

过程与工艺

Studies on Thermal Degradation of Cellulosic Fibers Treated with Flame Retardants

高明,戴秋菊

华北科技学院安全环境工程系

收稿日期 修回日期 网络版发布日期 接受日期

摘要 Hemp fabric, one of the most flammable materials, was treated with compounds containing different kinds of elements that contribute to flame retardation. For a study of flame retardation from the standpoint of thermal degradation, the samples were subjected to thermogravimetry (TG) and differential thermal analysis (DTA) in air from ambient temperature to 600°C. The apparent activation energy (Ea) is evaluated by Broido's method at different stages of thermal degradation to observe the variation of Ea in the process of thermal degradation. Flame retardation of samples was determined by limiting oxygen index (LOI) to find the effects of the different compounds on flammability and the thermal degradation of the hemp fabric. The composition of the chars was studied by the IR spectra to obtain information concerning the thermal degradation mechanism. Compared with flammable hemp, the hemp fabric treated with flame retardants showed a higher LOI but lower Ea and decomposition temperatures, which indicated that some compounds make the hemp fabric decompose at lower temperatures, resulting in less flammable products.

关键词 [degradation,DTA,flame retardant,hemp,IR,TG](#)

分类号

DOI:

对应的英文版文章: [206508](#)

通讯作者:

gaoming@ncist.edu.cn

作者个人主页: 高明;戴秋菊

扩展功能

本文信息

▶ [Supporting info](#)

▶ [PDF](#)(142KB)

▶ [\[HTML全文\]](#)(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](#)

[“degradation,DTA,flame retardant,hemp,IR,TG”的 相关文章](#)

▶ 本文作者相关文章

· [高明](#)

· [戴秋菊](#)