邓 宇,王艳艳.棉秆微波蒸煮碱法制纸浆的工艺优化[J].农业工程学报,2012,28(6):278-282

棉秆微波蒸煮碱法制纸浆的工艺优化

Optimization on pulping process of cotton stalk by microwave radiation cooking and alkali method

投稿时间： 2011-04-14 最后修改时间： 2012-02-10

中文关键词：微波技术,制浆,工艺,棉秆

英文关键词:microwaves pulping working technology cotton stalk

基金项目:国家自然科学基金项目（项目编号：20976136）

作者	单位
邓 宇	1. 天津科技大学材料科学与化学工程学院，天津 300457； 2. 天津市制浆造纸重点实验室（天津科技大学），天津 300457
王艳艳	1. 天津科技大学材料科学与化学工程学院，天津 300457

中文摘要:

为了探索出棉秆常压下采用微波辐射方法的蒸煮新工艺，该文在分别考察了总碱量、混合碱用量比、辐射时间、辐射功率对蒸煮制浆效果单因素影响的基础上，通过正交试验确定其较佳工艺条件是：总碱量为18%，NaOH：Na2SO3质量比为4:7，固液比为1:8，微波辐射时间为45 min。结果表明，在较佳工艺条件下，棉秆浆得率可稳定在53.3%左右、硬度在20左右。所得纸浆与常规化学浆相近。结果为棉秆资源的应用开辟一条新途径,为中国纸浆产业新的原料来源与制浆方法提供参考。

英文摘要:

In this paper, a new cooking technique of cotton stalk with microwave radiation under atmospheric pressure was explored. Based on the analysis of cooking pulp effected by the main factors including total alkali content, dosage ratio of mixed-alkali, radiation time and radiation power, the optimum process condition determined by orthogonal experiments was provided as follows: total alkali content was 18%, the mass ratio of NaOH to Na2SO3 was 4:7, the solid-liquid ratio was 1:8 of and microwave heating time was 45 min. The results showed that the yield of cotton stalk pulp could be stabilized at around 53.3% and the hardness was about 20 under optimum conditions. The pulp obtained by this method was similar with conventional chemical pulp. This research studied a new way for application of cotton stalk resources and provided references for new sources of raw materials and pulping methods in Chinese pulp and paper industry.

查看全文 下载PDF阅读器

关闭