Chemical Composition Determination and Thermal Analysis for Some Typical Biomass Ashes in China

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ABSTRACT

In the exploitation of biomass resources, the complete understanding of the chemical compositions for the biomass ashes is important. By using the joint adoption of several analysis tools, the ashes of four typical biomass resources in rural area of north China, i.e., Corn stalk, wheat stalk, cotton branch and poplar branch, were studied. The detailed contents of contained minerals, such as carbonates and potassium salts, were figured out by synthesizing the results of XRD and XRF. Few similar data could be found in literatures. And the thermal analysis via FactSage modeling and TGA showed the stability properties of the ashes in heating process. The results of mineral composition and thermal analysis were in accordant with each other. The synthetic analysis method for the determination of mineral contents of biomass ash may be widely referred. In addition, with the understanding of detailed mineral characteristics, more and better ideas or measurements may be available for the utilization of biomass ashes or for the avoidance of some negative effects.