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AL Asmarya Islamic University
Faculty of Engineering



Adsorption of Copper (II) Ions from Aqueous
Solution Onto Marble Waste

A graduation project is submitted to the Chemical Engineering
Department in partial fulfillment of the requirements for the degree of
Bachelor of Science in Chemical Engineering

BY

MOHAMMED MOFTHE ELGBO
ALAA ABDULAH BELGRAT

SUPERVISOR

Mr. KHALID ALJFAIRY

Zliten, Libya

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ABSTRACT

The presence of heavy metals in the environment is a major concern due to their toxicity for many life forms. This research studied the ability of using Marble Waste (MW) as an adsorbent for the removal of Cu(II) ions from aqueous solution by batch operation. Experimental investigations of a number of operating parameters were performed to assess their effect on the removal of *Cu (II)* by Marble waste from synthetic solutions. These parameters are contact time, adsorbent dose initial concentration of adsorbate, agitation rate, solution temperature and pH level. The optimum conditions were determined to be pH 6, 2g adsorbent dose, 60 min contact time, 50ppm Cu and 35 °C for copper removal, and particle diameter at 0.275 μm .

The adsorption process of copper (II) is tested with Langmuir and Freundlich adsorption isotherm models. The results revealed that copper is considerably adsorbed on Marble Waste and it could be economic method for the removal of copper from aqueous solutions. Moreover this study gives a value added utilization of biomass to remove Cu from waste water.