Minerals chemistry and geochemistry of propylitic alteration in Astaneh granitoid (southwest Arak)

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Abstract: Astaneh granitoid intrusion is located in southwest of Arak city that is part of Sanandaj-Sirjan zone. This intrusive mass altered under influence of hydrothermal fluids and so propylitic alteration is one of the most important types of alterations in this granitoid. Epidote, sphene, prehnite and quartz are important minerals in this alterated rocks. The weight percent of pistacist in epidote is about 24 so this base epidote origin if saussuritization of plagioclase took place. On the bases of Al and Fe in structural formula of sphene, these minerals are secondary in origin and forms during the alteration processes. Prehnites have low enrichment of iron so formed in low temperature and oxygen fugacity. Normalization of altered rocks to parent rock is indicator of depletion of REE and this depletion increased from propylitic to phyllic alteration. The variations of major oxides relative to immobile oxides of Al₂O₃ are indicative of increasing of Na₂O in all zones except phyllic zone that it is reason of reduce plagioclase basicity. CaO increasing in propylitic zone and finally MgO is only depleted oxide in all alteration zones.

Keywords: Hydrothermal alteration, propylitic, tourmalinization, phyllic, granitoid, Astaneh, southwest Arak.