Mineralogy, Petrography and Petrogenesis of Sahand Volcanic Suite, Northwest Iran

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Abstract: Sahand volcanic rocks, with Plio-Quaternary age, is located southeast Tabriz in the northwest part of Central Iran. These rocks are mainly composed of pyroclastics (tuff and ignimbrite) and lava flows (rhyolite, rhyodacite, dacite and andesite) that unconformably cover the Miocene sedimentary formations. The major constituent minerals include plagioclase and hornblende which are surrounded by a matrix of fine grain and glassy. Their textures are porphyritic. Heterogenous mineralogy, field and textural evidences such as sieve texture in plagioclase, resorption rims in crystals, oscillatory zoning in plagioclase, high normative quartz and rounded enclaves suggest that the primary magma undergone magmatic evolution including fractional crystallization, fractionation, contamination and magma mixing during ascending. There are mineralogical as well as geochemical evidences that AFC-type processes were involved in the evolution of the Sahand volcanic rocks. The chemistry of the felsic-intermediate volcanic rocks indicates that the parent magmas are medium-K calc-alkaline and metaluminous in nature. The volcanic rocks display highly fractionated REE patterns, with no negative Eu anomaly. Their geotectonic environment is post-collision and continental margin arcs.

Keywords: Sahand; Plio-Quaternary; Central Iran; subalkaline lava; post-collisional.