

[1]邹美帅,郭晓燕,杨荣杰,等.氟橡胶/镁/硝酸钠富燃料体系的热分析[J].火炸药学报,2009,(4):56-59.

ZOU Mei shuai, GUO Xiao yan, YANG Rong jie, et al. Thermal Analysis of Viton A/Mg/NaNO₃ Fuel Rich System[J]., 2009, (4):56-59.

点

击复

制

氟橡胶/镁/硝酸钠富燃料体系的热分析



分享到:

导航/NAVIGATE

[本期目录/Table of Contents](#)

[下一篇/Next Article](#)

[上一篇/Previous Article](#)

工具/TOOLS

[引用本文的文章/References](#)

[下载 PDF/Download PDF\(5217KB\)](#)

[立即打印本文/Print Now](#)

[导出](#)

统计/STATISTICS

[摘要浏览/Viewed](#)

[全文下载/Downloads](#) 726

[评论/Comments](#) 403



《火炸药学报》 [ISSN:1007-7812/CN:61-1310/TJ] 卷: 期数: 2009年第4期 页码: 56-59 栏目: OA栏目 出版日期: 2009-08-30

Title: Thermal Analysis of Viton A/Mg/NaNO₃ Fuel Rich System

作者: 邹美帅; 郭晓燕; 杨荣杰; 邱日尧

北京理工大学材料科学与工程学院, 北京100081

Author(s): ZOU Mei shuai; GUO Xiao yan; YANG Rong jie; QIU Ri yao

School of Materials Science and Engineering, Beijing Institute of Technology, Beijing 100081, China

关键词: 分析化学; 富燃料推进剂; 硝酸钠; 氟橡胶; 热分析

Keywords: analytical chemistry; fuel rich propellant; sodium nitrate; viton A; thermal analysis

分类号: TJ55; O657

DOI: -

文献标志码: A

摘要: 采用TG DTA研究了镁粉、硝酸钠、氟橡胶以及混合组分的热分解过程, 揭示了高含量镁粉/硝酸钠体系的凝聚相热分解反应机理。单组分的热分析曲线显示, 镁粉熔化后有一个大的失重过程, 硝酸钠的分解可分为不同的阶段, 氟橡胶在较窄的温度范围内发生完全失重。混合组分的热分析结果表明, 镁粉与氟橡胶之间也存在着相互作用, 硝酸钠与氟橡胶的分解产物之间也有相互反应; 镁/硝酸钠体系的快速分解温度发生在535℃附近, 添加氟橡胶的镁/硝酸钠体系的分解温度发生在380℃附近。

Abstract: The thermal decomposition processes of magnesium, sodium nitrate, viton A and their mixing components were studied by differential thermal analysis (DTA) and thermogravimetry (TG) in order to obtain the condensed phase reaction mechanism of magnesium/sodium nitrate system. DTA and TG results showed that magnesium had a large mass loss after melting, the decomposition of sodium nitrate included different stages, and viton A decomposed completely in the narrow range of temperature. The thermal analysis for the mixtures indicated that the decomposition products of the viton A might react with magnesium, and with the decomposition products of sodium nitrate. The results suggest that fast decomposition of Mg/NaNO₃ happened at 535°C, while it happened at about 380°C after adding viton A to the system.

- [1] Gany A, Netzer D W. Combustion studies of metallized fuels for solid fuel ramjets [J]. Journal of Propulsion and Powder, 1986, 5: 423-427.
- [2] Singh H, Rao R B. Effect of particles size on combustion of magnesium sodium nitrate [J]. Propellants, Combustion Science and Technology, 1992, 81: 233-242.
- [3] Ward J R, Decker L J, Borrows A W. Burning rates of pressed strands of a stoichiometric magnesium sodium nitrate [J]. Combustion and Flame, 1983, 51: 121-123.
- [4] Rao R B, Rao P S, Singh H. Agglomeration of magnesium particles in magnesium sodium nitrate combustion [J]. Propellants, Explosives, Pyrotechnics, 1996, 21: 319-324.
- [5] Singh H, Somayajulu M R, Rao R B. A study on combustion behavior of magnesium sodium nitrate binary mixtures [J]. Combustion and Flame, 1989, 76: 57-61.
- [6] Kashporov L Y, Klyachko L A, Silin N A, et al. Burning velocity of two component mixtures of magnesium with sodium nitrate [J]. Combustion, Explosion, and Shock Waves, 1994, 30(5): 606-616.
- [7] 张杏芬. 国外火炸药原材料性能手册 [M]. 北京: 兵器工业出版社, 1991: 37.
- [8] Dillehay D R. Illuminant Performance in Inert Atmospheres [C] // 4th Int Pyrotechnics Seminar. Steamboat Village, CO, 1974.
- [9] 邹美帅, 郭晓燕, 杨荣杰, 等. 氟化物对镁/硝酸钠富燃料推进剂燃烧性质的影响 [C] // 2008年火炸药学术研讨会论文集. 北京: 北京理工大学, 2008: 355-359. ZOU Mei shuai, GUO Xiao yan, YANG Rong jie, et al. Influence of fluorides on combustion characteristics of Mg/NaNO₃ fuel rich propellants [C] // Pyrotechnic and Explosive Powder Academic Seminar. Beijing, Beijing University of Science and Technology, 2008: 355-359.
- [10] Koch E C. Thermochemical and combustion behaviour of MTV [J]. Propellants, Explosives, Pyrotechnics, 2002, 27: 340-351.

相似文献/References:

- [1] 张翠梅. 单基发射药中二苯胺的极谱法测定[J]. 火炸药学报, 2007, (1): 32.
- [2] 胥会祥, 赵凤起, 李晓宇. 无定形硼粉的溶剂法提纯[J]. 火炸药学报, 2007, (2): 8.
- [3] 马海霞, 宋纪蓉, 胡荣祖, 等. HMX, CL-20和DNTF自由基的光照检测[J]. 火炸药学报, 2007, (2): 33.
- [4] 王利军, 孙翔宇, 李学军, 等. 提高含硼富燃料推进剂能量的技术途径[J]. 火炸药学报, 2006, (6): 54.
- [5] 张力, 杜仕国, 许路铁, 等. 甲基紫试验在长贮火药安定性检测中的应用[J]. 火炸药学报, 2006, (6): 74.
- [6] 赵军, 徐复铭, 周伟良, 等. 覆碳铁、钴、镍纳米复合材料对AP的催化热分解[J]. 火炸药学报, 2006, (5): 35.
- [7] 咸琨, 刘祥萱, 王焯军. 液体推进剂偏二甲肼氧化变质的规律和影响因素[J]. 火炸药学报, 2006, (5): 39.
- [8] 张君启, 张炜, 朱慧, 等. 含咪唑衍生物富燃料推进剂的能量性能[J]. 火炸药学报, 2006, (4): 36.
- [9] 李理, 张玉荣, 蒙古海, 等. 发射药中钝感剂含量与分布的测定[J]. 火炸药学报, 2006, (4): 65.
- [10] 曹宏安, 江劲勇, 路桂娥. 浸取/气相色谱法表征发射药中钝感剂的浓度分布[J]. 火炸药学报, 2006, (3): 26.

备注/Memo: 收稿日期: 2009-05-15; 修回日期: 2009-06-06 作者简介: 邹美帅(1982-), 男, 博士研究生, 从事推进剂研究工作。
