

Journal of Materials Chemistry A

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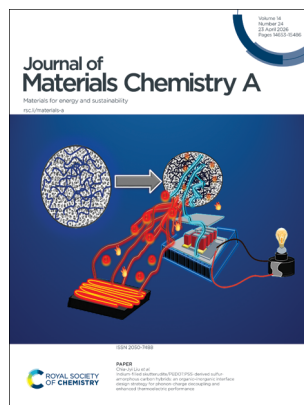
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IN THIS ISSUE

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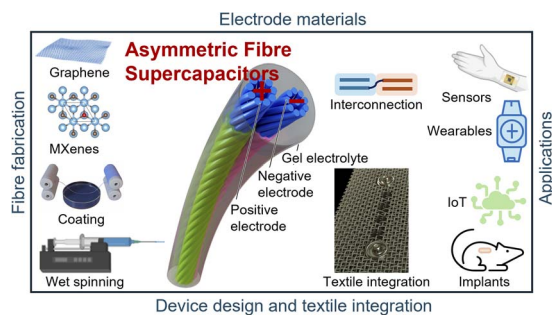
Inside cover
See Chia-Jyi Liu *et al.*, pp. 14884–14907. Image reproduced by permission of Vinothkumar Lourdhusamy and Chia-Jyi Liu from *J. Mater. Chem. A*, 2026, 14, 14884. Created with BioRender.

REVIEWS

14670

Asymmetric fibre supercapacitors for sustainable energy storage in next-generation soft textile wearables

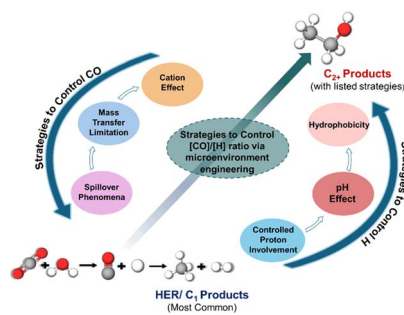
Neeraj Kumar, Nishu Devi, Rashi Gusain, Patryk Wojciak, Safa Polat and Shayan Seyedin*



14709

CO₂ electroreduction into C₂₊ products on Cu surfaces: recent advances, challenges, and opportunities

Sneha Mittal, Ligang Feng and Anantharaj Sengeni*



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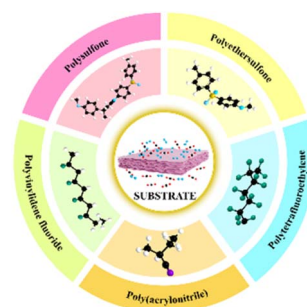
Fundamental questions
Elemental answers

REVIEWS

14735

Thin-film composite membranes for efficient CO₂ capture: evaluation of different polymer substrate selection strategies

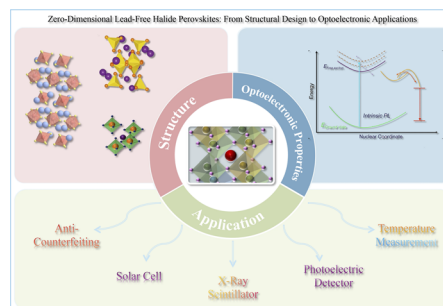
Wenhao Yan, Shengnan He, Hongfei Su, Menglong Sheng,* Feng Xue* and Ruizhi Pang



14751

Zero-dimensional lead-free halide perovskites: from structural design to optoelectronic applications

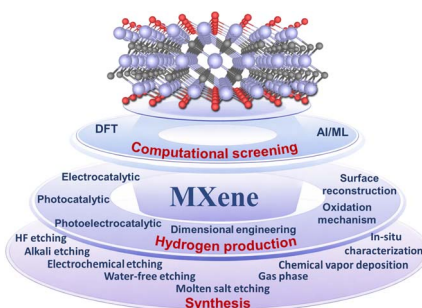
Qiaochu Chen, Chao Wang, Kan Wang, Yan Su, Guifu Dong* and Hongbin Yan*



14788

MXenes as emerging 2D materials for hydrogen generation: advances and future prospects

Pooja Varma, Sukanya Saha, Nithin Kumar Banoth, Appala Naidu Chokkapu, Seung Jun Lee,* B. Moses Abraham,* D. Amaranatha Reddy* and Ujjwal Pal*

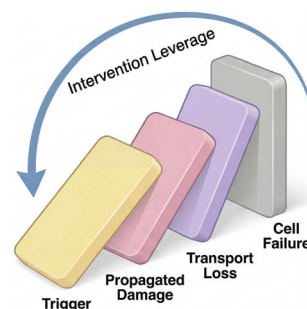


PERSPECTIVE

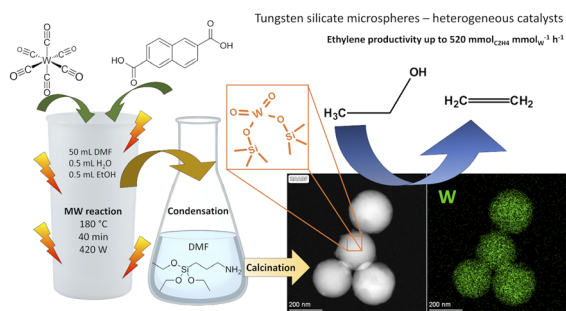
14854

A failure-cascade view of cathode degradation and intervention strategies in aqueous Zn-ion batteries

Dingyi Zhao, Kaixi Chen, Bo Liu, Huida Lyu, Jennie Gao, Tian-Yu Wang, Kaiyan Liang, Jung Tae Kim, Jiayi Yu, Keyue Liang, Sophia Li, Vanessa Cho and Yuzhang Li*



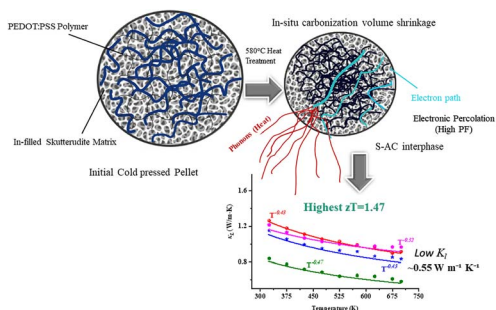
14886



Microwave-assisted one-pot sol–gel synthesis of tungsten silicate microspheres with dispersed WO_x and their activity in ethanol dehydration

David Skoda,* Tomas Pokorny, Barbora Hanulikova, Ales Styskalik,* Zuzana Hlavenkova, Lucie Simonikova, Jan Varada, Lucie Leonova, Ivo Kuritka, Claude Poleunis and Damien P. Debecker*

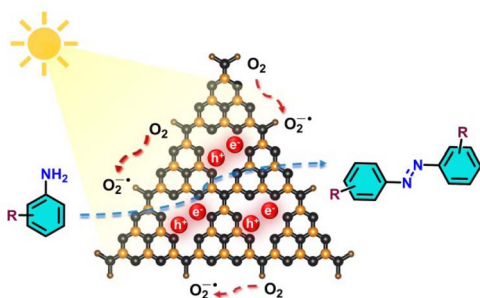
14884



Indium-filled skutterudite/PEDOT:PSS-derived sulfur-amorphous carbon hybrids: an organic–inorganic interface design strategy for phonon–charge decoupling and enhanced thermoelectric performance

Vinothkumar Lourdhusamy, Immanuel Paulraj, Veera Prabu Kannan, Niranjan A.S. and Chia-Jyi Liu*

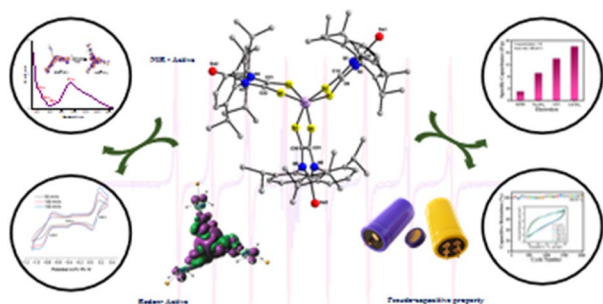
14908



Harnessing an mpg- C_3N_4 photocatalyst for the selective oxidative coupling of amines to yield azoaromatic compounds

Dinesh S. Chaudhari, Rahul P. Gaikwad, Indrajeet R. Warkad, Rostislav Langer, Michal Otyepka and Manoj B. Gawande*

14923



Novel redox-active vanadium(v)-dithiolene complexes for efficient supercapacitive energy storage: role of selenium functionalization on pseudocapacitive properties

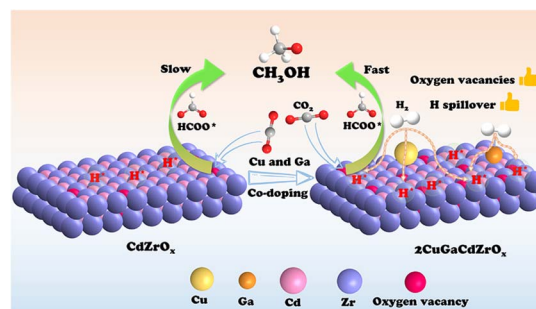
Sangita Mondal, T. Kedara Shivasharma, Sujit Das, Mayur Thosare, Christel Livia Mascarenhas, Babasaheb R. Sankapal* and Kartik Chandra Mondal*



14940

Enhancing hydrogen spillover and oxygen vacancies in CdZrO_x solid solution catalysts via the synergistic effect of Cu and Ga for efficient CO₂ hydrogenation to methanol

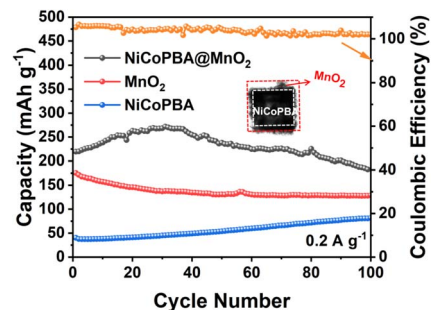
Yu Zhou, Ke Zhuang, Yun Xu, Kai Shen, Yaping Zhang,*
Tingyu Zhu and Wenqing Xu*



14957

A robust core-shell design to stabilize MnO₂ and activate Prussian blue for high-performance zinc-ion batteries

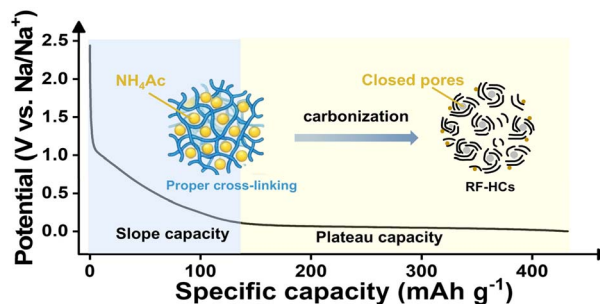
Hanqi Sun, Li Sun,* Wenjing Li, Jiayang Li, Yong Wang and Jiawen Cui



14969

Bifunctional catalyst directed closed-pore engineering in hard carbon for enhanced sodium storage

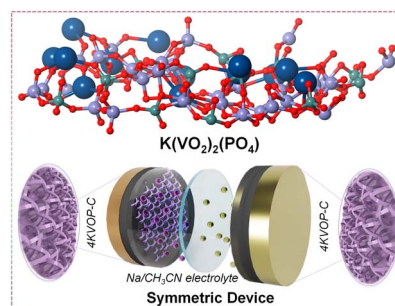
Xiaoqi Yu, Xiaoyu Xu, Songyue Liu, Haiyan Liu, Hanyu Wei, Chengwei Fan, Ang Li, Xiaohong Chen and Huaihe Song*



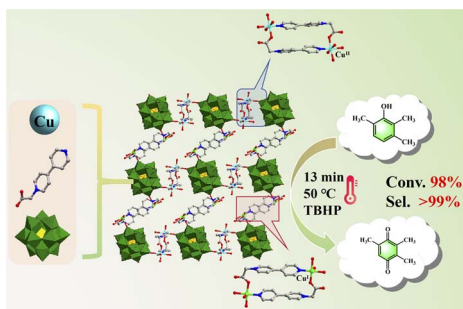
14981

Engineering fibrous-interconnected potassium bis(dioxovanadium) phosphate frameworks for fast-charging and high-rate sodium-ion supercapacitors

Ramu Manikandan, C. Justin Raj, Hyun Jung,
John D Rodney, Periyasamy Sivakumar,
Rajavel Velayutham, Amol Marotrao Kale, S. Saranya,
Byung Chul Kim and Jae-Min Oh*



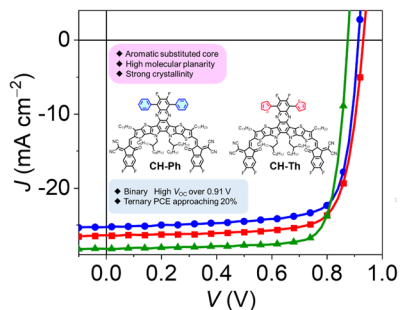
15000



A 4,4-connected 2D POM-based complex with synergistic mixed-valence Cu^I/Cu^{II} for mild and efficient catalytic oxidation of phenols

Jia-Yu Sun, Si-Yu Sun, Zhong Zhang,* Mei-Tong Li, Guo-Cheng Liu* and Xiu-Li Wang*

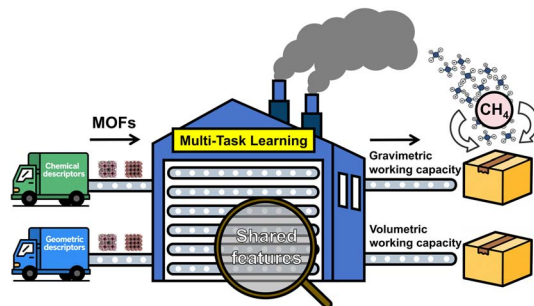
15008



Central aromatic ring substitution on non-fullerene acceptors boosts the performance of organic photovoltaics

Ruibin Bian, Xiangjian Cao, Zhaoyang Yao,* Wenkai Zhao, Shuhui Ding, Guankui Long, Xiangjian Wan,* Chenxi Li and Yongsheng Chen*

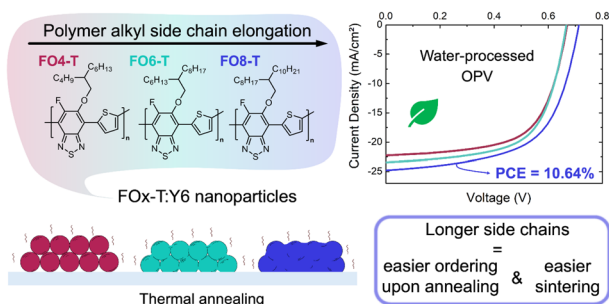
15018



Application of multi-task learning in analysing the methane working capacity of metal-organic frameworks

Junhui Kou, Tianle Liu,* Guosheng Jiang, Guokun Yang, Zerang Li, Xiaoyang Ni and Hao Liu

15034



Impact of the polymer donor side-chain length on the formation and processing of waterborne nanoparticles for organic solar cells

Hugo Laval,* Martina Rimmele,* Alberto Peinador Veiga, Xabier Rodríguez-Martínez, Gilles Pécastaings, Marc Schmutz, Alejandro Salinas-Villasenor, Christine Lartigau-Dagron, Antoine Bousquet, Guillaume Wantz, Jaime Martin, Martin Heeney and Sylvain Chambon*



15044

Constructing a continuous gradient structure significantly enhances the high-temperature energy storage performance of cellulose acetate multilayer composite films

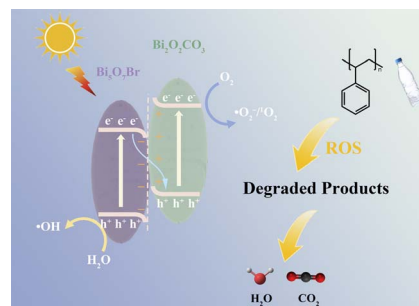
Fan Zhang, Rui Luo, Nan Zhang, Jing-hui Yang and Yong Wang*



15057

Built-in electric field driven S-scheme $\text{Bi}_2\text{O}_2\text{CO}_3/\text{Bi}_5\text{O}_7\text{Br}$ heterojunction for superior photocatalytic mineralization of polystyrene microplastics

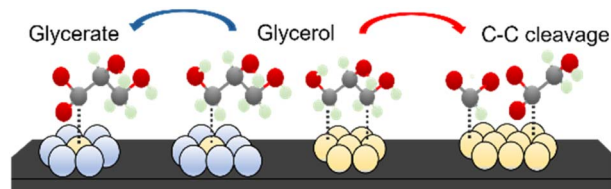
Yu Zhang, Yangang Sun,* Luyao Pan and Zhaoxia Wen



15075

Atomically dispersed Pt catalyst on ceria-carbon for suppressing C–C cleavage in glycerol electrooxidation

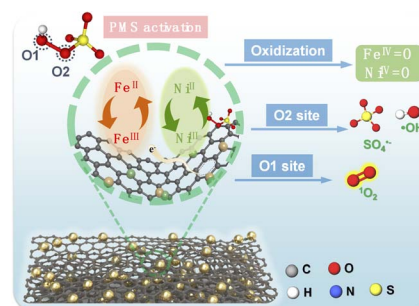
Hae Ryeong Lee, Eunchoong Lee, Yunji Choi, Jaehoon Kwon, Seonmin Jeon, Sujin Park, Yun Jeong Hwang* and Hyunjoon Lee*



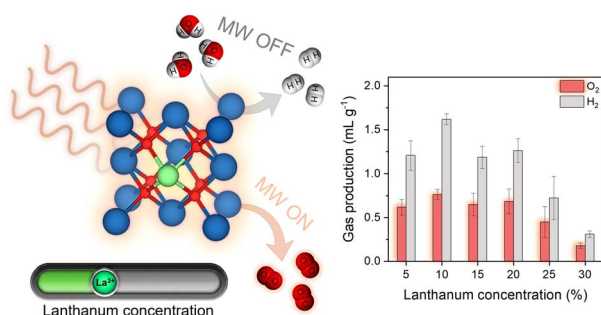
15085

NiFe alloy nanocrystals anchored on nitrogen-doped carbon: interface engineering for enhanced peroxymonosulfate activation *via* non-radical dominated pathways

Xiaoqin Sun,* Meiluo Jiang, Hao Chen, Hongmei Chen and Xiaoxiang Xu*



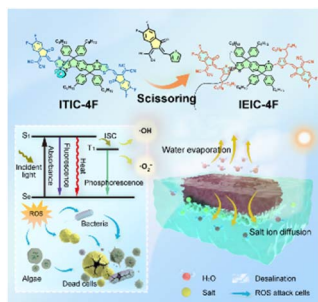
15097



Defect-surface engineering of La-doped ceria for microwave-assisted hydrogen production

Aitor Domínguez-Saldaña, Laura Navarrete, Alfonso J. Carrillo, María Balaguer, Joaquin Santos, Beatriz García-Baños, Pedro Plaza-González, David Catalán-Martínez, Jose M. Catalá-Civera* and Jose M. Serra*

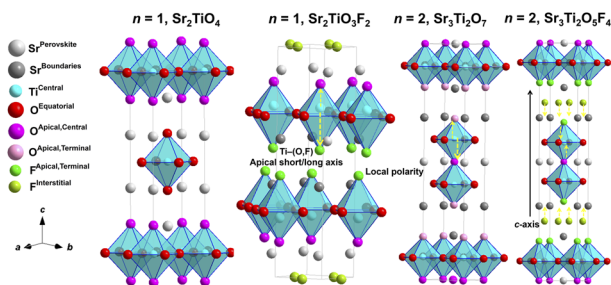
15108



Molecular scissoring strategy to modify band gap and molecular motion for high-performance solar desalination and water purification

Zishuo Zhang, Fangqing Fan, Jingshuai Zhu,* Minyi Liang, Hongyu He, Youxun Wang, Xuemei Chen, Ning Weng, Shuyan Mai, Jiabin Zheng, Shiguo Chen* and Yuanfeng Wang*

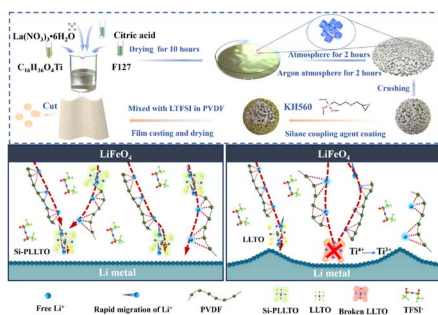
15119



Structural origins of photocatalytic properties in Ruddlesden-Popper $Sr_{n+1}Ti_nO_{3n+1}$ ($n = 1, 2$) and their topochemically fluorinated phases $Sr_{n+1}Ti_nO_{(3n+1)-x}F_{2x}$ ($x \approx n$)

Shama Perween,* Kevin Matthias Ries, Anja Hofmann, Tommi Hendrik Aalto, Harol Moreno Fernández, Marc Widenmeyer, Robert Löser, Jana Timm, Guido Schmitz, Petia Atanasova, Jan Philipp Hofmann, Oliver Clemens, Roland Marschall and Chengchao Zhong

15142



Interfacial functionalization of porous $Li_{0.33}La_{0.557}TiO_3$ enabling fast lithium-ion transport in solid polymer electrolytes

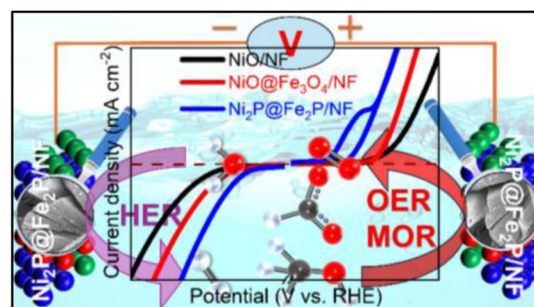
Benfu Chi, Shuai Ju, Zhihao Ding, Yuanhao Duan, Jingyi Liu, Xiaoxiong Wang,* Jianjun Song, Dong Meng* and Chuan Shi*



15150

Dual-MOF-derived Ni@Fe-based core-shell heterostructures as trifunctional catalysts for methanol valorization-coupled H₂ production via hybrid water electrolysis

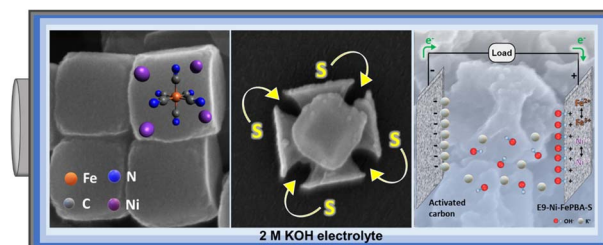
Apurba Borah, Sayan Das, Vishakha Singh and Gaddam Rajeshkhanna*



15163

Etching-induced electronic modulation in Prussian blue analogue-derived metal sulfides for advanced hybrid supercapacitors

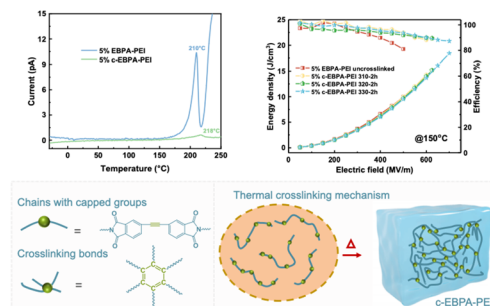
Pin-Yan Lee, Kevin C.-W. Wu* and Kuo-Chuan Ho*



15176

Thermally self-crosslinkable polyetherimide dielectrics with superior high-temperature energy storage efficiency

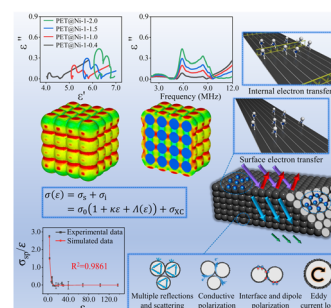
Dingyu Zheng, Huilei Jiang, Huijian Ye* and Lixin Xu*



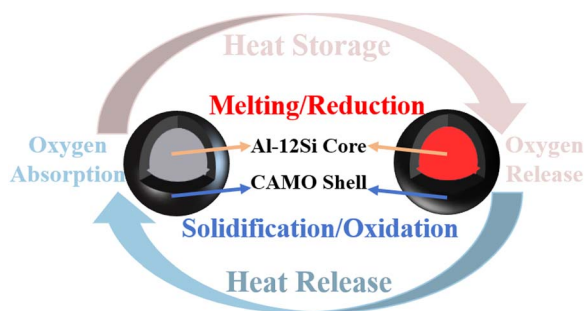
15187

Nonlinear conduction and multifunctional integration enabled by segregated network modulation in PET@Ni composites

Niming Zheng, Jiaxin Yang, Xu Guo, Han Gao, Yun Li, Hongtao Guan* and Yang Zhang*



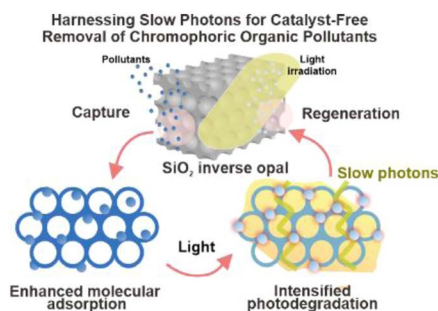
15204



Encapsulation and coupling of brownmillerite-structured active oxides with metallic phase change materials for multiModal heat storage and air separation

Yeku Wang, Shengxin Li, Ruijie Zhu, Nan Sheng and Chunyu Zhu*

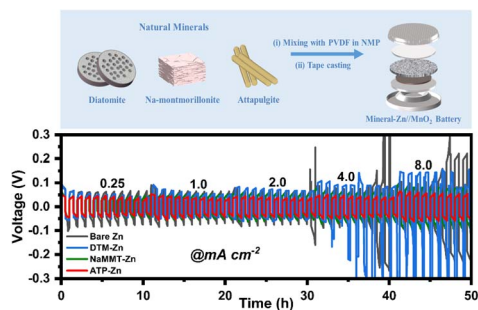
15218



Harnessing slow photons in 3D silica photonic crystals for efficient and catalyst-free removal of chromophoric organic pollutants

Tharishinny Raja Mogan,* Ruo Qi Ho, Veronica Pereira, Carice Chong, Siew Kheng Boong, Eugene Yee Shuen Chua and Hiang Kwee Lee*

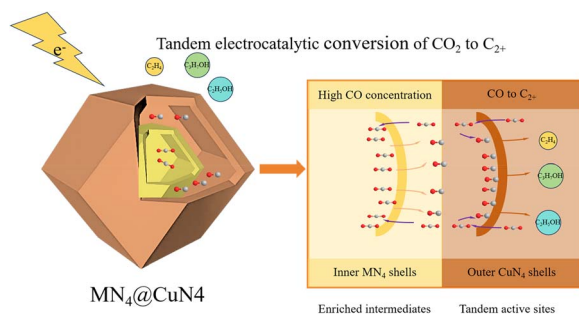
15226



Natural mineral engineering of zinc anodes: attapulgite-based interfacial modification for dendrite-free aqueous zinc-ion batteries

Wenjing Li, Li Sun,* Hanqi Sun, Jiayang Li, Jiawen Cui, Yong Wang and Libing Liao

15241



Janus NiN₄-CuN₄ catalyst supported by a double-layered ZIF-8 structure for CO₂ electrocatalytic reduction to C₂₊ products

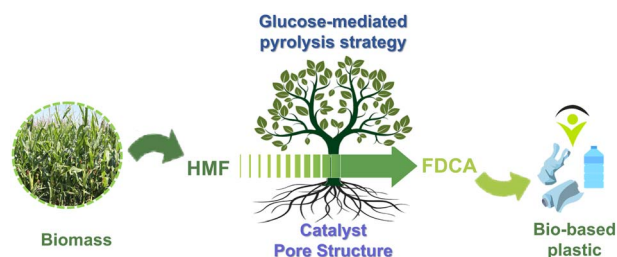
Gege Zhang, Qianyun Tan, Xiaoyu Xu and Fa-Qian Liu*



15252

A glucose-mediated independent pyrolysis strategy optimises the pore structure of MOF-derived carbon catalysts to promote the conversion of HMF to FDCA

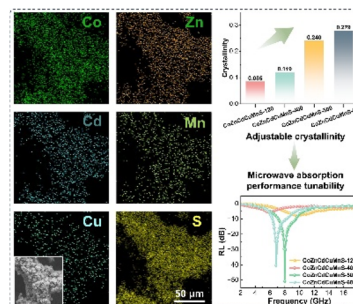
Hao Peng, Zhan Chen, Peng Wang, Haoyue Ma, Song Zhang, Shuai Li, Ye Yuan, Cheng Chen,* Somboon Chaemchuen, Soon Hyeok Hong* and Zongkui Kou*



15263

High-entropy Co–Zn–Cd–Cu–Mn sulfide ceramic nanoflowers as efficient microwave absorbers with photothermal performance

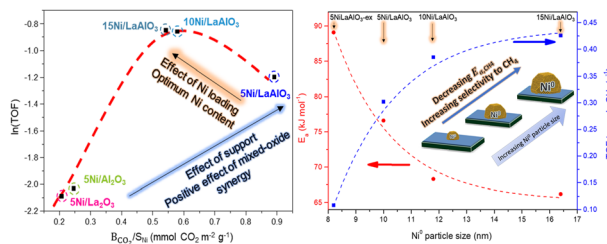
Shuai Li, Baoguo Lv, Haiming Lv, Xiao Liu,* Lihong Wu, Lianwang Shan, Yongxin Qian, Daguang Li, Rui Wang* and Guizhen Wang*



15275

Boosting CO₂ methanation over Ni-based catalysts via La–Al mixed oxide synergy

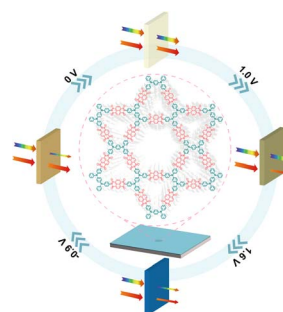
R. B. Machado-Silva, L. M. Andrés-Olmos, N. Kosinov, E. J. M. Hensen and A. Chica*



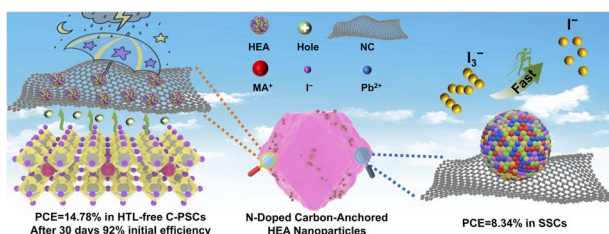
15287

Mixed-valence engineered bipolar polyimide covalent organic framework film for multicolor displays and dual-band electrochromism

Xiangbin Zou, Shuo Yang, Hao Zeng, Xueyu Yuan, Sizhe Tang, Zihao Zhou, Yujie Song,* Bing Li* and Ming Liu*



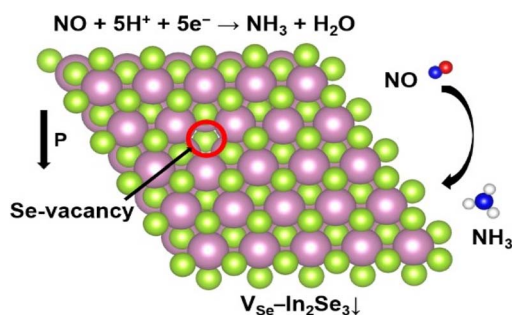
15297



Entropy-assisted nitrogen-doped carbon-anchored high-entropy alloy composites for efficient and stable universal photovoltaic electrodes

Haijiang Yang, Sining Yun,* Tianxiang Yang, Weidong Tian, Guangping Yang, Abdullah Nasir, Zhiguo Wang and Rou Feng

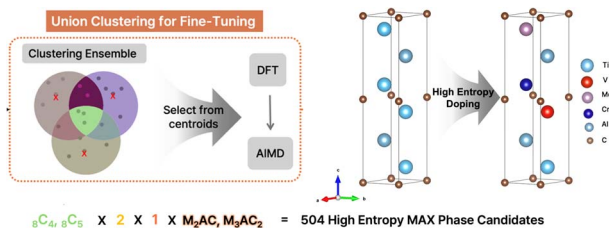
15311



Controlling nitric oxide reduction to ammonia on defective $\alpha\text{-In}_2\text{Se}_3$ via ferroelectric polarization switching

Md Tarikal Nasir, Yun Han, Dimuthu Wijethunge and Aijun Du*

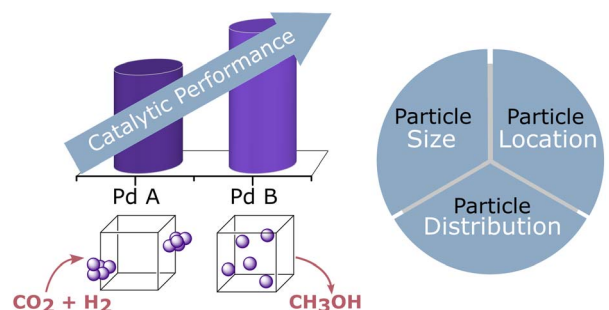
15319



Data-efficient training of machine learning interatomic potentials for MAX-phase synthesizability prediction

Jonghyuk Kim, Woojin Shin, Jungjae Hwang, Junghyeon Kwon, Sanghyeon Song and Kyoungmin Min*

15335



Structural and catalytic insights into Pd-UiO-67 frameworks for CO_2 hydrogenation to methanol

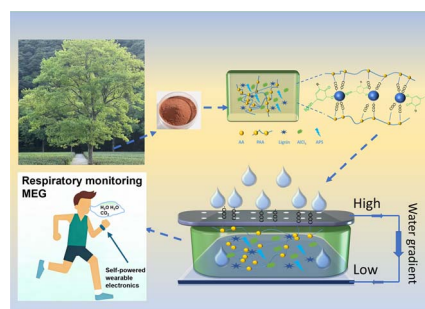
Elif Tezel, Beatrice Garetto, Davide Salusso, Dag K. Sannes, Izar Capel Berdiell, Sahra Ahmed, Prantik Sarkar, Stian Svelle, Michael Hirscher, Unni Olsbye, Elisa Borfecchia and Petra Ágota Szilágyi*



15347

Sustainable lignin-based ionic hydrogel for high-performance moisture-induced electricity generation and self-powered wearable sensing

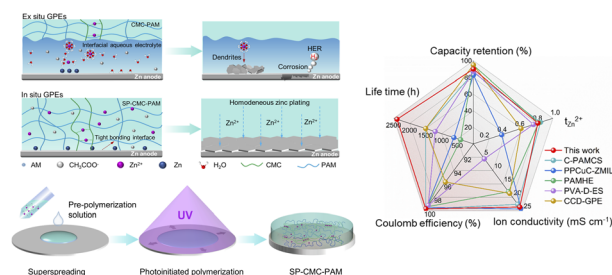
Xinli Tang, Yijun Lu, Qiang Shi, Hongfeng Yu, Xiaoliang Ren, Dayong Zheng, Jianqiang Xie and Jiankui Sun*



15355

Superspreading-photoinitiated *in situ* construction of a hydrogel electrolyte enabling high-performance and long-cycling zinc-ion batteries

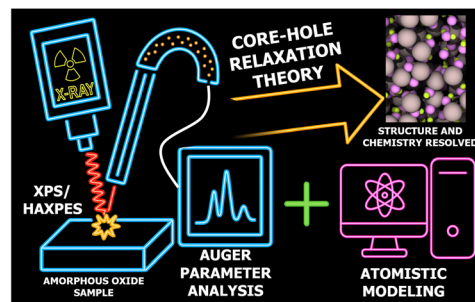
Jihao Fan, Linlin Ma,* Ziqiang Zhao, Meng Yu, Yue Wu, Shengwen Kong,* Yanglansen Cui* and Chuangqi Zhao*



15364

Bridging classical and quantum interpretation of chemical state analysis by XPS/HAXPES to resolve short-range order in amorphous alumina films

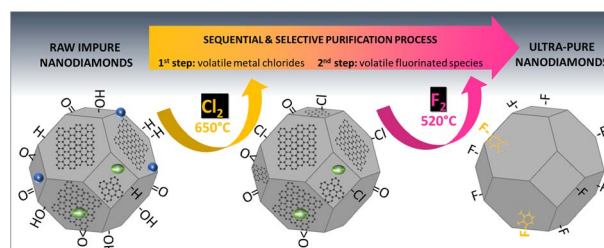
Simon Gramatte,* Xing Wang, Michael Alejandro Hernández Bertrán, Claudia Cancellieri, Giovanni Pizzi, Deborah Prezzi, Iurii Timrov, Olivier Politano, Ivo Utke, Lars P. H. Jeurgens and Vladyslav Turlo*



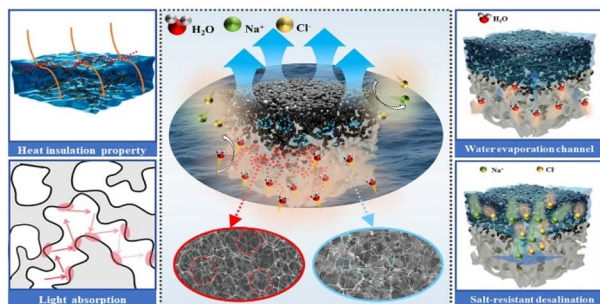
15386

Detonation nanodiamonds with ultrapure surfaces through a combined chlorine and fluorine gas treatment

Killian Henry, Mélanie Emo, Sébastien Diliberto, Sébastien Hupont, Julien Parmentier, Sylvette Brunet, Jean-Dominique Comparot, Marc Dubois and Brigitte Vigolo*



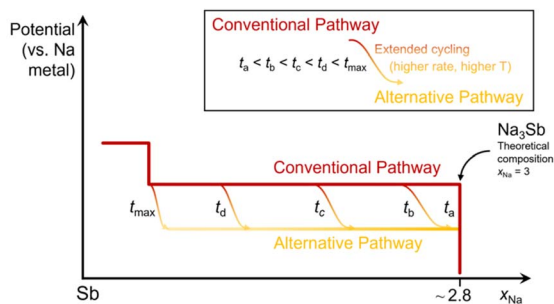
15407



Capillary-Marangoni synergism enabled salt-resisting sodium alginate hydrogel foam for efficient solar-driven water harvesting

Yong Li,^{*} Deyun Yue, Minqi Cui, Danning Cao, Mengyao Wang and Haojie Song^{*}

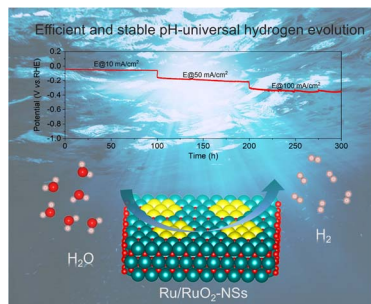
15418



Unveiling reaction dynamics and degradation pathways in microwave-synthesized antimony anodes for Na-ion batteries

Daniel Schuhmacher, Fabio Maroni, Jonathan Delaney, Ali Ahmadian and Mario Marinaro^{*}

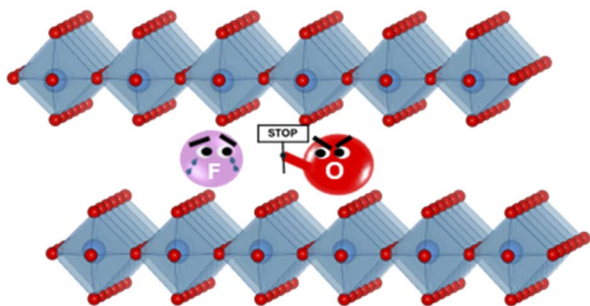
15437



Chlorine-mediated construction of monometallic Ru–RuO₂ with abundant interfaces for efficient pH-universal hydrogen evolution catalysis

Jiao Yang, Lishan Peng,^{*} Youpeng Cao, Lun Li, Zhichao Yu, Chengcheng Zhong, Wendi Zhang, Weng Fai Ip and Hui Pan^{*}

15446



The role of oxygen excess on fluoride intercalation in Ruddlesden–Popper electrodes for fluoride ion batteries: the case of LaSrMnO₄

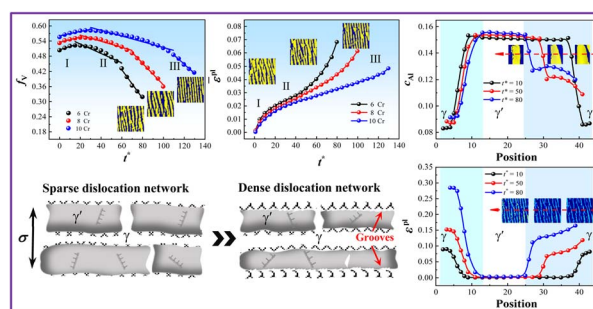
Gabriele Mezzadra, Xiangwei Guo, Marco Ravalli, Clemens Ritter, Davide Ceresoli, Oliver Clemens and Cristina Tealdi^{*}



15456

Unveiling γ' phase creep damage in multi-component Ni-based superalloys by crystal plasticity phase-field simulation

Ye Shan, Junpeng Song, Shenlong Wang, Kunning Niu, Xianshun Wu, Xingyu Bian, Suleman Muhammad and Yongsheng Li*



15473

A dual strategy of peripheral modification and skeleton fusion for pyrazolo[3,4-*b*]pyridine coplanar fused insensitive high-energy materials

Jing Feng, Pengzhao Han, Jie Sun, Pengcheng Zhang* and Qing Ma*

