Mineralogical and Geochemical Aspects of the Gateh-Deh Subvolcanic Alkaline Mass, Central Alborz,Iran.

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The Gateh-Deh subvolcanic mass intruded through an elongated fault zone into the pyroclastic sequences of Karaj Formation(middle Eocene) in South-Central Alborz.

Very high amounts of K_2O(12-16%),Al_2O_3(12-18%) and SiO_2(61-72%) and the same mineralogical composition of all parts of it are outstanding features. The rocks are mainly composed of orthoclase (80-85%), quartz (10-15%) and minor amounts of accessory minerals such as plagioclase phenocrysts(relics), very rare and scattered crystals of biotite, zircon, disseminated pyrite and celsian. Low amounts of secondary minerals like quartz, barite, calcite, iron oxides and copper compounds are also present.

Surface alterations are appeared in various forms including pyrite dissolution to iron oxides and slightly alteration of feldspar phenocrysts and groundmass orthoclase to kaolinite.

A major metasomatic process is the groundmass quartz replacement by orthoclase that has given rise to the formation of nearly rounded-shape grains, later named " brown pigments" that may somehow interpret the abnormal increased amounts of K_2O in the chemical composition of the rock samples.

By comparing these results with petrographic characteristics, a primary granitic composition was attributed to these rocks which eventually found a similarly syenitic nature(but not a real type) by virtue of the metasomatic processes.