

# Materials Advances

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## IN THIS ISSUE

ISSN 2633-5409 CODEN MAADC9 5(21) 8321-8732 (2024)



### Cover

See Hafeezullah Memon *et al.*, pp. 8333–8350. Image reproduced by permission of Hafeezullah Memon, Siyi Liao, Rabia Maryam, Alessia Patrucco and Claudia Riccardi from *Mater. Adv.*, 2024, 5, 8333. The authors would like to thank Anastasia Anceschi for the cover illustration.



### Inside cover

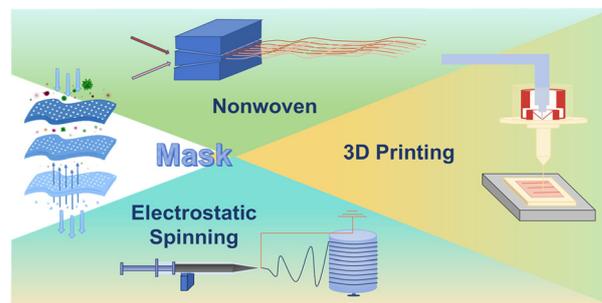
See Khaled N. Salama, Mohamed Eddaoudi *et al.*, pp. 8432–8438. Image reproduced by permission of Osama Shekhah and Mohamed Eddaoudi from *Mater. Adv.*, 2024, 5, 8432.

## REVIEWS

8333

### Development of medical masks: performance, properties, and prospects

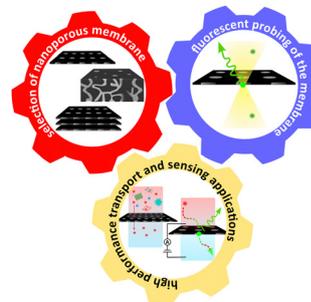
Hafeezullah Memon,\* Siyi Liao, Rabia Maryam, Alessia Patrucco and Claudia Riccardi



8351

### Fluorescence methods to probe mass transport and sensing in solid-state nanoporous membranes

H. Samet Varol,\* Dila Kaya, Emma Contini, Chiara Gualandi and Damiano Genovese\*



# RSC Applied Polymers

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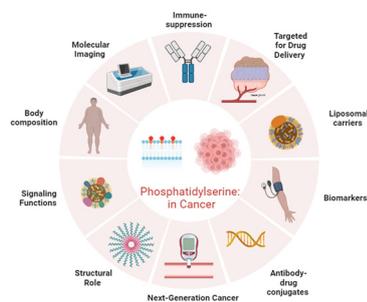
Fundamental questions  
Elemental answers

## REVIEWS

8384

### Phosphatidylserine: paving the way for a new era in cancer therapies

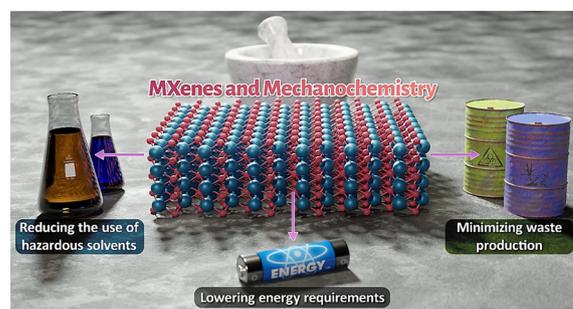
Subham Preetam,\* Arunima Pandey, Richa Mishra, Gautam Mohapatra, Pratyasa Rath, Sumira Malik,\* Sarvesh Rustagi, Alisha Dash and Shailesh Kumar Samal\*



8404

### Advancements in MXenes and mechanochemistry: exploring new horizons and future applications

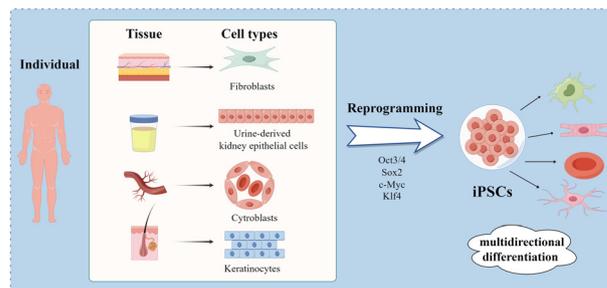
Siavash Irvani,\* Atefeh Zarepour, Ehsan Nazarzadeh Zare, Pooyan Makvandi, Arezoo Khosravi, Rajender S. Varma and Ali Zarrabi\*



8419

### Hepatocyte-like cells and liver organoids: the application of iPSCs and their derivants for treating liver diseases

Ruobing Ju, Siyuan Tian, Yulong Shang, Shuoyi Ma, Miao Zhang, Jingyi Liu, Keshuai Sun, Lina Cui,\* Xia Zhou\* and Ying Han\*

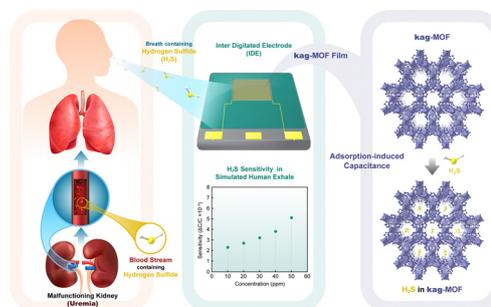


## COMMUNICATIONS

8432

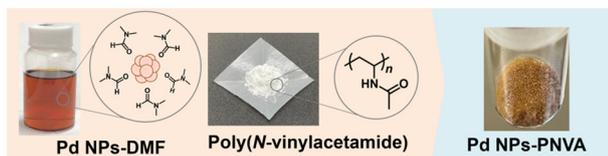
### A non-invasive approach for H<sub>2</sub>S gas sensing under stimulated breathing conditions: a kag-MOF based gas sensor as a case study

Mostafa Zeama, Jiangtao Jia, Sheng Zhou, Murilo Calil Faleiros, Usman Yaqoob, Osama Shekha, Khaleed N. Salama\* and Mohamed Eddaoudi\*



## COMMUNICATIONS

8439



- ✓ Pd-NPs immobilised vinylamide polymer
- ✓ Characterisations: TEM, DLS, XAS, XPS...
- ✓ Catalyst for Suzuki-Miyaura Cross-coupling

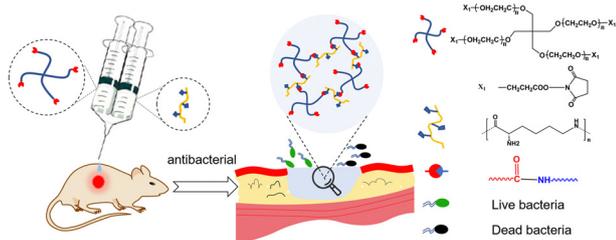


### Synthesis of colloidal Pd nanoparticles immobilised on poly(*N*-vinylacetamide): characterisation and application in catalysis

Kazuki Tabaru, Kanji Okada, Tatsuki Nagata, Takeyuki Suzuki, Hiromitsu Sogawa, Fumio Sanda, Takeshi Watanabe and Yasuhi Obora\*

## PAPERS

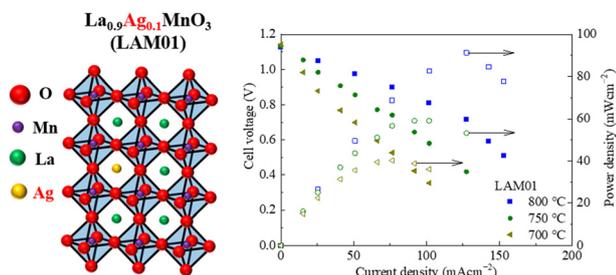
8444



### *In situ* forming PEG- $\epsilon$ -poly-L-lysine hydrogels with antimicrobial properties for fighting infection

Quanbin Dong, Lei He, Weixue Wang, Yurong Xiong, Jine Liu, Xiaoshu Cheng\* and Huihui Bao\*

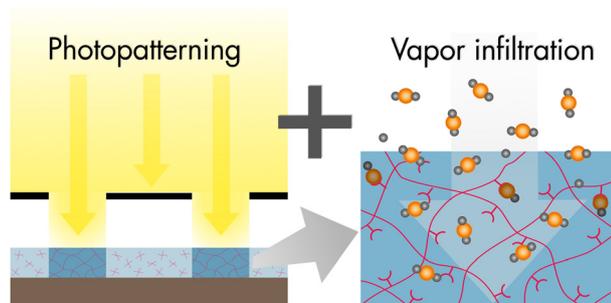
8455



### Characteristics of Ag-doped $\text{LaMnO}_3$ perovskite oxide and its application as a solid oxide fuel cell cathode

Akihiro Takamatsu, Masatsugu Oishi,\* Shinpei Goda, Hiroki Takemura, Konosuke Mitsushio, Satoshi Sugano, Takashi Yamamoto, Toshiaki Ina, Haruo Kishimoto and Takaaki Sakai\*

8464



### ZnO vapor phase infiltration into photo-patternable polyacrylate networks for the microfabrication of hybrid organic–inorganic structures

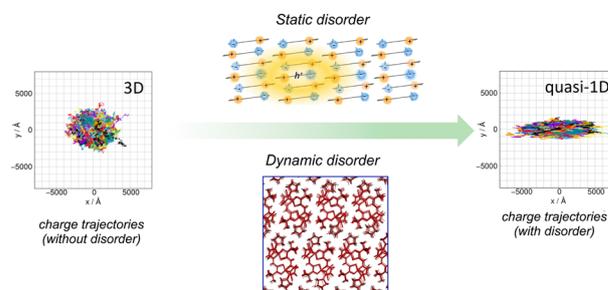
Lisanne Demelius, Li Zhang, Anna Maria Coclite\* and Mark D. Losego



8475

## Impact of static and dynamic disorder effects on the charge transport properties of merocyanine single crystals

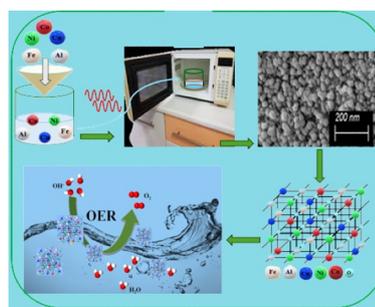
Nora Gildemeister, Sven Geller, Robert Herzhoff, Fabrizia Negri, Klaus Meerholz\* and Daniele Fazzi\*



8490

## Rapid microwave synthesis of medium and high entropy oxides for outstanding oxygen evolution reaction performance

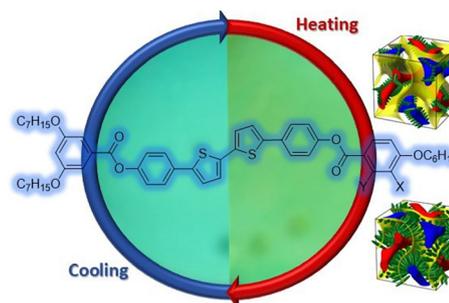
Muhammad Asim, Akbar Hussain, Sadia Kanwal, Awais Ahmad, Yasemin Aykut, Ayşe Bayrakçeken and Naveed Kausar Janjua\*



8505

## Halogen substituted bithiophene-based polycatenars with tunable fluorescence

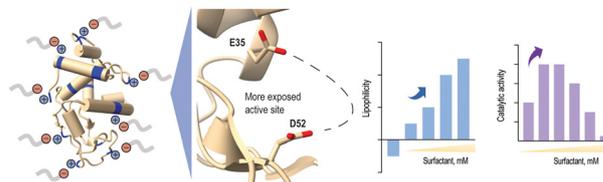
Mohamed Alaasar,\* Yu Cao, Thorben Neumann, Tianyi Tan, Feng Liu and Michael Giese\*



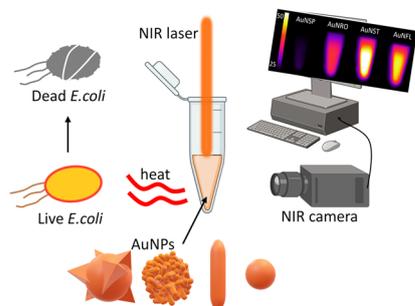
8515

## Re-engineering lysozyme solubility and activity through surfactant complexation

Jiaming Mu, Leran Mao, Gavin P. Andrews and Sheiliza Carmali\*



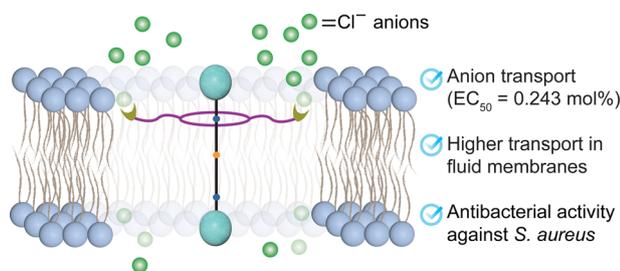
8524



### Eradication of planktonic bacteria by shape-tailored gold nanoparticle photothermia

Zhendong Peng, Laurent Royon, Yun Luo, Philippe Decorse, Sarra Gam Derouich, Michaël Bosco, Christine Gravier-Pelletier, Romain Briandet, John S. Lomas, Claire Mangeney and Miryana Hémadi\*

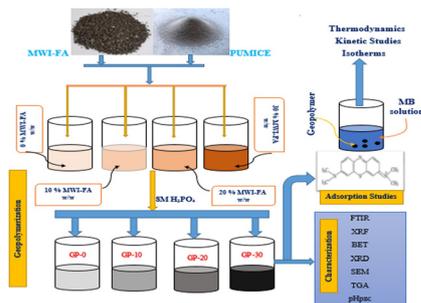
8534



### Thiourea-based rotaxanes: anion transport across synthetic lipid bilayers and antibacterial activity against *Staphylococcus aureus*

Nasim Akhtar, Udyogi N. K. Conthagamage, Sara P. Bucher, Zuliah A. Abdulsalam, Macallister L. Davis, William N. Beavers\* and Víctor García-López\*

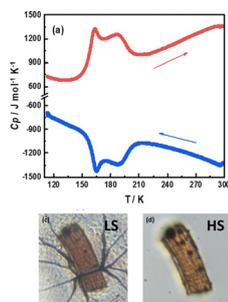
8546



### Synthesis of pumice and medical waste incinerator fly ash based phosphate geopolymers for methylene blue dye adsorption: co-valorization, parameters and mechanism

Collins Onyango, Wilfrida Nyairo, Bowa Kwach, Victor Shikuku,\* Tome Sylvain, Hermann Dzoujo Tamaguelon and Claus Rüscher

8564



### Stimuli-responsive spin crossover behavior in 3D Fe(II) porous coordination polymers for guest molecules

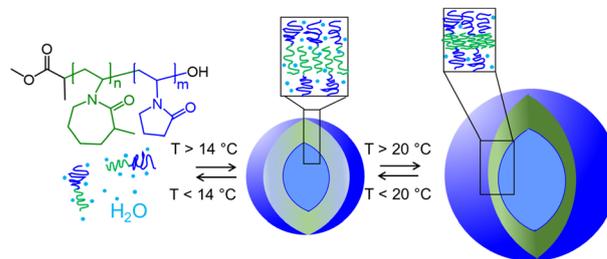
Li Sun, Xiaochun Li, Constance Vandembulcke, Nour El Islam Belmouri, Guillaume Bouchez, Koen Robeyns, Aurelian Rotaru, Kamel Boukheddaden and Yann Garcia\*



8575

### The effect of low temperature on poly(3-methyl-*N*-vinylcaprolactam)-*b*-poly(*N*-vinylpyrrolidone) diblock copolymer nanovesicles assembled from all-aqueous media

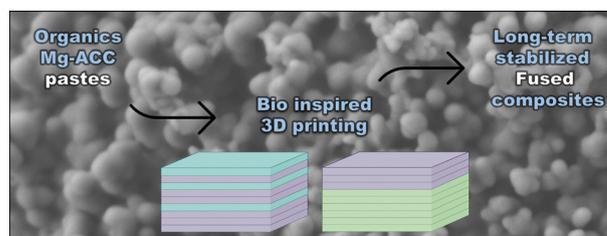
Veronika Kozlovskaya, Yiming Yang, Shuo Qian and Eugenia Kharlampieva\*



8588

### Bio-inspired 3D printing of layered structures utilizing stabilized amorphous calcium carbonate within biodegradable matrices

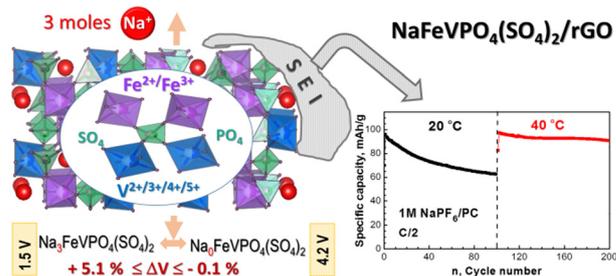
Hadar Shaked, Daniela Dobrynin, Iryna Polishchuk, Alexander Katsman and Boaz Pokroy\*



8599

### Multi-electron redox reactions with iron and vanadium ions at a mixed phosphate–sulfate electrode during sodium intercalation

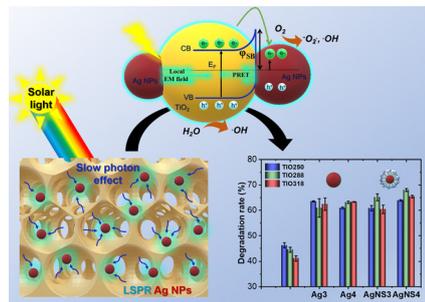
Violeta Koleva, Trajche Tushev, Sonya Harizanova, Rositsa Kukeva, Maria Shipochka, Pavel Markov and Radostina Stoyanova\*



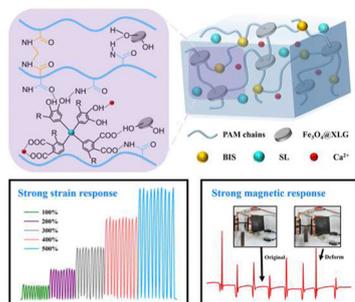
8615

### Tunable slow photon effect and local surface plasmon in Ag-immobilized TiO<sub>2</sub> inverse opal films for enhancing pollutant photodegradation

Thi Kim Ngan Nguyen,\* Fabien Grasset, Satoshi Ishii, Hiroshi Fudouzi and Tetsuo Uchikoshi



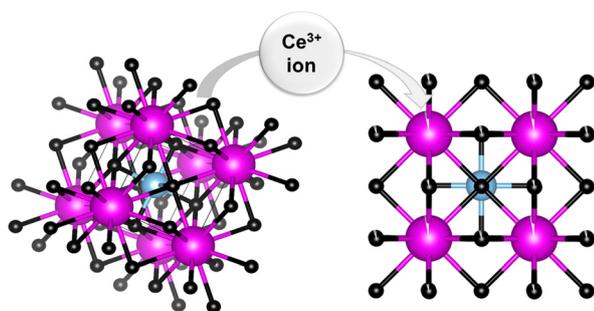
8629



### Fast preparation of adhesive, anti-freezing hydrogels with strain- and magnetic-responsive conductivities

Xinyu He, Xinyi Huang, Shuai He, Wei Zhang, Xinhua Li, Yong You\* and Fang Zuo\*

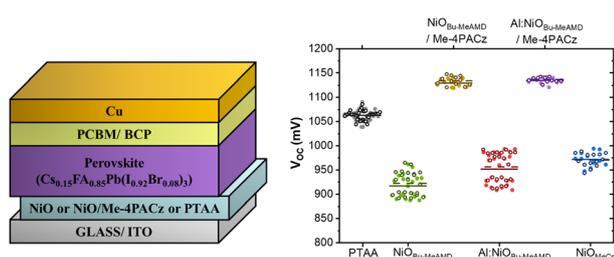
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### Doping stimulated ferromagnetic ordering and tailoring of the dielectric properties of $Ba_{1-x}Ce_xTiO_3$

Rahul Sharma, Shreya Sinha, Rahul Singh, Saurabh Pathak,\* Barsha Borgohain, Noor Jahan\* and N. S. Negi

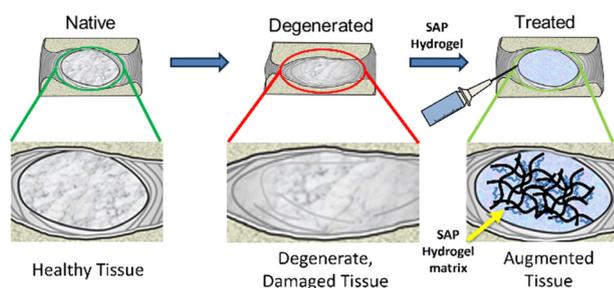
8652



### On the $V_{OC}$ loss in NiO-based inverted metal halide perovskite solar cells

Kousumi Mukherjee,\* Denise Kreugel, Nga Phung, Cristian van Helvoirt, Valerio Zardetto and Mariadriana Creatore

8665



### Injectable peptide-glycosaminoglycan hydrogels for soft tissue repair: *in vitro* assessment for nucleus augmentation

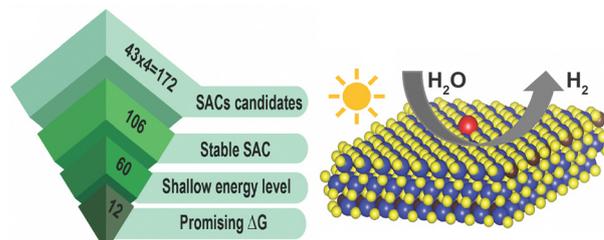
James P. Warren, Ruth H. Coe, Matthew P. Culbert, Andrew R. Dixon, Danielle E. Miles, Marlène Mengoni, Paul A. Beales and Ruth K. Wilcox\*



8673

## High-throughput screening of single atom co-catalysts in $\text{ZnIn}_2\text{S}_4$ for photocatalysis

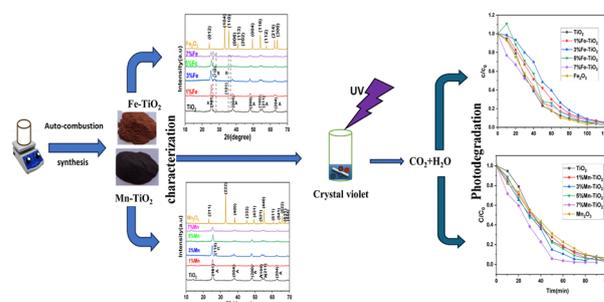
Md Habibur Rahman, Yujie Sun and Arun Mannodi-Kanakkithodi\*



8684

## A facile auto-combustion pathway for creating Mn- and Fe-doped $\text{TiO}_2$ nanostructures and their photocatalytic activity

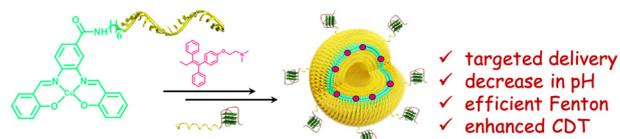
Gharieb M. Meselhy,\* Mostafa Y. Nassar and Sabry H. Seda



8701

## DNAzyme with self-boosting ROS generation via tumour acidosis for enhanced and targeted chemodynamic cancer therapy

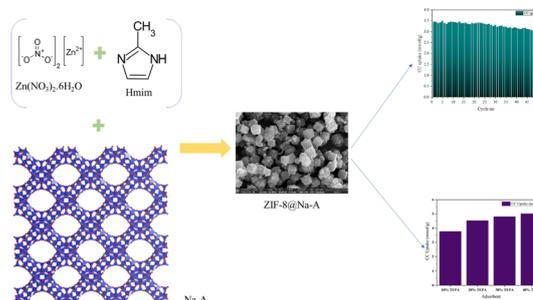
Gowtham Raj, Justin Prasad, Tamraparni Ghosh, Vasudev D. S., Athul V. B., Joyraj Kalita, Devu B. Kumar and Reji Varghese\*



8709

## Coal fly ash-ZIF composites for enhanced and stable carbon capture—an in-depth study

Ramadurgam Aniruddha, Satyapaul A Singh, Benjaram M Reddy, Akula Venugopal and Inkollu Sreedhar\*



## CORRECTION

8730

**Correction:  $\text{Li}_2\text{MnCl}_4$  single crystal: a new candidate for a red-emitting neutron scintillator**

Vojtěch Vaněček,\* Robert Král, Křehlíková Kateřina, Romana Kučerková, Vladimír Babin, Petra Zemenová, Jan Rohlíček, Zuzana Málková, Terézia Jurkovičová and Martin Nikl

