

Materials Advances

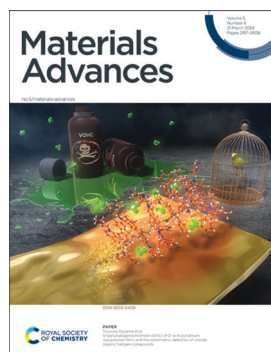
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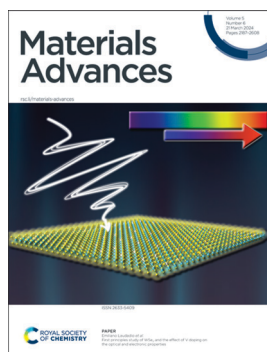
IN THIS ISSUE

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

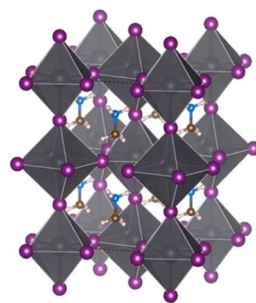
See Emiliano Laudadio *et al.*, pp. 2230–2237. Image reproduced by permission of Emiliano Laudadio from *Mater. Adv.*, 2024, 5, 2230.

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*

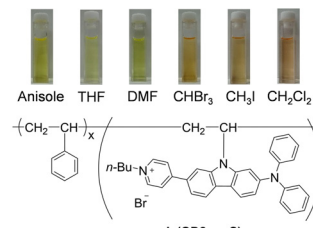
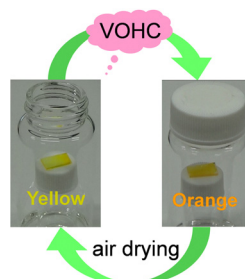


PAPERS

2218

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

Kumpei Kozuka, Keiichi Imato and Yousuke Ooyama*



D- π -A pyridinium dye polymer exhibiting Organohalogenochromism (OHC)



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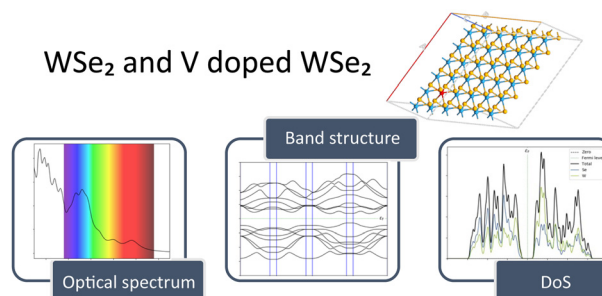
Fundamental questions
Elemental answers

PAPERS

2230

First principles study of WSe₂ 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@Ti₃C₂T_x-TiO₂ catalysts: a sustainable approach for H₂ generation via water splitting

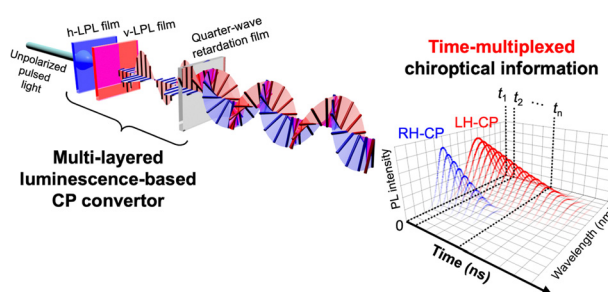
Muhammad Zeeshan Abid, Khezina Rafiq,* Abdul Rauf, Raed H. Althomali and Ejaz Hussain*



2253

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

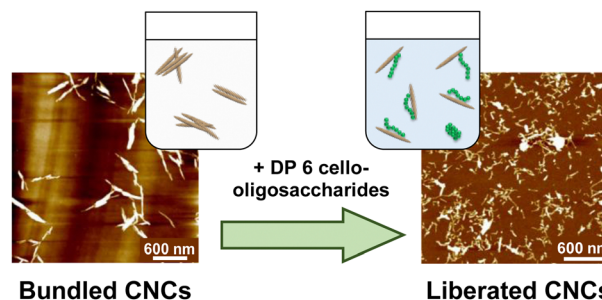
Yutaka Okazaki,* Hayaki Shimizu, Kaito Nakamura, Kyohei Yoshida, Guillaume Raffy, Misaki Kimura, Keita Tsukamoto, Rei Akasegawa, Kan Hachiya, Makoto Takafuji, André Del Guerzo and Takashi Sagawa*



2260

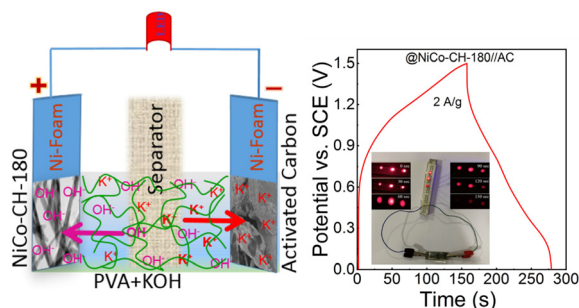
Dispersing uncharged cellulose nanocrystals through a precipitation surface modification route using oligosaccharides

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



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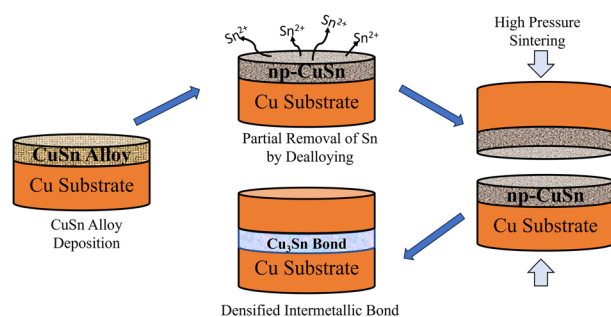
2271



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*

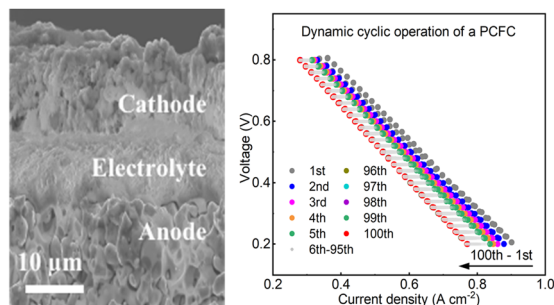
2285



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*

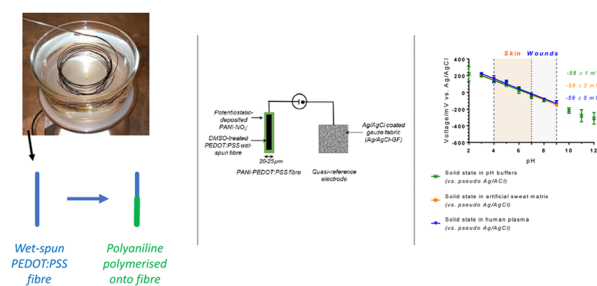
2296



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

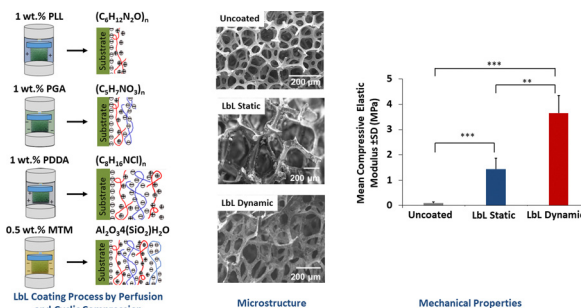
Rachel E. Smith, Stella Totti, Daniel Reid, Suzanne M. Hingley-Wilson, Eirini Velliou, Paola Campagnolo, Neil I. Ward, John R. Varcoe and Carol Crean*



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

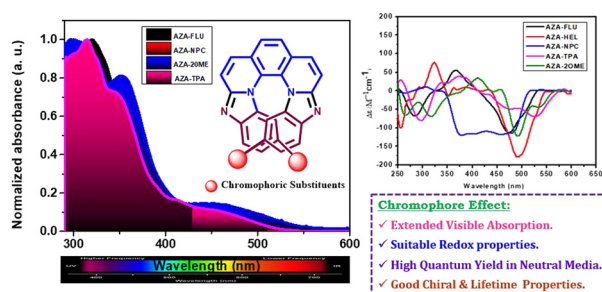
MohammadAli Sahebalzamani, Tina Sadat Hashemi, Zohreh Mousavi Nejad, Srishti Agarwal, Helen O. McCarthy, Tanya J. Levingstone and Nicholas J. Dunne*



2328

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

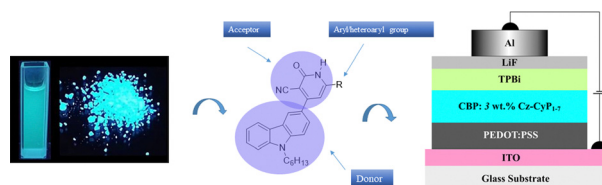
B. Yadagiri, Vinay Kumar and Surya Prakash Singh*



2335

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

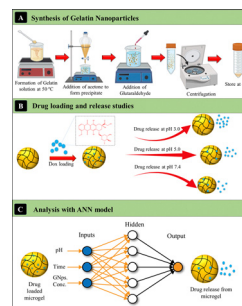
Vishrutha K S, Hidayath Ulla, Raveendra Kiran M, Badekai Ramachandra Bhat* and Airody Vasudeva Adhikari*



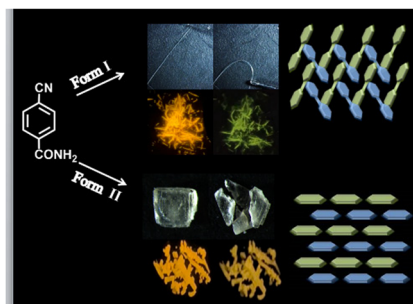
2347

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*



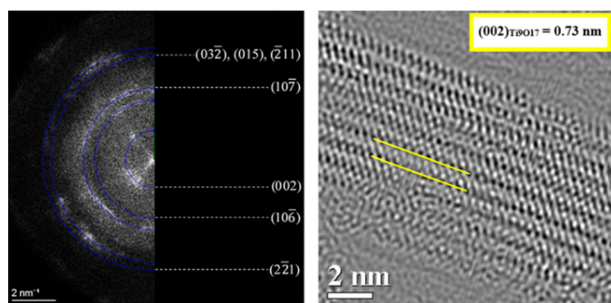
2359



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*

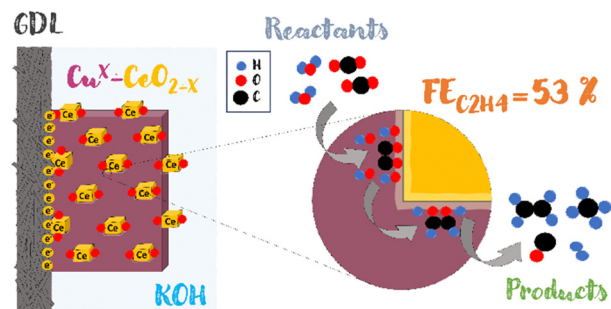
2368



Top-down surfactant-free electrosynthesis of magnéli phase Ti_9O_{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*

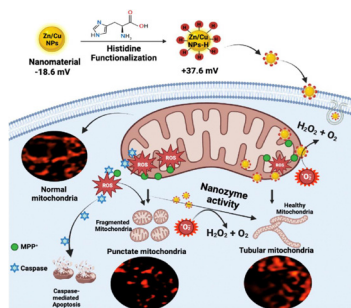
2377



CeO_2 -promoted Cu_2O -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*

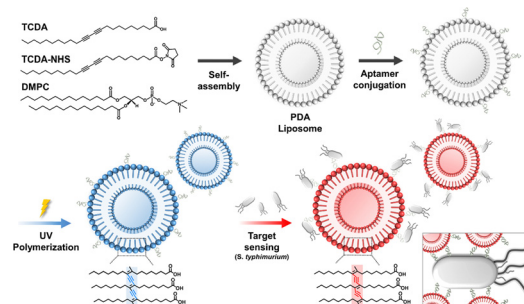


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2400

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

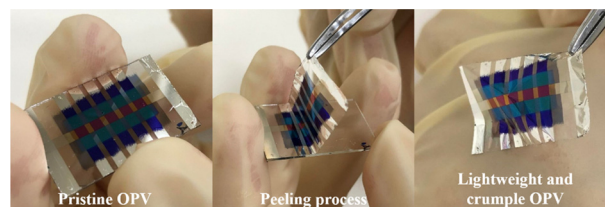
Goeun Lee, Byeongsung Kim, Inseung Jang, Moon Il Kim, Seunghan Shin and Kiok Kwon*



2411

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

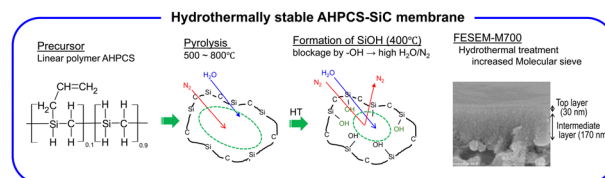
Yu-Ching Huang,* Chih-Chien Lee, Yung-Yuan Lee, Ssu-yung Chung, Hui-Chieh Lin, Uma Kasimayan, Chia-Feng Li and Shun-Wei Liu*



2420

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

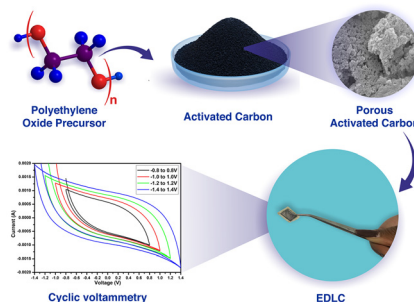
Gusni Sushanti, Daiki Tanabe, Khuat Thi Thu Hien, Norihiro Moriyama, Hiroki Nagasawa, Masakoto Kanezashi and Toshinori Tsuru*



2430

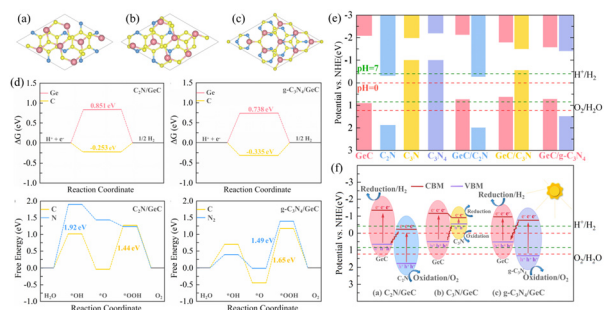
Environment-friendly approach for synthesis of promising porous carbon: empowering supercapacitors for a sustainable future

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



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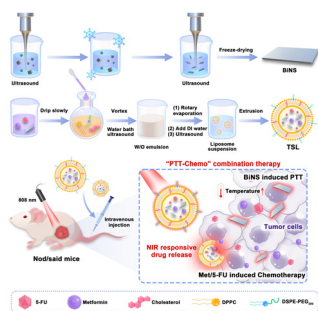
2441



Two-dimensional g-CN/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*

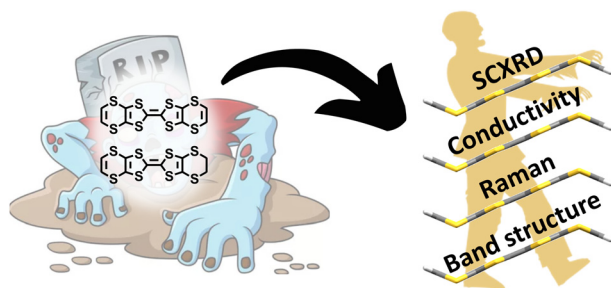
2456



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*

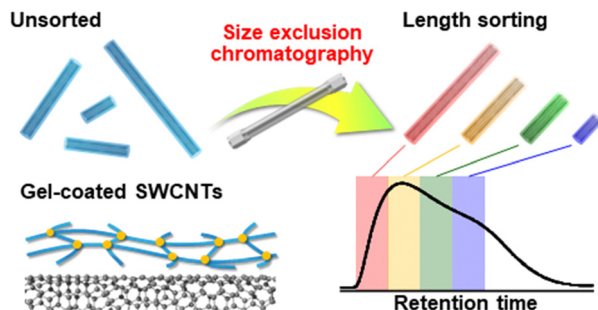
2470



Reviving BVDT-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*

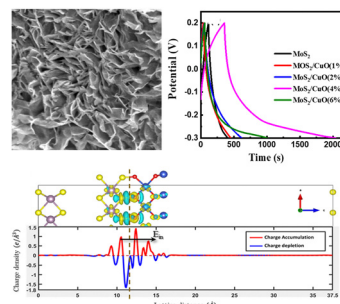


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2491

DFT-aided experimental investigation on the electrochemical performance of hetero-interface-functionalized CuO nanoparticle-decorated MoS₂ nanoflowers for energy storage applications

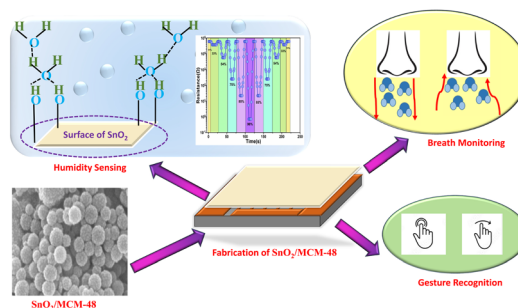
Muhammad Rakibul Islam,* Nahid Farzana, Md. Rajbanul Akhond, Mizanur Rahaman, Md Jahidul Islam and Ishtiaque M. Syed



2510

A high-performance humidity sensor based on 3D porous SnO₂-encapsulated MCM-48 for real-time breath monitoring and contactless gesture detection

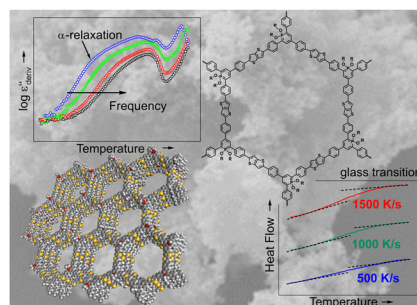
Priya Malik, Surender Duhan* and Rakesh Malik*



2526

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

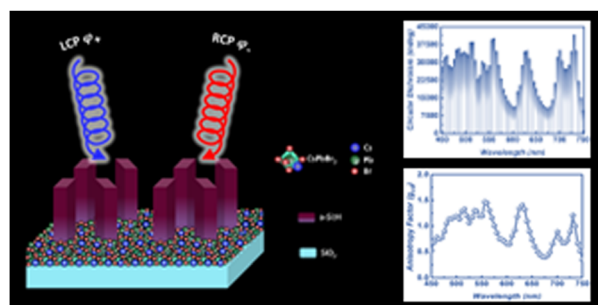
Farnaz Emamverdi, Jieyang Huang, Paulina Szymoniak, Michael J. Bojdys, Martin Böhning and Andreas Schönhals*



2536

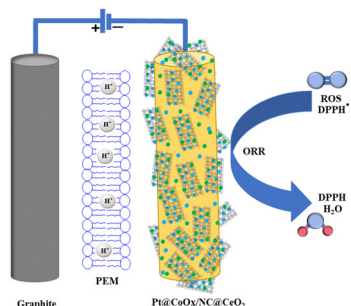
Realization of giant superstructural chirality at broadband optical wavelengths *via* perovskite dielectric metasurfaces

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



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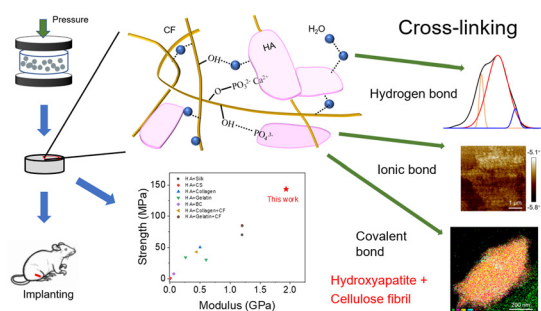
2545



Investigating the effect of CeO₂ on the radical scavenging activity of Pt@CoO_x/NC@CeO₂ during the electrocatalytic oxygen reduction reaction in acidic and alkaline environments

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

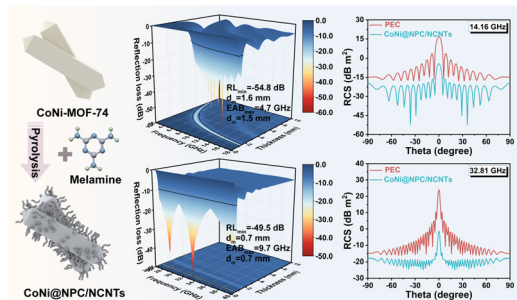
2556



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*

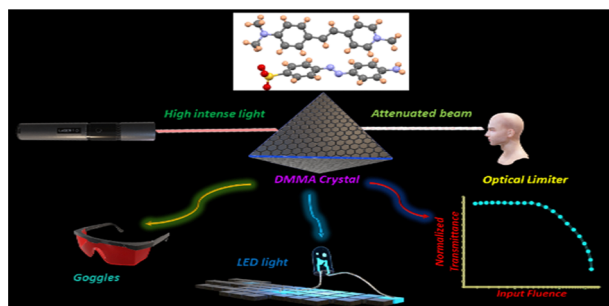
2570



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*

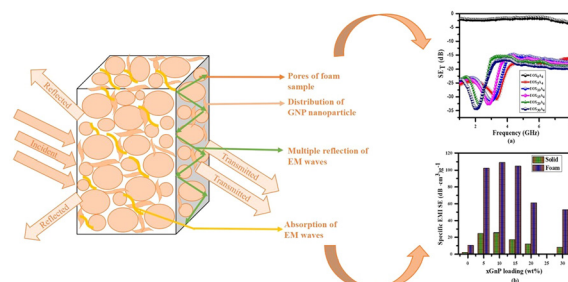


PAPERS

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*

