

Effect of Carboxylate Ferroxane Nanoparticles Functionality on Lead Removal Efficiency

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Abstract

Various carboxylate ferroxane adsorbents were investigated for the removal of lead (Pb), such as: para hydroxybenzoate ferroxane (PHBF), maleate ferroxane (MF), para aminobenzoate ferroxane (PABF) and fumarate ferroxane (FF). The adsorption of lead was studied by batch experiments and the effects of different operational parameters e.g., contact time, solution pH, type of adsorbant, adsorbent dose, and the initial concentration of Pb were studied; where, temperature (25°C) and agitation rate were kept constant throughout the experiments. The concentration of Pb was measured by inductively coupled plasma spectrometry. Maximum adsorption of the Pb took place by MF and the adsorption capacity was 114.68 mg/g. This study revealed that carboxylate ferroxane nanostructures acted as very efficient adsorbent materials for removal of lead from aqueous solutions.