

# Materials Advances

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## IN THIS ISSUE

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### Cover

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



### Inside cover

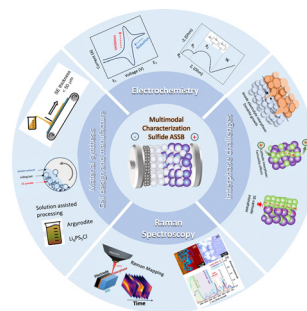
See G. N. Manjunatha Reddy *et al.*, pp. 9210–9219. Image reproduced by permission of G. N. Manjunatha Reddy from *Mater. Adv.*, 2024, 5, 9210.

## REVIEWS

9138

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

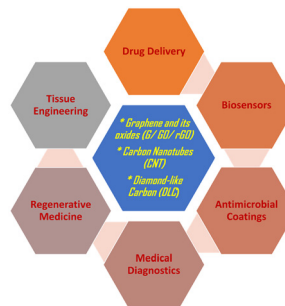
Yuanshun Li, Michelle Lehmann, Lei Cheng, Thomas A Zawodzinski, Jagjit Nanda and Guang Yang\*



9160

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

Naveen Narasimhachar Joshi, Jagdish Narayan and Roger Narayan\*



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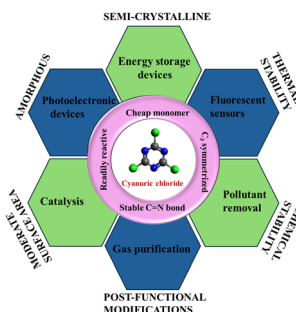


## REVIEWS

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\*

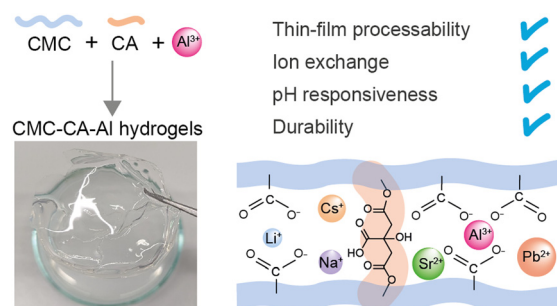


## COMMUNICATION

9210

## Dual cross-linked cellulose based hydrogel films

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

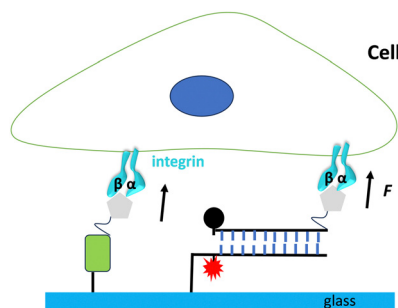


## PAPERS

9220

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

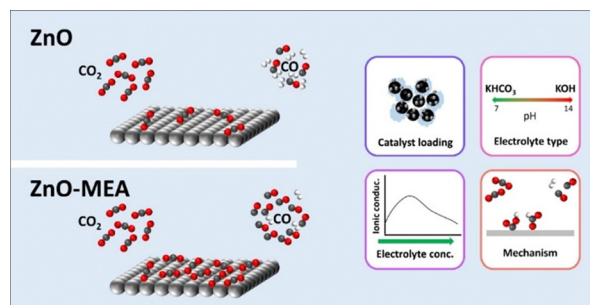
Xiaojun Liu, Jiangtao Li, Xiaoyun Wang, Feng Shao, Xingyou Hu, Juan Li, Lei Yu, Jicheng Zang,\* Guixue Wang\* and Yongliang Wang\*



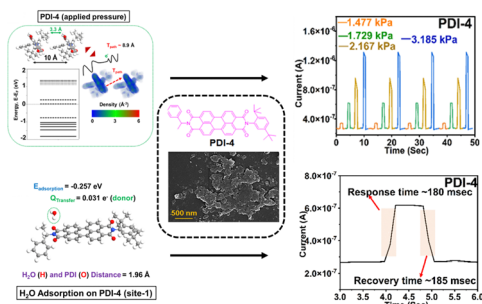
9231

Modification of ZnO gas-diffusion-electrodes for enhanced electrochemical CO<sub>2</sub> 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\*



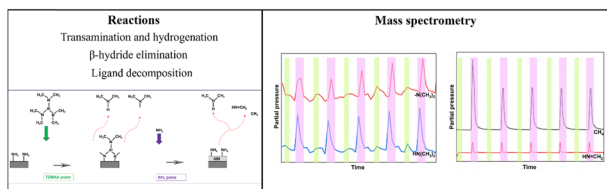
9243



### 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\*

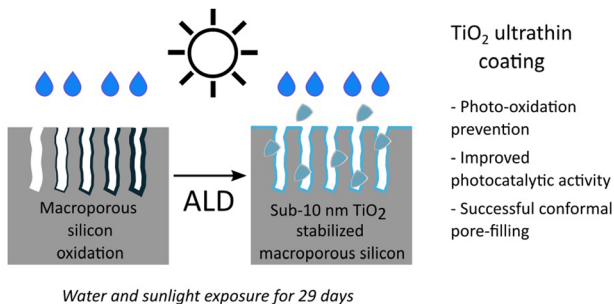
9259



### 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\*

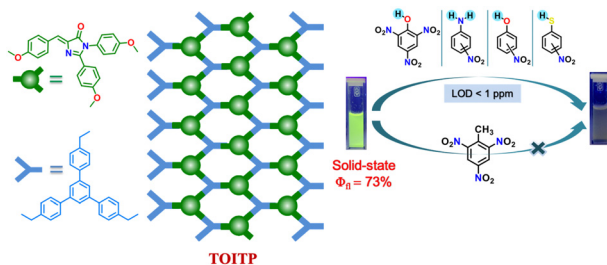
9270



### A road for macroporous silicon stabilization by ultrathin ALD TiO<sub>2</sub> 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

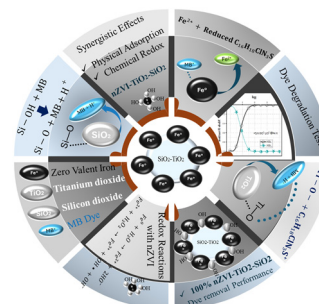
Gulshan Anjum, Ashish Kumar, Gurunath Ramanathan\* and Jarugu Narasimha Moorthy\*



9292

## Unveiling the synergistic effect of an nZVI–SiO<sub>2</sub>–TiO<sub>2</sub> nanocomposite for the remediation of dye contaminated wastewater

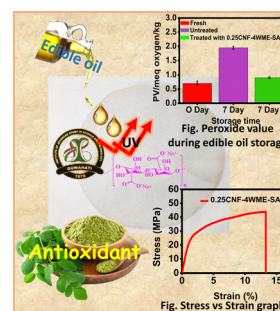
Murtala Namakka,\* Md Rezaur Rahman,\*  
 Khairul Anwar Mohamad Bin Said, King Kuok Kuok,  
 Fahmi Asyadi Md Yusof, Muneera S. M. Al-Saleem,  
 Jehan Y. Al-Humaidi and Mohammed M. Rahman



9314

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

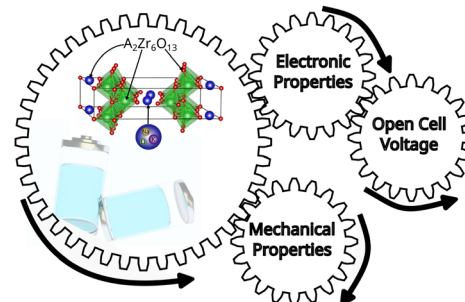
Sazzadur Rahman, Chandramani Batsh,  
 Shalini Gurumayam, Jagat Chandra Borah and  
 Devasish Chowdhury\*



9330

## Theoretical predictions of alkali hexazirconate (A<sub>2</sub>Zr<sub>6</sub>O<sub>13</sub>, A = Li, Na, And K) as candidates for alkali ion batteries

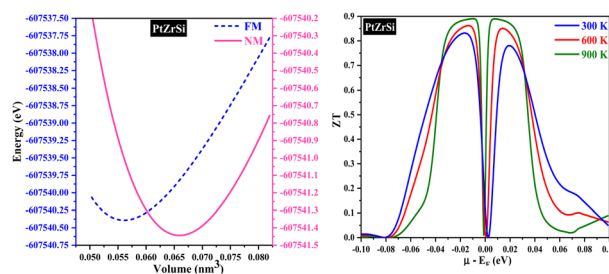
José. R. Fernández-Gamboa,\* Frederik Tielens and  
 Yohandys A. Zulueta



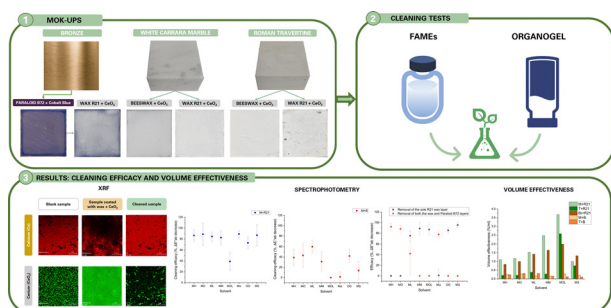
9340

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

Bharti Gurunani and Dinesh C. Gupta\*



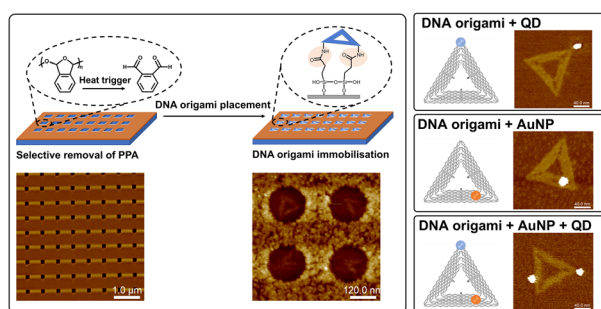
9359



### 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

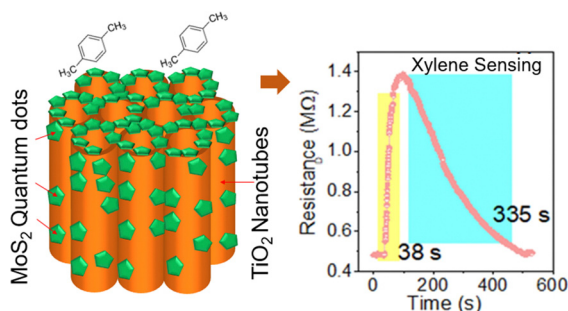
9376



### 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\*

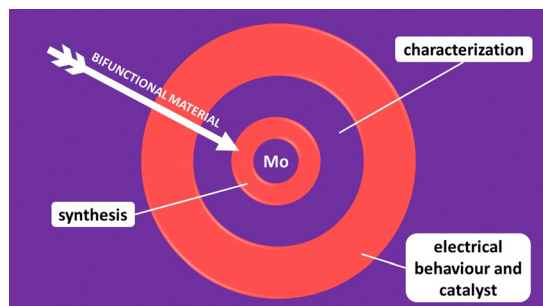
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### A MoS<sub>2</sub> quantum dot functionalized TiO<sub>2</sub> nanotube array for selective detection of xylene at low temperature

Radha Bhardwaj and Arnab Hazra\*

9391



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

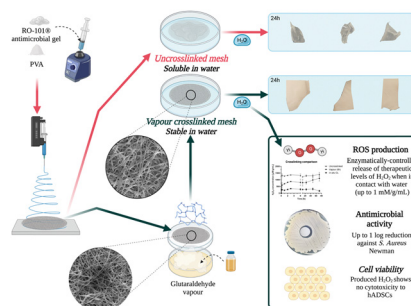
Josipa Sarjanović, Mateja Cader, Edi Topić, Marta Razum, Dominique Agustin, Mirta Rubčić, Luka Pavić\* and Jana Pisk\*



9403

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

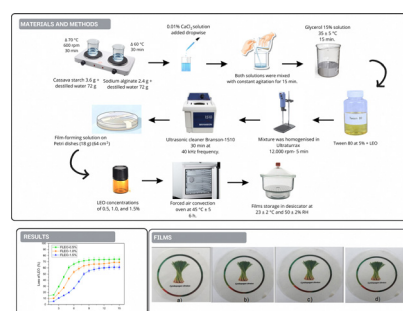
Joel Yupanqui Mieles,\* Cian Vyas,\* Gavin Humphreys, Carl Diver and Paulo Bartolo\*



9417

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

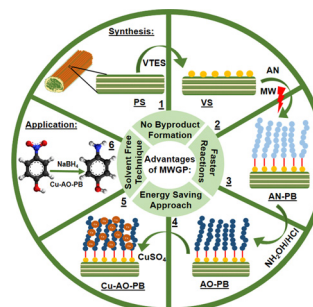
Olga Lucía Torres Vargas,\* Yessica Viviana Galeano Loaiza and Iván Andrés Rodríguez Agredo



9428

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

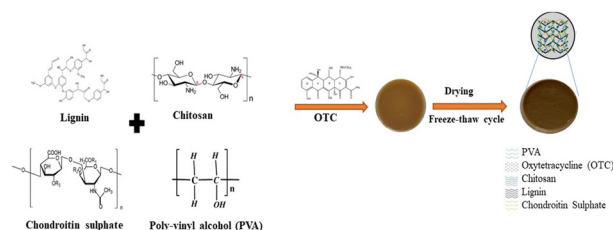
Shaista Taimur,\* Shajia Rehman, Mujtaba Ellahi, Syed Rizwan, Humaira Razzaq and Tariq Yasin



9445

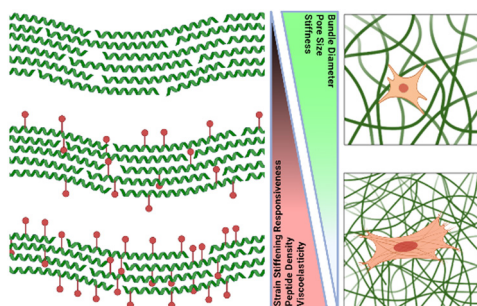
## A lignin-based biocomposite hydrogel for antimicrobial and wound healing applications

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



## PAPERS

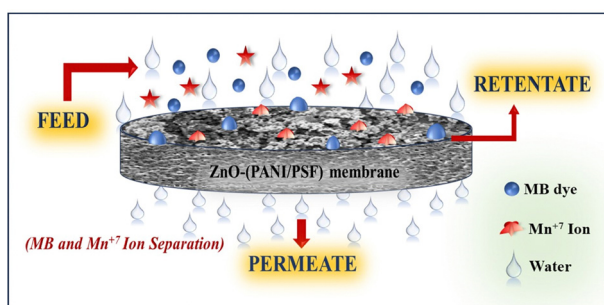
9458



### 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\*

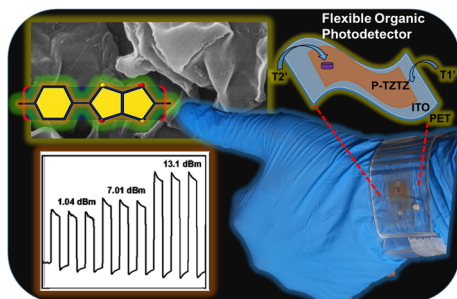
9471



### 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\*

