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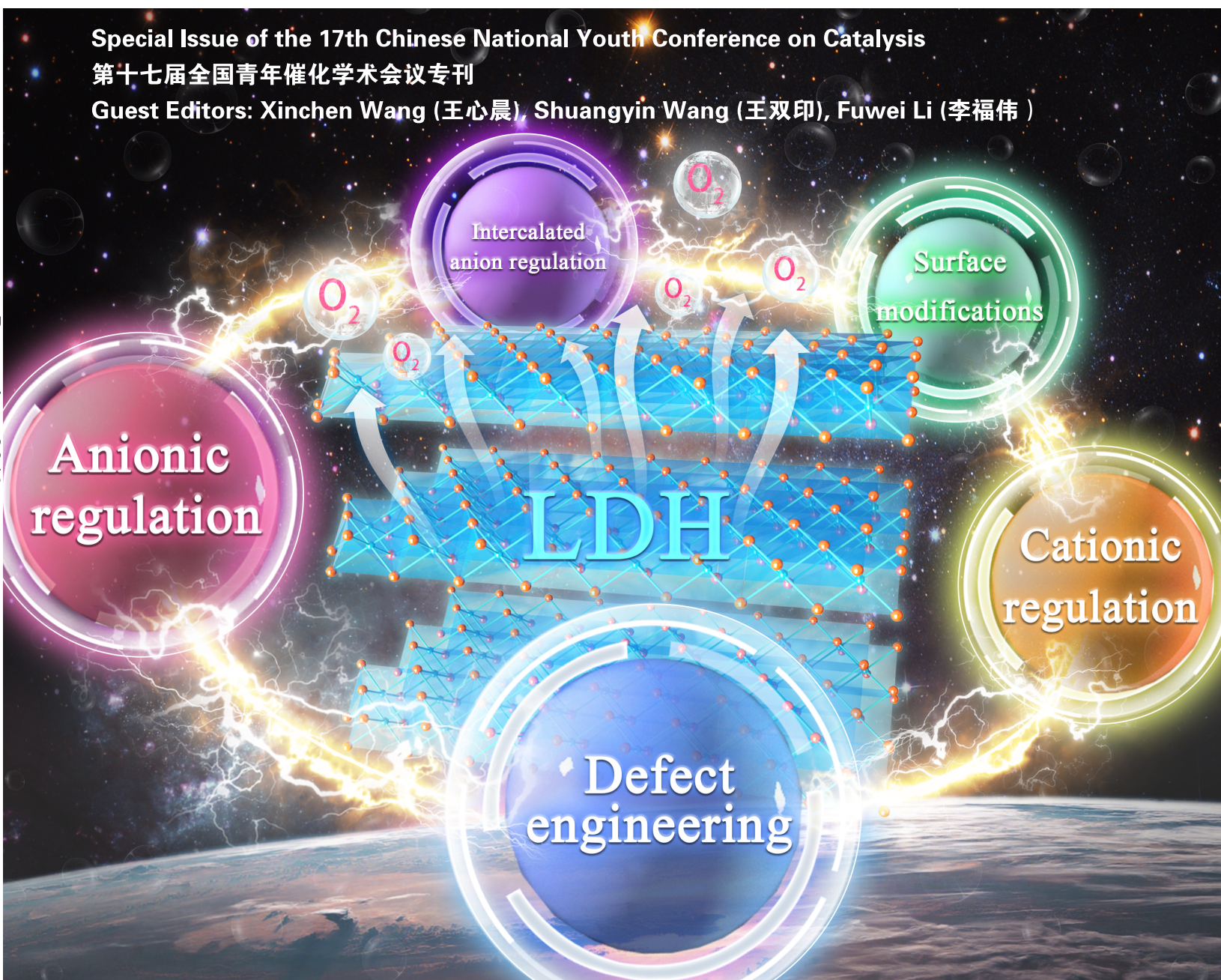
Special Issue of the 17th Chinese National Youth Conference on Catalysis

第十七届全国青年催化学术会议专刊

Guest Editors: Xinchun Wang (王心晨), Shuangyin Wang (王双印), Fuwei Li (李福伟)

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In This Issue



Cover: Wang and coworkers reported the electronic structure regulation on layered double hydroxides for oxygen evolution reaction (OER). The effect of these strategies, including cationic and anionic regulation, defect engineering, regulation of intercalated anions, and surface modifications, on OER activities were summarized. Read more about the article behind the cover on pages 1822–1840.

封面: 王双印等报道了电子结构调控对层状双金属氢氧化物催化析氧性能的影响。文章归纳了常见的调控手段,包括阴离子、阳离子调控,缺陷调控,层间插层物调控以及表面修饰等,对析氧反应催化性能的影响规律。见本期第1822–1840页。

About the Journal

Chinese Journal of Catalysis is an international journal published monthly by Chinese Chemical Society, Dalian Institute of Chemical Physics, Chinese Academy of Sciences, and Elsevier. The journal publishes original, rigorous, and scholarly contributions in the fields of heterogeneous and homogeneous catalysis in English or in both English and Chinese. The scope of the journal includes:

- ◆ New trends in catalysis for applications in energy production, environmental protection, and production of new materials, petroleum chemicals, and fine chemicals;
 - ◆ Scientific foundation for the preparation and activation of catalysts of commercial interest or their representative models;
 - ◆ Spectroscopic methods for structural characterization, especially methods for in situ characterization;
 - ◆ New theoretical methods of potential practical interest and impact in the science and applications of catalysis and catalytic reaction;
 - ◆ Relationship between homogeneous and heterogeneous catalysis;
 - ◆ Theoretical studies on the structure and reactivity of catalysts.
- ◆ The journal also accepts contributions dealing with photo-catalysis, bio-catalysis, and surface science and chemical kinetics issues related to catalysis.

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- **Reviews** deal with topics of current interest in the areas covered by this journal. Reviews are surveys, with entire, systematic, and important information, of recent progress in important topics of catalysis. Rather than an assemblage of detailed information or a complete literature survey, a critically selected treatment of the material is desired. Unsolved problems and possible developments should also be discussed. Authors should have published articles in the field. Reviews should have more than 80 references.
- **Communications** rapidly report studies with significant innovation and major academic value. They are limited to four Journal pages. After publication, their full-text papers can also be submitted to this or other journals.
- **Articles** are original full-text reports on innovative, systematic and completed research on catalysis.
- **Highlights** describe and comment on very important new results in the original research of a third person with a view to highlight their significance. The results should be presented clearly and concisely without the comprehensive details required for an original article.
- **Perspectives** are short reviews of recent developments in an established or developing topical field. The authors should offer a critical assessment of the trend of the field, rather than a summary of literatures.
- **Viewpoints** describe the results of original research in general in some area, with a view to highlighting the progress, analyzing the major problems, and commenting the possible research target and direction in the future.

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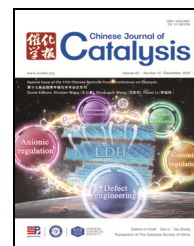
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Guest Editors: Xincheng Wang, Shuangyin Wang, Fuwei Li

Chinese Journal of Catalysis

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Editorial

Chin. J. Catal., 2019, 40: 1821 doi: S1872-2067(19)63491-1

Preface to the Special Issue of the 17th Chinese National Youth Conference on Catalysis (17th CNYCC)

Xincheng Wang, Shuangyin Wang, Fuwei Li

Fuzhou University; Hunan University; Lanzhou Institute of Chemical Physics, Chinese Academy of Sciences



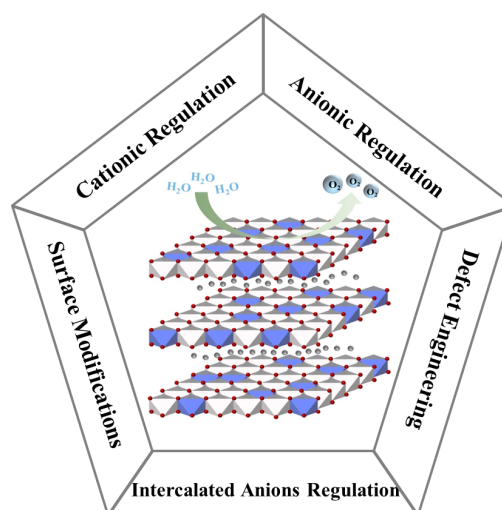
Review

Chin. J. Catal., 2019, 40: 1822–1840 doi: S1872-2067(19)63284-5

Electronic structure regulation on layered double hydroxides for oxygen evolution reaction

Liangliang Huang, Yuqin Zou *, Dawei Chen *, Shuangyin Wang *
Hunan University; Qingdao University of Science and Technology;
Shenzhen University

A review summarized recent advances in electronic structure regulations, including cationic regulation, anionic regulation, defect engineering, intercalated anions regulating, surface modifications, on LDHs as electrocatalysts for OER. Schematic summarizing the recent advances in electronic structure regulation, including cationic regulation, anionic regulation, defect engineering, intercalated anion regulation, and surface modifications on LDHs as electrocatalysts for OER.



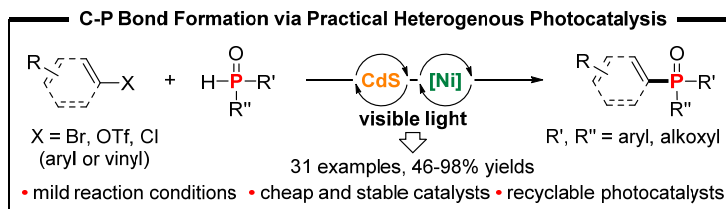
Communications

Chin. J. Catal., 2019, 40: 1841–1846 doi: S1872-2067(19)63379-6

Practical C–P bond formation via heterogeneous photoredox and nickel synergetic catalysis

Ernest Koranteng, Yi-Yin Liu, Si-Yue Liu, Qiang-Xian Wu, Liang-Qiu Lu *, Wen-Jing Xiao

Central China Normal University; Lanzhou Institute of Chemical Physics, Chinese Academy of Sciences



A carbon-phosphorus bond formation reaction was developed by merging heterogeneous photocatalysis and nickel catalysis. This protocol features mild reaction conditions, a broad substrate scope, recyclability of photocatalysts, and inexpensive catalysts, thus defining the practical and economic proprieties of the present catalyst system.

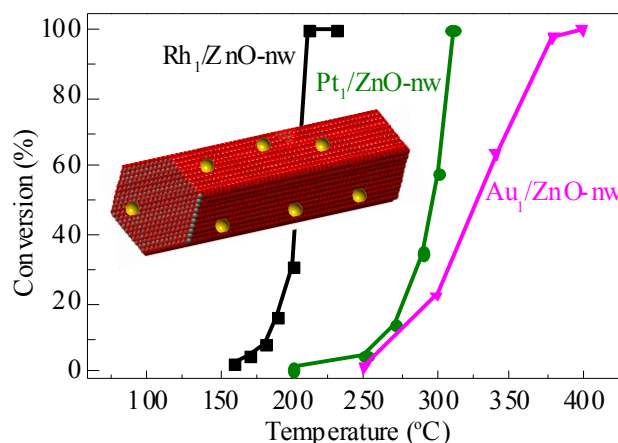
Chin. J. Catal., 2019, 40: 1847–1853 doi: S1872-2067(19)63411-X

Superior activity of Rh₁/ZnO single-atom catalyst for CO oxidation

Bing Han, Rui Lang, Hailian Tang, Jia Xu, Xiang-Kui Gu *, Botao Qiao *, Jingyue(Jimmy) Liu *

Dalian Institute of Chemical Physics, Chinese Academy of Sciences, China; University of Chinese Academy of Sciences, China; Arizona State University, USA; Wayne State University, USA; Dalian National Laboratory for Clean Energy, China

The ZnO nanowires supported Rh single-atom catalyst exhibits the highest activity for CO oxidation among the Pt and Au single-atom catalysts with extremely low metal loading.



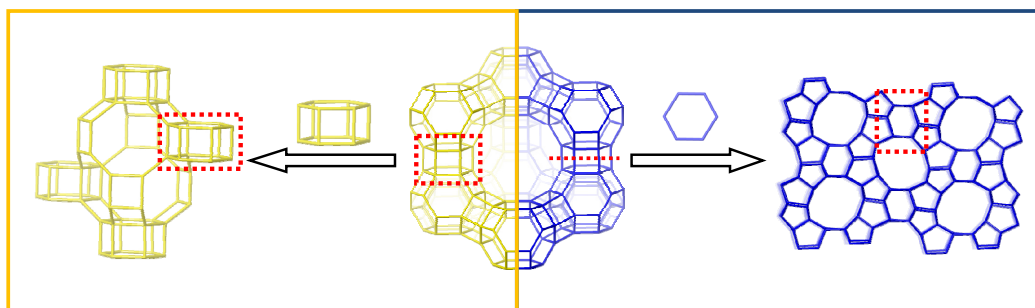
Articles

Chin. J. Catal., 2019, 40: 1854–1859 doi: S1872-2067(19)63287-0

Interzeolite transformation from FAU to CHA and MFI zeolites monitored by UV Raman spectroscopy

Juan Zhang, Yueying Chu, Xiaolong Liu, Hao Xu, Xiangju Meng *, Zhaochi Feng *, Feng-Shou Xiao *

Zhejiang University; Dalian Institute of Chemical Physics, Chinese Academy of Sciences; Wuhan Institute of Physics and Mathematics; Sun Yat-Sun University



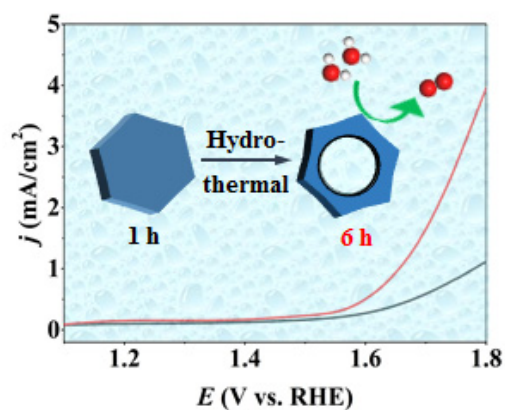
The illustration shows the behavior of double 6-membered rings (D6R) units of the FAU zeolite for the formation of the target CHA (yellow line) and MFI (blue line) zeolites, where the dotted-line squares indicate the key species (D6R and single 6-membered rings (S6R)) during interzeolite transformation.

Chin. J. Catal., 2019, 40: 1860–1866 doi: S1872-2067(19)63306-1

Controlled synthesis of hexagonal annular Mn(OH)F for water oxidation

Yan Zhang †, Yingdong Chen †, Zuozhong Liang, Jing Qi, Xueqing Gao,
Wei Zhang*, Rui Cao*
Shaanxi Normal University; Renmin University of China

The hexagonal rings of Mn(OH)F shows higher electrochemical OER performance than the hexagonal solid sample in 1 mol/L KOH solutions.

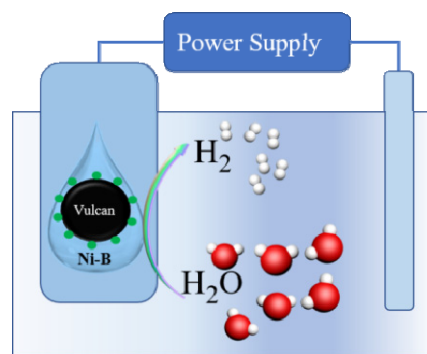


Chin. J. Catal., 2019, 40: 1867–1873 doi: S1872-2067(19)63331-0

Ultrafine Ni-B nanoparticles for efficient hydrogen evolution reaction

Ting Huang, Tao Shen, Mingxing Gong, Shaofeng Deng, Chenglong Lai,
Xupo Liu, Tonghui Zhao, Lin Teng, Deli Wang*
Huazhong University of Science and Technology

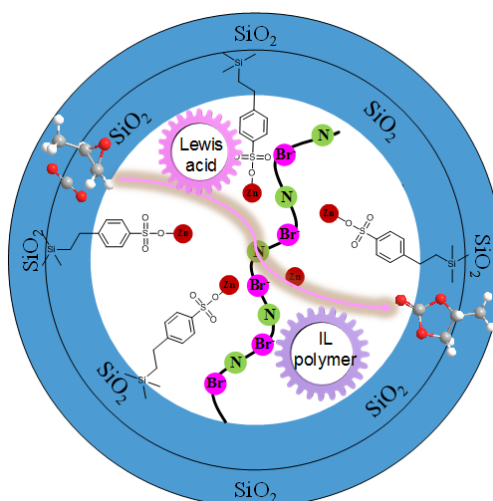
Ultrafine Ni-B nanoparticles can improve the reaction rate and efficiency of the electrocatalytic hydrogen evolution to produce high-purity hydrogen.



Chin. J. Catal., 2019, 40: 1874–1883 doi: S1872-2067(19)63340-1

Incorporation of flexible ionic polymers into a Lewis acid-functionalized mesoporous silica for cooperative conversion of CO₂ to cyclic carbonates

Ruqun Guan, Xiaoming Zhang*, Fangfang Chang, Nan Xue, Hengquan Yang*
Shanxi University

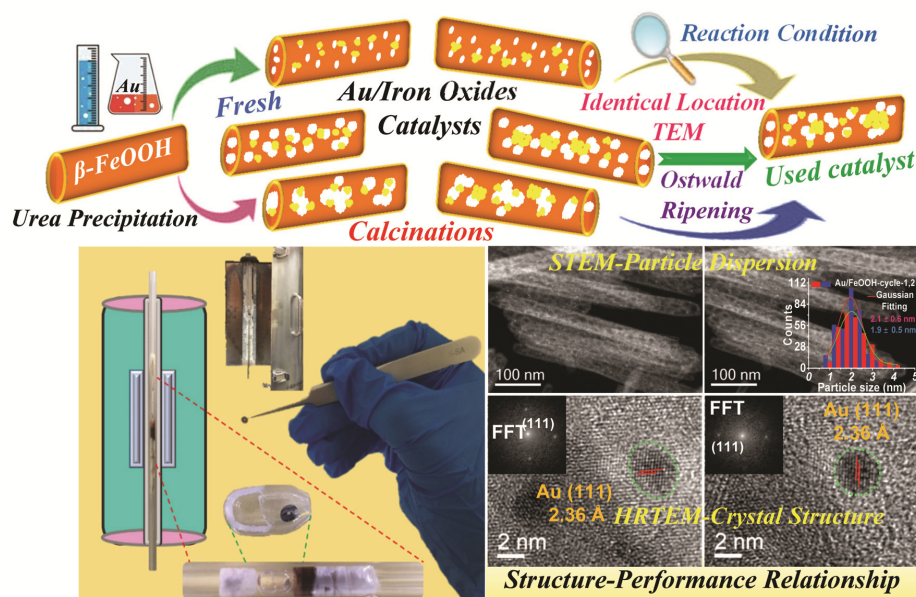


Flexible ionic polymers were confined in the nanopores of a Lewis acid-functionalized mesoporous silica for facilitating the cooperative effects and accelerating the catalytic activity in the cycloaddition of CO₂ with epoxides.

Chin. J. Catal., 2019, 40: 1884–1894 doi: S1872-2067(19)63374-7

Tailoring the surface structures of iron oxide nanorods to support Au nanoparticles for CO oxidation

Wen Shi [†], Tongtong Gao [†], Liyun Zhang, Yanshuang Ma, Zhongwen Liu ^{*}, Bingsen Zhang ^{*}
*Institute of Metal Research, Chinese Academy of Sciences; Shaanxi Normal University;
 University of Science and Technology of China*

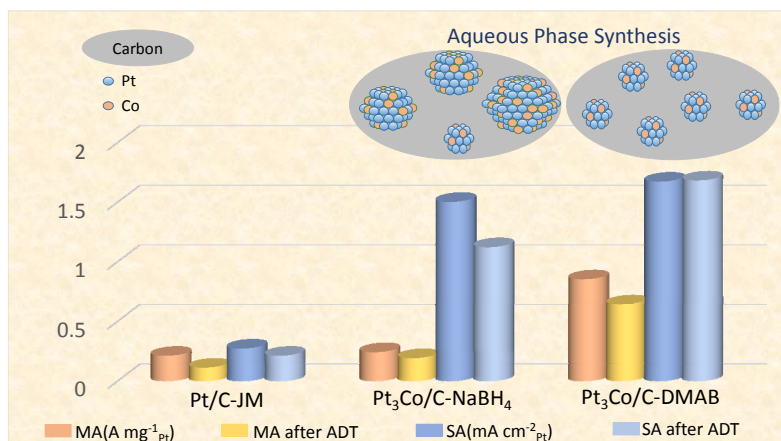


Iron oxides with varied surface properties were synthesized by the calcination of the β -FeOOH precursor at different temperatures; the iron oxides were further used as supports for Au NPs to obtain a Au/iron oxide series of catalysts. The correlation between the iron oxides with varied surface properties and supported Au NPs in CO oxidation was established after detailed characterizations. Moreover, the structure evolution of the iron oxide supported Au NPs catalysts during the CO oxidation was studied by the *gas-phase* identical location transmission electron microscopy (IL-TEM) method. By comparing and quantifying a series of TEM images, the behavior of the supported Au NPs under certain reaction conditions, and the relation between the structure evolution of the catalysts and the surface properties were further explored.

Chin. J. Catal., 2019, 40: 1895–1903 doi: S1872-2067(19)63338-3

An alternate aqueous phase synthesis of the Pt₃Co/C catalyst towards efficient oxygen reduction reaction

Jinjing Huang, Chen Ding, Yongqiang Yang, Gang Liu, Wen-Bin Cai ^{*}
*Fudan University; Institute of Metal Research, CAS;
 University of Science and Technology of China*

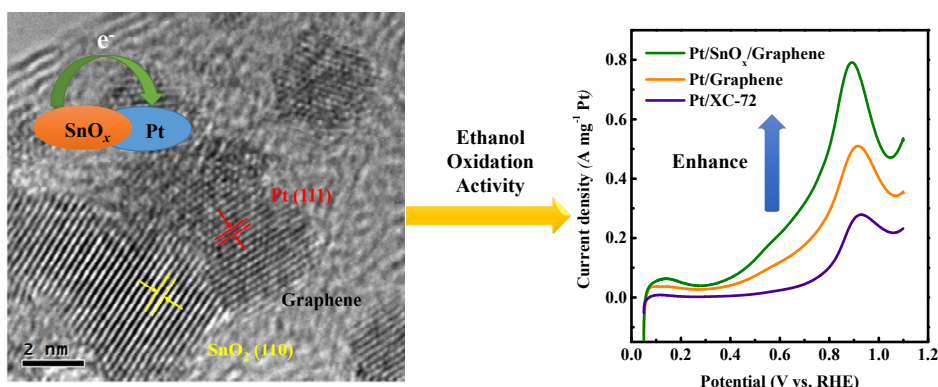


Pt₃Co/C with well-controlled size, dispersion and alloying degree was obtained using aqueous phase synthesis with DMAB being the reductant, exhibiting excellent electrocatalytic activity and durability for ORR.

Chin. J. Catal., 2019, 40: 1904–1911 doi: S1872-2067(19)63442-X

Tuning the electronic structure of platinum nanocrystals towards high efficient ethanol oxidation

Sheng Zhang *, Hai Liu, Na Zhang, Rong Xia, Siyu Kuang, Geping Yin, Xinbin Ma
Tianjin University; Harbin Institute of Technology; Beijing Aerospace Propulsion Institute

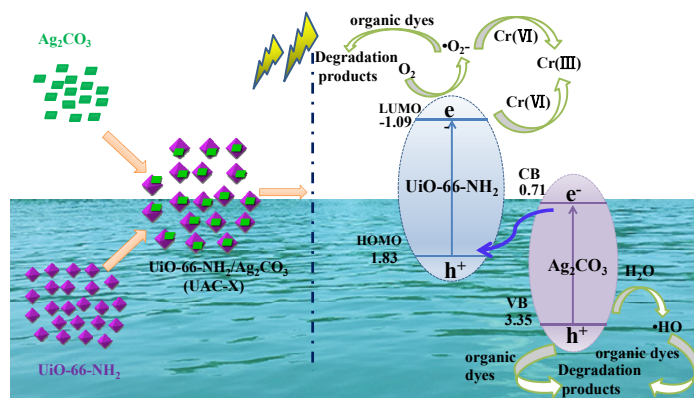


Highly dispersed Pt/SnO_x heterostructure on graphene shows excellent performance for ethanol electro-oxidation, which was attributed to the cooperative electron-donation effect from both SnO_x and graphene support to Pt nanocrystals.

Chin. J. Catal., 2019, 40: 1912–1923 doi: S1872-2067(19)63433-9

Facile fabrication and enhanced photocatalytic performance of visible light responsive UiO-66-NH₂/Ag₂CO₃ composite

Yun-Cai Zhou, Xue-Yan Xu, Peng Wang, Huifen Fu, Chen Zhao, Chong-Chen Wang *
Beijing University of Civil Engineering and Architecture



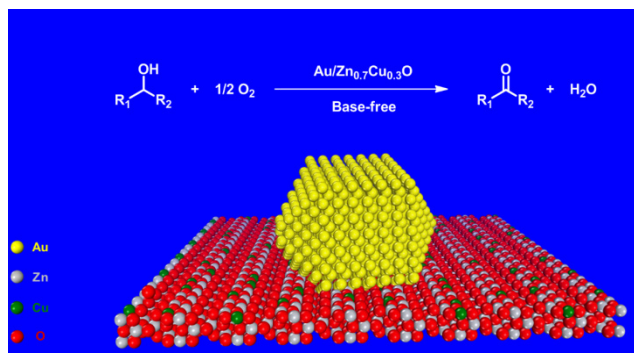
The UiO-66-NH₂/Ag₂CO₃ composite (UAC-X) displayed outstanding photocatalytic activity due to the effective separation of photo-induced electrons and holes over the composite, which was contributed to the formed direct Z-scheme heterojunctions.

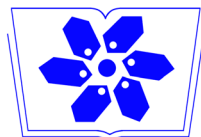
Chin. J. Catal., 2019, 40: 1924–1933 doi: S1872-2067(19)63429-7

Highly efficient base-free aerobic oxidation of alcohols over gold nanoparticles supported on ZnO-CuO mixed oxides

Wei Wang, Yan Xie *, Shaohua Zhang, Xing Liu, Liyun Zhang, Bingsen Zhang, Masatake Haruta, Jiahui Huang *
Dalian Institute of Chemical Physics, Chinese Academy of Sciences, China; University of Chinese Academy of Sciences, China; Institute of Metal Research, Chinese Academy of Sciences, China; Tokyo Metropolitan University, Japan

The Au/Zn_{0.7}Cu_{0.3}O catalyst showed excellent catalytic performance for aerobic oxidation of a wide range of alcohols, affording the corresponding carbonyl compounds with high yields under mild conditions without base.





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第十七届全国青年催化学术会议专刊

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张艳, 陈迎冬, 梁作中, 齐静, 高学庆, 张伟, 曹睿

1867

超小Ni-B纳米颗粒的合成与电催化性能研究

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关茹群, 张晓明, 常芳芳, 薛楠, 杨恒权

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黄金晶, 丁辰, 杨勇强, 刘岗, 蔡文斌

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张生, 刘海, 张娜, 夏荣, 况思宇, 尹鸽子, 马新宾

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