

Job Description for Professional Posts

Position and Grade:	Preparation for Ultra-High-Sensitivity SIMS at SAL (P5)
Organizational Unit:	NA NAAL Safeguards Analytical Laboratory
Duty Station:	Seibersdorf
Type/Duration of Appointment:	CFE/2 years

Organizational Setting

1. The International Atomic Energy Agency's (IAEA) Laboratories are located in Seibersdorf, approximately 45 km south of Vienna. Their main objective is to contribute to the implementation of the IAEA's programmes in food and agriculture, human health, physical and chemical sciences, water resources, industry, environmental management (terrestrial), radiation protection and safeguards verification.

2. The Safeguards Analytical Laboratory (SAL) is the part of the IAEA's Laboratories at Seibersdorf responsible for safeguards verification. This is achieved through analyses of nuclear and environmental samples taken by safeguards inspectors for verification of material accountancy and for confirmation of the absence of undeclared nuclear activities. SAL is the hub of a network of analytical laboratories supporting the Department of Safeguards. The collection of samples by Department of Safeguards inspectors is facilitated under INFCIRC/153-type safeguards agreements and the additional protocol to safeguards agreements (INFCIRC/540). SAL has three units: the Chemical Analysis Unit, the Mass Spectrometry Unit and the Clean Laboratory Unit. These are supported by the QA/IT group.

The Senior SIMS Expert will support the SIMS uranium and plutonium particle analyses of Safeguards Environmental Samples. The accuracy and reliability of analyses is critical, as the work has a direct impact on the integrity of Safeguards conclusions reached by the Agency. The Senior MS/SIMS Expert is located in the Mass Spectrometry Unit, a team of approximately 10 scientists, engineers, and technicians.

Main Purpose

Environmental particle analysis for actinides is one of the critical tools used by the Agency to verify the absence of undeclared nuclear activities. At SAL the primary tool for this activity is Secondary Ion Mass Spectrometry (SIMS). The IAEA is undertaking a major new project to modernize their SIMS capability through acquisition of a large-radius, multi-collector SIMS. .

Role

The primary responsibility of the Senior SIMS Expert will be to provide technical advice and oversight during procurement, site preparation, installation, and testing of advanced SIMS equipment.. He/she will be responsible for developing protocols for SIMS analysis using the new capabilities of

the large-radius SIMS, and training the SAL staff in these techniques. He/she will be a member of the Mass Spectrometry Unit, reporting to the Unit Head.

Partnerships

The SIMS Expert works in close cooperation with staff of the Department of Safeguards to ensure that project implementation follows Safeguards' project priorities and addresses their long-term development needs. The Expert will also interact with other advanced SIMS facilities across the world (e.g., in France, Sweden, the U.K., the U.S.A, and Japan) to apply their experience and developments to the IAEA's needs. In addition, he/she will interact with SAL staff during this process through exchange of knowledge and training.

Functions / Key Results Expected

- Provides technical leadership in preparing the specifications, especially for performance characteristics and software functionality, and evaluating the bids that are received. As part of the Request for Procurement, design a set of factory acceptance tests to prove functionality required for high quality particle analysis. 20%
- Provides technical guidance for instrument site preparation, including critical characteristics for design of a building to house an advanced SIMS. Visit other SIMS laboratories to learn how they implemented the site requirements. Provide technical oversight during construction of the SIMS facility. 30%
- Leads factory acceptance testing to ensure compliance with specifications, and well as on-site installation and training. 20%
- In collaboration with active SIMS facilities, designs and tests measurement protocols for actinide particle isotopic analysis by SIMS. This includes putting in place a Quality Control Program and developing an uncertainty analysis. 30%
- Provides training and knowledge transfer to IAEA staff responsible for the future operation of the SIMS equipment. 20%

Knowledge, Skills and Abilities

- Excellent knowledge of isotopic measurements by SIMS.
- Experience in writing purchasing specifications and performing acceptance testing of advanced mass spectrometry equipment.
- Experience in technical project management, including demonstrated effective communication/training skills.
- Experience applying quality management to analytical measurements, including error analysis.
- Experience in the measurement of isotope ratios of actinide elements is desirable.
- Experience with site preparation for environmentally-sensitive analytical equipment is desirable.
- Ability to carry out method development and testing and to document and present the results.

Education, Experience and Language Skills

- Advanced University degree in Analytical Chemistry, Physics, or Engineering.
- Minimum of 10 years experience as a mass spectrometrist, preferably working in the field of analysis of actinide elements in environmental samples.
- Experience of working at the international level is desirable
- Detailed experience with mass spectrometry control and data reduction software is highly desirable.
- Fluency and ability to communicate effectively in English, including drafting technical documents, is essential. Working knowledge of German is an asset.

Internal Human Resources use only:	
Effective Date:	
Occupational Group(s):	
Post Number:	