Sorption of lead ions from aqueous solution using tree fern as a sorbent

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摘要

Abstract

This study is on sorption of lead ions on an agricultural by-product, tree fern. Equilibrium isotherms have been
measured and modeled. The equilibrium sorption capacity of lead(II) was determined from the Langmuir isotherm and
found to be 40.0 mg/g. Based on the assumption of the pseudo-second order mechanism, a batch sorption model was
developed to predict the rate constant of sorption, the equilibrium sorption capacity and the initial sorption rate with the
effect of initial lead(II) concentration and temperature. The sorption rate was found to increase with temperature, and an
activation energy of approximately 87 kJ/mol was determined from the pseudo-second order rate constants. The findings
of this investigation suggest that chemical sorption plays a role in controlling the sorption rate.