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Effect of Drying Methods on Structure of RDX/RF Composite Energetic Materials

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Abstract: Hexahydro-1, 3, 5-trinitro-1, 3, 5-triazine/resorcinol-formaldehyde (RDX/RF) aerogel and xerogel were prepared by supercritical fluid drying method and freezing drying method. The structure of RDX/RF composites were characterized by scanning electron microscopy (SEM), BET method, X-ray power diffraction (XRD) and differential scanning calorimetry (DSC). The results show that supercritical fluid drying method can get RDX/RF aerogel of typical nano-pore structures and high surface areas. Freezing drying destroys the framework of gels and leads to the rapid decreasing of surface areas of gels. The mean crystal size of RDX in RDX/RF aerogels is between 34 – 38 nm, and in RDX/RF xerogels is between 50 – 100 nm. The thermal decomposition temperature of RDX/RF aerogels decreases by about 14 – 25 °C, and of RDX/RF xerogels decreases by about 2 – 7 °C.

Key words: organic chemistry; supercritical fluid drying; freezing drying; composite energetic materials; sol-gel

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第二届固体推进剂安全技术研讨会暨固体推进剂生产安全协会 第四届会员代表大会征文通知〈第一轮〉

第二届固体推进剂安全技术研讨会暨固体推进剂生产安全协会第四届会员代表大会拟于 2009 年 8 月召开(地点待定),此次会议由航天工业固体推进剂安全技术研究中心和固体推进剂生产安全协会主办,航天科技集团四院四十二所承办。

会议主题: 固体推进剂安全技术研究进展与发展方向

征文范围: 固体推进剂安全技术研究进展与发展方向; 固体推进剂配方与新型含能材料安全性研究; 固体推进剂安全性试验方法与测试技术研究; 固体推进剂安全性数值计算及模拟仿真技术研究; 固体推进剂安全性评估、评价方法研究; 固体推进剂降感方法及安全控制技术研究; 固体推进剂低易损性技术研究; 固体推进剂、火箭发动机、导弹武器安全性相关技术研究; 固体推进剂安全生产管理及创新。

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