

Thermometers of Eskisehir volcanic rocks (NW Anatolia, Turkey) by using mineral chemistry

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Neogene volcanic rocks, extruded around Eskişehir city (NW Anatolia, TURKEY), are tephritic, basaltic trachyandesitic, basaltic andesitic and trachyandesitic in composition.

In this study, electron-microprobe data have been used for determining the crystallization temperatures of the mineral phases (olivine, pyroxene, plagioclase) of selected volcanic rock samples. These samples are porphyritic in texture and with the following mineral assemblages; olivine (Fo₆₂₋₉₆), orthopyroxene (En₇₉₋₈₄, Wo₂₋₃), clinopyroxene (En₁₂₋₅₂, Wo₃₇₋₅₉), plagioclase (An₃₃₋₈₀), and orthoclase. Ti-magnetite, and chrome-spinel (6-7% MgO, 43-46 % Cr₂O₃) are common accessory minerals. Olivine-spinel [1], two feldspars [2] and clinopyroxene-orthopyroxene [3] thermometries have been used for estimating the crystallization temperatures of minerals. Calculated crystallization temperatures are ~1000°C for olivines, ~950 °C for plagioclases and ~900°C for pyroxene pairs.

[1] Wan, Coogan, & Canil (2008) *American Mineral.* **93**, 1142–1147. [2] Putirka (2008) *Reviews in Mineral. & Geochemist.* **69**, 61–120. [3] Lindsley (1983) *American Mineral.* **68**, 477–493.

Origin of the neof ormation minerals in the Polatlı volcano-sedimentary lacustrine basin, Central Anatolia, Turkey

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Polatlı volcano-sedimentary basin, situated at SW of Ankara city, Central Anatolia, is a lacustrine environment probably related to the extensional tectonics. Early-Middle Miocene aged sedimentary units which consist of conglomerate, sandstone, marl, dolomitic limestone, claystone, tuffite and limestone are intercalated with the alkaline basaltic lava flows in this basin.

X-Ray diffraction (XRD) whole rock analyses revealed that clay, opal-CT, dolomite, mica, analcime, feldspar, calcite, and quartz minerals existence and illite, smectite and kaolinite were detected in the clay fraction.

Detrital origin appear as the potential source of illite while, the probable source of smectite is the products of hydrolysis of volcanic materials. Dolomite and calcite seem to be formed by the direct precipitation from the lake water. Analcime with dolomite paragenesis which indicate a saline-alkaline lacustrine environment, are very common in the study area and the occurrences of analcime could be related to the alteration of the volcanic rocks which are alkaline in character and rich in Na.