

Materials Advances

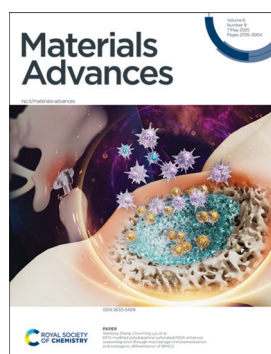
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Cover

See Xianlong Zhang, Chunming Lyu *et al.*, pp. 2781–2793. Image reproduced by permission of Chunming Lyu from *Mater. Adv.*, 2025, 6, 2781.

EDITORIAL

2714

Introduction to advances in emerging thermoelectric materials and devices

Krishna Nama Manjunatha,* Shashi Paul,* Satyajit Sahu and Mona Zebarjadi

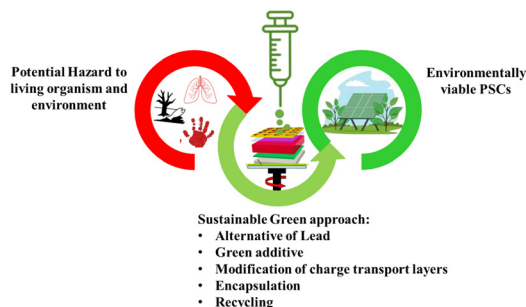


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Lead-free alternatives and toxicity mitigation strategies for sustainable perovskite solar cells: a critical review

Md. Helal Miah, Mayeen Uddin Khandaker,* Md. Jakir Hossen, Noor-E-Ashrafi, Ismat Jahan, Md. Shahinuzzaman, Mohammad Nur-E-Alam, Mohamed Y. Hanfi, Md. Habib Ullah and Mohammad Aminul Islam



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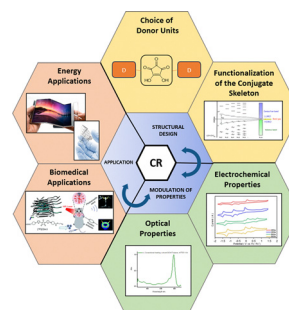


REVIEWS

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Croconic acid-based compounds: synthesis, structural characteristics, properties and applications of an intriguing class of functional organic materials

Maria Montrone, Umberto Berardi,* Antonio Cardone* and Maria Annunziata M. Capozzi*

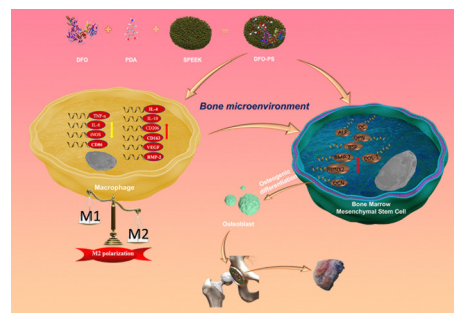


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DFO-modified polydopamine sulfonated PEEK enhances osseointegration through macrophage immunomodulation and osteogenic differentiation of BMSCs

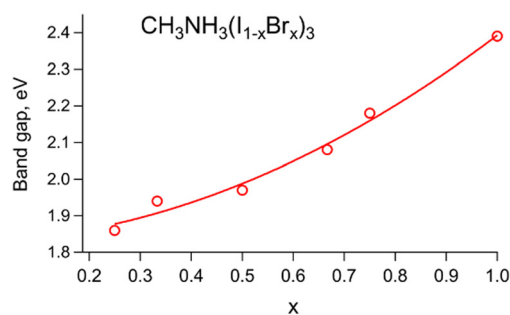
Shengjie Wang, Wei Liu, Chao Yang, Xianlong Zhang* and Chunming Lyu*



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On the band gap variation in $\text{CH}_3\text{NH}_3\text{Pb}(\text{I}_{1-x}\text{Br}_x)_3$

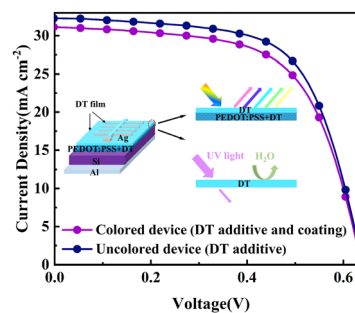
Sergei M. Butorin



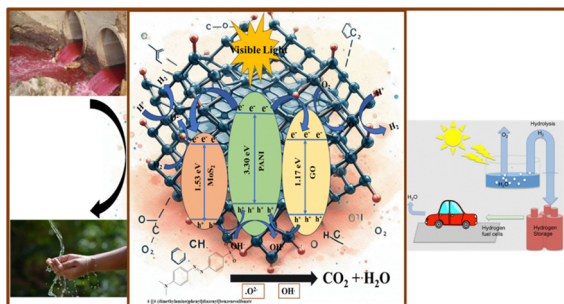
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Application of a multifunctional liquid crystal material in colored PEDOT:PSS/Si heterojunction solar cells

Zheng Zhou, Shibo Chen, Yingming Shen, Juan Wang, Guijun Zhang, Yang Shi, Haixia Wu, Jingjing Luo, Xiaohong Cheng* and Yu Yang*



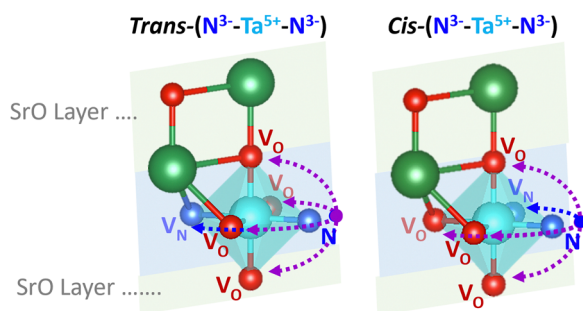
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Design and synthesis of PANI/GO/MoS₂ nanocomposites *via* oxidative polymerization for efficient photocatalytic applications: organic pollutant degradation and hydrogen generation

Pritam Hait, Rajeev Mehta and Soumen Basu*

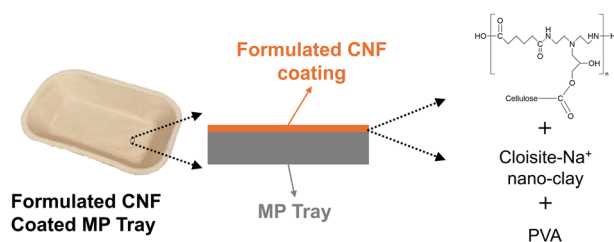
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Influence of anion ordering on defect diffusion anisotropy in layered perovskite Sr₂TaO₃N: implications for oxynitride stability

Joshua J. Brown* and Alister J. Page

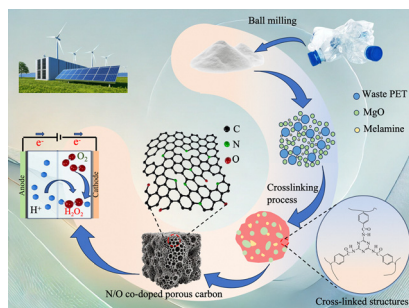
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Cellulose nanofibril-based hybrid coatings with enhanced moisture barrier properties

Jingxuan Zhang and Jeffrey P. Youngblood*

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N/O co-doped porous carbon derived from polyester waste for electrochemical production of H₂O₂

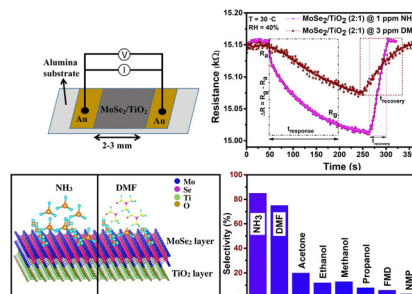
Mingsheng Luo, Chupeng Wang, Shiqi Song, Maochong Tang, Xiao Xia Wang* and Min Wu



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MoSe₂-based room temperature gas sensor with a sub-parts-per-billion limit for ammonia and *N,N*-dimethylformamide

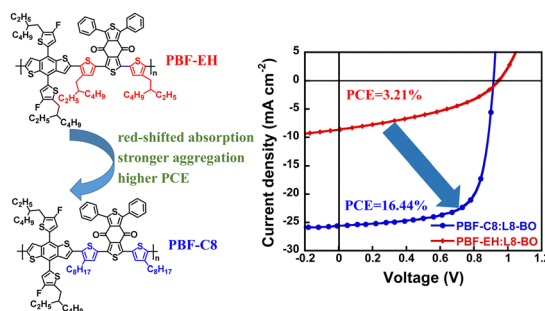
Virendra Singh Choudhary, Ramandeep Singh, Ashok Kumar, C. S. Yadav, Sandeep Sharma, Joel Garcia* and Surender Kumar Sharma*



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Side-chain engineering to develop phenyl-substituted benzodithiophenedione-unit-based polymer donors for efficient non-fullerene polymer solar cells

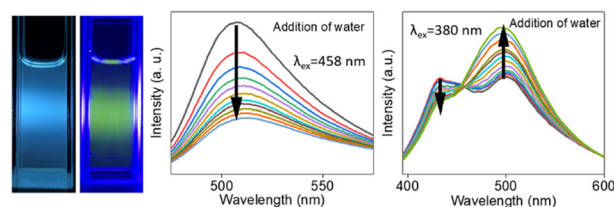
Baitian He, WenZheng Zhang, Jinming Zhang, Yan Liu,* Guiting Chen,* Manjun Xiao* and Chuanbo Dai



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Fluorescent carbon dots with dual emissions and solvent-dependent properties for water detection in organic solvents

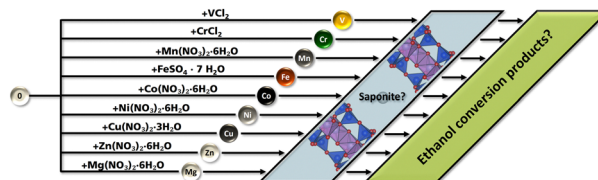
Koki Sekioka, Nazanin Mosleh, Dan Boice, Richard Hailstone and Xiangcheng Sun*



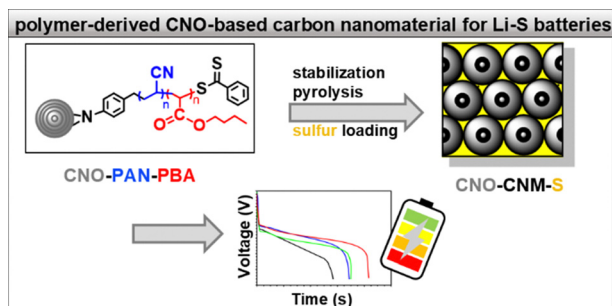
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The conversion of ethanol over 3d-metal saponite-like smectites

Marc Greuel, Clara Maria Watermann, Heiko Lohmann, Stefan Kaluza, Ulf-Peter Apfel* and Barbara Zeidler-Fandrich*



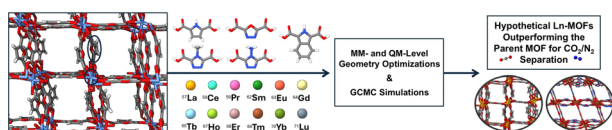
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Polymer-derived N-doped carbon nanomaterials containing carbon nano-ions and their potential applicability

Agnieszka Hryniewicka,* Joanna Breczko, Gabriela Siemiaszko, Karolina H. Markiewicz, Agnieszka Gabryelczyk, Grzegorz Lota and Marta E. Plonska-Brzezinska*

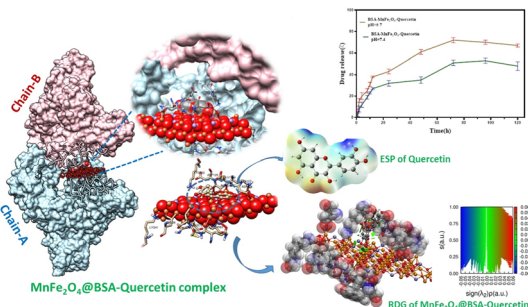
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Rational design of lanthanide-based metal–organic frameworks for CO₂ capture using computational modeling

Zeynep Pinar Haslak, Hasan Can Gulbalkan and Seda Keskin*

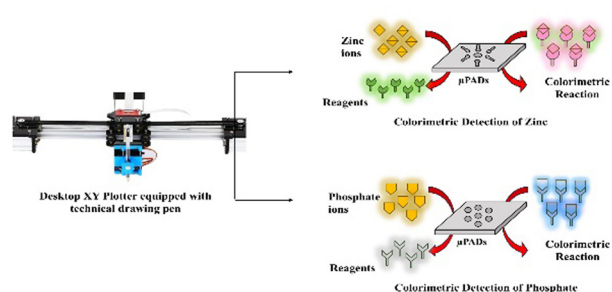
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An integrated computational and experimental study of BSA-coated MnFe₂O₄ nanoparticles as a drug delivery platform for quercetin

Negin Hashemi, Shabnam Naderlou, Ali Mohammadi and Hossein Danafar*

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Empowering agriculture: rapid on-site soil nutrient detection with microfluidic colorimetry

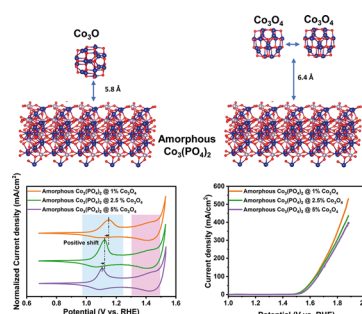
Piyush Mishra, Priyanshi Gupta, Sadhak Khanna, Bhupendra Pratap Singh, Pallavi Mishra, Swapnil Srivastava, Sapna Yadav, Sneha Kadian, Shug-June Hwang and Ved Varun Agrawal*



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Charge redistribution induced by well-dispersed cobalt oxide nanoparticles on $\text{Co}_3(\text{PO}_4)_2$ surfaces enhances OER catalytic activity

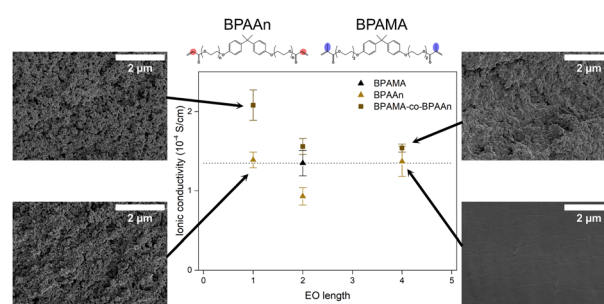
Abdelhadi El Jaouhari, Jamal Bencaid, Anouar Belhboub, Mustapha Matrouf, Ikram Cheras, Jinhua Zhu, Bouchaib Manoun and Fouad Ghamous*^{*}



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Effect of monomer composition on the formation of hybrid polymer-liquid electrolytes for lithium-ion batteries

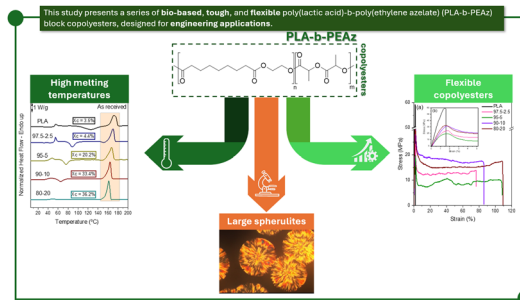
Samuel Emilsson, Gabriele Maffei, Martina Cattaruzza and Mats Johansson*^{*}



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Novel biobased, flexible blocky copolyesters based on poly(lactic acid) and poly(ethylene azelate)

Rafail O. Ioannidis, Zoe Terzopoulou,* Alexandra Zamboulis, Nikolaos D. Bikiaris, Michiel Jan Noordam and Nikolaos Nikolaidis*^{*}



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Exploring a new synthesis route to lithium-excess disordered rock salt (DRX) cathode materials

Matthew S. Chambers,* Tianyu Li, Zhilin Liang, Jong Keum, Kevin H. Stone, Raphaële J. Clément, Beth L. Armstrong* and Ethan C. Self*^{*}

