

General Information

In the Framework of Human Resources and Mobility (HRM) activity, Marie Curie Host Fellowships for the Transfer of Knowledge (TOK), five (5) experienced researchers (4-10 years research experience) positions are available in the field of biophysics (**NOLIMBA project**). The research concerns the elucidation of molecular mechanisms and biological activities at the sub-cellular level by using non-linear microscopy with femtosecond laser pulses for the excitation.

Three (3) positions are available for 12 months and two (2) positions are available for 24 months.

Starting Date: 1/1/2006

Duration 1/1/2006 – 1/1/2010

NOLIMBA project

Non Linear Imaging at Microscopic level for Biological Applications

The elucidation of *in vivo* fundamental mechanisms and biological activities at the sub-cellular level by using novel imaging techniques (non-linear microscopy, non-linear ionisation) and utilizing femtosecond laser pulses for the excitation is a scientific area which is drawing the attention of an increasing number of researchers in the last years. These imaging technologies represent the forefront pool of research in cell biology and will become, in the next years, dominant for basic and application-driven research, such as in the fields of diagnosis and treatment of numerous serious diseases. The available experienced researcher's positions are related to the interdisciplinary field of biophysics. Specifically, the research concerns novel applications of non-linear imaging to biological specimens at the microscopic level.

The main objective of the **NOLIMBA** Marie Curie Transfer of Knowledge (TOK) project is to bring experienced researchers (4-10 years research experience) playing a

leading role in research together in a multidisciplinary environment, which is expected to result in opening up novel research activities and create new research positions at the host (IESL-FORTH).

The indicative research topics are:

- Development of reliable, flexible, compact experimental workstation for the realization of the non-linear imaging measurements in biological samples at microscopic level.
- Investigation of neuronal signals transmission in the neurons of model organisms (*Caenorhabditis elegans*) through Second Harmonic Generation (SHG) measurements.
- Sub-cellular localization of new generation photosensitizers in Photodynamic Therapy by employing Two Photon Excitation Fluorescence (TPEF) microscopy.
- Femtosecond laser disruption of sub-cellular organelles in living cells by using two-photon ionisation.
- Construction of 3D microstructures for biosensor applications through multi-photon processes.

There is a close collaboration between the Institute of Electronic Structure and Laser (IESL - host) and the Institute of Molecular Biology and Biotechnology (IMBB), both members of FORTH, for the realization of the work.

Experienced researchers in the above mentioned scientific fields are invited to submit an application (including an updated CV). Selection of candidates will be based on:

- ✓ review of the submitted CV
- ✓ recent publications relevant to the scientific subject

Contact Person

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