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# Optimization of Copper Concentrate Bioleaching by Mixed Moderate Thermophile Bacteria

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The main objective of this research was to study the bioleaching of Sarcheshmeh chalcopyrite copper concentrate by mixed iron- and sulfur- oxidizing bacteria. Experiments were designed using a full factorial design program. The effects of temperature, pH, nutrient medium and silver ions on the iron and copper recovery from chalcopyrite concentrate as well as on the cell concentration were considered. The experiments were carried out at a pulp density of 10% (w/v) using shake flasks in incubator (150 rpm) for 30 days. Several models have been developed between the target variables and relevant parameters by means of variance analysis using the Design-Expert software. It was found that the maximum copper recovery can be achieved under the following optimum conditions: T= 50°C; initial pH= 1.8; nutrient medium= Norris; silver concentration, 30 mg/L.