

Preparation, characterization and functionalization of porous cellulose materials

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Cellulose is a biodegradable polysaccharide with fascinating structure and properties. Because of the strong intra-molecular hydrogen bonds, cellulose cannot be easily dissolved in ordinary solvents. In the last decade, a new process of cellulose dissolution has been reported. The objective of this study was to prepare highly porous materials from cellulose (aerogels). The preparation of cellulose aerogels, consisted of dissolving microcrystalline cellulose in sodium hydroxide solutions, gelification at 50°C, regeneration in distilled water, and neutralization and acetone exchange. Solvent (acetone) was evacuated in supercritical conditions. Scanning Electron Microscopy was used for morphological characterization of cellulose aerogels. BET technique was used to determine the surface area, the pore size, and the pore size distribution. Thermogravimetric analysis was used to determine the thermal properties. Percent crystallinity of and crystallite size were determined using X-Rays diffraction.

Biography

Abidi is Associate Professor in the Department of Plant and Soil Science and Head of Biopolymer Research at the Fiber and Biopolymer Research Institute at Texas Tech University. He has generated 40 refereed journal publications, 1 book, 6 book chapters, more than 95 conference papers, 1 patent, and 4 invention disclosures. Dr. Abidi has served as PI or co-PI on funded research grants totaling more than \$11,159,337. He serves as Associate Editor of the J. of Cotton Science and Modern Textile Science & Engineering. He serves as a Secretary of the Division of Cellulose & Renewable Materials/American Chemical Society.

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