

Synthesis and characterization of a new green high energetic primary explosives Couper (I) with sodium 5-nitrotetrazole

A. Mousaviazar, N.Mansoori, R. Kazemshoar-Duzdüzani*, SH.Barati

Faculty of Applied sciences, Malek- Ashtar University of Technology, Shahin Shahr

*E-mail: reza.kazemshoar23@gmail.com

Primary explosives are sensitive than secondary explosives and propellants [1]. When the primary explosives subjected to a flame, heat, impact, electric spark or friction are generated a detonation wave. These compounds are used in small quantities in initiating devices such as detonators for military and civil applications [2-5]. In the present paper, a new green high energetic primary explosives [Cu(NT)_x] using sodium 5-nitrotetrazole (NaNT) as a ligand was synthesized and characterized by applying Fourier transform infrared (FT-IR) spectroscopy, elemental analysis, Ultraviolet (UV-Vis) spectroscopy and Inductively coupled plasma (ICP) spectroscopy. The results of spectral and characterizations showed that the structure of a new green compound is [Cu(NT)]. The sensitivity properties such as impact sensitivity, friction sensitivity and sensitivity to temperature for a new green primary high explosives has the ability to replace toxic compounds such as lead styphnate and lead azide in initiator.

Keywords: Energetic metal complex, Primary explosives, sodium 5-nitrotetrazole

References

- [1] N. Szimhardt, M. H. Wurzenberger, P. Spieß, T. M. Klapötke, J. Stierstorfer. Propellants Explos. Pyrotech. **2018**, 43(12), 1203-1209.
- [2], B. T. Fedoroff, , O. E. Sheffield, S. Kaye. Dover, NJ PATR **1966**, 2700, 587.
- [3] B. Fedoroff, O. Sheffield. **1966**.
- [4] M. Barsan, , A. Miller. Natl. Inst. for Occupational Safety and Health Cincinnati; **1996**.
- [5] J. A. Erickson. Google Patents; **2003**.