structures[CP], University of Gottingen, Germany, 1997.
[16] LI Fu-gang, BI Yan-gang, ZHANG Tong-lai, et al. Nitrogen-rich salts based on the energetic [monoaquabis(*N*, *N*,-bis(1*H*-tetrazol-5-yl)amine)-zinc(Ⅱ)] anion: a promising design in the development of new energetic materials[J], *Inorg Chem*, 2015, 54: 2050−2057.
[17] Kissinger H E. Reaction kinetics in differential thermal analysis [J]. *Anal Chem*, 1957, 19: 1702−1706.
[18] Ozawa T. A new method of analyzing thermogravimetric data bull[J]. *Chem Soc Jpn*, 1965, 38: 1881−1886.
[19] ZHANG Zhi-bin, XU Cai-xia, ZHANG Jian-guo, et al. Synthesis, crystal structure and properties of a new 1D polymeric nitrogen-Rich energetic complex $\{TAG[Li(BTO)(H_2O)]\}_n$ based on 1*H*,1′*H*-5,5′-bitetrazole-1,1′-diolate (BTO)[J]. *RSC Adv*, 2016(6): 73551−73559.

Synthesis, Crystal Structure and Properties of a Novel Energetic Material Dirubidium 5, 5′-Bis(tetrazole-1-oxide)

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Abstract: A new energetic material dirubidium 5,5′-bis(tetrazole-1-oxide) (BTORb) was synthesized by using 1*H*,1′*H*-5,5′-bistetrazole-1,1′-diolate (BTO) as the original material. The monocrystal of target salt was first cultivated by the method of gradual evaporation, and the single crystal structure was menstruated by single X-ray diffraction. It is found that the Rb^+ and BTO^{2-} formed a dissymmetrical structure. In different layers, they are alternately arranged and connected with each other, forming a three-dimensional reticular structure. Its thermal decomposition behavior was investigated through DSC and TG-DTG technologies, indicating a good thermal stability with a decomposition temperature beginning at 292 ℃. Its kinetic parameters of non-isothermal reaction was calculated by Kissinger and Ozawa methods with the equation of Arrhenius is $\ln k=13.51-186.3\times10^3/RT$. Its standard heat of formation was calculated with the result of 274.91 kJ·mol^{-1}. Its critical temperature of thermal explosion T_b is 356.7 ℃, indicating that the salt has a good thermal stability. The impact sensitivity (H_{50}) of BTORb is 34.8 cm, with the drop hammer of 800 g. The friction sensitivity is 36%, under the condition of 70°, 1.23 MPa. The 50% fire energy of electrostatic spark sensitivity is 0.34 J.

Key words: energetic material; dirubidium 5, 5′-bis(tetrazole-1-oxide) (BTORb); synthesis; crystal structure; properties
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