

# Materials Advances

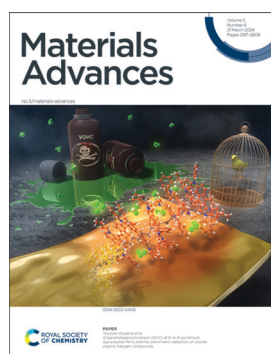
An open access journal publishing across the breadth of materials science

[rsc.li/materials-advances](https://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.

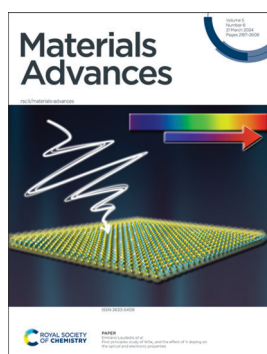
## IN THIS ISSUE

ISSN 2633-5409 CODEN MAADC9 5(6) 2187-2608 (2024)



### Cover

See Yousuke Ooyama *et al.*, pp. 2218–2229. Image reproduced by permission of Yousuke Ooyama from *Mater. Adv.*, 2024, 5, 2218.



### Inside cover

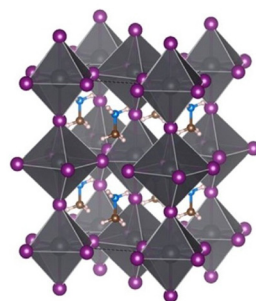
See Emiliano Laudadio *et al.*, pp. 2230–2237. Image reproduced by permission of Emiliano Laudadio from *Mater. Adv.*, 2024, 5, 2230.

## REVIEW

2200

### The impact of moisture on the stability and degradation of perovskites in solar cells

Bhushan P. Kore, Mahboubeh Jamshidi and James M. Gardner\*

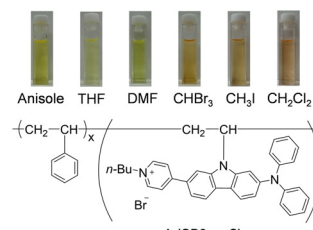
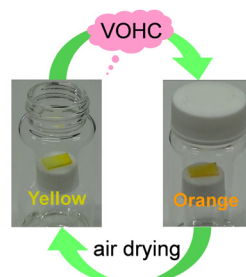


## PAPERS

2218

### Organohalogenochromism (OHC) of D- $\pi$ -A pyridinium dye polymer films and the colorimetric detection of volatile organic halogen compounds

Kumpei Kozuka, Keiichi Imato and Yousuke Ooyama\*



D- $\pi$ -A pyridinium dye polymer exhibiting OrganoHalogenochromism (OHC)



# RSC Sustainability

GOLD  
OPEN  
ACCESS

Dedicated to sustainable  
chemistry and new solutions

For an open, green and inclusive future



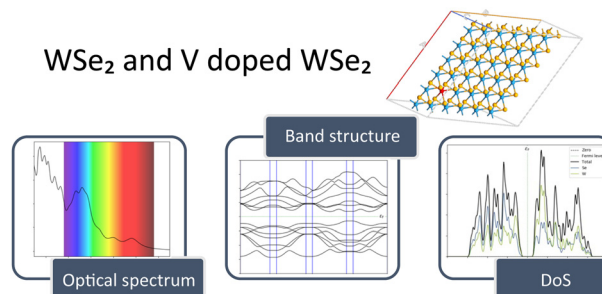
[rsc.li/RSCSus](https://rsc.li/RSCSus)

Fundamental questions  
Elemental answers

2230

### First principles study of WSe<sub>2</sub> and the effect of V doping on the optical and electronic properties

Eleonora Pavoni, Elaheh Mohebbi, Gian Marco Zampa, Pierluigi Stipa, Luca Pierantoni, Emiliano Laudadio\* and Davide Mencarelli



2238

### Scaling up the charge transfer on Pd@Ti<sub>3</sub>C<sub>2</sub>T<sub>x</sub>-TiO<sub>2</sub> catalysts: a sustainable approach for H<sub>2</sub> generation via water splitting

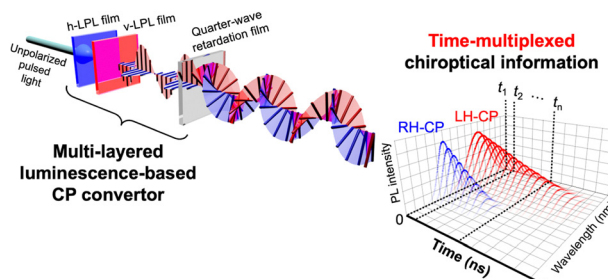
Muhammad Zeeshan Abid, Khezina Rafiq,\* Abdul Rauf, Raed H. Althomali and Ejaz Hussain\*



2253

### Generation of time-multiplexed chiroptical information from multilayer-type luminescence-based circular polarization conversion films

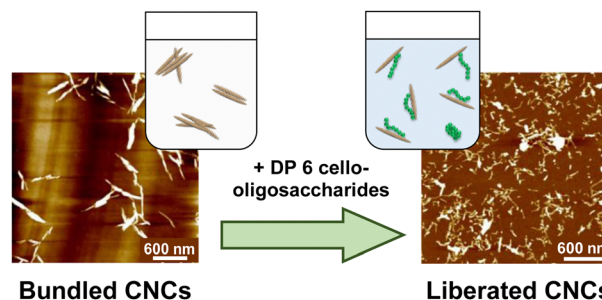
Yutaka Okazaki,\* Hayaki Shimizu, Kaito Nakamura, Kyohei Yoshida, Guillaume Raffy, Misaki Kimura, Keita Tsukamoto, Rei Akasegawa, Kan Hachiya, Makoto Takafuji, André Del Guerzo and Takashi Sagawa\*



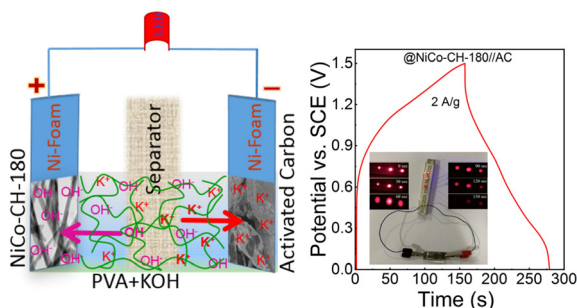
2260

### Dispersing uncharged cellulose nanocrystals through a precipitation surface modification route using oligosaccharides

Megan G. Roberts, Elina Niinivaara, Timo Pääkkönen, Cameron W. King, Eero Kontturi and Emily D. Cranston\*



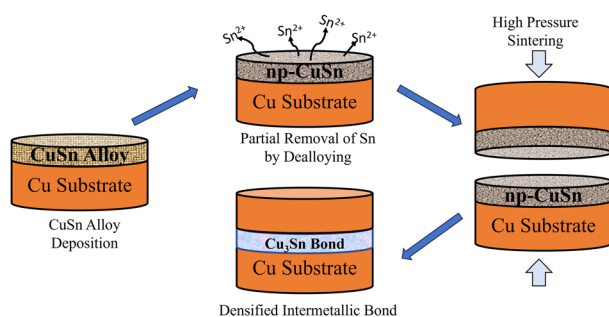
2271



### Morphology-controlled synthesis of a NiCo-carbonate layered double hydroxide as an electrode material for solid-state asymmetric supercapacitors

Sudhir Kumar, Biraj Kanta Satpathy and Debabrata Pradhan\*

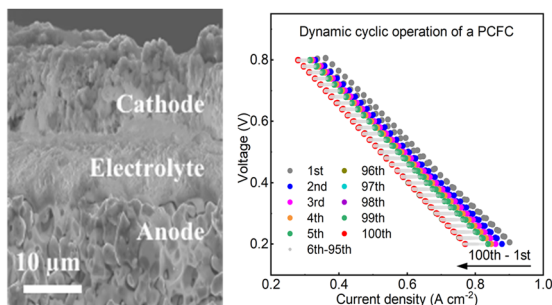
2285



### New generation copper-based interconnection from nanoporous CuSn alloy film sintered at low temperatures

Ezer Castillo, Abdullah F. Pasha, Zachary I. Larson and Nikolay Dimitrov\*

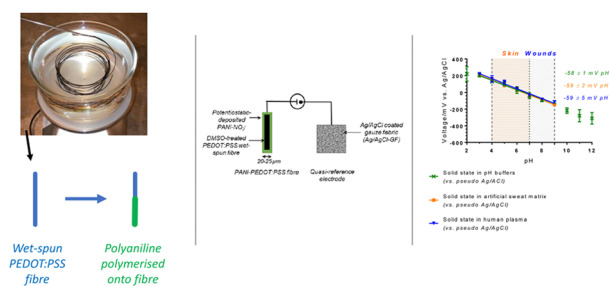
2296



### A robust protonic ceramic fuel cell with a triple conducting oxygen electrode under accelerated stress tests

Shuanglin Zheng, Wenjuan Bian and Hanping Ding\*

2306



### pH-responsive and antibacterial PANI-PEDOT:PSS fibres for wearable applications

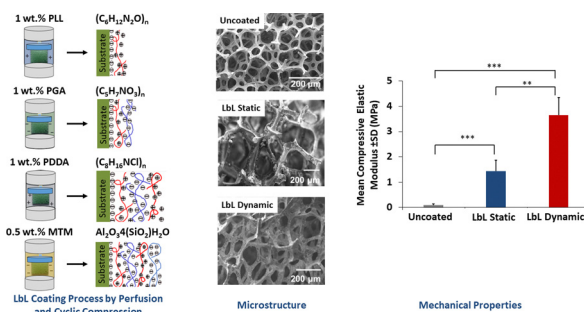
Rachel E. Smith, Stella Totti, Daniel Reid, Suzanne M. Hingley-Wilson, Eirini Velliou, Paola Campagnolo, Neil I. Ward, John R. Varcoe and Carol Crean\*



2316

## Deposition of multilayer coatings onto highly porous materials by Layer-by-Layer assembly for bone tissue engineering applications using cyclic mechanical deformation and perfusion

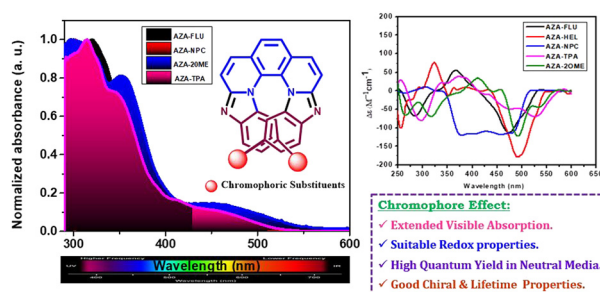
MohammadAli Sahebalzamani, Tina Sadat Hashemi, Zohreh Mousavi Nejad, Srishti Agarwal, Helen O. McCarthy, Tanya J. Levingstone and Nicholas J. Dunne\*



2328

## Organic fluorophore-substituted polyaza-[7]helicenes derived from 1,10-phenanthroline: Studying the chromophoric effect on fluorescence efficiency

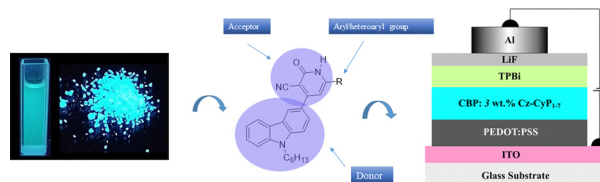
B. Yadagiri, Vinay Kumar and Surya Prakash Singh\*



2335

## Utilization of newly configured carbazole-cyanopyridone structural hybrids towards achieving high-performance cyan fluorescent organic light-emitting diodes

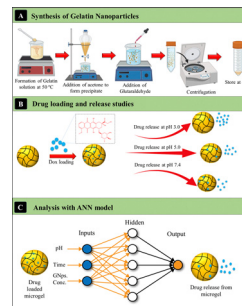
Vishrutha K S, Hidayath Ulla, Raveendra Kiran M, Badekai Ramachandra Bhat\* and Airody Vasudeva Adhikari\*



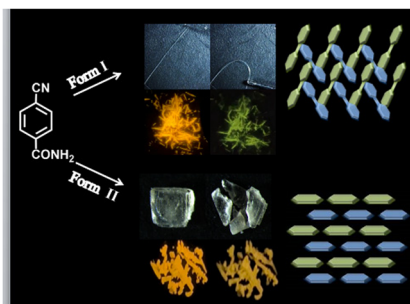
2347

## Controlled release of doxorubicin from gelatin-based nanoparticles: theoretical and experimental approach

Wajiha Fatima, Syeda Rubab Batool, Farwa Mushtaq, Muhammad Aslam, Zulfiqar Ali Raza\* and Muhammad Anwaar Nazeer\*



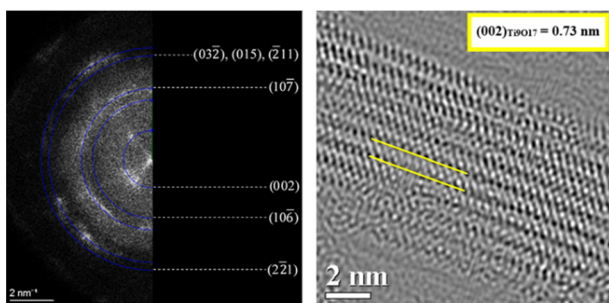
2359



### Molecular stacking mode-directed mechanical compliance and room-temperature phosphorescence achieved by polymorphic 4-cyanobenzamide crystals

Di Wang, Hui-Min Tang, Bo Ding, Xiu-Guang Wang, Haijiao Xie and En-Cui Yang\*

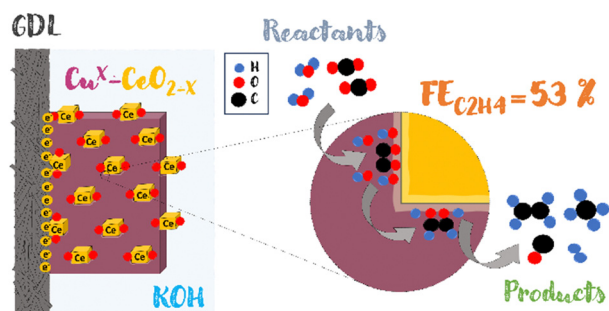
2368



### Top-down surfactant-free electrosynthesis of magnéli phase $\text{Ti}_9\text{O}_{17}$ nanowires

Peter M. Schneider, Christian M. Schott, Dominik Maier, Sebastian A. Watzel, Jan Michalička, Jhonatan Rodriguez-Pereira, Ludek Hromadko, Jan M. Macak,\* Volodymyr Baran, Anatoliy Senyshyn, Arnaud Viola, Frédéric Maillard, Elena L. Gubanova\* and Aliaksandr S. Bandarenka\*

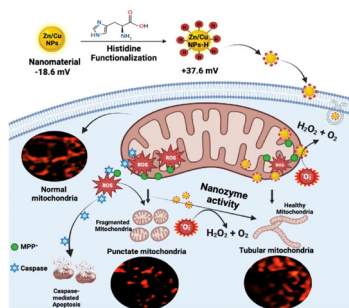
2377



### $\text{CeO}_2$ -promoted $\text{Cu}_2\text{O}$ -based catalyst sprayed on the gas diffusion layer for the electroreduction of carbon dioxide to ethylene

A. Alarcón,\* T. Andreu and C. Ponce de León

2388



### A histidine-functionalized ROS scavenging hybrid nanozyme for therapeutic application in Parkinson's disease pathogenesis

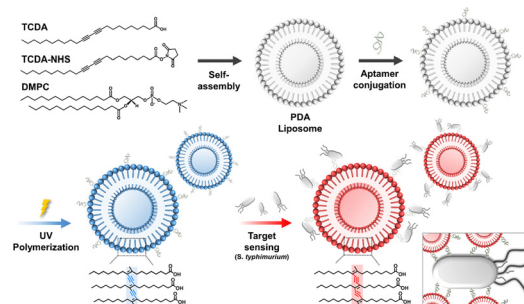
Sanjay Prasad, Parth Sarathi Nayak and Patrick D'Silva\*



2400

### Rapid detection of *Salmonella* using an aptamer-functionalized PDA liposome sensor with naked-eye colorimetric sensing

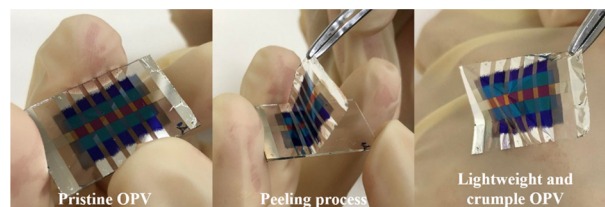
Goeun Lee, Byeongsung Kim, Inseung Jang, Moon Il Kim, Seunghan Shin and Kiok Kwon\*



2411

### High-efficiency ITO-free organic solar cells through top illumination

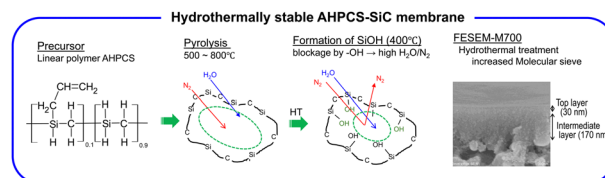
Yu-Ching Huang,\* Chih-Chien Lee, Yung-Yuan Lee, Ssu-yung Chung, Hui-Chieh Lin, Uma Kasimayan, Chia-Feng Li and Shun-Wei Liu\*



2420

### Permeation properties and hydrothermal stability of allyhydridopolycarbosilane (AHPCS)-derived silicon carbide (SiC) membranes

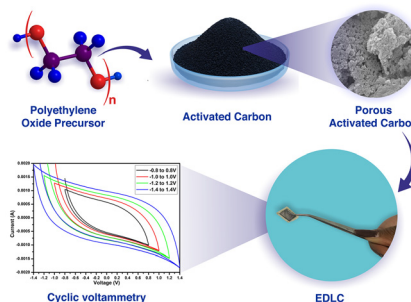
Gusni Sushanti, Daiki Tanabe, Khuat Thi Thu Hien, Norihiro Moriyama, Hiroki Nagasawa, Masakoto Kanezashi and Toshinori Tsuru\*



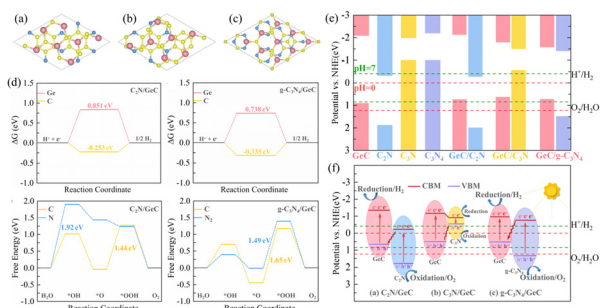
2430

### Environment-friendly approach for synthesis of promising porous carbon: empowering supercapacitors for a sustainable future

Pawan Singh Dhapola,\* Manoj Karakoti, Sushant Kumar, Vinay Deep Punetha,\* Monika Matiyani, N.A Masmali,\* Markus Diantoro,\* Serguei V. Savilov and Pramod K. Singh\*



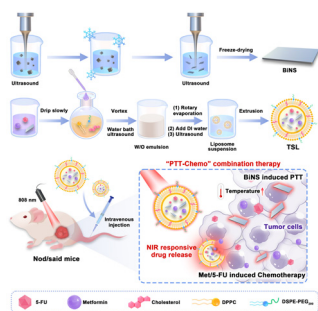
2441



## Two-dimensional g-CN<sub>4</sub>/GeC heterojunctions: desirable visible-light photocatalysts and optoelectronic devices

Ying Zhang, Hang Liu, Bo Zhang, Jingyao Shao, Zhiqiang Xu, Yun Chao,\* Ling-Ling Wang and Liang Xu\*

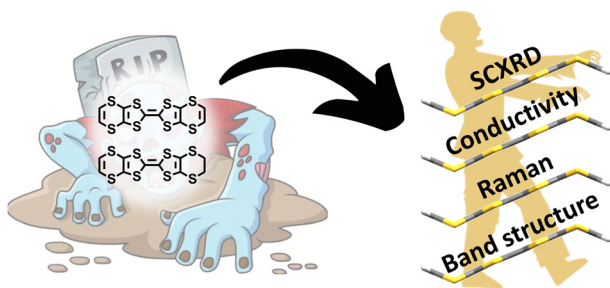
2456



## 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 Yanmin Yang\*

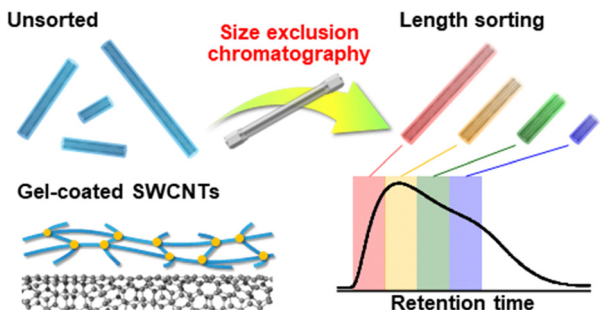
2470



## Reviving BVD-TTF and EVT-TTF salts

Federica Solano, Pascale Auban-Senzier, Bolestaw Barszcz, Arkadiusz Frąckowiak, Iwona Olejniczak, Pere Alemany, Enric Canadell,\* Nicolas Zigon\* and Narcis Avarvari\*

2482



## Size exclusion chromatography-based length sorting of single-walled carbon nanotubes stably coated with cross-linked polymers

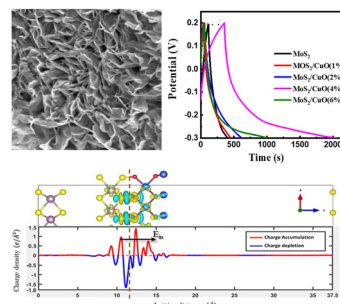
Ryo Hamano, Naoki Tanaka and Tsuyohiko Fujigaya\*



2491

### DFT-aided experimental investigation on the electrochemical performance of hetero-interface-functionalized CuO nanoparticle-decorated MoS<sub>2</sub> nanoflowers for energy storage applications

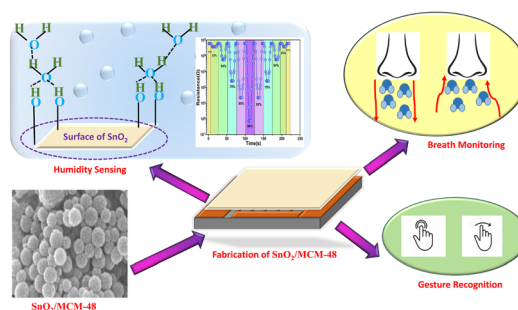
Muhammad Rakibul Islam,\* Nahid Farzana, Md. Rajbanul Akhond, Mizanur Rahaman, Md Jahidul Islam and Ishtiaque M. Syed



2510

### A high-performance humidity sensor based on 3D porous SnO<sub>2</sub>-encapsulated MCM-48 for real-time breath monitoring and contactless gesture detection

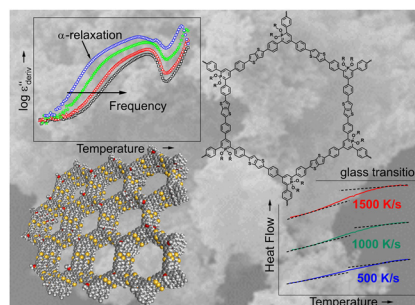
Priya Malik, Surender Duhan\* and Rakesh Malik\*



2526

### Structure and molecular mobility of phosphinine-based covalent organic frameworks – glass transition of amorphous COFs

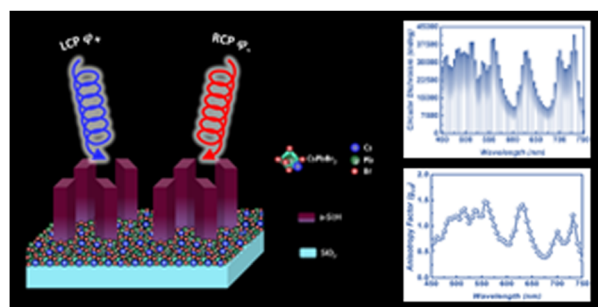
Farnaz Emamverdi, Jieyang Huang, Paulina Szymoniak, Michael J. Bojdy, Martin Böhning and Andreas Schönhals\*



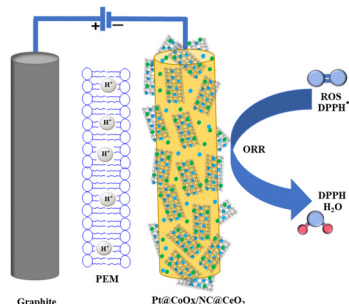
2536

### Realization of giant superstructural chirality at broadband optical wavelengths via perovskite dielectric metasurfaces

Aqsa Asad, Hafiz Saad Khaliq, Min-Seok Kim, Jae-Won Lee and Hak-Rin Kim\*



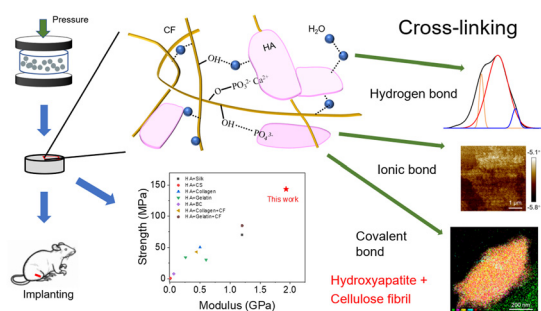
2545



### Investigating the effect of CeO<sub>2</sub> on the radical scavenging activity of Pt@CoO<sub>x</sub>/NC@CeO<sub>2</sub> during the electrocatalytic oxygen reduction reaction in acidic and alkaline environments

Fatima Nasim, Hassan Ali, Amir Waseem and Muhammad Arif Nadeem\*

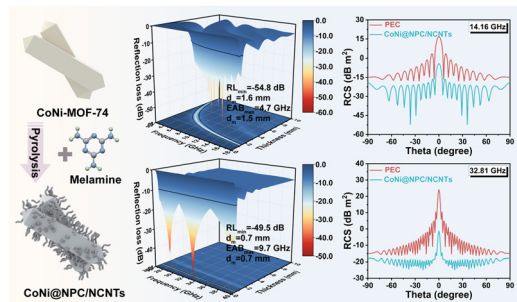
2556



### Intensified cross-linking dramatically improved the mechanical properties of hydroxyapatite and cellulose composites for repairing bone segmental defects

Qingyou Liang, Jie Dong, Jian Ren, Cairong Xiao and Chunlin Deng\*

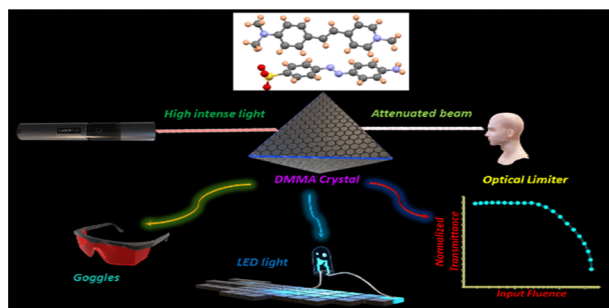
2570



### N-doped branched metal–organic framework derivatives to boost multiband microwave absorption with ultrathin thickness

Zhe Zhang, Jiewu Cui,\* Dongbo Yu,\* Jiaqin Liu, Pengjie Zhang, Yong Zhang, Song Ma, Linjie Wang, Guangsheng Deng and Yucheng Wu\*

2582



### Experimental and theoretical exploration of the new stilbazolium-family single crystal grown by the integration of a novel anion for optical limiting and optoelectronic applications

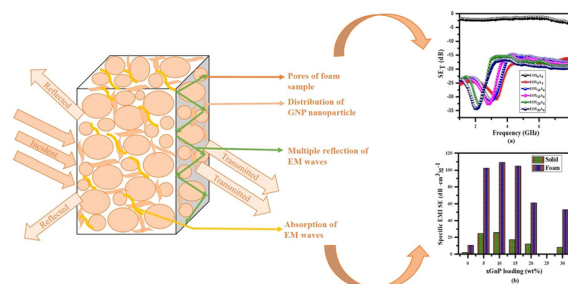
Sekar Anand and Muthurakku Usha Rani\*



2597

## Effect of foaming on the electromagnetic interference-shielding performance of exfoliated graphite nanoplatelets-filled EVA/EOC blend composites in the S-band region

Suryakanta Parida, Nitesh kumar Nath, R. K. Parida, B. N. Parida and Nimai C. Nayak\*



EMI shielding mechanism of xGnP filled EVA/EOC microcellular hybrid foam composites.

## CORRECTION

2606

## Correction: High performance $\text{LiMnFePO}_4/\text{Li}_4\text{Ti}_5\text{O}_{12}$ full cells by functionalized polymeric additives

Jean-Christophe Daigle,\* Sylviane Rochon, Yuichiro Asakawa, Benoît Fleutot, Charlotte Mallet, Kamyab Amouzegar and Karim Zaghib\*

