

**Collisional tectonics along the Appalachian margin of Laurentia:
constraints from Corner Brook Lake and Baie Verte**

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Corner Brook Lake and western Baie Verte lie within the internal domain of the Appalachian Humber Zone and define the eastern surface extent of Laurentia. To the east are accreted oceanic and continental terranes. High grade

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metamorphism and polyphase deformation of the Laurentian margin has "historically" been attributed to Ordovician Taconian overthrusting of these outboard terranes. However, U/Pb and Ar/Ar dating of a variety of igneous and metamorphic mineral phases indicate an Early Silurian age for orogenesis.

At Corner Book Lake, a lower limit on deformation is provided by a U/Pb zircon age of $434 \pm 2/-3$ Ma for a pegmatite that is affected by the regional foliation and is interpreted to be syntectonic. A garnet-kyanite-staurolite schist, which records peak metamorphic conditions and in which porphyroblasts overgrow the regional foliation, gave U/Pb ages of 430 ± 2 Ma for monazite and 437 ± 6 Ma for rutile. Ar/Ar cooling ages for hornblende from amphibolites are 427 ± 3 Ma, 425 ± 3 Ma, and 424 ± 4 Ma, and muscovite from psammitic and pelitic schists are 429 ± 3 Ma, 427 ± 3 Ma, 423 ± 4 Ma, and 413 ± 3 Ma.

At Baie Verte, monazite from a syntectonic leucogranite melt within a psammite from the Fleur de Lys Supergroup yielded a precise concordant U/Pb age of 427 ± 2 Ma. Monazite

from the muscovite-garnet bearing syntectonic S-type phase of the Wild Cove igneous suite gave an identical age (427 ± 2 Ma). Zircon and titanite from a K-feldspar, megacrystic, posttectonic I-type pluton of the suite indicate an age of crystallization of 423 ± 3 Ma. Ar/Ar data from the Fleur de Lys Supergroup gives ages as old as 429 ± 10 Ma for hornblende and 421 ± 10 Ma for muscovite.

The isotopic data from the Corner Brook Lake and Baie Verte regions are remarkably uniform and indicate that regional deformation, metamorphic mineral growth and cooling of this segment of the eastern margin of Laurentia occurred in the Early Silurian between 435 and 425 Ma. The U/Pb and Ar/Ar data require that rapid subduction of the margin was followed by equally rapid exhumation. A Silurian age for deformation and metamorphism of the Laurentian margin is coincident with the timing of similar events along the Newfoundland Gondwana margin and suggests that the Silurian was a period of major continent-continent collision.