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5,5'-二硝胺基-2,2'-联-1,3,4-噁二唑含能离子盐的合成及性能

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摘要: 以5,5'-二硝胺基-2,2'-联-1,3,4-噁二唑为原料合成了一系列含能盐,采用了红外(FT-IR)、核磁(NMR)和元素分析进行了结构表征。并用X-射线单晶衍射进一步确定了3-氨基-1,2,4-三唑盐(**9**·2H₂O)和4-氨基-1,2,4-三唑盐(**10**)的结构,用差热扫描法(DSC)测定了它们的热分解温度,用Explos 5 v6.02计算了它们的爆轰性能。结果表明它们的热分解温度范围为146.8~239.9℃;计算爆速高于7693 m·s⁻¹,爆压高于21.3 GPa;密度介于1.683~1.941 g·cm⁻³,实测撞击感度介于10~28 J,摩擦感度介于160~360 N,表明5,5'-二硝胺基-2,2'-联-1,3,4-噁二唑类含能盐是一类性能较好的高能量密度材料。

关键词: 含能材料;1,3,4-噁二唑;X-射线单晶衍射;感度;爆轰性能

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《含能材料》“含能共晶”征稿

含能共晶是不同含能分子通过氢键等相互作用力形成的具有稳定结构和性能分子晶体。含能共晶充分组合了单质含能分子的优点,呈现出感度低,综合性能优良的特点,具有潜在的应用前景,共晶研究已经引起国内外含能材料学界的高度关注。为推动含能共晶的研究和交流,本刊特推出“含能共晶”专栏,主要征稿范围包括含能共晶晶体设计与性能预测、含能共晶的制备、结构解析、性能等。来稿请注明“含能共晶”专栏。