

NEW HYDROCHAR AND BIOCHAR MATERIALS AND THEIR STUDIES FOR PHOTOPHYSICAL PROPERTIES BY HYDROTHERMAL CARBONIZATION METHOD

Azmam Alamgir¹, Salma Begum², Avijit Pramanik² and Paresh C. Ray²

¹*Department of Chemical and Biological Engineering, McCormick School of Engineering and Applied Science, Northwestern University, Evanston, IL 60208, USA*

²*Department of Chemistry, Physics and Atmospheric Science, Jackson State University, Jackson, MS 39217, USA*

Abstract: The process that termed hydrothermal carbonization is a thermal treatment of water mixed with organic substances such as saccharides at ~220°C-250°C temperature gives rise to water soluble organic substances and a carbon rich solid product (hydrochar). Biochar is produced through pyrolysis or gasification processes that heat biomass in the absence or under reduction of oxygen. Cellulose is the most promising material as it is by far the most abundant and inexpensive saccharide available is used in this experiment. In this experiment we investigated the potential of cellulose precursor for the production and studied the photophysical properties of hydrochar and biochar by UV-visible, Fluorescence and Raman Spectra. The product yield suggests that the hydrothermal carbonization of cellulose is an effective way to increase the turnover time of carbon contained in the biomass. From a chemical point of view the hydrochar and biochar contain a high amount of oxygen which is present both in the core and the shell of the carbonaceous microspheres.

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