



Chinese Journal of Catalysis

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万方数据



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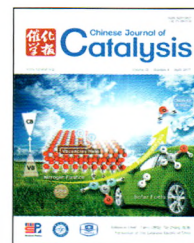


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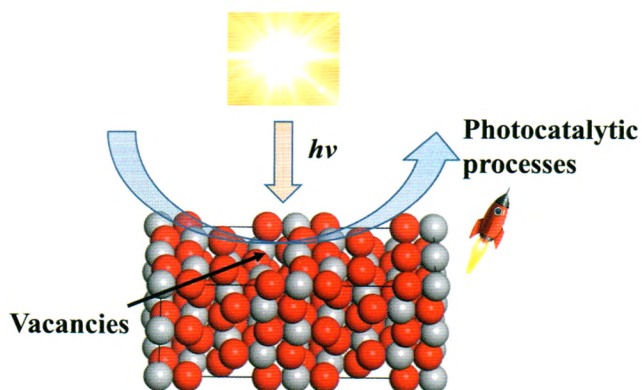
Minireview

Chin. J. Catal., 2017, 38: 617–624 doi: 10.1016/S1872-2067(17)62821-3

Engineering vacancies for solar photocatalytic applications

Mingce Long *, Longhui Zheng
Shanghai Jiao Tong University

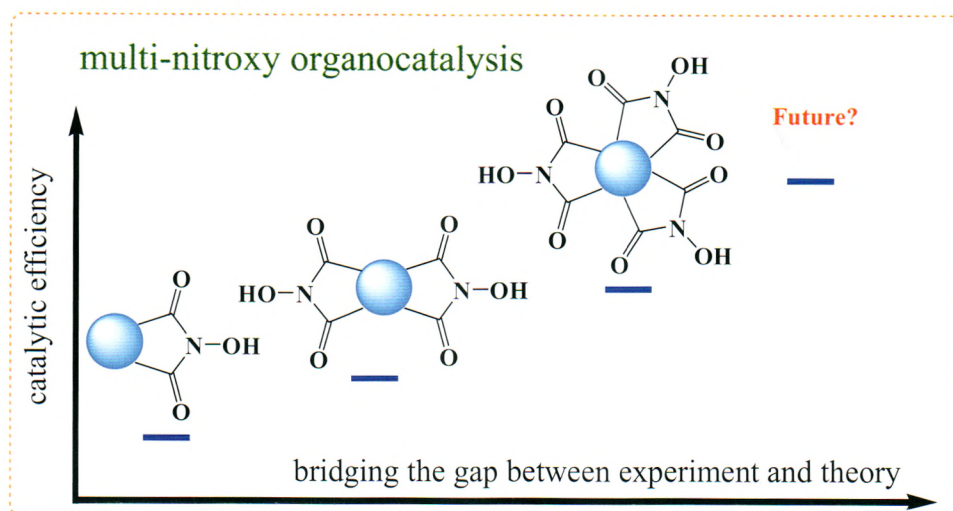
Engineering of vacancies represents an effective strategy to boost photocatalytic processes for solar energy applications. This mini-review analyzes the latest progress in the engineering of anion and cation vacancies in the field of photocatalysis.



Review

Chin. J. Catal., 2017, 38: 625–635 doi: 10.1016/S1872-2067(17)62777-3

Selective aerobic oxidation promoted by highly efficient multi-nitroso organocatalysts

Kexian Chen *, Haiying Xie
Zhejiang Gongshang University; Zhejiang NHU Company Ltd.

The significant advances in efficient aerobic oxidation catalyzed by multi-nitroso organocatalysts are highlighted in this review, with an emphasis on rational design strategies for, and potential applications of multi-nitroso organocatalysts.

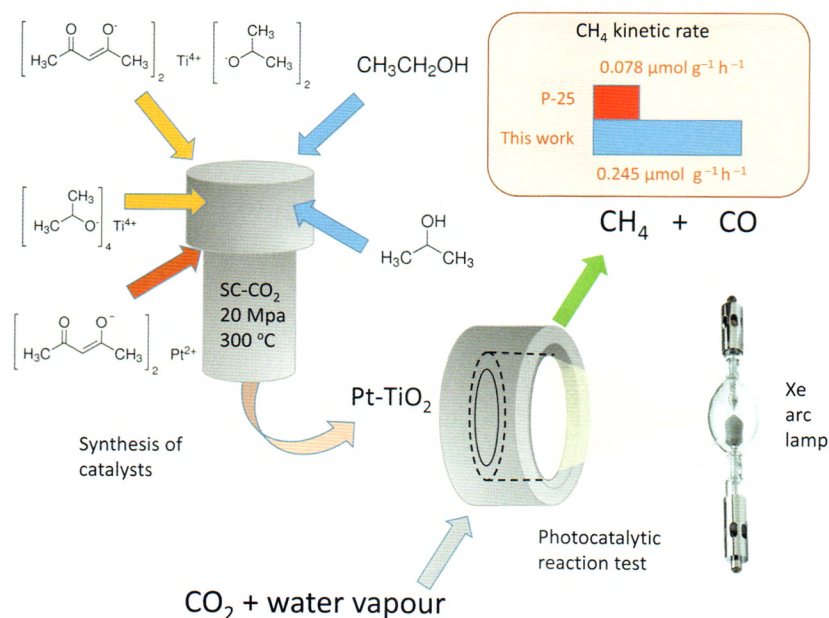
Articles

Chin. J. Catal., 2017, 38: 636–650 doi: 10.1016/S1872-2067(17)62766-9

Supercritical synthesis of platinum-modified titanium dioxide for solar fuel production from carbon dioxide

Susana Tostón, Rafael Camarillo*, Fabiola Martínez, Carlos Jiménez, Jesusa Rincón

University of Castilla-La Mancha, Spain



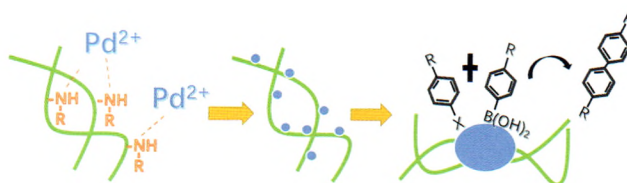
The catalytic properties of Pt/TiO₂ particles can be tuned by simply changing operating parameters like the type of titania precursor and/or hydrolysis agent when their hydrothermal formation reaction is accomplished in supercritical CO₂. The synthesised particles exhibit superior performance to that of a commercial catalyst in the photocatalytic reduction of CO₂ to methane.

Chin. J. Catal., 2017, 38: 651–657 doi: 10.1016/S1872-2067(17)62797-9

Simple synthesis of sub-nanometer Pd clusters: High catalytic activity of Pd/PEG-PNIPAM in Suzuki reaction

Zhe Chen, Yu Liang, Da-Shuang Jia, Zhi-Min Cui*, Wei-Guo Song*
North China Electric Power University; Beihang University; Institute of Chemistry, Chinese Academy of Sciences

A temperature-responsive copolymer, i.e., PEG-PNIPAM, was synthesized and stabilized ultra-small Pd clusters were formed on it by direct reduction. The sub-2-nm Pd nanoclusters showed outstanding catalytic activities in Suzuki reactions.

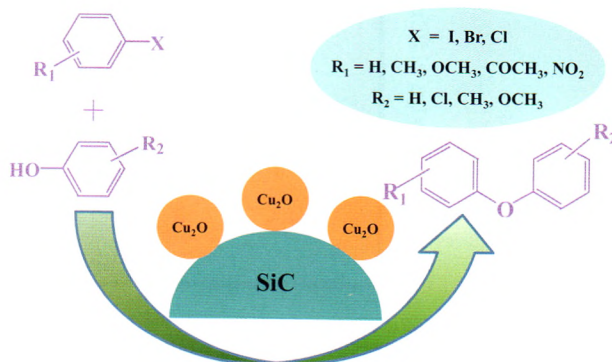


Chin. J. Catal., 2017, 38: 658–664 doi: 10.1016/S1872-2067(17)62785-2

Cu₂O/SiC as efficient catalyst for Ullmann coupling of phenols with aryl halides

Yibing Wang, Xiaoning Guo, Manqian Lü, Zhaoyang Zhai, Yingyong Wang*, Xiangyun Guo
Institute of Coal Chemistry, Chinese Academy of Sciences; University of Chinese Academy of Sciences; Dalian University of Technology

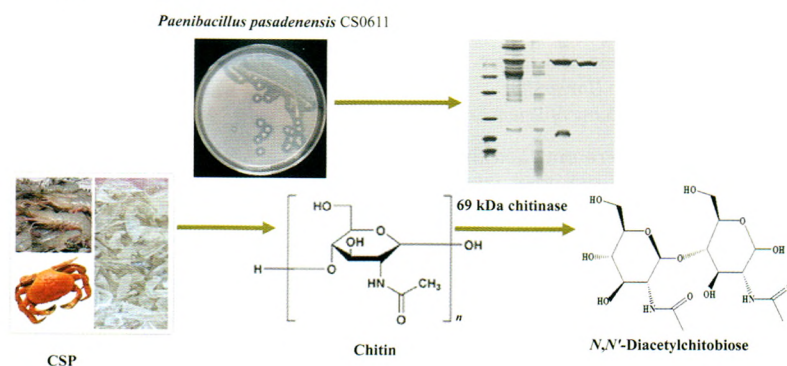
A Cu₂O/SiC heterogeneous catalyst was highly active in Ullmann-type C–O cross-coupling reactions of aryl halides and phenols, with a turnover frequency of up to 1136 h⁻¹, and showed general applicability to Ullmann cross-coupling reactions.



Chin. J. Catal., 2017, 38: 665–672 doi: 10.1016/S1872-2067(17)62787-6

Purification and characterization of alkaline chitinase from *Paenibacillus pasadenensis* CS0611

Xiaoxiao Guo, Pei Xu, Minhua Zong, Wenyong Lou *
South China University of Technology

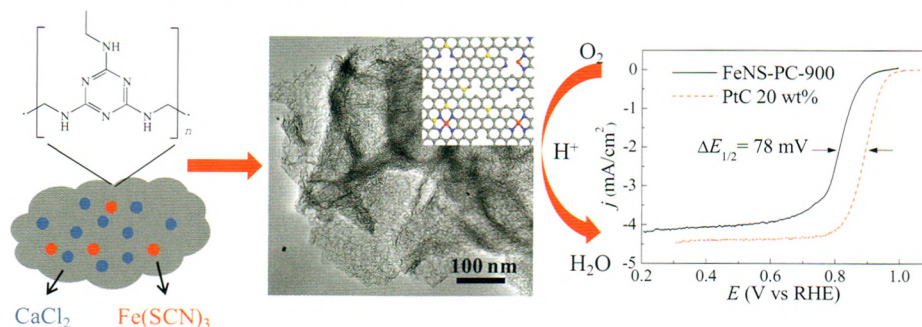


A highly efficient chitinase from *Paenibacillus pasadenensis* CS0611 was purified and characterized for the first time. Furthermore, the main product (GlcNAc)₂ was studied using different substrates.

Chin. J. Catal., 2017, 38: 673–682 doi: 10.1016/S1872-2067(17)62807-9

Fe, N, S-doped porous carbon as oxygen reduction reaction catalyst in acidic medium with high activity and durability synthesized using CaCl₂ as template

Chi Chen, Zhiyou Zhou, Yucheng Wang, Xue Zhang, Xiaodong Yang, Xinsheng Zhang *, Shigang Sun *
East China University of Science and Technology; Xiamen University

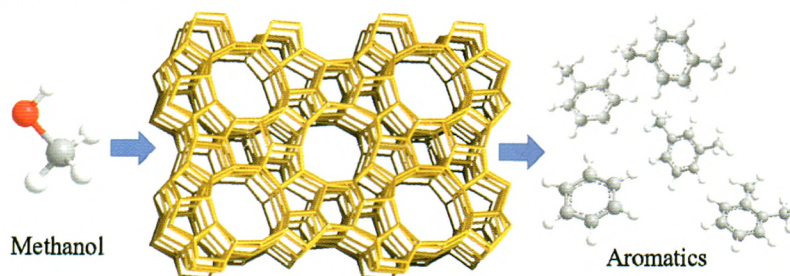


Fe, N, S-doped porous carbon was synthesized by direct carbonization of a mixture of melamine formaldehyde resin and Fe(SCN)₃ using CaCl₂ as a template. The porous carbon showed high activity and durability in the oxygen reduction reaction.

Chin. J. Catal., 2017, 38: 683–690 doi: 10.1016/S1872-2067(17)62791-8

Correlation between H-ZSM-5 crystal size and catalytic performance in the methanol-to-aromatics reaction

Lingzhi Yang, Zhiyuan Liu, Zhi Liu, Wenyong Peng, Yunqi Liu *, Chenguang Liu *
China University of Petroleum (East China)



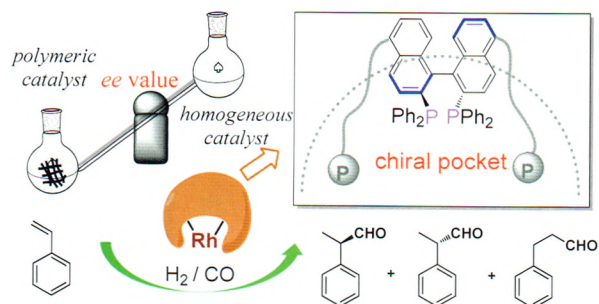
The effect of H-ZSM-5 crystal size on the methanol-to-aromatics reaction has been systematically investigated. Nano-sized hierarchical H-ZSM-5 shows enhanced catalytic activity attributed to the presence of auxiliary meso- and macropores and larger external surface areas.

Chin. J. Catal., 2017, 38: 691–698 doi: 10.1016/S1872-2067(17)62790-6

Porous Rh/BINAP polymers as efficient heterogeneous catalysts for asymmetric hydroformylation of styrene: Enhanced enantioselectivity realized by flexible chiral nanopockets

Tao Wang, Wenlong Wang, Yuan Lyu *, Kai Xiong, Cunyao Li, Hao Zhang, Zhuangping Zhan, Zheng Jiang, Yunjie Ding *
Dalian Institute of Chemical Physics, Chines Academy of Sciences; University of Chinese Academy of Sciences; Xiamen University; Shanghai Institute of Applied Physics, Chines Academy of Sciences

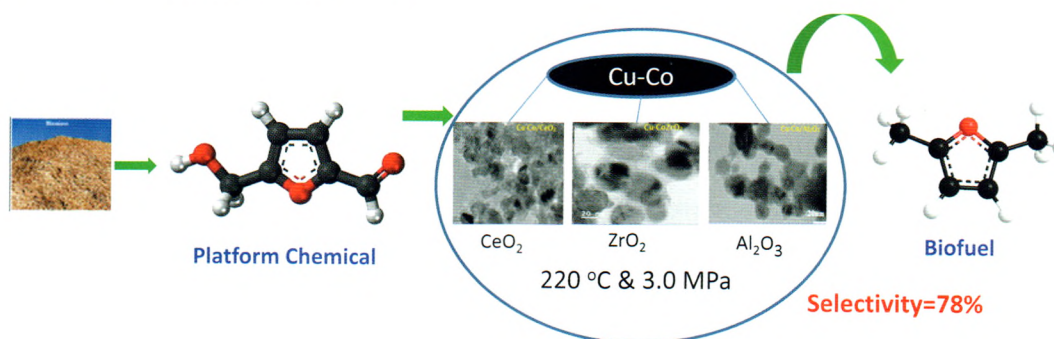
A series of polymer-supported Rh catalysts were obtained through the copolymerization of (*S*)-5,5'-divinyl-BINAP and other co-monomers. The heterogeneous catalyst exhibited higher enantioselectivity than the corresponding homogeneous complex owing to the presence of flexible chiral nanopockets.



Chin. J. Catal., 2017, 38: 699–709 doi: 10.1016/S1872-2067(17)62789-X

Influence of supports for selective production of 2,5-dimethylfuran via bimetallic copper-cobalt catalyzed 5-hydroxymethylfurfural hydrogenolysis

Sanjay Srivastava, G. C. Jadeja, Jigisha Parikh *
Sardar Vallabhbhai National Institute of Technology, India

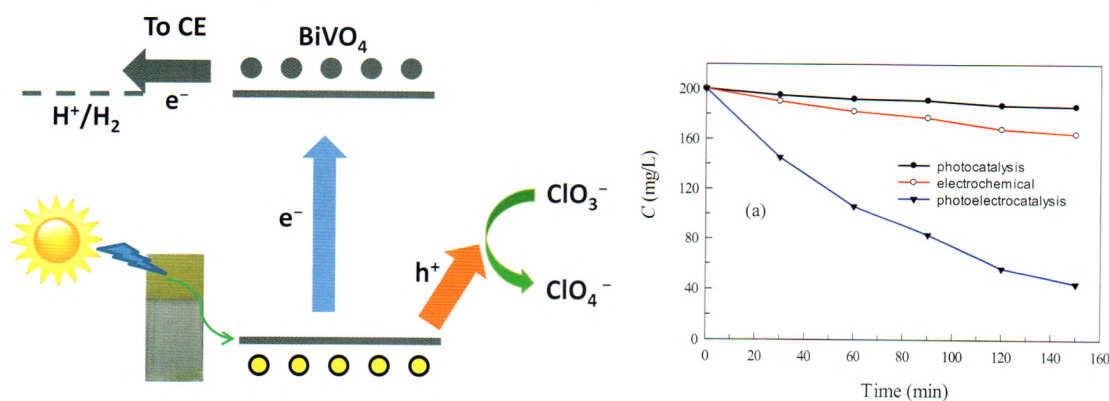


The present study explored the use of non-noble, environmentally benign, bimetallic copper-cobalt catalysts in the selective production of 2,5-dimethylfuran via 5-hydroxymethylfurfural hydrogenolysis.

Chin. J. Catal., 2017, 38: 710–716 doi: 10.1016/S1872-2067(17)62788-8

Synthesis, characterization and application of BiVO₄ photoanode for photoelectrochemical oxidation of chlorate

Seyed Ghorban Hosseini *, Saeid Safshekan
Malek Ashtar University of Technology, Iran; University of Mazandaran, Iran



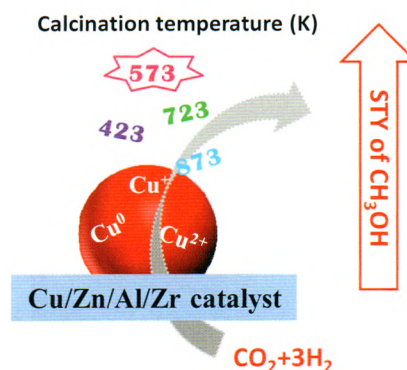
We have synthesized and fully characterized BiVO₄ on FTO substrate. Electrochemical, photochemical and photoelectrochemical oxidation of chlorate was investigated. High rate constant of chlorate oxidation was obtained by photoelectrochemical method, as compared to other two methods.

Chin. J. Catal., 2017, 38: 717–725 doi: 10.1016/S1872-2067(17)62793-1

CO₂ hydrogenation to methanol over Cu/Zn/Al/Zr catalysts prepared by liquid reduction

Xiaosu Dong, Feng Li*, Ning Zhao, Yisheng Tan, Junwei Wang, Fukui Xiao
*Institute of Coal Chemistry, Chinese Academy of Sciences;
 University of Chinese Academy of Sciences;
 National Engineering Research Center for Coal-based Synthesis*

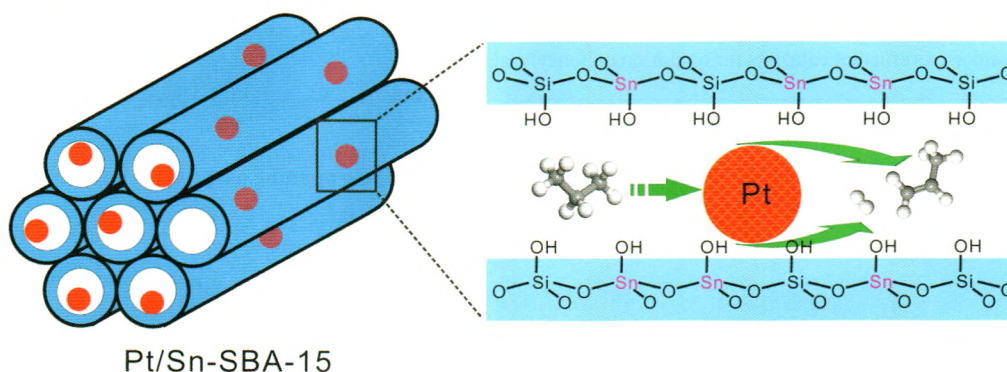
Cu/Zn/Al/Zr catalysts containing Cu²⁺, Cu⁺ and Cu⁰ were prepared via a liquid reduction method and then calcined at different temperatures. These materials were subsequently applied to the synthesis of methanol by the hydrogenation of CO₂ to assess the effects of varying the calcination temperature.



Chin. J. Catal., 2017, 38: 726–735 doi: 10.1016/S1872-2067(17)62805-5

Ordered mesoporous Sn-SBA-15 as support for Pt catalyst with enhanced performance in propane dehydrogenation

Bing Li, Zhenxin Xu, Wei Chu, Shizhong Luo*, Fangli Jing*
Sichuan University, China; Université de Strasbourg, France

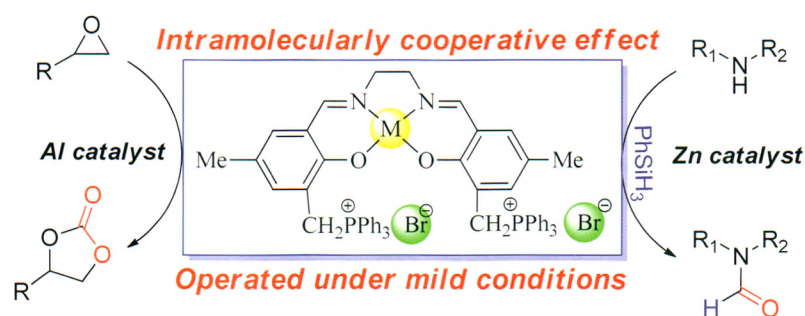


A facile one-pot method was used to synthesize ordered mesoporous Sn-SBA-15-supported Pt catalysts with stable SnO_x species and enhanced promotion by Sn species. The materials gave excellent catalytic performance and good resistance to coking in propane dehydrogenation.

Chin. J. Catal., 2017, 38: 736–744 doi: 10.1016/S1872-2067(17)62802-X

Transformation of carbon dioxide into valuable chemicals over bifunctional metallosalen catalysts bearing quaternary phosphonium salts

Wuying Zhang, Rongchang Luo*, Qihang Xu, Yaju Chen, Xiaowei Lin, Xiantai Zhou, Hongbing Ji[#]
Sun Yat-sen University; Shenzhen Polytechnic



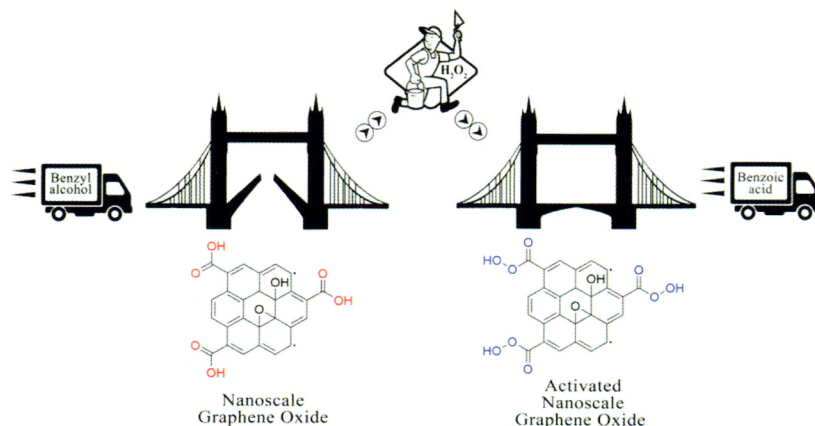
The use of bifunctional metallosalen complexes bearing quaternary phosphonium salts under solvent-free, mild conditions without co-catalysts exhibited high efficiencies catalyzing both the CO₂-based *N*-formylation reaction of amines from hydrosilanes and the cycloaddition of CO₂ to epoxides.

Chin. J. Catal., 2017, 38: 745–757 doi: 10.1016/S1872-2067(17)62776-1

Nanoscale graphene oxide sheets as highly efficient carbocatalysts in green oxidation of benzylic alcohols and aromatic aldehydes

Alireza Sedrpoushan*, Masoud Heidari, Omid Akhavan

Iranian Research Organization for Science and Technology (IROST); Sharif University of Technology



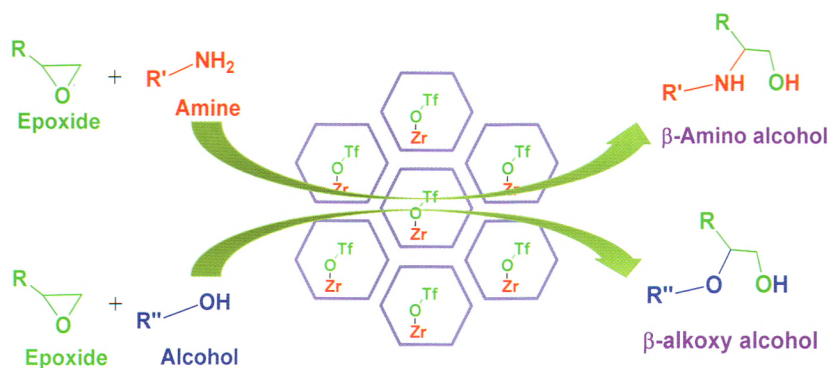
Nanoscale graphene oxide sheets as active graphene-based carbocatalysts with peroxidase-like activity convert to peroxybenzoic acid in the presence of H_2O_2 , and act as efficient catalysts for oxidation of benzylic alcohols.

Chin. J. Catal., 2017, 38: 758–766 doi: 10.1016/S1872-2067(17)62794-3

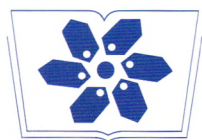
Zirconium triflate grafted on SBA-15 as a highly efficient solid acid catalyst for ring opening of epoxides by amines and alcohols

Kamlesh N. Tayade, Lianye Wang, Sensen Shang, Wen Dai, Manish Mishra, Shuang Gao*

Dalian Institute of Chemical Physics, Chinese Academy of Sciences, China; Dharmsinh Desai University, India



We report the synthesis of zirconium triflate grafted mesoporous SBA-15 (ZrTf/S) using a simple one-pot-two-step synthesis. ZrTf/S showed excellent activity for ring opening of epoxides by various amines and alcohols under ambient conditions.



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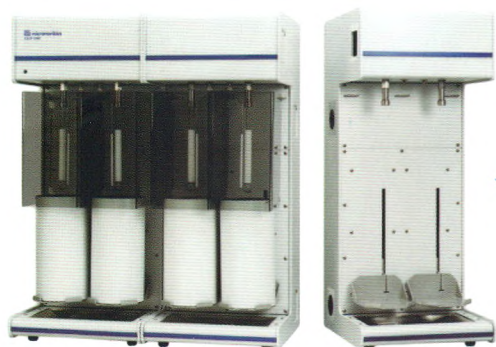
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