Solubility of 1,2-Bis(5-nitroiminotetrazol-1-yl)ethane and its salts in Water

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1,2-bis(5-nitroiminotetrazol-1-yl)ethane (EBNIT) is a recently-developed eco-friendly energetic material. This material shows needle-like shape and wide size distribution as the exisiting energetic materials. Therefore, the development of a proper crystallization process is essential to improve the final performance of this material. To develop the crystallization process, the solubility of this material has to be measured. In this study, the solubility of EBNIT and its salts which are Bis(hydroxylammonium) ethylene bis(5-nitroiminotetrazolate) (HA-EBNIT), Bi(guanidinium) ethylene bis(5-nitroiminotetrazolate) (Gua-EBNIT), and Bi(ammonium) ethylene bis(5-nitroiminotetrazolate) (Am-EBNIT) in water was measured from 293.15 to 353.15K by the isothermal method. The collected solubility data were fitted by the exponential regression, and the root-mean-square deviations from the regression were higher than 0.98.