

Modifikasi dan karakterisasi bentonit alam Jambi yang diinterkalasi alanin serta aplikasinya sebagai adsorpsi logam cadmium dan timbal =
Modification and characterization of Jambi natural bentonite
intercalated alanin and its application for cadmium and lead adsorption

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Abstrak

Organoclay dipreparasi dengan cara interkalasi alanin ke dalam antar lapisan fraksi natrium montmorillonit (MMT) dari bentonit Jambi. Interkalasi alanin ke dalam monmorilonit menghasilkan basal spacing lebih besar dari fraksi Na-MMT, meningkat dari 13,28 Å menjadi 17,55 Å dan 19,66 Å. Penentuan KTK menggunakan kompleks tembaga amin, menghasilkan nilai KTK sebesar 42 meq/100 gram Na-MMT. Karakterisasi FTIR Organoclay diinterkalasi alanin sebanyak 1 KTK & 2 KTK, menunjukkan bahwa alanin telah berhasil terinterkalasi ke dalam MMT. Organoclay terinterkalasi alanin diuji daya adsorpsinya terhadap ion logam berat Cd²⁺ dan Pb²⁺ dengan variasi waktu, dan konsentrasi, serta membandingkannya dengan daya adsorpsi oleh bentonit alam. Hasilnya menunjukkan bahwa organoclay mengadsorpsi ion Cd²⁺ lebih besar dibandingkan Pb²⁺ dan organoclay 2 KTK daya adsorpsinya lebih besar dibandingkan dengan organoclay 1 KTK dan bentonit alam.

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The organoclays were modified by intercalating sodium monmorillonite of fraction Jambi natural bentonite with alanine. Intercalation of alanin to the fraction of montmorillonite interlayers resulted an organoclay with a basal spacing greater than fraction of Na-MMT, increased from 13.28 Å to 17.55 Å and 19.66 Å. The CEC of Na-MMT was performed using amine copper complex, and the obtained CEC was 42 meq/100 gram Na-MMT. The FTIR of organoclay intercalated alanine of 1 and 2 CEC showed that alanine has been successfully intercalated into MMT. Organoclay intercalated alanine, as well as raw bentonite, was applied for adsorption of heavy metal cadmium and lead by varying concentration and adsorption time. The results showed that the organoclay have a greater adsorption capacity against Cd²⁺ rather than Pb²⁺ and organoclay 2 CEC has a greater adsorption capacity than the 1 CEC organoclay and raw bentonite.