

U-Pb geochronology of the southern part of the Saint George Batholith, including the Late Devonian Mount Douglas multiphase intrusion, southwestern New Brunswick, Canada: preliminary results

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The Mount Douglas intrusion is comprised of a suite of peraluminous leucogranitic rocks that were crystallized from a melt that had undergone extensive fractional crystallization. It forms the main easternmost part of the Saint George Batholith and hosts numerous intragranitic Sn, W, and Mo occurrences. The Saint George Batholith is composed of five mappable suites: the Welsford intrusive suite, Digdeguash Lake intrusion (Bocabec Gabbro, Utopia Granite), South Oromocto Lake intrusions (Magaguadavic Granite, John Lee Brook Granite), the Mount Douglas intrusive suite, and the Late Devonian Pomeroy Intrusive suite. Similarities in texture, mineralization style, geochemical characteristics, and U-Pb dating suggest these units may be co-magmatic, and may indicate that the Mount Douglas Granite is a subvolcanic system that was responsible for the polymetallic mineralization at Mount Pleasant. Previous investigations using U-Pb geochronology on monazite grains show that samples from the John Lee Brook pluton report an age of 413 +/- 2 Ma, which indicates that this unit is older than the Magaguadavic pluton rather than younger.

A widely accepted and commonly used technique, *in situ* U-Pb analysis will be performed using LA-ICPMS on several samples from the southern contact of the Mount Douglas intrusive suite, where there are many outcrops of the Saint George Batholith that have similar petrography; SEM-BSE imaging of zircon and monazite grains in four separate granite samples is used to determine zoning features and core-rim relationships: this allows for precise placement of ablation spots during LA-ICP-MS U-Pb data collection. Analysis of monazite and zircon in several polished thin sections from each sample will help to constrain the absolute timing of the emplacement of the granite samples. This approach is designed to help distinguish any petrographic linkage between the sub-units of the Mount Douglas intrusion and the southern contact of the Saint George Batholith. Grains that show evidence of crystallization from magma and reveal no inherited cores are preferred for measurement to obtain the real crystallization age.