

promising properties of a new family of high-density insensitive materials[J]. *J Am Chem Soc*, 2010, 132 (34): 11904 – 11905.

[10] Wu Y Q, Huang F L. Retracted: frictional properties of single

crystals HMX, RDX and PETN explosive[J]. *J Hazard Mater*, 2010, 183(12): 324–333.

[11] 金韶华, 松全才. 炸药理论[M]. 第二版. 西安: 西北工业大学出版社, 2010: 338–342.

Synthesis and Properties of 5,5'-Dinitramino-3,3'-bi[1,2,4-triazolate] Carbohydrazide Salt

WANG Xiao-jun^{1,2}, ZHANG Xiao-peng¹, LU Zhi-yan¹, WANG Xia¹, JIN Shao-hua², CHEN Shu-sen²

(1. Research Institute of Gansu Yinguang Chemical Industry Group, Baiyin 730900, China; 2. Colloge of Materials Science and Engineering, Beijing Institute of Technology, Beijing 100081, China)

Abstract: 5,5'-Dinitramino-3,3'-bi[1,2,4-triazolate] carbohydrazide salt (CBNT) was synthesized via ring formation reaction, nitration reaction and salt formation reaction using oxalic acid and aminoguanidinium bicarbonate as starting materials. Its structure was characterized by IR, NMR and elemental analysis. The thermal behavior of CBNT was studied by differential thermal analysis /thermogravimetry (DTA-TG) and its impact sensitivity and friction sensitivity were measured. Results show that the temperature of exothermic decomposition peak for CBNT is 229 °C. Its impact sensitivity (H_{50}) is 89 cm, and friction sensitivity in explosion percentage is 4%–8%.

Key words: energetic materials; 5,5'-dinitramino-3,3'-bi[1,2,4-triazolate] carbohydrazide salt (CBNT); synthesis; decomposition; sensitivity

CLC number: TJ55; O62

Document code: A

DOI: 10.11943/j.issn.1006-9941.2016.04.007



《含能材料》损伤与点火专栏征稿

含能材料的损伤特征与点火过程有密切的联系,炸药、推进剂的内部损伤及其对力学特性、安全特性和点火行为的影响规律受到了含能材料学界的高度重视,为推动这一重要研究方向的学术交流,本刊特设立“损伤与点火”专栏。专栏主要征集炸药、推进剂等含能材料的损伤观测与多尺度表征技术、含损伤的本构方程、准静态与动态损伤演化规律、损伤与破坏的宏(细)观模式、损伤对起爆、爆炸、爆轰成长以及非冲击起爆行为的影响等方向的原创性研究论文。来稿请注明“损伤与点火”专栏。

《含能材料》编辑部