

BASIC INFORMATION ON SUB-PROJECT

NAME OF PROGRAMME/FUND	Scholarship Fund - Sciex NMS ^{ch}
RESEARCH FIELD AND OTHER RESEARCH FIELDS INVOLVED (if applicable)	Mathematics / Natural Sciences
TITLE OF THE SUB-PROJECT	THz ellipsometry with a femto-second laser
REGION OF THE CZECH REPUBLIC (according to the location of the home institution)	South Moravian Region
GRANT AMOUNT SPENT	143 474,15 CHF
INTERMEDIATE BODY	Swissuniversities
HOME INSTITUTION	Department of Condensed Matter Physics Faculty of Science, Masaryk University
HOST INSTITUTION	Physics Department, University of Fribourg
NAME OF THE FELLOW	Přemysl Maršík

ABSTRACT OF THE SUB-PROJECT

We propose that Premysl Marsik builds up a spectroscopic ellipsometer for the terahertz (THz) spectral range from about 0.1 to 3 THz which is based on a femtosecond laser source and a time-resolved detection technique. This system will enable precise THz spectroscopy in reflection mode and thus will open up entirely new possibilities for the investigation of opaque materials for which the standard THz technique in transmission mode cannot be applied. Prominent examples of such materials are doped semiconductors, metals, superconductors, and thin films on absorbing substrates on which both partners have very active research programs that will greatly benefit from the availability of such a unique THz ellipsometer.

The two groups at Masaryk University (MasUni) and University of Fribourg (UniFr) share a long-standing and strong expertise in building infrared ellipsometer and applying them in material science. The required know-how about the femtosecond lasers and the time resolved detection technique will be provided by the group of Prof. Th. Feurer at the University of Bern (UniBe). They are building and providing an optical fiber-based femtosecond-laser and will help with the design and the implementation of the time-resolved detection scheme. A close collaboration with this group is already established in the context of the project "LIMAT" (Light and Matter) between UniFr and UniBe.

DATE OF REALISATION OF THE FELLOWSHIP

1.12.2009 - 31.5.2011

MORE INFORMATION ON THE PROGRAMME

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