



Behavior and mechanism of various components of soil in Cu (II) adsorption from aqueous solution

Haniyeh Jalayeri^{a,*}, Mohammad Mehdi Salarirad^b, Mansour Ziiai^a

^aDepartment of Mining, Petroleum and Geophysics Engineering, Shahrood University of Technology, Shahrood, Iran, Tel. +98 2332392204; emails: haniyeh.jalayeri@gmail.com (H. Jalayeri), mziiai@shahroodut.ac.ir (M. Ziiai)

^bDepartment of Mining and Metallurgy Engineering, Amirkabir University of Technology, Tehran, Iran, Tel. +98 2164542974; Fax: +98 2166405846; email: salari@aut.ac.ir

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ABSTRACT

Soil plays a significant role in control of heavy metals in the environment. Therefore, understanding of the adsorption properties of soil is essential in solving pollution problems. The aim of this paper is to study Cu (II) adsorption onto two soil samples taken from around Sarcheshmeh copper mine (i.e. SA and SE). Also, the adsorption isotherms of Cu (II) onto soil samples were studied. The Langmuir isotherm indicated the best fit for the experimental data in comparison with other isotherms such as Freundlich and Temkin. The capacity of Cu (II) adsorption was assessed by distribution coefficient (K_d) for soil samples that SA sample showed high K_d values. Sequential extraction was conducted for the evaluation of main sorbents of Cu (II) in soils. The results of sequential extraction were indicated and demonstrated that carbonate phase in SA and SE samples play a significant role in the adsorption of Cu (II) metal. In this study, scanning electron microscopy was used to evaluate the relationship between clay content of soil and adsorption process.

Keywords: Soil; Adsorption isotherms; Distribution coefficient; Sequential extraction; X-ray energy dispersive spectroscopy

*Corresponding author.