عنوان مقاله:

Kinetic, thermodynamic and studies of the biosorption of Ni by bacteria isolated from east of Kurdistan province

محل انتشار:

بیستمین کنگره ملی و هشتمین کنگره بین‌المللی زیست‌شناسی ایران (سال: 1397)

تعداد صفحات اصل مقاله: 1

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خلاصه مقاله:

Biosorption is a promising technology for the removal and recovery of metal ions from wastewater and aqueous solutions due to its low-cost, high effectiveness at low concentrations and its eco -friendly nature. The purpose of this study is to separate and identify the bacterial strains in Qorveh region and to assess the biosorption rate of nickel by the strains using FT –IR and SEM devices. At first, the bacteria were separated and identified using biochemical and molecular methods. The effects of parameters such as PH, contact time, absorbent mass, and initial concentration of nickel on the absorption rate were investigated and the optimal values of these parameters were determined. Also, metal absorption conditions were optimized by the studied bacteria and effective functional groups in absorption were investigated by FT- IR device analysis and Scanning Electron Microscope (SEM), and afterward, experimental data isotherms were evaluated using Freundlich, Langmuir, and Temkin isotherm equations. Pseudo-firstorder, pseudo second-order and Allievis kinetic equations were applied in order to determine the best kinetic model for nickel ion adsorption. The present study showed that absorption capacity depends on parameters such as pH, contact time, absorbent mass, and initial concentration of nickel ions. The optimum pH was about 5.9 theequilibrium time was about 120 minutes the metal adsorption isotherm was followed by the Langmuir model and the maximum metal adsorption was 0.36 mM g-1.Using FT-IR the involved groups included carboxyl hydroxyl and amine. The bacterium studied was from bacterial Micrococcus

کلمات کلیدی:

Biosorption, Nickel, Bacteria, Isotherm, Kinetic