

# Postdoctoral Fellowships and Ph.D Studentships in Nonlinear Optics

The Optics Laboratory at the Department of Physics of the Tampere University of Technology in Finland has openings for Postdoctoral Fellows and/or Ph.D. students in the field of nonlinear optics, which could be filled as early as January 1, 2010.

## Postdoctoral Fellowships

The postdoctoral positions can be filled in the following areas:

- 1) Multipole (magnetic and quadrupole) effects in the nonlinear response. The effects play an important role in the separation of surface and bulk nonlinearities and can be enhanced in appropriate nanostructured materials. Experience in surface nonlinear optics and characterization of nonlinear materials would be beneficial for the position.
- 2) Nonlinear microscopy. We will develop new techniques for nonlinear microscopy, based on the control of the vectorial field in the focal volume. The techniques will be applied to investigate the symmetry of molecular order by microscopic resolution. Experience in nonlinear microscopy and/or its applications in molecular and biomedical materials would be beneficial for the position.
- 3) Theoretical and experimental studies of optical rogue waves and extreme-value phenomena in optical-hydrodynamic systems. The investigations will be primarily performed in the context of optical fibers. Experience with the propagation of ultra-short pulses in nonlinear media is a prerequisite. Experience with optical waveguides/fibers and stochastic processes will be considered as an advantage.

The postdoctoral positions are initially available for two years, but can be extended for another two-year period. We are looking for versatile and independent experimentalists with background in optics. Theoretical traits for the analysis of experimental work and the ability to supervise M.Sc. and Ph.D. students will be additional benefits. The positions may also involve some teaching duties in the future. The positions are primarily meant for scientists who have received their Ph.D. in the past few years.

## Ph.D. Studentships

- 1) Nonlinear optics of metal and dielectric nanostructures. Of particular interest are resonance-domain materials, where the interplay between the electromagnetic resonances of individual nanoparticles and their arrays enhances the nonlinearity.
- 2) Development of broadband, fiber-based, sources with specific characteristics for white-light interferometry, spectroscopy and optical-coherence tomography.

M.Sc. in an appropriate field from an internationally recognized university is a prerequisite to be accepted into the Ph.D. program. Students with their M.Sc. in Nonlinear Optics are preferred but not required. Our Ph.D. program requirements include coursework worth about 1-1.5 years and then a sufficient number of scientific publications, which form the basis for the Ph.D. thesis.

The interested applicants should send their applications including a CV, a list of publications, 1-2 page letter of motivation as soon as possible by e-mail to *goery.genty@tut.fi*. Please also provide 2-3 names and contact information of possible references. Reference letters from these persons may be asked at a later stage.

Please include the reference "OpLab PostDoc position" or "OpLab Ph.D. position" in the e-mail subject depending on whether you are applying for the PostDoc or Ph.D. position.

The review of applications will start immediately and the positions will be filled as soon as suitable candidates are found. Candidates may be invited for an interview at our University. Applications received later than 30.11.2009 will not be considered.

Contact Information for further inquiry

Goëry Genty

Tampere University of Technology

Department of Physics

Optics Laboratory

PO Box 692

FIN-33101 Tampere

FINLAND

Tel: +358-(0)3-31152185

Fax: +358-(0)3-31152600

Email: *goery.genty@tut.fi*