GEOTARGET SOLUTIONS INC. FEE SCHEDULE (2011)

THERMOCHRONOLOGY

We provide i) data that has been calibrated with state-of-the-art methods, ii) a full interpretation tailored to the request of the client, and iii) a concise and informative report. Our costs for thermochronological (multi-phase $^{40}Ar/^{39}Ar$, fission-track and (U-Th/He)) studies are extremely flexible, and depend on:

1. The methods used (our experts can competently assist you with choosing the most appropriate methods for your application).
2. Whether or not the application is intended for commercial or academic purposes.
3. Turnaround time requirements.

A quotation for thermochronological work will be provided upon request (contact Richard Spikings: spikings@geotargets.ca or Tel. +41 76 580 6383). We will also provide you with a clear explanation of the steps that we use to interpret the data.

MINERAL SEPARATION AND GEOCHRONOLOGY

Rock crushing and mineral separation	**250 USD/sample**
Grain picking and mount polishing and/or grain dissolution	**200 USD/sample**
CL imaging by Scanning electron microscope (SEM)	**250USD/sample**
Isotope dilution chemistry	**250 USD/sample**

Data acquisition and processing

• U-Pb zircon high-precision ages by TIMS (10 concordant analyses)	**2500 USD/sample**
• High-precision U-Pb ages of accessory phases by TIMS (baddeleyite, xenotime, apatite, titanite, rutile, allanite, garnet)	**1500 USD/sample**
• Detrital grain geochronology by LA ICP-MS (100grains)	**2200 USD/sample**
• *In situ* U-Pb dating of zircon, garnet, rutile and titanite (50 grains)	**1800 USD/sample**
• $^{40}Ar/^{39}Ar$ step-heating (hornblende, muscovite, biotite, magmatic feldspar, adularia, alunite and other minerals). At least ten heating steps per sample.	**1500 USD/sample**

GEOCHEMISTRY

Assaying

- Pd-Pt-Au, Re concentrates, Rh, Ga, Cu (sequential oxides) — **60 USD/element**
- All other elements — **35 USD/element**

Elemental geochemistry

- Whole-rock major and minor element chemistry by XRF (29 major and trace elements; Si, Al, Ti, Fe, Mn, Ca, Mg, K, Na, P, Sc, V, Ni, Cr, Ba, Sr, Zr, Y, Rb, Nb, Ga, Cu, Zn, Pb, La, Ce, Th, Nd, U, and Cs≥10 ppm; minimum quantity 20g) — **100 USD/sample**
- Trace element geochemistry by solution ICP-MS (14 REEs, Ba, Th, Nb, Y, Hf, Ta, U, Pb, Rb, Cs, Sr, Sc, and Zr; includes cost of reference solutions and sample digestion) — **250 USD/sample**
- *In situ* trace element geochemistry by high-resolution LA ICP-MS (all trace elements; includes standardization; and warm-up time) — **350 USD/sample or 250 USD/hour**
- *In situ* geochemistry of mineral phases, melt and fluid inclusions; U-Th/Pb dating of monazite by electron microprobe (EMPA) — **250 USD/hour**
- Soil gas hydrocarbons (SGH) geochemistry by gas chromatography mass spectrometry (GC-MS) — **150 USD/sample**
- Biogeochemistry of rocks, drill cores, panning concentrates, soils, sediments and vegetation (Ag, Al, As, Au, B, Ba, Be, Bi, Br, Ca, Cd, Ce, Co, Cr, Cs, Cu, Dy, Er, Eu, Fe, Ga, Gd, Ge, Hf, Hg, Ho, In, Ir, K, La, Li, Lu, Mg, Mn, Mo, Na, Nb, Nd, Ni, Pb, Pr, Pt, Pd, Rb, Re, Rh, Ru, Sb, Sc, Se, Si, Sm, Sn, Sr, Ta, Tb, Te, Th, Ti, Tl, Tm, U, V, W, Y, Yb, Zn, Zr)

  Humus and vegetation by INAA (100 grams) — **250 USD/sample**

  Vegetation ash by ICP-MS — **15 USD/first element/ + 7 USD/ add. elem.**

- Indicator geochemistry of heavy mineral concentrates (mineral separation fees apply):

  Thermal irradiation (INAA; 60 grams) — **150 USD/hour**

  Base metals by acid dissolution and ICP-MA (Ag, Cu, Cd, Mn, Mo, Ni, Pb, Zn, S) — **10 USD/first element/ + 5 USD/ add. elem.**

Spot analyses by electron microprobe (EMPA)	**200 USD/hour**

Mineral and oxide identification and imaging

Clay speciation by X-ray diffraction (XRD) (semi-quantitative analyses of all rock-forming and clay/phyllosilicates; analyses of mixed-layer clays, ordering, and percent expandable interlayers)	**400 USD/sample**
Whole-rock mineral identification by X-ray diffraction (XRD) (semi-quantitative analyses of weight percentages of rock-forming minerals and estimate of total clay/phyllosilicates)	**250 USD/sample**
Spectroscopic identification of crystalline polymorphs by XRD	**250 USD/sample**
Scanning Electron Microscopy of geological materials (sample preparation and 3 photomicrographs at magnifications of choice)	**350 USD/sample**
Mössbauer spectroscopy of powdered geological samples	
• Determination of the valence state of iron, identification of iron oxides and redox conditions of glasses (spectra acquisition and fitting at room temperature)	**750 USD/sample**
• Determination of the valence state of iron, identification of iron oxides and redox conditions of glasses at low temperature • (spectra acquisition and fitting at 77 K or 13 K)	**1200 USD/sample**
• Comprehensive determination of the valence state of iron, identification of iron oxides and redox conditions of glasses (spectra acquisition and fitting at RT, 77 K and 13 K)	**3000 USD/sample**
Wet chemistry (colorimetery) on powdered samples	**80 USD/sample**
Petrography of rocks, sediments, ores and fluid inclusions (reflected and transmitted light microscopy including sample preparation)	
• Standard size thin sections (26x46 mm)	**75 USD/section**
• Large thin sections (50x76 mm)	**150 USD/section**
• Standard polished thin sections (26x46)	**150 USD/section**

- Large polished thin sections (50x76) **200 USD/section**
- Fluid inclusion mounts of desired thickness **200 USD/mount**
- Feldspar staining **50 USD/sample**

Isotope geochemistry

Isotopic tracing of whole rock and mineral separates by (N)TIMS

- $^{143}Nd/^{144}Nd$ and Nd+Sm concentrations in silicates **600 USD/sample**
- $^{143}Nd/^{144}Nd$ in whole rocks/silicate mineral separates **500 USD/sample**
- $^{87}Sr/^{86}Sr$ in whole rocks/silicate mineral separates **450 USD/sample**
- $^{87}Sr/^{86}Sr$ and Rb+Sr concentrations in silicates **550 USD/sample**
- $^{143}Nd/^{144}Nd$ and $^{87}Sr/^{86}Sr$ in silicates **750 USD/sample**
- $^{143}Nd/^{144}Nd$, $^{87}Sr/^{86}Sr$ isotopic ratios with the Rb+Sr and Nd+Sm concentrations in silicates **900 USD/sample**
- $^{87}Sr/^{86}Sr$ isotopic ratios in carbonates **300 USD/sample**
- $^{143}Nd/^{144}Nd$ isotopic ratios in carbonates **400USD/sample**
- ^{206}Pb, ^{207}Pb, and ^{208}Pb isotopic ratios in silicates **500 USD/sample**
- ^{206}Pb, ^{207}Pb, and ^{208}Pb in sulphides and carbonates **400 USD/sample**
- Bomb dissolution of samples (optional) **400 USD/sample**
- $^{187}Re/^{187}Os$ and $^{190}Pt/^{186}Os$ systematics in silicates and sulfides (dating of shale, Mo, Au, and Cu-Ni deposits) **600USD/sample**

Isotopic tracing of carbonates, silicates, peat, coal, water and gas by stable isotope ratio MS

- Stable isotope systematics of carbonate minerals (O and C) **150USD/sample**
- Stable isotope composition of water (O and H isotopes) **200 USD/sample**

- Stable isotope systematics of hydrogen in silicates **300 USD/sample**
- Stable isotope composition of CO_2 (C and O) **150 USD/sample**
- Stable isotope systematics of nitrogen ($\delta^{15}N$) **200 USD/sample**
- Stable isotope systematics of carbon ($\delta^{13}C$) in organics **200 USD/sample**
- Stable isotope systematics of nitrogen and carbon (w/o acid) **300 USD/sample**

In situ isotope composition of mineral phases by LA (MC) ICP-MS and SIMS

- $^{176}Hf/^{177}Hf$ and Lu+Hf concentrations in zircon **700 USD/sample**
- *In situ* $^{143}Nd/^{144}Nd$ **500 USD/sample**
- *In situ* ^{206}Pb, ^{207}Pb, and ^{208}Pb **500 USD/sample**
- *In situ* analyses of isotopic composition of transition metals (Mo, Cd, Mg, Fe, Cu, Li) **500 USD/hour**

** 100% rush (7 days turnaround) surcharge applies to all **GeoTarget Solutions Inc.** analytical services*
*** Above fee schedule applies to commercial and governmental entities; academic rates are available upon request.*

CONSULTANCY

The **GeoTarget Solutions Inc.** expert consultancy fee schedule is threefold:

Hourly rate basis

- Fixed principal geologist hourly and daily services of **100 USD** / **700 USD** respectively.

Contingency basis

- No retainer fee
- No consultancy time commitment

Retainer basis

- **5000 USD** per month for a minimum of three months.
- All retainer fees are subtracted from the fee payable upon the delivery of services
- Retainer covers staff overhead, analytical and miscellaneous expenses and at least 30 hours per month of specified consultancy.
- Reserved right to increase retainer fees depending on the nature and volume of a task.