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Methylene blue dye adsorption by using deep eutectic solvent pre-treated wood chips

Abstract

Adsorption of Methylene Blue using biomass or bioproduct of industries has received major attention by the researcher and industries. In this study, wood chips treated using deep eutectic solvents (DES) was used for adsorption of methylene blue. The surface and pores of this wood chips were analyzed by using scanning electron microscope (SEM). One Factor At a Time (OFAT) method was carried out to study the effect of contact time and biomass dosage on adsorption efficiency. Evaluation of pretreated wood chips biosorption, isotherms and kinetics were also studied.. Wood chips treated with DES changes the surface area and the pores of wood chips and improved the adsorption process efficiency. Freundlich isotherm and pseudo-second show correlation coefficient of R2, 0.9591 and 0.9999 respectively. Wood chips treated using deep eutectic solvents demonstrate a great potential as a cheap biosorbent for the removal of methylene blue by looking at the isotherm and kinetic studies.

Keywords

Biosorption; Biomass energy sources; Deep eutectic solvents; Bioproducts; Methylene blue; Scanning electron microscopy; Industry; Covariance and correlation