



Diploma- / Master thesis

Design of microfluidic chips for Raman spectroscopy based cell diagnostics

Cooperation project: Friedrich-Schiller-University Jena & Dublin City University, Ireland

Sepsis is a life threatening complication of infectious disease with high mortality (25-60%). Within the research group “Novel Diagnostic Tools for Culture-Independent Sepsis Pathogen Detection” at the Center for Sepsis Control and Care and “Clinical Spectroscopic Diagnostics” at the Institute of Photonic Technology (IPHT) novel, label-free methods for fast and reliable pathogen recognition are developed. This involves the application of non-destructive optical spectroscopy, especially vibrational spectroscopy such as Raman scattering and IR absorption for the characterization of sepsis pathogens with a focus on bacteria. Lab-on-a-chip devices for sophisticated sample handling, including separation of the bacteria as well as spectroscopic measurements, shall be developed together with the Microfluidic Platforms group led by Professor Jens Ducreé at Dublin City University, Ireland.

Within this diploma / master thesis, existing microfluidic chips shall be modified and improved to allow the application of vibrational spectroscopy. The resulting lab-on-a-chip device will be the basis for a culture-independent diagnostic tool for sepsis pathogens.

You will be enrolled as a diploma / master student at the Physical Chemistry Department of the Friedrich-Schiller-University, Jena (Prof. Dr. J. Popp); however the work will be performed at the Dublin City University (DCU).

The project will **start in January 2012** and involve at least **6-months stay in Ireland**. Support for travel and accommodation may be available.

You should be interested in design, fabrication and testing of microfluidic lab-on-a-chip systems, spectroscopy and its biomedical application.

For further information please contact: Dr. Ute Neugebauer (ute.neugebauer@med.uni-jena.de).