

A large scale partial melting at the basal part of the plagiogranite body

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Intermediate to acidic rocks usually referred as plagiogranite occur in oceanic crusts. They are trondjemites, plagiogranites, albite-granites, rhyolites, andesites, quartz diorites and diorites.

Plagiogranite bodies with various scales appear in the Oman ophiolite, which is best preserved and exposed in the world. The Suhaylah plagiogranite complex at the southern margin of the Fizh block of the northern Oman ophiolite. This complex appears in the transitional zone from the gabbroic sequence to the sheeted dyke complex. The Suhaylah body is the largest plagiogranite complex in the Oman ophiolite studied so far, and extends about 3x4km. The Suhaylah plagiogranite complex shows heterogeneous occurrence and is composed of many lithofacies such as leuco gabbros-diorites, quartz diorites and three types of tonalites. However, a systematic variation of lithofacies depending on stratigraphic position is present. The lowest part of the complex (western part of the complex) consists of leuco gabbroic-dioritic rocks. They are successively changed from the lower gabbroic rocks. The middle part consists of quartz dioritic rocks, which are also gradually changed from the lower rocks. The uppermost part (eastern part of the complex) consists of tonalitic dykes. The plagiogranite complex contains numerous xenoliths and enclaves possibly derived from dyke complexes and the gabbros. They are extremely common and make up 10-30% volume, in particular, attains 50% at southeast area.

Along the lowest stratigraphic position, we found curious rocks from the gabbroic-dioritic rocks. There're two types of occurrence, one is dioritic rocks with numerous mafic clots ranging from a few millimeters to centimeters composed of orthopyroxene -clinopyroxene -plagioclase. Another curious rocks occur as large blocks attaining about 10 meters. Their blocks are characterized by reddish color and consist of a large amount of orthopyroxene. The microscopic texture is very heterogeneous, consisting of globular coarse -grained aggregates of orthopyroxene -clinopyroxene -oxide and matrix of plagioclase -orthopyroxene -clinopyroxene -oxide. The coarse grain aggregations are wrapped by quartz. This curious rocks may reveal an in situ partial melting in oceanic crusts.

Furthermore, we also found plagiogranite dykes with chilled margins in the uppermost section. We suppose that the chilled margin may preserve a melt composition at some stages of magmatic evolution.