

SHEN Jin-peng, YANG Guang-cheng, QIAO Zhi-qiang, et al. High-energy micro-ignition chip and its preparation and use method: CN105258580 [P], 2016.

[166] An C, Xu S, Zhang Y, et al. Nano-HNS particles: mechano-chemical preparation and properties investigation [J]. *Journal of Nanomaterials*, 2018(4): 1-7.

## Advances in Micro-nano Energetic Materials

LI Feng-sheng, LIU Jie

(National Special Superfine Powder Engineering Research Center of China, School of Chemical Engineering, Nanjing University of Science and Technology, Nanjing 210094, China)

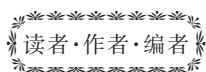
**Abstract:** Micro-nano energetic materials exhibit excellent properties and good application results due to their small size effect, crystal perfection effect, high surface energy and high surface activity. In this paper, the current advances in the recrystallization technologies and pulverization technologies used in the preparation of micro-nano energetic materials at present, and the drying technologies, characterization methods of particle size and morphology, mechanisms of sensitivity changed with particle size, application directions and effect etc. of micro-nano energetic materials were summarized based on the related research work of scholars both at home and abroad. It is pointed out that micro-nano energetic materials in the future should focus on the research work of strengthening basic theory, simulation, functional mechanism of application, engineering magnification and practical application etc. of micro-nano energetic materials, so that micro-nano energetic materials can be transferred into engineering applications as soon as possible, so as to accelerate the development of high-energy solid rocket propellants, composite explosives, gun propellants as well as pyrotechnics, and improve their performances.

**Key words:** micro-nano; energetic materials; preparation; characterization; mechanism; application

**CLC number:** TJ55; O64

**Document code:** A

**DOI:** 10.11943/CJEM2018280



## 《含能材料》“损伤与点火”专栏征稿

含能材料的损伤特征与点火过程有密切的联系,炸药、推进剂的内部损伤及其对力学特性、安全特性和点火行为的影响规律受到了含能材料学界的高度重视,为推动这一重要研究方向的学术交流,本刊特设立“损伤与点火”专栏。专栏主要征集炸药、推进剂等含能材料的损伤观测与多尺度表征技术、含损伤的本构方程、准静态与动态损伤演化规律、损伤与破坏的宏(细)观模式、损伤对起爆、爆炸、爆轰成长以及非冲击起爆行为的影响等方向的原创性研究论文。来稿请注明“损伤与点火”专栏。

《含能材料》编辑部