

Removal of Chlorinated Phenol from Aqueous Media by guava seed (*Psidium Guajava*) Tailored Activated Carbon

Abstract

In this study, the activated carbons (ACs) were prepared from guava seeds via two stages activation. The dried guava seeds were semi-carbonized at 300 °C for 1 h, and then the carbonized samples were impregnated with zinc chloride (ZnCl₂). The ZnCl₂: sample impregnation ratios (w/w) were altered from 1:1 to 5:1. The ACs were characterized by the yield percentage, ash content, moisture content, pH value, adsorption quality of 2,4-dichlorophenol (2,4-DCP) and surface functional groups. The surface area of the best produced AC3 was found to be 919.40 m² g⁻¹. It was found that AC3 had highest 2,4-DCP adsorption capacity, which was 20.9 mg g⁻¹. The 2,4-DCP adsorption kinetic of prepared AC3 was pseudo-second order with correlation value of 0.995. In addition, the 2,4-DCP adsorption capacity of AC3 was fitted to the Langmuir model with correlation coefficient value of 0.977, indicating that chemisorption was a major contributor to the adsorption process.