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Petrography and petrology of alkaline potassic rocks from the Eslamy Island, NW Iran and geodynamic environment of genesis

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Eslamy Island with an area of 360 km^2 is located in SW of Tabriz and east of Urmia Lake in NW Iran. The island is a stratovolcano with subsided centre, which is uplifted due to injection of late sub-volcanic masses and domes with trachytic to microsyenitic composition. The complex cone of the volcano includes alteration of leucite tephrite, tephrite, leucite basanite, basanite and related pyroclastic rocks. The magmatic succession starts with alkaline potassic to ultra-potassic magmas and silica under-saturated basic shoshonites, followed by intrusion of lamprophyric stocks and dykes and eventually acidic magmas including trachytic domes, microsyenites, syenites and phonolites are intruded. The magma, forming igneous rocks of the Eslamy Island had alkaline potassic to ultra-potassic and shoshonitic nature and was enriched in LREE and LILE and shows distinct depletion in HREE. This feature can be attributed to generation of magma from garnet lherzolitic deep mantle with low melting rate, which is contaminated by crustal rocks during ascent. The study of geodynamical environment of these rocks in appropriate discriminant diagrams shows that the Eslamy Island igneous complex is formed in a post-collision magmatic arc setting and is not related to the subduction zones or continental rifts.