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Competitive adsorption of toxic metals on bentonite and use of chitosan as flocculent coagulant to speed up the settling of generated clay suspensions

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highlights

- A mineral adsorbent was synthetized from modified Algerian clay.
- We studied the adsorption of heavy metal ions on the adsorbent.
- Fitting of experimental isotherm data by non-linear Langmuir and Freundlich models were studied.
- The adsorbent shows high adsorption capacity and good selectivity for Cu and Zn.

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abstract

Evaluation of modified Algerian clay as mineral adsorbent was done for its adsorbing capacity on copper (Cu) and Zinc (Zn) cations. The results obtained show a rapid kinetic adsorption for both metals (less than 2 h) following the pseudo-second order model with high elimination rates of 67.2 and 61.8% for Cu and Zn respectively. The adsorption isotherms analyzed with Langmuir model revealed a correlation with the experimental values. While the use of obtained chitosan at room temperature, as flocculent coagulant, accelerates the decantation of the colloidal particles in suspension generated after adsorption process.

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