

## **SINTESIS *BEADS* ALGINAT–KITOSAN–ASAM HUMAT UNTUK ADSORPSI ION Cu(II)**

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### **INTISARI**

Penelitian tentang sintesis *beads* alginat (A)- kitosan (K)- asam humat (AH) untuk adsorpsi ion logam Cu(II) telah berhasil dilakukan. Pada penelitian ini dilakukan karakterisasi, kajian adsorpsi dan kajian desorpsi *beads* A-K-AH terhadap ion Cu(II). Karakterisasi menggunakan FTIR, SEM, uji penyerapan air dan uji stabilisasi pH. Pada kajian adsorpsi dilakukan penentuan komposisi, pH, waktu kontak, dan konsentrasi awal optimum untuk mengadsorp ion Cu(II). Pada kajian desorpsi dilakukan penentuan larutan pendesorp yang efektif dan waktu kontak desorpsi optimum.

Sintesis *beads* A-K-AH berhasil dilakukan melalui interaksi elektrostatis antar material. Pada kajian adsorpsi dihasilkan adsorpsi ion Cu(II) optimum pada massa alginat 1,5 gram, pH 4, waktu kontak 180 menit dan konsentrasi awal 200 ppm. Kapasitas adsorpsi ion Cu(II) sebesar 54,79 mg g<sup>-1</sup>. Larutan pendesorp yang efektif digunakan adalah larutan HNO<sub>3</sub> 1 M dan pada waktu kontak selama 5 jam.

**Kata kunci:** adsorpsi, *beads*, desorpsi, logam Cu(II)

## **SYNTHESIS OF BEADS ALGINATE–CHITOSAN–HUMIC ACID FOR ADSORPTION OF ION Cu(II)**

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### **ABSTRACT**

Research about the synthesis of alginate (A)–chitosan (K)–humic acid (AH) beads for adsorption of Cu(II) metal ions has been successfully carried out. In this research, characterization, adsorption studies, and desorption studies on A-K-AH beads were carried out. Characterization using FTIR, SEM, swelling test and pH stabilization test. In this study, the optimum composition, pH, contact time, and initial concentration were determined to adsorb Cu(II) metal ions. The desorption study determines the effective desorption solution and the optimum desorption contact time.

Synthesis of A-K-AH beads was successfully carried out through electrostatic interactions between materials. In the adsorption study, the optimum adsorption of Cu(II) ions was obtained at an alginate mass of 1.5 g, pH 4, contact time of 180 min and an initial concentration of 200 ppm. The resulting adsorption capacity to adsorb Cu(II) ions was  $54.79 \text{ mg g}^{-1}$ . The effective adsorbing solution used is  $\text{HNO}_3$  1 M solution and at the contact time for 5 hours.

**Key words:** adsorption, beads, desorption, Cu(II) metal