

Hydrothermal synthesis of COOH-functionalized carbon spheres for cellobiose hydrolysis

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In this investigation, acid-functionalized carbon spheres have been hydrothermally prepared from sugars and linear hydrocarbons with a carboxylic acid. In such a synthesis, several preparation variables were varied, and the resulting materials were characterized by SEM, FT-IR, and a titration method to quantitatively determine an amount of carboxylic acid groups located on the surface of carbon materials. Since the prepared carbon materials have an acid character for catalysis, we applied them for the hydrolysis of cellobiose to glucose. As a result, it was found that cellobiose could be substantially hydrolyzed to glucose, where the catalytic activity depends on the amount of surface carboxylic acids. A relationship between their chemical characteristics and catalytic activity will be presented on site.