

Stanford Geochronology Facility

The Stanford Geochronology Facility offers capabilities in the following areas:

- **U-Th-Pb and U-Th Geochronology by Secondary Ionization Mass Spectrometry (contact: Matt Coble coblem@stanford.edu)**
 - SHRIMP-RG is a high mass resolution, high sensitivity ion probe operated under the auspices of the **Stanford-USGS Micro Analysis Center** that is staffed by Stanford (Matt Coble and USGS (Jorge Vazquez) scientists.
 - Measurements performed with either grain mount (polished or natural surfaces) or thin section (full petrologic context)
 - Easy to use LabVIEW software facilitates fully automated analysis and 24 hour operation after analysis locations are targeted
 - Spatially resolved 10-30 micron 1-3 micron deep, 1-3 nanogram volume
 - Some additional trace element measurements (from B to Th) can typically be included with U-Th-Pb analysis
 - All sample preparation, characterization, analysis, and data interpretation supported by laboratory personnel.
 - \$1600/day external use rate for SHRIMP-RG use (all sample preparation, characterization and data reduction factored into daily rate)
- **$^{40}\text{Ar}/^{39}\text{Ar}$ and (U-Th)-He Geochronology and Thermochronology by Noble Gas Mass Spectrometry (contact Marty Grove mjgrove@stanford.edu)**
 - Nu Noblesse magnetic sector multi-collector calibrated with 5 automated pipette systems including ^{40}Ar - ^{39}Ar - ^{38}Ar - ^{36}Ar reference gasses developed with USGS (Menlo Park), atmospheric Ar as well as ^4He and ^3He .
 - Fully automated Laser fusion $^{40}\text{Ar}/^{39}\text{Ar}$ analysis of anhydrous single crystals via 10 watt CO_2 laser system
 - Fully automated laser incremental heating for $^{40}\text{Ar}/^{39}\text{Ar}$ or (U-Th)-He applications of metal encapsulated single crystals or grain aggregates (up to ~2 mg) via 75 watt near-IR (908nm) fiber optic laser with either current regulated or PID-regulated optical pyrometer or type C thermocouple-based PID feedback
 - Laser ablation (spot) analysis via UV (UP-213) laser (manual targeting)
 - In house HF 125 ml Parr bomb digestion laboratory
 - All sample preparation, characterization, analysis, and data interpretation supported by laboratory personnel.
 - Cost recovery: $^{40}\text{Ar}/^{39}\text{Ar}$ \$25/measurement (U-Th)-He \$50/measurement
- **Apatite Fission Track Analysis (Trevor Dumitru tdumitru@stanford.edu)**
 - Mineral Separation Laboratory for separating apatite and zircon
 - Specialized fission track mounting and polishing facilities
 - Custom-configured, research-grade Zeiss Axioskop microscope with computer-automated stage for track observation and data collection
 - Software for data analysis and modeling
 - All sample preparation, characterization, analysis, and data interpretation supported by laboratory personnel.
 - Cost recovery depends upon details of the project – contact Trevor Dumitru for further information