中国化学工程学报 2004;12(6):727-731 ISSN: 1004-054x CN: 44-1963/B

THERMODYNAMICS

高压管系中的水合物诱导期研究

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收稿日期: 修回日期: 网络发布日期: 接受日期:

摘要 The appearance of turbidity due to large numbers of critical size hydrate nuclei may significantly affect the outgoing light intensity and the flow resistance in the pipe loop. The induction period of hydrate formation was determined by analyzing the experimental data——
either based on the shading ratio data of laser detector or based on the pressure drop data of the flow system. The induction period of CO2(H2) in pure water and that of CH4 in (tetrahydrofuran + water) systems were then measured with the above two methods. Experimental data show that the induction period depends on the driving force exponentially. Flow rate also has a significant influence on the hydrate nucleation. A new induction period model taking the driving force and liquid flow rate into account was proposed. And it is successfully applied to the calculation of the induction period, which is in good agreement with the experimental data obtained in this study.

关键词 诱导期研究; 成核理论; 激光检测; 水合物; 高压; 数学模型; 计算机; 计算机系统;
分类号
DOI:

The Induction Period of Hydrate Formation in a Flow System

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Received Revised Online Accepted

Abstract The appearance of turbidity due to large numbers of critical size hydrate nuclei may significantly affect the outgoing light intensity and the flow resistance in the pipe loop. The induction period of hydrate formation was determined by analyzing the experimental data—— —
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Key words hydrate induction period; flow; laser; model;

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