Bentonite Functionalised with 2-(3-(2-aminoethylthio)propylthio)ethanamine (AEPE) for the Removal of Hg(II) from Wastewaters

By Nina Siebers

Diplomica Verlag Nov 2008, 2008. Taschenbuch. Book Condition: Neu. 270x190x5 mm. This item is printed on demand - Print on Demand Neuware - In this study, natural bentonite clay was first purified and then functionalised with the chelating ligand 2-(3-(2-aminoethylthio)propylthio)ethanamine (AEPE) to improve the adsorption capacity and selectivity towards Hg(II) ions. The surface modification was characterised with the help of powder X-ray diffraction (XRD), Fourier transform infrared spectroscopy (FT-IR), BET isotherm to determine the specific surface area while the thermal stability of the samples was studied using thermogravimetric analysis (TGA). FT-IR and TGA demonstrated the presence of the chelating ligand on the modified clay. XRD pattern indicated that the chelating agent AEPE was only grafted onto the surface of the purified bentonite, whereas the interlayer distance did not change. N2 specific surface area measurement also indicated the coverage of AEPE onto the surface of purified bentonite. Adsorption of Hg(II) ions from aqueous solutions as a function of pH, contact time, initial concentration, ionic strength, interfering ions and adsorbent dose was studied. The adsorption process followed a pseudo-second order kinetics and monolayer adsorption. The adsorption of Hg(II) ions increased with increasing pH and reached a plateau value in the pH range...

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