Geochemistry and petrology of Mazraeh granodiorite north of Ahar north east Azarbayan and its Comparison with some others granodiorites

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(Received: 5/3/2010, in revised form: 9/8/2010)

Abstract: Mazraeh granodiorite is part of Shyvardag plutonic batholith which is located in eastern Azarbajan, 20 km north of Ahar town and 5 km north of Mazraeh Village. It is a part of Mesozoic –Tertiary igneous belt of the Sanandaj-Sirjan. From petrography and geochemical point of view, rocks are acidic to intermediate and the main part of the body is granodiorite. Texturally, the rock is mainly granular, containing plagioclase, alkali feldspars, quartz, and hornblende. The accessory minerals include biotite, sphenite, magnetite, apatite and epidote. Geochemically, this granodioritic rocks are calc alkaline an I type series and is Metaaluminous with VAG characteristic. Based on Harker type diagrams, the incompatible elements as well as compatible elements have a continuous trends, which indicate fractional crystallization of magma during the evolution of intrusion of the rock in the region and other processes are in second order. The presence of amphibole minerals indicate that the primary magma was rich in water (%3). In addition, enrichment of magma from elements like Fe, Ca, Mg, Co, Ni and reduction of elements like K,Na, Th in low Si samples proved that the amphibole have been crystallized at the intail stages of fractional crystallization but minerals like albite, alkali feldspar and biotite were crystallized at the final stage. Intrusion of this body to in the carbonate rocks caused the skarn mineralization which indicate the potential of mineralization of these granodiorites. Comparison of Mazraeh granodiorite with other granodiorite, such as Qulong of Chinese, Rio Narcea belt in Spain, Celebi in Turkey, Songun and Tokmedash in Iran indicate that Mazraeh granodiorite enriched in elements like Th,Nb,La,P,Pb. These geochemical differences with other granodiorite could be due to their different shares from enriched mantel and crust during the formation of these granodiorites.

Keywords: Geochemistry; petrology; Mazraeh granodiorite Mazraeh skarn; Ahar.

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