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Mineralogy, petrography and geochemistry of the Kharvanagh volcanic rocks, (NW of Iran)

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Abstract: The study area is located in the central part of the Siahrood geological map, Kharvanagh of Ahar town, in the East Azerbaijan Province. The volcanic rocks of the Kharvanagh area include trachybasalt, trachy-andesi-basalt and trachy-andesite. The main minerals in the rocks are plagioclase, pyroxene, olivine and hornblende and the main textures are microlitic-porphyry. At the contact between the volcanic rocks and Miocene sandstones, epidote and calcite are formed due to thermal effect. Based on the geochemical data of major and trace elements, these rocks belong to High K alkaline to shoshonitic magmatic series. The absence of distinct Eu anomaly and relatively enrichment in LILE (Ba, Rb, and K) and LREE in these rocks indicate a back arc tectonic setting. Also enrichment of incompatible elements can be related to mantle metasomatism or contamination by continental crust. The chemistry of back arc rocks is relatively complicated and the geochemical features depend on the degrees of partial melting, heterogeneity in the sources mantle, etc. Considering the geological features and the Miocene age of the rocks, it can be concluded that the parental magma belongs to extensional basins magmatism, which produced from partial melting of the garnet lherzolite mantle.

Keywords: *Kharvanagh; basalt; back-arc basin; garnet- lherzolite.*

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