

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.

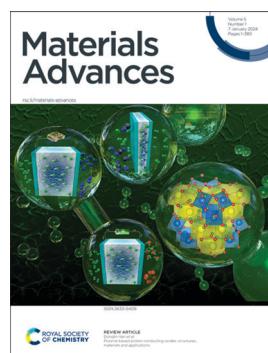
IN THIS ISSUE

ISSN 2633-5409 CODEN MAADC9 5(1) 1–380 (2024)



Cover

See Muhammad Imran Asghar *et al.*, pp. 143–158.
Image reproduced by permission of Sanaz Zarabi Golkhatri, Peter D. Lund and Muhammad Imran Asghar from *Mater. Adv.*, 2024, 5, 143.



Inside cover

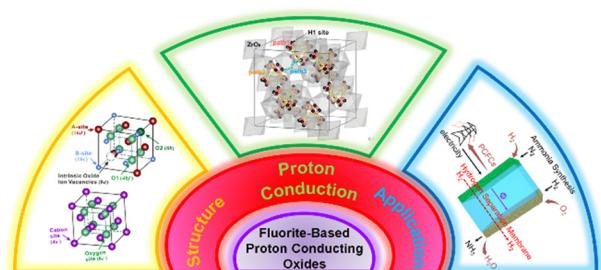
See Donglin Han *et al.*, pp. 12–29.
Image reproduced by permission of Donglin Han from *Mater. Adv.*, 2024, 5, 12.

REVIEWS

12

Fluorite-based proton conducting oxides: structures, materials and applications

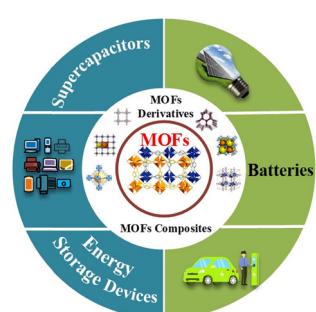
Pan Xiang, Sara Adeeba Ismail, Shihang Guo, Lulu Jiang and Donglin Han*



30

Metal–organic frameworks for next-generation energy storage devices; a systematic review

Zeshan Ali Sandhu,* Muhammad Asam Raza, Nasser S. Awwad, Hala A. Ibrahim, Ummi Farwa, Sawera Ashraf, Arooj Dildar, Eman Fatima, Sufyan Ashraf and Furqan Ali



 GOLD
OPEN
ACCESS

RSC Applied Polymers

The application of polymers,
both natural and synthetic

Interdisciplinary and open access



rsc.li/RSCApplPolym

Fundamental questions
Elemental answers

REVIEWS

51

A review on zirconium-based metal–organic frameworks: synthetic approaches and biomedical applications

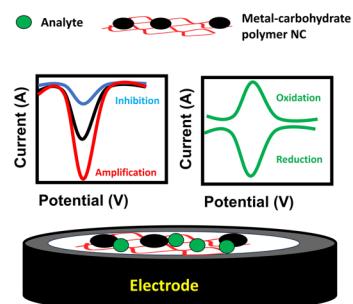
Krishna Chattopadhyay,* Manas Mandal* and Dilip Kumar Maiti*



68

Carbohydrate polymer-supported metal and metal oxide nanoparticles for constructing electrochemical sensors

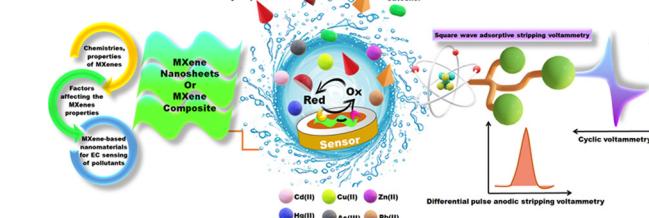
Moustafa Zahran



83

Versatile MXenes as electrochemical sensors for heavy metal ions and phenolic moiety-containing industrial chemicals: recent development and prospects

G. Manasa and Chandra Sekhar Rout*

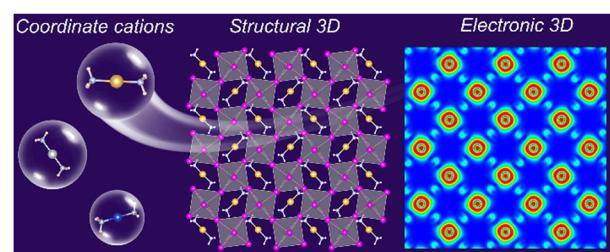


COMMUNICATIONS

123

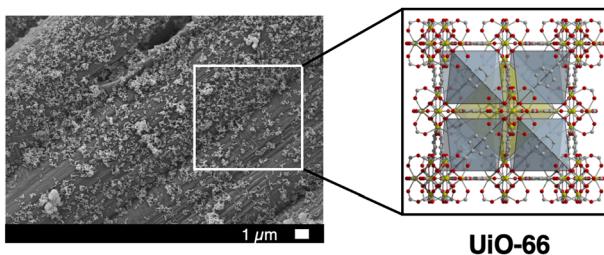
Three-dimensional lead iodide perovskites based on complex ions

Hebin Wang, Yinye Yu, Haolin Lu, Teng Wang, Yuki Haruta, Xingzhan Wei, Guichuan Xing, Makhsum I. Saidaminov, Yecheng Zhou* and Guankui Long*



COMMUNICATIONS

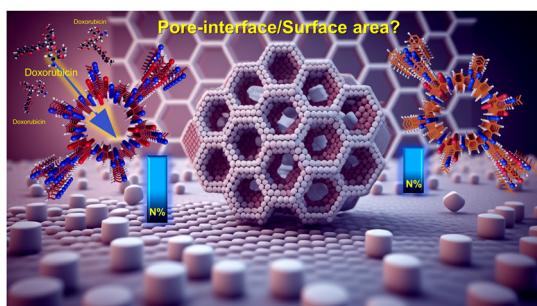
131



Aerosol deposition of porous metal-organic materials onto diverse solid supports

Christine M. Montone and Eric D. Bloch*

136

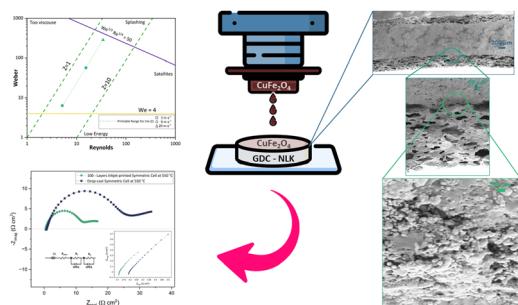


Pore-interface engineering improves doxorubicin loading to triazine-based covalent organic framework

Preeti Rathi, Sumanta Chowdhury,* Partha Pratim Das, Anand Kumar Keshri, Anubha Chaudhary and Prem Felix Siril*

PAPERS

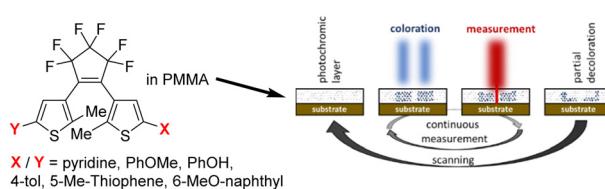
143



A novel CuFe₂O₄ ink for the fabrication of low-temperature ceramic fuel cell cathodes through inkjet printing

Sanaz Zarabi Golkhatmi, Peter D. Lund and Muhammad Imran Asghar*

159



Stabilities of bis(thienyl)ethenes in polymethyl methacrylate (PMMA) coatings as absorbance modulation layers for nanoscale imaging

Sven Nagorny, Marvin Schewe, Thea Weingartz, André Eitzeroth, Jörg Adams, Christian Rembe and Andreas Schmidt*

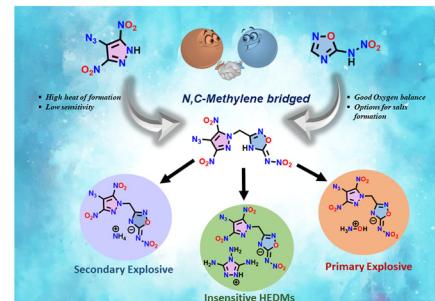


PAPERS

171

Taming of 4-azido-3,5-dinitropyrazole based energetic materials

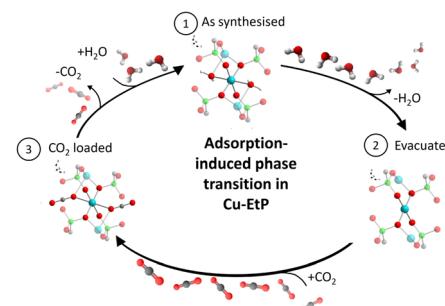
Priyanka Das, Prachi Bhatia, Krishna Pandey and Dheeraj Kumar*



183

Unusual adsorption-induced phase transitions in a pillared-layered copper ethylenediphosphonate with ultrasmall channels

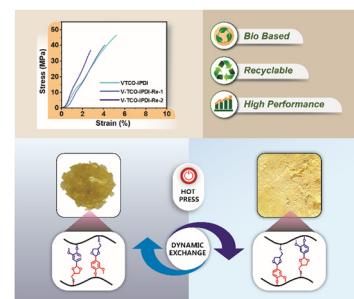
Margherita Cavallo, Matteo Signorile, Roberto Köferstein, Valentina Crocellà* and Marco Taddei*



199

Castor oil-derived polyurethane networks multiple recyclability based on reversible dynamic acetal bond

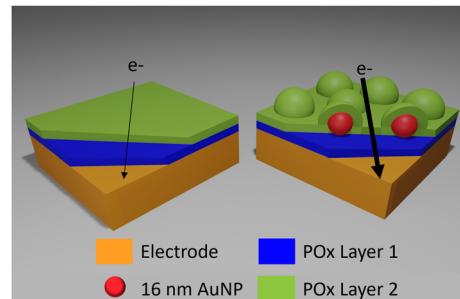
Muhammad Abu Taher, Yi Su, Xiaolin Wang,* Xiaobo Xu, Md Ahsan Habib, Jin Zhu* and Jing Chen*



209

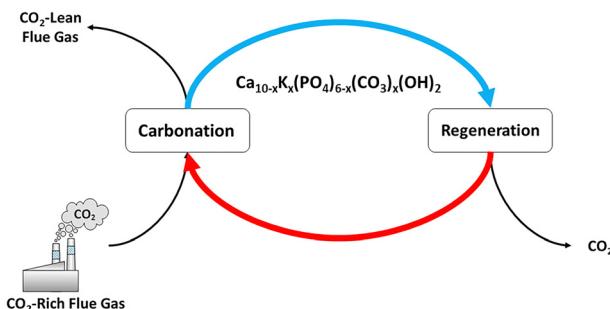
Enhancing the conductivity of plasma polymer functionalized electrodes using gold nanoparticles

Alex Gheorghiu,* Daisy Yang, Tiexin Li, Essam M. Dief, Nadim Darwish, Craig Priest and Melanie MacGregor*



PAPERS

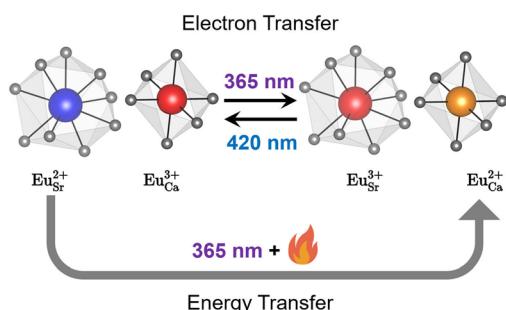
220



Cycling of potassium–carbonate co-substituted hydroxyapatite compositions for improved carbon dioxide capture at 500 °C

Duncan A. Nowicki,* Iain R. Gibson and Janet M. S. Skakle

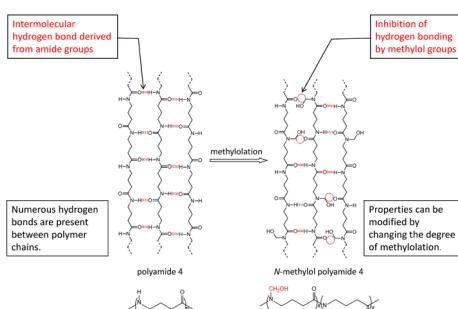
231



Insight into the electron transfer and anti-thermal quenching of europium doped $\text{Li}_4\text{SrCa}(\text{SiO}_4)_2$

Jieqi Hu, Philippe F. Smet, Rik Van Deun and David Van der Heggen*

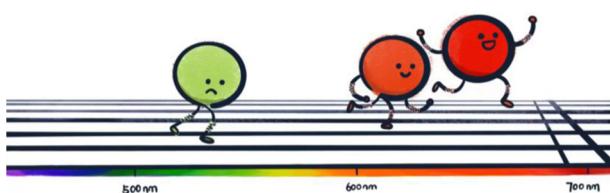
240



Synthesis of *N*-methylol polyamide 4: characterization, properties, and biodegradability

Norioki Kawasaki,* Naoko Yamano and Atsuyoshi Nakayama

249



Photoluminescence mechanism of red emissive carbon dots from a diaminobenzoic acid isomer

Yunpeng Liu, Haojie Ding, Shulan Zhang, Mujing Qu, Jiaxin Duan, Henglong Dai and Huili Li*

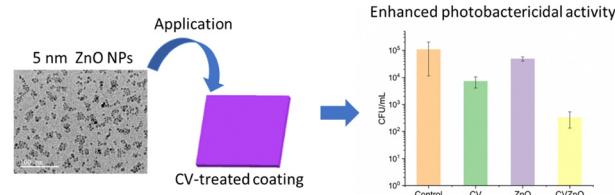


PAPERS

259

White light-activated bactericidal coating using acrylic latex, crystal violet, and zinc oxide nanoparticles

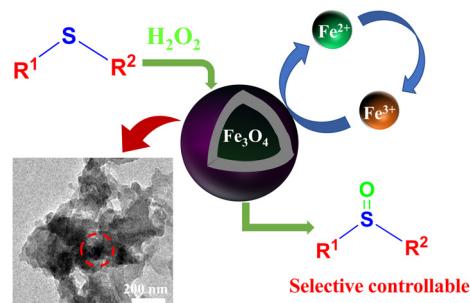
Gi Byoung Hwang, Joe Stent, Sacha Noimark, Ki Joon Heo, Alexander J. MacRobert, Christopher W. M. Kay, Enrico Salvadori, Charlotte K. Williams, Sebastian D. Pike, Milo S. P. Shaffer, Elaine Allan and Ivan P. Parkin*



267

A magnetic Fe@PANI catalyst for the selective oxidation of sulphide under mild and green conditions

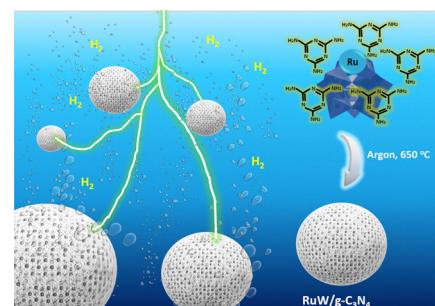
Xiaohu Wu, Ying Chen, Yiyang Zhang, Xu Zhang* and Lei Yu*



274

A tailored polyoxometalate-derived RuW/g-C₃N₄-based electrocatalyst for enhanced hydrogen evolution reaction

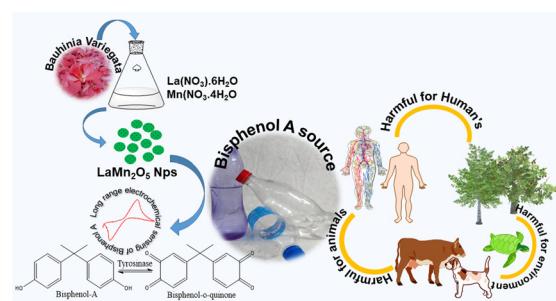
Soyeb Pathan,* Menon Ankitha, Ajith Arjun Mohan, Neermunda Shabana, Yongfeng Tong and P. Abdul Rasheed*



282

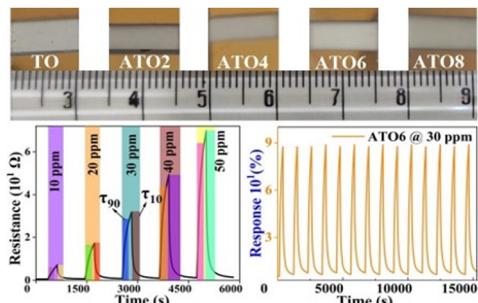
Structuring biogenic synthesis of rare phase LaMn₂O₅ using the *Bauhinia variegata* (Kachnar) flower extract for highly sensitive, long range electrochemical detection of bisphenol-A, an endocrine disruptor

Ankur Srivastava, Kshitij RB Singh, Mrituanjay D. Pandey* and Jay Singh*



PAPERS

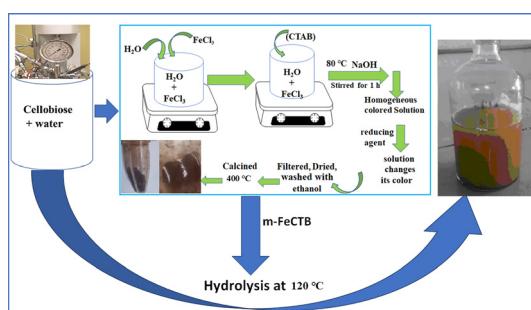
293



A highly sensitive and room temperature ethanol gas sensor based on spray deposited Sb doped SnO_2 thin films

Ramarajan Ramanathan, Selvakumar Nagarajan, Surya Sathiyamoorthy, Balaji Manavaimaran, Harish C. Barshilia and Ramesh Chandra Mallik*

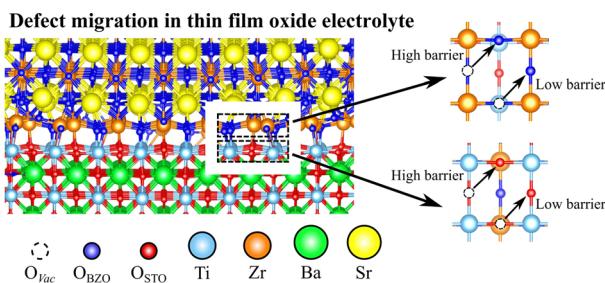
306



Surfactant-assisted synthesis of zero-dimensional iron nanomaterial for cellobiose hydrolysis

Hari Singh,* Anil Kumar Sinha, Sharanmeet Kour, Suneel Singh Barhey, Gaurav Goel and Jibanananda Mishra

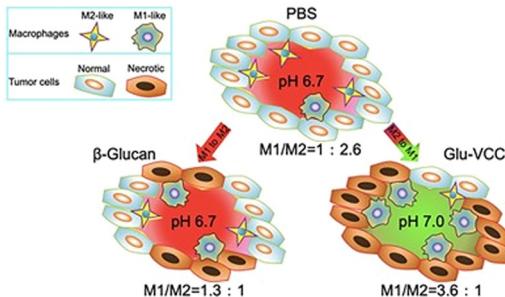
315



High-throughput prediction of oxygen vacancy defect migration near misfit dislocations in $\text{SrTiO}_3/\text{BaZrO}_3$ heterostructures

William Ebmeyer and Pratik P. Dholabhai*

329



The modulation of tumor-associated macrophages via natural nanomodulators by neutralizing the acidic tumor microenvironment for tumor treatment

Lei Peng, Chenxu Zhang, Guanlun Zhou, Ao Yu* and Yongjian Wang*

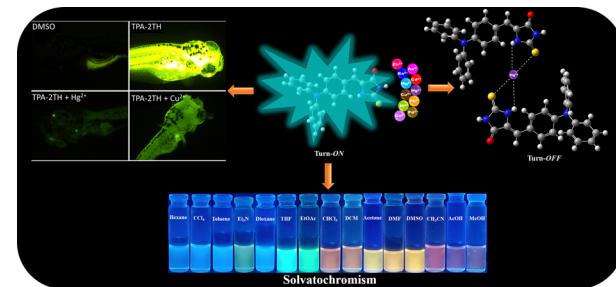


PAPERS

336

A novel triphenylamine based push–pull fluorophore bearing a 2-thiohydantoin unit for toxic Hg^{2+} ion detection: exploring its potential for live cell imaging

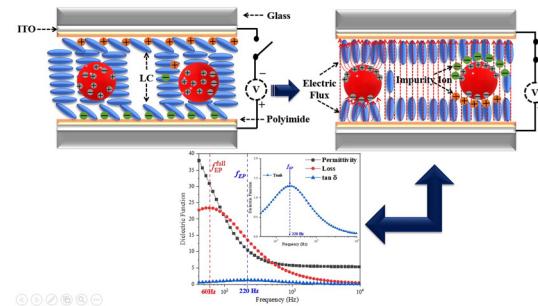
Pratiksha P. Gawas, Buthanapalli Ramakrishna, Rajesh Pamanji, Joseph Selvin and Venkatramaiyah Nutalapati*



349

Unveiling the role of electrode polarization in modulating dielectric and electro-optical properties of SnSe dispersed nematic liquid crystal

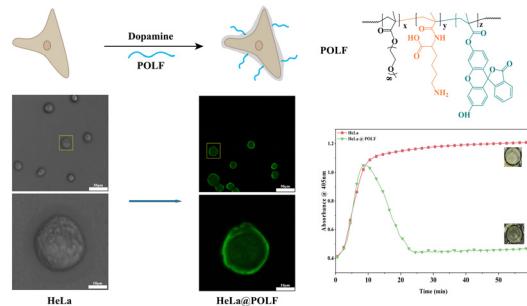
Bhupendra Pratap Singh, Piyush Mishra, Mohammad Rafe Hatshan, Dharmendra Pratap Singh and Shug-June Hwang*



361

Cell surface functionalization with lysine ligand-containing copolymers for fibrinolytic activity

Shengjie Liu, Xingyu Heng, Wenjin Wang, He Yang, Wei Sun, Zhaoqiang Wu* and Hong Chen



369

Facile development of copper ferrite nanospheres for UV light-driven photocatalytic degradation of cloxacillin sodium

Muhammad Naeem, Faheem Haider, Adnan Ashraf*, Saeed Ahmed*, Khalid Mujasam Batoo, Waseeq Ahmad Siddiqui, Muhammad Imran, Muhammad Asam Raza, Muhammad Pervaiz and Sajjad Hussain

