

**PENGARUH PENAMBAHAN ASAM ETILENDIAMINTETRAASETAT
(EDTA) TERHADAP KEMAMPUAN ADSORPSI Pb²⁺ DAN Cd²⁺
PADA ZEOLIT ALAM**

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RINGKASAN

Zeolit merupakan aluminosilikat dengan struktur kerangka tiga dimensi, memiliki rongga serta saluran yang saling berhubungan menyebabkan bagian permukaannya menjadi sangat luas dan efektif sebagai adsorben. Dalam efektifitasnya sebagai adsorben, zeolit alam dapat ditambahkan dengan ligan EDTA (*ethylenediaminetetraacetic acid*). Dengan ligan EDTA diharapkan zeolit menjadi lebih selektif dalam mengadsorpsi logam.

Zeolit dengan penambahan EDTA digunakan untuk mengadsorpsi ion logam Pb²⁺ dan Cd²⁺. Adsorpsi ion logam oleh ZA-EDTA dilakukan pada variasi ukuran partikel ZA 212 µm, 125 µm, dan 90 µm dengan rasio adsorbat/adsorben pada 20 mL/g, 30 mL/g, 40 mL/g dan 50 mL/g. Pada penelitian ini juga dilakukan perbandingan kemampuan adsorpsi ZA-EDTA terhadap ion Pb²⁺ dan Cd²⁺ dengan kemampuan adsorpsi zeolit alam terhadap kompleks Pb-EDTA dan Cd-EDTA.

Berdasarkan spektra FTIR terhadap ZA dan ZA-EDTA diketahui bahwa penambahan EDTA tidak mengubah struktur zeolit secara keseluruhan. Adsorpsi ion Pb²⁺ dan Cd²⁺ terhadap ZA-EDTA terbaik pada ukuran partikel 212 µm, dengan rasio adsorbat/adsorben pada ion Pb²⁺ 30 mL/g dan pada ion Cd²⁺ 20 mL/g Adsorpsi yang dilakukan oleh ZA-EDTA terhadap ion Pb²⁺ dan Cd²⁺ lebih baik daripada adsorpsi zeolit alam terhadap kompleks Pb-EDTA dan Cd-EDTA.

SUMMARY

Zeolite is an aluminosilicate mineral with three dimensional framework structure. It has cavities and channels which related one another causing the surface becomes more widely and effective as adsorbent. Effectiveness as adsorbent zeolite can be enhanced by ligand EDTA (*ethylenediaminetetraacetic acid*). Therefore the zeolite become more selective in adsorption metal of Pb^{2+} and Cd^{2+} .

Adsorption of the metal by ZA-EDTA was done at variation of size measure particle of ZA at 212 μm , 125 μm and 90 μm with ratio adsorbent/adsorbent at 20 mL/g, 30 mL/g, 40 mL/g and 50 mL/g. The research wick also done by comparison of adsorption effectivity of ZA-EDTA to metal Pb^{2+} and Cd^{2+} by adsorption ZA of metal Pb^{2+} and Cd^{2+} complex to Pb-EDTA and Cd-EDTA.

Based FTIR spectra of ZA and ZA-EDTA known that the addition of EDTA didn't change the zeolite structure as a whole. Test of adsorption of ZA-EDTA to ion of metal Pb^{2+} and Cd^{2+} size measure good particle is 212 μm , while ratio adsorbent/adsorbent best Pb^{2+} at 30/1 mL/g and 20/1 mL/g at Cd^{2+} . Adsorpti done by ZA-EDTA to metal Pb^{2+} and Cd^{2+} had adsorption effectivity which better than adsorption natural zeolite to complex of Pb-EDTA and Cd-EDTA.

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