

Journal of Materials Chemistry A

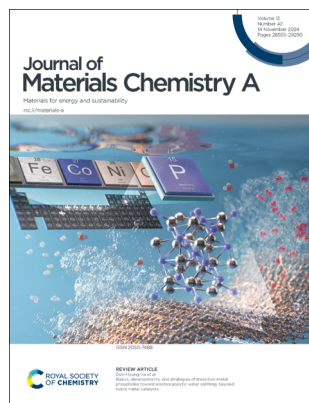
Materials for energy and sustainability

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IN THIS ISSUE

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Cover

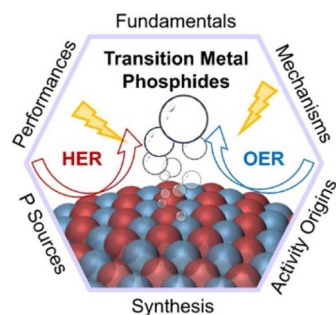
See Don-Hyung Ha *et al.*, pp. 28574–28594. Image reproduced by permission of Yeongbin Lee, Wooseok Jeong, Don-Hyung Ha from *J. Mater. Chem. A*, 2024, 12, 28574.

REVIEWS

28574

Basics, developments, and strategies of transition metal phosphides toward electrocatalytic water splitting: beyond noble metal catalysts

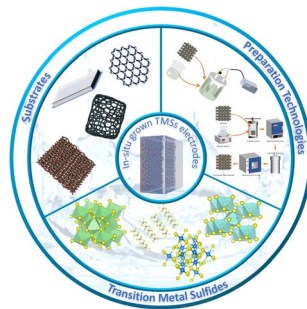
Yeongbin Lee, Wooseok Jeong, Yun Jae Hwang, Boeun An, Hyeonseok Lee, Heesoo Jeong, Gyuhyeon Kim, Yoonsu Park, Minyoung Kim and Don-Hyung Ha*



28595

Boosting the efficiency of electrocatalytic water splitting via *in situ* grown transition metal sulfides: a review

Haowei Jia, Linghui Meng, Yile Lu, Tianyue Liang, Yu Yuan, Yifan Hu, Zekun Dong, Yingze Zhou,* Peiyuan Guan,* Lu Zhou, Chao Liu, Mengyao Li, Tao Wan, Bing-Jie Ni, Zhaojun Han* and Dewei Chu



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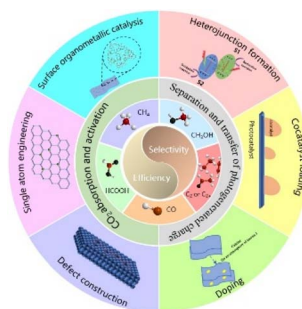
**Fundamental questions
Elemental answers**

REVIEWS

28618

Artificial CO₂ photoreduction: a review of photocatalyst design and product selectivity regulation

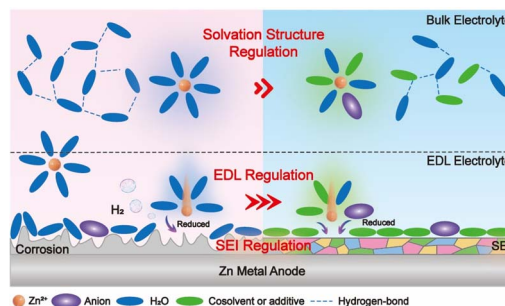
Chen Fu, Zhenyu Wan, Xin Yang, Junhui Zhang and Zizhong Zhang*



28658

Electrolyte regulation methods for improving the cycle life of zinc metal anodes

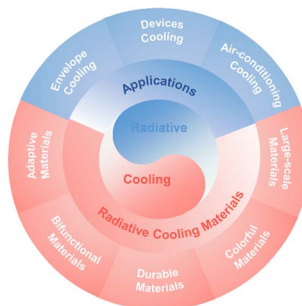
Liyang Liu, Zewei Hu, Xin Wang, Xinyi Wang, Qingqing Zheng, Chao Han, Xun Xu, Hua-Kun Liu, Shi-Xue Dou and Weijie Li*



28682

Advances in radiative cooling materials for building energy efficiency: a decade of progress

Ke Huang, Zhixin Huang, Yahui Du,* Yan Liang, Junwei Liu* and Jinyue Yan*

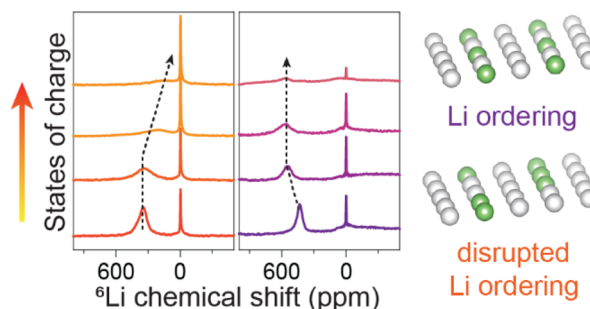


COMMUNICATIONS

28711

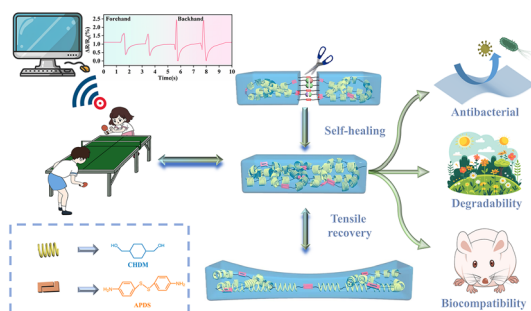
Revealing the disrupted Li/vacancy structure in Co, Mg, and Al co-doped ultra-high Ni-rich cathodes

Hang Li,* Weibo Hua, Alexander Missyul, Thomas Bergfeldt, Michael Knapp, Helmut Ehrenberg, Feng Pan* and Sylvio Indris*



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28716

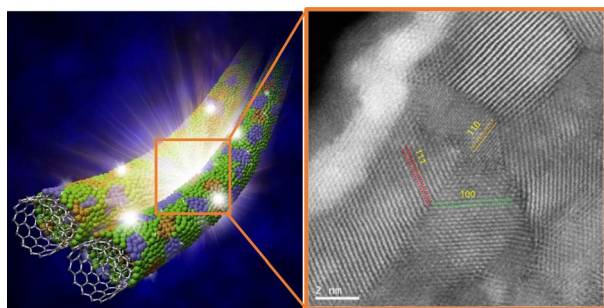


Multi-functional self-healing polyurethane elastomer based on chair conformation for strain sensors

Yiyao Zhu, Yuting He, Wentong Lu, Hao Tian, Fan Fei, Peilong Zhou and Jincheng Wang*

PAPERS

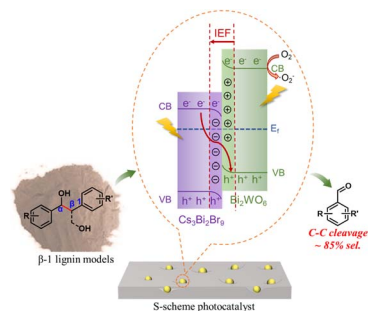
28731



Edge sites on platinum electrocatalysts are responsible for discharge in the hydrogen evolution reaction

Vipin Adavan Kiliyankil,* Wei Mao,* Yurie Takahashi, Wei Gong, Shigeru Kabayama, Yuki Hamasaki, Katsuyuki Fukutani, Hiroyuki Matsuzaki, Ichiro Sakata, Kenji Takeuchi, Morinobu Endo and Bunshi Fugetsu*

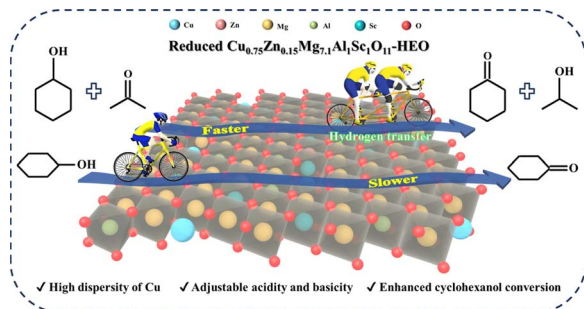
28744



S-scheme $\text{Cs}_3\text{Bi}_2\text{Br}_9/\text{Bi}_2\text{WO}_6$ heterojunctions for efficient photocatalytic cleavage of C–C bonds in β -1 lignin models

Huating Jiang, Wencai Yang, Xiao Lian, Minxia Liu, Mingxiang Zhu, Huili Li* and Fang Zhang*

28753



High-entropy oxide-derived Cu catalysts for the coupling reaction of cyclohexanol dehydrogenation with acetone hydrogenation

Rui Li, Yingdan Ye, Yibin Zhang, Huaiyuan Zhao, Weichen Du and Zhaoyin Hou*

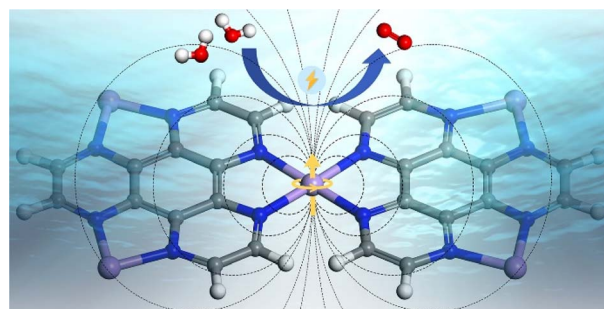


PAPERS

28764

Correlation between the spin effect and catalytic activity of two-dimensional metal organic frameworks for the oxygen evolution reaction

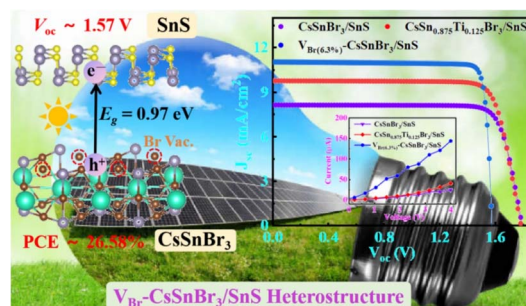
Feifan Wang, Liang Hu and Yu Jing*



28771

Interfacial electronic and defect engineering coupling of S-scheme $\text{CsSnBr}_3/\text{SnS}_x$ ($x = 1, 2$) heterostructures with carrier dynamics for solar cells

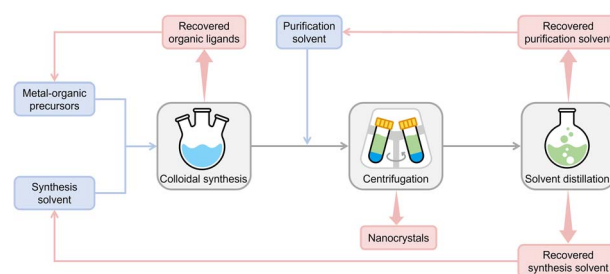
Minjie Zhang, Ningning Yao, Yanming Lin,* Zhenyi Jiang* and Aijun Du



28786

Recycling of organic ligands and solvents for successive synthesis of Cu-based nanocrystals towards CO_2 hydrogenation

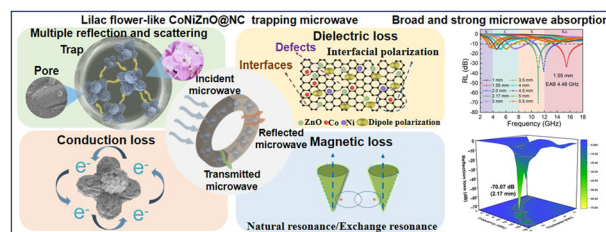
Yue Xin, Zicheng Xie, Rui Liu, Qi Li, Zheng Wang, Dongqiang Cao, Shuhui Li, Lantian Zhang, Sunpei Hu, Hongliang Li, Rong He, Liangbing Wang* and Jie Zeng*



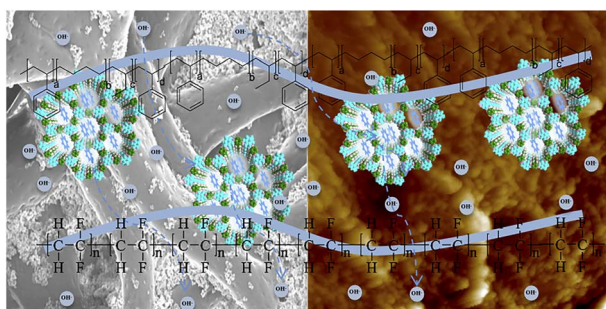
28794

Metal-organic framework-derived lilac flower-like CoNiZnO @nitrogen-doped carbon composites via a trapping microwave strategy for efficient absorption

Jiatong Yan, Wenhao Bai, Ce Cui, Shan Jiang, Weijie Wang, Hong Tang and Ronghui Guo*



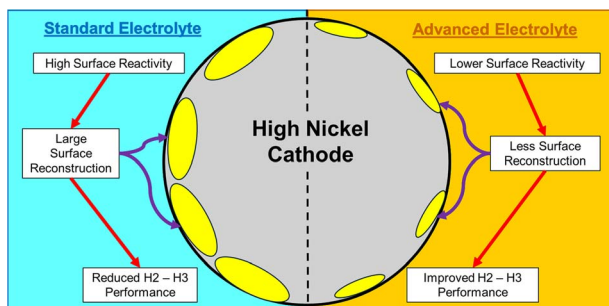
28805



Novel anion-exchange membranes with accelerated hydroxide ion conduction through a quaternized covalent organic framework-doped electrospinning binary polymer

Dan Wu, Niuniu Zhang, Weimin Gao, Qingquan Li, Xinna Gao, Shuang Wang and Quantong Che*

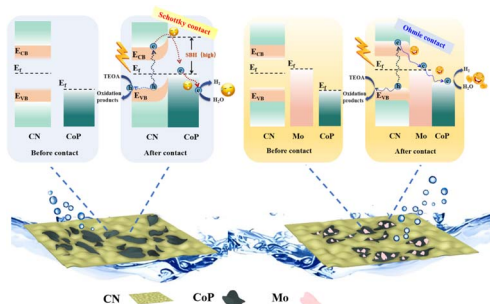
28818



Electrolyte strategies to minimize surface reactivity for improved reversibility of the H₂-H₃ phase transition

J. Brandon Adamo and Arumugam Manthiram*

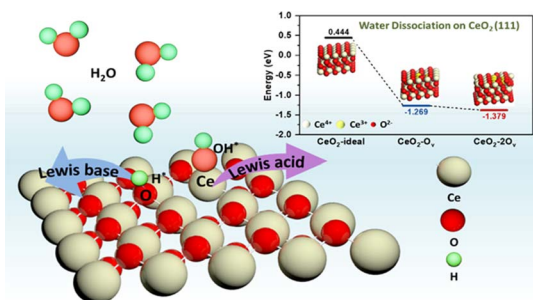
28830



The tuned Schottky barrier of a CoP co-catalyst via the bridge of ohmic contact from molybdenum metal for enhanced photocatalytic hydrogen evolution

Ying-jie Sun, Xue-ting Liu, Xin-jie Zhao, Xiao-jing Wang,* Jun Zhao, Yu-pei Li, Hui-ying Mu and Fa-tang Li*

28843



Frustrated Lewis pair chemistry in 2D CeO₂ for efficient alkaline hydrogen evolution

Kaisi Liu, Tongtong Liu, Xinyi Wu, Jiao Dai, Qingjun Chen, Jun Wan* and Lei Liu*

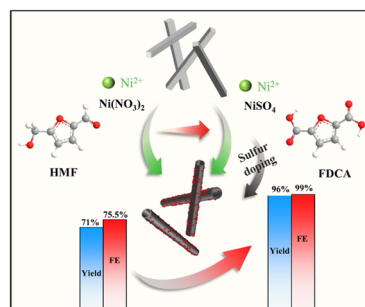


PAPERS

28853

Construction of nickel and sulfur co-doped carbon nanotubes derived from hydrogen-bonded organic frameworks for efficient biomass electrooxidation

Yuting Zhang, Junhua Kuang, Jia Yu,* Yangyang Dong, Jiaran Li, Tianwei Xue, Jing Wu, Junchi Ma, Jinlong Wan, Shiping Zeng, Yong Sun, Yue-Jiao Zhang, Jin-Chao Dong, Li Peng,* Shuliang Yang* and Jian-Feng Li*



28863

Large-scale synthesis of N-doped carbon spherical shells as high-performance cathode materials for Li–X (X = O₂, S, Se) batteries

Kailing Sun, Xiaocong Deng, Xian Huang, Shijun Liao, Limei Liu, Mei Yang* and Tongye Wei*

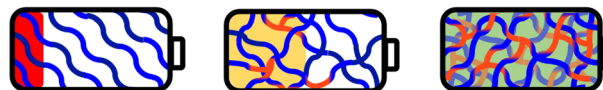


28874

Cross-linking organic cathodes enhances stability at the expense of ionic accessibility

Ani N. Davis, Kausturi Parui, A M Mahmudul Hasan, Lianett A. Pineda, John D. Langhout, Kiana A. Treaster, Megan M. Butala* and Austin M. Evans*

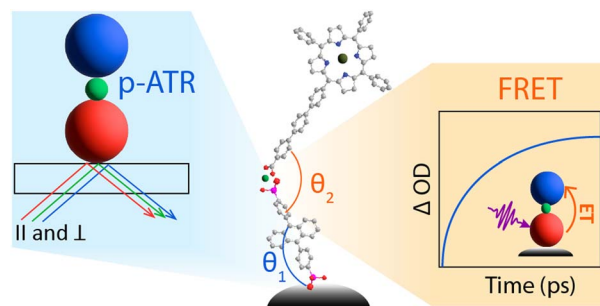
Intermediate Cross-linking Density Increases Cathode Stability and Capacity



28882

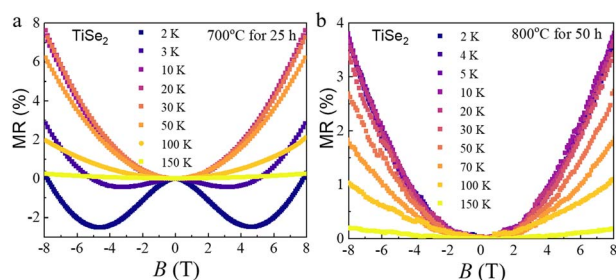
Structural insights to metal ion linked multilayers on metal oxide surfaces via energy transfer and polarized ATR measurements

Ashley Arcidiacono, Cory Ruchlin, Grace M. McLeod, Dhruva Pattadar, Sarah Lindbom, Alex J. Robb, Suliman Ayad, Nikolas R. Dos Santos, Igor V. Alabugin, S. Scott Saavedra and Kenneth Hanson*



PAPERS

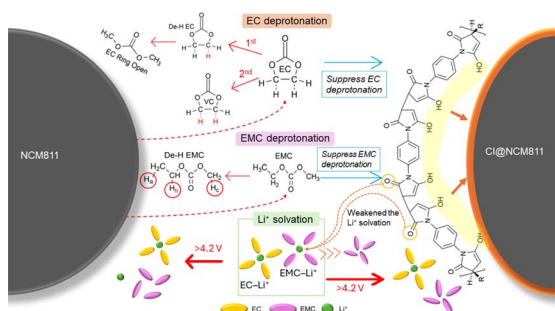
28892



Crystal structure, magnetotransport properties, and electronic band structure of $V_{1-x}Ti_xSe_2$ single crystals

Lina Sang, Meng Yuan, Jinshi Zhao, Guangsai Yang,* Frank Fei Yun, Zhi Li* and Xiaolin Wang*

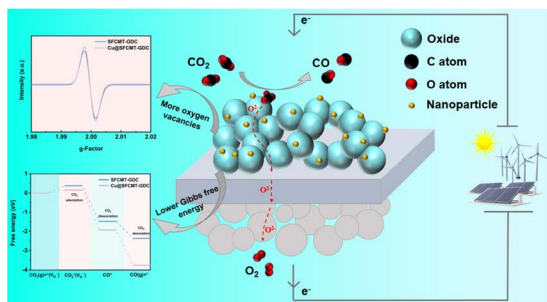
28899



Carbonate deprotonation on an Ni-rich layered cathode: development of a new *cis*-oligomer as an organic coverage

Laurien Merinda, Fu-Ming Wang,* Nae-Lih Wu,* Rio Akbar Yuwono, Chusnul Khotimah, Ulya Qonita, Wei-Hsiang Huang, Lester Pei-Wan Tiong, Ching-Kai Chang, Ping-Hsuan Hsu, Chih-Wen Pao, Jeng-Lung Chen, Chi-Liang Chen and Ting-Shang Chan

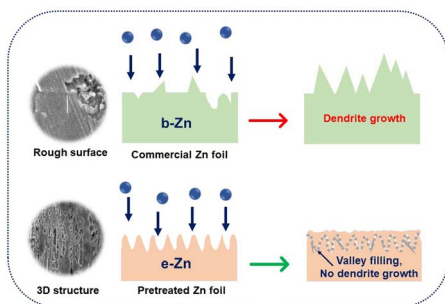
28911



High electrolysis performance of the SOEC cathode by creating oxygen vacancies to regulate the adsorption energy

Yongqian Du, Longyan Zhao, Yanzhi Xiao, Jiangrong Kong,* Peng Liu, Xianfeng Yang and Tao Zhou

28919



Beyond conventional: unveiling the impact of Zn anode pretreatment in aqueous zinc-ion batteries

Sanna Gull, Chi-Yu Lai, Wen-Hsuan Lu, Bushra Rehman, Wan-Ju Chiu and Han-Yi Chen*

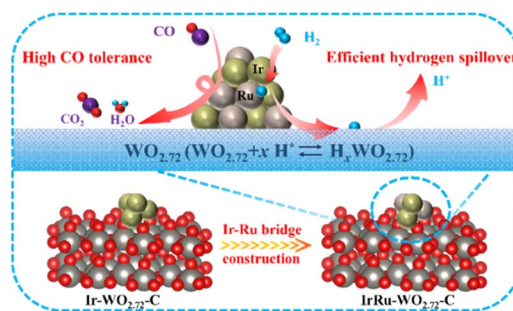


PAPERS

28930

Reducing the hydrogen transfer barrier by the introduction of Ru via a constructed Ir–Ru–WO_{2.72} bridge for highly CO-tolerant hydrogen oxidation

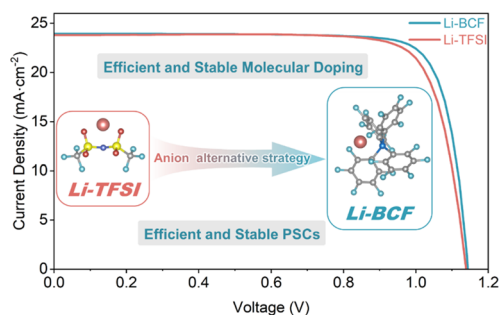
Xu Yu, Han Tian, Ziyi Yu, Fantao Kong, Chang Chen, Ziwei Chang, Jian Huang, Xiangzhi Cui* and Jianlin Shi



28943

Anionic engineering of a p-dopant enables efficient and stable perovskite solar cells

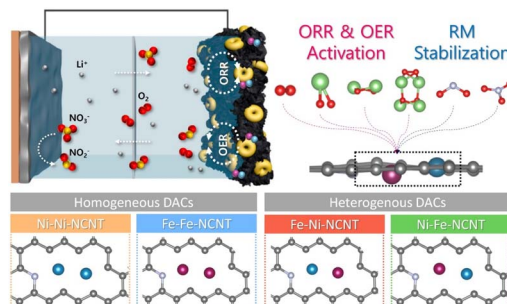
Haomiao Yin, Zhongquan Wan,* Jingqing Zhu, Jianxing Xia, Muhammad Azam, Hua Yang, Huaibiao Zeng, Runmin Wei, Yuanxi Wang, Junsheng Luo* and Chunyang Jia*



28953

Sequential element control of non-precious dual atom catalysts on mesoporous carbon nanotubes for high performance lithium–oxygen batteries

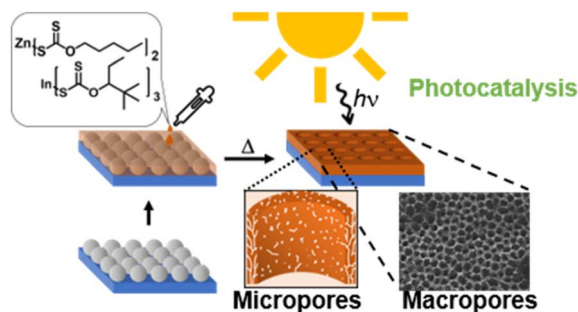
Yeji Lim, Hongjun Chang, Huiju Kim, Yoon Jeong Yoo, YeoJin Rho, Bo Ran Kim, Hye Ryung Byon, Janghyuk Moon* and Won-Hee Ryu*



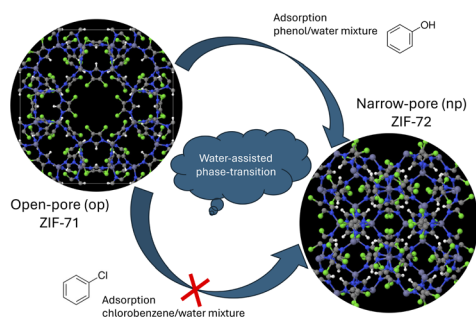
28965

ZnIn₂S₄ thin films with hierarchical porosity for photocatalysis

Marco Sigl, Melissa Egger, Fernando Warchomicka, Daniel Knez, Martina Dienstleder, Heinz Amenitsch, Gregor Trimmel and Thomas Rath*



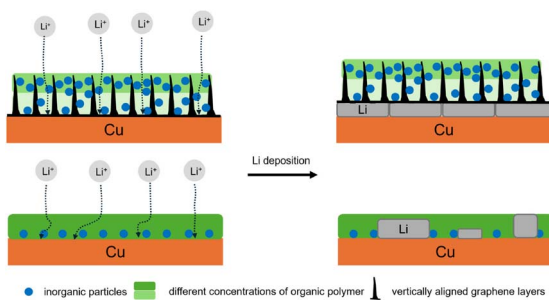
28975



Molecular recognition-induced structural flexibility in ZIF-71

J. Farrando-Perez, A. Missyul, A. Martín-Calvo, C. Abreu-Jauregui, V. Ramírez-Cerezo, L. Daemen, Y. Q. Cheng, A. J. Ramirez-Cuesta, S. Calero, C. Carrillo-Carrión and J. Silvestre-Albero*

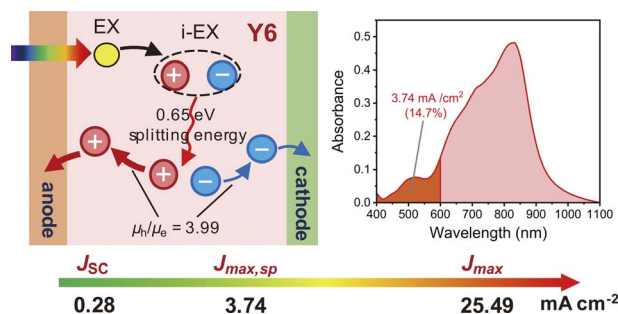
28985



The microwave plasma torch chemical vapor deposition of graphene layers on copper foil for facilitating uniform lithium deposition in lithium metal batteries

Hao-Yu Ku, Yun Ku, Chi-Yu Lai, Yi-Ting Lu, Hsiang-Sheng Wei, Hung-Hsin Shih, Kun-Ping Huang and Chi-Chang Hu*

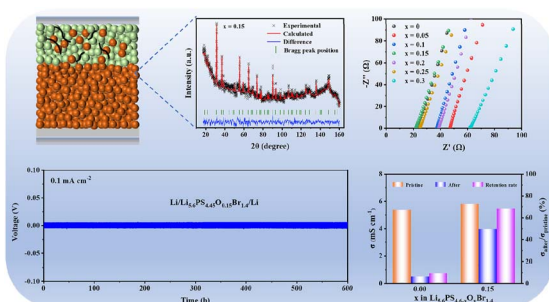
29000



Why does Y6 with bulk charge photogeneration and bipolar charge transport properties still fail in non-heterojunction organic photovoltaics?

Yuhao Xie, Yu Cui, Dmitry Yu. Paraschuk, Wei Ma and Han Yan*

29009



Oxygen substitution at the unbonded S site for excellent wet-air stability and lithium compatibility of Br-rich Li-argyrodite solid-state electrolytes

Haiting Shi, Tong Xu, Daoxi Wang, Xianyan Wu,* Shuaitong Liang,* Yaohui Liang,* Hao Li and Zhiwei Xu*

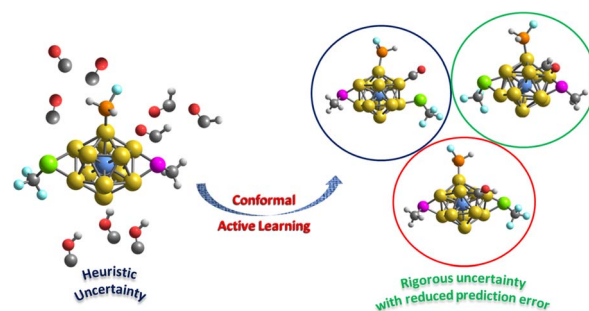


PAPERS

29022

Conformal active learning-aided screening of ligand-protected Cu-nanoclusters for CO₂ reduction reactions

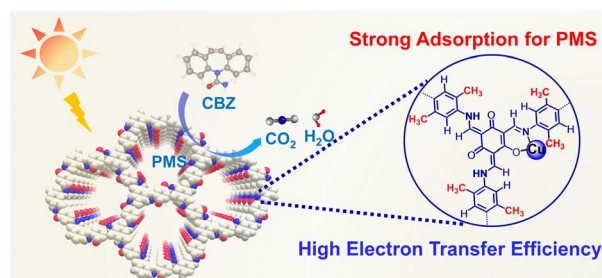
Diptendu Roy, Amitabha Das and Biswarup Pathak*



29033

Regulating the local electron density and adsorption energy of COF-based single copper sites for highly efficient Fenton-like photo-oxidation

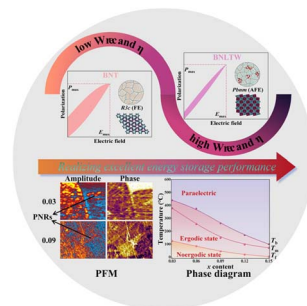
Qianqian Peng, Guijiao Wen, Chen Yuan, Caizhi Lv, Lan Wu, Juan He* and Xiandeng Hou*



29044

Boosting energy storage performance with lead-free relaxor ferroelectric in BNT-based ceramics via introducing scheelite La₂WTiO₈

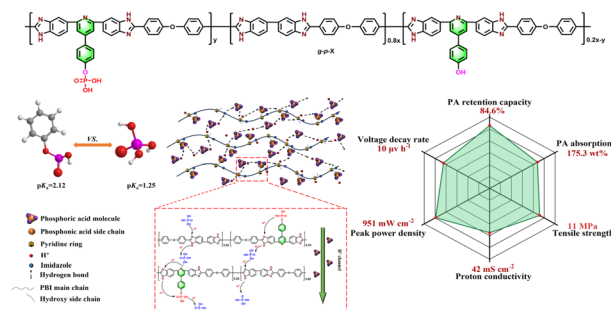
Wenyuan Li, Jianan Xu, Jia Chen, Yaxin Wei, Kai Li, Aimin Chang and Bo Zhang*



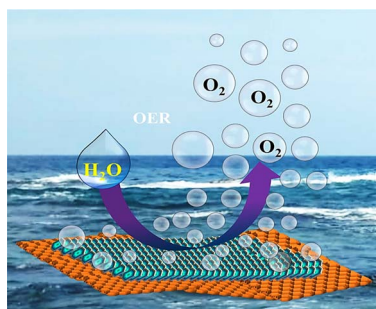
29054

Phosphonic acid grafted polybenzimidazoles containing pyridine for stable high-temperature proton exchange membrane fuel cells

Jie Li, Weiyu Zhang, Wenwen Wang, Jiaqi Ji, Hong Li, Yiming Sun, Keda Li, Tianqi Yang, Weiye Jin, Yi Tang, Yongqing Zhao,* Wei Li and Chenliang Gong*



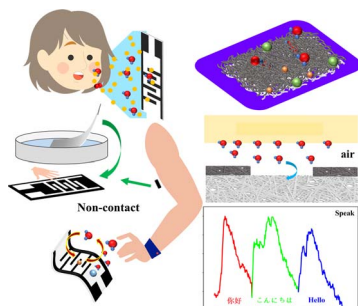
29072



Second coordination sphere modulation during water oxidation with metal-hydroxide organic frameworks

Abhimanyu Yadav, Toufik Ansari, Pandian Mannu, Baghendra Singh, Ajit Kumar Singh, Yu-Cheng Huang, Vishal Kumar, Sanjay Singh, Chung-Li Dong* and Arindam Indra*

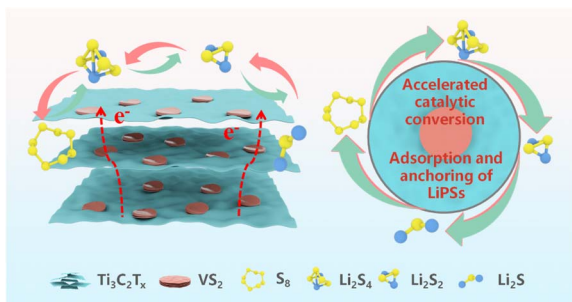
29081



A non-contact porous composite fiber paper-based humidity sensor for wearable breathing and skin humidity monitoring

Aoxun Liang and Xueye Chen*

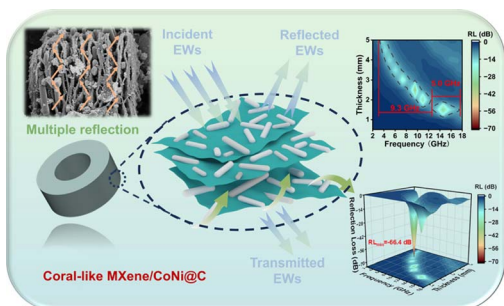
29092



A multifunctional layered $\text{Ti}_3\text{C}_2\text{T}_x/\text{VS}_2$ composite sulfur host for promoting the conversion of lithium polysulfides in lithium-sulfur batteries

Guisheng Deng, Wen Xi, Junpu Zhang, Youfang Zhang, Rui Wang,* Yansheng Gong, Beibei He, Huanwen Wang and Jun Jin*

29103



Growing bimetallic CoNi-MOF derivatives between MXene layers with hierarchically coral-like interfaces for enhanced electromagnetic wave absorption

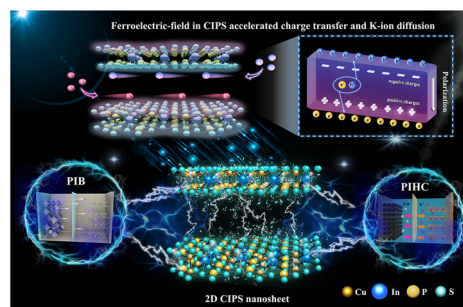
Jiajia Zheng, Chenhui Xu, Zhihui Li, Cheng Gu, Xiping Li, Zhaochun Li, Yancheng Li, Gang Lou and Yiming Chen*



29113

Ferroelectricity-enhanced potassium-ion storage in van der Waals layered CuInP_2S_6

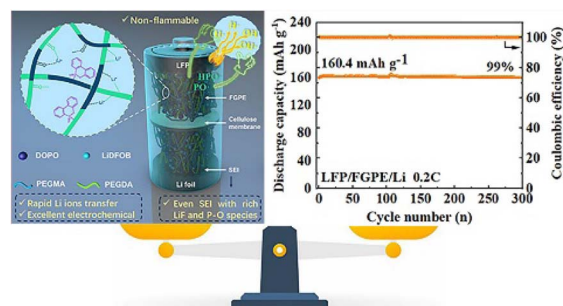
Po-Wen Chien, Yu-Bo Hung, Yi-Chun Yang and Hsing-Yu Tuan*



29129

Phosphorus flame retardant *in situ* fixed on a gel polymer electrolyte for lithium metal batteries with enhanced safety and superior electrochemical performance

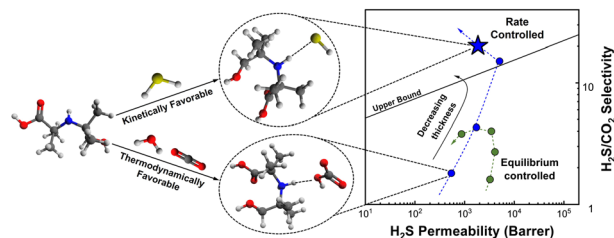
Hao Yu, Su Wang, Yan Zhang, Yanrui Pan, Zhaokun Wang, Chen Li, Yue Ma,* Dawei Song, Hongzhou Zhang, Xixi Shi, Chunliang Li* and Lianqi Zhang*



29138

Kinetic $\text{H}_2\text{S}/\text{CO}_2$ selectivity in an exceptionally sterically hindered amine membrane

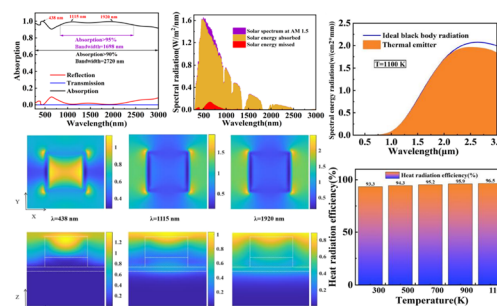
Shraavya Rao, Xuepeng Deng, Changlong Zou, Babul Prasad, Yang Han, Li-Chiang Lin and W.S. Winston Ho*



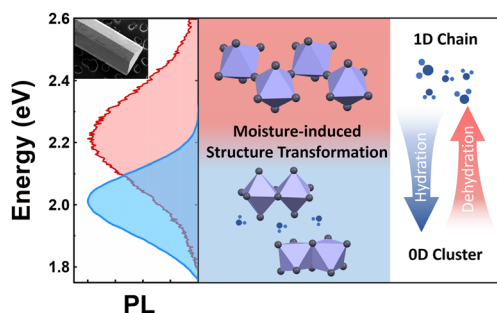
29145

Investigation of a high-performance solar absorber and thermal emitter based on Ti and InAs

Yifan Xiao, Can Ma, Tangyou Sun, Qianju Song, Liang Bian, Zao Yi,* Zhiqiang Hao, Chaojun Tang, Pinghui Wu and Qingdong Zeng



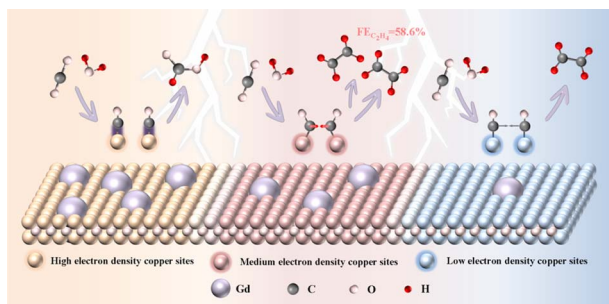
29152



Reversible structural transformation of metastable lead-free organic–inorganic hybrid bismuth halide single crystals

Yurou Zhang, Mehri Ghasemi, Xiaoming Wen, Minwoo Lee, Xiaoxia Liu, Yalong Jiao, Paul V. Bernhardt, EQ Han, Tongen Lin, Bo Wei Zhang, Kaijie Xu, Su-Min Lee, Jae Sung Yun, Jung-Ho Yun* and Lianzhou Wang*

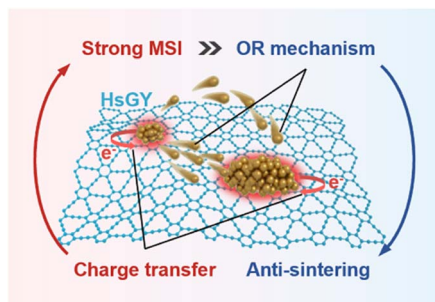
29165



Shielding effect in the synthesis of Gd-doped copper oxide catalysts with enhanced CO₂ electroreduction to ethylene

Zenan Cao, Zhichao Chen, Hanlei Sun, Shuo Yao, Ziyong Liu, Fuli Li, Xiaobo Yang, Wei Zhou, Jingxin Fan, Hongzhi Wang* and Licheng Liu*

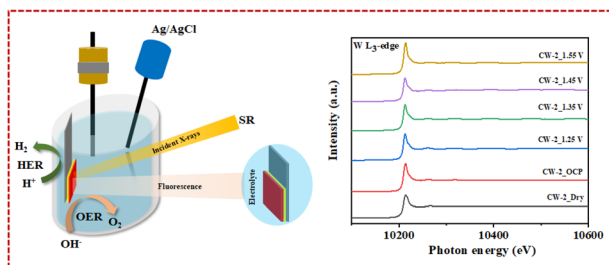
29174



Incomplete charge transfer bestows significant sintering resistance for metal nanoparticles on two-dimensional graphyne

Min Gan, Jiawei Huang, Xiaodong Li, Meiping Li, Zhouyang Zhang, Ze Yang, Chunfang Zhang, Peng Yang, Xianglai Gan,* Chang Lu, Xingcai Yang, Linfeng Fei* and Changshui Huang*

29184



Sulfur vacancy-rich tungsten disulfide and metal–organic framework derived Co₃O₄ heterostructure for sulfur ion degradation-assisted efficient hydrogen production

Ranjith Kumar Dharman, Athibala Mariappan, Pandian Mannu, Ta Thi Thuy Nga, Chung-Li Dong* and Tae Hwan Oh*

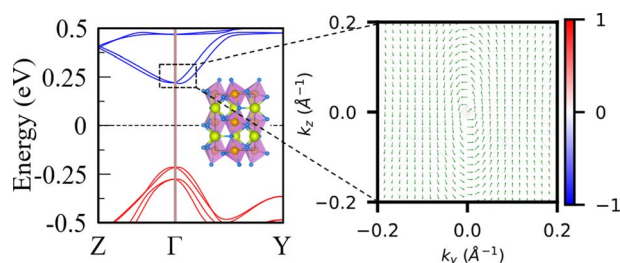


PAPERS

29196

Spin texture evolution of Rashba splitting under pressure: a case study of inorganic nitride perovskite crystals

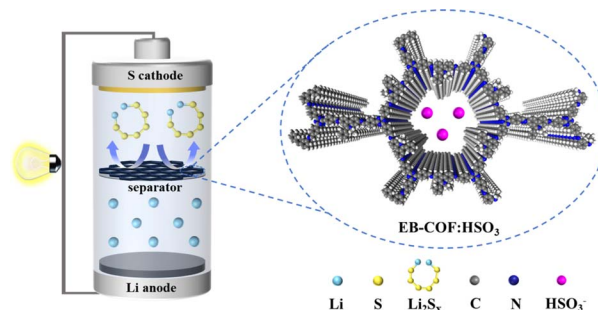
Showkat H. Mir and Sudip Chakraborty*



29205

Hydrogen sulfite ion functionalized cationic covalent organic framework nanosheets as a separator boosted the energy storage performance of Li-S batteries

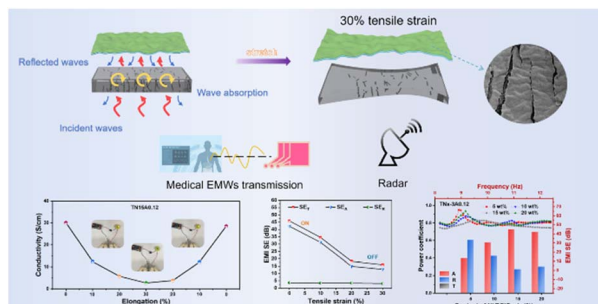
Bingxin Jia, Bo Sun, Hongmin Yu, Chan Yao, Wei Xie and Yanhong Xu*



29211

Flexible intelligent electromagnetic shielding polymer composites with sensitive on/off switching and high absorption

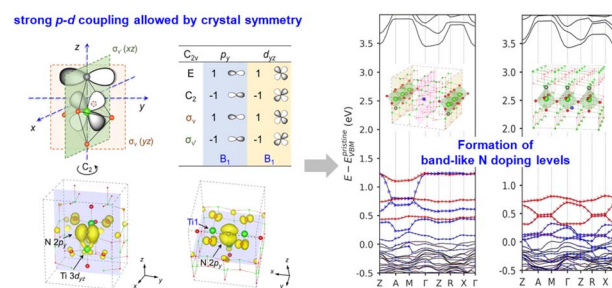
Bozhen Wu, Peng Wu, Yujing Yu, Yidong Wu, Xuejiao Song, Dong Zhou* and Yulin Li*



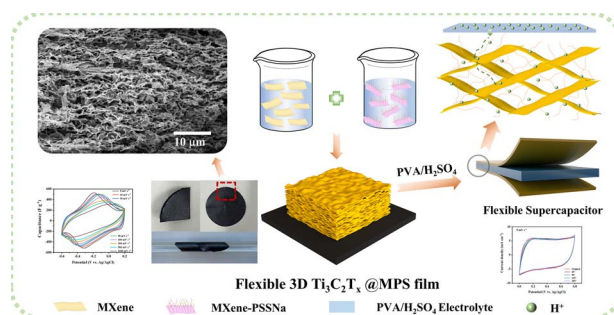
29222

p-d coupling: prerequisite for band-like doping levels in metal oxides

Kangyu Zhang, Li-Chang Yin,* Guoqiang Deng, Xing-Qiu Chen, Hui-Ming Cheng and Gang Liu*



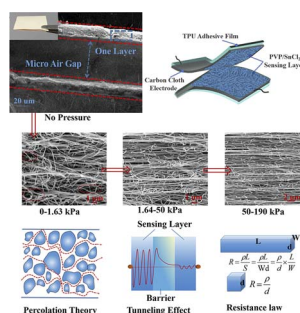
29230



Efficient utilization of the active sites of MXene: MXene/PSSNa films with a 3D-stabilized porous structure as high-capacitance and high-rate electrodes for flexible supercapacitors

Ying Song, Yaqing Liu, Qi Ao, Lin Jiang, Xiaoxiao Lv, Xinglai Tong, Tuohao Jiang, Yuanqing Yao and Jun Tang*

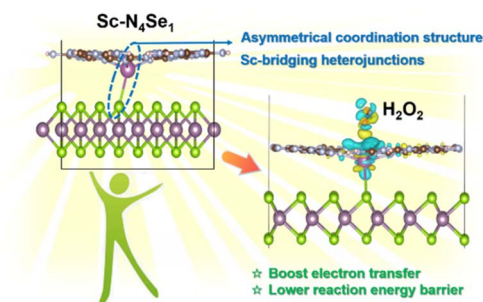
29241



Ultra-high sensitivity and ultra-stable flexible wearable sensors based on hyperelastic semiconductor fibers

Meiying Li, Yuting Wang,* Shouheng Sun, Chubin Wan, Yanli Wang, Ruikai Li, Anchun Tang and Xin Ju

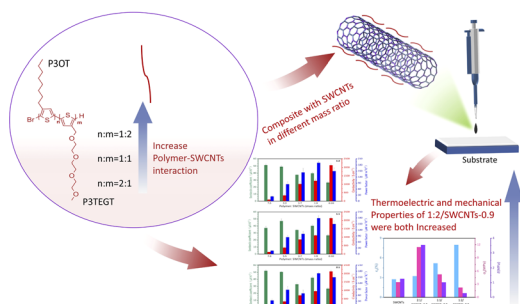
29254



Asymmetrical Sc coordination-induced bridging structure and surface relaxation for boosting H₂O₂ photoactivation in Fenton-like catalysis

Cong Liu, Mingchuan Yu,* Yuhao Ma, Yuanzheng Zhang, Yufei Zhou and Junfeng Niu

29262



Enhanced thermoelectric and mechanical performance of fully conjugated block polythiophene modified with polar ethylene glycol side chains/single-walled carbon nanotube composite materials

Ye Zhang,* Qing Yang, Chen Lin, Roujun Chen, Sunjida Reza Maliha, Yu Chen, Jinjia Xu* and Chengjun Pan*

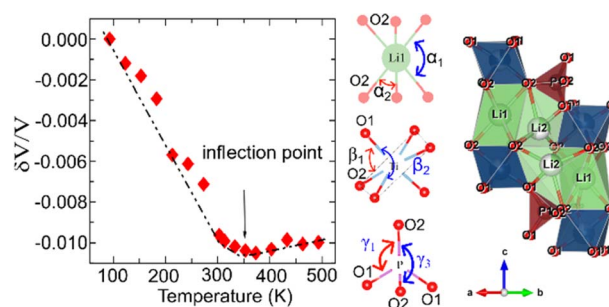


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29271

Isotropic negative thermal expansion of a $\text{Li}_{1.3}\text{Al}_{0.3}\text{Ti}_{1.7}(\text{PO}_4)_3$ solid-state electrolyte

Sayan Ghosh and C. Sudakar*



29278

0D/2D heterojunction photocatalysts for improved full-spectrum-light-driven hydrogen evolution

Shu Zhan, Yang Yang,* Lu Taixu, Armaković Sanja, Wang Lin, Hou Huilin, Tu Nengrong, Li Pengcheng, Li Weijun* and Yang Weiyu

