

Production and Characterization of activated carbon from pterospernum acerifolium

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Abstract

The structural morphology of activated carbon making it a good adsorbent for variety of applications in removing pollutants from industrial effluents which causes water and air pollution. But the cost of industrially produced activated carbon is comparatively high. So the use of biomass for production of it can be alternative to bring down its cost. Pterospernum acerifolium (commonly known as kanak champa) was selected for this study, because of it high fixed carbon content and low ash content which provides high heating value upto 16.75 MJ/kg. In this study pterospernum acerifolium sample was first pyrolyzed to get biochar in muffle furnace. Biochar was impregnated with KOH with impregnation ratio 1 at room temperature for 24 hours and then carbonized for producing activated carbon.

To study the effect of change in temperature and carbonization time on structural morphology of activated carbon, carbonization was carried out at different temperature (400 to 700 °C) and time (30 to 90 min).

Activated carbon produced was further characterized by Brunauer Emmett Teller (BET) surface area analysis, scanning electron microscopy (SEM), Fourier transform infrared spectroscopy (FTIR), X-ray diffraction (XRD) for knowing chemical and structural morphology and thermogravimetric analysis (TGA) for thermal stability.

References:

1. A.H. Basta, V. Fierro, H. El-Saied, A. Celzard, *Bioresource Technology* 100 (2009) 3941–3947.
2. Satish P. Bhagat, Poonam Gera, Anjireddy Bhavana, *Journal of Material Cycles and Waste Management* 2017
3. Mohammed Danisha, Tanweer Ahmad, Rokiah Hashim, Norafizah Said, Mohammad Nishat Akhtar, Junita Mohamad-Saleh, Othman Sulaiman. *Surfaces and Interfaces* 11 (2018) 1013