



Umeå University is dedicated to providing creative environments for learning and work. We offer a wide variety of courses and programmes, world leading research, and excellent innovation and collaboration opportunities. More than 4 000 employees and 37 000 students have already chosen Umeå University. We welcome your application!

PhD position in Physics

in Optical Frequency Comb Spectroscopy

The Department of Physics has about 100 employees, including 13 professors, 28 lecturers, about 40 PhD students and postdoctoral researchers, and 10 technical/administrative staff. The Department is active in research areas such as atomic, molecular and optical physics, laser spectroscopy, biological physics, organic electronics, photonics, condensed matter physics, nonlinear and plasma physics, and statistical physics and networks. For further information, see www.physics.umu.se/english/research.

Laser spectroscopy has been one of the major experimental research fields at the Department for over 15 years, with the aim of developing sensitive spectroscopic techniques for detection of atoms and molecules. Most recently, the focus has been on tunable diode laser spectroscopy, TDLS, [noise-immune cavity-enhanced optical heterodyne molecular spectroscopy](#), NICE-OHMS, and Faraday modulation spectroscopy, FAMOS. This year a new research group has been initiated at the Department dedicated to the novel technique of Optical Frequency Comb Spectroscopy. Optical frequency combs are produced by femtosecond mode-locked lasers, whose optical spectrum consists of a series of equidistant narrow lines spanning tens or hundreds of nanometers. The unique combination of wide optical bandwidth and high spectral resolution, which was previously unavailable, has opened up exciting new possibilities in spectroscopy. Spectroscopy performed with optical frequency combs is equivalent to a simultaneous measurement with thousands of narrow synchronized laser lines, and combines the high resolution and sensitivity of continuous wave laser spectroscopy with broad spectral coverage. It has the potential of becoming the ultimate tool for trace gas detection since it allows for highly sensitive simultaneous detection of many molecular species in short acquisition times.

We are now accepting applications for a PhD position in the Optical Frequency Comb Spectroscopy Group, aimed at the development and application of the technique for broadband ultrasensitive detection of molecular species in the gas phase. The project will encompass development of optical frequency comb based detection systems for molecules of importance in applications such as breath analysis, atmospheric and climate studies, and industrial process control.

The successful candidate should hold a Master degree (or equivalent) in experimental physics or electrical engineering. Skills and experience in experimental laboratory research, including optics, electronics, measurement techniques and/or laser spectroscopy, will be seen as an advantage. The applicant should be highly motivated and have the ability to work independently as well as in a research group. The candidate should be fluent in both verbal and written English.

The position is available starting in September 2012, the exact date being open for negotiation. To qualify for the PhD position at least 240 ECTS points are required, of which at least 60 ECTS must be at advanced level, and 120 ECTS should be in the field of physics.

The application should include a motivation letter, CV, transcript of records, copy of thesis, list of publications (if any) and names and contact information of two reference persons. Documents should be sent either in hard-copy (2 copies) or electronically in MS Word or PDF format, to the address below.

More information is given by Dr. Aleksandra Foltynowicz-Matyba
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Union information is available from SACO, +46-(0)90-786 53 65, SEKO, +46-(0)90-786 52 96 and ST, +46-(0)90-786 54 31.

The procedure for recruitment for the position is in accordance with the Higher Education Ordinance (chapt. 12, 2 §) and the decision regarding the position cannot be appealed.

Your complete application, marked with **reference number 313-607-12**, should be sent to jobb@umu.se (state the reference number as subject) or to the Registrar, Umeå University, SE-901 87 Umeå, Sweden to arrive **August 9, 2012 at the latest**.

We look forward to receiving your application!
