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利用Py-GC/MS研究温度和时间对生物质热解的影响

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Study on effect of temperature and time on biomass pyrolysis by Py-GC/MS

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摘要 以稻壳为原料,采用Py-GC/MS装置对其在不同热解条件下进行快速热解,并对热解气进行在线检测分析,考察了热解温时间对生物质热解性质的影响.结果表明,低于450 ℃,随着温度的升高,生物质热解产物种类及其产率均增加,但低温条件下产类较少,有利于产物的分离提纯;高于450 ℃,生物质热解产物种类基本稳定,仅在产率上有所变化,当550 ℃时,收率最大.随着温度的升高,其对应的最佳热解时间缩短,且生物质低温热解时间延长时热解比高温解热时间缩短时热解更充分.

关键词： 温度　时间　Py-GC/MS　裂解

Abstract： The rice husk fast pyrolysis was studied by using pyrolysis-gas chromatography/mass spectrometry (Py-GC/MS), and the pyrolysis gases were online analyzed. The effects of pyrolytic temperature and time on the pyrolysis of biomass was focused. The results show that the number and yi of product species increase with temperature below 450 ℃. The less species at lower pyrolytic temperat of benefit to the enrichment of high value products. However, the number of product species becomes constant and the yield only changes when the temperature is over 450 ℃. The yield reaches the maximu when the temperature is 550 ℃. As the temperature increases, the optimum pyrolytic time descends. Th pyrolysis of biomass with a long pyrolysis time at lower temperature is more completely than that with a pyrolysis time at higher temperature.

Key words： temperature　time　Py-GC/MS　pyrolysis

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