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Materials Science & Technology

Empa is the interdisciplinary research and services institution for material sciences and technology development within the ETH Domain.

The Laboratory for **Air Pollution & Environmental Technology** studies processes at the technosphere-atmosphere interface as a contribution to a healthy and safe environment. Based on state-of-the-art measurement techniques and modeling tools we develop technological solutions and provide scenarios for economical and political decision makers. For our SNF project on the analysis of methane isotopic species we offer a

### **PhD position in laser based ambient air analysis**

Methane (CH<sub>4</sub>) is an important greenhouse gas which has numerous anthropogenic or natural sources and sinks. Understanding the global CH<sub>4</sub> cycle is thus both relevant and challenging. One scientific tool that contributes significantly to our understanding of the origin and fate of CH<sub>4</sub> is its isotopic signature. Fortunately, isotopically selective measurements can be achieved using laser based absorption spectroscopy in the mid-infrared, a technology which has been very successful for other gases, and which will now be further developed to study methane.

The successful candidate will adapt a laser spectrometer to continuously monitor  $\delta^{13}\text{C-CH}_4$  and  $\delta\text{D-CH}_4$ , based on state of the art quantum cascade lasers. To obtain the necessary precision at ambient concentrations, this also implies the development and validation of an automated preconcentration unit.

The ideal candidate is a communicative scientist with a profound background in physics and/or chemistry. Experience in gas analysis or laser spectroscopy and a strong interest in mechanics and electronics for the design of analytical instruments is desirable.

The instrumental development will take place at Empa in Dübendorf, in close collaboration with Prof. H. Fischer of the Climate and Environmental Physics department of the University of Bern. Field measurements will take place within the frame of the European research programme INGOS. For further information visit our homepages ([www.empa.ch/abt134](http://www.empa.ch/abt134); [www.climate.unibe.ch](http://www.climate.unibe.ch), [www.ingos-infrastructure.eu](http://www.ingos-infrastructure.eu)) or contact Dr. Lukas Emmenegger, phone +41 58 765 46 99, email: [lukas.emmenegger@empa.ch](mailto:lukas.emmenegger@empa.ch)

We are looking forward to your application including CV, your research interest, a list of publications and the names of two academic referees. Application received before September 30, 2011 will receive full consideration. The position will remain open until filled.

Please submit your application online [www.empa.ch/job](http://www.empa.ch/job)

