

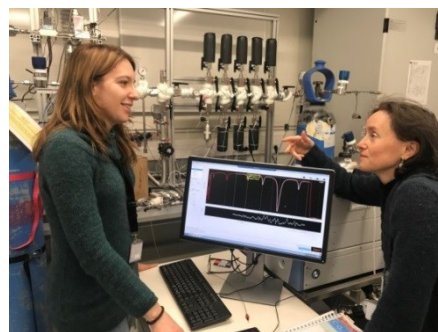
# Visiting Scientist Opportunities in the BIPM Chemistry Department (2025-2026)

Bureau  
International des  
Poids et  
Mesures

*Developing and validating methods for the comparison of chemical and biochemical standards world-wide.*

The International Bureau of Weights and Measures (BIPM) is an international organization established by the Metre Convention, through which Member States act together on matters related to measurement science and measurement standards.

The BIPM has a number of vacancies for short-term secondments in the Chemical Metrology Department, supporting the development of methods which will be used to compare national measurement standards and measurement capabilities for: greenhouse gases; major air quality gases; organic small molecule and peptide and protein primary reference materials and calibrators.



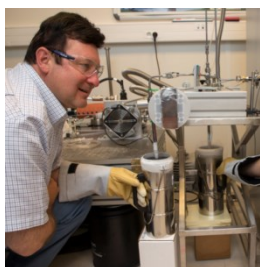
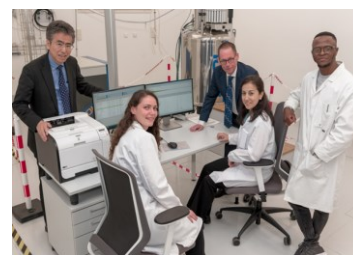
## About the Chemistry Department

The BIPM chemistry laboratory activity focuses on gas standards for air quality and global atmospheric monitoring, and primary calibrators for clinical chemistry and laboratory medicine, food analysis, environmental analysis, forensics and pharma. The BIPM coordinates key comparisons and pilot studies prioritized by the CCQM, in response to NMI needs, for:

- greenhouse and air quality gas standards including their isotope ratios, for which the uncertainty of standards is critical, to ensure the accurate long-term, global monitoring of these species, including the BIPM key comparison BIPM.QM-K1 for surface ozone and BIPM.QM-K2 for atmospheric carbon dioxide;
- the purity assessment of organic calibrators for small molecules and peptides/proteins (source of traceability for measurements of the amount of organic species in a wide range of clinical, environmental, food, forensic and drugs in sport applications) and reference data for their value assignment.

## Working on secondment at the BIPM

The BIPM offers a unique environment for a secondment. It is located in Sèvres, on the outskirts of Paris (France) and has an international staff of about 75. There is a wide range of accommodation available nearby, including furnished apartments. There is an excellent public transport network to central Paris and the international airports are in easy reach.



## Terms and conditions

Applications are welcome from employees of a national measurement institute, a designated institute or a relevant international organization. You would not be employed by the BIPM and would remain an employee of your institute. The BIPM will normally pay an allowance to cover your additional living expenses.

Help will be given in finding local accommodation for the duration of the secondment.

## Experience needed

The experience needed depends on the project. A good level of English (spoken and written) is essential.



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No.	Programme Area	Name and Description of Secondment Project	Duration	Required experience of Visiting Scientist to undertake Secondment
C-1	Gas Standards and Comparisons	<b>Carbonate reaction facility for IRMS: optimization and validation</b> To contribute to the development of a BIPM reference method for CO <sub>2</sub> isotope ratio measurements based on carbonate standards and phosphoric acid reaction. The visiting scientist will optimize and validate IRMS reference procedure based on a carbonate reaction facility developed at the BIPM to prepare gaseous CO <sub>2</sub> from carbonate reference materials, and measurement of carbon and oxygen isotopes with a MAT-253+ mass spectrometer.	6–12 months preferred	<ul style="list-style-type: none"> <li>• Experience in IRMS operation and data analysis</li> <li>• Experience in the analysis of carbonates with IRMS</li> <li>• Experience with Isodat Script Language would be an advantage</li> </ul>
C-2	Gas Standards and Comparisons	<b>Linking <math>\delta^{18}\text{O}</math> measurements to VPDB-CO<sub>2</sub> and VSMOW-VSLAP scales</b> To extend and validate the BIPM's SIRMGEN system for CO <sub>2</sub> mixtures to allow equilibration with water standards to produce CO <sub>2</sub> gases with $\delta^{18}\text{O}$ values anchored to the VSMOW-VSLAP scale. Analysis to be performed by IRMS with a MAT-253+ mass spectrometer.	6-12 months preferred	<ul style="list-style-type: none"> <li>• Experience in IRMS operation and data analysis</li> <li>• Experience in gas handling and working with isotopic water standards</li> <li>• Experience with Isodat Script Language would be an advantage</li> <li>• Experience with cryogenic trapping/water equilibration would be an advantage</li> </ul>
C-3	Gas Standards and Comparisons	<b>NO<sub>2</sub> Dynamic Standards (1000 nmol/mol to 50 nmol/mol)</b> To develop FTIR methods to measure nitric acid permeation rates from permeation tubes used to produce NO <sub>2</sub> in Nitrogen/Air standard concentrations in the range 1000 nmol/mol to 50 nmol/mol.	6 months preferred	<ul style="list-style-type: none"> <li>• Expertise in operation of FTIR using B-FOS and MALT</li> <li>• Experience in gas metrology</li> <li>• Experience in LabVIEW would be an advantage</li> </ul>
C-4	Organic Analysis – Small Molecules	<b>qNMR: Purity assignment of drug and pesticide pure reference standards by <sup>19</sup>F qNMR and <sup>31</sup>P qNMR</b> To support the BIPM CBKT and key comparison programme, researchers will use the sample preparation facilities and the JEOL ECS-400 MHz spectrometer at the BIPM to value assign the mass fraction content of primary standards of organic materials.	Minimum 3 months, preferably 6 months	<ul style="list-style-type: none"> <li>• Expertise in the theory and practice of NMR</li> <li>• Background in analytical organic chemistry</li> <li>• Experience in performing qNMR measurements</li> </ul> <p>Practical knowledge of the operation of NMR spectrometers and the optimization of their operating parameters is essential</p> <p>Previous experience with JEOL NMR systems and the Mnova NMR software an advantage</p>
C-5	Organic Analysis – Small Molecules	<b>LC-MS(/MS) Impurity quantification in Pesticide and Drug Materials</b> Visiting scientists are sought to develop LC-MS(/MS) methods for the identification and quantification of related substances in pure pesticide and drug materials as part of a mass balance approach to material characterization. The outputs will be incorporated into purity evaluation guidelines contributing to Knowledge Transfer and training activities.	6 months, preferably 12 months	<p>Previous experience in one or more of the following</p> <ul style="list-style-type: none"> <li>• LC-MS(/MS) of small organic molecules</li> <li>• UV spectrophotometry of small organic molecules in solution</li> <li>• Performing homogeneity and stability testing</li> </ul>

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No.	Programme Area	Name and Description of Secondment Project	Duration	Required experience of Visiting Scientist to undertake Secondment
C-6	Organic Analysis – Small Molecules	<b>Development and analysis of multicomponent pesticide solution by LC-UV</b> Visiting scientists are sought to develop LC-UV methods for the quantification of pesticides in multicomponent calibration solutions and their stability testing. The outputs will be incorporated purity evaluation guidelines contributing to Knowledge Transfer and training activities.	6 months, preferably 12 months	Previous experience in one or more of the following: <ul style="list-style-type: none"> <li>• LC-UV of small organic molecules</li> <li>• UV spectrophotometry of small organic molecules in solution</li> <li>• Performing homogeneity and stability testing</li> </ul>
C-7	Organic Analysis – Large Molecules	<b>High resolution mass spectrometry of peptides/proteins: Cyclosporin A</b> Visiting scientists are sought to develop LC-hrMS(/MS) methods to characterize Cyclosporin A material in preparation for future pure primary peptide calibrator comparisons which will focus on future rounds of CCQM-K115	6 months, preferably 12 months	<ul style="list-style-type: none"> <li>• Experience with liquid chromatography – high resolution mass spectrometry</li> </ul> Previous experience in one or more of the following <ul style="list-style-type: none"> <li>• LC-MS(/MS) identification of peptides/proteins</li> <li>• Peptide mapping</li> <li>• De-novo peptide sequencing</li> </ul>
C-8	Organic Analysis – Large Molecules	<b>Quantification of Tryptic Digest Peptides</b> Visiting scientists are sought to further develop quantification methods for tryptic digest peptide using (LC-IDMS), to support future pure primary peptide calibrator comparisons (CCQM-K115 series)	6 months, preferably 12 months	<ul style="list-style-type: none"> <li>• Experience with liquid chromatography – mass spectrometry</li> </ul> Previous experience in one or more of the following <ul style="list-style-type: none"> <li>• LC-IDMS(/MS) of peptides/proteins</li> <li>• Tryptic digest of proteins</li> </ul> Previous experience with a SCIEX 6500+ would be an advantage
C-9	JCTLM Database	<b>Development of JCTLM back-office operating procedures</b> To review and update back office operating procedures for the JCTLM database including new functions and operating systems as well as the availability of an applications programming interface.	Minimum 3 months (onsite or remote)	<ul style="list-style-type: none"> <li>• Experience with quality systems</li> <li>• Experience with writing procedures for data handling and databases</li> </ul>

▪ **How to apply**

Please contact the Department Director, Dr Robert Wielgosz ([rwielgos@bipm.org](mailto:rwielgos@bipm.org)) to discuss the project and confirm whether the secondment opportunity is still available. If you decide you would like to go ahead, please forward a copy of your CV so that the BIPM can confirm that the project would be suitable. The BIPM will then send a copy of a Secondment Contract which should be signed by the authorized person at your organization.

If the secondment opportunity is no longer available or the project is not suitable, the BIPM would be pleased to discuss opportunities for a secondment in the future.

