

Effect of chemical treatment on production of activated carbon from *cocos nucifera* L. (Coconut) shell by microwave irradiation method

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ABSTRACT

In recent years, activated carbon has attracted attention among researchers due to its special properties such as high porosity, highly adsorption and low cost. In this research, activated carbon has been successfully produced from the coconut shell by using the microwave irradiation method where zinc chloride (ZnCl₂), phosphoric acid (H₃PO₄) and sodium hydroxide (NaOH) were implemented as the activating agents. The results showed that phosphoric acid has the most significant effect on the synthesized activated carbon properties. The optimum parameter for the power of microwave irradiation used was 380 W, impregnation ratio of activating agent to char was 3:1 for phosphoric acid, 2:1 for sodium hydroxide, and for 1:1 zinc chloride while concentration of each activating agents was 0.5 M with 10 minutes of activation time. All samples then were characterized by using, Moisture meter, FTIR-ATR, XRD and TGA in order to determine the functional groups, composition and element and weight loss of the activated carbon. This research could benefit the environment by recycling the agriculture waste into a new useful material as well as to keep the environment safe from pollution.

KEYWORDS

Activated carbon; Activating agent; Microwave irradiation

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