吉林农业大学学报 2012, 34(1) 90-93 DOI: CNKI:22-1100/S.20111201.0903.0 ISSN: 1000-5684 CN: 22-1100/S

论文

玉米秸秆磷钨酸催化液化研究

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摘要:

为改进以浓硫酸为催化剂将生物质催化液化转化为生物质资源不 利于工业化生 产的现状,研究了以磷钨酸为催化剂、聚乙二醇400(PEG400)作为反应介质对玉米秸秆进 行液化反应,利用单因素试验以及正交试验考察了料液质量浓度、反应时间、反应温度和 催化剂用量对液化反应的影响。结果表明:以磷钨酸为催化剂,聚乙二醇400为液化剂的条件 下,在温度为180 ℃,时间为60 min,料液质量浓度为 0.15 g / mL ,磷钨酸用量为2%时,液化 率可达90.29%。通过使用红外光谱对玉米秸秆以及液化产物的结构进行分析对比,发现液 化反应中生成了大量的羟基,并且产生酯类物质。

关键词: 玉米秸秆 磷钨酸 液化剂 催化液化

Study on the Liquefaction of Corn Stalk by Using Phosphotungstic Acid as Catalyst

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Abstract:

The practice of catalytic liquefaction of biomass converts bio mass res ources using sulfuric acid as catalyst is not conducive to industrial production . In order to overcome this shortcomings, the liquefaction of corn stalk catalyz ed by phosphotungstic acid in the reaction media of polyethylene glycol 400 (PEG 400) was studied. The effects of liquid concentration, reaction time, reaction t emperature and catalyst dosage were investigated by single factor test and orth o gonal test. Results showed that liquefaction rate could reach 90.29% under the following conditions: temperature 180 ℃, reaction time 60 min, material / wate r concentration 0.15 g / mL and catalyst dosage 2%. At the same time, the IR spec tra of corn stalk and liquefaction product were analyzed and compared, which sho wed that a large number of hydroxyl and esters were generated in the liquefactio n.

Keywords: corn stalk phosphotungstic acid liquefier catalytic liquef action

收稿日期 2011-06-23 **修回日期** **网络版发布日期**

DOI: CNKI:22-1100/S.20111201.0903.0

基金项目:

辽宁省教育厅项目(20 07T105)

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［4］〓梁凌云.秸秆热化学液化工艺和机理的研究［D］.北京:中国农业大学,2005.

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