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研究论文

Bi-MCM-41 催化对氯甲苯选择氧化

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- 摘要
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摘要 合成了一系列 Bi 掺杂的 MCM-41 介孔分子筛, 运用电感耦合等离子体原子光谱, X 射线衍射, N2 吸附脱附, 透射电镜和紫外可见光谱对其进行了表征, 并将其用于以 H2O2 为氧化剂, 乙腈为溶剂的对氯甲苯选择氧化反应中. 结果表明, Bi-MCM-41 即便在底物量较大时也表现出较高的催化活性. 浓缩反应液的检测结果表明, Bi 在反应过程中无明显流失, 同时该催化剂具有良好的循环使用性能.

关键词:

Abstract: A series of bismuth incorporated MCM-41 mesoporous samples were synthesized and characterized by inductive coupled plasma emission spectrometer (ICP), X-ray diffraction, N_2 adsorption/desorption, transmission electron microscopy, and UV-Vis spectroscopy. These samples catalyzed the selective oxidation of 4-chlorotoluene efficiently even on a large scale with H_2O_2 as oxidant in acetonitrile. No bismuth was detected by ICP in the condensed reaction mother liquid, and the recycle test proved the catalyst was stable.

Keywords: Bi-MCM-41, 4-chlorotoluene, oxidation, 4-chlorobenzaldehyde

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[1] Yoo J S. Appl Catal A, 1996, 135: 261

[2] Walling C, Zhao C, El-Taliawi G M. J Org Chem, 1983, 48: 4910

[3] Selvam T, Singh A P. J Chem Soc, Chem Commun, 1995: 883

[4] Partenheimer W. Catal Today, 1995, 23: 69

[5] Miki J, Osada Y, Konoshi T, Tachibana Y, Shikoda T. Appl Catal A, 1996, 137: 93

[6] 龙丽萍, 赵建国, 杨利娴, 付名利, 吴军良, 黄碧纯, 叶代启. 催化学报 (Long L P, Zhao J G, Yang L X, Fu M L, Wu J L, Huang B Ch, Ye D Q . Chin J Catal), 2011, 32: 904

[7] 罗晓明, 陈宁, 陈懿. 催化学报 (Luo X M, Chen N, Chen Y. Chin J Catal), 1988, 9: 351

[8] Popova M, Szegedi A, Németh P, Kostova N, Tsoncheva T. Catal Commun, 2008, 10: 304

[9] Kim K-J, Ahn H-G. Appl Catal B, 2009, 91: 308

[10] Merga G, Schuchmann H-P, Rao B S M, Vonsonntag C. J Chem Soc, Perkin Trans, 1996: 551

[11] Singh A P, Selvam T. Appl Catal A, 1996, 143: 111

[12] Raju Burri D, Jun K-W, Yoo J S, Lee C W, Park S-E. Catal Lett, 2002, 81: 169

[13] Hu A-J, Lü C X, Wang H Y, Li B D. Catal Commun, 2007, 8: 1279

[14] Kresge C T, Leonowicz M E, Roth W J , Vartuli J C, Beck J S. Nature, 1992, 359: 710

[15] Selvam P, Bhatia S K, Sonwane C G. Ind Eng Chem Res, 2001, 40: 3237

[16] Bielanski A, Haber J. Oxygen in Catalysis. Amsterdam: Elsevier, 1991

[17] Dumitriy D, Bârjega R, Frunza L, Macovei D, Hu T, Xie Y, Pârvulescu V I, Kaliaguine S. J Catal, 2003, 219: 337

[18] Qian G, Ji D, Lu G M, Zhao R, Qi Y X, Suo J S. J Catal, 2005, 232: 378

[19] Qian G, Luo X, Wang J M. Microporous Mesoporous Ma-ter, 2008, 112: 632

[20] Zhou Z, Franz A W, Hartmann M, Seifert A, Thomas J J, Thiel W R. Chem Mater, 2008, 20: 4986

[21] Shi G J, Shen J Y. Energy Fuels, 2009, 23: 320