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HMX在二甲亚砜、丙酮和硝酸中溶解度的测定及关联

Title: Measurement and Correlation of HMX Solubility in DMSO, Acetone and Nitric acid

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摘要: 为验证并确定HMX溶解度摩尔分数的对数与对应绝对温度倒数的线性关系，采用常用的测定固体在液体中溶解度的实验装置，用静态平衡法测定293～363K时HMX在二甲亚砜（DMSO）和质量分数68%硝酸中的溶解度以及273～328K时在丙酮中的溶解度。然后用最小二乘法对HMX在不同温度下的溶解度数据进行关联，拟合出HMX在3种溶剂中溶解度与温度的线性方程，用其中一方程计算不同温度下HMX在DMSO中的溶解度，并与实测溶解度值进行比较，平均相对误差小于0.5%。此外，列出了溶解 结晶模型并界定了介稳区宽度。

Abstract: In order to prove and determine the linear relation between natural logarithm of molar fraction of HMX solubility and the reciprocal of corresponding absolute temperature，the solubility of HMX in dimethylsulfoxide (DMSO), 68% nitric acid at 293-363K and in acetone at 273-328K were determined by static equilibrium method in a reliable common apparatus for measuring solid solubility in liquid. The data of HMX solubility obtained at various temperatures was correlated by the least squares method, the linear equations of HMX solubility in three solvents versus the reciprocal of corresponding absolute temperature were fitted and given. Based on one of the equations, the solubility of HMX in 68%

nitric acid at different temperature was calculated and compared with relevant measured value. The average relative error between both is lower than 0.5%.Moreover the model of solution crystallization was listed and the metastable zone was also determined.

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