POSTDOC IN METHODS DEVELOPMENT FOR MOLECULAR SPECTROSCOPY

IN BRIEF

We are looking for a postdoc with experience in experimental AMO physics to work on an ERC-funded proof-of-concept project to develop a miniature, quantitative greenhouse gas analyzer based on our successful fiber Fabry-Perot microcavity technology. The instrument will be brought to the market by newly-founded startup Mirega SAS, with the aim to redefine greenhouse gas emission monitoring, and thus to contribute to a greener and more sustainable future.

CONTEXT

Harnessing the power of Fiber Fabry-Perot cavity, initially developed for quantum information applications, the Atom Chips group (www.quantumdevices.fr) at Laboratoire Kastler Brossel (LKB) is developing a miniature, high-precision trace gas analyzer. This work is supported by the EU's ERC Proof-of-Concept scheme, and by SATT Lutech, Sorbonne Universités technology transfer office, and has led to the creation of Mirega SAS (www.mirega.fr) in 2023. We have already realized a first prototype, achieving sub-ppm sensitivity for CO2 in a sub-microliter detection volume. We are now looking for a researcher in development of molecular spectroscopy methods to join our dynamic team and contribute to the development of our miniaturized gas analyzer.

RESPONSIBILITIES

As a postdoc, you will develop techniques and optical setups to achieve state-of-the-art quantitative trace gas analysis in a novel situation. This involves both experimental work (advanced locking and modulation schemes, gas management, etc) and data analysis (lineshapes and fitting methods, background modeling and compensation, ...), including development of new methods adapted to the unique situation of our miniature, high-finesse (F>100000) cavity. Within this context, emphasis can be put into different aspects, depending on your profile and interests (hardware/software, modulation schemes, advanced data analysis...). You will be part of a small and highly motivated multidisciplinary team working in close collaboration between academic research and industrial R&D, thanks to the partnership of LKB and Mirega SAS. Your successful work will lead to both scientific publications and protectable intellectual property.

DESIRED QUALIFICATIONS

You should have a doctoral degree in AMO physics, ideally with a specialization in instrument development for gas spectroscopy, but we are equally happy to consider candidates from fields such as atomic frequency standards, experimental techniques in ultracold atoms, high-stability lasers, and other related fields. You should have good programming skills, a proven ability to work independently while being an active member of a team, and a good sense of humour.

FURTHER INFORMATION

You will work at LKB, a world-leading laboratory in AMO and quantum physics. Our labs are situated at the Physics Department of Ecole Normale Supérieure, a vibrant environment for both fundamental research and high-tech startups in the heart of Paris. If you envisage a transition from academic research to industrial R&D, or if you want to develop your profile at the interface of academic research and engineering, this job could be an excellent choice. Please send your CV, cover letter and any other relevant documents to jakob.reichel@ens.fr