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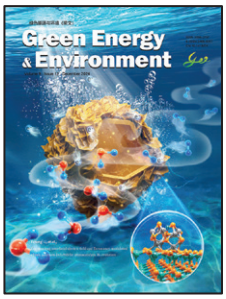

Front Cover

Constructing interfacial electric field and Zn vacancy modulated ohmic junctions ZnS/NiS for photocatalytic H_2 evolution

*Yi-lei Li, Xu-jia Liu, Yun-biao Wang, Ying Liu, Rui-hong Liu, Hui-ying Mu, Ying-juan Hao, Xiao-jing Wang, Fa-tang Li**

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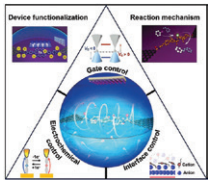
Recyclable bio-based epoxy resin thermoset polymer from wood for circular economy
Bowen Zhang, Saravanakumar Elangovan, Zhuohua Sun*..... 1781

Review Articles

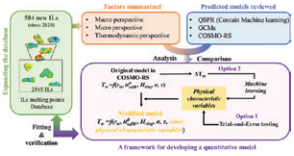
Application of ionic liquids in single-molecule junctions: Recent advances and prospects
Li Zhou[1], Miao Zhang[1], Yani Huo, Liping Bai, Suhang He, Jinying Wang*, Chuancheng Jia*, Xuefeng Guo*..... 1784

This review explores recent advances where ionic liquids function as electrolytes, dielectric layers, and structural elements within single-molecule junctions, reshaping charge transport, redox reactions, and molecular behaviors in these nanoscale systems.



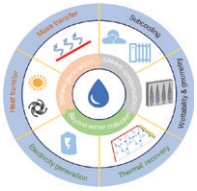
Melting points of ionic liquids: Review and evaluation
Zhengxing Dai, Lei Wang, Xiaohua Lu*, Xiaoyan Ji*..... 1802

In this review, the data, effect factors, and predicted models of the melting points of ionic liquids are collected, summarized, and reviewed. After analysis and comparison, a framework for developing a quantitative model is proposed.



Recent advances in water collection based on solar evaporation
Meijie Chen*, Shuang Li, Shuai Guo, Hongjie Yan, Swee Ching Tan*..... 1812

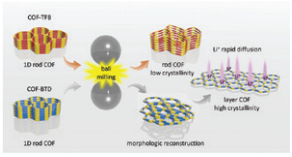
This review summarizes heat and mass transfer behaviors to collaborate evaporation and condensation processes for water collection based on solar evaporation. Some challenges still need to be improved in the future for scalable and practical applications, including passive water collection rate, integrated system, and long-term issues.



Research papers

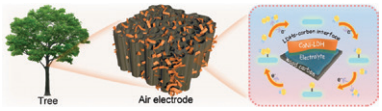
Mechanochemical strategy assisted morphology recombination of COFs for promoted kinetics and LiPS transformation in Li–S batteries
Yunchen Ge, Yan Meng*, Lin Liu, Jianming Li, Xuechun Huang, Dan Xiao*…….. 1822

This research provides a feasible plan for the development and selection of the host material of lithium-sulfur batteries.



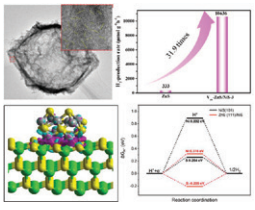
Wood-derived freestanding integrated electrode with robust interface-coupling effect boosted bifunctionality for rechargeable zinc-air batteries
Benji Zhou[1], Nengneng Xu[1], Liangcai Wu*, Dongqing Cai*, Eileen H. Yu, Jinli Qiao*…… 1835

Based on an activation-doping assisted interface modification strategy, the integrated CoNiLDH@NPC electrode is fabricated via constructing 2D LDHs in 3D wood carbon matrix.



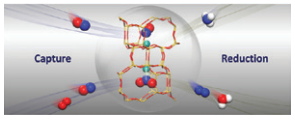
Constructing interfacial electric field and Zn vacancy modulated ohmic junctions ZnS/NiS for photocatalytic H_2 evolution
Yi-lei Li, Xu-jia Liu, Yun-biao Wang, Ying Liu, Rui-hong Liu, Hui-ying Mu, Ying-juan Hao, Xiao-jing Wang, Fa-tang Li*…… 1847

The hollow ZnS/NiS nanocages with ohmic contact containing Zn vacancy (V_{Zn}-ZnS/NiS) are synthesized. An internal electric field is constructed by Fermi level flattening to form ohmic contacts, which increase donor density and accelerate electron transport at the V_{Zn}-ZnS/NiS interface. The optimal hydrogen production activity of V_{Zn}-ZnS/NiS was 10,636 μmol h^{-1} g^{-1}, which was 31.9 times that of ZnS.



Efficient nitric oxide capture and reduction on Ni-loaded CHA zeolites
Bin Yue, Jianhua Wang, Shanshan Liu*, Guangjun Wu, Bin Qin, Landong Li*…… 1857

Ni-CHA zeolites show high NO_x capture capacity by forming stable complexes under both oxygen-lean and rich conditions. A facile reductive regeneration strategy is developed using ammonia at

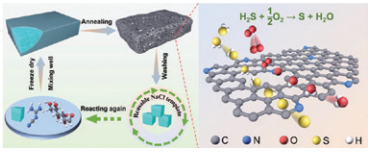


moderate temperature of 673 K. This study informs efficient NO_x capture and reduction process with non-precious metal materials.

Reusable salt-template strategy for synthesis of porous nitrogen-rich carbon boosts H_2S selective oxidation

Xu Liu, Liang Shan, Xiaoxue Sun, Tianxin Wang, Zhongqing Liu*, Yuefeng Liu*…… 1866

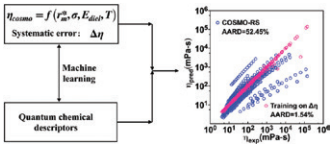
This work presents porous, honeycomb-like N-doped carbon catalysts with large specific surface areas, high pyridinic N content, and numerous structural defects for H_2S selective oxidation prepared using reusable NaCl as the template.



Hybrid data-driven and physics-based modeling for viscosity prediction of ionic liquids

Jing Fan, Zhengxing Dai, Jian Cao, Liwen Mu, Xiaoyan Ji, Xiaohua Lu*…… 1878

A quantitative relationship between the systematic deviations of the COSMO-RS model and the quantum chemical descriptors was established by machine learning, and the average absolute relative deviation (AARD) of COSMO-RS was reduced to 1.54% from 52.45%.



Constructing lithiophilic sites–rich artificial solid electrolyte interphase to enable dendrite–free and corrosion–free lithium–sulfur batteries

Wei Lu[1], Anshun Zhao[1], Qiuxu Chen, Sihan Liu, Mingxi Yu, Zihao Wang, Ze Gao, Xue Zhao, Guiru Sun, Ming Feng*…… 1891

We develop an artificial polyester polymer/lithiophilic sites composite SEI with uniform lithium deposition behavior and polysulfide anchoring effect. The MPAF-SEI contains polymethyl methacrylate (PMMA), poly propylene carbonate (PPC) and AlF_3 particles. The AlF_3 can convert into Li–Al and LiF lithiophilic sites, effectively reducing the nucleation overpotential of Li and preventing the formation of dendrites. Polysulfide can be chemically anchored by PMMA and PPC due to forming C–S/C–O–S groups, which inhibits corrosion of Li metal anode. These extend the cycling life of Li–S batteries.