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Preparation and Characterization of High Purity Nano HNS

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Abstract: High purity nano HNS was prepared by the combination of solution quench recrystallization and solvent-antisolvent recrystallization. Results show that crystal appearance of nano HNS is smoother with particle size from 58.9 nm to 231.6 nm, and its purity is increased from 90.1% to 99.44%, the BET specific surface area is determined to be $19.27 \text{ m}^2 \cdot \text{g}^{-1}$. Sensitivity tests for the raw HNS and nano HNS indicate that nano HNS is less sensitive to impact than raw HNS, but more sensitive to short impulse shock waves.

Key words: organic chemistry; nano explosive; 2, 2', 4, 4', 6, 6'-hexanitro-stilbene (HNS); high purity; solvent-antisolvent recrystallization



2008年《发射药、烟火剂、火工品研究论文专辑》征稿启事

为促进发射药、烟火剂、火工品的发展,本刊将于2008年第5期组织出版《发射药、烟火剂、火工品研究论文专辑》。

专辑内容包括:(1)低敏感高能发射药的新配方、装药、及点火设计和理论模拟技术等方面的研究进展和成果。其中,配方设计主要包括能量水平、氧化剂与粘结剂的相容性及粘结剂、改性剂、交联剂等组成的调配;装药技术包括提高发射药装填密度、改善能量释放程序的药型及结构设计的传统和现代装药技术研究;新型点火技术包括等离子体点火、微波点火、和激光点火的机理及其器具和技术。理论模拟技术包括用于分子设计、配方设计、预估点火特性、起爆特性、燃烧特性、火焰温度和烧蚀性、机械和流变特性等方面的理论和模型。(2)低敏感高能发射药的新材料技术,包括新型高能填充剂、含能粘合剂、新型燃烧性能改良剂、材料的纳米化、新材料的筛选与评价等。(3)低敏感高能发射药的新实验分析技术,包括微、少量样品的测试设备与技术、易损性/敏感度筛选评价设备与技术、新型含能材料热分解及其机理等。(4)烟火剂、火工品及其相关技术等内容,如新型起爆技术(如半导体桥技术、激光起爆技术)以及所用高能量密度材料。

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