

# Characterization of Char From the Microwave Pyrolysis of Corn Stover

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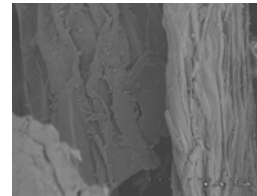
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## DESCRIPTION OF WORK

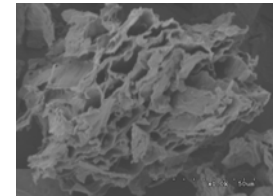
- ◆ Microwave pyrolysis is a new process for converting biomass to biooil, syngas and solid char. In this study, pyrolysis of corn stover was carried out in an inert environment at atmospheric pressure and temperatures ranging from 200 to 600°C. The objective of was to study the effect of pyrolysis conditions on the characteristics of the solid char residue. The char was characterized using Scanning electron microscopy (SEM), Fourier transform infrared (FTIR) spectroscopy, and Elemental analyzer. The char yield from pyrolysis decreased significantly to 21% with an increase in temperature to 600°C. SEM analysis indicated that pyrolysis of corn stover led to a stepwise accumulation of inorganic matter onto the exposed surface, and some organic matter melted, resulting in the formation of hollow cavities by evolving volatile. FTIR results showed a continuous decrease in the intensity of the hydroxyl group stretch with temperature and the aromatic group to be at maximum at 600°C. Elemental analysis indicated the H/C ratio of the char decreased continuously with temperature, while the O/C ratio remained almost constant above 300°C.

## MAJOR OBSERVATIONS

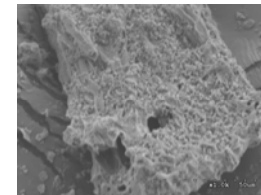
- ◆ SEM profiles of corn cob, corn stover, and activated carbon.



Corn Cob



Corn Stover



Activated Carbon