

Press Release

For immediate release
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Young Investigator Award at Single Molecule Session during SPIE/ Photonics West

From January 19-24, 2008 SPIE organized a special symposium about „Biomedical Spectroscopy, Microscopy and Imaging“ as part of North America's Largest Photonics Event („Photonics West“). The „Single Molecule Spectroscopy and Imaging“ session was surely one of the highlights of this symposium and about 120 scientists enjoyed more than 40 presentations.

The goal of this session was to provide a state-of-the-art interdisciplinary forum for spectroscopists, biochemists and engineers to exchange information on ultrasensitive optical detection and spectroscopy down to the single-molecule level and its applications in chemoanalysis, biophysics, biological and biomedical research, medical diagnostics and microscopy.

The session covered a wide range of different single-molecule techniques such as Fluorescence Correlation Spectroscopy (FCS), Fluorescence Lifetime Imaging (FLIM) or superresolution imaging, with a special focus on biological and biomedical applications. The presentations clearly showed that single molecule spectroscopy has become an important tool in fundamental biological and biomedical research as it allows the study of function and interaction of individual biomolecules.

A special attention was given by the conference chairs Jörg Enderlein (University of Tübingen), Zygmunt Gryczynski (Center for Commercialization of Fluorescence Technologies, UNTHSC) and Rainer Erdmann (PicoQuant GmbH) to activities of young investigators. A special **YOUNG INVESTIGATOR AWARD** worth 750 USD was sponsored by PicoQuant to motivate these students to submit and present their work at such a leading event.

Although all student contributions were of outstanding quality, the chairs awarded the 2008 prize to Andrea Armani from the group of Scott Fraser at California Institute of Technology for the paper: „*Label-free detection of cytokines using optical microcavities*“ [1]. Andrea Armani and co-workers achieved the long-standing dream of single-molecule spectroscopists to observe light absorption of single molecules under ambient conditions in a liquid using a high-Q toroidal microresonator. Since the beginning of optical single molecule spectroscopy in liquids roughly 20 years ago, the prevailing method was fluorescence detection due to its superior sensitivity and signal-to-background ratio. To observe the absorption of light by a single molecule is a fundamentally harder task. The core idea of Armani et al. was to place a molecule into the evanescent field of a high-Q microcavity allowing for a nearly billion-fold increase of the light-molecule interaction and thus to amplify the weak single-molecule absorption signature.

The award winner also received a registration fee waiver for the leading European meeting on "Single Molecule Spectroscopy and Ultra Sensitive Analysis in the Life Sciences" to be held at September 17-19, 2008 in Berlin, Germany.

The next SPIE session will be held again in San Jose as part of the „Photonics West“, January 19-24, 2009 .

[1] *Science* DOI: 10.1126/science.1145002

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Attachement

picture of the award winner and tconference chairs

(from left to right: Zygmunt Gryczynski, Andrea Armani, Rainer Erdmann and Joerg Enderlein)

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About PicoQuant GmbH

PicoQuant GmbH is a research and development company, founded in 1996 and based in the Technology Park Berlin-Adlershof, Germany. The company is leading in the field of Single Photon Counting Applications. The product line includes pulsed light sources, photon counting instrumentation, fluorescence lifetime spectrometer and time-resolved confocal microscopes. It employs around 40 people.