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Journal of Materials Chemistry A

Materials for energy and sustainability

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See Wenlong Song, Zhuangzhi Sun *et al.*, pp. 21577–21585. Image reproduced by permission of Lintao Mi and Zhuangzhi Sun from *J. Mater. Chem. A*, 2023, **11**, 21577.

REVIEWS

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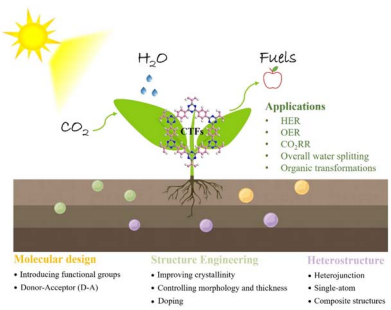
Strategies to improve the photocatalytic performance of covalent triazine frameworks

Yubing Liu, Hao Wu and Qian Wang*



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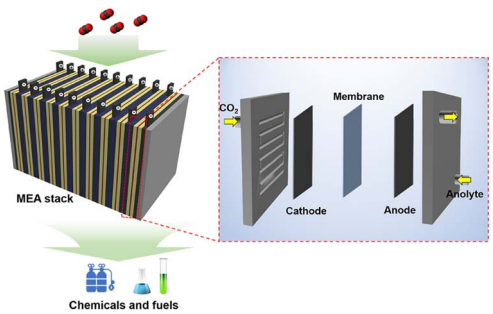
Advances and challenges in membrane electrode assembly electrolyzers for CO_2 reduction

Qingqing Ye, Xueyang Zhao, Ruiben Jin, Fan Dong, Hongtao Xie* and Bangwei Deng*



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REVIEWS

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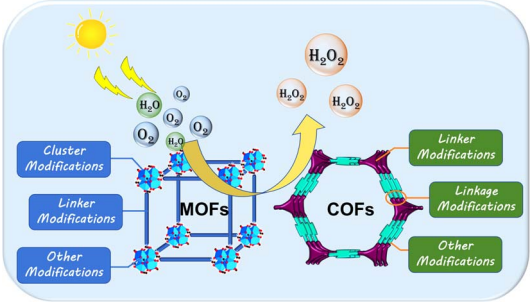
Metal–organic frameworks and covalent organic frameworks as photocatalysts for H_2O_2 production from oxygen and water

Jiamin Sun, Jeet Chakraborty, Maojun Deng, Andreas Laemont, Xiao Feng, Ying-Ya Liu and Pascal Van Der Voort*



COMMUNICATIONS

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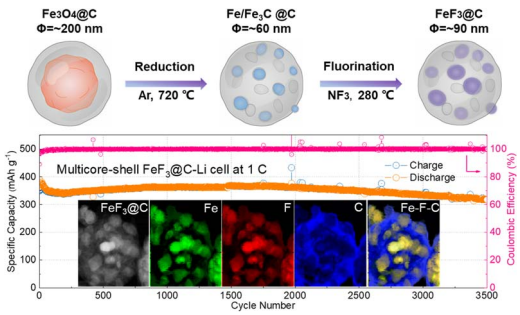
Multicore–shell iron fluoride@carbon microspheres as a long-life cathode for high-energy lithium batteries

Ziang Jiang, Yujie Wang, Xuanfeng Chen, Fulu Chu, Xuansi Jiang, Felix Kwofie, Qianfan Pei, Shunrui Luo,* Jordi Arbiol and Feixiang Wu*



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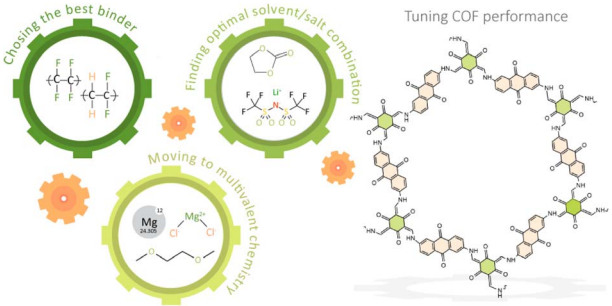
Tuning the electrochemical performance of covalent organic framework cathodes for Li- and Mg-based batteries: the influence of electrolyte and binder

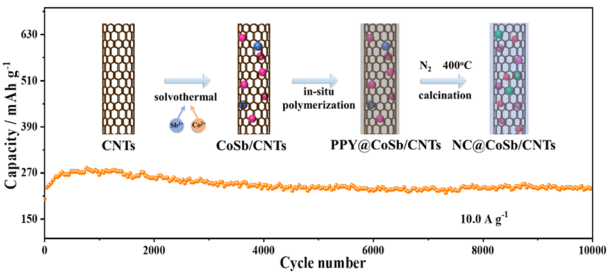
Olivera Lužanin, Raquel Dantas, Robert Dominko, Jan Bitenc* and Manuel Souto*



21561

Seed-mediated formation of multiphase zero-valent Sb nanoparticles as alloying-type anodes for sodium-ion batteries with high capacity and ultra-long durability

Weixu Wang, Yongjie Wang, Zhongqing Jiang, Binglu Deng and Zhong-Jie Jiang*



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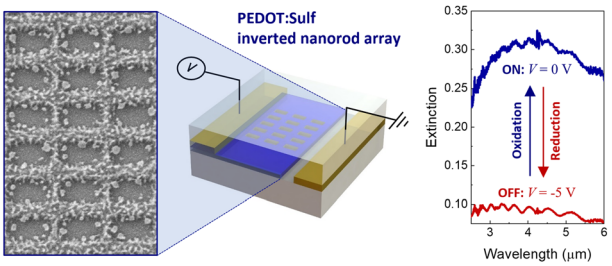

Plasmonic polymer nanoantenna arrays for electrically tunable and electrode-free metasurfaces

Seunghyun Lee, Daseul Jeong, Sriram KK, Shangzhi Chen, Fredrik Westerlund, Byeongwon Kang, Kyoung-Ho Kim, Magnus P. Jonsson and Evan S. H. Kang*

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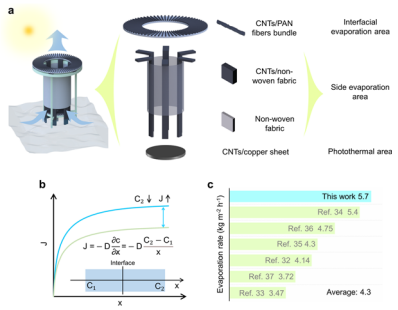

A natural gain strategy of passive cycling water vapour escape toward efficient freshwater purification

Lintao Mi, Zhiwen Zhang, Xingli Zhang, Chuanlong Han, Wensheng Wang, Wenlong Song* and Zhuangzhi Sun*

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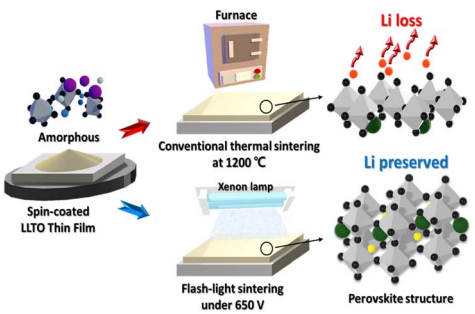

Lithium-preserved sintering method for perovskite-based solid electrolyte thin films *via* flash light sintering for all-solid-state lithium-ion batteries

Sunmin Kim, Hojae Lee, Junghum Park, Miju Ku, Minji Kim and Young-Beom Kim*

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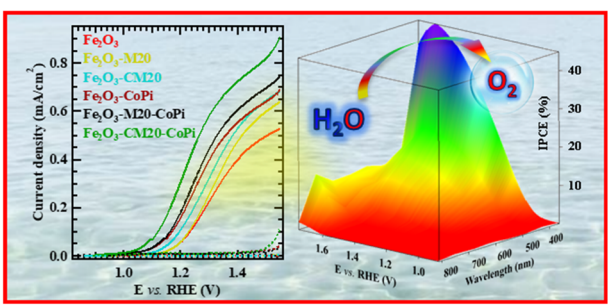

Advances in photo-assisted seawater splitting promoted by green iron oxide-carbon nitride photoelectrocatalysts

Mattia Benedet, Gian Andrea Rizzi,* Oleg I. Lebedev, Vladimir Roddatis, Cinzia Sada, Jan-Lucas Wree, Anjana Devi, Chiara Maccato,* Alberto Gasparotto and Davide Barreca

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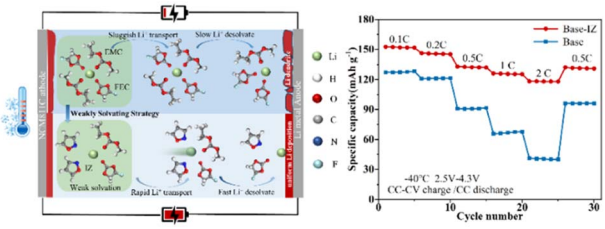
Regulating the weak solvation structure in electrolyte for high-rate Li-metal batteries at low temperature

Hao Yu, Weihao Wang, Youquan Zhang, Yuejiao Chen, Libao Chen, Liangjun Zhou* and Weifeng Wei



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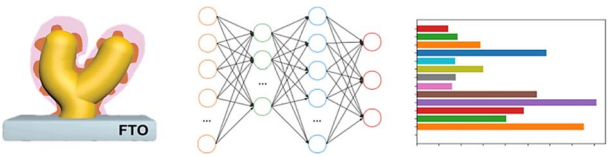
A comprehensive machine learning strategy for designing high-performance photoanode catalysts

Meirong Huang, Sutong Wang and Hongwei Zhu*



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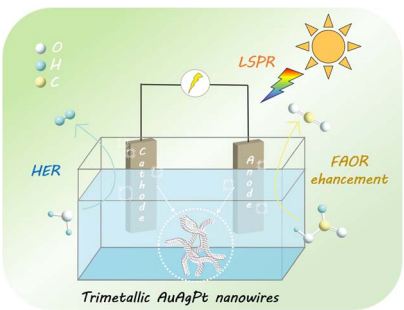
The trimetallic AuAgPt nanowires for light-enhanced formic acid electrolysis

Ze-Nong Zhang, Xiao-Hui Wang, Xin-Long Tian,* Yu Chen* and Shu-Ni Li*



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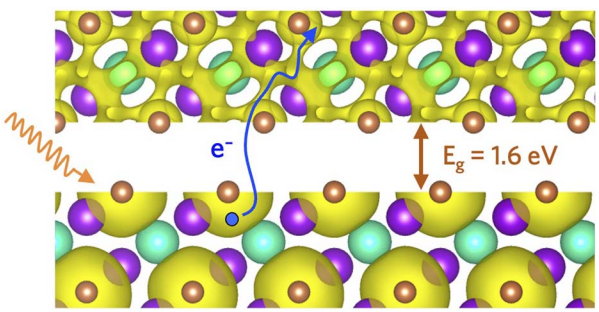
Relativistic electronic structure and photovoltaic performance of K_2CsSb

Ruiqi Wu and Alex M. Ganose*



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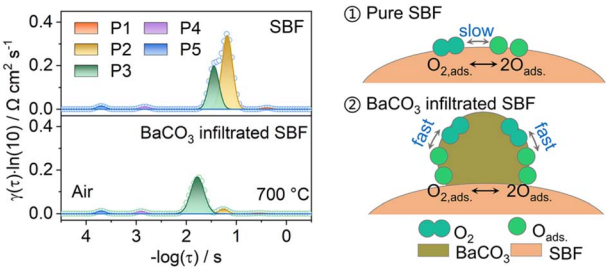

Unraveling the promotional role of $BaCO_3$ in the electrode reaction kinetics of an $SmBaFe_2O_{5+\delta}$ air electrode of reversible solid oxide cells

Min Zhang, Zhihong Du, Zhipeng Sun and Hailei Zhao*

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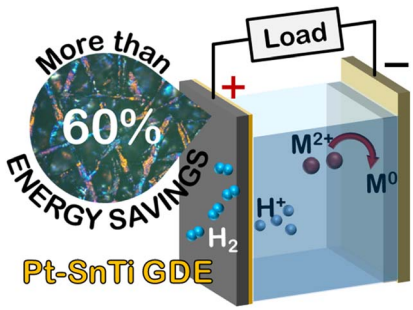

Thermal reconstruction engineered titanium-based gas diffusion electrodes for robust and energy-saving hydrogen hydrometallurgy

Anbang Zheng, Yufeng Su, Songtao Lin, Yuchen Wang, Zhilin Li,* Zhengping Zhang* and Feng Wang*

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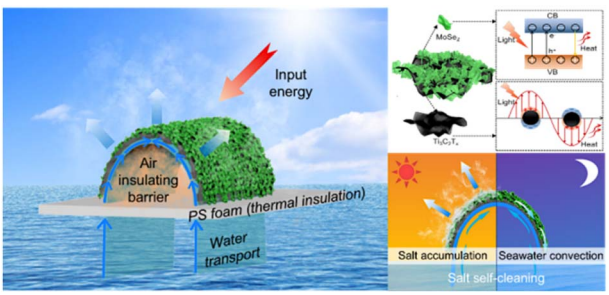

Roof tile-inspired 3D arch evaporators based on $Ti_3C_2T_x/MoSe_2$ photothermal nanocomposites for efficient solar desalination

Jun Zhao, Hongzhi Cui,* Ruiqi Xu, Jinlai Yang, Leigang Li, Na Wei and Xiaojie Song

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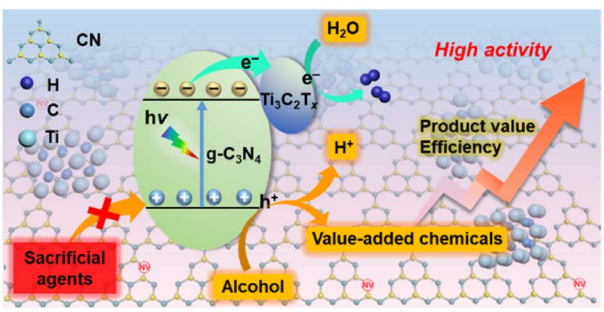

Photocatalytic H_2 evolution coupled with selective aromatic alcohol oxidation over nitrogen-vacancy-rich $Ti_3C_2T_x/g\text{-}C_3N_4$ junctions *via* interfacial N–Ti bonding

Wen-Jing Yi, Xin Du, Sha-Sha Yi, Yanyan Liu, Baojun Li, Zhong-Yi Liu* and Xin-Zheng Yue*

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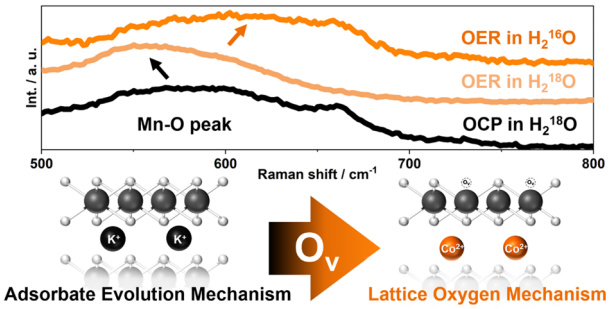
Participation of the unstable lattice oxygen of cation-exchanged δ-MnO_2 in the water oxidation reaction

Kahyun Ham, Sinwoo Kang, Yeongin Kim, Youjin Lee, Young-Dok Kim and Jaeyoung Lee*



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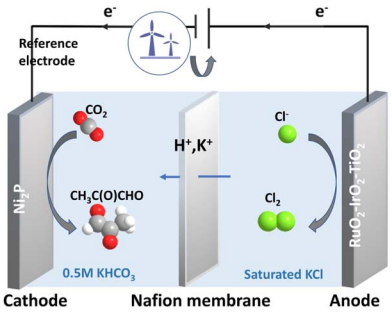
Remodelling the chlor-alkali electrolysis process to co-generate useful reduction products from CO_2

Yifei Li, Anders B. Laursen, Mahak Dhiman and G. Charles Dismukes*



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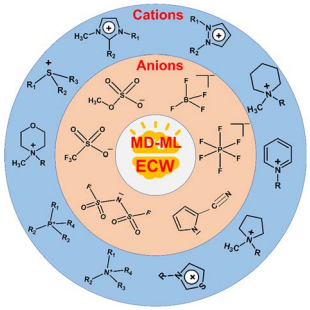
Molecular dynamics-machine learning approaches for the accurate prediction of electrochemical windows of ionic liquid electrolytes for dual-ion batteries

Surya Sekhar Manna, Souvik Manna and Biswarup Pathak*



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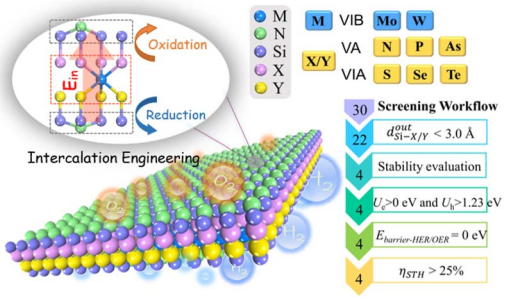
Internal electric fields in asymmetric single-layer lattices for enhancing photocatalytic solar-to-hydrogen efficiency

Yuliang Liu, Yongfeng Wan, Bo Li, Chuanlu Yang,* Xingshuai Lv and Ying Shi*



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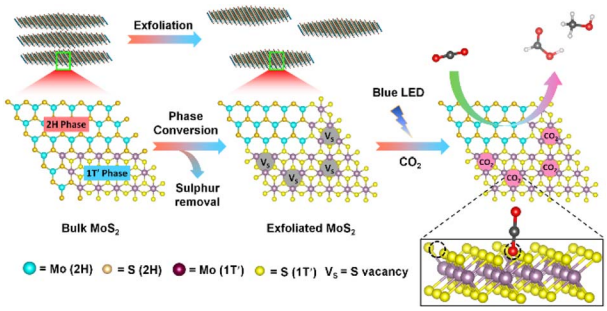

Sulphur vacancy driven phase conversion of MoS_2 nanosheets for efficient photoreduction of CO_2 under visible light

Kousik Das, Sarika Lohkna, Gang Yang, Prasenjit Ghosh* and Soumyajit Roy*

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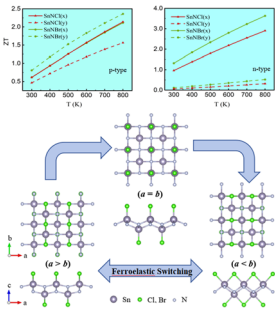

Novel 2D ferroelastic SnNX (X = Cl, Br) monolayers with anisotropic high carrier mobility and excellent thermoelectric transport properties

Xiaoli Liu, Linyang Li,* Can Yang, Congling Bai and Jia Li*

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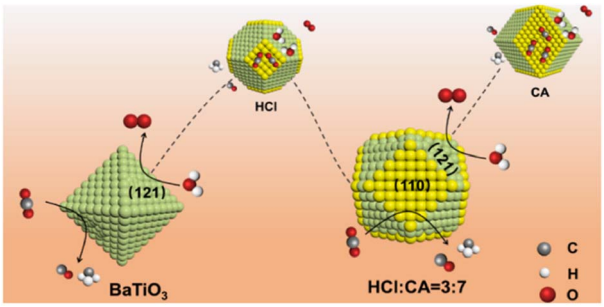
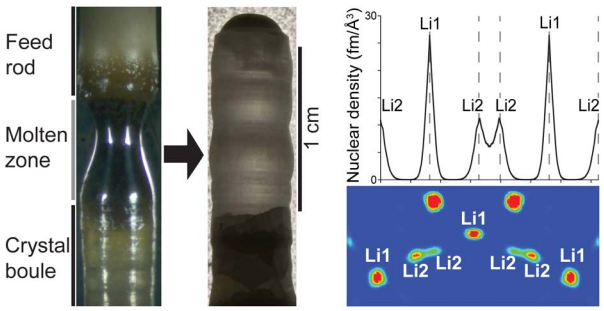


Acid-inducing {110}/{121} facet junction formation boosting the selectivity and activity of CO_2 photoreduction by $BaTiO_3$ nanoparticles

Weihua Cai, Yabo Wang, Lei Zhao, Xun Sun, Jun Xu, Jin Chen, Ruochen Shi, Peihong Ma and Meidan Que*

21754



Floating zone crystal growth, structure, and properties of a cubic $Li_{5.5}La_3Nb_{1.5}Zr_{0.5}O_{12}$ garnet-type lithium-ion conductor

Caleb Ramette, Lucas Pressley, Maxim Avdeev, Minseong Lee, Satya Kushwaha, Matthew Krogstad, Suchismita Sarker, Paul Cardon, Jacob Ruff, Mojammel Khan, Kunimitsu Kataoka, Tyrel McQueen and Huiwen Ji*

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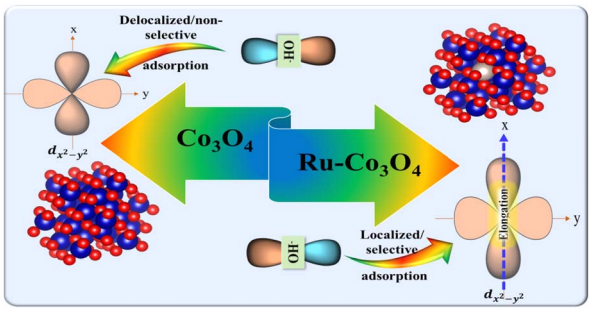
21767

Regulating the selective adsorption of OH* over the equatorial position of Co_3O_4 *via* doping of Ru ions for efficient water oxidation reaction

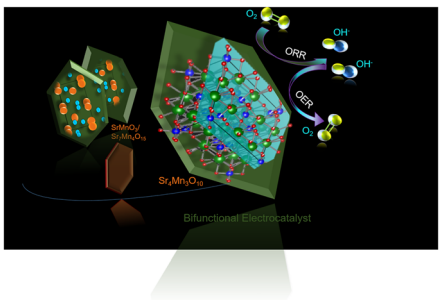
Ragunath Madhu, Arun Karmakar, Preethi Arunachalam, Jaisakthi Muthukumar, Pradeep Gudlur and Subrata Kundu*



21780

Molten salt-directed synthesis of strontium manganese perovskite oxide: an active electrocatalyst for the oxygen reduction reaction and oxygen evolution reaction

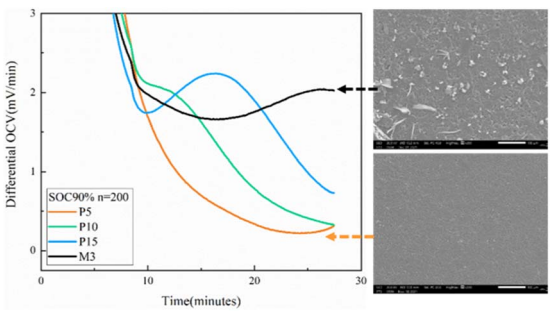
Carolin Mercy Enoch, Sagar Ingavale, Phiralang Marbaniang, Indrajit Patil and Anita Swami*



21793

Particle size effect of graphite anodes on performance of fast charging Li-ion batteries

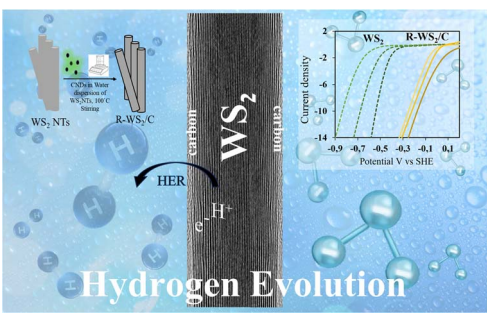
Guanyi Wang, Aleksandar Mijailovic, Jian Yang, Jie Xiong, Sarah E. Beasley, Kevin Mathew, Bingyao Zhou, Wenquan Lu,* Brian W. Sheldon* and Qingliu Wu*



21806

1D transition-metal dichalcogenides/carbon core–shell composites for the hydrogen evolution reaction

Asmita Dutta, Ortal Breuer, Manjunath Krishnappa, Refael Minnes, Alla Zak and Arie Borenstein*



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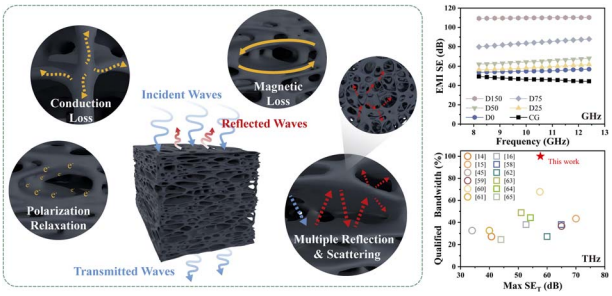
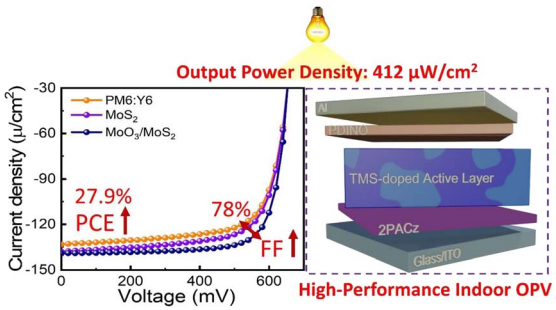
21817



An artificially re-structured PEDOT:PSS/konjac glucomannan sponge toward high-performance electromagnetic interference shielding from gigahertz to terahertz bands

Haowen Sun, Zihao Wo, Yier Su, Hua Ma and Xiwen Zhang*

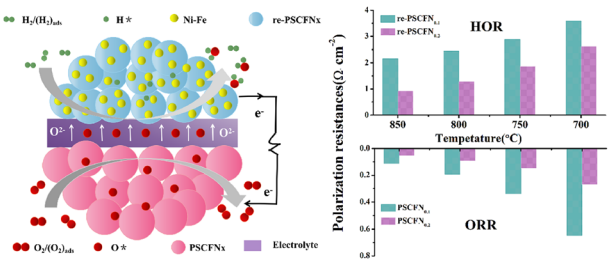
21828



Phase-engineered two-dimensional MoO_3/MoS_2 hybrid nanostructures enable efficient indoor organic photovoltaics

Muhammad Ahsan Saeed, Muhammad Faizan, Tae Hyuk Kim, Hyungju Ahn, Ji-Young Kim, Kyung-Wan Nam* and Jae Won Shim*

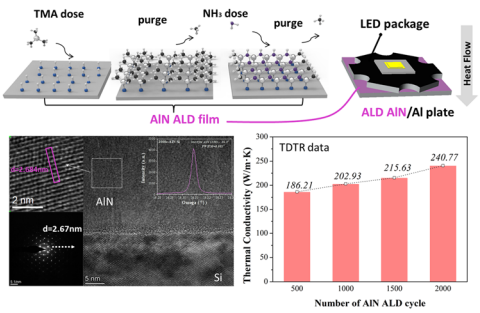
21839



Bifunctional electrocatalysts $Pr_{0.5}Sr_{0.5}Cr_{0.1}Fe_{0.9-x}Ni_xO_{3-\delta}$ ($x = 0.1, 0.2$) for the HOR and ORR of a symmetric solid oxide fuel cell

Jing Yan, Huili Chen,* Ya Wei Li, Si-Dian Li and Zongping Shao

21846



Atomic layer deposited high quality AlN thin films for efficient thermal management

Wangle Zhang, Jianguo Li, Jiabin Fang, Longfei Hui, Lijun Qin, Ting Gong, Fangyuan Sun and Hao Feng*

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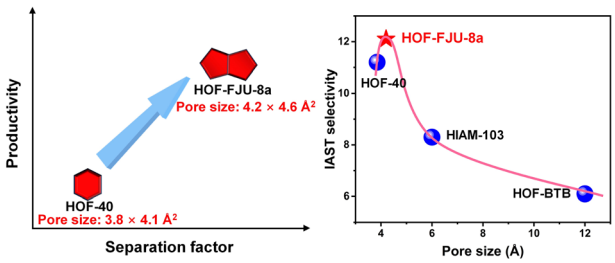
21857

Hydrogen-bonded organic framework with tailored pores prepared by enlarging the core size for high-performance Xe/Kr separation

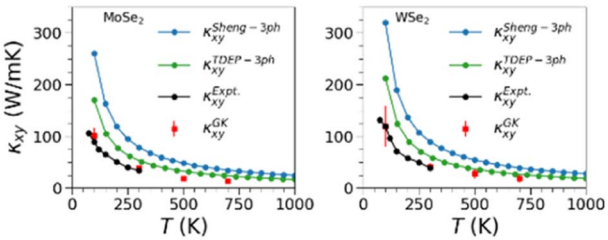
Zhen Yuan, Liangji Chen, Xin Zhou, Lu Li, Yunbin Li, Yisi Yang, Zhiqi Zhou, Yanting Chen, Shengchang Xiang, Banglin Chen and Zhangjing Zhang*



21864

Distinct anharmonic characteristics of phonon-driven lattice thermal conductivity and thermal expansion in bulk $MoSe_2$ and WSe_2

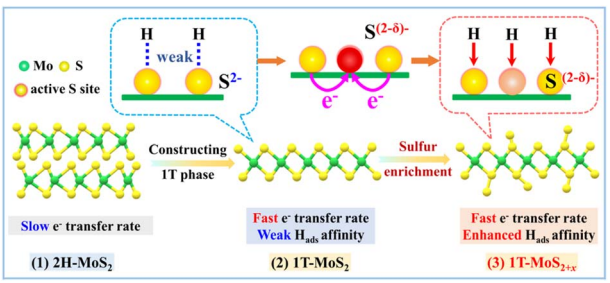
Mayanak K. Gupta,* Sajan Kumar, Ranjan Mittal,* Sanjay K. Mishra, Stephane Rols, Olivier Delaire, Arumugum Thamizhavel, P. U. Sastry and Samrath L. Chaplot



21874

Discharging antibonding orbital electrons of 1T-MoS_2 by S-rich treatment for promoting photocatalytic H_2 evolution

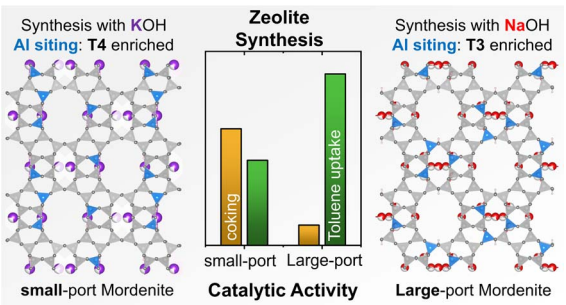
Pinsi Deng, Duoduo Gao, Ping Wang,* Xuefei Wang, Feng Chen and Huogen Yu*



21884

Cation-induced speciation of port-size during mordenite zeolite synthesis

Sebastian Prodinger,* Izar Capel Berdiell, Tomas Cordero-Lanzac, Odd Reidar Bygdnes, Bjørn Gading Solemsli, Karoline Kvande, Bjørnar Arstad, Pablo Beato, Unni Olsbye and Stian Svelle



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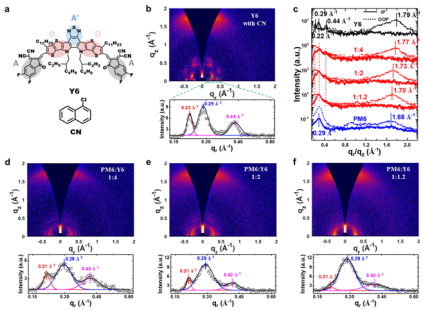
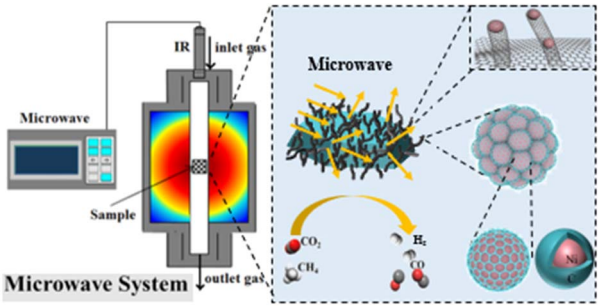
21895



Revealing the crystalline packing structure of Y6 in the active layer of organic solar cells: the critical role of solvent additives

Xinxin Xia, Le Mei, Chengliang He, Zeng Chen, Nannan Yao, Minchao Qin, Rui Sun, Zhenzhen Zhang, Yuyu Pan, Yiqun Xiao, Yuze Lin, Jie Min, Fengling Zhang, Haiming Zhu, Jean-Luc Bredas, Hongzheng Chen,* Xian-Kai Chen* and Xinhui Lu*

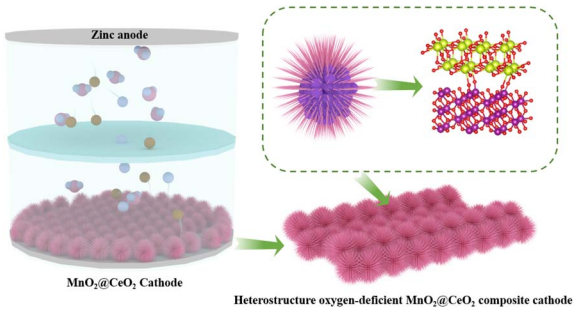
21908



Hierarchical core–shell Ni@C-NCNTs nanocomposites tailored for microwave-induced dry reforming of methane process

Miaomiao Zhang, Yibo Gao, Yanpeng Mao,* Yang Jin, Wenlong Wang, Jian Sun, Zhanlong Song, Jing Sun and Xiqiang Zhao

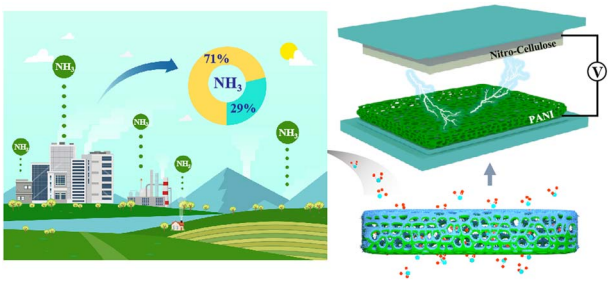
21927



MnO_2@CeO_2 composite cathode for aqueous zinc-ion batteries: enhanced electrical conductivity and stability through Mn–O–Ce bonds

Meng Xie, Ran Wang, Nana Wang, Qiang Zhang, Xiao Zhang, Chao Feng, Lijun Huang, Yanchao Xu, Yang Jiao* and Jianrong Chen*

21937



Highly sensitive self-powered ammonia gas detection enabled by a rationally designed PANI/commercial cellulosic paper based triboelectric nanogenerator

Maosen Yang, Jinmei Liu,* Caixia Hu, Weiqiang Zhang, Jingyi Jiao, Nuanyang Cui* and Long Gu*

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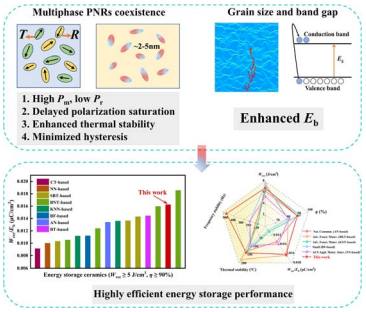
21948

Multi-objective collaborative design optimized highly efficient energy capacitive lead-free relaxor ferroelectrics

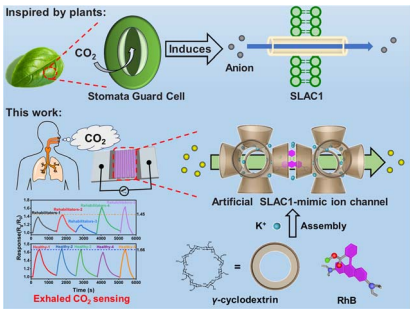
Long Lin, Chongyang Li, Yibo Zhang, Wangfeng Bai,* Shiting Wu, Yongjun Yuan, Wei Li and Jiwei Zhai*



21959

A bio-inspired and switchable H^+/OH^- ion-channel for room temperature exhaled CO_2 chemiresistive sensing

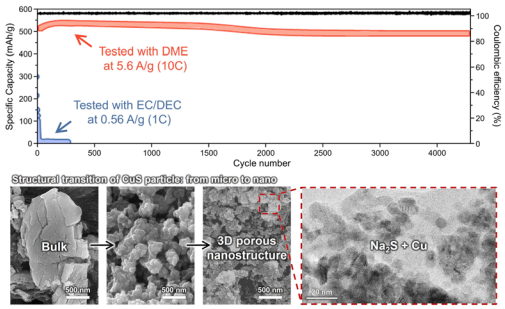
Honghao Chen, Ruofei Lu, Yixun Gao, Xiaorui Yue, Haihong Yang, Hao Li, Yi-Kuen Lee, Paddy J. French, Yao Wang* and Guofu Zhou



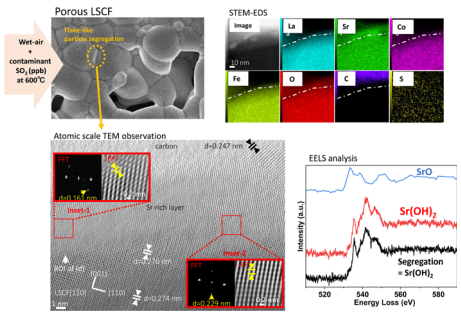
21972

Self-assembling CuS anodes with conversion reaction for ultrafast Na-ion storage

Sung Yeob Kim, Hee-Jae Ahn, Young-Hoon Kim, Hong-Kyu Kim, Byeong-Hyeon Lee, Young-Woon Byeon, Jae-Ho Park, Kyung Yoon Chung and Jae-Chul Lee*



21983

Towards an atomic scale understanding of the early-stage deterioration mechanism of LSCF

Shu-Sheng Liu,* Katherine Develos-Bagarinao, Riyan Achmad Budiman, Tomohiro Ishiyama,* Haruo Kishimoto and Katsuhiko Yamaji