

过程与工艺

## Degradation Kinetics of Xylose and Glucose in Hydrolysate Containing Dilute Sulfuric Acid

元伟<sup>1</sup>;张素平<sup>2</sup>;许庆利<sup>3</sup>;任铮伟<sup>2</sup>;颜涌捷<sup>3</sup>

华东理工大学生物质能研究中心<sup>1</sup>

华东理工大学能源化工系<sup>2</sup>

收稿日期 2008-8-22 修回日期 2008-10-24 网络版发布日期 2009-1-21 接受日期

**摘要** In preparation of fuel alcohol from biomass as feedstock, hydrolysis with dilute acid as catalyst is one way to produce fermentable saccharide, xylose and glucose. However, the acid is also the catalyst in degradation of xylose and glucose and the yield of saccharide is dependent on the kinetic behaviors of saccharide. The degradation kinetics of xylose and glucose in the hydrolysate was investigated under the conventional process conditions of hydrogen ion concentration from 0.05 to 0.2 mol/L and temperature from 150 to 200°C. With a numerical calculation method, the kinetic parameters were estimated, and the activation energy of xylose and glucose in the degradation reaction was obtained. The kinetic equations correlating the effect of hydrogen ion concentration on the rate constants of degradation reaction were established. Comparison between the calculated results from the equations and experimental ones proved that the established kinetic model could satisfactorily predict the degradation behavior of xylose and glucose in the acidic hydrolysate.

**关键词** [biomass](#) [dilute sulfuric acid](#) [xylose](#) [glucose](#) [kinetic behavior](#)

分类号

**DOI:**

对应的英文版文章: [208278](#)

通讯作者:

颜涌捷 [yyansc@online.sh.cn](mailto:yyansc@online.sh.cn)

作者个人主页: 元伟 张素平 许庆利 任铮伟 颜涌捷

### 扩展功能

本文信息

▶ [Supporting info](#)

▶ [PDF \(204KB\)](#)

▶ [\[HTML全文\] \(0KB\)](#)

▶ [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](#)

相关信息

▶ [本刊中 包含“biomass”的 相关文章](#)

▶ 本文作者相关文章

· [元伟](#)

· [张素平](#)

· [许庆利](#)

· [任铮伟](#)

· [颜涌捷](#)