

Post-doctoral position at PC2A Laboratory (University of Lille)

We are seeking a postdoctoral candidate for the ANR INTERSTELLAR project (StudyINg THE photophysics of laRge aSTrophysical hydrocarbon molEcuLar systems using LABoRatory analogues). The project's goal is to explore similarities between species formed in the interstellar medium (ISM) and flames producing carbon-based matter like polycyclic aromatic hydrocarbons (PAHs), fullerenes, and carbon nanoparticles, which are believed to play a key role in phenomena such as aromatic infrared bands (AIBs) and other specific spectral signatures of the ISM.

The INTERSTELLAR project aims to characterize these large molecules, and in particular their photophysical properties, using original laboratory flames as sources of analogs for these large interstellar molecules, and to link this to astrophysical observations. This investigation will involve combining advanced experimental setups with in situ laser-based diagnostics and online measurements, the results of which will be analyzed through theoretical studies.

This project will be conducted in collaboration with the Institute of Molecular Sciences of Orsay (ISMO) and the Laboratory of Physics of Lasers, Atoms, and Molecules (PhLAM) at the University of Lille. This presents a uniquely exciting opportunity to engage in research within an interdisciplinary scientific framework, bringing together high-level technical skills and research equipment from the three laboratories involved in the project, each internationally recognized in their field of expertise.

As part of the postdoctoral work at the PC2A laboratory, we are offering active participation in the development of the laboratory flame setup, and in implementing the measurement techniques necessary for the success of this project. This will primarily involve characterizing species using advanced laser-based techniques such as Laser-Induced Fluorescence (LIF) and Laser-Induced Incandescence (LIJ), as well as methods like Time-of-Flight Secondary Ion Mass Spectrometry (TOFSIMS) or Scanning Mobility Particle Sizer (SMPS). Theoretical work in collaboration with the ISMO laboratory will complement this project to assist in interpreting the emission characteristics of the diverse species formed.

The position is available immediately. The contract duration is 18 months. The candidate should hold a PhD in Physical Chemistry, Physics, Chemistry, or related fields, with a focus on laser diagnostics and spectroscopy. A strong background in molecular spectroscopy in gas and/or particulate phases and combustion processes is required. Experience in mass spectrometry and SMPS, while not mandatory, will be appreciated and considered an asset. The candidate should have a keen interest in experimental work, possess good synthesis skills, and demonstrate writing abilities.

The selected candidate will be based at the PC2A laboratory at the University of Lille (Villeneuve d'Ascq-France), and will work closely with Xavier Mercier, Alessandro Faccineto, and Eric Therssen.

Interested candidates are encouraged to apply by directly contacting Xavier Mercier or Alessandro Faccineto at the following email addresses: xavier.mercier@univ-lille.fr and alessandro.faccineto@univ-lille.fr.