

ADSORBEN MODIFICATION OF ACTIVATED CARBON SEA PANDAN LEAVES WITH NATURAL ZEOLITE AND ITS ADSORPTIVITY TEST TO COPPER ION AND CROMIUM IN INDUSTRIAL LIQUID WASTE

by Susila Kristianingrum, Endang Dwi Siswani, Erfan Priyambodo, Crys Fajar Partana

ABSTRACT

The aim of this research were to know the character of active charcoal adsorbent from sea pandan leaves (*pandanus tectorius*) and its modification with natural zeolite, knowing optimum composition of activated charcoal and natural zeolite in adsorption of Cu and Cr metal ions in industrial electroplating wastewater, and to know the optimum adsorption efficiency to Cu and Cr metal ions in the electroplating wastewater. The subject of this research were the modification of adsorbent from activated charcoal of sea pandan leaves and natural zeolite with 2M HCl solution as activator. The object was the adsorbent character of the modified product and the adsorption efficiency of the adsorbent on Cu and Cr metal ions in electroplating wastes with variations of certain composition of activated charcoal (A) and natural zeolite (Z) were 1:0; 0:1; 1:1; 1:2; 1:3; 3:1 and 2:1. Sampling technique by purposive sampling. The independent variables in this research were metal ion type and variation of composition A:Z. The dependent variable were the modified adsorbent character which includes moisture content, ash content, volatile substance content, charcoal content, functional groups and the adsorption efficiency (Ep). The control variables in this study were pH, temperature, contact time, stirring speed, adsorbent mass, and adsorbate volume. The experiment was conducted through 3 stages of active charcoal making, active charcoal characterization according to SNI 06-3730-1995 and adsorptivity test on Cu and Cr metal ions in electroplating waste with atomic absorption spectrophotometer at 324.7 nm wavelength for Cu and 357.9 nm for Cr. The results showed that the activated charcoal adsorbent of sea pandan leaves was successfully synthesized with activator of 2M HCl solution and according to SNI 06-3730-1995 and with FTIR showed similar pattern before and after physically and chemically activated. Composition A:Z optimum in Cu adsorption ion was 1: 3 with Ep 4.65% and at A:Z = 2:1 with Ep 80.71% for Cr adsorption in electroplating waste.

Kata Kunci: *adsorbent, sea pandan, natural zeolite, adsorptivity test, copper, chromium, electroplating waste*