Petrology, geochemistry and mineral chemistry of volcanic rocks in the north of Kaboudarahang (Hamedan)

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Abstract: The volcanic rocks in the north of Kaboudarahang consist of andesite-tracky andesite with the Eocene age have been exposed in the Urmieh-Dokhtar zone. These andesite are scattered as prismatic columns. Petrographic studies show that these rocks consist of amphibole and plagioclase with porphyritic, glomoporphyritic and microlitic textures. Geochemical studies show that these rocks belong to the calc alkaline magmatic series. In terms of tectonic environment, they are located in the active continental margin associated with subduction zone. Trace element pattern shows the enrichment of LREE to HREE. Amphibole mineral chemistry shows that they are belonging to the calcic group of magnesium hornblende and chermackit types. These amphiboles belong to active continental margin that consistent with the results of host andesite. Based on thermobarometric methods, these amphiboles are formed at a temperature of 815.5 °C and a pressure of 6.35 kbar. The high fugacity obtained for these rocks indicates the oxidant conditions in the formation of these rocks and evidence of their formation at the boundary of convergent plates.

Keywords: Thermobarometry; andesite; Eocene; volcanic arc; Kaboudarahang.

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