

# APPLICATION OF ACTIVE CARBON MATERIAL FROM CASSAVA PEEL (*Manihot Esculenta* Cranzts) AS ADSORBENT OF METAL IONS IN ELECTROPLATING LIQUID WASTE

by Susila Kristenngrum, Sulistyani

## ABSTRACT

This study aims to determine the characterization, the effect of mass variation, the percentage of effectiveness of carbon adsorption of activated Cassava peels with HCl and H<sub>2</sub>SO<sub>4</sub> on the absorption of Cu, Zn and Cr metals in electroplating wastewater and the surface morphology of the cassava peel adsorbents.

The subjects of this research were activated carbon of Cassava peel with 0.5 M HCl and 0.5 M H<sub>2</sub>SO<sub>4</sub>. The object of this research was the characterization of activated carbon and the adsorption efficiency of Cu, Zn and Cr metals in electroplating wastewater. Cassava peel activated carbon was characterized based on SNI 06-3730-1995. The adsorption process was carried out by the batch method. The test of Cu, Zn and Cr metals content in electroplating wastewater before and after the adsorption process was carried out using an Atomic Absorption Spectrophotometer. The surface morphology test of activated carbon was carried out by SEM-EDX and the particle size test was carried out using PSA.

Characterization of Cassava peel activated carbon before and after activation for moisture content, ash content and iodine adsorption capacity has met the standard of SNI No.06-3730-1995, except for the content of volatile substances and bound carbon content. Characterization with PSA showed that the particle size for carbon before activation was 34.484 μm, for HCl activated carbon was 42,504 μm and for activated carbon H<sub>2</sub>SO<sub>4</sub> was 37,059 μm. The results of the SEM-EDX test showed that the activated carbon of cassava peel had a surface with a non-uniform particle shape. The optimum mass was obtained at 0.5 M H<sub>2</sub>SO<sub>4</sub> activated carbon. The optimum mass for adsorption Cu and Cr metals was 1.5 g, while for Zn metal was 2.25 g. The optimum adsorption efficiency of Cu, Zn and Cr metals in electroplating waste using a batch system was obtained from 0.5 M H<sub>2</sub>SO<sub>4</sub> activated carbon were 59.660%, 71.994% and 83.717% respectively.

Kata Kunci: *activated carbon, adsorbent, cassava peel, electroplating liquid waste, adsorption efficiency*