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Determination of Metastable Zone Widths and Nucleation Behavior of Aspirin in Acetic Acid and Acetic Anhydride Binary Solvent Mixture

Lixuan Xiong^a, Ling Zhou^{a,*}, Xia Zhang^a, Meijing Zhang^{a,b}, Baohong Hou^{a,b}, Ying, Bao^{a,b}, Wei Du^c, Wei Su^{a,b}, Shihao Zhang^a, Qiuxiang Yin^{a,b,*}

^a School of Chemical Engineering and Technology, State Key Laboratory of Chemical Engineering, Tianjin University, Tianjin 300072, People's Republic of China

^b Collaborative Innovation Center of Chemical Science and Chemical Engineering, Tianjin 300072, People's Republic of China

^c College of Chemical Engineering and Materials Science, Tianjin University of Science and Technology, Tianjin 300457, People's Republic of China

*Corresponding author E-mail: zhoulings@tju.edu.cn

ABSTRACT

The dependence of metastable zone widths (MSZWs) of aspirin in acetic acid and acetic anhydride binary solvent mixture on saturated temperature, cooling rate and solvent composition was experimentally studied by polythermal method. Modified classical nucleation theory approach and modified self-consistent approach which take the saturation temperature and nucleation temperature into consideration were employed to describe the nucleation behavior by correlating the MSZWs with saturated temperature and cooling rate. The critical nucleus size, critical Gibbs energy and solid-liquid interfacial energy were calculated and analyzed. The results suggest that the critical nucleus size as well as the critical Gibbs energy decrease with the

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