

Solubility measurement of  $\beta$ -HNIW in binary solvent mixtures (ethyl acetate+ cyclohexane, ethyl acetate+ toluene)박인호<sup>1</sup>, 김광주<sup>1,2,†</sup>, 김준형<sup>3</sup><sup>1</sup>한밭대학교; <sup>2</sup>화학생명공학과; <sup>3</sup>국방과학연구소(kjkim@hanbat.ac.kr<sup>†</sup>)

The nitramine 2,4,6,8,10,12-hexanitro-2,4,6,8,10,12-hex-azaisowortzitane (HNIW or CL-20), is a powerful explosive compound which has an excellent stability, and environmentally friendly. And it is outstanding in comparison to other high energetic non-nuclear explosive materials such as HMX, RDX, PETN with respect to density, velocity of detonation. HNIW has four polymorphs, of which usually existed as  $\epsilon$ -HNIW and  $\beta$ -HNIW in organic solvent. Polymorph transformation is affected by supersaturation, temperature, solvent composition. Therefore solubility of  $\beta$ -HNIW in binary solvent mixtures should be measured in order to determine effect of supersaturation on polymorph transformation. Solubility of  $\beta$ -HNIW in binary solvent mixtures (ethyl acetate + cyclohexane, ethyl acetate + toluene) at temperature range between 283.15 and 333.15K was measured by gravimetric method.  $\beta$ -HNIW in binary solvent mixtures is metastable form. So solubility was quickly measured before occur transformation. Solubility of  $\beta$ -HNIW in binary solvent mixtures was decreasing with increasing temperature and mole fraction of cyclohexane, toluene at temperature range between 283.15 and 333.15K.