Mineral chemistry and geothermobarometry of Spid pluton (West Qom)

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(Received: 6/2/2017, in revised form: 5/7/2017)

Abstract: Spid pluton with Neogene age outcrop in the Urumieh-Dokhtar Magmatic belt. Amphibole in this intrusion is calcic and magmatic and its composition corresponds to magnesiohornblende to actinolite which reflects the type I granitoid. Geobarometry calculations show that the amphibole crystallized at pressure of 2.5 to 3.7 kbr corresponding to a depth of 8 to 12 km. Based on geothermometry of hornblende - plagioclase pairs and amphibole, a temperature of 752 to 865 °C is estimated for crystallization of these two minerals at the Spid pluton. In addition, log \( f_O^2 \) for this pluton equals to -12.18 to -15.27, which reflects relatively high oxygen fugacity in magma and indicates the formation of this pluton in the subduction zone.

Keywords: mineral chemistry; geothermobarometry; Spid pluton; oxygen fugacity.