

# **ICPMS and passive sampler method development for the analysis of aquatic contamination tracers in the context of climate change**

## **Context**

Under the framework of the State-Regional Plan Contract (CPER) Climibio (2015-2020), the evolution of the continental water masses in the Artois Picardie Basin in the context of climate change is monitored by the team "Physical chemistry of the environment" of the LASIR laboratory (UMR 8516, CNRS). In the northern part of France, the IPCC foresees a multiplication of extreme climatic events (heavy rain, drought...) and an increase of the mean temperature of more than 2°C (optimistic scenario) by 2100. One of the strategies considered in this project is to choose water quality tracers in order to discriminate the contaminations due to climate change from those due to "classical" anthropic activities (industrial, agricultural, urban contaminations...). If some of these tracers are already routinely analyzed (e.g. nutrients), analytical developments are still necessary for some others.

Among the metallic tracers, Platinum Group Elements (PGE) such as Pt, Pd and Rh seem to be good proxies for road transport contamination. Other surrogates such as arsenic (redox indicator) or silver (biocide) should also be studied. However, these elements are present at trace or ultra-trace levels in the aquatic environment and sensitive analytical methods are thus necessary. A recently-purchased state-of-the-art ICPMS should allow such sensitivity.

## **Position profile**

The candidate will participate to the installation of the new ICPMS in the laboratory. In collaboration with a research engineer, he will develop new reliable methods for the analysis of trace and ultra-trace elements in surface water. ICPMS coupled with chromatographic techniques (HPLC and GC) will be considered.

Also, as the levels of the studied metallic elements are very low, the use of passive samplers such as DGT (Diffusive Gradients in Thin films) could allow the improvement of quantification as well as the integration in the measure of sharp events (e.g. soil/road leaching during a storm, overflow of a water treatment plant...). The study will be focused on the development of specific chelating resin for the selected tracers.

## **Profile of the candidate**

PhD in analytical and/or environmental chemistry with additional skills in ICPMS analytical development is required. Some knowledge about DGT would be desirable.

**Length of the contract**

The post-doc will start on January 1<sup>st</sup> 2017 and will last 1 year.

**Salary**

Gross salary of approximately 2500 €.

Interested candidates send a detailed CV, 1-2 letters of recommendations and a cover letter to Pr. Gabriel Billon, [gabriel.billon@univ-lille1.fr](mailto:gabriel.billon@univ-lille1.fr).