

能源和环境工程

废新闻纸纤维素酶、半纤维素酶与漆酶/介体协同脱墨作用

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收稿日期 2007-2-9 修回日期 2007-4-28 网络版发布日期 2007-12-26 接受日期

摘要

利用纤维素酶、半纤维素酶与漆酶/介体协同对废新闻纸脱墨, 对脱墨浆性能的检测结果表明, 与单独使用纤维素酶、半纤维素酶和漆酶的脱墨浆相比, 协同脱墨浆的残余油墨浓度降低, 强度性能提高, 经 H_2O_2 漂白后的白度提高, 说明纤维素酶、半纤维素酶与漆酶具有协同脱墨作用, 脱墨后纸浆纤维性能有所改善。测定纤维平均长度、粗度、比容和比表面积, 并利用环境扫描电镜 (ESEM) 对脱墨过程中脱墨浆纤维的表面性能变化进行了分析, 发现与对照浆相比, 协同脱墨浆纤维的平均长度和粗度有所降低, 而比容和比表面积均提高; 纤维素酶、半纤维素酶与漆酶/介体处理后, 纤维表面出现细小纤维。

关键词

[废新闻纸](#) [纤维素酶](#) [半纤维素酶](#) [漆酶/介体](#) [脱墨](#)

分类号

Deinking of old newsprint by cellulase or hemicellulase combined with laccase/mediator system

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Abstract

Deinking technology of old newsprint (ONP) by cellulase or hemicellulase combined with laccase/mediator system (LMS) was investigated. The effective residual ink concentration (ERIC) of the deinked pulp was lower than that of the pulp deinked with each individual enzyme, which suggested that ONP could be deinked by these enzymes synergistically. Brightness after H_2O_2 bleaching and physical properties of the pulps were better than those of the pulp obtained by pulping with each individual enzyme. Fiber morphology changes during the deinking were studied by fiber average length and coarseness, specific surface area, specific volume determination and environmental scanning electronic microscopy (ESEM) observations. Comparing with the control pulp, fiber average length and coarseness of LMS-cellulase and LMS-hemicellulase synergistic deinking pulp decreased. Specific surface area and specific volume of synergistic deinked pulp fibers were higher than those of the control pulp fibers. ESEM images indicated that fibrils were present on the fiber surface after synergistic treatment.

Key words

[old newsprint](#) [cellulase](#) [hemicellulase](#) [LMS](#) [deinking](#)

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