



HiLASE R&D centre
Institute of Physics ASCR, v. v. i.
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HiLASE (High-average power pulsed lasers) is a European R&D project aimed at development of novel type of diode-pumped solid-state lasers (DPSSL) intended for industrial and scientific applications. The project realization team from the Institute of Physics AS CR, v.v.i. is seeking a candidate for the position of:

Postdoctoral Fellow

"Theoretical studies of surface plasmon-polariton excitation by ultrashort laser pulse irradiation of semiconductors and metals with predesigned configuration"

The postdoctoral fellow will focus on theoretical studies of surface plasmon-polariton (SPP) excitation induced by ultrashort laser pulses. Particular emphasis will be on investigations of specially designed reliefs on semiconductor and metallic surfaces for revealing new absorption modes emerging at different excitation levels. Multilayered materials with nanosized layers will be also a subject of studies with the aim to predict SPP interference at layer interfaces. The theory will be developed in order to escape the laborious try and error method. The developed theory will be applicable for a number of industrial and scientific applications such as plasmonics, biosensing, and photovoltaics.

The successful candidate will perform numerical simulations, using existing FDTD software, of laser excitation of metals and semiconductors with tailored surfaces to gain insight into changing of the SPP dispersion as a function of surface relief, excitation level, and material properties. It is expected that an analytical generalized SPP model will be proposed. Based on the results, he/she will identify the conditions for controllable generation of laser-induced periodic surface structures (LIPSS) with desired periodicity and predict optimal surface layers for increasing photovoltaic cell efficiency. The findings will be verified experimentally.

The candidate must demonstrate extensive knowledge and practical skills in the field of laser-matter interaction, computer modeling, and nonlinear optics. Knowledge of programming languages (FORTRAN or C++) and data processing software is required.

Key Responsibilities:

1. Realization of research tasks assigned by the Mentor.
2. Advising, training, and educating students (3 hours per week).
3. Research stay in selected world-class institution outside Czech Republic (3 months).
4. Publishing in SCI journals.

Key Requirements:

1. Ph.D. in natural sciences or applied sciences or engineering gained within the last 6 years.
2. English language on a very good level (written and spoken).
3. Strong motivation for work and loyalty.
4. Excellent communication and organizational skills.
5. Team player, feel a sense of accomplishment.
6. Willing to travel.

We Offer:

1. Monthly salary of up to 2.200 EUR depending on the quality of candidate.
2. Contract until 30th June 2015.
3. 5 weeks of holidays per year.

Requested Documents:

1. CV (English).
2. List of publications (English).
3. Recommendation Letter (English or Czech).
4. Motivation Letter (English).
5. Copy of Ph.D. diploma or certificate (English or Czech)
6. Copy of Ph.D. thesis (hard copy or electronic version)

Deadline: November 15, 2014

Contact:

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