STUDY OF METAL REMOVAL FROM COPPER-CONTAINING EFFLUETNS USING AAS AND NAA TECHNIQUES

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Saccharomyces cerevisiae, waste biomass originated from beer fermentation industry, was used to remove metal ions from four copper-containing synthetic effluents: Cu-Fe, Cu-Fe-Ni, Cu-Fe-Zn, and Cu-Fe-Ni-Zn. The effect of pH, initial copper concentration, equilibrium time, and temperature on copper, iron, nickel and zinc ions biosorption was studied. Metal adsorption by biomass was assessed using neutron activation analysis and atomic absorption spectrometry. Langmiur, Freundlich, Temkin and Dubinin–Radushkevich equilibrium models have been assessed to describe the experimental sorption equilibrium profile, while pseudo-first order, pseudo-second order, Elovich and the intra-particle diffusion models were applied to describe experimental kinetics data. Maximum sorption capacities have been calculated by means of Langmuir equilibrium model and mean free sorption energies through the Dubinin-Radushkevich model. Thermodynamic analysis results showed that the adsorption of copper, iron and zinc was spontaneous and endothermic in nature, while of nickel exothermic. *Saccharomyces cerevisiae* can be successfully applied for complex wastewater treatment.

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