



Earth Sciences

UNIVERSITY OF TORONTO

Earth Sciences Centre • 22 Russell St. • Toronto • ON • M5S 3B1 • CANADA

Jack Satterly Geochronology Lab

Prof. Harold Gibson, PhD., P.Geo.
Director, Mineral Exploration Research Centre
Department of Earth Sciences
Laurentian University
935 Ramsey Lake Road, Sudbury, ON, Canada

Oct 31, 2015

Dear Harold,

On behalf of the Jack Satterly Geochronology Laboratory (JSGL) at the University of Toronto, I am pleased to offer our collaborative support of your CFREF proposal, Metal Earth. This letter affirms our enthusiastic commitment to support the U-Th-Pb analytical goals of your proposal, and we pledge to make the necessary facilities, staff, and analytical time available as required. The proposed program aligns closely with our own research efforts aimed at establishing high-resolution age and radiogenic tracer isotopic constraints on Precambrian and Phanerozoic crustal evolution, the role of the contemporaneous development of Earth's subcontinental lithospheric mantle, and the timing, source, and depositional controls on metal ore systems.

The JSGL is recognized as the home and source of numerous milestones in the evolution of modern U-Pb geochronology, and many of these advances were made through investigations of Canada's Precambrian shield and its world-class base and precious metal deposits. Analytical efforts in the JSGL have constantly strived to develop new mineral chronometers and innovative, ultralow-blank analytical protocols to address new geological challenges. In addition to our specialized mineral separation and clean lab facility, the JSGL houses two upgraded VG354 and one Sector 54 mass spectrometer, and a newer GV Instruments Isoprobe-T thermal ionization mass spectrometer all of which are equipped with multiple Faraday cups, and digital Daly photomultiplier ion counting capabilities for small signals. Capacity for both age-dating and radiogenic tracer isotopic studies are therefore now greatly increased. Accuracy of TIMS ages through the JSGL is ensured through our use of gravimetrically-calibrated in-house and EARTHTIME mixed ^{205}Pb - ^{233}U - ^{235}U spikes. We routinely use high-T annealing and chemical abrasion (CA-ID-TIMS) methods to help eliminate Pb-loss in zircons. Furthermore, the lab houses a VG PlasmaQuad ExCell ICP-MS with enhanced sensitivity, equipped with a coherent 213nm laser, and together with a newly-arrived, state-of-the-art Agilent 7900 quadrupole with an NWR 193 UC laser system, we offer unparalleled *in situ* isotopic and trace element analysis of minerals and inclusions. Combined, the research (Hamilton, Davis, Kamo) and technical staff and students at the JSGL bring over 150 years of combined experience and expertise in high-precision geochronology, radiogenic isotope geochemistry, and field work.

I wish you the best of luck with this very intriguing and exciting initiative, and offer any help you might need to bring it to success.

Sincerely,

Prof. Michael A. Hamilton, PhD
Director, Jack Satterly Geochronology Lab