

Paleozoic metamorphism identified in the Mountaineer Range of northern Victoria Land, Antarctica

Sang-Bong Yi¹⁺, Mi Jung Lee¹, Seunghee Han¹

¹*Korea Polar Research Institute, Korea*

Antarctica is classified into the East and West Antarctica, and the East Antarctica of which consists mainly of Archean to Proterozoic old massifs. The northern Victoria Land of the East Antarctica is composed of the Neoproterozoic to early Paleozoic Wilson Terrane and the early Paleozoic Bowers and Robertson Bay terranes accreted to the Wilson Terrane. In the Mountaineer Range, various rock units related to the early Paleozoic Ross orogeny, such as the Murchison migmatitic gneiss (Wilson Terrane), the Dessent Ridge amphibolite, the Bowers Terrane metasedimentary rocks and mafic/ultramafic rocks in the Tiger Gabbro Complex crop out, and several studies on these units have been published.

This study investigates the early Paleozoic metamorphism (Ross orogeny) of the northern Victoria Land in terms of formation and evolution of the Dessent Ridge amphibolite in the Mountaineer Range, and the results are as follows. (1) The protolith of Dessent Ridge amphibolite formed at 514.6 ± 2.0 Myr ago. Although its metamorphic time is unclear, the distinctive c. 500 Ma igneous and metamorphic ages reported in the Mountaineer Range makes it possible to assume that the metamorphic age of the Dessent Ridge amphibolite could also be c. 500 Ma. (2) The Dessent Ridge amphibolite underwent an intermediate-P/T type metamorphism characterized by the peak pressure of c. 10 kbar (c. 600 °C) and the peak temperature of c. 700 °C (c. 7 kbar). (3) This is interpreted as a result that a mafic crust (i.e., Dessent Ridge unit) accreting to continental Wilson Terrane margin experienced the high temperature metamorphism at the middle deep arc environment (c. 7 kbar, c. 25 km) after the subduction (c. 10 kbar, c. 35 km).