

Mineral chemistry and physical conditions of crystallization in Filshour and Goft dioritic intrusions, Southwest of Sabzevar

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(Received: 20/10/2018, in revised form: 19/1/2019)

Abstract: The Late cretaceous dioritic intrusions of Filshour and Goft in southwest of Sabzevar are situated in the northern edge of central Iran zone. The rocks of these plutons show porphyry, granular, ophitic and subophitic textures and are composed of amphibole, plagioclase and clinopyroxene (in diorites), along with quartz (in quartz diorites). The amphiboles of these rocks are in the group of calcic amphiboles and Mg-hornblende type. Plagioclase composition ranges from anorthite to labradorite. The obtained equilibrium and closing temperatures and pressures in amphiboles and plagioclases based on different thermo-barometry methods are in the range of 763-918 C° and 3-5.5 Kb (10-18 Km depths). The Pyroxenes are in the range of Ca-Mg-Fe pyroxenes with augitic composition and crystallized from a magma under the high oxygen fugacity in 2-5 Kb pressures and 1000-1100 °C temperatures. The amphibole and pyroxene chemistries indicate the subalkaline nature of the magma and a subduction related magmatic arc setting for these intrusions that is compatible with the intra-oceanic island arc environment of the Upper Cretaceous magmatic rocks of the supra-subduction oceanic basin of Sabzevar.

Keywords: *Mineral chemistry; thermobarometry; dioritic intrusions; Sabzevar; Iran.*

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