Vita

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Universities Attended:

Dalhousie University (2003)
Bachelors of Science Honours
Earth Science

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Masters of Science
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Conference Presentations:

GAC-MAC-IAH-CNC-CSPG 2022, Halifax, NS. Oral presentation: Major- and trace-element geochemistry of pegmatites of the Hall Peninsula, Baffin Island, Nunavut: implications for petrogenesis, tectonic setting, and mineral potential

GAC-MAC-IAH 2019, Québec City, PQ. Oral presentation: Petrogenesis and rare element potential of late tectonic pegmatites, Hall Peninsula, Baffin Island, Nunavut

Resources for Future Generations 2018, Vancouver, BC. Oral presentation: Lithogeochemistry, geochronology, and economic potential of pegmatites of the Hall Peninsula, Baffin Island, Nunavut, Canada

Petrogenesis, geochronology, and economic potential of pegmatites of the Hall Peninsula, Baffin Island, Nunavut

UNIVERSITY OF NEW BRUNSWICK

THESIS DEFENCE AND EXAMINATION

in Partial Fulfillment

of the Requirement for the Degree of
Master of Science

by

Alia Bigio

in the Department of Earth Science

U.N.B., Fredericton, N.B.

Wednesday, August 30th, 2023
10:00 a.m.

Via MS TEAMs

Examining Committee

Dr. David Lentz	Supervisor
Dr. Donnelly Archibald	Internal Examiner
Dr. John Neville	External Examiner
Dr. Chris McFarlane	Chair of Oral Examination

Abstract

Granitic pegmatite bodies locally intrude the Archean basement and Paleoproterozoic country rock of the Hall Peninsula, Baffin Island, Nunavut. This thesis examines the melt source (metasedimentary melting or granitic intrusion), relative timing of emplacement during the Trans-Hudson Orogen (THO) and absolute crystallization age, and critical metal potential of the Hall pegmatite bodies.

Uranium-lead dating on zircon and monazite collected from 7 pegmatites provided three concordant ages and four poorly- to non-concordant ages. The concordant ages, of 1870 ±17 Ma, 1765 ±9 Ma, and 1782 ±10 Ma, place the Hall pegmatites in the late- to post-tectonic phases of the THO.

The pegmatites' geochemistry supports the metasedimentary source rock interpretation, and the most geochemically anomalous pegmatites, including in Li, Sn, Nb, Ta, and Ce, are found in proximity to Lake Harbour Group metasediments. Several of the study's pegmatites should be further evaluated for their critical mineral potential.