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# ***Single Molecule Spectroscopy and Imaging II***

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*Editors*

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## Introduction

During 24–30 January 2009, SPIE organized a special symposium on Biomedical Spectroscopy, Microscopy, and Imaging as part of Photonics West, North America's largest photonics event. The Single Molecule Spectroscopy and Imaging II conference was surely one of the highlights of this symposium, and about 150 scientists enjoyed more than 40 presentations. In particular, the keynote lecture from Prof. Stefan Hell about "Nanoscopy with focused light" attracted significant attention and filled the session hall.

The aim of this conference 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 conference covered a wide range of different single-molecule techniques such as fluorescence correlation spectroscopy (FCS), fluorescence lifetime Imaging (FLIM), or Foerster resonance energy transfer (FRET), with a special focus on biological and biomedical applications. The presentations showed clearly 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.

The sessions about superresolution microscopy were among the highlights. Starting with a general overview given in a keynote lecture by Prof. Stefan Hell, the subsequent talks presented many new and exciting results, demonstrating for example, the possibility of achieving optical far-field resolution down to 1 nm.

The conference chairs, Jörg Enderlein (Georg-August-Univ. Göttingen), Zygmunt K. Gryczynski (Ctr. for Commercialization of Fluorescence Technologies, The Univ. of North Texas Health Science Ctr.), and Rainer Erdmann (PicoQuant GmbH), paid special attention to the presentations of Young Investigators. A specially dedicated Young Investigator Award with a generous cash prize was sponsored by PicoQuant to motivate these students to submit and present their work at such a leading event.

The large amount of excellent talks this year made it impossible to pick a single winner. In the end, PicoQuant honoured the outstanding work of several young scientists by increasing the award amount and splitting it between Sigrun Henken-johann (Univ. Bielefeld, paper 7185-02), Jonas Fölling (MPI Göttingen, paper 7185-20) and Nathan P. Wells (Los Alamos National Lab., paper 7185-33).

The award also offers the winners a registration fee waiver for the leading European Meeting on Single Molecule Spectroscopy and Ultra Sensitive Analysis in the Life Sciences, to be held in September 15–18, 2009, in Berlin.

The next Single Molecule Spectroscopy and Imaging conference will be held in San Francisco as part of Photonics West, 23–28 January 2010. SPIE and the conference chairs encourage all scientists in the field to join us again for presenting their latest scientific results.

We thank all of the authors of this year's session who submitted their papers in time, and our thanks go also to the SPIE staff for helping us tremendously to make this session such a successful event.

**Jörg Enderlein**  
**Zygmunt K. Gryczynski**  
**Rainer Erdmann**