Petrology and thermobarometric modeling of high-grade metamorphic rocks from the New Quebec orogen, Nunavik, Canada

LOGAN ALLEN[1] AND DEANNE VAN ROOYEN[2]

1. Department of Earth Sciences, Saint Francis Xavier University, Antigonish, Nova Scotia B2G 2W5

2. Department of Mathematics, Physics, and Geology, Cape Breton University, Sydney, Nova Scotia B1P 6L2

1 The New Quebec orogen is a Paleoproterozoic mountain belt located in the eastern part of the Canadian Shield known as the Southeastern Churchill Province. It was formed through primarily transpressional collision between the Archean Core Zone and Superior craton which occurred between 1.82 and 1.80 Ga. The New Quebec orogen is made up of a collage of autochthonous rocks deposited adjacent to the Archean Superior craton (the Kaniapiskau Supergroup) and by allochthonous metavolcanic and metasedimentary assemblages accreted to the cratonic margin (the Rachel-LaPorte zone). The Core Zone is divided into the Gabriel terrane and the Leaf Bay terrane. The metamorphic grade is typically greenschist facies in the Kaniapiskau Supergroup, to upper greenschist and lower amphibolite facies in the Rachel-Laporte zone, increasing to upper amphibolite and granulite facies in the Gabriel and Leaf Bay terranes. This project will examine rocks of the Gabriel and Leaf Bay terranes using thin section petrography and thermobarometric modelling to better integrate metamorphic data with new geochronology and structural mapping done in the area. This study will use Theriak-Domino, a program for the calculation and plotting of equilibrium mineral assemblages in conjunction with petrographic interpretations. Preliminary work has allowed for the interpretation of pressure and temperature condition in two important rock units; a retrogressed granulite in the northern Leaf Bay terrane, and a garnet muscovite schist from the Gabriel terrane. The pseudosections and mineral assemblages of garnet, orthopyroxene, and amphibole suggest that the retrogressed granulite experienced peak metamorphic conditions of 600°C–800°C and 0.5–1.0 GPa. Pseudosections and mineral assemblages of garnet, biotite, muscovite and apatite suggest that the garnet schist experienced peak metamorphic conditions of at least 310°C and 0.3 GPa. Future work will focus on expanding the suite of samples examined and on integrating the results with known geochronology and structural data. [Poster]

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