

## Geochemistry and petrogenesis of igneous rocks in the Saveh region, NW Iran

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Saveh region is located in Central Iran (CI) and Urumieh-Dokhtar Magmatic Assemblage (UDMA) and is consist of major varieties of Paleogene igneous rocks. Granitoid, diorite and gabbro (intrusive) and rhyolite, andesite and basalt (volcanic) are exist in the region. Pyroclastic rocks and tuff are observed as well. Their west-northwest trend is perpendicular to the subduction zone and is parallel to major faults trend. Approximately all igneous rocks have calc-alkaline metaluminous affinity and Harker's variation diagrams of major and trace elements show a continuous range that indicate they are cognate. The enrichment of LILE and depletion HFSE which are consistent with continental volcanic arc magmatism. Some basic rocks are enriched in both LILE and HFSE, which is consistent with the undepleted, asthenospheric mantle. On the other hand, the enrichment of Ti, Fe, Mg and Ca in the igneous rocks in the region can be considered as decompressin melting of oceanic lithosphere or mantle wedge derived parent magma. Whole rock  $^{87}\text{Sr}/^{86}\text{Sr}$  ratios of Silijerd intrusion range from 0.704759 to 0.705166 reflect their lower crust nature and low contamination of their magmas with upper crust [1].

Geochemistry of igneous rocks in the Saveh reveals an extensional backarc basin with high-angle slab or rapid subduction (slab roll-back) tectonic setting in the region during the paleogene. This may be preceded by a flat-slab subduction of Neotethyan oceanic lithosphere beneath Central Iran in the Mesozoic [2].

[1] Mobasher *et al.* (2008) AGU. [2] McQuarrie *et al.* (2003) *Geophys. Res. Letts.* **30**, 2036.

## Using chromespinel for petrogenetic implications of South-eastern Iranian mantle peridotites

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In Iranian mantle peridotites (Kuhshah, Soghan and Abdasht complexes), there are various types of spinels with distinct chemical and textural features. The unique speciality of spinel for indication of its environmental conditions during crystallization leads us to use it for understanding the origin of these Iranian mantle complexes. In these peridotites, each of lithologies contains special types of Spinel. In dunites, chemical composition and texture of disseminated spinels indicate a replacive origin for dunites that leftover after passage of ascending melts. In harzburgites, spinels are refractory and show nearly 20 percent partial melting of host rocks. In chromitites, spinels are magmatic in origin and their composition is similar to those crystallized from boninitic melts. In some lithologies, there are two types of spinels including refractory ones and interstitials that have been formed from perculating melts. These features indicate south-east Iranian upper mantle has been affected by partial melting and impregnation events and it is highly heterogenous.