

兵器工业出版社, 1990.

[10] 代晓涂, 王娟, 王玉史, 等. PBX-2 炸药加热条件下燃烧转爆轰特性[J]. 含能材料, 2013, 21(5): 649-652.

DAI Xiao-gan, WANG Juan, WEN Yu-shi, et al. Deflagration to detonation transition characteristics of heated PBX-2[J]. *Chinese Journal of Energetic Materials(Hanneng Cailiao)*, 2013, 21(5): 649-652.

[11] 程家增. 爆破过程高速摄像方法研究[D]. 武汉: 武汉理工大学, 2010.

CHENG Jia-Zeng. High speed photography technology in blasting engineering[D]. Wuhan: Wuhan University of Science and

Technology, 2010.

[12] 王星河. 光纤爆速仪在导爆索爆速测试中的应用[J]. 爆破器材, 2011, 40(6): 27-31.

WANG XING-he. Application of fiber optical detonation velocity meter in the detonation velocity measurement of detonating Cord [J]. *Explosive Materials*, 2011, 40(6): 27-31.

[13] 姜爱华, 焦宁, 王高, 等. 新型高精度多段光纤爆速仪的设计[J]. 爆破器材, 2013, 42(6): 29-31.

JANG Ai-hua, JIAO Ning, WANG Gao, et al. Design of a new high-precision multiple fiber optical detonation velocity meter [J]. *Explosive Materials*, 2013, 42(6): 29-31.

## In-situ Preparation of Porous Nickel Hydrazine Nitrate

CHEN Yang, LI Yan, ZHU Shun-guan

(School of Chemical Engineering, Nanjing University of Science and Technology, Nanjing 210094, China)

**Abstract:** The porous nickel hydrazine nitrate(NHN) was obtained by in-situ liquid-solid reaction of ammonium salt, hydrazine hydrate and porous nickel under constant temperature in half-closed environment. The detonation velocities of NHN with different mass increase rate were measured using optical fiber time measurement method. Results show detonation velocity is maximum (about  $2300 \text{ m} \cdot \text{s}^{-1}$ ) when the mass increase rate ranges from 35% to 40%. The optimum reaction condition to obtain NHN with high detonation velocity was investigated by orthogonal test. It is found when the concentration of hydrazine hydrate is  $0.256 \text{ mol} \cdot \text{L}^{-1}$ , and the concentration of ammonium nitrate  $0.192 \text{ mol} \cdot \text{L}^{-1}$ , and reaction temperature  $65 \text{ }^\circ\text{C}$  and pH 9, the detonation velocity of NHN reaches up to  $2357\text{--}2499 \text{ m} \cdot \text{s}^{-1}$ .

**Key words:** porous nickel; nickel hydrazine nitrate(NHN); liquid-solid reaction; in-situ preparation

**CLC number:** TJ55; O61

**Document code:** A

**DOI:** 10.11943/j.issn.1006-9941.2015.02.009



读者·作者·编者

## 《含能材料》高品质炸药晶体研究专栏征稿

高品质炸药晶体的出现为钝感弹药的研究与应用开辟了一条重要途径,高品质炸药晶体因而也成为目前国内外含能材料研究领域的热点之一。为促进高品质炸药晶体的研究和应用,《含能材料》将于2015年开设高品质炸药晶体研究专栏,专题报道高品质炸药晶体的制备、表征、性能、应用等领域的最新研究成果,促进学者间的交流。欢迎相关研究学者投稿。来稿建议为英文。来稿时请选择对应的专栏。

《含能材料》编辑部