

Microfabrics of omphacite and garnet in eclogite from the Lanterman Range, northern Victoria Land, Antarctica

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Layered structures in metamorphic rocks are sometimes crucial to occur strain localization then affect to seismic properties. We conducted microstructural analyses omphacite and garnet in foliated eclogite from the Lanterman Range, northern Victoria Land, Antarctica, to determine the influence of the layered structure on seismic observations in subduction zone. The analyzed eclogite, composed of layered garnet-rich and omphacite-rich layers, shows the low aspect ratios, similar angular distribution of long axes relative to the foliation, uniform grain size distribution, near-random crystallographic preferred orientations (CPOs), and misorientation angle distributions of garnet and opposite characteristics of omphacite in both layers. The results of fabric analyses are consistent with strain localization into omphacite or omphacite-rich layers rather than garnet or garnet-rich layers. Our results therefore demonstrate the importance of the layered structure in strain localization and in the development of the seismic anisotropies of subducting oceanic crust.

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