Geochemical and Biogeochemical Characteristics of the Deh Madan Deposit, Charmahal and Bakhtiari Province, Iran

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Sedimentary-chemical reserves after porphyry deposits are most important copper producer in the world, with about 27% of the world's copper reserves. The Deh Madan deposit is one of the main examples of sedimentary Cu deposits in Iran. Deh Madan deposit located in Ardal region in Charmahal-Bakhtiari province, Iran. In order to geochemical studies, collected samples were analyzed using Inductively Coupled plasma Mass Spectroscopy (ICP-MS) method at the Lab West Analytical Laboratories in the Australia. Geochemical data show that SiO_2, Fe_2O_3, CaO and MgO have the high concentrations. The most important trace elements in the studied samples are: Cu = 68057.6 ppm, As = 137.7 ppm, Co= 119.2 ppm, Ba = 71 ppm, Sr = 36.40 ppm, Ni = 26.8 ppm and Ag = 13.54 ppm. Calculated correlation coefficients of elements show that copper (Cu) have a specific correlation with Ag (0.85), As (0.6) and Cd (0.6). These data confirms that there is negative correlation between Cu with Ba, Co and Al. In addition, investigation of (Sc/Th)/(Cr/Th) and (Sc)/(Th/Sc) showed that Felsic and Mafic igneous material mixture affect Deh Madan sediments. In order to study of Oxidation- Reduction conditions in the area, Ni/Co, V/Cr, V/(V+Ni) and Mo/ (Ni/Co) were used. The obtained data indicate Oxidation conditions in Deh Madan district. The geochemical results represent negative Ce and Eu anomalies, LREE enrichment relative to HREE and an upward concavity in MREE values (fig. 1). Comparing REE pattern of Nachanga deposit [1] with Deh Madan pattern show that the study area features are analogous to that of central African Zambian belt sedimentary copper deposits. The Ce negative anomaly is due to the presence of organic matter during metals deposition in Deh Madan region. Finally, The absence of similar behavior in bioessential elements pattern, indicate low activity of organism such as bacteria in metals deposition in the area [2].

[1] Roberts et al (2009) Zambian Copperbelt Miner Deposita. 44, 881–891 [2] Zarasvandi, A et al (2009) Chemie der Erde. 73, 495-508