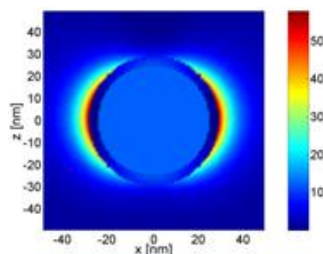


Postdoc and Ph.D. Positions in Nano-Optics and Surface-enhanced Raman Spectroscopy, ETH Zürich.

We are looking for one postdoc and two Ph.D. candidates interested in experimental studies in nano-optics and surface-enhanced Raman spectroscopy (SERS).

SERS is a powerful tool for enhancing the inherently low Raman scattering cross-sections of molecules, enabling detection down to single molecules. The major mechanism of the SERS effect arises from electromagnetic field enhancement in the vicinity of metallic nanostructures when they are excited at their surface plasmon resonance. Our aim, within the frame work of this project, is to increase the enhancement factors of SERS technique by developing novel designs and fabrication methods as well as using different excitation wavelengths ranging from UV to NIR. The objective of the project is to design, fabricate and analyze optical properties of metallic nanostructures and to perform Raman, fluorescence, and photoluminescence spectroscopy experiments of biomolecules and quantum dots. The fabrication methods involve e-beam lithography, Extreme Ultraviolet (EUV) lithography and focused-ion beam lithography. For theoretical understanding simulations using finite-difference time-domain (FDTD) method will be employed.



Enhancement factor profile of electromagnetic fields near a gold nanoparticle calculated by FDTD

Laboratory of Metal Physics and Technology, Department of Materials at the ETH Zurich, conducts fundamental research in the fields of nanostructured metals, bulk metallic glasses, hybrid systems, and magnetic materials as well as applied research in advanced metallic systems for medical and photonic applications. It offers an interdisciplinary and stimulating research environment with excellent infrastructure.

We are looking for highly-motivated Ph.D. candidates with an excellent Master or Diploma degree in physics, materials science, chemistry or engineering. The candidates should have a keen interest in experimental work in nanotechnology and optics. For the postdoc candidates, in addition to similar qualifications, a Ph.D. degree is required. Hands-on experience in either SERS or Raman spectroscopy will be of great advantage.

Applications with a cover letter and curriculum vitae including copies of degrees, certificates, grades, and names of at least two references should be sent by e-mail in PDF format to the following address: lmpt_positions@mat.ethz.ch

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