

LOW-PRESSURE GRANULITE-FACIES METAMORPHISM IN THE PRYDZ BAY REGION, EAST ANTARCTICA (ABSTRACT)

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The terrain along the coastal line of Prydz Bay is underlain by granulite-facies rocks of various kinds including pelitic to psammitic gneisses, basic to intermediate gneisses and subordinate amounts of calc-silicate rocks and ultramafic rocks. Extensive partial melting has been observed in pelitic to psammitic gneisses. The age of metamorphism has been dated to be Late Proterozoic based on a Rb-Sr whole rock isochron (SHERATON and COLLERSON; BMR J. Aust. Geol. Geophys., 8, 119, 1983).

The rocks have been subjected to low-pressure granulite-facies metamorphism as evidenced by the following petrographical observations.

1) Pelitic to psammitic gneisses: Cordierite occurs regionally in pelitic gneisses. Andalusite and sillimanite coexist in a cordierite gneiss, in which andalusite occurs as a retrograde mineral being associated with chlorite.

2) Basic to intermediate gneisses: Orthopyroxene occurs regionally in basic to intermediate gneisses, being occasionally associated with clinopyroxene, amphibole and biotite. Garnet is rare, but where it occurs, coronas composed of plagioclase+clinopyroxene+magnetite symplectite are observed around garnet.

3) Ultramafic rocks: Olivene+plagioclase intergrowth is observed in ultramafic rocks.

Mineral equilibria and geothermo-barometries yield initial *P-T* conditions around 750°C at 5±1 kbar.

Prior to the low-pressure granulite-facies metamorphism (possibly in Late Proterozoic), the rocks had been recrystallized at much higher *P-T* conditions around 950–1050°C at ≈10 kbar deduced from local occurrence of pyrope-rich garnet (up to X_{Mg} 70–72) in basic granulites.

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