

Crystal-chemistry and whole rock geochemistry evidences for magma mixing, contamination and metasomatism in Akapol Granitoid (SW Kelardasht, Central Alborz)

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Abstract: The crystal-chemistry of the plagioclase, alkali feldspar, biotite, amphibole and whole rock geochemistry of Akapol granitic massif are investigated in this paper. The chemical composition of biotites and amphiboles plotted in the annite-siderophyllite, magnesiohornblende and actinolite fields, respectively. Comparison of the chemical composition of biotites and amphiboles with similar minerals from the California granitic batholith indicate that the monzogranitic unit of Akapol belongs to the strongly contaminated I-type granites. Accordingly, these rocks are highly contaminated and may have derived from upper mantle and/or lower crustal sources. They have experienced magma mixing or are affected by contamination with upper crustal rocks. These results are consistent with the curve like logarithmic diagrams of compatible/incompatible elements; the presence of the sieve, poikilitic and rapakivi textures; the partial absorption of the plagioclase phenocrysts; the presence of mafic microgranular enclaves and needle apatite in the samples. Based on this study, two types of plagioclase in monzogranitic unit can be recognized in the monzogranitic unit: the first generation occur in the alkali feldspar phenocrysts and the second generation is in the form of covering crystals in rapakivi and sieve textures which probably formed during magma mixing.

Keywords: *magma mixing, contamination, akapol, granitoid, rapakivi texture.*