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Bioadsorbent beads prepared from activated biomass/alginate for enhanced removal of cationic dye from water medium: kinetics, equilibrium and thermodynamic studies.

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Abstract

Biodegradable and very low cost adsorbents from lemon peels activated with phosphoric acid (ALP) and encapsulated with alginate (ALP/A beads) were prepared. New materials were characterized by Fourier transform infrared spectroscopy (FTIR), scanning electron microscopy (SEM) and isoelectric points (pHpzc). Their adsorptive properties were tested in the removal of methylene blue (MB) from aqueous medium. Adsorption studies were carried out in batch system. Performance of the samples was evaluated under various experimental conditions: initial concentration, contact time, effect of pH and temperature. Langmuir isotherm model describes well the adsorption process. Results showed that the maximum adsorption capacity of ALP/A 1/1 beads is very high and found to be 841.4 mg/g at 24°C. The

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