Petrology, geochemistry and tectonic setting of Kuhmish granitoids (south of Sabzevar)

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Abstract: Granitoid bodis of Kuhmish are located about 30 km south of Sabzevar city. In terms of tectonic classification, Kuhmish granite was considered to be part of Sabzevar zone. Conglomerate, tuff, sandstones of Paleogene age and tuff units, radiolarites, andesite and diorite with Upper Cretaceous age form the main litological units of the study area. Granitoid bodies involves an acidic part with combination of sinogranite, monzogranite and granodiorite with age after Paleocene which form majority of this bodies, and an intermediate term of diorite with Late Cretaceous age mostly can be seen as enclaves with few centimeters to several square meters in size within the granitoids. According to geochemical diagrams, granites have calc-alkaline and peralumin nature and diores and granodiorites have teolic and metaluminous nature. These units are reclassified as I-type granitoids. Also flat pattern of rare earth element indicate that the primary source of magma is outside the garnet stability range. Spider diagrams of trace elements in all phases of granitoid mass indicated negative anomalies of Nb and Ti and positive anomalies of Rb and K that are typical of subduction environments. Comparison of the frequency of incompatible elements in studied rocks with variation of these elements in granitoids in different tectonic settings indicates their similarity with Andean volcanic arc granitoids. In addition, these parathion diagrams of tectonic environments indicates the relationship of Kuhmish sub-volcanic body with volcanic arc (VGA) which are composed, in result, of subduction of Neotethyan oceanic crust under central Iran

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