Research team from Jena receives the Thuringian Research Award for Applied Research: multi-contrast microscopy for clinical use

Jena-based scientists from the Institute of Photonic Technology (IPHT), the Institute of Physical Chemistry (IPC), the Institute of Applied Physics (IAP), the Fraunhofer Institute for Applied Optics and Precision Engineering (IOF) and Jena University Hospital investigated a multi-contrast imaging approach, a key to powerful clinical diagnostics. For this research work they will be presented the research award of the Ministry for Education, Science and Culture of Thuringia on February 8, 2013. This award has been given since 1995 for outstanding research and knowledge transfer achievements in the categories "Basic Research", "Applied Research" and "Transfer" and is endowed with 50.000 euros.

This research contributes to the objective of improving clinical diagnostics, one of the central domains of modern health care. With an increasing average age of the population, the requirements for medical care are also growing. The risk of cardiovascular diseases and cancer both increase with age. Novel approaches in diagnostics and therapy are necessary to guarantee optimal care in the future and limit costs. This can best be achieved with an early and accurate diagnosis of disease, because time plays a key role in successful treatment.
Despite the availability of modern imaging methods like magnetic resonance tomography, computed tomography and ultrasound, it is not possible today to examine the chemical composition of patient samples or image structures smaller than a single cell without destroying them or marking them with dyes.

The efficiency of this new technique was particularly demonstrated for diseases such as arteriosclerosis and larynx or colon cancer. The new method has been created by the scientists from Jena in such way that it can be integrated in clinical practice without high costs or extensive training for the medical staff.

In developing the award-winning technology, physicists, engineers and physicians from the University of Jena, Jena University Hospital and two external institutes worked closely together on the medical requirements and technological means to develop an optimal system. The result was a combination of microscope and laser source, which is predestined for the clinical use, as the method enables non-specialist personnel to carry out multi-contrast imaging outside of laser laboratories in excellent quality.

The winners:

Prof. Dr. Jürgen Popp
Prof. Dr. Benjamin Dietzek
Institute of Physical Chemistry, FSU Jena
Institute of Photonic Technology, Jena

Prof. Dr. Andreas Tünnermann
Prof. Dr. Jens Limpert
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Prof. Dr. Andreas Stallmach
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Prof. Dr. Orlando Guntinas-Lichius
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