

plagioclase-bearing peridotites fo Nain ophiolite (Isfahan province), Iran

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The Nain ophiolite belongs to the inner ophiolitic belt of Iran. The ophiolitic belt with almost triangular shape surrounds the Central East Iranian microplate (CEIM). The complexes of various rocks which form this belt have been described as remnants from a limited and narrow oceanic basin (Red sea type) around CEIM of Mesozoic time. The youngest sedimentary rocks (calcareous limestones) that cover the Nain ophiolite are early Eocene in age then the closing time of the Nain-Baft Ocean was early Tertiary in the Nain area. The ophiolitic sequence of Nain mainly comprises peridotites (dominantly harzburgite, lherzolite, plag-lherzolite and subordinately dunite sometimes cut by gabbroic and pyroxenitic veinlets or dikes). The volcanic components in this ophiolite appear as limited outcrops of lava flows (sometimes pillowed) and sheeted dikes which show basaltic to andesitic compositions with island-arc or mid-oceanic ridge tholeiite affinities. The plagioclase-bearing peridotites form small bodies less than 1 km across within sheared serpentinites or narrows deformed chains along main faults of the area. They are divided into two main types: (1) Impregnated foliated to impregnated metasomatized mylonitic lherzolites, and (2) Recrystallized metasomatized lherzolites to harzburgites. The impregnated plagioclase peridotites are characterized by heterogeneous distribution of clinopyroxenes as small patches or narrow seams parallel to the foliation plane and the presence of plagioclases as irregular batches sometime in association with the spinels. In contrast, the recrystallized plagioclase peridotites contain plagioclase envelopes around spinels with a simultaneous modal decrease of orthopyroxenes, clinopyroxenes and amphiboles. This may indicate formation of plagioclase at the expense of these minerals with an increase of the degree of recrystallization. The studied recrystallized and mylonitic plagioclase peridotites have been metasomatized to contain amphiboles. The amphiboles are K-free pargasites. This possibly indicates very low-degree of partial melting after the metasomatism.