



One or two-year Postdoc position (reference 2023-1289952)

Autumn 2023

LIBSEAU Project

Research Profil: a post-doctoral fellow trained in laser atomic spectroscopy

Duration: 1 or 2 years, starting from November 2023

Rémunération : 46 k€ brut

Date limite de candidature : mi-septembre 2023

Date de démarrage du post-doctorat : novembre 2023

Encadrements

Water and Environnement	Optics and laser devices
Gilles Guibaud, Professeur Stéphane Simon, Maitre de conférences	Claire Lefort, CR CNRS Vincent Couderc, DR CNRS
Laboratoire E2LIM, UR 24 133, Université de Limoges	Institut de recherche XLIM, UMR CNRS 7252
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Contacts

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Offer description

The LIBSEAU project aims to develop an on-line monitoring solution for assessing water quality in terms of mineral elements, for example during potabilization treatment. The idea is to explore the potential of a laser-induced plasma atomic spectroscopy (LIBS) method for real-time detection and quantification of compounds of interest. The suitability and detection thresholds of LIBS spectroscopy will be tested on raw water and water treated on ceramic membranes, targeting the following ions as a priority: K, Na, Ca, Mg, Mn, Fe, Al.

Profil of the candidate

The profile sought is that of a researcher

- PhD less than 3 years old
- with experience of laser set-ups
- able to work with spectrometers, with particular expertise in spectrum analysis and signal processing
- open to discover water chemistry

Role of the

The person recruited will be responsible for the technical implementation of the LIBSEAU project: he/she will need to be trained in optical set-ups and the handling of high-energy lasers, as well as in the



handling of spectrometers detecting atomic fluorescence emission. The first task will be to set up the LIBS optical system in the XLIM laboratory and test aqueous solutions containing ions in controlled concentrations. Detection limits will need to be established, and standard water analysis methods such as mass spectroscopy (ICPMS) carried out at the E2LIM laboratory will need to be checked.

Host laboratory

The post-doctorate will take place between the E2LIM and XLIM laboratories (Limoges). The E2LIM laboratory brings together leading-edge skills in the field of Water and Environmental Sciences. We are looking for answers to environmental and water quality problems, in a context of high demand from economic and regional players [1, 2]. For many years, the XLIM laboratory has been developing physical tools dedicated to the analysis of targets from various horizons. Expertise is focused on the development of laser sources based on nonlinear optics in optical fibers, as well as on the application of these sources to life science disciplines [3, 4].

Submission of applications

Applications must be submitted on the "Choisir le service public" platform (Post-doctoral contract) or following the website of University of Limoges:

<https://www.unilim.fr/post-doctorant-e2lim-xlim/>

reference of the job offer: 2023-1289952

Dead line: August 28, 2023

And by email to:

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[1] J. Rougerie, R. Buzier, S. Simon, G. Guibaud, "Aluminum sampling by Chelex, titanium dioxide and zirconium oxide DGT: Influence of pH on accumulation behaviors", *Environmental Technology & Innovation*, 24, 101931 (2021)

[2] S. Wongrod, S. Simon, E.D. van Hullebusch, P.N.L. Lens, G. Guibaud, "Assessing arsenic redox state evolution in solution and solid phase during As(III) sorption onto chemically-treated sewage sludge digestate biochars", *Bioresource Technology*, 275, 232-238 (2019)

[3] T. Mansuryan, A. Tonello, K. Krupa, A. Desmoulière, G. Ndong Ntoutoume, V. Sol, C. Lefort, M. Zitelli, M. Ferraro, F. Mangini, Y. Sun, Y. Arosa Lobato, B. Wetzel, S. Wabnitz, V. Couderc, "Spatial Division Multiplexing for Multiplex Coherent Anti-Stokes Raman Scattering", *IEEE Journal of Lightwave Technology*, *under press* (2023)

[4] C. Lefort, R.P. O'Connor, V. Blanquet, L. Magnol, H. Kano, V. Tombelaine, P. Lévêque, V. Couderc, P. Leproux, "Multicolor multiphoton microscopy based on a nanosecond supercontinuum laser source", *Journal of Biophotonics*, 9(7), 709-714 (2016)