Catalysts for the Atom Economic Nitration of o-Nitrotulene [J]. Tetrahetron letters, 1998,39(12): 1641 - 1642.

[7] H Sato, Hirose K. Vapor-phase nitration of benzene over solid acid catalysts(Ⅰ): Nitration with nitricoxide(NO_2)[J]. Applied catalysis A: Genera,1998,174 (1 - 2): 77 - 81.

[8] Bertea L E, Kouwenhoven H W, Prins R. Vapour-phase nitration of benzene over modified mordenite catalysts [J]. Applied catalysis A: General,1995,129 (2): 229 - 250.

[9] Sato H, Hirose K, Nagai K, et al. Vapor-phase nitration of benzene over solid acid catalysts(Ⅱ): Nitration with nitric acid (1); montmorillonitre and mixed metal oxide catalysts [J]. Applied catalysis A: General, 1998, 175 (1 - 2): 201 - 207.

[10] Sato H, Nagic K, Yoshioka H, et al. Vapor-phase nitration of benzene over solid acid catalysts(Ⅲ): Nitration with nitric acid(2); mixed metal oxide treated with sulfuric acid and heteropolyacid partially neutralized [J]. Applied catalysis A: General,1998,175(1 - 2): 209 - 213.

Study and Progress of Clean Nitration Technology

REN Yong-li, WANG Li, MI Zhen-tao

(*School of Chemical Engineering*, *Tianjin University*, *Tianjin* 300072, *China*)

Abstract: This paper studies some clean process used for the nitration of aromatic hydrocarbon, including liquid phase reaction and gas phase reaction. By the use of new nitrating agent, catalysts and solvents, all the reactions eliminate the use of concentrated sulfuric acid and are environmental friendly with high atom economy. Reasearch and development direction of clean nitration reactions are also presented.

Key words: nitration; clean; aromatic hydrocarbon; concentrated sulfuric acid; nitric acid; N_2O_5; NO_2

新书征订消息

欢迎订购《2002 年火炸药技术及钝感弹药学术研讨会论文集》。这次研讨会是 2002 年 11 月由中国兵工学会火炸药专业委员会、北京理工大学、南京理工大学、中国工程物理研究院化工材料研究所、西安近代化学研究所等单位联合组办的,来自兵器集团、航天集团、高等院校、中国工程物理研究院和军队系统等 20 多个单位的 150 多名代表出席了会议。该论文集刊登了从会议征集的 200 多篇论文中精选出的论文 156 篇,内容涵盖炸药、推进剂、发射药、烟火剂、火工品的合成与配方研究、性能分析测试、加工制造工艺,钝感弹药的研究与应用,安全性及贮存寿命等领域。论文内容丰富,包括了当前一些最新科研成果,有很高的参考利用价值。该文集由会议承办者中国工程物理研究院化工材料研究所组稿、由国内外发行的学术期刊《含能材料》编辑部编辑出版。该文集为精装大 16 开本,753 页,定价 200 元。

需订购者请与中国工程物理研究院化工材料研究所科技信息室联系。

通信地址:四川省绵阳市 919 信箱 310 分箱 邮政编码:621900

联系人:李秉仁 电话:(0816)2485376 传真:(0816)2281339