

## Mineralogy, geothermobarometry and magmatic series of Natanz plutonic complex

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**Abstract:** The Natanz plutonic complex is located in north of Isfahan and in the Orumieh – Dokhtar magmatic belt. Based on petrographic studies, the Natanz complex is composed of six rock types, which are granodiorite, quartz-diorite, diorite, gabbro, quartz-monzonite and granite monzogranit. The intrusive rocks of Natanz are related to the calc-alkaline magmatic series and I-type granitoids. These rocks are mainly composed of plagioclase, quartz, amphibole, alkali-feldspar, biotite, and pyroxene. The composition of olivine is Fo<sub>67-70</sub>. Pyroxene is Na-poor. The Composition of clinopyroxenes is in the diopside – augite range and orthopyroxenes are enstatite. All clinopyroxene analyses display compositional differences between cores and rims. Calcic amphibole with magnesiohornblende composition is one of the mafic minerals in the rocks. Composition of plagioclase is An<sub>11</sub> (the minimum value in granite) to An<sub>92</sub> (the maximum value in gabbro) and in some samples this mineral has normal zoning. Micas are Mg-rich biotite. Application of Al in hornblende barometry indicates a pressure of  $\approx$  2 kbar for the intrusion. Thermometry yields low temperatures, which probably reflects late stage, post - magmatic re-equilibration of the minerals.

**Keywords:** *mineral chemistry, geothermometry, geobarometry, calc-alkaline, Orumieh – Dokhtar, Natanz.*

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