Petrology, geochemistry and origin of Garagheh Granite, North west of Zahadan

H. frasatmirbaluchzahe, H. Biabangard*, M. Boomaeri

Department of Geology, Faculty of Science, University of Sistan & Baluchestan

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Abstract: Garagheh granitoid is located in the northwest Zahedan batholite and is exposed in Zahedan-Saravan granitoid belt and Sistan suture zone. This granitoid is composed of granite (synogranite, monzogranite) and granodiorite. These rocks have mainly consist of plagioclase, orthoclase, microcline, quartz, biotite and hornblend with granoular texture. This pluton cut by microdioritic dykes. Garagheh granitoid have metapellitic enclaves with enrich from quartz and mica minerals with granoular texture. This granitoid is calc-alkaline, metalluminous, with (I) and slightly to S types, enrichment from in LREE and LILE and depleted from in HREE and HFSE. Tectono magmatic diagrams show Garagheh granitoid is related to active continental environments. Positive anomalies in K and Cs elements and negative anomalies in Zr, Sr, and Ti elements show patterns similar to the subduction environment. Based on the Sr/Y versus Y and FeOt+MgO+TiO2 +Al2O3 versus Al2O3/FeOt+MgO+TiO2 digrams, it is thought that the constituent magma of this pluton is similar to the Zahedan granite due to the melting of amphibolite source, that resulted during closure of the Neothytean ocean east of Iran, located between the Lut and Helmand plates, during the Eocene-Oligocene to Miocene times.

Keywords: Granite; calcalkaline; Sistan suture Zone; Garagheh; Zahedan.

*Corresponding author; Tel: 09153408526, Email: h.biabangard@science.usb.ac.ir