

## In-situ partial melting of the oceanic crust: evidence from the restite in the gabbro-dike transition of Oman ophiolite.

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Intermediate to acidic rocks occurring in oceanic crust usually referred to as plagiogranite. There are two different models for the mechanism of formation of the oceanic plagiogranite. One is an extreme fractional crystallization of mafic melts (Spulber and Rutherford, 1982), and the other is partial melting of crustal rocks. Furthermore, two different partial melting processes are debated, i.e. hydrous melting (Koepke et al., 2004) and dehydration melting (Beard and Lofgren, 1991). It is still not confirmed that which mechanism is most effective. We found numerous large blocks retaining partial melting processes from the basal part of the Suhaylah plagiogranite body in the northern Oman ophiolite. We show mode of occurrence, petrography and geochemical data on these blocks. Then we discuss the partial melting processes and its significance for the formation of an oceanic plagiogranite.

The Suhaylah body is the largest plagiogranite complex in the Oman ophiolite studied so far, and extends about 2.5 x 2.5 km. The Suhaylah plagiogranite complex shows heterogeneous occurrence and is composed of various lithofacies such as leuco gabbros-diorites, quartz diorites and tonalites. Although the lithofacies are very heterogeneous, a systematic variation of lithofacies depending on stratigraphic position is present in a large scale.

The basal part of the Suhaylah plagiogranite body is characterized by frequent occurrences of large blocks which are easily distinguished by reddish appearance due to abundant appearance of orthopyroxene. The sizes of the blocks are variable and the largest one exceeds about 20 X 5 meters. They are traceable over 1.5 km along the basal part. It is noted that these rocks do not contain primary amphiboles in many cases. The microscopic texture is very heterogeneous in one specimen, and specimen to specimen due to the location in the blocks, and blocks to blocks due to the stratigraphic position. Most common textures are globular coarse-grained aggregates composed of orthopyroxene-clinopyroxene-oxide set in a heterogeneous matrix consisting of plagioclase-orthopyroxene-clinopyroxene-oxide with variable quartz. The coarse-grain aggregations are usually wrapped by quartz. Variable amount of quartz occurs as single rounded crystal, globular aggregate and also as irregular shaped vein. These blocks may reveal an in situ partial melting in oceanic crusts.