



Department: School of Chemical Engineering

Professional field: Chemical engineering and technology

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Profile

Education

2003: Ph. D., Physical Chemistry, Fudan university, China.

2000: M. S. Physical Chemistry, Institute of Modern Physics, Northwest University, China.

1997: B.S., Material Chemistry, Northwest University, China.

Academic Experience

2010-present: Professor, School of Chemical Engineering, ECUST, China.

2007-2009: Postdoctoral Research Assistant, Pacific Northwest National Lab, USA.

2006-2007: Visiting Scholar, University of California, San Diego, USA.

2005-2006: Postdoctoral Research Assistant, Technical University of Denmark, Denmark.

2003-2005: Postdoctoral Research Assistant, Jacobs University Bremen, Bremen, Germany.

Research Field

At present, it is mainly engaged in methane catalytic conversion (methane carbon dioxide dry gas reforming to synthesis gas and methane chlorine oxidation to CH_3Cl , CH_3Cl catalytic to ethylene, propylene, etc.) and molecular sieve catalysis (n-alkane isomerization, dimethyl ether to olefin, dimethyl ether homologation, aromatics alkylation, etc.). In the research of preparation and catalysis of multi-stage porous zeolite materials, many kinds of multi-stage porous zeolite materials have been developed and used in catalytic reaction. At present, alkylation of benzene and methanol has been applied in industry.

Research results and selected published papers

1. T. Yue, W. Liu, L.Y. Li, X.L. Zhao, K.K. Zhu*, X.G. Zhou and W.M. Yang. Crystallization of ATO silicoaluminophosphates nanocrystalline spheroids using a phase-transfer synthetic strategy for n-heptane hydroisomerization. J. Catal., in press. (2018)
2. H.B. Zhou, T.T. Zhang, Z.J. Sui, Y.A. Zhu, C. Han, K.K. Zhu* and X.G. Zhou. A single source method to generate Ru-Ni-MgO catalysts for methane dry reforming and the kinetic effect of Ru on carbon deposition and gasification. Appl. Catal. B-Environ., 233, 143-159 (2018)
3. Y.L. Wang, X.X. Wang, Y.A. Zhu*, K.K. Zhu*, D. Chen and X.G. Zhou. Shape Selectivity in Acidic Zeolite Catalyzed 2-pentene Skeletal Isomerization from First Principles. Catal. Today. In press. (2018)
4. D.L. Jin, G.H. Ye, J.W. Zheng, W.M. Yang, K.K. Zhu*, M.O. Coppins* and X.G. Zhou. Hierarchical Silicoaluminophosphate Catalysts with Enhanced Hydroisomerization Selectivity by Directing the Orientated Assembly of Pre-manufactured Building Blocks. ACS Catal., 7, 5887-5902 (2017)
5. Z.T. Liu, P. Ma, J. Ulstrup, Q. Chi *, K.K. Zhu* and X.G. Zhou. A new class of two-dimensional bimetallic complex nanoplatelets for high energy-density and electrochemically stable hybrid type supercapacitors. Nano. Res., 10, 3018-3034 (2017)
6. D.L. Jin, Z.T. Liu, J.W. Zheng, W.M. Hua*, J. Chen, K.K. Zhu* and X.G. Zhou. Nonclassical from-Shell-to-Core Growth of Hierarchically Organized SAPO-11 with Enhanced Catalytic Performance in Hydroisomerization of n-Heptane. RSC Adv., 6, 32523-32533 (2016)
7. J.W. Zheng, W.P. Zhang, Z.T. Liu, Q.S. Huo, K.K. Zhu*, X.G. Zhou and W.K. Yuan. Unraveling the Non-classic Crystallization of SAPO-34 in A Dry Gel System towards Controlling Meso-structure with the Assistance of Growth Inhibitor: Growth Mechanism, Hierarchical Structure Control and Catalytic Properties. Micropor. Mesopor. Mater., 225, 74-87 (2016)
8. K.K. Zhu, and X.G. Zhou*. Manipulating the architecture of zeolite catalysts for enhanced mass transfer. Curr. Opin. Chem. Eng., 9, 42-48 (2015)
9. X.L. Fan, Z.T. Liu, Y.A. Zhu, G.S. Tong, J.D. Zhang, C. Engelbrekt, J. Ulstrup, K.K. Zhu* and X.G. Zhou. Tuning the Composition of Metastable $\text{Co}_{1-x}\text{Ni}_x\text{Mg}_{100-x-y}(\text{OH})(\text{OCH}_3)$ Nanoplates for Optimizing Robust Methane Dry Reforming Catalyst. J. Catal., 330, 106-119 (2015)
10. W. Song, Z.T. Liu, L.P. Liu, A.L. Skov, N. Song, G. Xiong *, K.K. Zhu* and X.G. Zhou. A solvent evaporation route towards fabrication of hierarchically porous ZSM-11 with highly accessible mesopores. RSC Adv., 5, 31195-31204 (2015)
11. G.S. Hutchings, Y. Zhang, J. Li, B.T. Yonemoto, X.G. Zhou, K.K. Zhu* and F. Jiao*. In situ Formation of Non-supported Cobalt Oxide Nanocubanes as Efficient Oxygen Evolution Catalysts. J. Am. Chem. Soc., 137, 4223-4229 (2015) ISI highly cited article.
12. M.J. Yu, Y.A. Zhu, Y. Lu, G.S. Tong, K.K. Zhu* and X.G. Zhou. The promoting role of Ag in Ni-CeO₂ catalyzed CH₄-CO₂ dry reforming reaction. Appl. Catal. B., 165, 43-56 (2015)
13. J.W. Zheng, Z.T. Liu, K.K. Zhu, X.G. Zhou and W.K. Yuan, Presentation, 'Preparation of hierarchically porous SAPO-34 molecular sieve by orientation attachment growth', Shanghai, China, Sunday October 25, 2015 - Wednesday October 28, 2015, Chinese Zeolite Association.
14. K.K. Zhu, Presentation, 'Dynamic assembly and synthesis of hierarchical SAPO-11 molecular sieves and their effects on hydroisomerization selectivity', Wuhan, China, Sunday October 25, 2015 - Wednesday October 28, 2015, Chinese Zeolite Association