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Petrogenesis, geochemistry and mineralogy of Eocene magmatism in the ophiolitic belt of Northern Sabzevar

A. R. Shirzadi[2], M. Nasrabady[1*], A. Asiabanha[1], S.J. Sheikh Zakariaei[2]

1. Imam Khomeini International University, Iran
2. Islamic Azad University, Sciences and Researches branch, Iran

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Abstract: Ophiolitic belt of Northern Sabzevar is invaded by basic, intermediate and acidic post-ophiolitic magmtism as dome, dyke and cone. Microscopically, the texture of the studied samples is porphyric and trachytic. Phenocryst mostly consists of amphibole, feldspar and clinopyroxene. All researchers that have investigated basic to acidic post ophiolitic magmatism of northern Sabzevar have consensus about their subduction related genesis. According to geochemical characteristics, basic and intermediate samples are resemble to normal arc island magma whilst rhyolitic and dacitic samples display adakitic nature. According to the binary diagrams, adakitic characteristic of these samples are as a consequence of amphibole, titanite and zircon fractionation. The existence of amphibole phenocryst and titanite and zircon as accessory minerals confirming this process as well. According to the barometry results, amphibole fractionation from water-rich melt of subduction zone at depth of equivalent to the middle and lower continental crust led to creation of adakitic signatures in the ultimate dacitic and rhyolotic magma.

Keywords*: acidic and intermediate dome, adakitic, amphibole fractionation, ophiolitic belt of Northern Sabzevar*

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*Corresponding author, Tel: 02833901360, fax: 02833780040, Email: nasrabadi@sci.ikiu.ac.ir