

Materials Advances

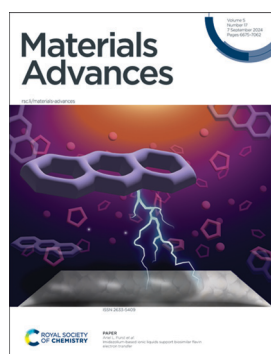
An open access journal publishing across the breadth of materials science

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(17) 6675-7062 (2024)



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*

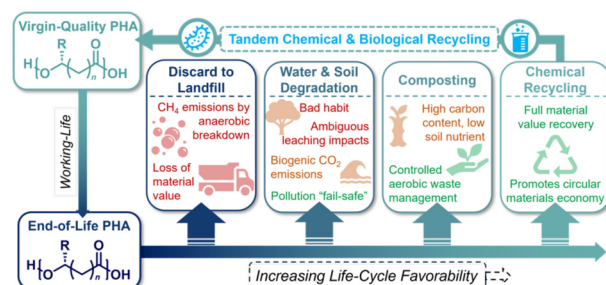


PERSPECTIVE

6690

Polyhydroxyalkanoates in emerging recycling technologies for a circular materials economy

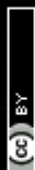
Ryan W. Clarke, Gloria Rosetto, Taylor Uekert, Julia B. Curley, Hyunjin Moon, Brandon C. Knott, John E. McGeehan and Katrina M. Knauer*



RSC Applied Polymers

The application of polymers,
both natural and synthetic

Interdisciplinary and open access



rsc.li/RSCApplPolym

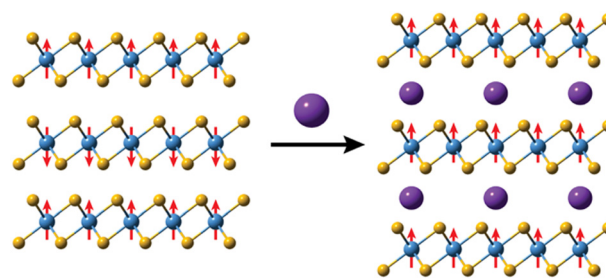
Fundamental questions
Elemental answers

REVIEWS

6702

Tuning the magnetic properties of van der Waals materials by intercalation

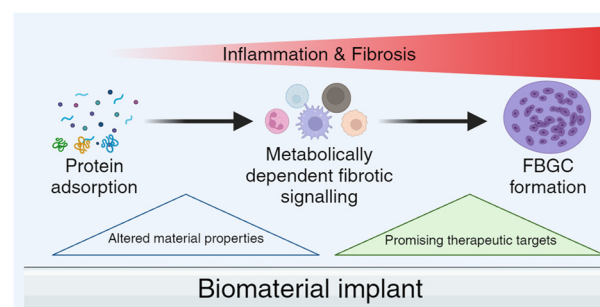
Pim Witte, Annemijn M. van Koten and Machteld E. Kamminga



6719

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

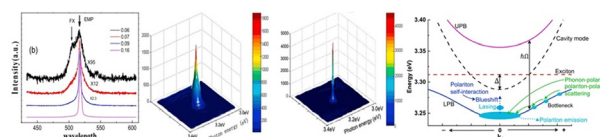
Neal I. Callaghan, Christian N. Rempe, Zachary S. C. S. Froom, Kyle T. Medd and Locke Davenport Huyer*



6739

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

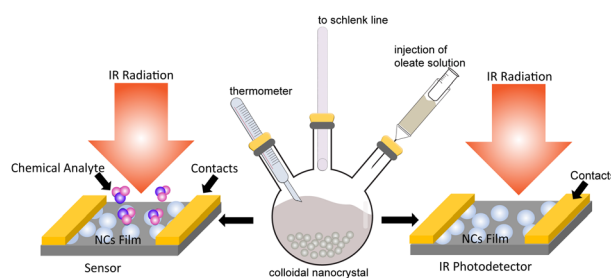
Arfan Bukhtiar* and Bingsuo Zou*



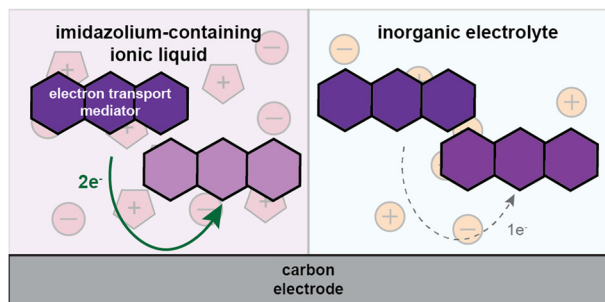
6796

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*



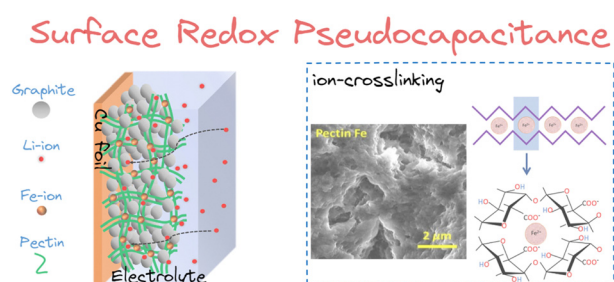
6813



Imidazolium-based ionic liquids support biosimilar flavin electron transfer

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

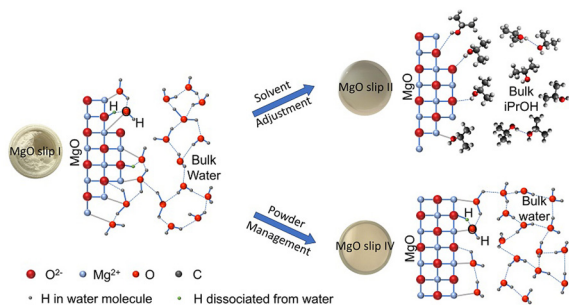
6820



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

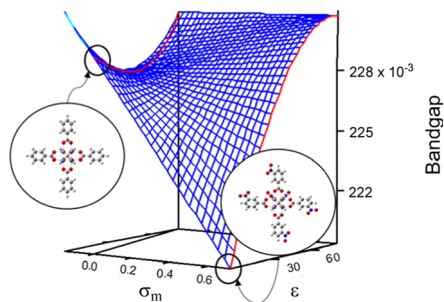
6830



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

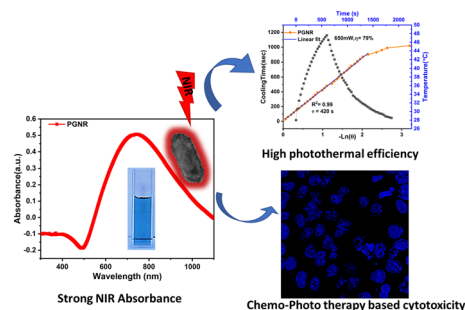
Kyle I. Williamson, Daniel J. C. Herr* and Yirong Mo*



6853

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

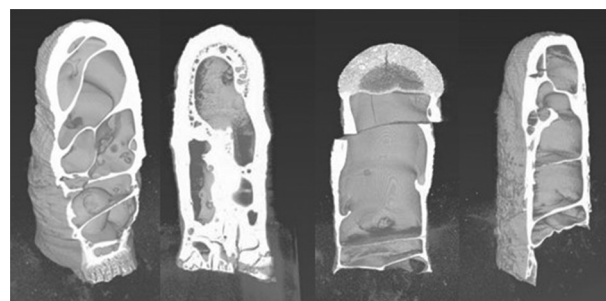
Snigdharani Panda, Irfan Khan, Suditi Neekhra, Rohit Srivastava and Sunita Srivastava*



6864

Hydrogen storage capacity of freeze cast microporous monolithic composites

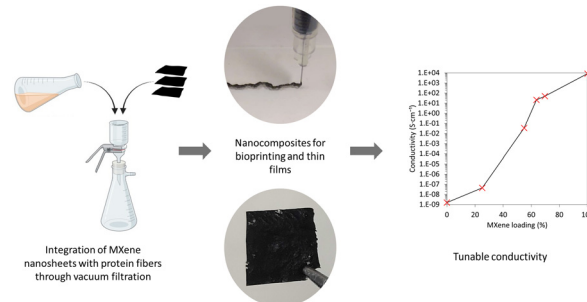
Catherine Butler, Timothy J. Mays, Vijay Sahadevan, Rachel O'Malley, Daniel P. Graham and Christopher R. Bowen*



6873

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

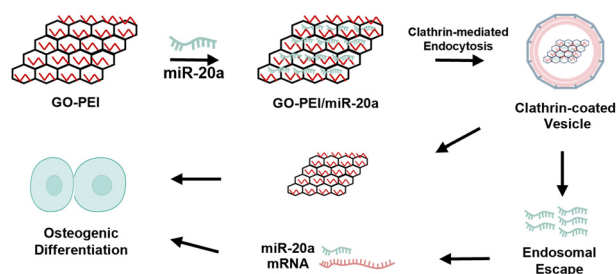
Mario Alfonso Arenas García, Slah Hidouri, Joshua M. Little, Daniel Modafferi, Xinxin Hao, Po-Yen Chen and Noémie-Manuelle Dorval Courchesne*



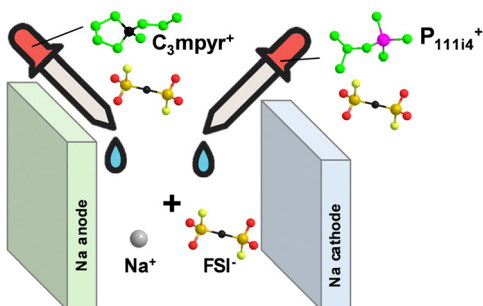
6887

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*



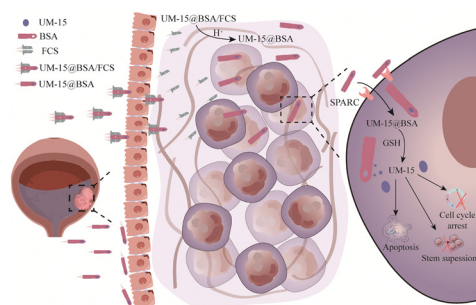
6899



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*

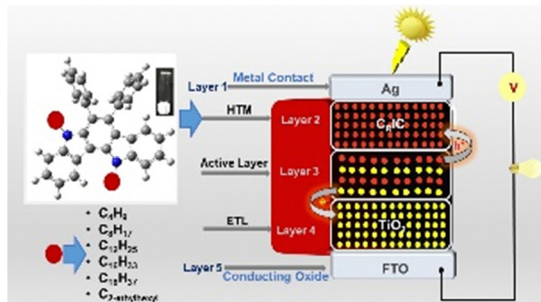
6910



Intravesical cascade delivery of active monoterpene coumarin for bladder cancer therapy

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

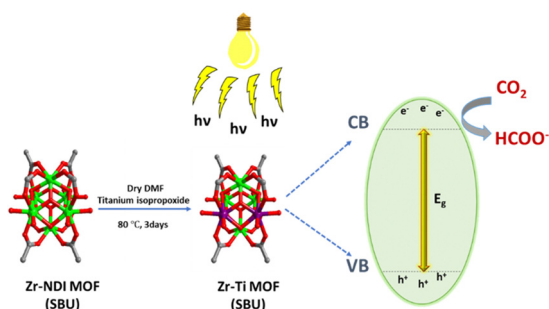
6925



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 CO₂ to formate

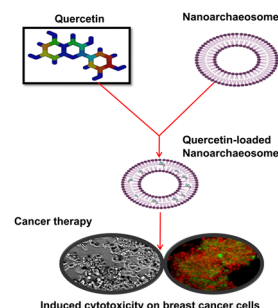
Akhil Chandran P., Govu Radha, P. C. Meenu, Sounak Roy* and Himanshu Aggarwal*



6944

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

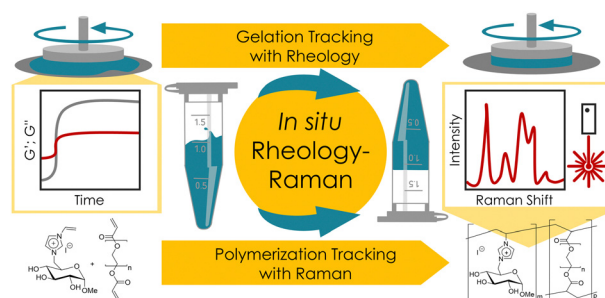
Subastri Ariraman, Abirami Seetharaman, Kaviya Vijayalakshmi Babunagappan and Swathi Sudhakar*



6957

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

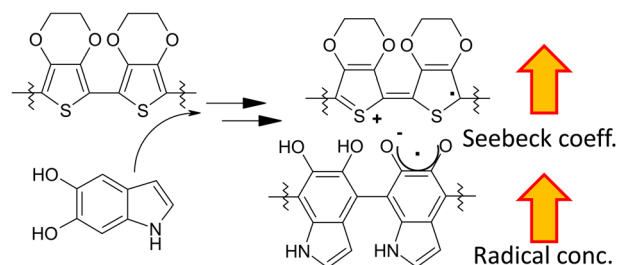
Sina Lambrecht, Marek Biermann, Selin Kara, Stefan Jopp and Johanna Meyer*



6967

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

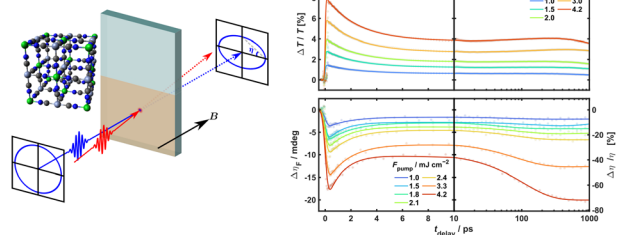
Raffaella Ferraiuolo, Carlo Carandente Coscia, Maria Grazia Maglione, Paolo Tassini, Rodolfo Esposito, Giuseppe Vitiello, Gerardino D'Errico and Alessandro Pezzella*



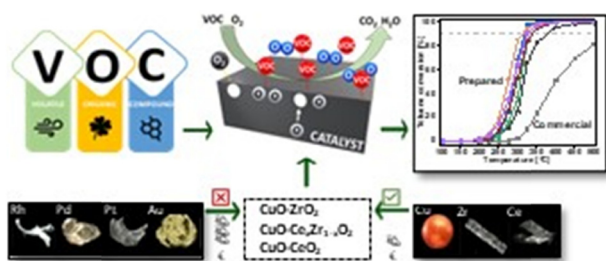
6974

Ultrafast magnetisation dynamics in a chromium-based Prussian blue analogue

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



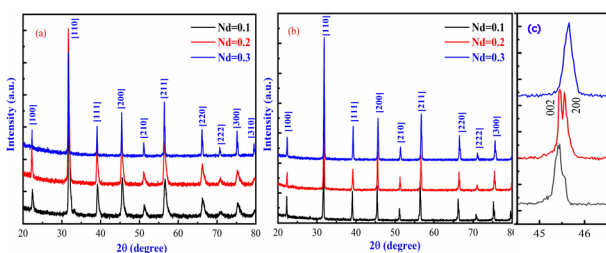
6983



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*

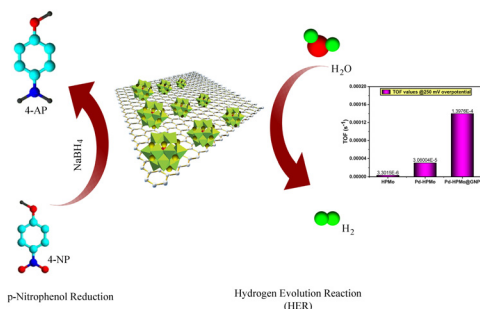
6996



Enhancement of mechanical and energy storage properties of Ba(Ti_{0.8}Co_{0.2})O₃ Pb-free ceramics by addition of Nd³⁺ 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

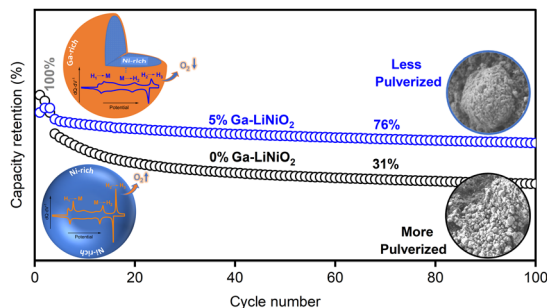
7006



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 LiNiO₂ cathodes enables extended cycling stability

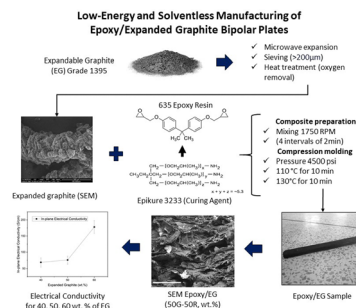
Mritunjay Mishra and Koffi P. C. Yao*



7028

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

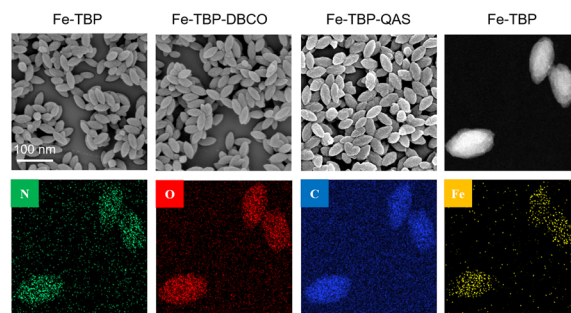
Jordy Santana-Villamar, Miguel Carrasco-Cordero, Jose Suarez-Loor, Mayken Espinoza-Andaluz* and Andres F. Rigail-Cedeño*



7035

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

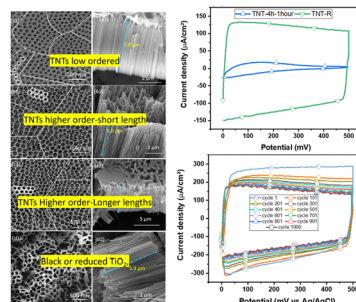
Ming Zhou, Bin Zhang, Tan Wang, Ping Xiao, Lin Cheng and Rui Tang*



7040

Enhanced activity of highly ordered pristine and black anodic TiO₂ nanotubes for high performance supercapacitors

Farzad Nasirpouri,* 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*

