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Feasibility of metal adsorption using brown algae and fungi: Effect of biosorbents structure on adsorption isotherm and kinetics

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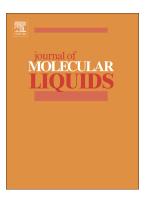
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Feasibility of metal adsorption using Brown algae and fungi: effect of biosorbents

structure on adsorption isotherm and kinetics

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**Abstract** 

Three brown algae and one fungus (Cystosiera compressa, Sargassum vulgare, Turbinaria and

Agaricus campestris) were evaluated as biosorbents in wastewater treatment containing copper

and lead ions in a dynamic process under stirring condition at 200 rpm. The influences of

biosorbents amounts, immersion time, initial metal ions concentration, and pH were determined

on the efficiency of the metal ions adsorption process. The efficiency of the different

biosorbents was increased by increasing the amount of biosorbents, immersion time and low

initial metal ions concentration. Variation of the pH of the medium has a great influence on the

efficiency of the adsorption process with the maximum removal at pH=8. The process obeyed

Freundlich adsorption isotherm and second order kinetic model. The kinetic study showed the

process occurred through three steps according to intraparticle diffusion process. The

biochemical structures of the different biosorbents had a great influence on their efficiency of

the metal ions removal.

**Keywords** 

Brown algae; biosorbent; metal remediation; adsorption models; Freundlich; intraparticle

model

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