

可再生能源发电

农业秸秆烘焙热分析

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摘要:

以稻秆、麦秆、棉秆、玉米秆为研究对象,采用热重红外联用方法(TG-FTIR)研究烘焙预处理对农业秸秆热分解特性及气体产物释放机制的影响。实验结果表明:在较低温度时(200~230 ℃),秸秆的热失重不是很明显,而随着温度进一步提高(>260 ℃),秸秆中半纤维素分解剧烈,热失重明显,傅里叶转换红外光谱分析气相产物中主要为水分、CO₂以及少量的酸、醇、醛、酮等含氧有机碳氢化合物。

关键词: 农业秸秆 三组分 烘焙 热重红外分析

Thermal Analysis of Agricultural Straw Torrefaction

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Abstract:

The torrefaction characteristics of agricultural straw were investigated by using thermogravimetric-Fourier transform infrared spectroscopy (TG-FTIR) method with rice straw, wheat straw, cotton stalks and corn stalk as typical samples. The results showed that there was no clear mass loss of the straw at a lower temperature (200~230 ℃), and the mass loss was obvious as the temperature increased further (>260 ℃), which was mainly due to the decomposition of hemicellulose. The FTIR gas products were mainly water, CO₂ and small amounts of acids, alcohols, aldehydes, ketones and other organic hydrocarbons.

Keywords: agricultural straw three components torrefaction thermogravimetric-Fourier transform infrared spectroscopy

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- ▶ Article by Yang,H.B
- ▶ Article by Chen,Y.Q
- ▶ Article by Zhang,S.H
- ▶ Article by Chen,H.B

1. 朱波 陈汉平 杨海平 陈应泉 王贤华 张世红. 烘焙对农业秸秆燃烧特性的影响研究[J]. 中国电机工程学报, 2011, 31(23): 115-120
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