

Effect of Surface area of seed on polymorphic transformation time at anti-solvent crystallization

박인호¹, 김광주^{1,2,†}, 김준형³

¹한밭대학교; ²화학생명공학과; ³국방과학연구소

(kjkim@hanbat.ac.kr[†])

HNIW (2,4,6,8,10,12-Hexanitro-2,4,6,8,10,12-hexaazatetracyclo) is a material that has been widely known as a high density and explosive material. Hniw has five polymorphs, and four forms, α -, β -, ϵ - and γ -forms, are stable under sufficient conditions. Polymorphs are distinguished by intermolecular bonding angles, which affect physical properties such as density and explosion rate.

In order to investigate how the surface area of the seeds affects the polymorphic transformation time, we prepared seeds of the epsilon type in different sizes and quantities with different surface areas of the seeds. Ethyl acetate and n-heptane were used as solvent and non-solvent. When the solution reached saturation concentration, the seeds were added and the polymorphic transformation time according to the surface area of the seed was analyzed by Raman spectroscopy.

The polymorphic transformation time was studied when the surface area of the seed was $7 \sim 2206 \text{cm}^2$. The polymorphic transformation time decreased as the seed surface area increased.