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Single Molecule Spectroscopy and Imaging

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Editors

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Introduction

From January 19–24, 2008 SPIE organized a special symposium titled Biomedical Spectroscopy, Microscopy, and Imaging, as part of North America's largest photonics event, SPIE's Photonics West. The conference on Single Molecule Spectroscopy and Imaging was surely one of the highlights of this symposium, and about 120 scientists enjoyed more than 40 presentations.

The goal of the conference was to provide a state-of-the-art interdisciplinary forum for spectroscopists, biochemists, and engineers to exchange information on ultra-sensitive 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 super-resolution 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 bio-molecules.

Special attention was given by the conference chairs Jörg Enderlein (University of Tübingen), Zygmunt Karol Gryczynski (The Center for Commercialization of Fluorescence Technologies,) and Rainer Erdmann (PicoQuant GmbH) to the 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 decided to give the 2008 prize to Andrea Armani from the group of Scott Fraser for the paper: "Label-free detection of cytokines using optical microcavities," (see also ¹) as she demonstrated a fascinating new method for the analysis of single molecules overcoming the current limitation of adding labels.

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

The next Single Molecule Spectroscopy and Imaging conference will be held again in San Jose as part of Photonics West from 19–24 January 2009. SPIE and the chairs of this conference encourage all scientists in the field to join us again and submit their latest scientific results.

We thank all authors of this year's conference who submitted their papers on time, and our thanks goes also to the SPIE staff for helping us to make this conference so successful.

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

¹ **A. M. Armani***, R. P. Kulkarni, S. E. Fraser, R. C. Flagan, K. J. Vahala
["Label-free, single-molecule detection with optical microcavities"](#)
Science, Volume 317, August 2007.