

Study of the source and geothermobarometry of Shah Jahan granodiorite and granite plutons: by using unstable isotope data, dating and geochemistry

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(Received: 17/10/2014, in revised form: 7/1/2015)

Abstract: The Shah Jahan Granodiorite and granite rocks are part of the Ordubad granitoid body that outcrop in 10 km south of Aras River. These rocks are located in the Alborz-Azerbaijan zone in NW of Iran. The Granodiorite Pluton has granular texture; containing minerals are plagioclase (andesine), alkali feldspar (orthoclase), amphibole (magnesian-hornblende) biotite, titanite and magnetite. Alkali feldspar minerals in granodiorite pluton are less than granite pluton. The Initial rate of $^{87}\text{Sr} / ^{86}\text{Sr} = 0.704486$ in granodiorite and $^{87}\text{Sr} / ^{86}\text{Sr} = 0.704432$ in granites rocks and positive ϵNd value indicate to mantle origin and subduction-related area. The emplacement age of these rocks is related to the Eocene based on Ar-Ar by biotite minerals. Base on mineral chemistry of biotite, amphibole and whole rock geochemistry: these plutons are meta-aluminous, I-type granites and related to calc-alkaline magma series. Negative Nb and Ti anomalies in normalized graphs can be shown subduction-related zones. P-T replacement of the granodiorite rocks are estimated of 1.08 to 1.91 Kbar and 753 to 777 °C.

Keywords: *Granodiorite and granite, unstable isotope, dating, mineral chemistry, Shah Jahan.*

متن فارسی اصل مقاله از صفحه ۶۰۹ تا ۶۲۲ در این شماره به چاپ رسیده است.

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