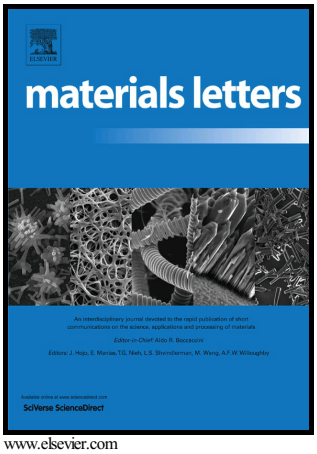

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Hydrothermal synthesis of pectin derived nanoporous carbon material

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Abstract

Nanoporous activated carbons were fabricated using pectin, as raw material, by a two step process. As a first step, a water-dispersion of pectin had undergone hydrothermal carbonization at 230 °C, followed by a second step consisting of chemical activation with KOH at 700 °C. The obtained activated carbon showed a BET surface area of 900 m^2/g, with a statistical pore diameter in the nanometer range. Scanning electron microscopy confirmed the nanoporous structure of the activated carbon. FT IR analysis was used to assess the efficiency of chemical activation. Finally, the activated carbon material was characterized respect to CO_2 capture capacity.

Keywords: pectin; nanoporous active carbon; hydrothermal carbonization; CO_2 capture; FT-IR spectroscopy.

1. Introduction

Porous Activated Carbons (ACs), due to their very high surface area, large distribution of pore size and low cost, are often used for gas sequestration and separation, as physical adsorbents for the separation of