

Adsorption behavior of cationic and anionic dyes onto acid treated coconut coir

Abstract

The adsorption of Methylene Blue (MB) and Acid Orange 7 (AO7) from aqueous solutions by acid treated coconut coir was investigated under laboratory conditions to assess its potential in removing cationic and anionic dyes. The acid treated coconut coir exhibited better adsorption capacity in cationic dye MB than anionic dye AO7 and the data obtained can be well described by both Langmuir and Freundlich isotherm models. According to the Langmuir isotherm model, the maximum adsorption capacities of MB and AO7 onto acid treated coconut coir were 121 mg/g and 10 mg/g, respectively. The adsorption behavior of MB and AO7 onto acid treated coconut coir was analyzed with first-order Lagergren model and pseudo-second order model.

Keywords

Acid Orange 7; Acid treatment; Agricultural waste; Kinetic study; Methylene Blue