Removal of basic dye from aqueous solution using tree fern as a biosorbent

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摘要

Abstract

A batch sorption system using tree fern as biosorbent was investigated to remove Basic Red 13 from aqueous solutions. The system variables studied include sorbent particle size and temperature and results revealed the potential of tree fern, an agriculture product, as a low-cost sorbent. The Langmuir isotherm was found to represent the measured sorption data well. The dye sorption capacity of tree fern increased as the sorbent particle size decreased. Maximum saturated monolayer sorption capacity of tree fern for Basic Red 13 was 408 mg/g. Various thermodynamic parameters such as ΔG°, ΔH° and ΔS° were calculated indicating that this system was a spontaneous and endothermic process..