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## BIOSORPTION OF Cu(II) IONS ON ALGAE BIOMASS AND DERIVED BIOCHAR

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### Abstract

This study investigated the removal of Cu(II) ions from aqueous solution using *Ulva lactuca* sp. algae biomass and biochar obtained from the algae biomass at 550°C (BC-550). The algae biomass was collected from the Romanian coast of the Black Sea, and due to its high carbon content, it was suitable for biochar preparation. Biosorption experiments were conducted in batch systems with varying initial pH, biosorbent dose, initial Cu(II) ions concentration, contact time, and temperature to determine optimal experimental conditions. Results showed that an initial solution pH of 5, 4.0 g/L biosorbent dose, 60 minutes of contact time and ambient temperature (23±1 °C) were optimal. Both biosorbents had the ability to remove Cu(II) ions from aqueous solution, but the biochar had a higher biosorption capacity (33.89 mg/g) than the algae biomass (21.61 mg/g). Equilibrium and kinetic data were analyzed using Langmuir and Freundlich models, as well as the pseudo-first order and pseudo-second order kinetic models, which allowed for quantitative evaluation of the retention efficiency of Cu(II) ions on the two biosorbents. The results suggest that the two materials have potential applications in metal ion removal processes.

*Key words:* algae biomass, aqueous media, biochar, biosorption, Cu(II) ions

*Received:* May, 2023; *Revised final:* May, 2023; *Accepted:* May, 2023; *Published in final edited form:* May, 2023

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