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Thermobarometry of Mamzar granitoid body, and its tectonomagmatic implication

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Abstract: The Mamzar granitoid pluton is located in the Kerman Province and structurally in southeast of Urumieh-Dokhtar magmatic zone. Based on petrographic studies, the granitoid consist of four rock type of diorite, tonalite, granodiorite and monzogranite. They are mainly composed of plagioclase (andesine), alkali-feldspar (orthoclase), quartz, amphibole (magnesiohornblende), biotite and clinopyroxene. Mineral chemistry of plagioclase indicate that their composition are andesine with An_{33-47} and the amphibole (calcic) have magnesiohornblende compositions that is feature of I-type granite. The biotites with $Fe/(Fe+Mg) > 0.33$ are magnesio-biotites. Based on TiO_2 versus Al_2O_3 diagram, composition of amphiboles indicate crust and mantle mixing in the formation of the Mamzar granitoid magma. Application of different barometers and thermometers such as Al-in-hornblende, plagioclase-amphibole pair exhibit an average pressure of 1.14 kbar and temperatures of 660-730 °C for the intrusion. The mineral chemistry of the biotites and amphiboles indicate that this granitoid pluton is calc-alkaline and formed at the depth of less than 8 km.

Keywords: Thermobarometry; mineral chemistry; Mamzar granitoid; Urumieh-Dokhtar zone; Kerman.

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