Geochemistry of the high-potassium, calc-alkaline, I-type granitoid rocks from the Qazan Pluton, central Iran

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The Qazan Igneous Complex is located 140 kilometers north-west of Isfahan city. This area is located within the Urumieh-Dokhtar magmatic arc. The composition of the intrusion ranges from gabbro to granodiorite. The whole-rock data show these rocks to be subalkaline, calc-alkaline and metaluminous to slightly peraluminous. The rocks are characterized by enrichment of lithophile elements (LILEs) and depletion of high field strength elements (HFSEs). The Qazan rocks have weak concave-upward rare earth element (REE) patterns, suggesting that amphibole played a significant role in their generation during magma segregation. Relative depletion in Al and enrichment in Ca vs. Fe+Mg+Ti, and the patterns of trace and rare earth elements suggest that these rocks formed along a destructive plate margin and were derived from a lower crustal source. The magma probably formed by partial melting of amphibolites. Mixing of such mantle derived mafic melts with the lower crust derived melts could have formed the diorite magma.

[Source] Parlak O (2006) Geodynamic significance of granitoid magmatism in the southeast Anatolian orogen: Geochemical and geochronogical evidence from Göksun-Afs¸in (Kahramanmaras¸ Turkey) region. *International Journal of Earth Sciences* **95**: 609–627.