D. VERIFICATION DIVISION

1. Associate Al/Chemical Forensics Officer, Verification Division, Laboratory (VER/LAB)

I. Position Information					
Division / Office:	VER	Grade Level: P-2			
Branch / Section:	LAB	Duration and Type of Appointment: One-			
JPO functional title:	Associate Al/Chemical Forensics Officer	renewal for an additional maximum period of one year, subject to satisfactory performance, recommendation by respective Division and donor state agreement			
Reports to:	Head of Laboratory				

II. Job Purpose and Organisational Context

The Junior Professional Officer (JPO) Programme:

The JPO Programme equips outstanding young leaders with the skills and experience required to advance the Organisation's goals and objectives. As a pathway into the world of International Public Sector professional employment, the programme offers young professionals excellent exposure to a multilateral organisation while providing a valuable entry point into the International Professional Environment.

During their appointments, JPOs benefit from the guidance of experienced OPCW staff members and are actively involved in supporting Divisions with the attainment and progress of projects and initiatives aimed towards the achievement of the OPCWs overall goals.

Job Purpose:

Chemical forensics describes the utilization of chemistry to determine the properties of a sample, similarities between samples, and sample origins to supplement an investigation or similarly mandated activity. This project focuses on the development of chemical forensic methodologies using analytical techniques and equipment at the Centre for

Chemistry and Technology (CCT), in order to enhance existing or explore new methodologies to generate chemical fingerprints from a range of Convention-related compounds in artificially synthesized samples.

Main purpose of the requested JPO placement is to investigate to which extent computational methods (e.g. those used in metabolomics) and Artificial Intelligence (AI) can be used to describe spectral features of compounds and to distinguish analytical data sets obtained from batches of chemicals produced by different synthesis methods, and whether it is feasible to identify the method of synthesis from the data, as well as the origin of starting materials.

Reporting structure and partners

The JPO will work under direct supervision of Head of Laboratory and technical guidance will be provided by two Senior Analytical Chemist working on chemical forensics and chemical synthesis as secondary supervisors. He/she will interact closely with other staff across LAB. In addition, it is envisaged that the JPO will interact with international collaborators from the Designated Laboratory networks.

III. Supervision

Name of Supervisor:	Mr. Daniel Noort
Title of Supervisor:	Head of Laboratory

Content and methodology of supervision:

As part of the JPO programme overall framework, the JPO will benefit from the following supervision modalities:

- Structured guidance provided by the supervisor, especially in the beginning of the appointment, with the purpose of gradually increasing the responsibilities of the JPO;
- Establishment of a work plan, with clear key performance indicators;
- Effective supervision through knowledge sharing and performance/development feedback throughout the appointment;
- Easy access to the supervisor;
- Participation in Division/Office/Branch/Section meetings to ensure integration and operational effectiveness;
- Guidance and advice in relation to learning and training opportunities within the field of expertise;
- Completion of the yearly OPCW Performance Management and Appraisal;

III. Duties, Responsibilities and Output expectations

- 1) Literature search on how artificial intelligence (AI) could play a role in forensic sciences, and in particular in chemical forensics (10%)
- 2) Identify potential collaborators on chemical forensics AI (forensic laboratories, designated laboratories, academia, private sector). Work closely with the supervisor to gain understanding of the needs. Work closely with ICA on national authority contacts. Prepare a work plan in collaboration with the LAB team and other internal and external stakeholders (10%)
- 3) Develop strategies how to apply AI on artificially synthesized samples of CWC-relevant chemicals (30%)
- 4) In collaboration with OPCW LAB staff apply these AI-based strategies to analytical data sets of CWC-relevant chemicals, which had been synthesized through different synthesis routes, including 'blindly' synthesized samples, in order to distinguish samples produced by different synthesis methods and whether it is feasible to identify the method of synthesis from the data, as well as the origin of starting materials (40%)
- 5) Propose recommendations for future use of AI in chemical forensics, based on the outcome of the results obtained, which will contribute to the verification activities of the OPCW. If results allow, work on peer-reviewed publication of developed methodology (10%)

IV. Values, Competencies and Selection Criteria				
Core Values	Description of Value / Competency			
Integrity	 Demonstrates the values of the OPCW in daily activities and behaviours Acts without consideration of personal gain Resists undue political pressure in decision-making Does not abuse power or authority Stands by decisions that are in the Organisation's interest, even if they are unpopular Takes prompt action in cases of unprofessional or unethical behaviour 			
Professionalism	 Shows pride in work and in achievements Demonstrates professional competence and mastery of subject matter Is conscientious and efficient in meeting commitments, observing deadlines and achieving results Is motivated by professional rather than personal concerns Shows persistence when faced with difficult problems or challenges Remains calm in stressful situations 			

Respect for Diversity/Gender Equality	 Works effectively with people from all backgrounds Treats all people with dignity and respect Treats men and women equally Shows respect for and understanding of diverse points of view and demonstrates this understanding in daily work and decision-making Examines own biases and behaviours to avoid stereotypical responses Does not discriminate against any individual or group 	
Core Competencies		
<i>Interdisciplinary Teamwork:</i> ability to collaborate with colleagues from other disciplines, such as synthetic and analytical chemists		
Communication: Ability to listen and translate specific professional language into understandable language		

Open mindedness/curious: Eager to try new things, open for change

V. Recruitment Qualifications				
Education:	An advanced university degree in a forensics science - related field, preferably with computational chemistry or Al background			
	Alternatively, an advanced degree in analytical chemistry with forensic specialization.			
	A first level university degree in a related field in combination with qualifying experience (4 years) may be accepted in lieu of an advanced university degree.			
Experience:	 A minimum of two years of working experience in a forensic science - related field with an advanced university degree Experience with AI-based pattern recognition and statistics or 			
	 A minimum of four years of working experience in a forensic science - related field with a first level university degree; Experience with AI-based pattern recognition and statistics. 			

Language Requirements:	•	Excellent written and spoken English is required;
Other desirable education, languages and work experience:	•	Computer skills required for AI applications.

VI. Training and Learning

The JPO will benefit from the on-job training and will have the opportunity to closely collaborate with scientists from related fields, like analytical and organic chemists, within a chemical forensics framework. The JPO will learn about merging novel technologies (in this case AI) into already more established disciplines (in this case chemical forensics). The JPO will learn and gain knowledge on CWC implementation, especially with regards to verification aspects, and will learn about the work of non-routine mission teams at OPCW.

VII. Background Information

Information on the receiving Division/Office/Branch:

The JPO will be placed in the Laboratory branch of the Verification Division, and the actual workplace will be the newly established Centre for Chemistry and Technology.

The role of the Verification Division (VER) is to provide the OPCW with means of verifying and assessing compliance with the CWC through the implementation of the verification regime under the relevant provisions of the CWC. The Verification Programme encompasses operational activities related to the implementation of the verification regime provided for by the Convention with a view to achieving disarmament and non-proliferation of chemical weapons.

The purpose of the OPCW Laboratory is to support the implementation of the verification regime by supporting Verification related activities. Results of verification activities will be reported to States Parties in an accurate, transparent, and balanced manner. OPCW Laboratory's core functions are:

- to provide technical advice and support on analytical equipment-related issues and verification-related analytical issues, and technical support to inspectors in the field during routine inspections, challenge inspections and investigations of alleged use;
- to provide efficient and effective support for the verification activities of the OPCW by operating the OPCW Laboratory in accordance with the quality assurance regime;
- to update and maintain the OPCW Central Analytical Database;
- to provide timely and efficient procurement and maintenance of laboratory equipment;
- the effective organisation, co-ordination and conduct of the official interlaboratory proficiency testing programme;
- assist in the training and certification of inspectors on analytical equipment and procedures; and
- to handle authentic samples taken during inspections and their distribution to designated laboratories.

The laboratory branch consists of 13 staff (10 professional staff and 3 general support staff), mainly analytical and organic chemists. The JPO will work under direct supervision of HoL, and technical guidance will be provided by two Senior Analytical Chemist working on chemical forensics and chemical synthesis as secondary supervisors. He/she will interact closely with other staff across LAB. In addition, it is envisaged that the JPO will interact with international collaborators from the Designated Laboratory networks.