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Petrology and geochemistry of granitoids from Siyahmansur area, northeastern Miyaneh (NW Iran)

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Abstract: The Siyahmansour area is located between longitude 37^0 46′ 07″ to 37^0 50′ 19″ N and latitude 47^0 53′ 13″ to 47^0 58′ 22″ E in northeastern town of Miyaneh Exposure of different igneous rocks in the studied area including Eocene to Miocene volcanic rocks, granitoids and diorites. The granitoids are different including muscovite granites and granite-granodiorite. The muscovite granites are intruded into metamorphic rocks only as dykes. The intrusion age of these muscovite granitoid types could be related to the Precambrian (?) or Early Cimmerian (?) age of the metamorphic rocks. The granite-granodiorites, including alkali-feldespar granites and granodiorites, are intruded into the Cretaceous and Eocene volcano-sedimentary rocks. The geochemistry of variety of granitoids in the studied area indicate that in the view of aluminum saturation index, the muscovite granites and granite-granodiorite are peraluminous to metaluminous respectively. Magmatic series of muscovite granites and granite-granodiorite are determined as calc-alkaline and alkaline respectively. On the basis of mineralogy and geochemical evidences, the muscovite granites and granite-granodiorite are S-type and A-type (A_1 subgroup) granitoids. Tectonic setting and petrogenesis of the granite-granodiorite are determined as anorogenic within plate granitoids having mantelic origin but the muscovite granites correspond to the Syn-COLG. REE diagrams of granite-granodiorite show high enrichment of LREE relative to HREE. This indicates that they are likely generated from an enriched source, although crustal contamination and/or fractional crystallization processes can be important too. REE amounts of the muscovite granites are relatively comparable and do not show considerable variations. The spider diagrams of A-type and S-type granitoides of Siyahmansour area are consistent with a crustal source of those rocks.

Keywords: *granitoids; metamorphic rocks; S-type; A-type; Siyahmansur; Miyaneh.*

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