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Mineral chemistry and thermobarometry of Soltan Maidan basalts, north of Shahrood

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Abstract: Soltan Maidan Basaltic Complex consists of a thick succession of basaltic lavas associated with some thin sedimentary interlayers that are exposed in the northwest to northeast of Shahrood. Soltan Maidan basaltic rocks has been generated from magma with transitional to mildly alkaline nature and derived by 14-20 percent partial melting of an enriched garnet peridotitic mantle source in an intra-continental rift setting during Late Ordovician to early Late Silurian. These basaltic rocks are relatively uniform in mineralogical composition and they have undergone moderate to high degrees of alteration. Labradorite plagioclase and augite clinopyroxene are major minerals, and Fe-Ti oxides as titanomagnetite and ilmenite form accessory minerals in these rocks. Thermobarometry results on the clinopyroxenes indicate that they have crystallized in temperatures between about 1100°C to 1200°C, with pressures less than 6 kbar and show that they have crystallized in magma chamber/chambers located at depths less than 23 kilometers.

Keywords: *Mineral chemistry; thermobarometry; Soltan Maidan basalts; Shahrood*.

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