

# Petrogenesis of Anorthite Rich Igneous Rocks of Rayen Area, Southeast Iran.

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Unusual anorthite rich igneous rocks in form of plugs, domes, lava flows and pyroclastics are found within Upper Eocene - Lower Oligocene continental deposits 50 km southeast of Rayen, southeast central Iran.

These igneous rocks, especially plugs and domes are very rich in highly calcian plagioclase, (anorthite and high calcian bytownite). Three generations of anorthite are observed. First and second generation of anorthite is well crystallized before olivine, only the third generation is crystallized with olivine, orthopyroxene and clinopyroxene. Field and laboratory investigations have shown that: (1) Very high alumina basalt is the mother magma, therefore crystallization started in anorthite field in the system "An-FO-Di" (2) Olivine is crystallized later and by increasing  $fO_2$  it has transformed to magnetite + Opx (3) The rest of crystallization is followed in the system "An-Ab-Cpx". (4) No evidence has been found to define the nature of source rock but it can be visualized that plagioclase-spinel-peridotite of upper mantle origin or basic granulite of lower continental crust may be the source rock. (5) Anatexis of source rock is achieved in condition of high water pressure. (6) Flow differentiation is a basic mechanism of differentiation for high anorthite bearing plugs. The bearing of these findings on the origin of anorthosites are discussed.