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U-Pb dating in the Grenville Province in 2008-2009

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Abstract

This report presents the 2008 results of U-Pb geochronology on zircons from five rock samples collected in the Baie-Comeau area of the allochthonous part of the Grenville Province. The analyses were made using two methods: isotope dilution (ID-TIMS) and laser ablation (LA-MC-ICP-MS).

Sample 2008-AM-0088 is a tonalitic orthogneiss collected along the thrust fault marking the contact with the Vanel Anorthosite gabbro-norite. The analysis yielded a Pinwarian age of $1495.3 \pm 2.8/-2.1$ Ma, which is considered the crystallization age for the orthogneiss.

Sample 2008-AM-0016A belongs to the Lac-St-Jean Anorthosite Suite, an intrusive mass of considerable size in the eastern part of the Grenville Province. It corresponds to a mylonitized anorthosite found along the Pimpuacan Deformation Zone. This sample gave an age of $1159 \pm 12/-8$ Ma.

Sample 2008-AM-0016B is from the same outcrop as sample 2008-AM-0016A. It represents a pegmatite dyke of granitic composition that intruded mylonitized anorthosite. The dyke is crosscut and displaced by a late fault that likely represents late movement along the Pimpuacan Deformation Zone. The emplacement age of 1104.5 ± 1.5 Ma obtained for this dyke thus indicates the Pimpuacan Deformation Zone was still active at 1104 Ma.

The analysis of mangerite (sample 2008-AM-0097) belonging to the Alcantara-Dion Mangerite yielded an emplacement age of 1022 ± 10 Ma, very similar to the emplacement ages for other AMCG (anorthosite-mangerite-charnockite-granite) suites in the Grenville Province. Sample 2008-AM-0101 is a pegmatitic norite, with orthopyroxene megacrysts, belonging to the Vanel Anorthosite. No result was obtained for the sample due to the poor quality of the isotopic analyses and the insufficient amount of extracted material.

Detrital zircons from a quartzite sample from the Bourdon Complex (2007-JY-9046) were analyzed by laser ablation. The maximum age of sedimentation is estimated at 1491 Ma, which is younger than the age of <1548 Ma obtained for a paragneiss from the same unit. The age of the youngest zircon (1045 Ma) corresponds to an episode of metamorphism related to the Grenvillian Orogeny.

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