Determination of chemical characterizations of activated carbons from various raw materials.

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摘要.

Abstract

The objectives of this research were to identify the surface chemical features of activated carbons made of peat, bituminous coal and coconut shell, as well as examine the specific relationship of these properties by using statistical analyses. The results showed that the peat carbons contained much more amounts of Ca, S, P and Mg; however, the bituminous carbons possessed higher contents of Si, Al and Fe. In addition, the content ratios of Al to Si exhibited the Al enrichment phenomenon occurred after the heat treatment. A nonlinear correlation between the pH value and the difference in the amounts of basic and acidic groups was developed. Unfortunately, there were no specific mass ratios found among the acidic functional groups. The results of correspondence analysis (CA) gave a promising confirmation about the EDXRF analysis; moreover, the results of factor analysis (FA) fairly agreed with the findings suggested by CA. Both could explain the specific chemical features of activated carbons made from different materials, especially the CA could differentiate each other in detail