

# 从催化导向性基础研究到工业应用的若干创新思路与实践 ——庆祝闵恩泽先生 90 华诞

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**摘要** 闵恩泽先生曾经指出:开展导向性基础研究对研发新技术及其实现工业应用至关重要.将高性能催化材料和化学工程技术的结合是石油化工技术创新的重要途径之一.在传统的石油化工领域引入和集成新材料、新工艺与新过程,可有力地推动石油化工技术的发展.本文对近年来在多孔催化新材料及若干石油化工关键催化技术的创新实践进行总结,包括多孔复合催化新材料与工业催化反应的结合、绿色反应工艺与催化剂、过程耦合与强化等几个方面,凝练了材料科学与化学工程结合与应用的创新思路.

**关键词:** 石油化工 工业催化 多孔复合催化材料 绿色反应工艺 过程耦合与强化 导向性基础研究

**Abstract:** Mr. Min Enze ever said that it was very important to carry on directional fundamental research during the development and application of new industrial technology. Under the guidance of Mr. Min's thoughts on innovation, we keep on making exploration and practice on new technology in recent years. One of the important and effective ways for innovation on petrochemical technology is to combine advanced catalytic materials with chemical engineering processes. It would promote the development of petrochemical technology by introduction and integration of new materials, new technology and new processes into the conventional petrochemical area. In this paper, we summarize some of our innovation practices on development of new porous catalytic materials and new petrochemical technology during recent years, such as the application of new porous composite materials on conventional industrial processes, new green reaction process via advanced catalysts, several progresses on process coupling and intensification, etc. We intend to stimulate thought and creative ideas on combination of material science and chemical engineering as well as their applications.

**Keywords:** petrochemical industry, industrial catalysis, porous composite materials, green reaction process, process coupling and intensification, directional fundamental research

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[1] 闵恩泽. 工业催化剂的研制与开发—我的实践与探索. 北京: 中国石化出版社 (Min E Z. The Research and De-velopment of Industrial Catalysts—My Practices and Ex-plorations. Beijing: Sinopec Press), 1997. 139

[2] 闵恩泽, 谢文华. 化工时刊 (Min E Z, Xie W H. Chem Ind Times), 2000, 14(1): 1

[3] 谢在库. 新结构高性能多孔催化材料. 北京: 中国石化出版社 (Xie Z K. Porous Catalytic Materials with New Structure and Improved Performance. Beijing: Sinopec Press), 2010

[4] Xie Z K, Liu Zh Ch, Wang Y D, Yang Q H, Xu L Y, Ding W P. Int J Mol Sci, 2010, 11: 2152 

[5] Rault J. "Paramax, A Single Source Solution for BTX Complexes", Asia Pacific Technology Conference (APTC), Kuala Lumpur, Malasia, May 17-18, 2004 

[6] 朱志荣, 李为, 杨为民, 陈庆龄, 祁晓岚 (Zhu Zh R, Li W, Yang W M, Chen Q L, Qi X L). CN1 765 500. 2006

[7] 李为, 朱志荣, 张荣, 谢在库, 陈波, 杨德琴 (Li W, Zhu Zh Rh, Zhang R, Xie Z K, Chen B, Yang D Q). CN 765 745. 2006

[8] 孔德金, 张荣, 李为, 陈庆龄, 侯敏, 杨德琴 (Kong D J, Zhang R, Li W, Chen Q L, Hou M, Yang D Q). CN

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[10] 765 497. 2006

[11] 谢在库, 杨卫胜, 孔德金, 朱冬茂 (Xie Z K, Yang W Sh, Kong D J, Zhu D M). CN 1 413 968. 2003

[12] Xie Z K; Yang W Sh, Kong D J, Zhu D M. US


[13] 774 273B2. 2003

[14] Zhu Zh R, Chen Q L, Xie Z K, Yang W M, Li C. Microporous Mesoporous Mater, 2006, 88: 16 

[15] Zhu Zh R, Chen Q L, Xie Z K, Yang W M, Kong D J, Li C. J Mol Catal A, 2006, 248: 152 

[16] Goossens A M, Wouters B H, Grobet P J, Buschmann V, Fiermans L, Martens J A. Eur J Inorg Chem, 2001: 1167

[17] Xie S J, Liu Sh L, Liu Y, Li X J, Zhang W P, Xu L Y. Microporous Mesoporous Mater, 2009, 121: 166 


[18] Liu Y, Zhang W P, Xie S J, Xu L Y, Han X W, Bao X H. J Phys Chem B, 2008, 112: 1226 


[19] 祁晓岚, 李斌, 李士杰, 刘希尧, 林炳雄. 催化学报 (Qi X L, Li B, Li Sh J, Liu X Y, Lin B X. Chin J Catal), 2006, 27: 228


[20] 王晓芳, 张彩娟. 石油化工技术与经济 (Wang X F, Zhang C J. Technol Econom Petrochem), 2011, 27(2): 48


[21] 孔德金, 刘志成, 房鼎业. 催化学报 (Kong D J, Liu Zh Ch, Fang D Y. Chin J Catal), 2009, 30: 885


[22] 刘志成, 孔德金, 王仰东, 谢在库. 石油学报 (石油加工)(Liu Zh Ch, Kong D J, Wang Y D, Xie Z K. Acta Petrol Sin (Petrol Process Sect)), 2008, 24 (Z1): 124

[23] Liu Y, Zhang W P, Liu Zh Ch, Xu Sh T, Wang Y D, Xie Z K, Han X W, Bao X H. J Phys Chem C, 2008, 112: 15375 

[24] Zhu H B, Liu Zh Ch, Wang Y D, Kong D J, Yuan X H, Xie Z K. Chem Mater, 2008, 20: 1134 

[25] Zhu H B, Liu Zh Ch, Kong D J, Wang Y D, Xie Z K. J Phys Chem C, 2008, 112: 17257 

[26] Zhu H B, Liu Zh Ch, Kong D J, Wang Y D, Yuan X H, Xie Z K. J Colloid Interf Sci, 2009, 331: 432 


[27] Yang H Q, Liu Q, Liu Zh Ch, Gao H X, Xie Z K. Microporous Mesoporous Mater, 2010, 127: 213 

[28] Yang H Q, Liu Zh Ch, Gao H X, Xie Z K. Appl Catal A, 2010, 379: 166 


[29] Teng J W, Xie Z K. Hydrocarbon Asia, 2006: 26


[30] 滕加伟, 赵国良, 金文清 (Teng J W, Zhao G L, Jin W Q). CN 1 927 714. 2007

[31] Zhao G L, Teng J W, Xie Z K, Jin W Q, Yang W M, Chen Q L, Tang Y. J Catal, 2007, 248: 29 

[32] Zhao G L, Teng J W, Xie Z K, Yang W M, Chen Q L, Tang Y. Stud Surf Sci Catal, 2007, 170: 1307 

[33] Xue N H, Chen X K, Nie L, Guo X F, Ding W P, Chen Y, Gu M, Xie Z K. J Catal, 2007, 248: 20 

[34] Wang Ch M, Wang Y D, Xie Z K, Liu Zh P. J Phys Chem C, 2009, 113: 4584 

[35] Wang Ch M, Wang Y D, Liu H X, Xie Z K, Liu Zh P. J Catal, 2010, 271: 386 

[36] 刘红星, 谢在库, 张成芳, 陈庆龄. 催化学报 (Liu H X, Xie Z K, Zhang Ch F, Chen Q L. Chin J Catal), 2004, 25: 702

[37] Xie Z K, Liu Zh Ch, Wang Ch M, Wang Y D, Yang H Q, Ren L P, Liu H X, Teng J W. Catalytic Conversion of Methanol to Olefins: Some Progresses on Catalytic Materials and Reaction Mechanism (Oral presentation), Munich: 15th International Congress on Catalysis, 2012

[38] Yang H Q, Liu Zh Ch, Gao H X, Xie Z K. J Mater Chem, 2010, 20: 3227 

[39] Mei Ch S, Wen P Y, Liu Zh Ch, Liu H X, Wang Y D, Yang W M, Xie Z K, Hua W M, Gao Zi. J Catal, 2008, 258: 243 

[40] Yu F P, Cai H, He W J, Yang W M, Xie Z K. J Appl Polymer Sci, 2010, 115: 2946 

[41] 李学峰, 高焕新, 金国杰, 丁琳, 陈璐, 杨洪云, 何欣, 陈庆龄. 催化学报 (Li X F, Gao H X, Jin G J, Ding L, Chen L, Yang H Y, He X, Chen Q L. Chin J Catal), 2007, 28: 551

[42] Xi Z W, Zhou N, Sun Y, Lu K L. Science, 2001, 292: 1139 

[43] Gao S, Xi Z W. In: Oyama S T ed. Mechanisms in Homogeneous and Heterogeneous Epoxidation Catalysis. Amsterdam: Elsevier, 2007. 429

[44] 范勤, 丛林, 卢立义, 毛连生. 石化技术与应用 (Fan Q, Cong L, Lu L Y, Mao L Sh. Petrochem Technol Appl), 2002, 20: 264

[45] 马春景, 卢立义, 李应成. 化学反应工程与工艺 (Ma Ch J, Lu L Y, Li Y Ch. Chem React Eng Technol), 2008, 24: 82

[46] 齐国祯, 钟思青, 杨远飞 (Qi G Zh, Zhong S Q, Yang Y F). CN 102 190 548A. 2011

[1] 刘志成, 王仰东, 谢在库. 从工业催化角度看分子筛催化剂未来发展的若干思考[J]. 催化学报, 2012, 33(1): 22-38

[2] 滕波涛; 常杰; 刘颖; 张成华; 杨骏; 郑洪岩; 张荣乐; 白亮; 相宏伟; 李永旺. 工业Fe-Mn催化剂上基于详细反应机理的F-T合成动力学模型 I. 烯烃再吸附动力学研究[J]. 催化学报, 2005, 26(8): 693-700

[3] 滕波涛; 常杰; 王刚; 张成华; 刘颖; 郑洪岩; 杨骏; 张荣乐; 白亮; 相宏伟; 李永旺. 工业Fe-Mn催化剂上基于详细反应机理的F-T合成动力学模型 II. 不同校正方法的动力学模型分析[J]. 催化学报, 2005, 26(8): 701-706

[4] 陈振兴; 方忠和; 黄彩娟; 叶华; 刘今. 铈-钨-钒系低温硫酸催化剂的研制[J]. 催化学报, 2000, 21(4): 384-386

- [5] 刘加庚;楼辉;徐端钧;马福泰;徐元植.V-P-O/SiO<sub>2</sub>催化剂上表面氧性质的研究[J]. 催化学报, 2000,21(1): 35-39
- [6] 刘浏;林明;刘持标;范以宁;颜其洁;陈懿.邻二甲苯选择氧化V-Ti-O复合氧化物超微粒催化剂[J]. 催化学报, 2000,21(1): 89-90
- [7] 何奕工.超临界流体状态下的异构烷烃与烯烃烷基化反应[J]. 催化学报, 1999,20(4): 403-408