

# Materials Advances

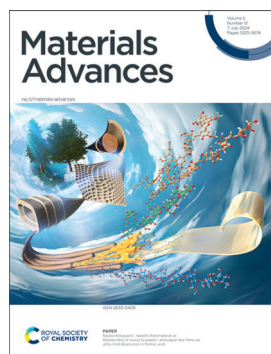
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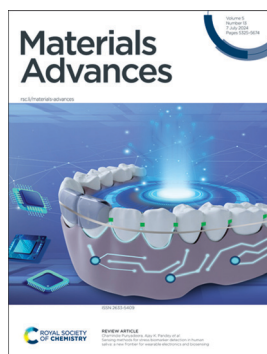
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ISSN 2633-5409 CODEN MAADC9 5(13) 5325-5674 (2024)



### Cover

See Naoko Kobayashi, Takashi Watanabe *et al.*, pp. 5398–5409. Image reproduced by permission of Naoko Kobayashi and Takashi Watanabe from *Mater. Adv.*, 2024, 5, 5398.



### Inside cover

See Chamindie Punyadeera, Ajay K. Pandey *et al.*, pp. 5339–5350. Image reproduced by permission of Ajay K. Pandey from *Mater. Adv.*, 2024, 5, 5339.

## EDITORIAL

5336

### Introduction to hybrid pores for CO<sub>2</sub> technologies

Petra Ágota Szilágyi, Jenny G. Vitillo and Gavin A. Craig

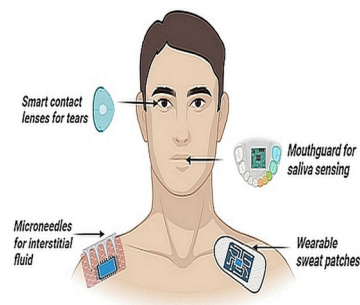


## REVIEWS

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### Sensing methods for stress biomarker detection in human saliva: a new frontier for wearable electronics and biosensing

Parth Pandit, Blair Crewther, Christian Cook, Chamindie Punyadeera\* and Ajay K. Pandey\*



# RSC Applied Polymers

The application of polymers,  
both natural and synthetic

Interdisciplinary and open access



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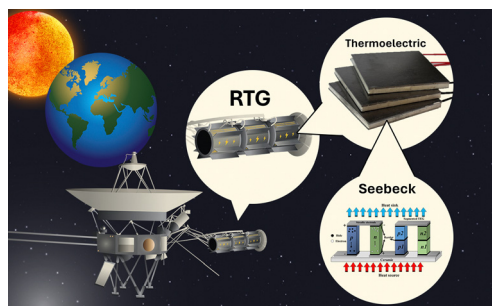
Fundamental questions  
Elemental answers

## REVIEWS

5351

**Thermoelectric materials for space explorations**

Dulyawich Palaporn, Sora-at Tanusilp,\* Yifan Sun, Supree Pinitsoontorn and Ken Kurosaki\*



5365

**Self-healing, injectable chitosan-based hydrogels: structure, properties and biological applications**

Manasi Esther J., Raghu Solanki, Mukesh Dhanka, Prachi Thareja\* and Dhiraj Bhatia\*

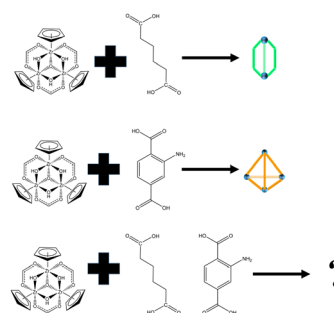


## COMMUNICATION

5394

**Study of self-assembly of mixed-ligand metal-organic cages by high-resolution mass spectrometry**

Kang Tong, Jia Jia,\* Rongfu Huang and Jin Luo

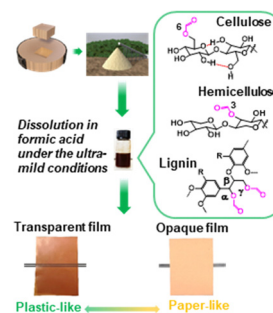


## PAPERS

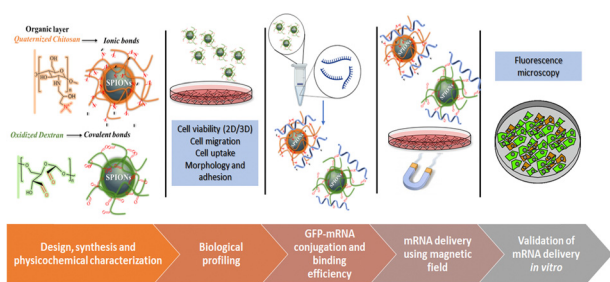
5398

**Reassembly of wood to plastic- and paper-like films via ultra-mild dissolution in formic acid**

Naoko Kobayashi,\* Tomohiro Hashizume, Keiko Kondo, Kenji Kitayama, Masato Katahira and Takashi Watanabe\*



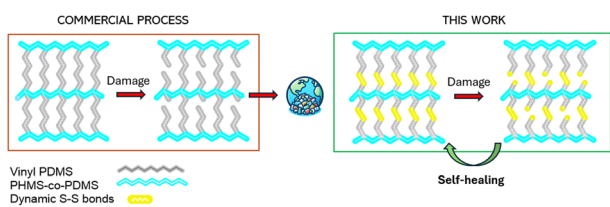
5410



### Functional polysaccharide-coated SPIONs for *in vitro* mRNA delivery in breast cancer cells

Olga Tsave, Maria Psarrou, Georgia Kastrinaki, Eleni Papachristou, Rigini Papi, Vassilios Zaspalis, Lori Nalbandian, Charalampos Sarafidis, Theodora Choli-Papadopoulou, Maria Vamvakaki and Christos Chatzidoukas\*

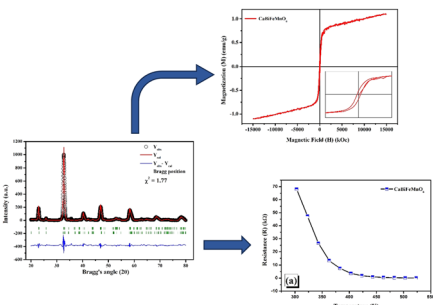
5433



### Converting commercial-grade silicone into a vitrimer using elemental sulfur

Mahsaalsadat Rokni, Kun Woo Park, Wing Ho Leung, Zoran Zujovic and Erin M. Leitao\*

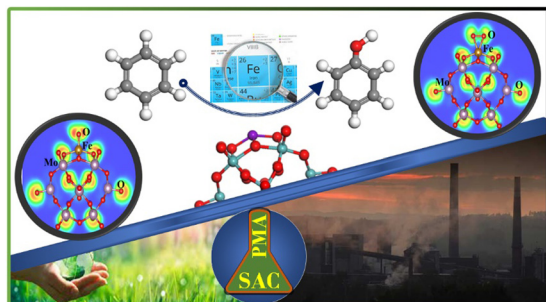
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### Investigation of the structural, dielectric, magnetic properties and NTC-thermistor response of $\text{CaBiFeMnO}_6$ double perovskites

Shubhashree Sahoo, Lutu Sahoo, N. C. Nayak, B. N. Parida and R. K. Parida\*

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### Enhancing direct hydroxylation of benzene to phenol on $\text{Fe}_1/\text{PMA}$ single-atom catalyst: a comparative study of $\text{H}_2\text{O}_2$ vs. $\text{O}_2$ -assisted reactions

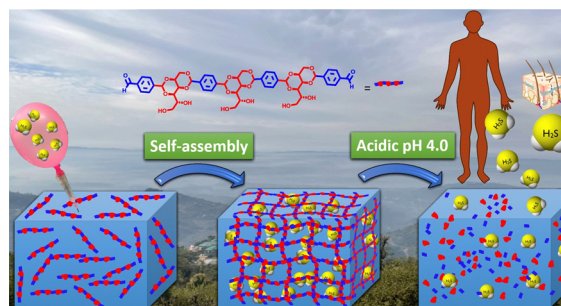
Beenish Bashir, Shamraiz Hussain Talib,\* Muhammad Ajmal Khan, Sharmarke Mohamed, Ahsanulhaq Qurashi, Hai Xiao and Jun Li\*



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### Facile synthesis and self-assembly of pharmaceutically important oligobenzylidene-D-sorbitol dialdehydes: direct encapsulation and stimuli responsive delivery of H<sub>2</sub>S

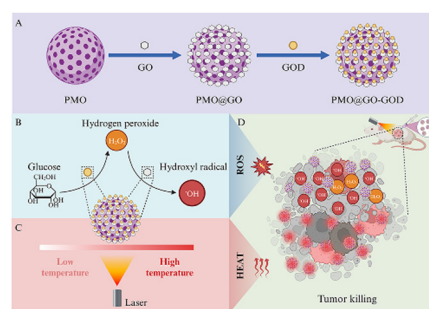
Vara Prasad Rebaka, Yogendra Kumar, Tohira Banoo, Arun Kumar Rachamalla and Subbiah Nagarajan\*



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### A graphene oxide-based sequential nanocatalyst for efficient tumor combination therapy

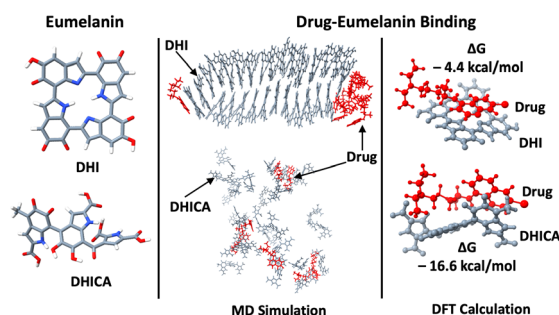
Zhenlu Yang, Ying Zhao, Zi Xu, Rongpin Wang\* and Qing Wang\*



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### A computational investigation of eumelanin–drug binding in aqueous solutions

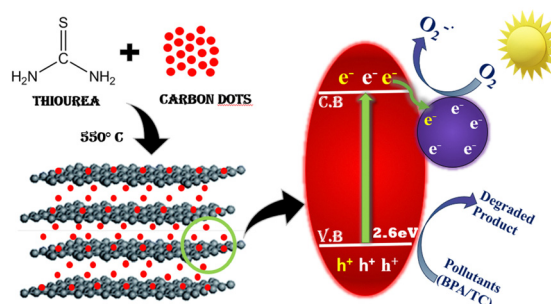
Sepideh Soltani, Anupom Roy, Arto Urtti and Mikko Karttunen\*



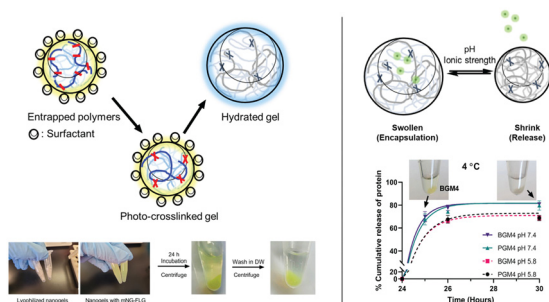
5514

### Efficient photo-oxidation of bisphenol a and tetracycline through sulfur-doped g-C<sub>3</sub>N<sub>4</sub>/CD heterojunctions

Ankoo Sura, Amanvir Singh, Arjun Singh, Sudha Narwal, Priya Malik, Manjeet Singh Goyat, Yogendra K. Mishra, Sonia Nain\* and Surender Duhan\*



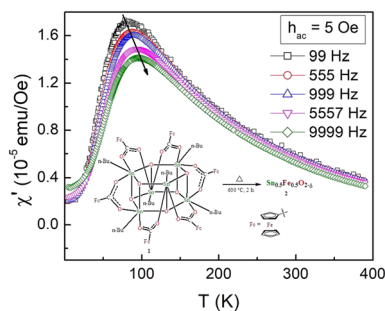
5527



## Harnessing nanoreactors: gelatin nanogels for human therapeutic protein delivery

Jeehye Kim, Caroline E. Copeland and Yong-Chan Kwon\*

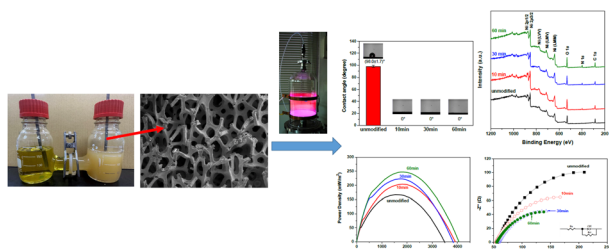
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## Observation of cluster spin glass behavior in thermally decomposed nanocrystalline $\text{Sn}_{0.5}\text{Fe}_{0.5}\text{O}_{2-\delta}$

Aarti Saini, Kisturi Dhanwant, Mukesh Verma, Sher Singh Meena, Yugandhar Bitla\* and Ramalingam Thirumoorthi\*

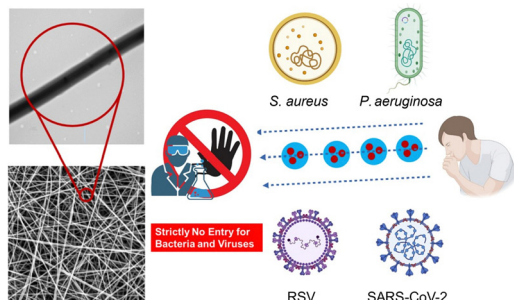
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## Effects of $\text{N}_2$ plasma modification on the surface properties and electrochemical performance of Ni foam electrodes for double-chamber microbial fuel cells

Mozghan Gholami-Kermanshahi, Ming-Cheng Lee, Günther Lange and Shih-Hang Chang\*

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## A one-step method for generating antimicrobial nanofibre meshes via coaxial electrospinning

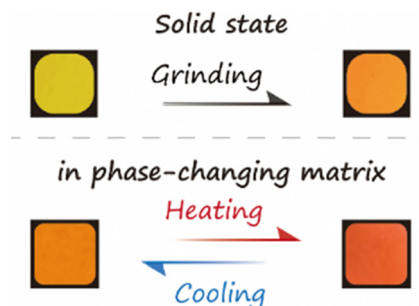
Fangyuan Zhang, Amy I. Jacobs, Maximillian Woodall, Helen C. Hailes, Ijeoma F. Uchegbu, Delmiro Fernandez-Reyes, Claire M. Smith, Karolina Dziemidowicz\* and Gareth R. Williams\*



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### Visible light excited and temperature-responsive phosphorescent system in a phase-changing matrix

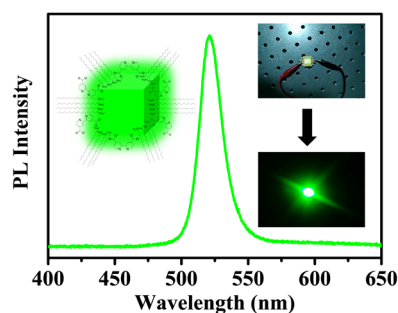
Yingying Hu, Glib V. Baryshnikov,\* Xueru Shan, Weiyi Zhang, Sheng-yin Zhao,\* Liangliang Zhu\* and Hongwei Wu\*



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### 2,2'-Bipyridine-4,4'-dicarboxylic acid ligand engineered CsPbBr<sub>3</sub> perovskite nanocrystals for enhanced photoluminescence quantum yield with stable display applications

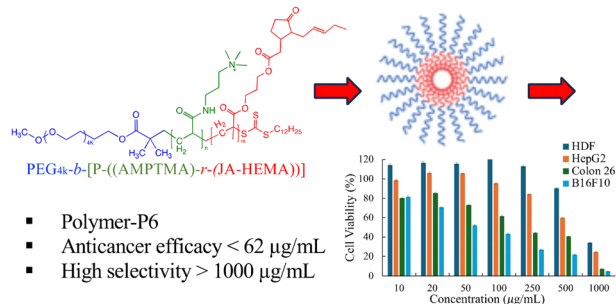
Ankit Kumar, Sukanya Ghosh, Ankush Saini, Sumit Kumar, Monojit Bag\* and Prasenjit Kar\*



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### Novel approach to enhancing the anticancer efficacy of methyl jasmonate with PEG-incorporated cationic polymers

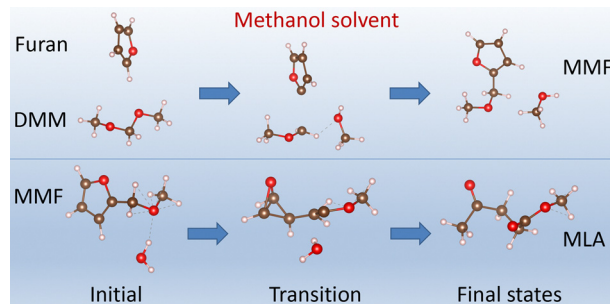
Nishant Kumar, Pratibha Singh, Dandan Zhao, Robin Rajan\* and Kazuaki Matsumura\*



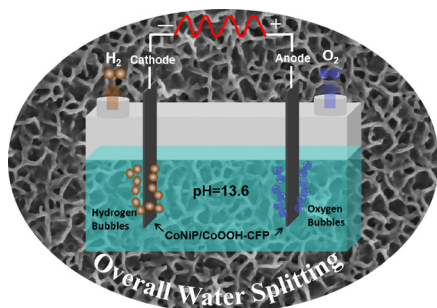
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### *Ab initio* insight into furan conversion to levulinate ester in reaction with methylal and methanol

Yun-Sim Kim, Ryong-Wan Ham, Yong-Chol Pak, Man-Sok O and Chol-Jun Yu\*



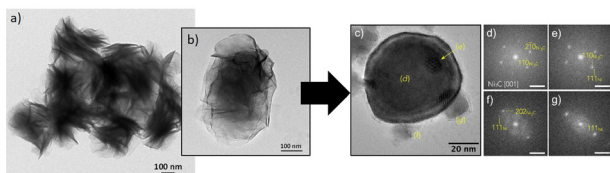
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### Surface engineering assisted CoNiP nanosheet arrays for electrochemical overall water splitting

Linfei Zhang,\* Ruilong Wei, Chenyi Liu, Ningfa He, Xinru He, Yuhuan Jiang, Changshuai Guo, Yong Hu and Shengliang Zhong\*

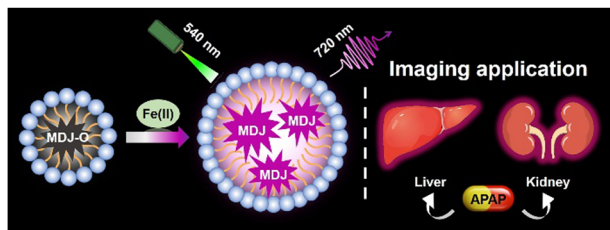
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### Cold H<sub>2</sub>-Ar plasma interaction with nickel $\alpha$ -hydroxide as a versatile nanofabrication tool for Ni@C<sub>gr</sub> nanoparticles

Marie-Charlotte Dragassi, Sonia Haj-Khlifa, Nicolas Menguy, Michael Redolfi\* and Souad Ammar\*

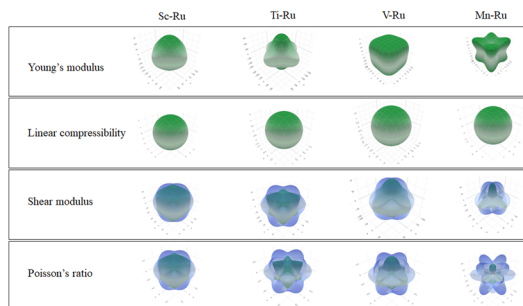
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### A novel NIR fluorescent probe for *in situ* visualizing Fe(II) and its application in drug-induced liver/kidney injury

Hanyue Xiang, Yanjie Song, Yilin Wang, Wenzhuo Fu and Nao Xiao\*

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### First-principles study of stability and electronic properties of B2 X-Ru alloys for high-temperature structural applications

B. O. Mnisi,\* E. M. Benecha and M. M. Tibane



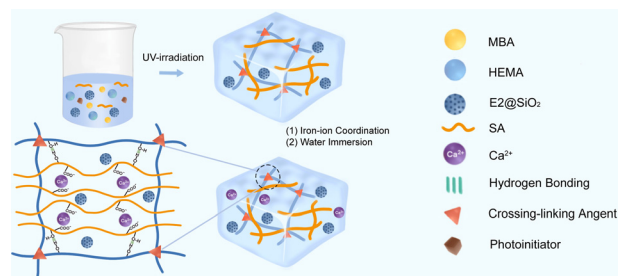


## PAPERS

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### Long-lasting anti-swelling sustained-release estradiol hydrogel for promoting vaginal wound healing

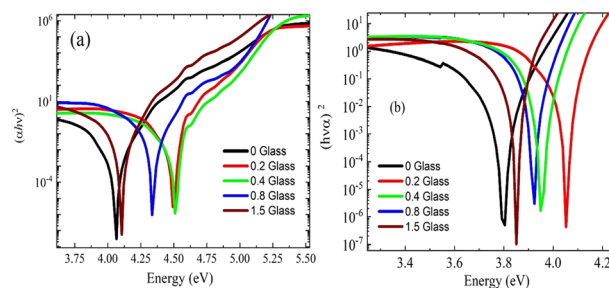
Tianyue Zhang, Hongyi Lv, Yijing Zhang, Lingyun Yu, Yonghong Li, Hechun Yan, Chenyan He, Dongmei Zhao, Lijuan Zhao, Yuedong He,\* Yi Wang\* and Zhongyi Zhu\*



5658

### Effect of gamma irradiation on the electrical and optical properties of PEVA composite membrane embedded with conductive copper fluoroborate glass powder

Elbadawy A. Kamoun,\* O. I. Sallam, Ehab E. Khozemy, Mohamed Morsy, Yasair Al-Faiyz, Saleh M. Matar, Ahmed I. Ali,\* Jong Yeog Son\* and Galal H. Ramzy



## CORRECTIONS

5671

### Correction: Thermosensitive drug-loaded liposomes for photothermal and chemotherapeutic treatment of colon cancer

Haihua Zhou, Hongyan Pan, Faisal Raza, Hajra Zafar, Yu Ge, Nan Wang, Ronglei Zheng, Degeng Zhang and Minyan Yang\*

5672

### Correction: High-throughput prediction of oxygen vacancy defect migration near misfit dislocations in SrTiO<sub>3</sub>/BaZrO<sub>3</sub> heterostructures

William Ebmeyer and Pratik P. Dholabhai\*

