

The HNIW polymorph control using a solution crystallization

임채호, 김광주[†]

한밭대학교

(kjkim@hanbat.ac.kr[†])

The HNIW is a high energetic and density than RDX, HMX which are widely used as an oxidizer for solid rocket propulsion agent or explosive. Up to now, the HNIW has four polymorphs; α , β , γ , ϵ -form can stably exist under ambient conditions. The HNIW of ϵ -form is the most suitable crystalline phases for high charge because of the thermodynamic stability with symmetric molecule arrangement and high density. But the ϵ -form is high sensitive, the ϵ -form should be enhanced its insensitive to adjust physical properties such as the crystal size, morphology, purity, internal and external defects. The efficient process of the optimal ϵ -form is a important task in the HEMs field. The objective of this study is to investigate characteristics of HNIW polymorphs created for each solvent, anti-solvent and etc. Using the drowing out-crystallization that put solvents dissolved the solute into the anti-solvent, We observed tendencies that the HNIW polymorphs are produced depending on the ratio of solvent to solute, the solvent types and temperatures.