

Studies on Optimization of Batch Biosorption of Cr (VI) and Cu (II) from Wastewater Using Bacillus subtilis

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Abstract : The objective of this present study is to optimize the process parameters for batch biosorption of Cr(VI) and Cu(II) ions by Bacillus subtilis using Response Surface Methodology (RSM). Batch biosorption studies were conducted under optimum pH, temperature, biomass concentration and contact time for the removal of Cr(VI) and Cu(II) ions using Bacillus subtilis. From the studies it is noticed that the maximum biosorption of Cr(VI) and Cu(II) was by Bacillus subtilis at optimum conditions of contact time of 30 minutes, pH of 4.0, biomass concentration of 2.0 mg/mL, the temperature of 32°C in batch biosorption studies. Predicted percent biosorption of the selected heavy metal ions by the design expert software is in agreement with experimental results of percent biosorption. The percent biosorption of Cr(VI) and Cu(II) in batch studies is 80% and 78.4%, respectively.

Keywords : heavy metal ions, response surface methodology, biosorption, wastewater

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