Mylonitic granites in NW of Iran: characteristic, genesis and tectonomagmatic implications

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Precambrian gneissic unites have been seen in the geological maps of northwest Iran that have been cut whit leucogranite rocks. According to field relationships and evidences, mineralogical studies and geochemical data, found that the acidic lithofacies are co-magmatic and which used to be thought of as gneiss, but these are actually mylonitic granites which have found gneissic feature through plastic and brittle deformation. Gradual changing of unmylonitic rocks into mylonitic ones, synchronous and adjacent observation of petrological phenomena and the similarities of mylonitic and unmylonitic rocks, show existence of porphyroclasts and megaclasts of primary rocks with trace elements distribution pattern such as Rb, Ba, Sr and Zr are indicate that mylonitization phase's effect on the region's rocks. From the tectonomagmatic point of view, presence of bimodal magmatism and anorgenic origin of granites, suggest that the presence of extensional geodynamic setting in the area. The granites are studied to be alomininous A-type granites. During transferring magma to upper levels and contaminated with wall rocks, these granites have found similarities with upper mantle.

Neoproterozoic collisional and anorogenic A-type granites of the Yenisey Ridge Orogen (southwestern framing of the Siberian craton)

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Three groups of Neoproterozoic A-type granites were recognized in the Yenisey Ridge: syncollisional Chirimba granites and quartz syenites (760 Ma), postcollisional Glushikha rare metal leucogranites (750-720 Ma) and anorogenic Tatarka leucogranites, granites and syenites (630 Ma) (Fig. 1).

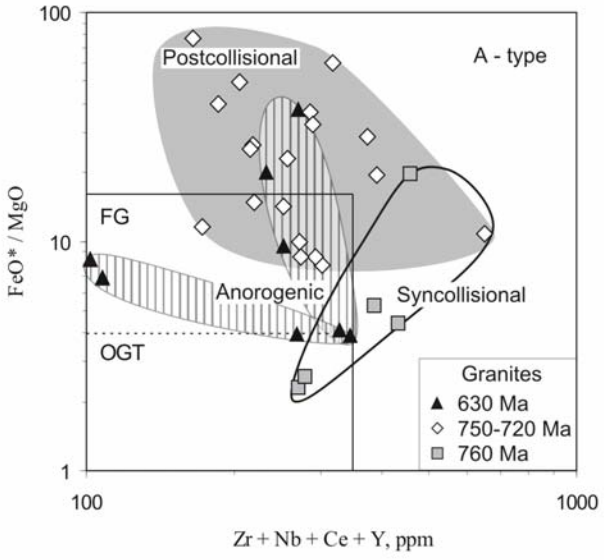

Figure 1: FeO*/MgO-Zr+Nb+Ce+Y diagram (Whalen et al., 1987) for three groups of A-type granites.

The Chirimba granites and associated with them S- and I-types granites were derived mostly from crustal source. The Tatarka granites associate with carbonatites, ultramafic and alkaline rocks that are differentiates of mantle and mantle - crust sources. Both the Chirimba and Tatarka rocks are high-temperature granites. The Glushikha rare metal (high-K) leucogranites relate to medium-low-temperature granites. They are probably late differentiates of subalkaline melts that were responsible for Chirimba granite formation.