

传递现象

基于Simha-Somcynsky状态方程的高分子-溶剂体系扩散系数模型

吕宏凌, 王保国, 杨基础

清华大学化学工程系

收稿日期 2005-12-11 修回日期 2006-4-26 网络版发布日期 2007-1-10 接受日期

摘要 将Simha-Somcynsky状态方程引入到Vrentas-Duda扩散系数模型, 建立基于状态方程的溶剂在聚合物中扩散系数模型。与原模型相比, 改进的模型避免进行聚合物的黏弹性实验测定, 模型中聚合物的相关参数仅由状态方程的特征温度和特征体积确定, 提高了模型的预测能力。对苯、甲苯、乙苯、氯仿在聚苯乙烯、聚异丁烯和聚醋酸乙烯酯中的扩散系数计算结果表明, 改进模型的预测值与实验值吻合较好。

关键词 [高分子](#) [溶剂](#) [扩散系数](#) [状态方程](#)

分类号

A diffusion coefficient model for polymer-solvent systems based on Simha-Somcynsky equation-of-state

Lü Hongling, WANG Baoguo, YANG Jichu

Abstract

With the introduction of the Simha-Somcynsky (SS) equation-of-state (EOS) into the Vrentas-Duda model, a modified diffusion coefficient model based on the EOS was developed for polymer-solvent systems. In the modified model, the measurement of polymer viscoelasticity was not required, and the parameters related to the polymer could be determined solely by the characteristic parameters of temperature and volume in the SS EOS. Therefore, it has better predictive capability compared with the original model. The calculated diffusion coefficients of benzene, toluene, ethylbenzene and chloroform in polystyrene, polyisobutylene and poly (vinyl acetate) indicated that predictions of the modified model were consistent with the experimental results.

Key words [polymer](#) [solvent](#) [diffusion coefficient](#) [equation-of-state \(EOS\)](#)

DOI:

通讯作者 王保国 bgwang@tsinghua.edu.cn

扩展功能

本文信息

- ▶ [Supporting info](#)
- ▶ [PDF\(674KB\)](#)
- ▶ [\[HTML全文\]\(0KB\)](#)
- ▶ [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](#)
- ▶ [复制索引](#)
- ▶ [Email Alert](#)
- ▶ [文章反馈](#)
- ▶ [浏览反馈信息](#)

相关信息

- ▶ [本刊中 包含“高分子”的 相关文章](#)
- ▶ [本文作者相关文章](#)

- [吕宏凌](#)
- [王保国](#)
- [杨基础](#)