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The Utilization of Tea Residues for Activated Carbon Preparation

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Abstract : Waste tea is commonly generated in certain areas of China and its utilization has drawn a lot of concern nowadays. In this paper, highly microporous and mesoporous activated carbons were produced from waste tea by physical activation in the presence of water vapor in a tubular furnace. The effect of activation temperature on yield and pore properties of produced activated carbon are studied. The yield decreased with the increase of activation temperature. According to the Nitrogen adsorption isotherms, the micropore and mesopore are both developed in the activated carbon. The specific surface area and the mesopore volume fractions of the activated carbon increased with the raise of activation temperature. The maximum specific surface area attained 756 m^2/g produced at activation temperature 900°C. The results showed that the activation temperature had a significant effect on the micro and mesopore volumes as well as the specific surface area.

Keywords : activated carbon, nitrogen adsorption isotherm, physical activation, waste tea
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