利用同步辐射真空紫外光电离质谱（SVUV PIMS）对稻壳和稻秆的热解过程进行了研究。通过改变光子能量，获得了随光子能量变化的质谱图，并鉴定了热解过程的主要产物。本工作测量了不同热解温度下的产物质谱图，并结合热重分析，对两种样品热解产物与温度的关系进行对比研究。稻壳与稻秆的热重曲线非常相近，但二者的产物质谱图却差异明显，主要表现在*m/z* 114和*m/z* 96等几种半纤维素产物丰度随温度变化的趋势不同。本工作还测量了若干特征产物随时间变化的谱图，结果表明，半纤维素在低温下就开始出现，且生成速度较快，而大部分的木质素分解速度较慢，温度区间也相对较宽，其分解伴随着整个热解过程。

"/> The pyrolysis of rice husk and rice straw were studied by tunable synchrotron vacuum ultraviolet photoionization mass spectrometry (SVUV PIMS). Main pyrolysis products of rice husk and rice straw were identified with mass spectra obtained at different photon energies. The work investigated the relation between pyrolysis products and reaction temperature, according to the mass spectra of rice husk and rice straw pyrolysis at different temperatures. Although the TGA spectra showed that the tendency of the TGA spectra of rice husk and rice straw were similar, their mass spectra were different obviously, especially that the *m/z* 96 and *m/z* 114, which came from the pyrolysis of hemicellulose, changed with temperature differently. The time-dependent profiles of some characteristic products showed that the pyrolysis products from hemicellulose appear rapidly at low temperature, while large proportion of lignin underwent slower thermal decomposition at wider temperature range during the overall pyrolysis process.

"/>

质谱学报
Journal of Chinese Mass Spectrometry Society
中文核心期刊
《EI》收录

真空紫外光电离质谱研究稻壳和稻秆的热解

孙韶波;翁俊桀;贾良元;王毓;齐飞;周忠岳

中国科学技术大学国家同步辐射实验室，安徽 合肥230029

Pyrolysis Study of Rice Husk and Rice Straw by Vacuum Ultraviolet Photoionization Mass Spectrometry

SUN Shao-bo;WENG Jun-jie;JIA Liang-yuan;WANG Yu;QI Fei;ZHOU Zhong-yue

National Synchrotron Radiation Laboratory, University of Science and Technology of China, Hefei 230029, China

摘要 图/表 参考文献() 相关文章 (9)