

### 一年生黑麦草制取燃料乙醇预处理工艺的初步研究

李 强, 郭和蓉

#### 摘要:

以一年生黑麦草Lolium multiflorum邦德(Abundant)为材料,进行了燃料乙醇转化的预处理工艺研究。研究结果表明,硫酸预处理的最优条件为:温度120℃,时间2h,硫酸质量分数1%,粒度20~40目,液固比8:1,其中温度是最主要的影响因素。氢氧化钠预处理的最优条件为温度100℃,时间2h,氢氧化钠质量分数为10%,液固比6:1,粒度20~40目,其中温度也是最主要的影响因素。硫酸预处理可以有效去除半纤维(91.6%)和纯化纤维素(60.1%)。氢氧化钠预处理可以有效去除木质素(64.2%),为进一步酶解奠定基础。

关键词: 一年生黑麦草; 硫酸; 氢氧化钠; 预处理; 纤维素; 燃料乙醇

### Preliminary study of pretreatment technology in the process of ethanol manufacturing using annual ryegrass

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#### Abstract:

Took annual ryegrass (Lolium multiflorum) variety Abundant as material to study the pretreatment technology of ethanol fuel manufacturing transformation. The results suggested that the optimum conditions of pretreatment by H2SO4 were that 1% H2SO4 at 120℃ for 2 h, with 20-40 granularities and the liquid/solid ratio of 8 : 1. While the optimum conditions of NaOH pretreatment were that 10% NaOH at 100℃ for 2 h, with 20-40 granularities and liquid/solid ratio of 6 : 1. Both of tests indicated that the temperature was the most important factor. The pretreatment by H2SO4 could remove 91.6% hemicelluloses and purify 60.1% cellulose effectively, while NaOH pretreatment could remove 64.2% lignin, it was basis for further enzymatic hydrolysis process.

Keywords: annual ryegrass H2SO4 NaOH pretreatment cellulose ethanol

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