Adsorption of Ni(II) ions from aqueous solution onto a fungus *Pleurotus ostreatus*

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**ABSTRACT**

In this study, the sorption behavior of *Pleurotus ostreatus* toward Ni(II) is examined with respect to pH, temperature, contact time, and concentration. The good correlation coefficient and close agreement between experimental and theoretical values of biosorption capacity confirm that the pseudo-second-order kinetic model is best applicable to the kinetics data. The sorption of Ni(II) is found to be dependent upon the pH and temperature of the solution. The adsorption of Ni(II) onto *P. ostreatus* is maximum at higher pH values and decreases with an increase in temperature in the range of 298–318 K. Both $X_m$ and $K_b$ values decrease with increase in temperature, indicating the exothermic nature of the process. Different thermodynamic parameters were calculated for adsorption of Ni(II) onto *P. ostreatus*. The negative value of $\Delta S$ indicates a decrease in randomness at the solid/liquid interface. The values of isosteric heat of adsorption are decreasing with increases in surface coverage, which reveal the heterogeneous nature of the solid surface. The FTIR spectra show that the carbonyl groups of *P. ostreatus* are responsible for adsorption of Ni(II) onto *P. ostreatus*.

**Keywords:** Biosorption; Nickel; *Pleurotus ostreatus*; Langmuir isotherm; Isosteric heat

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