

## Mineral chemistry of pyroxenes and geothermobarometry of the basic rocks, NE-Qorveh (Kurdistan)

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**Abstract:** The Plio- Quaternary volcanoes are located in the NE-Qorveh (Kurdistan) in the Qorveh-Takab volcanic belt, in the Hamedan-Tabriz Zone (HTZ). The volcanic rocks consist of basalt to olivine-basalt. The electron microprobe (EMP) analyses of pyroxenes show occurrence of one type of clinopyroxene, as diopside ( $Fs_{2.65-6.42} En_{40.44-50.47} Wo_{45.97-53.14}$ ) with Mg # = 84-98. The compositions of the pyroxenes suggest that rocks belong to alkaline-subalkaline magmatic series. Considering different methods of geothermometry of clinopyroxene, the temperature of crystallization stage for pyroxene was 800-1300°C. Distribution of Al in octahedral and tetrahedral sites of pyroxenes displays that this mineral is crystallized from a magma with 10% water contents, in low-medium pressure which is in accordance with their formation the depth of 18-30 km.  $Fe^{+3}$  content of clinopyroxenes implies crystallization in high oxygen fugacity condition.

**Keywords:** *Pyroxene; basalt; thermometry; barometry; fugacity of oxygen; Qorveh; Kurdistan.*

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