

Journal of Materials Chemistry A

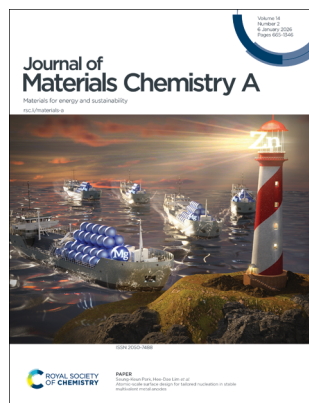
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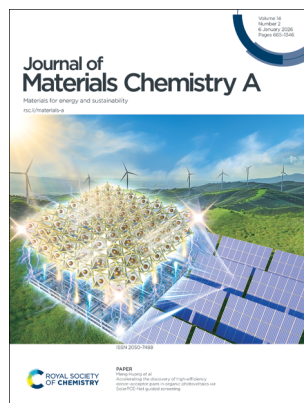
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See Seung-Keun Park, Hee-Dae Lim *et al.*, pp. 953–961. Image reproduced by permission of Hee-Dae Lim from *J. Mater. Chem. A*, 2026, **14**, 953.



Inside cover
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EDITORIAL

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2025 Journal of Materials Chemistry Lectureship winner: Dr Guanjie He

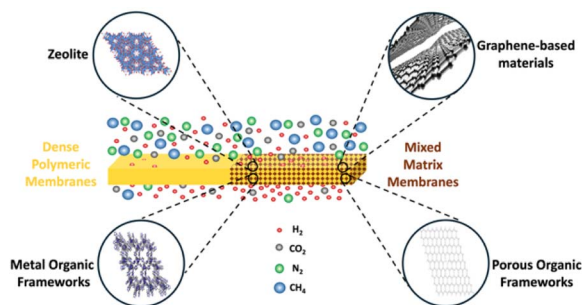


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Mixed matrix membranes for hydrogen separation: a comprehensive review and performance analysis

Reza Sabouri, Bradley Paul Ladewig* and Nicholaus Prasetya*



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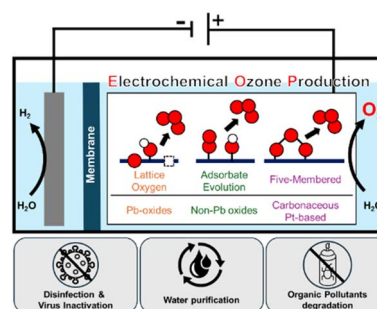
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A comprehensive review of mechanism-based catalyst design and applications for electrochemical ozone production

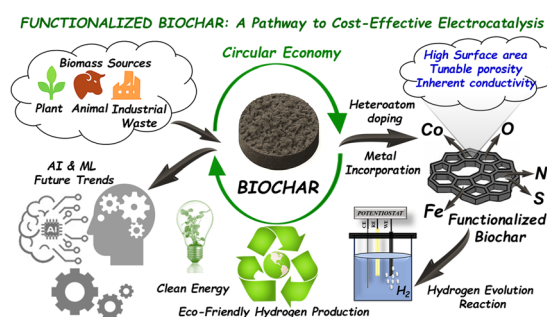
Doyeop Kim, Joyjit Kundu, Jinwon Choi, Sang-Il Choi,* Kwangyeol Lee* and Taehyun Kwon*



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Unravelling the HER activity of functionalized biochar: a pathway to cost-effective electrocatalysis

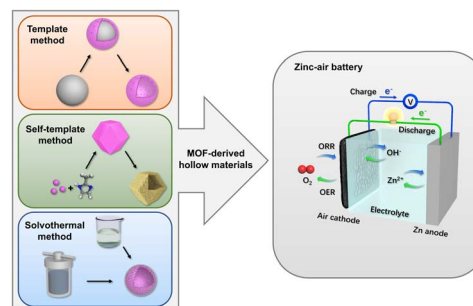
Arockia Jona Kalasan Susai, Magesh Kumar Muthukumaran, Muthukumar Govindaraj and Arockia Selvi J*



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Metal–organic framework derived hierarchical hollow materials for high-performance zinc–air batteries

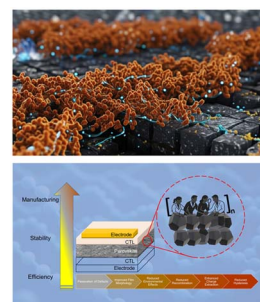
Yongji Qin, Hao Wang, Hao Zhang, Changfei Jing, Peipei Jia,* Longchao Zhuo, Xijun Liu* and Jun Luo*



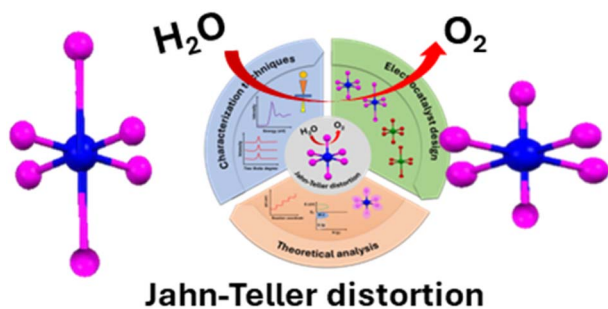
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Multifunctional polymers in perovskite photovoltaics: bridging efficiency, stability, and manufacturing

Farzad Zahedi, Mohsen Ameri,* Mohammad Hossein Rajabi Manshadi, Mohammad Jafari Pouya, Marziyeh Mohebbi, Maryam Alidaei, Siming Huang, Tandis HosseinMirzaie, Galyam Sanfo and Mojtaba Abdi-Jalebi*



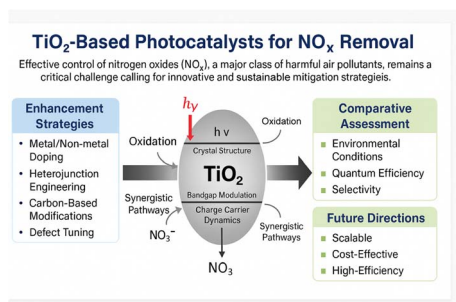
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Jahn–Teller distortion in the oxygen evolution reaction: from fundamental insights to catalyst design

Baghendra Singh* and Apparao Draksharapu*

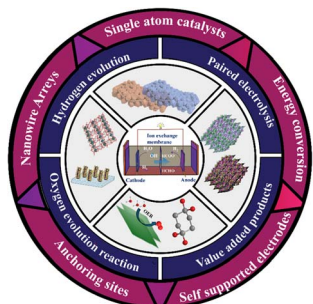
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Engineered titanium dioxide-based photocatalysts for NO_x abatement: navigating design strategies and structure activity relationships for practical air purification

Kowsar Ahmadi, Aadil Bathla, Sherif A. Younis and Ki-Hyun Kim*

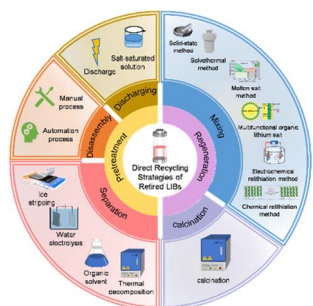
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Paired electrolysis by regulated electronic distribution and lowering of overpotential with enhanced current density

Meemansha Mishra, Rahul Patil,* Sada Venkateswarlu, Aristides Bakandritsos, Radek Zbořil* and Saikat Dutta*

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Recent advances in the industrialization of direct recycling for retired lithium-ion batteries

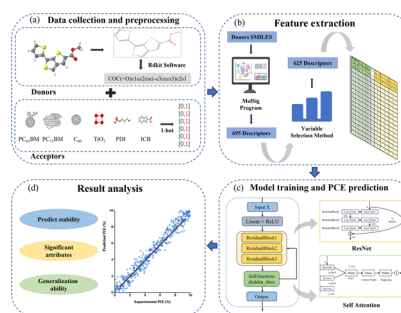
Runxin Wang, Shijie Ma, Wenzhe Wang,* Feng Liu,* Hongzhao Wu, Chunsheng Shi, Yanchun Ke and Biao Chen*



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Accelerating the discovery of high-efficiency donor–acceptor pairs in organic photovoltaics via SolarPCE-Net guided screening

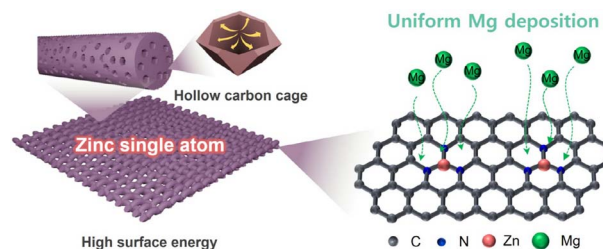
Xingyu Liu, Bo Hu, Pei Liu, Meng Huang,* Ming Li, Yuwei Wan, Bram Hoex and Tong Xie



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Atomic-scale surface design for tailored nucleation in stable multivalent metal anodes

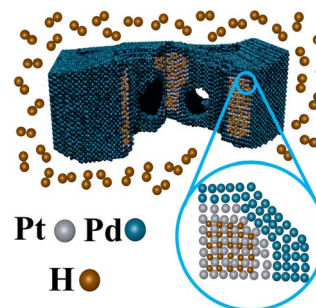
Jun-Won Lee, Jeong Ho Na, SeongJae Lee, Seonju Kim, Hee Seung Ryu, Kyeounghak Kim, Haeseong Jang, Seung-Keun Park* and Hee-Dae Lim*



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Nanoarchitected Pt–Pd foams as novel hydrogen reservoirs through Pt–H bonding

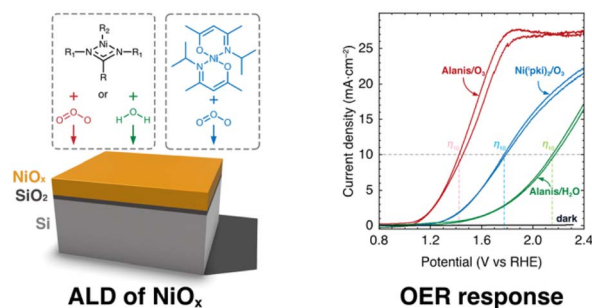
Wahidullah Khan, Alisson S. Thill, Gustavo Z. Giroto, Marco A. H. Vogt, Carlos Escudero, Fernanda Poletto, Virginia Perez-Dieste and Fabiano Bernardi*

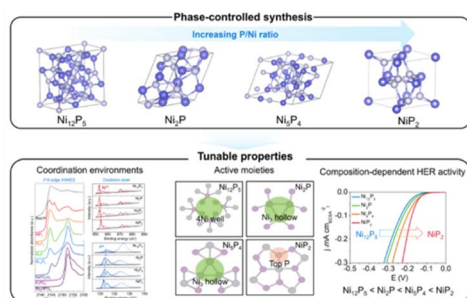


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Atomic layer deposition of NiO_x: harnessing the potential of new precursor combinations for photoelectrochemical water oxidation

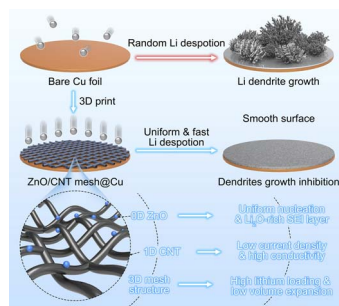
Vyshnav Kannampalli, Marcel Schmickler, Bruno Fabre, Ludovic Largeau, Antoine Seyeux, José Alvarez, Simon D. Elliott, Anjana Devi and Lionel Santinacci*





Colloidal phase control of Ni–P nanocrystals reveals a P-site hydrogen evolution reaction mechanism distinct from Ni-rich analogues

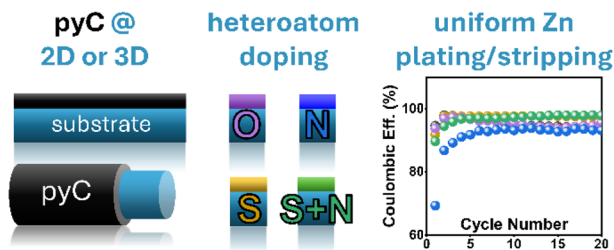
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A 3D-printed ZnO/CNT mesh@Cu composite electrode for dendrite-free and ultra-stable lean-lithium metal batteries

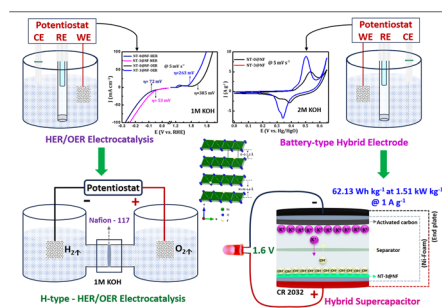
Lingtong Zhu, Shu Xu, Shaopeng Li, Yining Zhao, Wenyu Ma, Kangsheng Huang,* Hui Dou* and Xiaogang Zhang*

pyrolytic carbon electrodes



Evaluating aqueous zinc electrodeposition and stripping at pyrolytic carbon electrodes with tunable surface functionality

R. Blake Nuwayhid, Hunter O. Ford, Debra R. Rolison* and Jeffrey W. Long*



Fluorine-doped β -Ni(OH)₂-Ti₃C₂ MXene composite: a bifunctional electrode

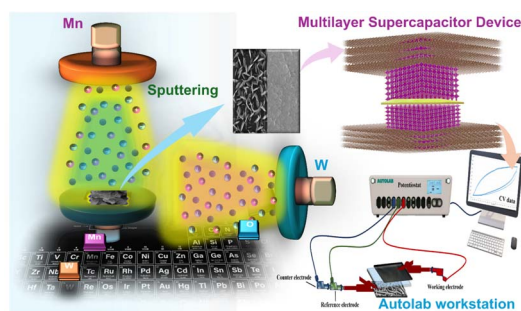
Madheshwaran Mohanraj, Moothedath Aparnasree, K. S. Rajni,* Sangaraju Shanmugam* and Mani Ulaganathan*



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Enhanced electrochemical performance of multilayer WO_3/MnO_2 thin films via sputtering on graphene substrate for high-stability supercapacitors

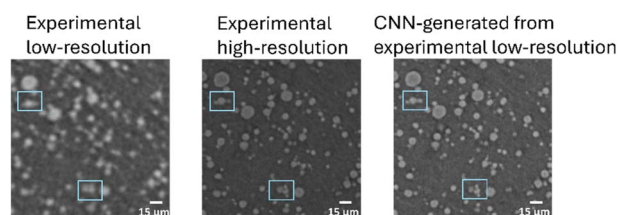
Nitesh Choudhary, Akshay Tomar, Gaurav Malik, Dushyant Chaudhary, Upendranath Nandi, Ramesh Chandra and Pradip K. Maji*



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X-ray imaging with AI-driven super-resolution deep learning for investigating battery electrode microstructural properties over cycling

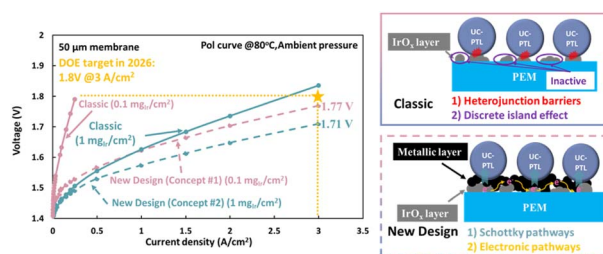
Mohammad Javad Shojaei, Guanting Li, Aditya Ramadas and Chun Huang*



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Simultaneously tackling discrete island effects and interfacial resistance in PEM electrolyzers via a scalable bilayer catalyst design

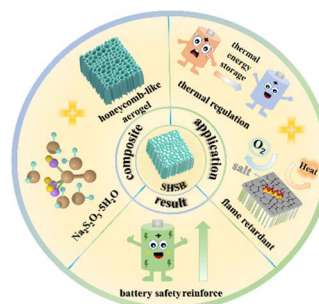
Hongjie Liao, Sandor Hollo, Zebai Chen, Zhao Zhang, Haowen Liang, Katie Pei, Luling Zhang, Ye Peng, Min Chen and Dustin Banham*



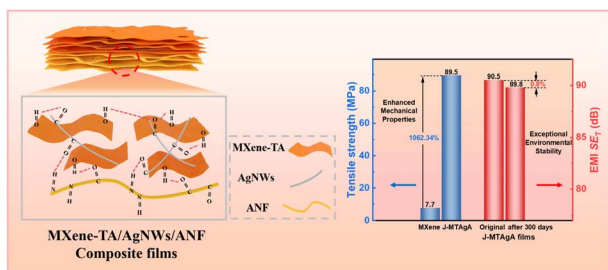
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Honeycomb-like structure with excellent thermal regulation and flame-retardant functions boosts Li-ion battery safety

Beibei Lei, Ziyang Hong, Xiaoting Shen, Shanzhu Jiang and Miao Wang*



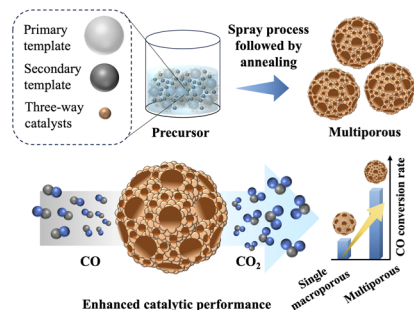
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Janus-structured MXene composite films with tannic acid-enhanced strength and environmentally stable electromagnetic interference shielding

Fan Xie,* Yuxuan Shang, Qiaoling Liu, Haitao Wei, Tao Liu, Yueyue Zhao, Wenting Zhang, Longhai Zhuo* and Zhaoqing Lu*

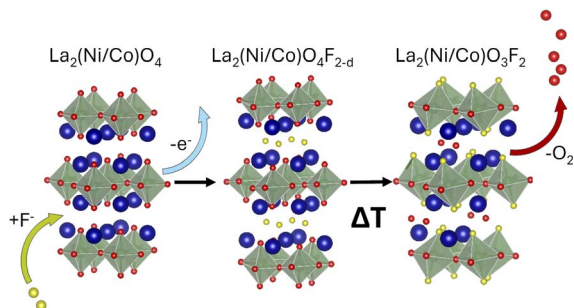
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Multiporous structure formation in three-way catalyst particles for enhanced catalytic performance

Duhail Biqal Kautsar, Phong Hoai Le, Kosuke Kondo, Kiet Le Anh Cao, Eka Lutfi Septiani, Tomoyuki Hirano and Takashi Ogi*

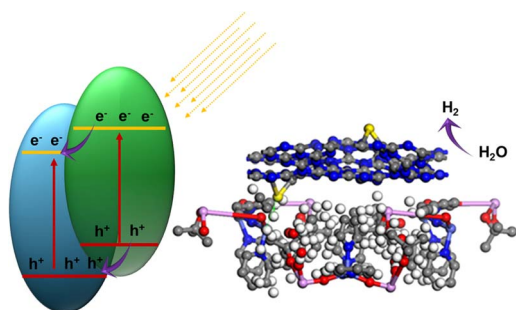
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Gas evolution in Ruddlesden-Popper-type intercalation cathodes in all-solid-state fluoride-ion-batteries: implications on battery performance and synthesis of highly oxidized oxyfluorides

Tommi Hendrik Aalto, Jonas Jacobs, Felix Frey, Dörthe Schiewe and Oliver Clemens*

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A sulfoxide-functionalized graphitic carbon nitride-cobalt dialkyl phosphate bipyridine heterojunction for photocatalytic hydrogen production

Navneet Matharoo, Mohammed Fawaz, Nithinraj Panangattu Dharmarajan, Ayona K. Jose, Jae-Hun Yang, Matej Huš, C. I. Sathish, Xuan Minh Chau Ta, Harleen Kaur, Yuwei Wang, Antonio Tricoli, Prashant Kumar, Blaž Likozar, Ramaswamy Murugavel* and Ajayan Vinu*



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Thermal alkyne–azide cycloaddition enables the fabrication of fluorescent COF thin films for sensitive chemical warfare agent sensing

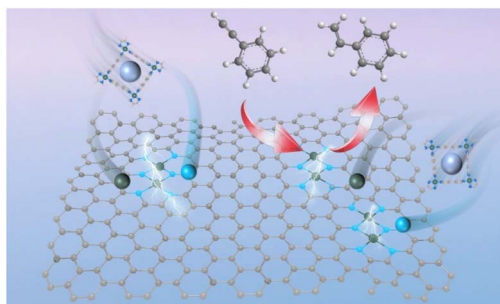
Wei qi Zhang, Kongqing Zhang, Qing Bai, Xiangyu Zhang, Ying Wang, Cheng Zhou, Hongwei Song, Hongwei Ma* and Liang Yao*



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Rational synthesis of Pd dual-atom catalysts via molecular precursor engineering for selective hydrogenation

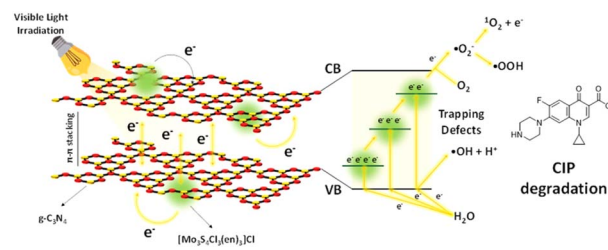
Kai Zhang, Chunyi Yu, Shang Han, Yang Wang, Yang Liu, Zhi-Wei Xing, Lifeng Ding* and Lin-Bing Sun*



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Electron trap engineering in g-C₃N₄ with molecular Mo₃S₄ clusters for visible-light-driven photocatalysis

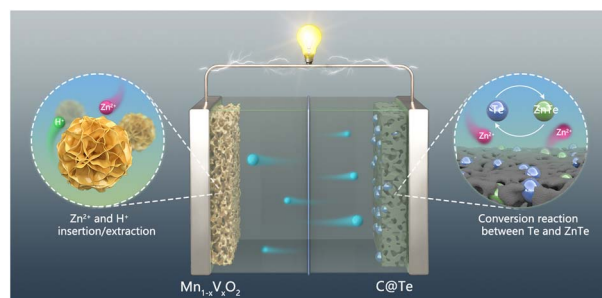
Mayra Luiza Gonçalves Rodrigues, Juanjo Mateu-Campos, Anelisse Brunca Silva, Maria Gutiérrez-Blanco, José Balena Gabriel Filho, Caue Ribeiro, Rosa Llusar, Juan Andrés, Elson Longo and Marcelo Assis*



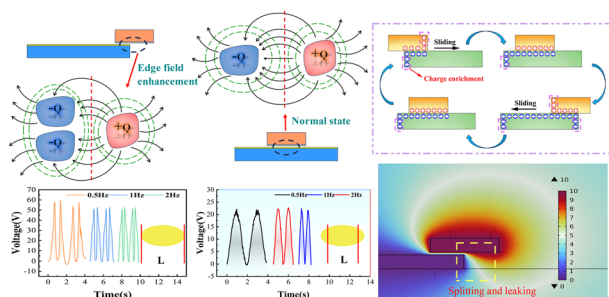
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Lattice engineering in MnO₂ via V⁵⁺ doping for high-performance aqueous Te–MnO₂ batteries

Xinyang Zhang, Xiaoyu Yang, Yingjun Wei, Dewei Wang* and Yuhong Chen



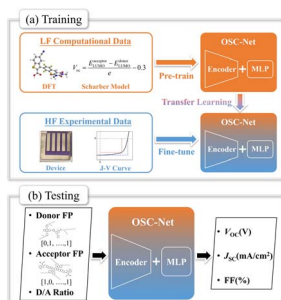
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On the electrostatic boundary effect: key influencing factors and underlying mechanisms in patterned triboelectric sensors

Tenghong Su, Xiao Lei, Dongdong Suo, Jijie Ma, Yili Hu, Jianping Li, Yingting Wang,* Ya Li* and Jianming Wen*

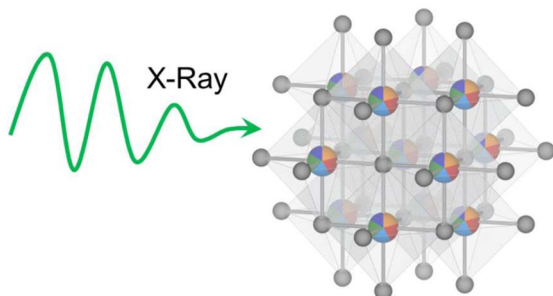
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OSC-Net: a multi-fidelity machine learning model for organic solar cells

Haizhou Yang, Adam Wold, Junlin Ou, Jeremy J. Rech, Wei You* and Yi Wang*

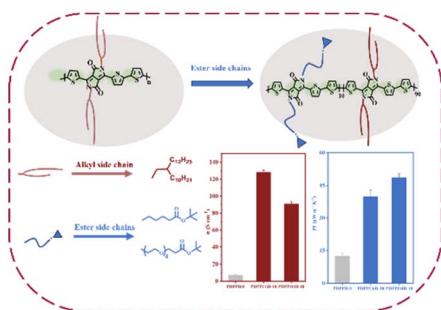
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X-ray analysis of $\text{Mg}_{0.2}\text{Co}_{0.2}\text{Ni}_{0.2}\text{Cu}_{0.2}\text{Zn}_{0.2}\text{O}$: disentangling elemental contributions in a prototypical high-entropy oxide

Maryia Zinouyeva,* Martina Fracchia, Giulia Maranini, Mauro Coduri, Davide Impelluso, Nicholas B. Brookes, Lorenzo Grilli, Kurt Kummer, Francesco Rosa, Matteo Aramini, Giacomo Ghiringhelli, Paolo Ghigna and Marco Moretti Sala*

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Synergistic regulation of ester side chains and thermal annealing to enhance electrical conductivity in diketopyrrolopyrrole-based conjugated polymers for thermoelectric generation

Zhiyong Luo, Guoliang He, Fei Zhong, Xuewen Xie, Mingliang Wang, Linhai Jiang, Chunmei Gao* and Lei Wang



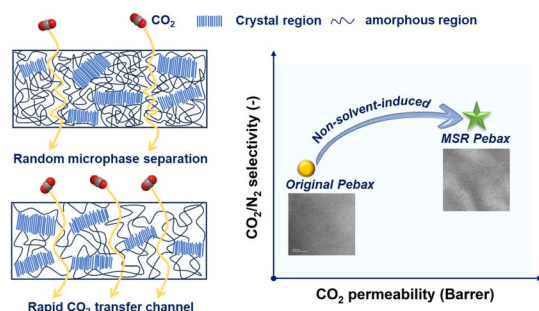
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Water-based room-temperature synthesis of Ce-BDC-MOFs using different additives: a comprehensive investigation on properties and tetracycline adsorption performance

Hossein Molavi* and Somayeh Saeedi

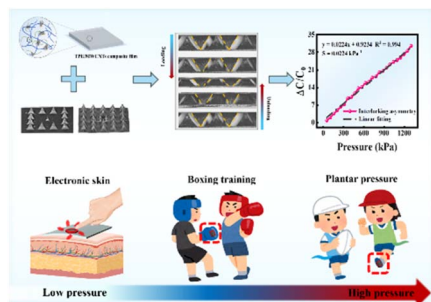
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Non-solvent-induced microstructure rearrangement for significantly enhanced CO₂/N₂ separation performance of Pebax 2533 membranes

Jing Wei, Min Deng, Yun Li, Long Shi, Zikang Qin, Junfeng Zheng,* Lin Yang, Lu Yao, Wenju Jiang and Zhongde Dai*

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High-*k* elastic composite dielectrics and microstructural engineering: high-sensitivity, ultra-wide linear range, and robust flexible capacitive pressure sensors for wearable electronics

Huiqi Zhang, Yu Xu, Miao Miao, Mingwei Han, Li Zhang, Xianzhe Liu,* Hongan Cai, Weijiang Liang, Jingxiang Yang, Guoning Chen, Jinxiu Wen, Aiping Huang,* Bingpu Zhou* and Jianyi Luo*

CORRECTION

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Correction: Tracking phase transformations in LiMn_{1.5+x}Ni_{0.5-x}O₄ by high resolution X-ray diffraction

Halvor Høen Hval* and Helmer Fjellvåg*

