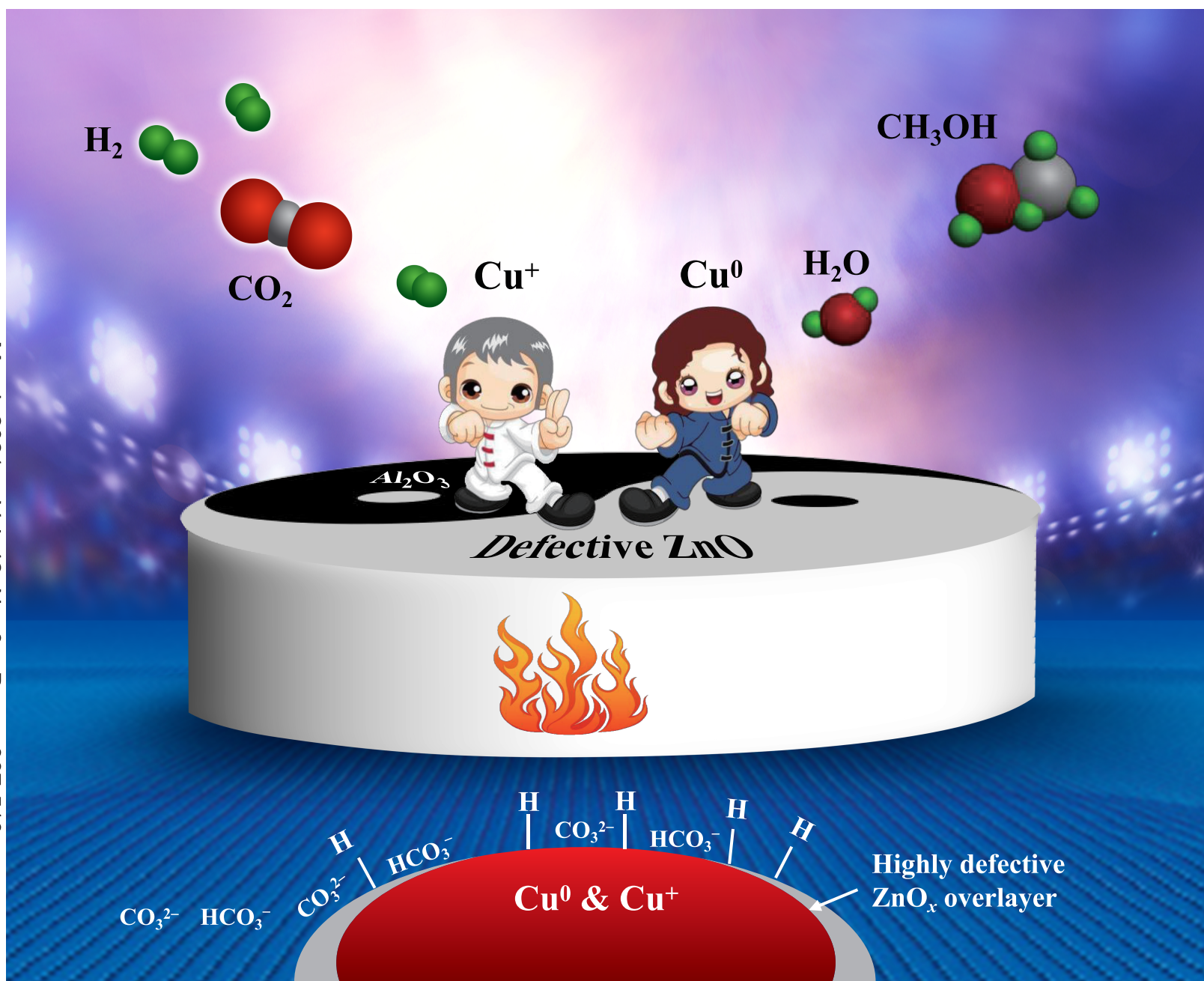




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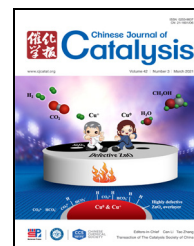




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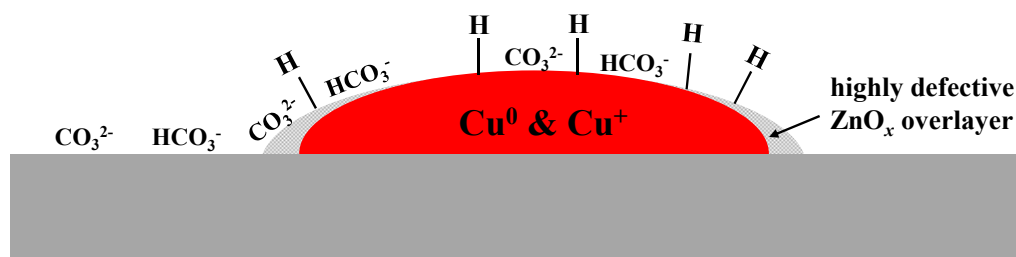


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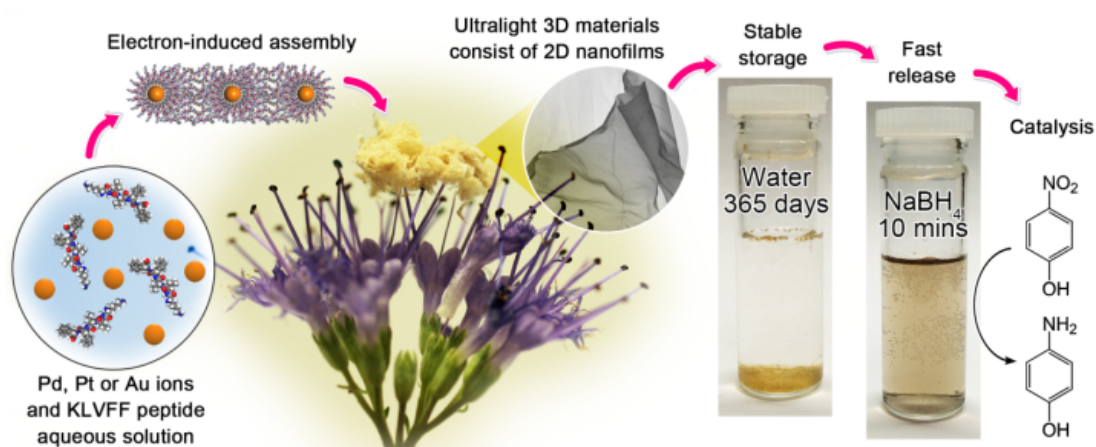
Articles

Chin. J. Catal., 2021, 42: 367–375 doi: 10.1016/S1872-2067(20)63672-5

***In situ* FTIR and *ex situ* XPS/HS-LEIS study of supported Cu/Al₂O₃ and Cu/ZnO catalysts for CO₂ hydrogenation**Jun Hu, Yangyang Li, Yanping Zhen, Mingshu Chen *, Huilin Wan
Xiamen University

In situ FTIR and *ex situ* XPS/HS-LEIS measurements indicate that Al₂O₃ has the role of stabilizing Cu⁺, and a highly defective ZnO_x overlayer, caused by SMSI, can dissociate H₂. The synergistic effects of Cu⁰, Cu⁺, and the highly defective ZnO_x overlayer may play important roles during CO₂ hydrogenation.

Chin. J. Catal., 2021, 42: 376–387 doi: 10.1016/S1872-2067(20)63655-5

Electron-induced rapid crosslinking in supramolecular metal-peptide assembly and chemically responsive disaggregation for catalytic applicationZongyuan Wang, Jiajun Wang, Zeyu Sun, Wenlong Xiang, Chenyang Shen, Ning Rui, Mingzhu Ding, Yingjin Yuan, Honggang Cui *,
Chang-jun Liu *
Tianjin University, China; The Johns Hopkins University, United States

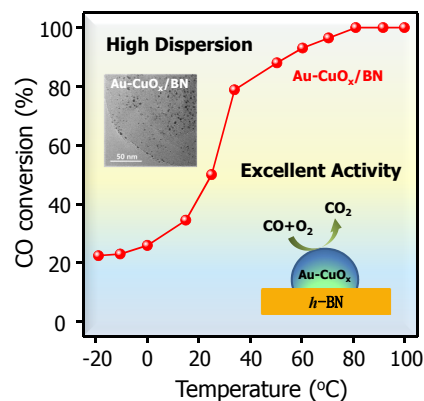
Mechanism study, responsive release and catalytic activity of Pd, Pt and Au@KLVFF nanofilms enabled by electron-induced assembly.

Chin. J. Catal., 2021, 42: 388–395 doi: 10.1016/S1872-2067(20)63669-5

Highly dispersed boron-nitride/CuO_x-supported Au nanoparticles for catalytic CO oxidation at low temperatures

Fan Wu, Lei He, Wen-Cui Li, Rao Lu, Yang Wang, An-Hui Lu *
Dalian University of Technology

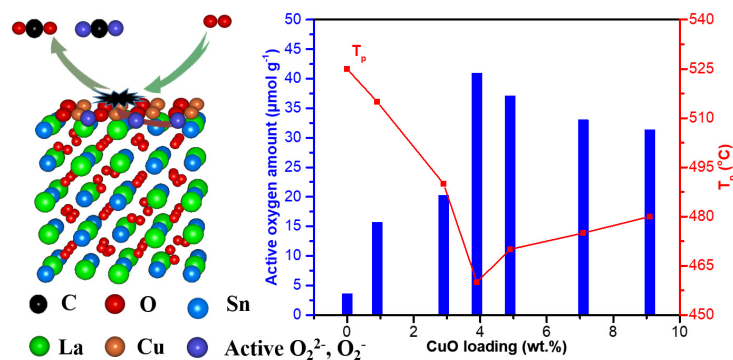
Using ball-milled BN as the support, a Au-CuO_x/BN catalyst was prepared. This catalyst exhibited high performance in CO oxidation due to the highly dispersed and stabilized Au nanoparticles and strengthened CO adsorption.



Chin. J. Catal., 2021, 42: 396–408 doi: 10.1016/S1872-2067(20)63657-9

Stable CuO/La₂Sn₂O₇ catalysts for soot combustion: Study on the monolayer dispersion behavior of CuO over a La₂Sn₂O₇ pyrochlore support

Xiaohui Feng, Rui Liu, Xianglan Xu, Yunyan Tong, Shijing Zhang, Jiacheng He, Junwei Xu, Xiuzhong Fang, Xiang Wang *
Nanchang University

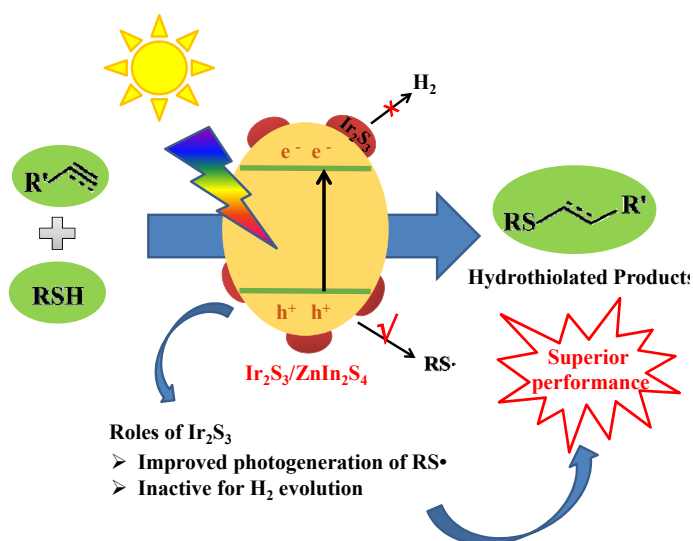


Active surface O₂⁻ and O₂²⁻ sites determine the soot combustion activity on CuO/La₂Sn₂O₇. The best catalyst can be obtained by covering La₂Sn₂O₇ surface with a CuO monolayer.

Chin. J. Catal., 2021, 42: 409–416 doi: 10.1016/S1872-2067(20)63660-9

Efficient visible light initiated hydrothiolations of alkenes/alkynes over Ir₂S₃/ZnIn₂S₄: Role of Ir₂S₃

Xinglin Wang, Yuanyuan Li, Zhaohui Li *
Fuzhou University

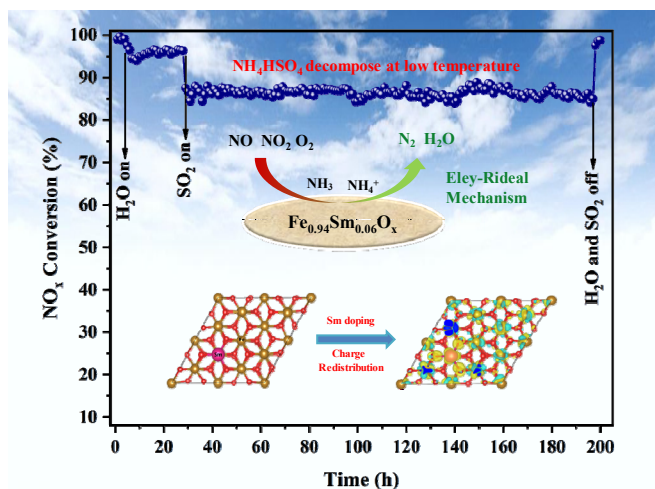


Ir₂S₃/ZnIn₂S₄ nanocomposites were obtained by one-pot solvothermal method, and the loading of Ir₂S₃ on the surface of ZnIn₂S₄ was found to promote the light initiated thiol-ene and thiol-yne reactions.

Chin. J. Catal., 2021, 42: 417–430 doi: 10.1016/S1872-2067(20)63666-X

Comprehensive understanding of the superior performance of Sm-modified Fe₂O₃ catalysts with regard to NO conversion and H₂O/SO₂ resistance in the NH₃-SCR reaction

Chuanzhi Sun *, Wei Chen, Xuanxuan Jia, Annai Liu, Fei Gao, Shuai Feng *, Lin Dong *
Shandong Normal University; Nanjing University; Taishan University

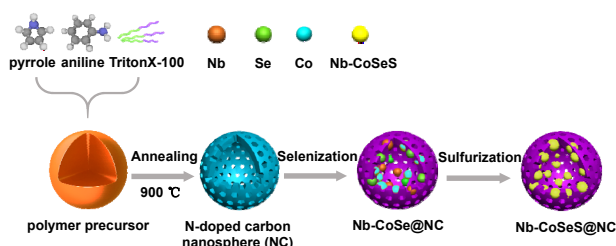


Sm-doping of Fe₂O₃ provides excellent SO₂ + H₂O resistance for the NH₃-SCR reaction at low temperatures by accelerating the decomposition of NH₄HSO₄ on the surface of the catalyst.

Chin. J. Catal., 2021, 42: 431–438 doi: 10.1016/S1872-2067(20)63673-7

Hierarchical CoSeS nanostructures assisted by Nb doping for enhanced hydrogen evolution reaction

Ya-Nan Zhou, Yu-Ran Zhu, Xin-Tong Yan, Yu-Ning Cao, Jia Li, Bin Dong *, Min Yang, Qing-Zhong Li, Chen-Guang Liu, Yong-Ming Chai *
China University of Petroleum (East China); Yantai University

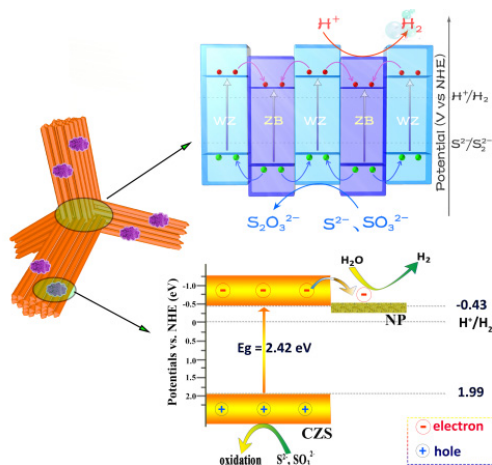


Nb-CoSe well dispersed in NCs (Nb-CoSe@NC) was synthesized through a hydrothermal reaction and facilitated good dispersion of the active sites. Se and S doping further improved the excellent HER activity of Nb-CoSeS@NC.

Chin. J. Catal., 2021, 42: 439–449 doi: 10.1016/S1872-2067(20)63597-5

Coralline-like Ni₂P decorated novel tetrapod-bundle Cd_{0.9}Zn_{0.1}S ZB/WZ homojunctions for highly efficient visible-light photocatalytic hydrogen evolution

Zhuwang Shao, Xiao Meng, Hong Lai, Dafeng Zhang, Xipeng Pu *, Changhua Su, Hong Li, Xiaozhen Ren, Yanling Geng
Liaocheng University; Qingdao University of Science and Technology



Ni₂P-Cd_{0.9}Zn_{0.1}S composites were synthesized by coupling tetrapod-bundle Cd_{0.9}Zn_{0.1}S and coralline-like Ni₂P via a simple calcination method. The synergistic effects of the novel tetrapod-bundle morphology, ZB/WZ homojunctions, and decoration of the Ni₂P co-catalyst can efficiently enhance visible-light photocatalytic hydrogen evolution.

Sulfur promoted n- π^* electron transitions in thiophene-doped g-C₃N₄ for enhanced photocatalytic activity

jiangsu University

Tuning the O-O bond formation pathways of molecular water oxidation catalysts on electrode surfaces *via* second coordination sphere engineering

Producing of cinnamyl alcohol from cinnamaldehyde over supported gold nanocatalyst

Figure 1: Reaction of cinnamaldehyde with ZnS nanoparticles.

Left Panel: Yield (%) vs. Time (min)

Time (min)	CAL (%)	COL (%)	HCAL (%)	HCOL (%)
0	100	0	0	0
0.5	45	30	2	1
1	45	50	2	1
2	25	68	2	1
3	10	82	2	1
4	5	90	2	1
5	2	95	2	1
10	1	95	2	1
15	1	96	2	1

Right Panel: Reaction Scheme

The reaction scheme illustrates the conversion of cinnamaldehyde (CAL) to cinnamyl alcohol (COL) and hydrocinnamyl alcohol (BCOL) using ZnS nanoparticles, ZnO, and Al₂O₃ as cocatalysts. The reaction is catalyzed by ZnS nanoparticles (represented by yellow spheres) in the presence of ZnO and Al₂O₃ cocatalysts.

- Major Product:** Cinnamyl alcohol (COL) is formed with a conversion of 98.3% and a selectivity of 95.4%.
- Minor Product:** Hydrocinnamyl alcohol (BCOL) is formed with a selectivity of less than 5%.
- Time:** The reaction time is 5–15 hours.
- Byproducts:** Hydrocinnamaldehyde (HCAL) and cinnamaldehyde (CAL) are shown as byproducts, indicating that the reaction is selective for the reduction of the aldehyde group to the alcohol group.

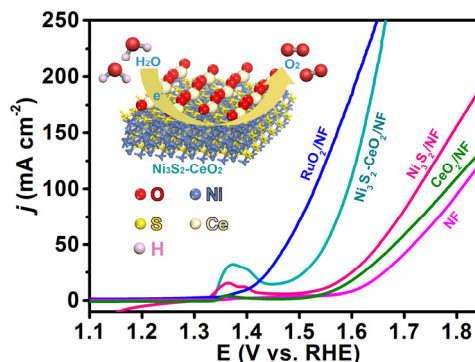
万方数据

Chin. J. Catal., 2021, 42: 482–489 doi: 10.1016/S1872-2067(20)63663-4

Facilitating active species by decorating CeO₂ on Ni₃S₂ nanosheets for efficient water oxidation electrocatalysis

Qian Wu *, Qingping Gao, Limei Sun, Huanmei Guo, Xishi Tai, Dan Li, Li Liu, Chongyi Ling *, Xuping Sun *
Weifang University; Weifang Vocational College;
Southeast University;
University of Electronic Science and Technology of China

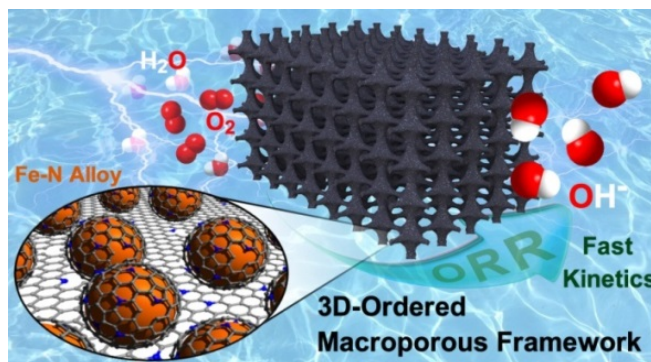
Ni₃S₂-CeO₂ is an efficient electrocatalyst for water oxidation in alkaline media, which needs a low overpotential of 264 mV to deliver 20 mA cm⁻², 92 mV lower than that of Ni₃S₂.



Chin. J. Catal., 2021, 42: 490–500 doi: 10.1016/S1872-2067(20)63667-1

3D-ordered macroporous N-doped carbon encapsulating Fe-N alloy derived from a single-source metal-organic framework for superior oxygen reduction reaction

Ya-Ru Lv, Xue-Jing Zhai, Shan Wang, Hong Xu, Rui Wang *, Shuang-Quan Zang *
Zhengzhou University

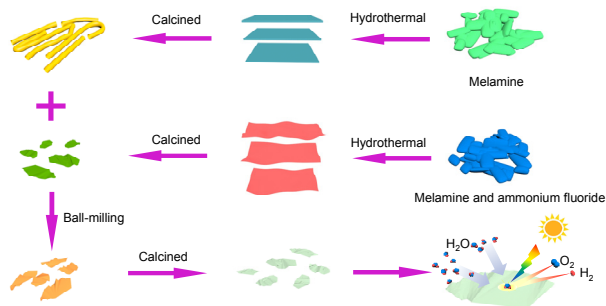


A 3D ordered macroporous N-doped carbon framework encapsulating Fe-N alloy nanoparticles was prepared by direct pyrolysis of dicyandiamide-MOF pre-embedded with polystyrene spheres template. It delivers a remarkable ORR activity and Zn-air battery performance with long-term durability.

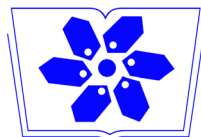
Chin. J. Catal., 2021, 42: 501–509 doi: 10.1016/S1872-2067(20)63670-1

Design of p-n homojunctions in metal-free carbon nitride photocatalyst for overall water splitting

Gang Zhao, Shuhua Hao, Jinghua Guo, Yupeng Xing, Lei Zhang, Xijin Xu *
University of Jinan; Shandong University



In this work, we successfully prepared a CN material with a heterogeneous structure via a clever design for the first time. Benefitting from the interface interactions in hybrid architectures, the CN photocatalysts exhibited high photocatalytic activity.



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