

化学与化工

草甘膦结晶动力学研究

曾向东,沙作良*,陈启华

天津科技大学 天津市海洋资源与化学重点实验室, 天津 300457

摘要:

结晶动力学研究可以为结晶器设计、结晶过程放大和优化以及结晶过程控制提供重要的基础数据。测量了草甘膦在工业溶液中的溶解度与温度的关系;使用连续的混合悬浮、混合产品排出(mixed suspension mixed product remove, MSMPR)理想结晶器,用外推法得到了草甘膦结晶粒度无关生长动力学模型以及粒度相关的生长动力学模型,并得到了成核速率模型。实验表明:草甘膦的溶解度随温度的变化较快,使用冷却结晶的方法可以实现草甘膦的生产;草甘膦的晶体生长速率与晶体的粒径相关;在实验条件下,悬浮密度和能力输入对成核速率的影响不大。

关键词: 结晶动力学 草甘膦 溶解度 MSMPR

Study on crystallization kinetics of glyphosate

ZENG Xiang-dong, SHA Zuo-liang*, CHEN Qi-hua

Tianjin Key Laboratory of Marine Resources and Chemistry, Tianjin University of Science & Technology, Tianjin 300457, China

Abstract:

The study of crystallization kinetics could provide the basic data for crystallizer design, scale-up, optimization and control of the crystallization process. The solubility of glyphosate in its synthesis mother liquor was experimentally measured. The crystallization kinetics of glyphosate in its synthesis mother liquor was also experimentally measured in a mixed suspension mixed product removal (MSMPR) crystallizer. The size-independent crystal growth rate model determined by the linear extrapolation population density distribution, the size-dependent crystal growth rate model, and the nucleation rate model determined by the extrapolated population density distribution to the zero-size crystals were obtained. The experimental results showed that the solubility of glyphosate increased with the temperature increasing, which could make cooling crystallization possible for crystallizing glyphosate. The glyphosate crystal growth rate was size-dependent, and the suspension density and energy input had little effect on nucleation rate under experimental conditions.

Keywords: crystallization kinetics glyphosate solubility MSMPR

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通讯作者:沙作良(1956-),男,天津人,教授,博士,主要研究方向为工业结晶,计算流体力学在化工过程中的应用以及海洋化工. E-mail: zsha@tust.edu.cn

作者简介:曾向东(1985-),男,四川内江人,硕士研究生,主要研究工业结晶与颗粒技术. E-mail: zxd22@126.com

作者Email: zsha@tust.edu.cn

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