

# Materials Advances

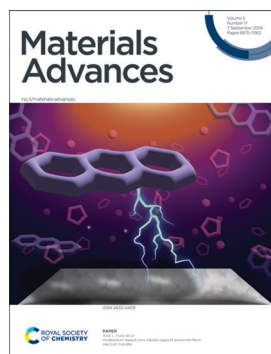
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## IN THIS ISSUE

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### Cover

See Ariel L. Furst *et al.*, pp. 6813–6819. Image reproduced by permission of Ariel L. Furst from *Mater. Adv.*, 2024, 5, 6813.



### Inside cover

See Chin-Yi Chung *et al.*, pp. 6820–6829. Image reproduced by permission of Chin-Yi Chung from *Mater. Adv.*, 2024, 5, 6820.

## EDITORIAL

6686

### Introduction to order, disorder and ultrafast phenomena in functional solids

Hiroko Tokoro,\* Eric Collet\* and Ernest Pastor\*

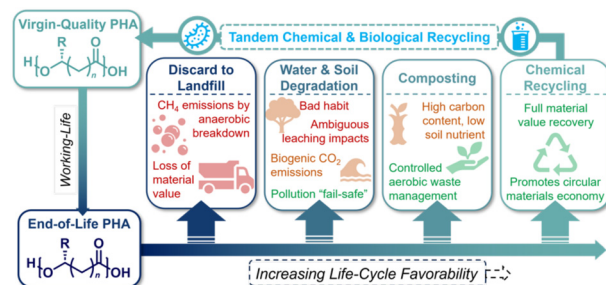


## PERSPECTIVE

6690

### Polyhydroxyalkanoates in emerging recycling technologies for a circular materials economy

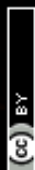
Ryan W. Clarke, Gloria Rosetto, Taylor Uekert, Julia B. Curley, Hyunjin Moon, Brandon C. Knott, John E. McGeehan and Katrina M. Knauer\*



# RSC Applied Polymers

The application of polymers,  
both natural and synthetic

Interdisciplinary and open access



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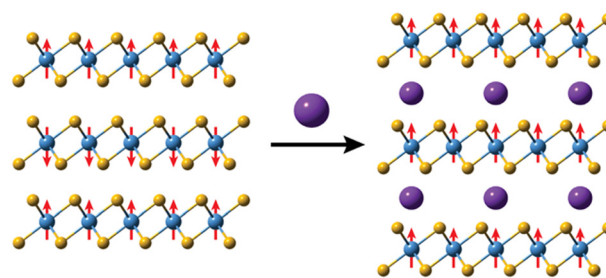
Fundamental questions  
Elemental answers

## REVIEWS

6702

### Tuning the magnetic properties of van der Waals materials by intercalation

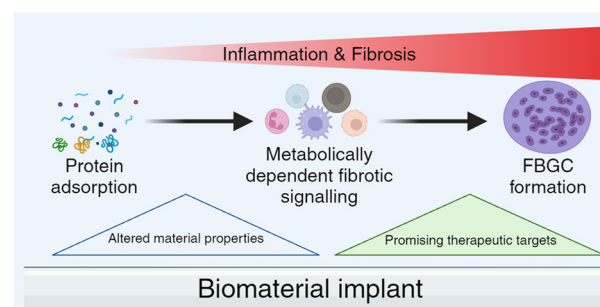
Pim Witte, Annemijn M. van Koten and Machteld E. Kamminga



6719

### Cell dynamics and metabolism of the foreign body response: characterizing host-biomaterial interactions for next-generation medical implant biocompatibility

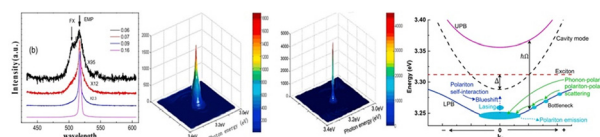
Neal I. Callaghan, Christian N. Rempe, Zachary S. C. S. Froom, Kyle T. Medd and Locke Davenport Huyer\*



6739

### Low-dimensional II–VI semiconductor nanostructures of ternary alloys and transition metal ion doping: synthesis, optical properties and applications

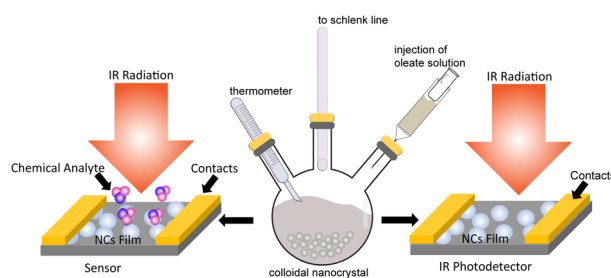
Arfan Bukhtiar\* and Bingsuo Zou\*



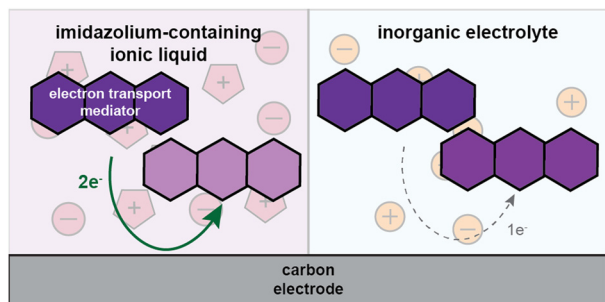
6796

### Degenerately doped metal oxide nanocrystals for infrared light harvesting: insight into their plasmonic properties and future perspectives

Mandeep Singh, Francesco Scotognella\* and Giuseppe Maria Paternò\*



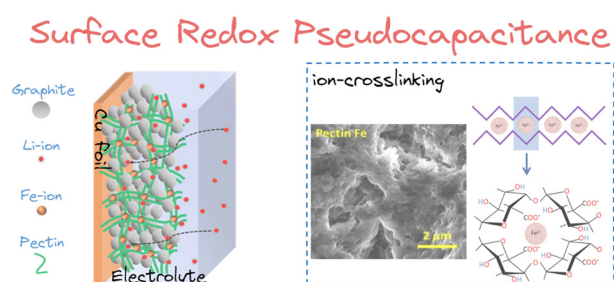
6813



### Imidazolium-based ionic liquids support biosimilar flavin electron transfer

Grace I. Anderson, Alec A. Agee and Ariel L. Furst\*

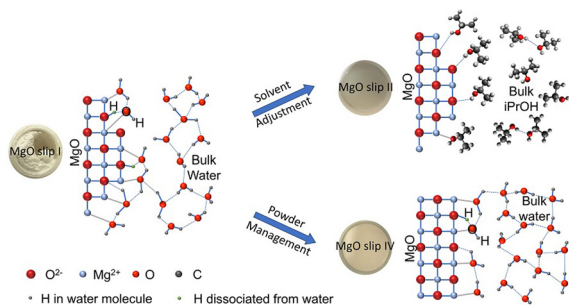
6820



### Enhanced fast charging capabilities in natural graphite/iron cross-linked pectin electrodes for lithium-ion batteries

Chin-Yi Chung, Wei-Ming Chen, Yan-Ruei Chen, Liang-Yu Chen, Yu-Hsuan Su, Po-Wei Chi,\* Phillip M. Wu,\* Kuei-Shu Chang-Liao, Hong-Yi Tang and Maw-Kuen Wu

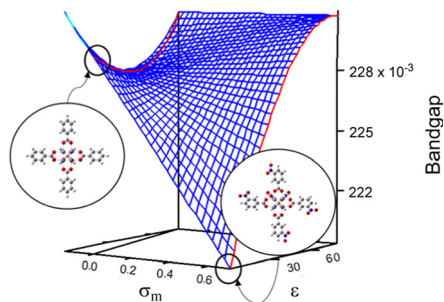
6830



### Hydration control in the fabrication of high-density magnesia products *via* slip casting

Yu Yu, Arkadiusz Gargala, Michael Misson and George Z. Chen\*

6842



### Toward tuning the bandgap in *meta*-substituted Fe-MOFs

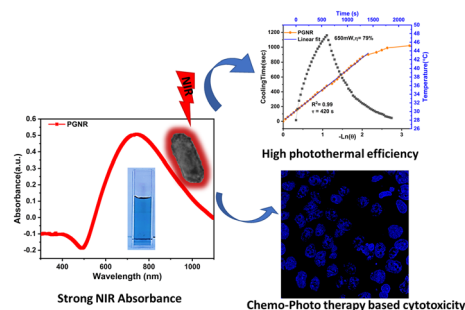
Kyle I. Williamson, Daniel J. C. Herr\* and Yirong Mo\*



6853

### NIR-responsive porous gold nanorod dispersed in a 3D gelatin scaffold for stimulus-responsive drug release and synergistic therapy

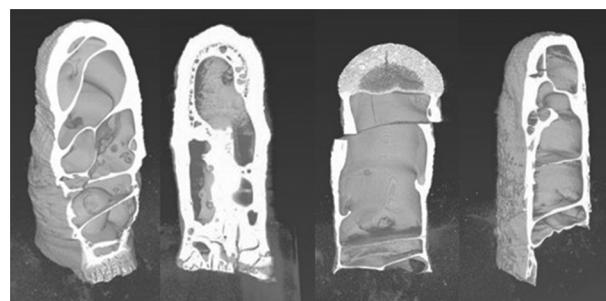
Snigdharani Panda, Irfan Khan, Suditi Neekhra, Rohit Srivastava and Sunita Srivastava\*



6864

### Hydrogen storage capacity of freeze cast microporous monolithic composites

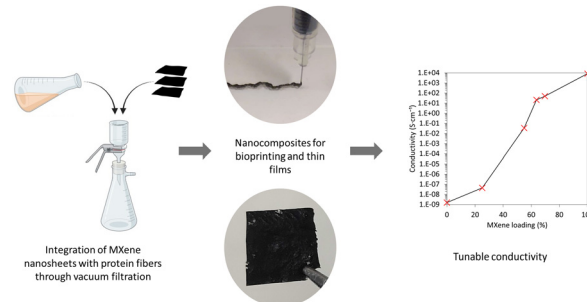
Catherine Butler, Timothy J. Mays, Vijay Sahadevan, Rachel O'Malley, Daniel P. Graham and Christopher R. Bowen\*



6873

### Conductive MXene nanosheets infused in protein fiber hydrogels for bioprinting and thin film electrodes

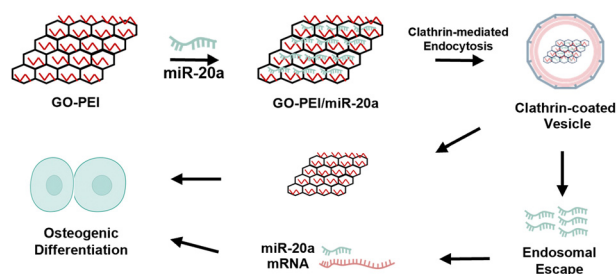
Mario Alfonso Arenas García, Slah Hidouri, Joshua M. Little, Daniel Modafferi, Xinxin Hao, Po-Yen Chen and Noémie-Manuelle Dorval Courchesne\*



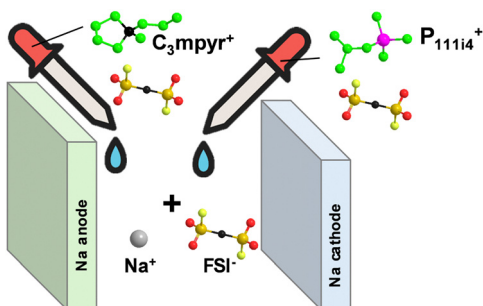
6887

### MiRNA-20a-loaded graphene oxide–polyethylenimine enters bone marrow mesenchymal stem cells via clathrin-dependent endocytosis for efficient osteogenic differentiation

Yujie Ji, Qiaoling Qing, Zhaoying Zhang, Han Qin\* and Xuerong Xiang\*



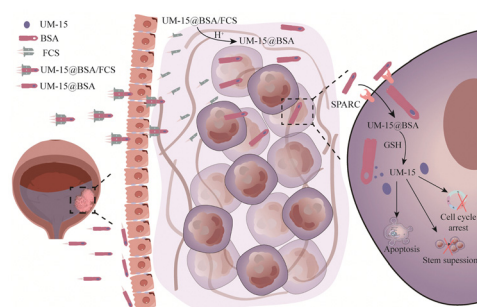
6899



### Investigating the role of mixed-cation ionic liquid electrolytes in sodium battery efficiency and stability

Lixu Huang, Faezeh Makhlooghiyazad, Luke A. O'Dell, Patrick C. Howlett and Maria Forsyth\*

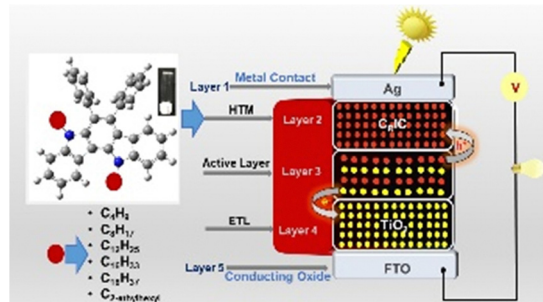
6910



### Intravesical cascade delivery of active monoterpene coumarin for bladder cancer therapy

Yanwei Lai, Dashi Deng, Simin Yuan, Xiaocen Liu, Qifang Lei\* and Guangzhi Li\*

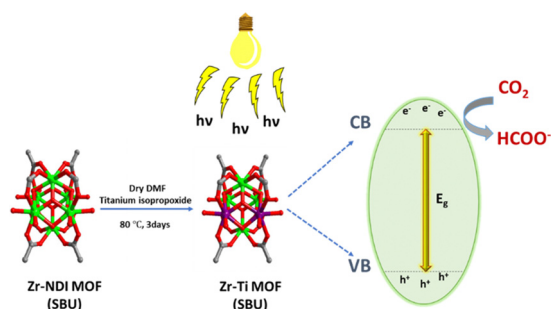
6925



### Design, synthesis and characterization of indolo[3,2-a]carbazole-based low molecular mass organogelators as hole transport materials in perovskite solar cells

Haritha Jalaja Raghavan, Nideesh Perumbalathodi, Lincy Tom, Kala Kannankutty, Madambi Kunjukuttan Ezhuthachan Jayaraj, Narayanapillai Manoj\* and Tzu-Chien Wei\*

6936



### Post-synthetic exchange in a zirconium metal-organic framework for efficient photoreduction of CO<sub>2</sub> to formate

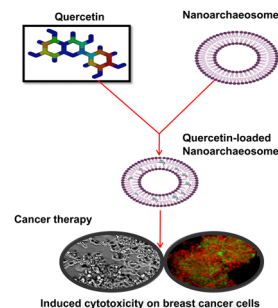
Akhil Chandran P., Govu Radha, P. C. Meenu, Sounak Roy\* and Himanshu Aggarwal\*



6944

### Quercetin-loaded nanoarchaeosomes for breast cancer therapy: a ROS mediated cell death mechanism

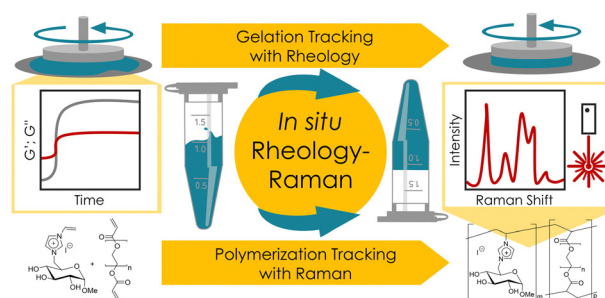
Subastri Ariraman, Abirami Seetharaman, Kaviya Vijayalakshmi Babunagappan and Swathi Sudhakar\*



6957

### A novel characterization technique for hydrogels – *in situ* rheology-Raman spectroscopy for gelation and polymerization tracking

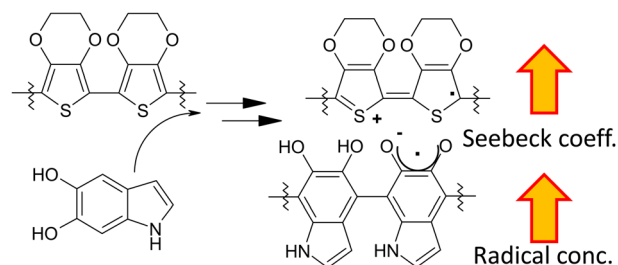
Sina Lambrecht, Marek Biermann, Selin Kara, Stefan Jopp and Johanna Meyer\*



6967

### A synergistic radical concentration increase in eumelanin–PEDOT:PSS blends: mammalian pigment-based doping for thermopower improvement

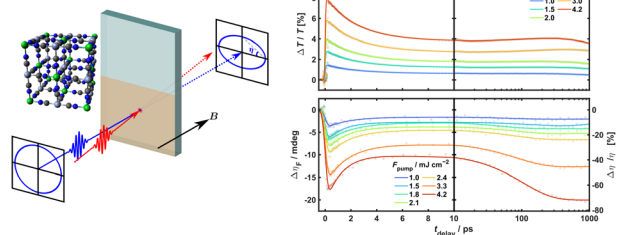
Raffaella Ferraiuolo, Carlo Carandente Coscia, Maria Grazia Maglione, Paolo Tassini, Rodolfo Esposito, Giuseppe Vitiello, Gerardino D'Errico and Alessandro Pezzella\*



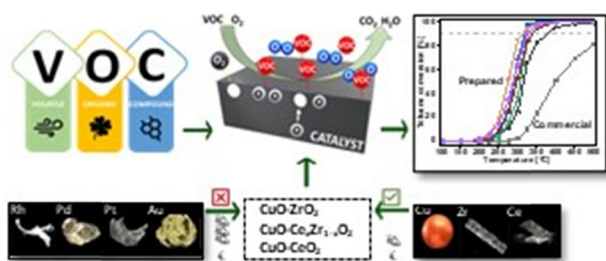
6974

### Ultrafast magnetisation dynamics in a chromium-based Prussian blue analogue

Harry A. Lewis, Thomas M. Stonelake, Oscar Céspedes and J. Olof Johansson\*



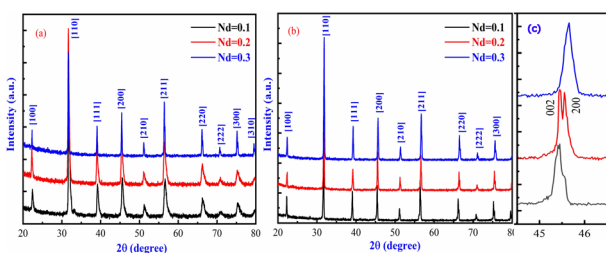
6983



### Preparation of noble metal-free porous CuO–ceria and zirconia mixed oxide catalysts using the ammonia driven deposition precipitation method for toluene combustion

Wouter Van Hoey, Anna Rokicińska, Marek Dębosz, Izabela Majewska, Piotr Kuśtrowski and Pegie Cool\*

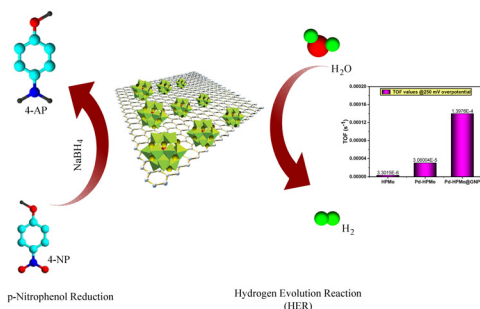
6996



### Enhancement of mechanical and energy storage properties of Ba(Ti<sub>0.8</sub>Co<sub>0.2</sub>)O<sub>3</sub> Pb-free ceramics by addition of Nd<sup>3+</sup> ions

Saleh M. Matar, Elbadawy A. Kamoun,\* Abd El-Razek Mahmoud, H. F. Mohamed, A. M. Ahmed, Gehad Mohamed Elhefnawy, Ahmed I. Ali,\* Jong Yeog Son\* and Amr Ali

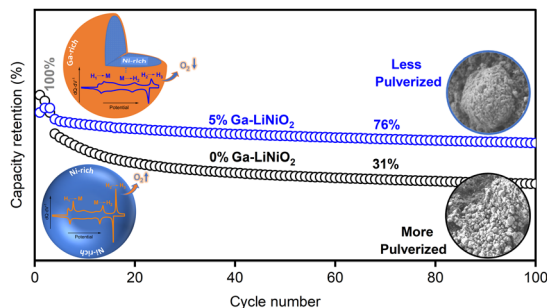
7006



### Modified Pd–HPMo@GNP as a highly effective electro-/nanocatalyst for the hydrogen evolution reaction and 4-nitrophenol reduction

Selvaraj Iniyan, Aathilingam Vijayaprabakaran, Christy Sebastian and Murugavel Kathiresan\*

7016



### The emergence of a robust lithium gallium oxide surface layer on gallium-doped LiNiO<sub>2</sub> cathodes enables extended cycling stability

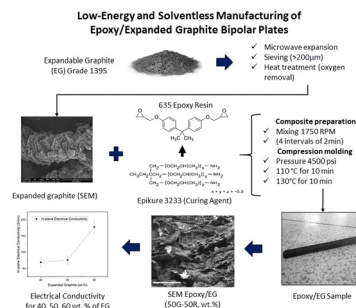
Mritunjay Mishra and Koffi P. C. Yao\*



7028

## Low-energy and solventless manufacturing of epoxy/expanded graphite bipolar plates

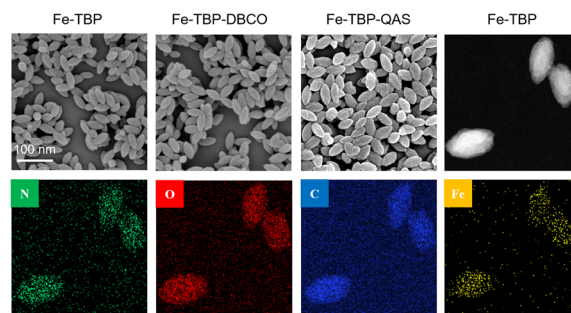
Jordy Santana-Villamar, Miguel Carrasco-Cordero, Jose Suarez-Loor, Mayken Espinoza-Andaluz\* and Andres F. Rigail-Cedeño\*



7035

## Synergistic antibacterial effect of quaternary ammonium salt functionalized metal–organic framework

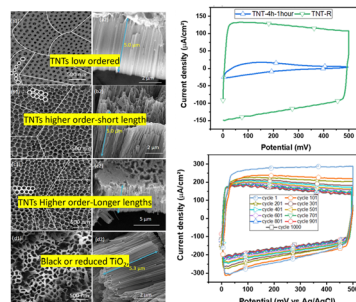
Ming Zhou, Bin Zhang, Tan Wang, Ping Xiao, Lin Cheng and Rui Tang\*



7040

## Enhanced activity of highly ordered pristine and black anodic TiO<sub>2</sub> nanotubes for high performance supercapacitors

Farzad Nasirpour, Leila Jafari-Foruzin, Amir-Ali Farmani, Elham Hosseinpour and Hassan Yadipour



7052

## Tuning N-heterocyclic carbene wingtips to form electrochemically stable adlayers on metals

Isabel M. Jensen, Vincent Clark, Harper L. Kirby, Netzahualcōyotl Arroyo-Currás\* and David M. Jenkins\*

