عنوان مقاله:

Fabrication of Nanoporous Functionalized Hydroxyapatite as High Performance Adsorbent for Acid Blue 25 Dye Removal

محل انتشار:

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خلاصه مقاله:

In this study, nanoporous hydroxyapatite was synthesized and functionalized via tetraethylenepentamine in order to obtain a novel adsorbent for efficient removal of Acid Blue 25 dye from aqueous solution. Functionalized hydroxyapatite was characterized by Fourier transform infrared spectroscopy (FTIR), X-Ray Diffraction (XRD), Scanning Electron Microscopy (SEM), Energy Dispersive Spectroscopy (EDS), and N2 adsorption-desorption. Batch adsorption studies were performed to investigate the effect of various parameters such as pH, initial dye concentration, adsorbent dosage, contact time and temperature. The results illustrated that dye removal percentage was reduced with incrementing pH of the solution and dye concentration. Maximum removal of Acid Blue 25 in the solution having an initial dye concentration of 40 mg/L using 10 mg of adsorbent at 25 °C was 88%. Experimental kinetic data obeyed the pseudo second order model was appointed in 180 min. The Freundlich isotherm model also represented a suitable fit with adsorption data. The thermodynamic study was indicated that the adsorption process was spontaneous and exothermic. Results confirmed that FHAp adsorbent possesses the potential to be used as a suitable candidate for Acid Blue 25 Dye removal from aqueous solutions.

کلمات کلیدی:

Hydroxyapatit, Dye removal, Adsorption, Nanoporous