propellants[J]. *Chinese Journal of Energetic Materials*(*Hanneng Cailiao*), 2002, 10(4): 189-191.
[7] 钱华, 吕春绪, 叶志文. 绿色硝化剂五氧化二氮及其在硝化反应中的应用[J]. 精细化工, 2006, 23(6): 620-624.
QIAN Hua, Lü Chun-xu, YE Zhi-wen. Clean nitrating agent dinitrogen pentoxide and itsapplication in nitration[J]. *Fine Chemicals*, 2006,23(6): 620-624.
[8] 王庆法, 石飞, 米镇涛, 等. 硝酸酯的绿色合成[J]. 含能材料, 2007, 15(4): 416-420.
WANG Qing-fa, SHI Fei, MI Zhen-tao, et al. Review on green synthesis of nitrate esters[J]. *Chinese Journal of Energetic Materials*(*Hanneng Cailiao*), 2007, 15(4): 416-420.
[9] 莫洪昌, 甘孝贤. 3-硝酸酯甲基-3-甲基氧杂环丁烷的合成及表征[J]. 火炸药学报, 2006, 29(6): 58-60.
MO Hong-chang, GAN Xiao-xian. Synthesis and characterization of 3-nitatomethyl-3- methyloxetane[J]. *Chinese Journal of Explosive & Propellants*, 2006, 29(6): 58-60.

Green Synthesis of 2-Nitratomethyltetrahydrofuran

LIU Ya-jing, MO Hong-chang, LU Xian-ming, LI Lei, GE Zhong-xue
(*Xi'an Modern Chemistry Research Institute, Xi'an* 710065, *China*)

Abstract: In order to develop new nitratopolyether binders, 2-nitratomethyltetrahydrofuran (NMTHF) was synthesized with 2-hydroxymethyltetrahydrofuran(HMTHF) as starting material and dinitrogen pentoxide(N_2O_5) as nitrating agent with yield of 90.6% and purity of 98.9%. The structure of NMTHF was characterized by IR, ^{1}H NMR and element analysis. The effects of synthetic conditions on nitration reaction were discussed. The optimized synthetic conditions are as follows: $n(N_2O_5)$: n(HMTHF)= 1.0 : 1.0, reaction temperature −10 ℃, and keeping reaction for only 5 min when the CH_2Cl_2 solvent of HMTHF was dropped over.

Key words: 2-nitratomethyltetrahydrofuran(NMTHF); green nitration; dinitrogen pentoxide(N_2O_5)
CLC number: TJ55 **Document code**: A **DOI**: 10.11943/j.issn.1006-9941.2015.03.003

读者·作者·编者

《含能材料》"观点"征稿

为了丰富学术交流形式,及时传递含能材料领域同行们的学术观点和思想,《含能材料》开设了"观点"栏目。"观点"栏目的来稿应观点鲜明、内容新颖、形式上短小精悍。欢迎含能材料各领域的专家积极来稿。来稿时请附个人简介及主要研究工作介绍。

《含能材料》固体推进剂专栏征稿

高能量、低特征信号、低易损、低成本、低污染、灵活能量管理和高可靠性成为当前固体推进剂面临的紧迫课题,为促进其研究,本刊将于2015年开设推进剂研究专栏,以专题报道固体推进剂研究的最新研究进展。欢迎广大学者投稿,来稿时请选择对应的专栏。

《含能材料》编辑部

www.energetic-materials.org.cn 含能材料