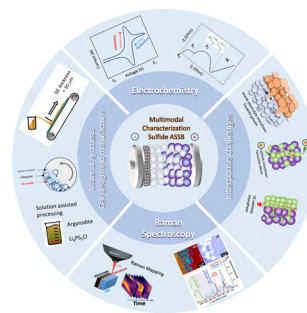
See G. N. Manjunatha Reddy *et al.*, pp. 9210–9219. Image reproduced by permission of G. N. Manjunatha Reddy from *Mater. Adv.*, 2024, 5, 9210.

REVIEWS

9138

Integrated electro- and chemical characterization of sulfide-based solid-state electrolytes

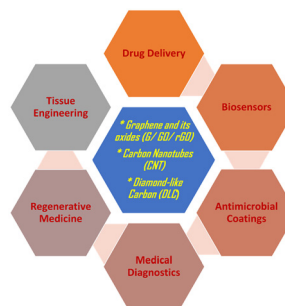
Yuanshun Li, Michelle Lehmann, Lei Cheng, Thomas A Zawodzinski, Jagjit Nanda and Guang Yang*



9160

Multifunctional carbon-based nanostructures (CBNs) for advanced biomedical applications – a perspective and review

Naveen Narasimhachar Joshi, Jagdish Narayan and Roger Narayan*



Advance your career in science

with professional recognition that showcases
your **experience, expertise and dedication**

Stand out from the crowd

Prove your commitment
to attaining excellence in
your field

Gain the recognition you deserve

Achieve a professional
qualification that inspires
confidence and trust

Unlock your career potential

Apply for our professional
registers (RSci, RSciTech)
or chartered status
(CChem, CSci, CEnv)

Apply now

rsc.li/professional-development

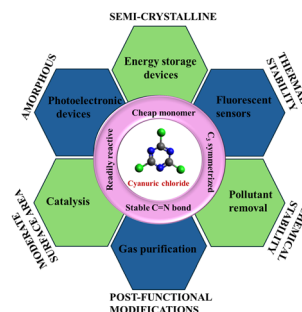


REVIEWS

9175

Cyanuric chloride as a linker towards the synthesis of covalent triazine polymers: a review

Silpa Elizabeth Peter, Paul Thomas, P. Vairavel and N. V. Anil Kumar*

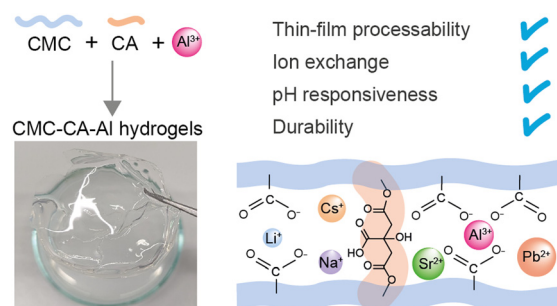


COMMUNICATION

9210

Dual cross-linked cellulose based hydrogel films

Neethu Thomas, Saphia Moussaoui, Braulio Reyes-Suárez, Olivier Lafon and G. N. Manjunatha Reddy*

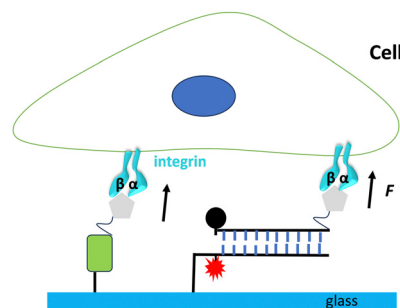


PAPERS

9220

A multiplexed tension sensor reveals the distinct levels of integrin-mediated forces in adherent cells

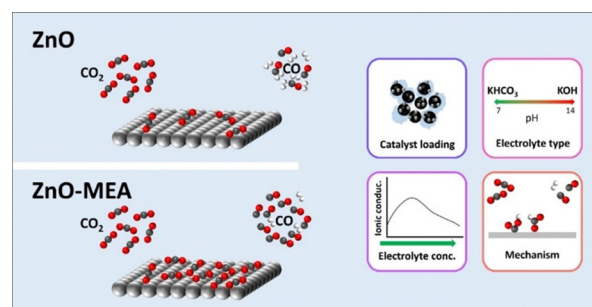
Xiaojun Liu, Jiangtao Li, Xiaoyun Wang, Feng Shao, Xingyou Hu, Juan Li, Lei Yu, Jicheng Zang,* Guixue Wang* and Yongliang Wang*



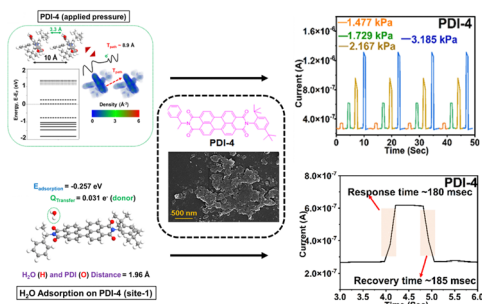
9231

Modification of ZnO gas-diffusion-electrodes for enhanced electrochemical CO₂ reduction: optimization of operational conditions and mechanism investigation

Gonçalves J. Marrenjo, Gelson T. S. T. da Silva, Rodrigo A. A. Muñoz, Lucia H. Mascaro and Osmando F. Lopes*



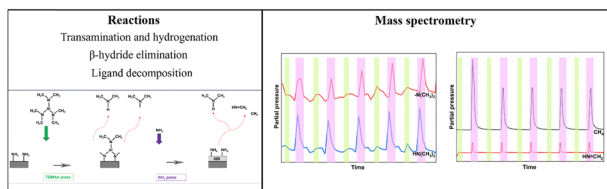
9243



Perylene diimide architecture-based electromechanical sensors: a systematic experimental and theoretical framework for the comparative analysis and study of the transduction mechanism

Aditya Tiwari, Vivek Adepu, Rikitha S. Fernandes, Nilanjan Dey,* Parikshit Sahatiya* and Sayan Kanungo*

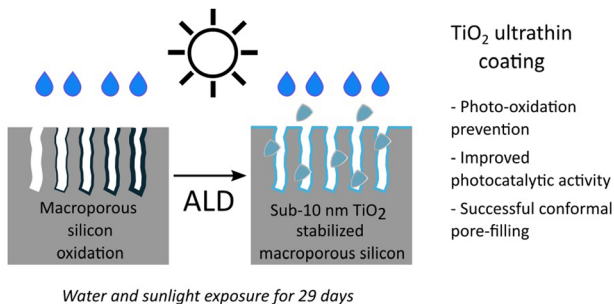
9259



A mass spectrometry study of aluminum nitride ALD from tris-dimethylamido aluminum and ammonia

Pamburayi Mpofu, Houyem Hafdi, Jonas Lauridsen, Oscar Alm, Tommy Larsson and Henrik Pedersen*

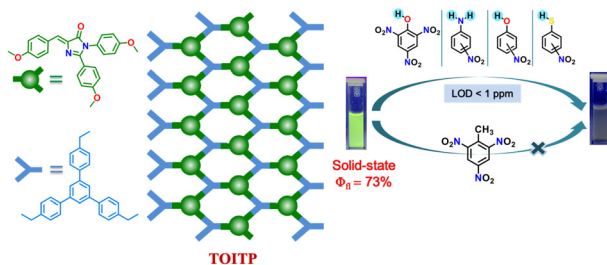
9270



A road for macroporous silicon stabilization by ultrathin ALD TiO₂ coating

Bachar Al Chimali, Irene Carrasco, Thomas Defforge, Romain Dailleau, Lisa Monnier, Kaushik Baishya, Jan M. Macak, Gael Gautier and Brice Le Borgne*

9279



Green fluorescent protein chromophore-based covalent organic polymers (GFPC-COPs): sensing of nitroaromatic organic pollutants and explosives

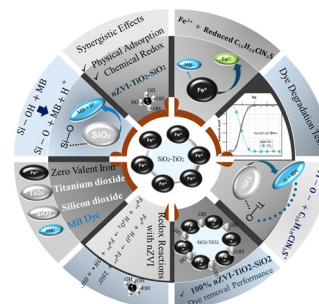
Gulshan Anjum, Ashish Kumar, Gurunath Ramanathan* and Jarugu Narasimha Moorthy*



9292

Unveiling the synergistic effect of an nZVI–SiO₂–TiO₂ nanocomposite for the remediation of dye contaminated wastewater

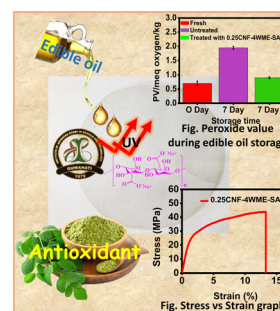
Murtala Namakka,* Md Rezaur Rahman,*
 Khairul Anwar Mohamad Bin Said, King Kuok Kuok,
 Fahmi Asyadi Md Yusof, Muneera S. M. Al-Saleem,
 Jehan Y. Al-Humaidi and Mohammed M. Rahman



9314

Sodium alginate-nanocellulose-based active composite film for edible oils packaging applications

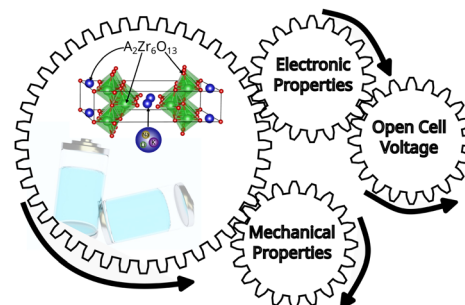
Sazzadur Rahman, Chandramani Batsh,
 Shalini Gurumayam, Jagat Chandra Borah and
 Devasish Chowdhury*



9330

Theoretical predictions of alkali hexazirconate (A₂Zr₆O₁₃, A = Li, Na, And K) as candidates for alkali ion batteries

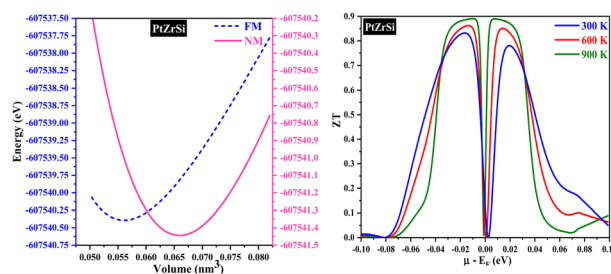
José. R. Fernández-Gamboa,* Frederik Tielens and
 Yohandys A. Zulueta



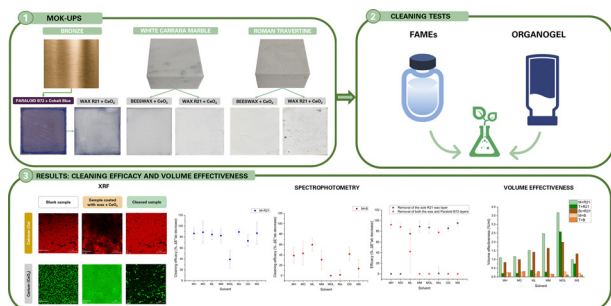
9340

Probing the thermoelectric and optical performance of half-Heusler PtZrX (X = Si, Ge) semiconductors: a first principles investigation

Bharti Gurunani and Dinesh C. Gupta*



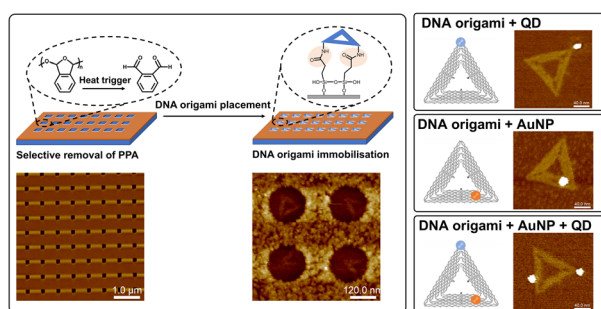
9359



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 Doure and Gabriele Favero

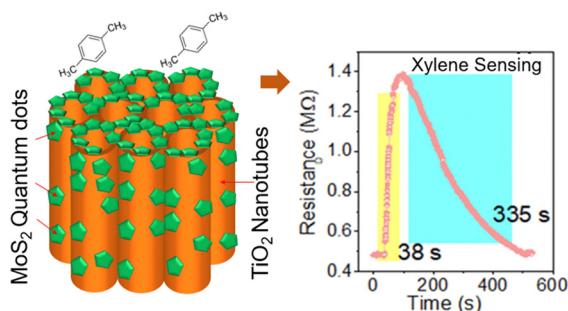
9376



Selective placement of functionalised DNA origami via thermal scanning probe lithography patterning

Tingting Zheng, Caoimhe O'Neill, John F. Marshall, Thomas Iskratsch* and Matteo Palma*

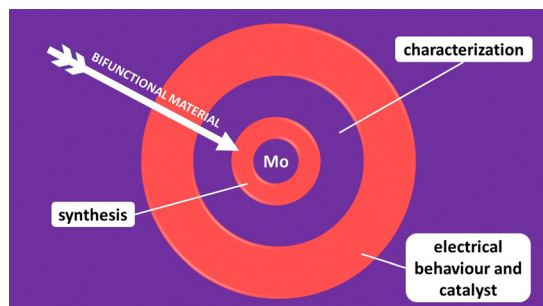
9383



A MoS₂ quantum dot functionalized TiO₂ nanotube array for selective detection of xylene at low temperature

Radha Bhardwaj and Arnab Hazra*

9391



Bifunctional molybdenum and vanadium materials: semiconductor properties for advanced electronics and catalytic efficiency in linalool oxidation

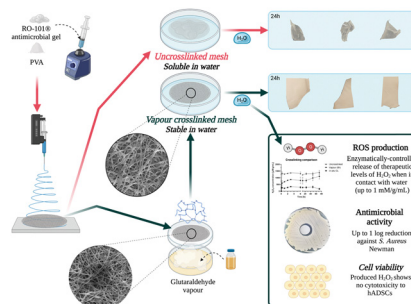
Josipa Sarjanović, Mateja Cader, Edi Topić, Marta Razum, Dominique Agustin, Mirta Rubčić, Luka Pavić* and Jana Pisk*



9403

ROS-releasing PVA sub-micron antimicrobial dressing with enhanced aqueous stability and mechanical properties

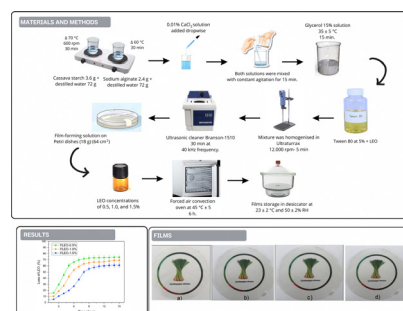
Joel Yupanqui Mieles,* Cian Vyas,* Gavin Humphreys, Carl Diver and Paulo Bartolo*



9417

Development and characterisation of starch/alginate active films incorporated with lemongrass essential oil (*Cymbopogon citratus*)

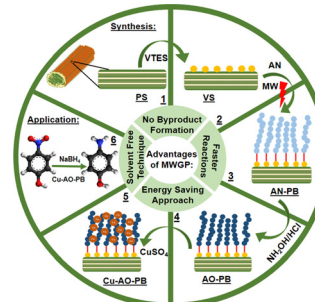
Olga Lucía Torres Vargas,* Yessica Viviana Galeano Loaiza and Iván Andrés Rodríguez Agredo



9428

Microwave-assisted synthesis of copper-loaded polyamidoxime brushes as an efficient catalytic system for nitroarene reduction

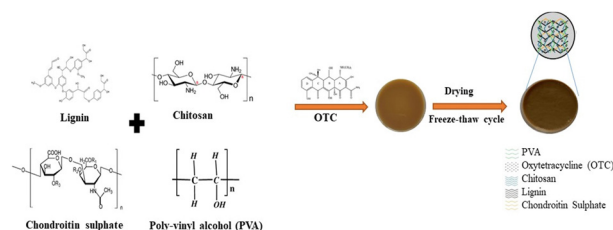
Shaista Taimur,* Shajia Rehman, Mujtaba Ellahi, Syed Rizwan, Humaira Razzaq and Tariq Yasin



9445

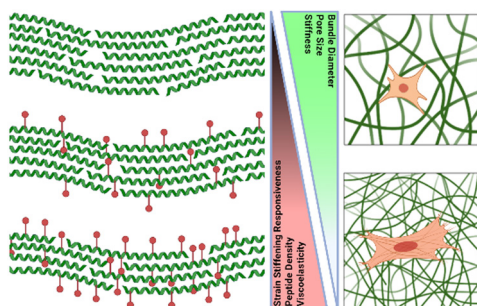
A lignin-based biocomposite hydrogel for antimicrobial and wound healing applications

Jaskiran Preet, Khushboo Pathania, Jasdeep Kaur, Rachna Singh, Deepak B. Salunke and Sandip V. Pawar*



PAPERS

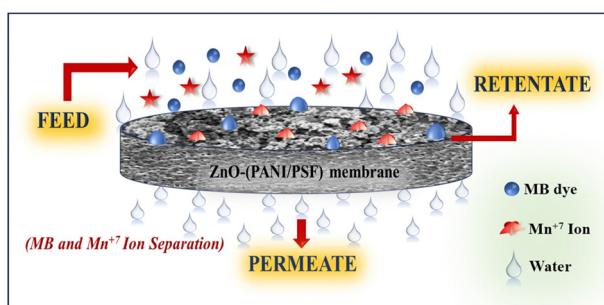
9458



Controlling ligand density and viscoelasticity in synthetic biomimetic polyisocyanide hydrogels for studying cell behaviours: the key to truly biomimetic hydrogels

Nicholas J. Westra van Holthe,* Zhao Wang, Jan Lauko, Elliot P. Gilbert, Vishaak Gangasandra and Alan E. Rowan*

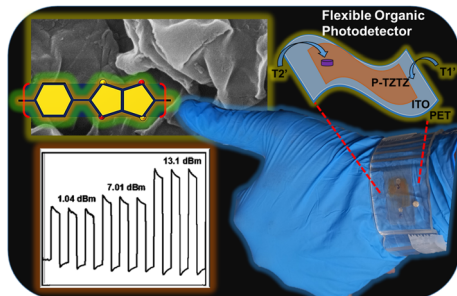
9471



Enabling improved PSF nanocomposite membrane for wastewater treatment with selective nanotubular morphology of PANI/ZnO

Aqsa Zahid, Hafiza Hifza Nawaz, Amna Siddique, Basheer Ahmed, Shumaila Razzaque, Xuqing Liu, Humaira Razzaq* and Muhammad Umar*

9488



A high-performance broadband organic flexible photodetector from a narrow-bandgap thiazolo[5,4-d]thiazole containing conjugated polymer

Sanjana Mathew, Sayan Halder, Keerthi C. J., Saurjyesh Hota, Maitreyi Suntha, Chanchal Chakraborty* and Subhradeep Pal*

CORRECTIONS

9500

Effect of build orientation and heat treatment on the microstructure, mechanical and corrosion performance of super duplex stainless steels fabricated *via* laser powder bed fusion

Karl Peter Davidson,* Ruiliang Liu, Chenyang Zhu, Mehmet Cagirici, Li Ping Tan, Alpravinosh Alagesan and Sarat Singamneni



CORRECTIONS

9501

Correction: Cu(I) diimine complexes as immobilised antibacterial photosensitisers operating in water under visible light

Martin V. Appleby, Peter G. Walker, Dylan Pritchard, Sandra van Meurs, Carly M. Booth, Craig Robertson, Michael D. Ward, David J. Kelly* and Julia A. Weinstein*

