

Ni-Cu-PGE potential of gabbro sills in the Labrador Trough

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The purpose of this project is to evaluate the Ni-Cu-PGE potential of gabbro sills in the Labrador Trough. The mineral potential of the Labrador Trough was first recognized in the 1930's when exploration programs were focused on its base and precious metals; however, it was not until recent exploration in Quebec by Northern Shield that mineralized gabbro sills were identified as potential targets for Ni-Cu-PGE mineralization. This project will examine the gabbro sills of the Howse Lake area and compare the results with the Northern Shield prospect 100 km north along strike in Quebec. Fieldwork for this project consisted of grab sampling from known occurrences and prospecting the areas in the immediate vicinity. It was conducted during the summer of 2017 through a student position with the Geologic Survey of Newfoundland and Labrador (GSNL). This project will attempt to determine the sulphur source in the mineralized gabbro, classify the deposit type(s), and generate a genetic model for exploration. Bulk rock geochemistry was conducted at the GSNL's laboratory in St. John's, with PGE and Au assays conducted at external commercial facilities. Petrographic analysis of the polished thin sections will be done to determine a paragenetic sequence for the sulphide mineralization, and selected samples will be chosen for SEM-MLA analysis to determine detailed petrographic relationships and host minerals for PGE mineralization. The sulphur isotopes of pyrrhotite and chalcopyrite from the mineralized gabbro will be analyzed in situ using secondary ion mass spectrometry (SIMS) to determine the source of the reduced sulphur within the melt, and to relate the different types of mineralization. These will be compared to results obtained from sulphide rich shales in contact with the gabbro sills. Whole-rock geochemistry from both mineralized and non-mineralized gabbro samples will be used to determine regional geochemical trends within the intrusions, and to identify which factors contributed to the localized mineralization. [Poster]