

## Vita

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Universities  
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### Conference Presentations:

Wu, P.L.E. and White, J.C., 2019. Structural Geology of West Beach Formation, Black River Area, New Brunswick. Oral Presentation at Atlantic Geoscience Society Colloquium, Fredericton, New Brunswick. 8-9 February, 2019.

Wu, P.L.E. and White, J.C., 2018. Structural Geology of West Beach Formation, Black River Area, New Brunswick. Oral Presentation at Exploration, Mining and Petroleum New Brunswick Conference. 4-6 November, 2018.

# Structural Geology of West Beach Formation, Black River Area, New Brunswick

UNIVERSITY OF NEW BRUNSWICK

THESIS DEFENCE AND EXAMINATION

in Partial Fulfillment

of the Requirement for the Degree of  
Master of Science

by

**Pao Lin Wu**

in the Department of Earth Science

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

**Monday, June 26<sup>th</sup>, 2023**

**2:30 p.m.**

Forestry Building, Room 23

Examining Committee

Dr. Joseph White  
Dr. Karl Butler  
Dr. Allan Adam  
Dr. Allison Enright

Supervisor  
Internal Examiner  
External Examiner  
Chair of Oral Examination

## Abstract

This study investigates the lithological and structural characteristics and delineates the deformation history of the West Beach Formation in the Black River area and attempts to date deformation.

The West Beach Formation, which consists of foliated to non-foliated, imbricated basalt slabs enclosed within phyllitic metasedimentary rocks, has undergone five deformation stages, D<sub>1</sub>–D<sub>5</sub>. The D<sub>1</sub>–D<sub>3</sub> is associated with the progressive deformation developed by folds and thrusts during the neo-Acadian Orogeny. The D<sub>4</sub> refers to E–W and NE–SW dextral strike-slip faulting, possibly contemporaneous with the Minas Fault Zone and Cobequid Fault System. The most recent (D<sub>5</sub>) is normal faulting related to the rifting and opening of the Bay of Fundy.

The oldest F<sub>1</sub> fabric preserved in white micas yields  $246.5 \pm 13.0$  Ma and an initial  $^{87}\text{Sr}/^{86}\text{Sr}_i$  ratio of  $0.7224 \pm 0.0035$ , using triple quadrupole laser ablation inductively coupled plasma-mass spectrometry (QQQ-LA-ICP-MS) in-situ Rb–Sr geochronology. This Rb–Sb age, which lies between the Late Permian and Upper Triassic, suggests a significant resetting of the Rb–Sr isotope ratio associated with the D<sub>5</sub>.