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Organo-bentonite for the adsorption of Pb(II) from aqueous solution: Temperature dependent parameters of several adsorption equations

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ABSTRACT

The preparation of organo-bentonite was conducted using bentonite from Pacitan as the raw material. The modification of bentonite was conducted by microwave irradiation. The adsorption capability of natural and modified-bentonite was tested for the removal of lead metal from aqueous solution. The adsorption experiments were conducted isothermally in static mode at various temperatures. The temperature dependent forms of the Langmuir, Freundlich, Sips and Toth models were used to correlate equilibrium data. It was found that the temperature dependent forms of Sips model can correlate the experimental data better than other models. The pseudo-first-order and pseudo-second-order models were chosen to correlate the experimental kinetic data. The pseudo-second order correlated the experimental data fairly well.

Keywords: Adsorption; Bentonite; Organo-bentonite; Isotherm; Temperature dependent

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