ADSORPTION OF Cu(II) IONS METAL ON ZEOLITE A WAS SYNTHESIZED FROM COAL BOTTOM ASH PT IPMOMI PAITON USING BATCH METHOD

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Abstract

This research aims to utilise coal bottom ash by converting to zeolite A used as an adsorbent for Cu(II). The zeolite was then tested for adsorption of Cu(II). Bottom ash also was tested for adsorption of Cu(II). Parameters such as time, concentration, pH and temperature were varied. Adsorption of Cu(II) using both zeolite A and bottom ash have been done at the same equilibrium time, 6 h. Capacity of adsorption of Cu(II) increased when metal adsorbed concentration increasing and temperature of adsorption on decreasing. Optimum pH of adsorption was found pH 8 for zeolite A and pH 9 for bottom ash.

Results showed that the synthesized zeolite has ability to adsorp Cu(II) up to 83.35% at concentration 50 mg/l, pH 8 for 360 minute, and bottom ash has ability to adsorp Cu(II) up to 90.47% at concentration 50 mg/l, pH 9 for 360 minute. This research also studied kinetics adsorption of Cu(II) and adsorption isotherm. Results showed that the adsorption kinetics is best approximated by the pseudo-second-order model for zeolite A and for bottom ash, and Freundlich model provides the best fit for the equilibrium data for zeolite A and bottom ash.

Key word: Adsorption of Cu(II) ions metal, Zeolite A, coal bottom ash, Adsorption, Kinetic, Isotherm