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INFLUENCE OF OPERATING CONDITIONS ON THE REMOVAL OF HEAVY METALS FROM INDUSTRIAL WASTEWATER BY BIOSORPTION

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Abstract

Free cells of *Rhizopus oryzae* were used to study adsorption of several cations (Cu^{2+} , Zn^{2+} , Mn^{2+} , Ni^{2+} , Cd^{2+} and Pb^{2+}) from wastewater within various experimental conditions. The influence of biomass dosage, pH and temperature on the removal process was investigated. The sorption efficiency increased with increasing the temperature in the range from 25 °C to 30 °C and pH from 5 to 8. The maximum removal percentage was achieved at a biosorbent concentration 0.25 – 0.30 g/L of wastewater. The optimal operating conditions removal order was found to be $\text{Cu}^{2+} > \text{Pb}^{2+} \approx \text{Zn}^{2+} > \text{Cd}^{2+} > \text{Ni}^{2+} > \text{Mn}^{2+}$. Promising results were obtained in the laboratory, as effective metal removals were observed.

Key words: biosorption, heavy metals, *Rhizopus oryzae*, wastewater

Received: March, 2012; *Revised final:* September, 2012; *Accepted:* October, 2012

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