

材料化学工程与纳米技术

戊二醛对壳聚糖-聚醚水凝胶溶胀动力学的影响

吴国杰, 张燕, 崔英德

仲恺农业工程学院

收稿日期 2009-2-12 修回日期 网络版发布日期 2010-2-1 接受日期

摘要

以壳聚糖和聚醚为原料、戊二醛为交联剂合成了壳聚糖-聚醚水凝胶。研究了壳聚糖-聚醚水凝胶溶胀机理,探讨了戊二醛浓度对该水凝胶的溶胀度、溶胀速率和溶胀动力学的影响。结果表明,戊二醛浓度不仅是影响水凝胶溶胀度的主要因素,随着戊二醛浓度的增大,壳聚糖-聚醚水凝胶的溶胀度逐渐减小,而且影响其溶胀动力学类型,当戊二醛浓度为 $0.107 \text{ mol} \cdot \text{L}^{-1}$,该水凝胶的溶胀过程属于Fickian类型,当戊二醛浓度为 0.320 、 $0.533 \text{ mol} \cdot \text{L}^{-1}$,其溶胀过程属于non-Fickian类型。

关键词

[壳聚糖](#) [聚醚](#) [戊二醛](#) [水凝胶](#) [溶胀动力学](#)

分类号

Effect of glutaraldehyde on swelling kinetics of chitosan-polyether hydrogel

WU Guojie, ZHANG Yan, CUI Yingde

Abstract

Chitosan-polyether hydrogels were prepared with chitosan and polyether using glutaraldehyde as crosslinker. The swelling mechanism of chitosan-polyether hydrogel was studied, the concentration of glutaraldehyde affecting swelling ratio, swelling rate and swelling kinetics of this hydrogel were researched. The result showed that the concentration of glutaraldehyde was not only the main factor affecting the swelling ratio, which reduced when the concentration of glutaraldehyde increased, but also a factor affecting its dynamic swelling behavior, which fitted with Fickian model when the concentration of glutaraldehyde was $0.107 \text{ mol} \cdot \text{L}^{-1}$ while non-Fickian model when it was $0.320 \text{ mol} \cdot \text{L}^{-1}$ and $0.533 \text{ mol} \cdot \text{L}^{-1}$ respectively.

Key words

[chitosan](#) [polyether](#) [glutaraldehyde](#) [hydrogel](#) [swelling kinetics](#)

DOI:

通讯作者 吴国杰 gjuw@gdut.edu.cn

扩展功能

本文信息

- ▶ [Supporting info](#)
- ▶ [PDF\(873KB\)](#)
- ▶ [\[HTML全文\]\(0KB\)](#)
- ▶ [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“壳聚糖”的 相关文章](#)
- ▶ [本文作者相关文章](#)

- [吴国杰](#)
- [张燕](#)
- [崔英德](#)