
Petrology and tectonic significance of coronitic mafic granulites, Southampton Island, Nunavut

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Southampton Island, south-central Nunavut, occupies the “Dorset corridor”, the enigmatic boundary region between the Trans-Hudson Orogen and the western Churchill Province. The eastern part of the island is underlain largely by granulite and upper amphibolite facies metagranitoid rocks, with local supracrustal enclaves. Mineral assemblages, textures, and P-T estimates in mafic enclaves from the eastern part of the island shed light on first-order aspects of the regional tectonometamorphic history. Most samples contain the granulite facies assemblage grt-opx-cpx-plag-hbl, with spectacular coronitic textures developed around garnet porphyroblasts. Three suites of texturally heterogeneous granulites each preserve three textural domains, interpreted to represent three points on the

P-T path. Near-peak metamorphic conditions, 850–900°C and 0.9–1.0 GPa, are preserved by cpx-opx-plag inclusions in garnet. Symplectites of opx-plag-spl-mag around garnets indicate near-isothermal decompression from 0.8 to 0.7 GPa at 800–850°C. Matrix plag-cpx-opx-hbl represents a re-equilibrated assemblage, yielding a P-T estimate at 500–600°C and 0.5–0.6 GPa. The P-T path derived from these estimates contrasts with those obtained from lithologically similar units in the western Churchill Province, suggesting that the rocks of Southampton Island share tectonic affinities with the Baffin-Ungava segment of the Trans-Hudson Orogen.