

for terrane boundaries; however, those in the north probably have greater prospectivity based on emplacement level and the presence of country rocks representing potential sources of sulphur.

---

### Geology and U-Pb geochronology of Mesoproterozoic magmatic sulphide mineralization in western Labrador

---

ANDREW KERR<sup>1</sup> AND VICKI MCNICOLL<sup>2</sup>

1. Mineral Deposits Section, Geological Survey of Newfoundland and Labrador, PO Box 8700, St. John's, Newfoundland and Labrador A1B 4J6, Canada <andykerr@gov.nl.ca> ¶ 2. Geological Survey of Canada, 601 Booth Street, Ottawa, Ontario K1A 0E8, Canada

Most orthomagmatic Ni-Cu-Co sulphide mineralization in Labrador is associated with Mesoproterozoic mafic plutonic suites, of which the best-known examples are the Voisey's Bay intrusion (ca. 1332 Ma) and the Pants Lake intrusions (ca. 1338 and 1322 Ma). Magmatic sulphide mineralization also occurs in western Labrador, notably within the Michikamau Intrusion, where it is associated with troctolite and olivine norite that form part of a thick layered sequence. There are two main mineralized zones, one of which is situated close to the basal contact of the intrusion; however, the contact region itself has yet to be tested by drilling. Mineralization recently located at higher levels in the layered sequence appears to have generally higher metal grades. Disseminated sulphide mineralization was also discovered in a sheet-like gabbroic intrusion near Evening Lake, where it is also located near to its basal contact with sulphide-bearing metasedimentary country rocks. Small amounts of disseminated sulphides are also known locally within the Mount Fyne Intrusion. Both intrusions are traditionally grouped with the Shabogamo Gabbro suite. The grades of all these mineralized zones are relatively low, typically having sulphide metal contents of 1% to 2% Ni, as opposed to nearly 4% Ni at Voisey's Bay. However, systematic exploration in western Labrador has to date been of limited extent, and the region retains significant potential.

Mineralization in the Michikamau Intrusion was dated using a pegmatitic variant of the host leucotroctolite, adjacent to and gradational with a sulphide-bearing zone. Single-grain analyses of baddeleyite define a U-Pb age of  $1469 \pm 1$  Ma, a result consistent with a previous age determination inferred to represent contact metamorphism. In the Evening Lake area, sulphide mineralization was dated using a dioritic variant of the gabbro, which gave a U-Pb zircon age of  $1448 \pm 2$  Ma. This confirms the assignment of the host rocks to the Shabogamo Gabbro suite. A closely similar U-Pb zircon age of  $1444 \pm 4$  Ma was previously obtained from gabbro of Mount Fyne Intrusion, which was emplaced into deeper level granitoid gneisses. The results confirm correlation of these mafic suites across ma-