

Geochemical investigation on quartz-monzonite pluton of Tuye-darvar, in eastern Alborz structural Zone, Damghan, north – east of Iran

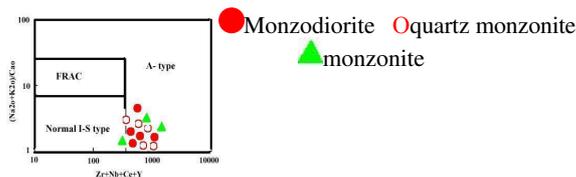
KHANALIZADEH.A¹, GHASEMI.H²,
SADEGHIYAN.M², ABEDI.A¹

¹Mining and geophysics faculty, Shahrood University of Technology, Iran (Alireza_geo25@yahoo.com)

²Geology faculty, Shahrood University of Technology, Iran

Alborz structural zone is a part of the alpine-hymalian active tectonic belt which these activities still is going on. Shtamphly (1991) called this zone as the area where rifting process of Paleothetys Ocean can be observed. The studied area is located in 45 km of Damghan (north-east of Iran) in eastern Alborz structural zone.

On the basis of geochemical diagram of De la Roche et al (1980)[1] the studied samples belong to the series of quartz-monzonite, quartz-monzodiorite and monzonite . According to ICP_MS and XRF analyses, together with the variation diagrams and variation trends of major, minor, trace and rare elements, a continuous compositional spectrum in the studied rocks is proven. Further studies using spider diagrams showed that all of the samples enriched in LILE and incompatible elements. They showed however less enrichment of heavy rare earth elements and compatible elements. Lower anomalous of Ti and Nb indicates that parent magma contaminated with crustal lithosphere. Lower Paleozoic alkaline granitoids of Damghan is associated with the calc-alkaline k-bearing series located inside the intercontinental granite(WPG). According to petrographical and geochemical evidences such as absence of muscovite and index minerals of metamorphic rocks, abundance of apatite and sphene, 52-58% SiO₂ content, low Ti content and more enrichment of LILE, the studied granitoidic rocks are I-type granitoids. Further more with attention to the low content of CaO (1,7-3,9%) and MgO (1,5-2,58) ,high ratios of K/Na ,Fe/Mg and enrichment of Zr(320-402 ppm) and Y(43-56 ppm), Ga/Al ratio and comparing with geochemical diagrams of Walen et al (1987)[2] and Maniar & Picooli (1989) we can classify the studied granite into anorogenic A-type granite.(see fig)



1-De La Roche H., (1980). A classification of volcanic and plutonic rocks using R_1 - R_2 diagrams and major element analyses- its relationships and current nomenclature. Chem. Geol., 29, 183-210.

2- Whalen, J. B., Currie, K. L., Chappell, B. W. (1987): A-type granites: geochemical characteristics, discrimination and petrogenesis. Contrib. Mineral. Petrol., 95, 407-419.