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Mineralogy, geochemistry and radiometric dating of igneous rocks of Champeh salt dome, north Bandar-Lengeh

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Abstract: Champeh salt dome is located in the north of Bandar Lengeh (Hormozgan Province). This dome has penetrated into the Champeh anticline with sequences from the formations in as ending order of Pabdeh, Jahrom, Asmari, Gachsaran, Mishan and Aghajari. The compositions of volcanic rocks inside this dome are different ranging from rhyolite to basalt and are accompanied by granodiorite rocks. The study of mineral chemistry in granodiorite rocks shows that the amphiboles are located in the calicic group and subgroup of ferrohornblende. The plagioclase of these rocks is albite and alkali feldspar is an orthoclase. Barometric measurement, based on the amount of Al in Amphiboles, shows the amphibole crystallization pressure as 1.54 kbar. Thermometry, shows based on the coexistence of hornblende and plagioclase minerals in granodiorite rocks, the crystallization temperature ranging between 684 °C to 811 °C. The amount of calculated oxygen fugacity for these amphiboles is about -17.08, which shows the conditions of the oxidant environment at crystallization. Based on the whole rock geochemistry, the composition of igneous rocks changes from mafic to acidic, corresponding to that the nature of their magma as calc-alkaline. In the normalized multi-elemental of chondrite and primary mantle diagrams, in most samples LREE enrichment is observed in comparison to HREE and depletion of Ti, P, Ta and Nb, which is characteristic of volcanic arc of the subduction region and in different tectonic diagrams, they represent the active continental margin environment. The result of U-Pb zircon dating of granodiorite is 549.2±4.8 Ma (Late Neoprotrozoic time).

Keywords: *Salt dome; Champeh; mineral chemistry; granodiorite; basalt; active continental margin; U-Pb zircon dating.*

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