

Job Description for Professional Posts

Position and Grade:	Scanning Electron Microscopy Expert (P5)
Organizational Unit:	Safeguards Analytical Laboratory Agency's Laboratories Seibersdorf Nuclear Sciences and Applications
Duty Station:	Seibersdorf
Type/Duration of Appointment:	2 years

Organizational Setting

The Agency's Laboratories Seibersdorf (NAAL) are located about 35 km south of Vienna. The NAAL contributes to different programmes within the Agency. The Safeguards Analytical Laboratory (SAL) of NAAL is an ISO 9001 accredited laboratory that performs analysis of samples taken by safeguards inspectors, and provides support to the Department of Safeguards in connection with its commitments under comprehensive safeguards agreements and additional protocols. The SAL consists of the Chemistry, Mass Spectrometry and Clean Laboratory Units, and a Quality Assurance and Information Technology Group. The main function of the Clean Laboratory Unit is the receipt, screening, handling and analysis of environmental samples taken by safeguards inspectors in facilities around the world. Detailed analysis techniques such as scanning electron microscopy and mass spectrometry are used to characterize nuclear signatures in these samples in order to draw conclusions about the absence of undeclared activities and materials.

Main Purpose

(I) Programme M Safeguards, Sub-programme N1 Operations, Project N109 Sample Logistics and Analysis. The work involves the setup and testing of a new scanning electron microscope (SEM) having both energy-dispersive and wavelength dispersive X-ray spectrometers. The new instrument will also require development of measurement protocols to ensure optimum utilization and high accuracy of the results. The combination of SEM with XRF is a highly specialized field and an expert with extensive experience is needed to support the implementation of this new instrument costing over € 600K.

Role

The incumbent will be a cost-free expert having the necessary technical knowledge of the methods as well as the scientific background to train SAL staff in its use. The CFE will work with SAL staff, both professional and general service, to develop procedures and to document the performance of the instrument.

Partnerships

The incumbent will bring a great deal of expertise to this work, but additional support should be obtained by contacting experts in Member States (at Universities and National Laboratories) as well as instrument manufacturers.

Functions / Key Results Expected

- 40% Oversee the installation and testing of the new JEOL scanning electron microscope at SAL. Perform acceptance tests along with JEOL engineers and SAL staff to demonstrate that the instrument meets all IAEA specifications.
- 25% Train SAL staff in the operation of the instrument. In particular, train SAL staff in using the X-ray fluorescence spectrometry equipment for ultimate sensitivity, accuracy and precision.
- 25% Develop procedures for the analysis of safeguards environmental samples. Document methods for sample preparation, initial searching for particles of interest, XRF measurements and in-situ particle manipulation.
- 10% Document all work, including acceptance tests and procedures.

Knowledge, Skills and Abilities

- Excellent knowledge of scanning electron microscopy coupled with X-ray fluorescence spectrometry.
- Specific knowledge of JEOL electron microscopes and EDAX/Oxford XRF spectrometers.
- Experience in the measurement of uranium and plutonium particles.
- Ability to work in a team to develop new methods and to train personnel in their use.
- Good communication and writing skills in English.

Education, Experience and Language Skills

- Ph.D. in Analytical Chemistry or Physics
- 15 years of experience at the national level in electron microscopy. 3 years of experience at the international level
- Fluency in English

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