

Mineralogy, geochemistry and origin of Chaharfarsakh intrusive and extrusive rocks, Lut block

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Abstract: Chaharfarsakh intrusive and extrusive rocks are located in 25 Km northwest of Nehbandan and 165 Km south of Birjand and in terms of geology, situated in the eastern of Lut block. Chaharfarsakh intrusive rocks with Jurassic age were injected into shales and sandstones Shemshak Formation. Intrusive rocks are gabbro, diorite, synogranite, quartz monzonite, hornblend tonalite, granodiorite, granite, pegmatite and aplitic in composition. These rocks are composed of quartz, plagioclase, orthoclase, hornblend and biotite minerals but pyroxene minerals observed in gabbro rocks. They are dominating granular texture. Andesite and dacite are main extrusive rocks in Chaharfarsakh bodies and composed of plagioclase, hornblende, quartz, biotite minerals with porphyritic texture. Chaharfarsakh granitoid have subalkaline, meta to peraluminous nature, I type granitoids and show tendency to contamination continental crust. Tectonic setting discrimination diagrams show these rocks belonging to volcanic arc granitoids position. It seems Chaharfarsakh extrusive rocks with Eocene age can be related to subduction of Neotethys ocean in the Cretaceous time, while Chaharfarsakh intrusive rocks to Jurassic are not justified with Cretaceous magmatism and probably differentiation formed from extrusive rocks. It seems Chaharfarsakh granitoid formed similar to ShahKuh intrusive have been formed by partial melting the base of continental crust that was contamination during replacement with assimilation of metamorphic and sedimentary host rocks the upper crust.

Keywords: *nehbandan; Chaharfarsakh; Lut block; geochemistry; cretaceous.*

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