Job Description

**Job Title:** Halogen CSIA IRMS Isotope Technician

**Department:** Earth & Environmental Sciences, Environmental Isotope Laboratory

**Reports To:** Lab Manager and Senior Technologist

**Jobs Reporting:** None

**Salary Grade:** USG 8

**Effective Date:** June 2018

**Primary Purpose**
The Halogen Compound Specific Isotope Analysis – Isotope Ratio Mass Spectrometry (CSIA – IRMS) Technician is responsible for the preparation and characterization of organic and inorganic samples primarily for δ37Cl and δ81Br but also δ13C and δ2H isotope analyses. They are required to assist in the maintenance of day-to-day operations including scheduling of sample priority with the Office Administrator and Lab manager, wet chemistry and sample preparation, operating and maintaining the Gas Chromatograph Isotope Ratio Mass Spectrometry (GC-IRMS) Systems for analysis and calibration of samples and reporting of data to clients and researchers. The incumbent will be an integral part of the team to provide sample analyses results in a timely manner to clients from around the world. Duties assigned will include the set up and operation of laboratory analytical equipment, conduct data analysis and interaction with students, co-workers and clients.

**Key Accountabilities**

**Mass Spectrometer systems and peripherals operation, maintenance, update and repair of the following lab equipment:**

- IsoPrime DI/CF/GC - Dual Inlet, Continuous Flow Stable Isotope Ratio Mass Spectrometer (CFSIR-MS) (elementar / Langenselbold-Germany) coupled with an Agilent 7890 Gas Chromatograph (Santa Clara-USA)
- Delta V-DI/CF/PT/ SPME/GC - Dual Inlet, Continuous Flow Stable Isotope Ratio Mass Spectrometer (CFSIR-MS) (Thermo Finnigan / Bremen-Germany) coupled with an Agilent 7890 Gas Chromatograph (Agilent / Santa Clara-USA) with ATOMX Purge & Trap (Teledyne Tekmar / Mason-USA)
- MAT 253-DI/TD/SPME/GasBench II/CF/GC - Dual Inlet, Continuous Flow Stable Isotope Ratio Mass Spectrometer (CFSIR-MS) with Gas Bench (Thermo Finnigan / Bremen-Germany) coupled with an Agilent 7890 Gas Chromatograph (Santa Clara-United States), Thermal Desorber (Scientific Instruments / West Palm Beach-USA)
- Triton Thermal Ionization Mass Spectrometer (TIMS) (Thermo Finnigan / Bremen-Germany) with 21 position autosampler.

**Sample Pretreatment and Extraction**

- Prepare and analyze organic and inorganic samples from around the world primarily for 37Cl and 81Br but infrequently 13C and 2H isotope compositions on a variety of sample media including aqueous, solvents, soils, minerals, gasses and resins.
- Operation and maintenance of a two-stage controlled high purity helium atmosphere glovebox in order to methylate samples for analysis using volatile carcinogenic compounds.
- High temperature glass blowing of both borosilicate and quartz break seals for sample preparation and internal standard characterization.
- Familiarity with glass vacuum lines and vacuum pumps.
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- Familiarity with liquid nitrogen and cold distillation sample purification. Must be able to prepare a variety of cold traps using solvent/low temperature mixtures.

**Method Development**
- Maintain up to date Technical procedures and work to improve efficiency for technical protocols in the lab, lower detection limits of existing methodologies and bring new methodologies and equipment online.
- Investigate and develop new methods and procedures to expand lab capabilities and help create new research frontiers.
- Responsible for statistical analysis and calibration of raw data to internationally calibrated standards and reporting of said data.

**Supervision**
- Maintain up to date Safety Data Sheets for all chemicals routinely used as well as an overall chemical inventory. Coordinate the safe disposal of hazardous waste.
- Help to supervise the safety training of students working in the lab focusing on familiarity with the dangerous chemicals utilized as well as the various locations of safety gear available in the lab.
- Assist with sample preparation, analysis, data calibration and interpretation for students and researchers working within the lab.
- Assist undergraduate and graduate students with all aspects of analytical work. This includes teaching analytical methods, supervising students, on machinery and wet chemistry procedures and providing advice and help with interpretation of analytical data used in student research projects.

**Other Duties**
- Attend conferences to advertise uwEILAB capabilities and take part in talks communicating isotopic techniques or research to those that might benefit from using them to obtain cutting edge methods and recruit customers.
- Keep track of consumable inventory and order replacements when necessary while considering the lead time required for specialized products.
- Help and work in liaison with the technical staff member running the TIMS isotope facility.
- General lab clean-up and organization
- Miscellaneous as assigned by the uwEILAB Manager

*All employees of the University are expected to follow University and departmental health and safety policy, procedures and work practices at all times. Employees are also responsible for the completion of all health and safety training, as assigned. Employees with staff supervision and/or management responsibilities will ensure that assigned staff abide by the above, and actively identify, assess and correct health and safety hazards, as required.*

**Required Qualifications**

**Education**
- Undergraduate degree in related Science field required, Master’s degree preferred
- A combination of equivalent education and/or experience will be considered

**Experience**
- At least 3 years’ experience working in an Isotope laboratory environment required

**Knowledge/Skills/Abilities**
- Effectively manage multiple priorities and exercise independent, prudent judgement
- Strong analytical and problem solving skills
- Excellent verbal and written communication skills
- Intermediate MS Word and Excel
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**Nature and Scope**

- **Contacts:** Good oral skills for telephone contacts, communicate effectively with clients, staff, students and faculty by telephone and/or email. Must be able to interact with potential clients and collaborating researchers in a conference environment. Must have good general knowledge about EIL analyses in order to field questions while representing uwEILab as an exhibitor.

- **Level of Responsibility:** Provides direction, training and insight to undergraduate and graduate students utilizing stable isotopes and visiting fellows/researchers.

- **Decision-Making Authority:** Organize and prioritize samples for weighing and analysis. Troubleshoot any issues with equipment to minimize downtime. Coordinate with the Office Administrator to communicate with clients and assist with any issues that may arise. Calibrate data to international standards and sign off on reported data to clients.

- **Physical and Sensory Demands:** Works in a busy lab where it can be noisy and hot, must be able to lift and carry medium weight boxes containing samples to storage areas throughout the labs. Must be able to disconnect, move and reconnect and move gas cylinders safely. Must be dexterous as much of the work involves maintenance and plumbing of capillary sized connections and micro-unions.

- **Working Environment:** Lab based with various chemical compounds, and chemicals; may have to stand for extended periods; constant need to give close attention to detail with written material; deadline pressures. Must be able to problem solve and be able to handle very different requirements from one day to the next.