

本期目录 | 下期目录 | 过刊浏览 | 高级检索  
页] [关闭]

[打印本

## 论文

### 气液比对多组分瓦斯水合物含气量影响

吴 强, 潘长虹, 张保勇, 高 霞, 张 强, 吴 琼

黑龙江科技大学 安全工程学院, 黑龙江 哈尔滨 150027

#### 摘要:

利用可视化水合物实验设备, 设定初始压力5 MPa、初始温度20 °C, 在0.1 mol/L四氢呋喃 (THF) —0.2 mol/L十二烷基硫酸钠 (SDS) 复配溶液体系中进行多组分瓦斯水合物生成实验。根据气体状态方程 (P-V-T) 计算出4种气液比 (40, 60, 80和100) 反应体系中多组分瓦斯水合物含气量, 从溶液的过饱和条件和水合物中晶体孔穴填充率的角度进行了机理分析。结果表明: 对于同一种多组分瓦斯气体, 反应体系气液比的增大, 促进了瓦斯-溶液之间物质传递, 加快了溶液的过饱和条件, 提高了水合物中晶体孔穴填充率, 致使水合物中含气量增大。

关键词: 气液比; 瓦斯水合物; 含气量; 过饱和

### Effects of gas liquid volume ratios on gas storage capacity of multicomponent gas hydrate

#### Abstract:

This paper was focused on investigating multicomponent gas hydrate formation in the system of compound solution of tetrahydrofuran (THF) solution with molar concentration of 0.1 mol/L and mixture of sodium dodecyl sulfate (SDS) with molar concentration of 0.2 mol/L, when the initial pressure was 5 MPa, temperature was 20 °C, by using visual hydrate equipments. According to the gas state equation, gas storage capacity of multicomponent gas hydrate of four different gas liquid ratios (40, 60, 80 and 100) respectively was calculated. The mechanism analysis was conducted from the respects of the solution supersaturated condition and the filling rate of crystal cavities in the hydrate. The results show that, for the same kind of multicomponent gas, with the increasing of gas liquid ratio, the substance transferring between gas and liquid can be promoted, the conditions of liquid supersaturation is sped up and the filling rate of crystal cavities in the hydrate is improved, which will lead to the increasing of gas content in the hydrate.

Keywords: gas liquid volume ratio; gas hydrate; gas storage capacity; supersaturation

收稿日期 2012-06-14 修回日期 网络版发布日期 2013-07-26

DOI:

基金项目:

国家自然科学基金资助项目 (51174264, 51104062, 50904026)

通讯作者: 吴 强

作者简介: 吴 强 (1959—), 男, 山东临沭人, 教授, 博士

## 扩展功能

### 本文信息

- Supporting info
- PDF(1476KB)
- [HTML全文]
- 参考文献PDF
- 参考文献

### 服务与反馈

- 把本文推荐给朋友
- 加入我的书架
- 加入引用管理器
- 引用本文
- Email Alert
- 文章反馈
- 浏览反馈信息

### 本文关键词相关文章

- 气液比; 瓦斯水合物; 含气量; 过饱和

### 本文作者相关文章

PubMed