Study of clinopyroxenes in the intrusions of Karaj-Taleghan Axis

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Abstract: The intrusive bodies of Central Alborz, with display lithological composition, include olivine gabbro, olivine monzodiorite, olivine monzonite and pyroxene monzonite. They are accompanied by pyroclastic rocks of the Karaj Formation, and they occur as sill, lopolith, stock and plug. The essential minerals of these rocks are plagioclase, alkali feldspar, pyroxene, olivine and biotite. Mineral chemistry studies of pyroxene onthe intrusive bodies indicate two types of diopside and augite clinopyroxene composition. The chemical composition of the pyroxenes shows that these rocks have been crystallized in a subduction geological setting. The average crystallization temperature of clinopyroxenes is about 1080 to 1250 °C, and it seems the clinopyroxenes crystallized in the lower temperature than orthopyroxenes. Furthermore, the calculated pressure is less than 9 Kbars, as well as the presence of high percent water content in the magma. The High oxygen fugacity and water content increment during magmatic evolution could represent that the clinopyroxenes were crystallized during magma ascent and within different pressures. The field characteristics, petrography and mineral chemistry similarity and proximity placement and time between studied rocks, demonstrate a genetic relationship, close relatives and there is probably a common origin.

Keyword: clinopyroxene, Central Alborz, sill, Karaj Formation, crystallization temperature.