Petrography and Geochemistry of minerals in Feldspathoid-bearing rocks, located in north Shahr-babak, west Meiduk village

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Abstract: The studied volcanic alkaline rocks with 32.7±6 Ma years age are cropped out along the south – east of Urumiyeh - Dokhtar Volcanic Belt in Kerman province. Based on the TAS classification these rocks are divided in to tephriphonolite and phonolite which belong to high-K alkaline rocks. These rocks are composed of pyroxene, plagioclase, sanidine, nepheline, analcime and titanomagnetite minerals. Diopside is the only pyroxene identified in the study area. In the most of the phenocrysts the amount of MgO in the core is more than the rims while the amount of FeO is high in the rims. This trend shows a normal fractionation during magmatic evolution. The composition of pyroxene phenocrysts is from WO 47.8 En 38.8 FS 13.4 to WO 45.6 En 35.7 FS 18.8. Sanidine is the only K-feldspar present in these rocks and has a composition ranges from Or 62.7 to Or 93.8. Most of the plagioclase phenocrysts have Ca-rich cores and more Na-rich rims which is attributed to normal magmatic fractionation. The composition range of plagioclase is An 50.83 to An 59.2. Trapezohedrs of analcime comprise up to 40% of the rocks and the composition of the analcime trapezohedrs are remarkably homogeneous. The analcime is interpreted as having formed by ion-exchange pseudomorphous replacement of primary leucite, either during cooling of the lava or shortly afterwards. Titanomagnetite is a very common equant grain in groundmass of all the studied samples. The Fe-Ti oxide crystals are relatively Ti-rich and are classified as titanomagnetite.

Keywords: Alkaline rocks, Diopside, Sanidine, Plagioclase, Titanomagnetite.