

A new activated carbon prepared from sago palm bark through physicochemical activated process with zinc chloride

ABSTRACT

This study aimed to use sago palm bark to formulate a new adsorbent activated carbon (AC) contains highly surface area through physicochemical method via ZnCl₂ activation. Conduction of the activation process was performed at varying impregnation ratios (0.5-2.0). Thermal decomposition was determined using thermogravimetric analysis (TGA). Porosity characterizations of AC were conducted by using N₂ adsorption-desorption in order to characterise properties like pore volume, surface area, and micropore volume. To detect the presence of functional groups which were found on the surface of AC, Fourier Transform Infrared Spectroscopy (FTIR) analysis was utilised. Morphology of AC was determined using scanning electron microscopy (SEM) and X-ray spectroscopy (EDX). Experimental results showed that maximum AC surface area was 1737 m²/g. Activation temperature was revealed to be 700oC, with chemical impregnation ratio of zinc chloride to a precursor equal to 1.5/1.

Keyword: Activated carbon; Sago palm bark; Physicochemical activation; Zinc chloride; Surface area