Petrography, mineralogy of alteration zones and geochemistry in Sarchah Cu-Au mineralization area, Eastern Iran.

P, Roohbakhsh, M. H. Karimpour* , A. Malekzadeh Shafaroudi

Department of Geology, Faculty of Sciences, Ferdowsi University of Mashhad, Iran

Abstract: Sarchah Cu-Au mineralization area is located in South Khorasan Province, about 180 km southwest of Birjand city, and in Lut Block Tertiary magmatism assemblages. Geology of the area consists of Eocene to Holocene volcanic lavas with basalt – andesite composition and crystal tuff. Landsat and ASTER data detected alunite, jarosite, sericite, epidote, and kaolinite alteration minerals using"standard and selective principal component analysis" and "spectral angle mapping"methods. Then the detected argillic (illite, Kaolinite and montmorillonite), jasproid and silicification alteration zones in the study area were proved by the following field, petrography and X-ray diffraction studies. The range of elements variation in the stream sediments is: Au <5 to138 ppb, Zn 48 to144 ppm, Pb 7 to 40 ppm, Cu 20 to 51 ppm and Ag 0.18 to 0.31 ppm. The high values are related to argillic zones and silicified veins. The result of chip composite geochemistry shows values of Au (max 75 ppb), Zn (max665 ppm), Pb (max 404 ppm), Cu (max >5%), Ag (max 5.3 ppm) and Mo (max 10.7 ppm). The high contents related to argilic alteration zone and silicified veins in center to south of the study area. Evidence of geology, alteration, mineralization, and geochemistry indicate a high sulphide epithermal mineralization associated with the upper parts of a copper porphyry system in the area that could be considered for the detailed exploration.

Keywords: *Sarchah Cu-Au mineralization area, argilic alteration, high sulfidation epithermal, Lut Block.*

*Corresponding author, Tel:05138797275, fax: 05138796416, Email: karimpur@um.ac.ir