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Microstructural and fabric characteristics of the uppermost mantle peridotites in the Taitao ophiolite, South America

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The <6Ma young Taitao ophiolite, exposed at the westernmost promontory of the Taitao Peninsula, is located approximately 40 km southeast of the Chile triple junction and consists of a complete sequence of oceanic lithosphere, including ultramafic rocks, gabbros, a dyke complex and volcaniclastic rocks. The ophiolite is surrounded by several contemporaneous granite plutons intruded in between the ophiolite and the Pre-Jurassic metamorphic basement. Several studies have been carried out on the Taitao ophiolite and surrounding granites. Whereas they have focused mostly on petrology and geochemistry, we investigated microstructures and crystal-fabrics of the ultramafic rocks, aiming to understand the origin of the ophiolite. 6 out of 16 ultramafic rocks preserved peridotite textures despite of intense serpentinization and show mostly porphyroclastic textures consisting of pyroxene porphyroclasts with a fine-grained olivine-pyroxene matrix. Their olivine crystal-fabrics shows [100]{0kl} and [100](001) patterns. These indicate that the uppermost mantle section have remarkably been deformed before and/or during the obduction process after their formation beneath the mid-ocean ridge.

Keywords: Taitao ophiolite, mantle section, peridotite, microstructure, olivine fabrics