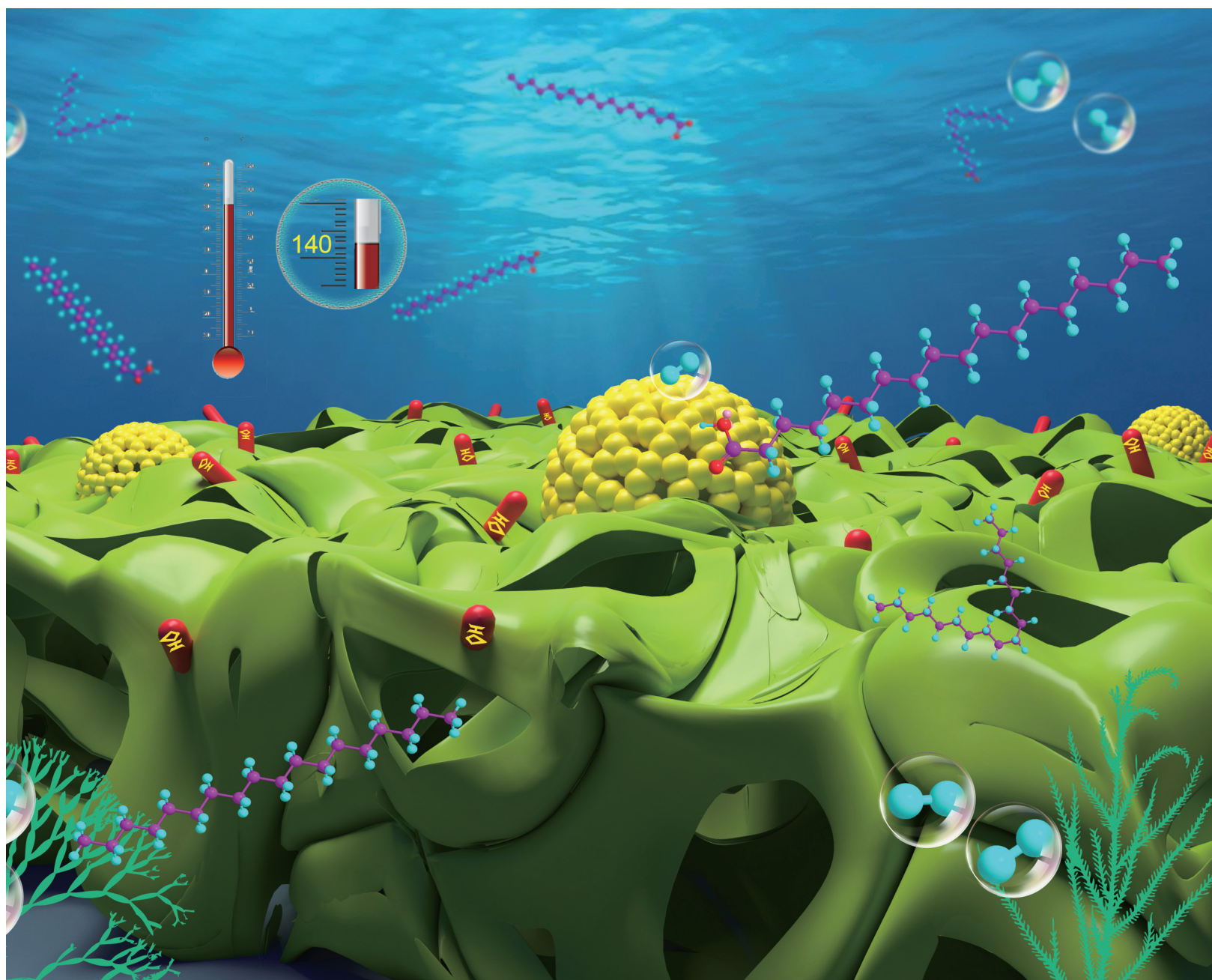




# Chinese Journal of Catalysis

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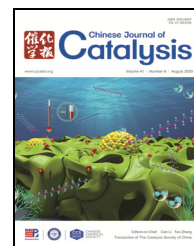
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## Chinese Journal of Catalysis

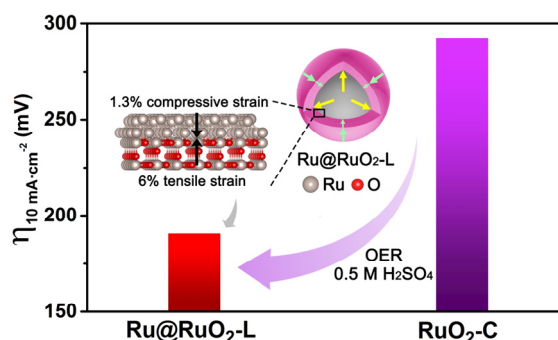
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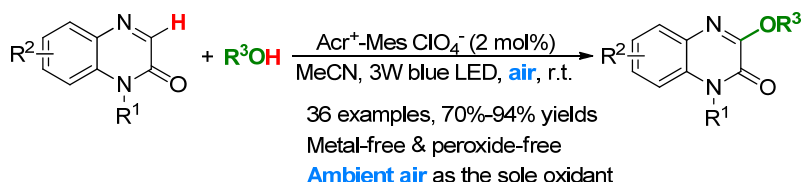
Chin. J. Catal., 2020, 41: 1161–1167 doi: 10.1016/S1872-2067(20)63543-4

**Engineering Ru(IV) charge density in Ru@RuO<sub>2</sub> core-shell electrocatalyst via tensile strain for efficient oxygen evolution in acidic media**Yizhi Wen, Tao Yang, Chuanqi Cheng, Xueru Zhao, Enzo Liu, Jing Yang\*  
Tianjin University

A high-performance OER catalyst was prepared by modulating the charge density of Ru<sup>4+</sup> via the generation of tensile strain in the RuO<sub>2</sub> shell of Ru@RuO<sub>2</sub> core-shell nanoparticles without any heteroatom doping.



Chin. J. Catal., 2020, 41: 1168–1173 doi: S1872-2067(19)63526-6

**C(sp<sup>2</sup>)-H/O-H cross-dehydrogenative coupling of quinoxalin-2(1H)-ones with alcohols under visible-light photoredox catalysis**Long-Yong Xie, Yi-Shu Liu, Hong-Ru Ding, Shao-Feng Gong, Jia-Xi Tan, Jun-Yi He, Zhong Cao, Wei-Min He\*  
Hunan University of Science and Engineering; Changsha University of Science and Technology; Hunan University of Science and Technology

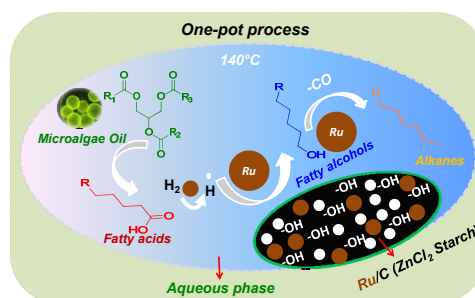
An efficient and practical procedure for the synthesis of 3-alkoxyquinoxalin-2(1H)-ones through the visible-light photocatalytic cross-dehydrogenation coupling of quinoxalin-2(1H)-ones and alcohols, with ambient air as the sole oxidant at room temperature, was developed.

## Articles

Chin. J. Catal., 2020, 41: 1174–1185 doi: 10.1016/S1872-2067(20)63539-2

**Ru nanoparticles supported on hydrophilic mesoporous carbon catalyzed low-temperature hydrodeoxygenation of microalgae oil to alkanes at aqueous-phase**Arif Ali, Chen Zhao\*  
East China Normal University

This work focuses on the synthesis of Ru nanoparticles supported on mesoporous carbon rich in -OH groups, which makes it to be more hydrophilic. This catalyst delivered the tandem hydrogenation and decarbonylation reactions, producing 100% yield of diesel-range alkanes at a low temperature of 140 °C in aqueous phase.



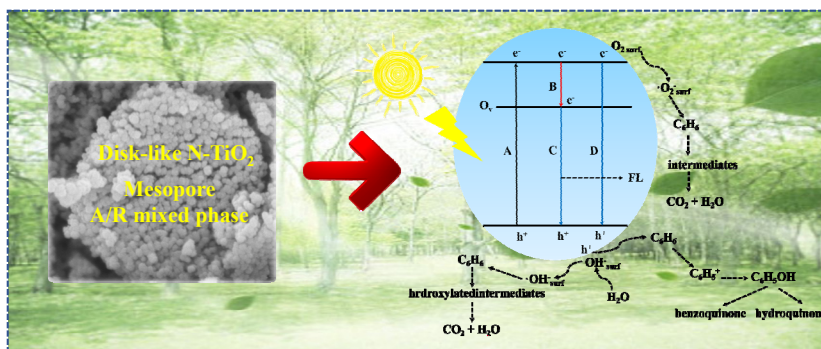


*Chin. J. Catal.*, 2020, 41: 1186–1197 doi: S1872-2067(19)63516-3

### Robust photocatalytic benzene degradation using mesoporous disk-like N-TiO<sub>2</sub> derived from MIL-125(Ti)

Chen Zhao, Zhihua Wang \*, Xi Chen, Hongyu Chu, Huifen Fu, Chong-Chen Wang \*

Beijing University of Chemical Technology; University of Civil Engineering and Architecture



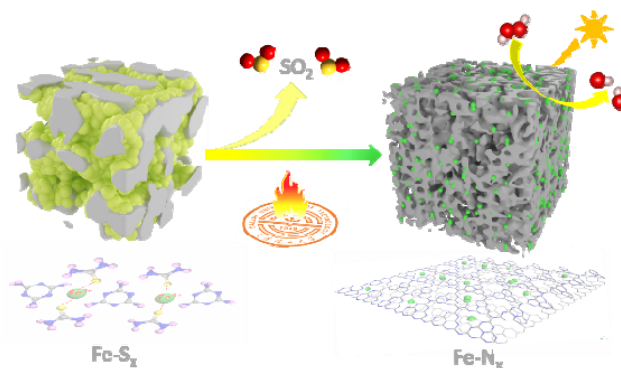
Mesoporous disk-like anatase-rutile mixed phase N-TiO<sub>2</sub> was constructed by the calcination of MIL-125(Ti) and melamine matrix in air, which possessed good photodegradation capability and superior cycling stability for photocatalytic purification of gaseous benzene.

*Chin. J. Catal.*, 2020, 41: 1198–1207 doi: 10.1016/S1872-2067(20)63529-X

### A facile sulfur-assisted method to synthesize porous alveolate Fe/g-C<sub>3</sub>N<sub>4</sub> catalysts with ultra-small cluster and atomically dispersed Fe sites

Sufeng An, Guanghui Zhang, Jiaqiang Liu, Keyan Li \*, Gang Wan, Yan Liang, Donghui Ji, Jeffrey T. Miller, Chunshan Song, Wei Liu, Zhongmin Liu, Xinwen Guo \*

Dalian University of Technology, China; Stanford University, USA; Purdue University, USA; The Pennsylvania State University, USA; Dalian Institute of Chemical Physics, Chinese Academy of Sciences, China



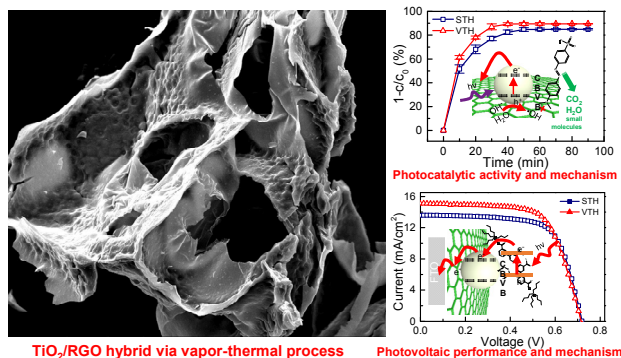
A template-free S-assisted method to synthesize porous alveolate Fe/g-C<sub>3</sub>N<sub>4</sub> catalysts with ultra-small clusters and atomically dispersed Fe sites for highly efficient catalytic advanced oxidation processes.

*Chin. J. Catal.*, 2020, 41: 1208–1216 doi: S1872-2067(19)63511-4

### One-step fabrication of TiO<sub>2</sub>/graphene hybrid mesoporous film with enhanced photocatalytic activity and photovoltaic performance

Junxiong Guo \*, Yiyi Li, Shangdong Li, Xumei Cui \*, Yu Liu \*, Wen Huang, Linna Mao, Xiongbang Wei, Xiaosheng Zhang  
University of Electronic Science and Technology of China;  
Chengdu University of Information Technology;  
Tsinghua University

A mesoporous film based on TiO<sub>2</sub>-reduced graphene oxide hybrids was fabricated using a one-step vapor-thermal method, which exhibits an ultra-high photocatalytic activity and enhanced photovoltaic performance.



TiO<sub>2</sub>/RGO hybrid via vapor-thermal process

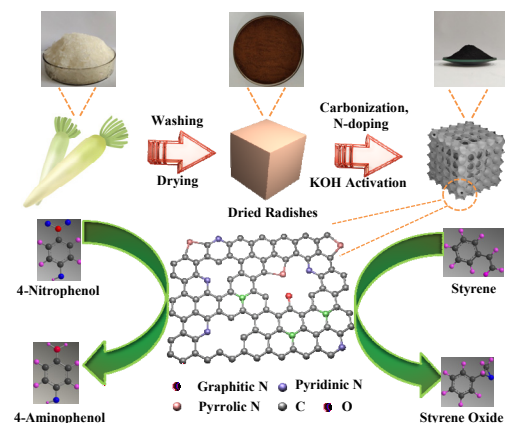
Photovoltaic performance and mechanism

*Chin. J. Catal.*, 2020, 41: 1217–1229 doi: 10.1016/S1872-2067(20)63534-3

### Versatile bifunctional nitrogen-doped porous carbon derived from biomass in catalytic reduction of 4-nitrophenol and oxidation of styrene

Jiangyong Liu\*, Jinxing Li, Rongfei Ye, Xiaodong Yan, Lixia Wang, Panming Jian  
Yangzhou University; Jiangnan University

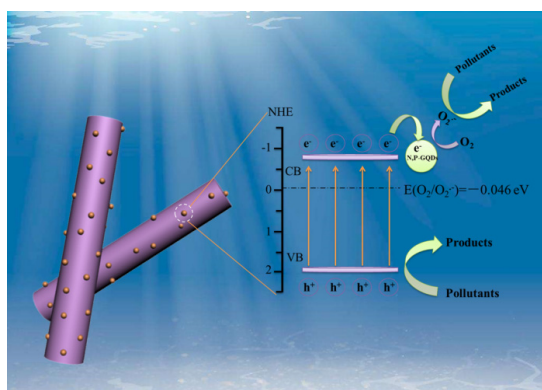
N-doped porous carbon derived from cheap and abundant radish can be employed as versatile and efficient bifunctional catalysts in both the catalytic reduction of 4-Nitrophenol and oxidation of styrene.



*Chin. J. Catal.*, 2020, 41: 1230–1239 doi: 10.1016/S1872-2067(20)63531-8

### Construction of nitrogen and phosphorus co-doped graphene quantum dots/Bi<sub>5</sub>O<sub>7</sub>I composites for accelerated charge separation and enhanced photocatalytic degradation performance

Kai Li, Mengxia Ji, Rong Chen, Qi Jiang, Jiexiang Xia\*, Huaming Li  
Jiangsu University



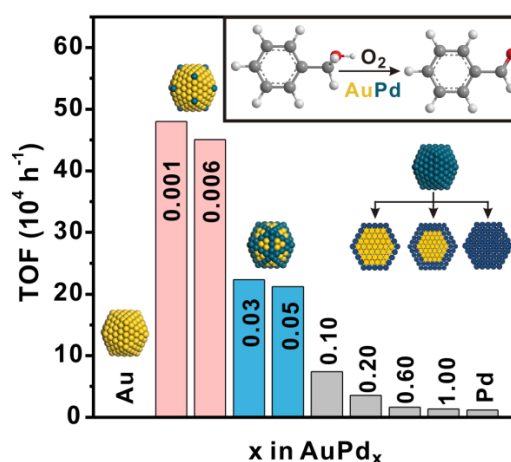
N and P co-doped graphene quantum dot-modified Bi<sub>5</sub>O<sub>7</sub>I (NPG/Bi<sub>5</sub>O<sub>7</sub>I) nanorods were prepared via an ionic liquid-assisted solvothermal method. Holes and superoxide radicals were the main active species involved in the photocatalytic degradation reaction.

*Chin. J. Catal.*, 2020, 41: 1240–1247 doi: 10.1016/S1872-2067(20)63535-5

### Site-specific deposition creates electron-rich Pd atoms for unprecedented C–H activation in aerobic alcohol oxidation

Yang Yan, Bin Ye, Mingshu Chen, Linfang Lu, Jian Yu, Yuheng Zhou, Yong Wang, Juanjuan Liu, Liping Xiao, Shihui Zou\*, Jie Fan\*  
Zhejiang University; Xiamen University; Hangzhou Dianzi University

Site-specific deposition enables the continuous regulation of the surface electronic structure of Pd atoms on Au nanoparticles. Electron-rich Pd atoms facilitate C–H cleavage, resulting in extremely high turnover frequency for solvent-free selective oxidation of benzyl alcohol.

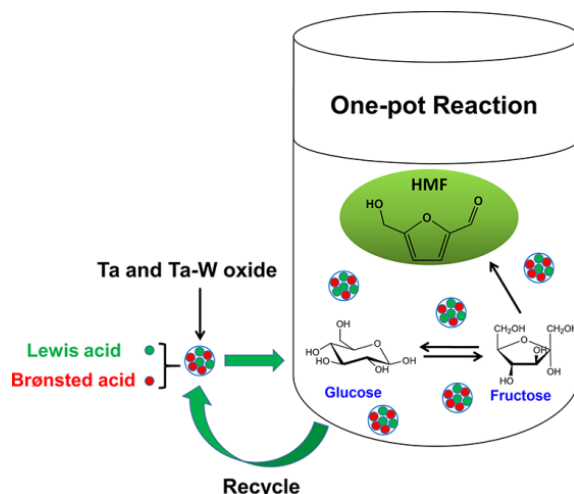


*Chin. J. Catal.*, 2020, 41: 1248–1260 doi: S1872-2067(19)63519-9

### Dehydration of sugars to 5-hydroxymethylfurfural and non-stoichiometric formic and levulinic acids over mesoporous Ta and Ta-W oxide solid acid catalysts

Bin Guo, Lulu He, Gangfeng Tang, Li Zhang, Lin Ye, Bin Yue \*,  
Shik Chi Edman Tsang, Heyong He \*  
*Fudan University, China; University of Oxford, UK*

A series of mesoporous Ta and Ta-W oxides have been synthesized and show high catalytic activity and good reusability in the dehydration of sugars to HMF in 2-butanol/H<sub>2</sub>O system.

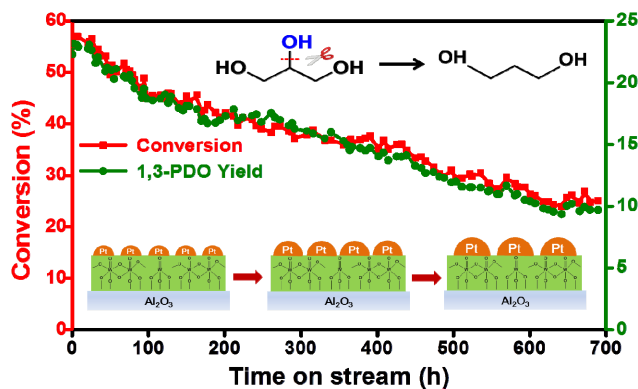


*Chin. J. Catal.*, 2020, 41: 1261–1267 doi: 10.1016/S1872-2067(20)63549-5

### Understanding the deactivation behavior of Pt/WO<sub>3</sub>/Al<sub>2</sub>O<sub>3</sub> catalyst in the glycerol hydrogenolysis reaction

Nian Lei, Zhili Miao, Fei Liu, Hua Wang, Xiaoli Pan, Aiqin Wang \*,  
Tao Zhang  
*Dalian Institute of Chemical Physics, Chinese Academy of Sciences;  
University of Chinese Academy of Sciences*

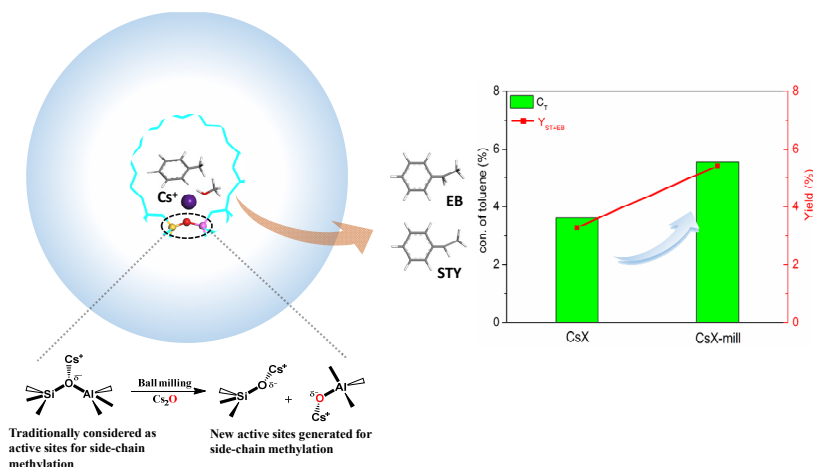
A continuous deactivation trend was observed during the stability test of glycerol hydrogenolysis over Pt/WO<sub>3</sub>/Al<sub>2</sub>O<sub>3</sub> catalyst. Characterization results suggested that the aggregation of Pt particles and decrease of Pt-WO<sub>x</sub> interfacial sites were responsible for the deactivation.



*Chin. J. Catal.*, 2020, 41: 1268–1278 doi: 10.1016/S1872-2067(20)63567-7

### Role of ball milling during Cs/X catalyst preparation and effects on catalytic performance in side-chain alkylation of toluene with methanol

Qijun Yu, Jinzhe Li, Changcheng Wei, Shu Zeng, Shutao Xu, Zhongmin Liu \*  
*Dalian Institute of Chemical Physics, Chinese Academy of Sciences; University of Chinese Academy of Sciences*



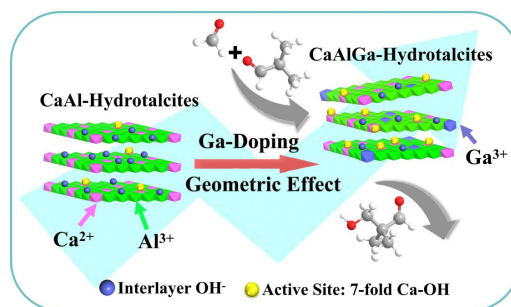
New active sites, such as Si–O–Cs and Al–O–Cs, are produced by the interaction between Cs<sub>2</sub>O species on zeolites and the framework of zeolites during ball milling, which favor the side-chain methylation reaction.

*Chin. J. Catal.*, 2020, 41: 1279–1287 doi: 10.1016/S1872-2067(20)63556-2

### Geometric effect promoted hydrotalcites catalysts towards aldol condensation reaction

Huimin Wang, Weihang Bing, Chunyuan Chen, Yusen Yang, Ming Xu, Lifang Chen, Lei Zheng, Xiaolin Li, Xin Zhang\*, Jianjun Yin\*, Min Wei\*  
Beijing University of Chemical Technology; China Tianchen Engineering Corporation Technology Research and Development Center;  
Institute of High Energy Physics, Chinese Academy of Sciences;  
SINOPEC Beijing Research Institute of Chemical Industry

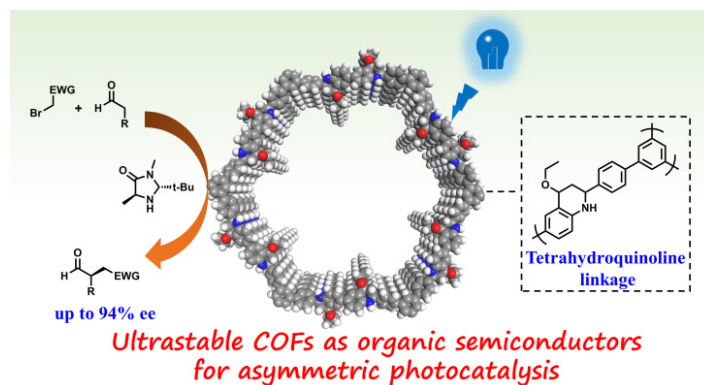
Ga as a structural promoter induces a moderate expansion of the laminate lattice, which results in a significant increase in the concentration of active sites in CaAlGa hydrotalcites, accounting for its high catalytic activity.



*Chin. J. Catal.*, 2020, 41: 1288–1297 doi: 10.1016/S1872-2067(20)63572-0

### Asymmetric photocatalysis over robust covalent organic frameworks with tetrahydroquinoline linkage

Chunzhi Li, Yinhua Ma, Haoran Liu, Lin Tao, Yiqi Ren, Xuelian Chen, He Li\*, Qihua Yang\*  
Dalian Institute of Chemical Physics, Chinese Academy of Sciences; University of Chinese Academy of Sciences

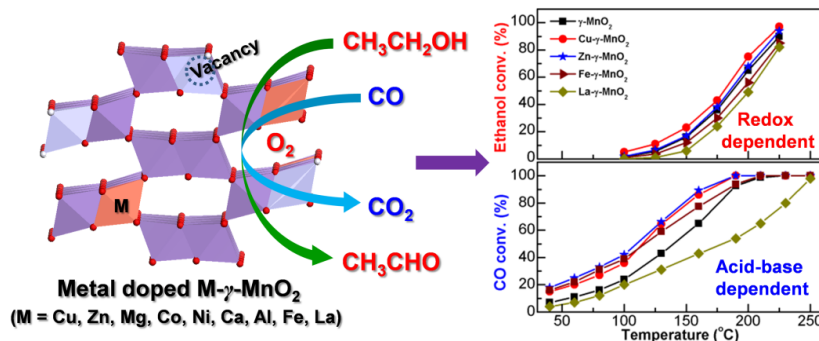


The synthesis of robust COFs with an irreversible tetrahydroquinoline linkage was established, and the potential application of QH-COFs in the photocatalytic asymmetric MacMillan reaction was demonstrated for the first time by merging with the chiral secondary amine.

*Chin. J. Catal.*, 2020, 41: 1298–1310 doi: 10.1016/S1872-2067(20)63551-3

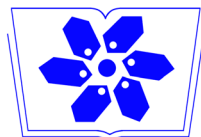
### Elucidating structure-performance correlations in gas-phase selective ethanol oxidation and CO oxidation over metal-doped $\gamma$ -MnO<sub>2</sub>

Panpan Wang, Jiahao Duan, Jie Wang, Fuming Mei, Peng Liu\*  
Huazhong University of Science and Technology



The different structural and component requirements of MnO<sub>2</sub> for gas-phase selective ethanol oxidation and CO oxidation were clarified by using metal-doped M- $\gamma$ -MnO<sub>2</sub> catalysts, with surface reducibility and acid-base property as the crucial factor, respectively.





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