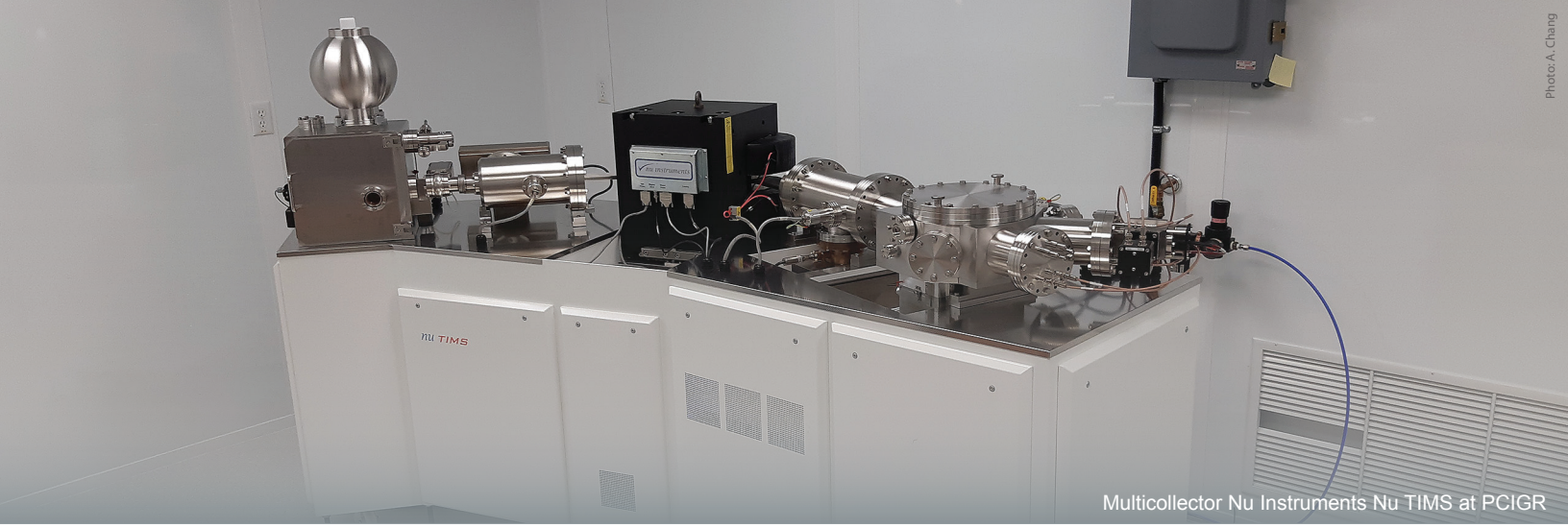


Photo: A. Chang

Multicollector Nu Instruments Nu TIMS at PCIGR

Geochronology Services

Welcome to the Pacific Centre for Isotopic and Geochemical Research, at the University of British Columbia in Vancouver, Canada. PCIGR is an all-in-one research facility that provides analytical services to investigators from academia, government and industry, both across Canada and around the world.

Geochronology at PCIGR

PCIGR offers U-Pb geochronology on zircons and Lu-Hf dating on garnets after specialized sample processing, as summarized below. Contact us for further details.

U-Pb Geochronology

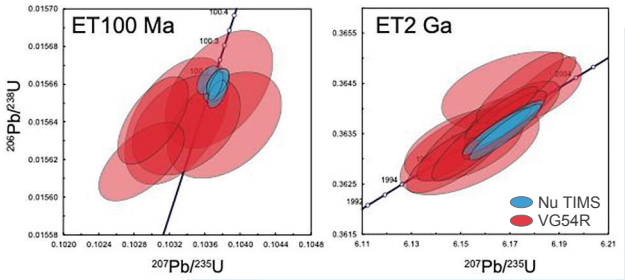
Sample preparation using standard techniques:

- Crushing and grinding of rock samples
- Processing by water-table, heavy-liquid and magnetic separation
- Picking zircon grains or grain fragments under magnification for imaging analyses
- Documenting grain external morphology by scanning electron microscopy
- Examining internal grain structures in polished grain mounts by cathodoluminescence imaging

We offer both isotope-dilution and in-situ age analyses, applied separately or in tandem where applicable.

Isotope dilution analyses:

- Chemical abrasion, single-grain zircon U-Pb technique
- EARTHTIME ET535 or in-house ^{205}Pb-$^{233-235}U$ isotope tracer
- Preparation of accessory minerals
- Purified zircon U and Pb loaded onto single Re filaments
- **Greatly improved precision** via **Nu TIMS** vs VG54R: <0.1% (2σ)



In-situ analyses:

- Laser ablation (λ = 193 nm) of zircons or accessory minerals
- Analysis via Applied Spectra RESOlution excimer laser and **Agilent 7700x** quadrupole ICP-MS, or
- Analysis via New Wave Research excimer laser and **Thermo Fisher Scientific Element2** high-resolution sector-field ICP-MS
- A single laser shot can acquire up to 30 user-selected trace elements, including rare earth elements

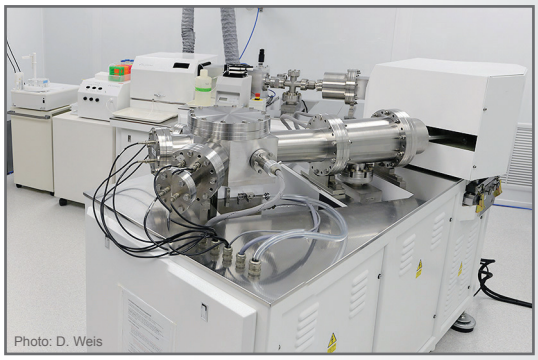
Lu-Hf Dating

Lu-Hf analysis is an emerging geochronology technique that enables dating of garnet— the main petrogenetic indicator mineral in metamorphosed rocks.

The technique has been used on rocks from (ultra-)mafic to felsic compositions and from Archean to Miocene in age, with reliable, high-precision (0.2–1.5%; 2SD) age constraints on garnet (re-)crystallization in the crust and mantle.

Sample preparation:

- Garnet grains washed and admixed with ^{176}Lu-^{180}Hf isotope tracer
- Step-wise dissolution of mixture
- Cation-exchange chromatography
- Analysis via Nu Plasma multicollector ICP-MS



Nu Instruments Nu Plasma MC-ICP-MS

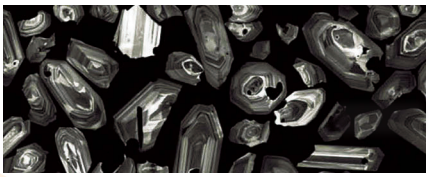
VG54R and VG354S TIMS

Agilent 7700x quadrupole ICP-MS

Our Capabilities

Consult our other brochures for related capabilities, or visit our website below for more information.

- **PCIGR: All-in-One Analytical Services**
- **Sample Preparation Services**
- **Trace Element Analysis Services**
- **Isotopic Analysis Services**
- **In-Situ and Microanalysis Services**


Zircons viewed under cathodoluminescence

Our Commitment

PCIGR is committed to working with you to achieve the best outcomes for your project. Contact us with your analytical and research needs.

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