

Front Cover

Dealuminated H β zeolite for selective conversion of fructose to furfural and formic acid

Rui Li, Qixuan Lin, Junli Ren*, Xiaobao Yang, Yingxiong Wang, Lingzhao Kong*

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Research highlight

New possibility for PET plastic recycling by a tailored hydrolytic enzyme

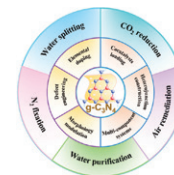
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Review articles

Engineering g-C₃N₄ based materials for advanced photocatalysis: Recent advances

Xin-Lian Song, Lei Chen, Li-Jiao Gao, Jin-Tao Ren, Zhong-Yong Yuan* 166

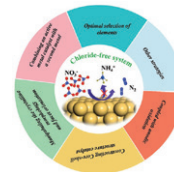
This review systematically summarized the recent advances about design strategies of g-C₃N₄ based materials. The relationship between structure and photocatalytic performance were deeply analyzed. The diverse photocatalytic applications of energy production and environment remediation were also listed by classification.



Strategies of selective electroreduction of aqueous nitrate to N₂ in chloride-free system: A critical review

Fukuan Li, Weizhe Zhang, Peng Zhang, Ao Gong, Kexun Li* 198

This review presents the strategies of electroreduction of nitrate to N₂ in chloride-free system, including optimal selection of elements, combining an active metal with another metal, manipulating the crystalline morphology and facet orientation, constructing core-shell structure catalysts, etc.



Porous framework materials for energy & environment relevant applications: A systematic review

Yutao Liu¹, Liyu Chen¹, Lifeng Yang¹, Tianhao Lan¹, Hui Wang, Chenghong Hu, Xue Han, Qixing Liu, Jianfa Chen, Zeming Feng, Xili Cui, Qianrong Fang, Hailong Wang, Libo Li*, Yingwei Li*, Huabin Xing*, Sihai Yang*, Dan Zhao*, Jinping Li* 217

A systematic review for the first time focusing on multiple applications of porous framework materials containing MOFs, COFs and HOFs in green energy & environment related fields for carbon neutrality.

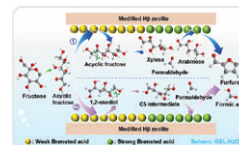


Research papers

Dealuminated H β zeolite for selective conversion of fructose to furfural and formic acid

Rui Li, Qixuan Lin, Junli Ren*, Xiaobao Yang, Yingxiong Wang, Lingzhao Kong* 311

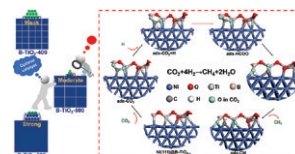
Citric acid-modified H β zeolite possessed suitable textural structure and high Brønsted acid amount was employed for fructose-to-furfural transformation, correspondingly to 76.2% furfural and 83.0% formic acid.



CO₂ methanation boosted by support-size-dependent strong metal-support interaction and B–O–Ti component

Shaoyu Yuan, Yushan Yang, Zhangyi Xiong, Peijing Guo, Sufang Sun, Zejiang Li, Jianlong Du, Yongjun Gao* 321

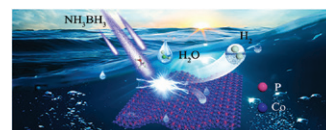
This work shows how changing the surface environment of the anatase TiO₂ (B–TiO₂) can be used to modulate the SMSI. The moderate TiO_x overlayer makes the Ni metal highly dispersed on the high specific surface area of support, resulting in a substantially enhanced CO₂ methanation rate.



Integration of morphology and electronic structure modulation on cobalt phosphide nanosheets to boost photocatalytic hydrogen evolution from ammonia borane hydrolysis

Chao Wan, Yu Liang, Liu Zhou, Jindou Huang, Jiapei Wang, Fengqiu Chen, Xiaoli Zhan, Dang-guo Cheng* 333

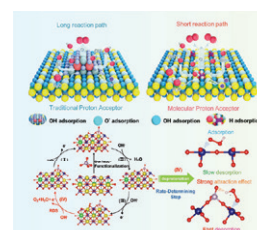
Cobalt phosphide nanosheets are synthesized by a facile salt-assisted along with low-temperature phosphidation strategy for simultaneously modulating its morphology and electronic structure, and function as hydrogen evolution photocatalysts.



Molecular-level proton acceptor boosts oxygen evolution catalysis to enable efficient industrial-scale water splitting

Yaobin Wang¹, Qian Lu¹, Xinlei Ge, Feng Li*, Le Chen, Zhihui Zhang, Zhengping Fu*, Yalin Lu, Yang Song, Yunfei Bu* 344

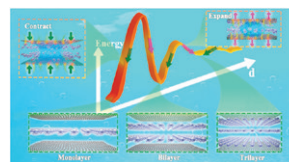
This work provides a new molecular-level strategy to develop highly efficient OER electrocatalysts for industrial applications.



Lamellar water induced quantized interlayer spacing of nanochannels walls

Yue Zhang, Chenlu Wang, Chunlei Wang, Yingyan Zhang, Junhua Zhao*, Ning Wei*..... 356

The nanochannel stables at a few quantized discrete spacing states when it is within 1.4 nm. This is attributed to water molecules becoming laminated structures, and the stable states are corresponding to the monolayer, bilayer and trilayer water configurations, respectively.



A novel Ag/ZnO core-shell structure for efficient sterilization synergizing antibiotics and subsequently removing residuals

Wenmei Han¹, Wenli Wang¹, Jie Fan, Runping Jia*, Xuchun Yang, Tong Wu*, Qingsheng Wu*..... 366

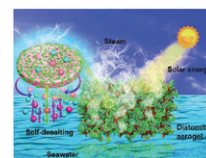
The 1+1>2 synergistic sterilization system reduces the dosage of antibiotics to delay drug resistance, and the subsequent photodegradation avoids environmental pollution problems.



Natural high-porous diatomaceous-earth based self-floating aerogel for efficient solar steam power generation

Aitang Zhang, Kai Wang, Md Julker Nine, Mengyu Cao, Hanwen Zong, Zhiqiang Liu, Hanwen Guo, Jingquan Liu*, Dusan Losic*..... 378

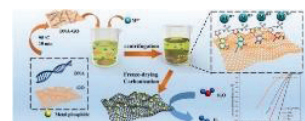
Natural-diatomite aerogel evaporator is prepared by assembling polyaniline covered diatomite into the polyvinyl alcohol treated melamine foam for highly efficient solar steam generation.



A sustainable process to 100% bio-based nylons integrated chemical and biological conversion of lignocellulose

Ruijia Hu, Ming Li, Tao Shen, Xin Wang, Zhuohua Sun, Xinning Bao, Kequan Chen, Kai Guo, Lei Ji, Hanjie Ying, Pingkai Ouyang, Chenjie Zhu*..... 390

An integrated chemical and biological process for producing 100% lignocellulose-based nylons PA56P and PA46P was developed by melt polymerization of 3-propyladipic acid derived from lignin and 1,5-pentenediamine/1,4-butanediamine derived from carbohydrate sugars.



Comprehensive reutilization of herbal waste: Coproduction of magnolol, honokiol, and β-amyryn from Magnolia officinalis residue

Lukun Xiao¹, Anyi Zhao¹, Jie Qiu, An Liu, Sha Chen, Jinzhu Jiang, Jun Zhang, Cong Guo, Jipeng Di, Jintang Cheng, Chang Chen, Kangxin Hou, Aiping Zhang, Yan Liu*, Caixia Wang*..... 403

Route of the comprehensive reutilization of all components in MOR. The two paths were jointly explored for the coproduction of high-value-added chemicals through MOF material adsorption combined with the saccharification fermentation process from MOR.

