

## **Insights on the PTX Fluid-Conditions of the Afyon Volcanic Rocks (Western Anatolia, Turkey) from natural rocks and phase relation experiments**

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Middle Miocene aged trachytic rocks south of Afyon are represented by domes, block lava and ash flows and can be divided into two groups. The first group is classified as ultrapotassic group (UPG), having high K<sub>2</sub>O (>9 wt%), K<sub>2</sub>O/Na<sub>2</sub>O (>10 wt%) ratio and Mg# (75-77) values, and the second one is called intermediate-potassic group (IPG). UPG samples have intermediate SiO<sub>2</sub> contents of 56-58 wt%, whereas IPG samples are richer in silica (57 wt% < SiO<sub>2</sub> < 64 wt%). Generally, both rock groups are potassic-alkaline and new trace element analyses of whole rock are showing enrichment in LILE and LREE, displaying negative anomalies for Nb and Ti. In UPG samples Ni and Cr values are varying between 119.1-120.7 ppm and between 212.1-219.9 ppm, respectively; whereas IPG samples contain 3.3-18.8 ppm Ni and 2.6-27.8 ppm Cr. UPG mineralogical assemblage consists of amp + phl + cpx + ol + san and oxides. IPG comprises plg + bio + amp + cpx ± opx ± san ± phl and oxides. Plg crystals have been identified as labradorite-oligoclase An<sub>3-63</sub>, amp crystals are tschermakite, richterite and magnesiohornblende (Mg#54-81) composition, cpx crystals are represented by diopside and augite Wo<sub>43-47</sub>, while opx crystals show hypersthene compositions (En<sub>40-74</sub>). Geothermobarometry calculations resulted in temperature, pressure and depth estimates for the collected natural rock samples. Temperatures are in the range of 1087-1119°C and pressures vary between 5-10 kbar, corresponding to depths of 18-28 km, respectively. First sets of volatile saturated phase equilibria experiments on natural IPG samples AD22 and AD24 have been performed in an internally heated pressure vessel (IHPV) at 5 kbar and 1050-1200°C, which will give us further implications on the magma storage and crystallization conditions.