

PETROLOGY, GEOCHEMISTRY AND ABSOLUTE AGE OF THE SIKHORAN BASIC-ULTRABASIC COMPLEX SOUTHEASTERN IRAN

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The Sikhoran basic-ultrabasic complex is situated in Kerman province , southeastern Iran. The main lithologic units involve porphyroclastic dunite zone composed of dunites and chromitites,transitional zone composed of alternations of adcumulate dunites, chromitites , adcumulate and heteradcumulate wehrlites and adcumulate pyroxenites , ultramafic cumulate zone composed of feldspathic wehrlites, feldspathic lherzolites, feldspathic harzburgites and melagabbros, layered gabbro zone composed of melagabbros, troctolites , olivine gabbros, allivalites, gabbro-norites ,ferrogabbros and plagiogranites, and finally isotropic gabbros composed of a coarse grain two pyroxenes gabbros from bottom to up . The late isotropic gabbros cuts the complex from transitional zone and the paleozoic metamorphic rocks around the complex , produced a contact zone composed of basic migmatite contains plagioclase and hornblende and basic hornfels composed of olivine, ortho and clinopyroxene, plagioclase and magnetite. This complex has not sheeted dykes complex and pillow lavas, then, it is not a ophiolitic complex. The scattered jurassic diabasic dykes cut this complex and surrounding metamorphics. Detail considerations of this complex show significant variations in its components. The olivine is the cumulus phase in the lower -middle parts and became intercumulus in the upper parts. Its fo % range from 95 to 69 from lower to upper parts. The Cr-spinel is an accessory phase, enriched of Fe and Al and depleted of Cr from bottom to up . Its Cr # range from 83 to 12 . The clinopyroxene that appears as an intercumulus phase in adcumulate dunites of transitional zone became a main cumulus phase in the upper parts. It is diopside in the throughout the sequence but the amounts of its TiO_2 , Al_2O_3 , Cr_2O_3 and Mg # show un interesting patterns. The orthopyroxene always is an intercumulus phase and its chemical composition is enstatite in the harzburgites, bronzite in the wehrlites, lherzolites, feldspathic peridotites and layered gabbros and hyperstene in the isotropic gabbros . The plagioclase appears as an intercumulus phase in the transitional zone at first, then its amounts increase gradually and became a main cumulus phase in layered and isotropic gabbros. Its An % range from 83 to 100 . The existence of phase , modal and cyclic layering and cumulate textures such as adcumulate , heteradcumulate , meso and orthocumulates in this complex indicate a magmatic origin and slow accumulations of the cumulus phases. Absence of zoning in the cumulus and intercumulus phases, high Mg / Fe ratios in components and high Ca in plagioclases indicate the equilibrium crystallisation conditions in the high temperatures. The paleozoic metamorphics composed of amphibolites, marbles, gneiss, anatectic granites and greenschists, overlain by the jurassic sedimentary rocks with the angular unconformity and basal conglomerates. The absolute age of these gneiss and anatectic granites is 337 ma , by K-Ar method on biotite and muscovite. The age of gabbro-pegmatoid dykes cut the ultramafic and layered gabbros by the same method on the amphibole is 254 Ma . Also, the age of basic migmatites in the contact of isotropic gabbro with paleozoic amphibolites by the same method on the amphibole and plagioclase is 220 Ma. This is the age of the gabbro emplacement. Finally, the age of the diabasic dykes by the same method on the whole rock is 165 Ma. The results of regional geology and age determinations indicate , this complex has been formed in an extensional environment in the Irannien platform in the hercynien orogeny, then intruded by the isotropic gabbros and diabasic dykes in the middle triassic and middle jurassic respectively.