

稻草与煤固定床共热解特性的研究

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Experimental study on co-pyrolysis characteristic of straw and coal blends in a fixed bed reactor

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摘要 选取稻草为生物质原料,将其与两种不同煤阶的煤(内蒙褐煤和神府烟煤)分别以0:100、20:80、40:60、60:40、80:20、100:0的干基质量比均匀混合.借助固定床反应器,研究了稻草与两种煤的共热解特性,探讨了共热解过程中可能存在的协同作用.结果表明,稻草添加有利于共热解气体产物的生成,且对神府煤作用更明显;稻草含量越高,热解气体产量的实验值与加权平均计算值的偏差也越大,说明稻草与煤共热解过程发生了协同作用.而共热解所得焦产量的实验值与加权平均计算值基本一致.热解焦傅里叶红外光谱分析结果表明,稻草添加对热解焦的官能团未造成显著影响.

关键词: 稻草 煤 固定床 共热解 协同作用

Abstract: Straw was mixed with 2 different coals including Neimeng lignite and Shenfu bituminous coal in different proportions of 0:100, 20:80, 40:60, 60:40, 80:20, and 100:0. The co-pyrolysis experiments of the blends were conducted in a fixed bed reactor. The co-pyrolysis characteristic of straw and coal blends and synergetic effects during co-pyrolysis were studied. The results show that the yield of co-pyrolysis of straw and coal blend based on volatile matters were higher than those of the sum of straw and coal individually. Meanwhile, considerable deviations from the average weighted value of gas yield were detected, especially for straw and Shenfu bituminous coal blend. The more straw was added into blend, the more gas yield produced during co-pyrolysis. However, straw addition did not play significant role in the char yield and organic functional groups characterization.

Key words: coal straw fixed bed reactor rapid co-pyrolysis synergetic effects

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