

Multiphoton Microscopy in the Biomedical Sciences XIV

Ammasi Periasamy

Peter T. C. So

Karsten König

Editors

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Introduction

Multiphoton microscopy has been established as the 3D imaging method of choice for studying biomedical specimens from single cells to whole animals with sub-micron resolution. Two decades have passed since the realization of two-photon laser scanning microscopy. The ever-expanding scope of applications and the continuing instrumental innovations require a forum where new ideas can be exchanged and presented. Our conference at the SPIE Photonics West BiOS 2014 meeting continues to address this need.

This is the 14th year of this conference and we start our conference with three keynote lectures from leaders in the field: Drs. Martin Booth from University of Oxford (United Kingdom), 8948-1: Adaptive optics from microscopy to nanoscopy, Chris Xu, Cornell University (United States), 8948-2: In vivo deep tissue multiphoton imaging, and Karsten König, Saarland University (Germany), 8958-3: Quantitative multiphoton imaging.

For the third year in a row, the conference is extremely pleased to have the JenLab Young Investigator Award, in addition to our regular poster awards. This award is donated by Dr. Karsten König, President and Founder of JenLab GmbH (Germany). The award selection committee includes Drs. Arnd Krueger (NewPort-Spectra Physics), Conor Evans (Harvard University), Paul Campagnola, University of Wisconsin-Madison, and the three conference chairs. The selection process includes the abstract, manuscript and poster presentation. Two finalists are selected for oral presentation after their poster presentation. The two finalists are (1) Dr. Gitanjal Deka, National Yang Ming University (Taiwan), Multiphoton microscopy for skin wound healing study in terms of cellular metabolism and collagen regeneration [8948-71], (2) Ms. Adi Schejter, Nairouz Farah, Shy Shoham, Technion-Israel Institute of Technology (Israel), Two-photon *in vivo* imaging of retinal microstructures [8948-75]. Dr. Deka from National Yang Ming University (Taiwan) was selected as the winner of the JenLab Young Investigator Award 2014.

For 14 years in a row, the conference organized poster awards for the students and postdoctoral fellows. The poster award was donated by all the conference sponsors including Becker & Hickl, Boston Electronics, Chroma Technology, Coherent, ISS, Newport-Spectra Physics, Princeton Instruments, Semrock, and Carl Zeiss.

The three poster award winners are

1. Leila B. Mostaco-Guidolin, National Research Council Canada (Canada), Shedding light into atherosclerosis: a quantitative study of nonlinear optical imaging in tracking plaque development [8948-74]
2. Ming Zhao, College of Optical Sciences, The University of Arizona (United States), Fast multiplexed time-resolved fluorescence microscopy for quantitative time-lapse FRET imaging in cells and deep tissue) [8948-90]
3. Brad Littleton, King's College London, United Kingdom Hyperspectral imaging via spectral interferometric polarised coherent anti-Stokes Raman scattering) [8948-101]

Some of the most valuable contributions in this volume are articles written by highly experienced practitioners of multi-photon microscopy. They have enumerated the most important considerations in designing multi-photon microscopes and imaging experiments. Further, updates on the state-of-the-art commercial multi-photon microscope systems are presented. This volume also includes articles describing some recent advances in major multi-photon microscope components and applications including laser light sources, ultra-fast optics, filters, FRET, FLIM, FCS, Raman, CARS, SRS and CRS microscopy and spectroscopy, single molecule, super-resolution imaging, endoscopy and various scientific and clinical applications.

On a personal note, the Conference Chairs are grateful for the participation of all authors, session chairs and acknowledge the innovation-driven manufacturers (Becker & Hickl GmbH, Boston Electronics, Chroma Technology, Coherent, ISS, JenLab GmbH, Newport-Spectra Physics, Princeton Instruments, Semrock, and Carl Zeiss) for their enthusiastic support in organizing this conference successfully for the last 14 years. We look forward to other exciting conferences in the second decade and welcome your continued participation and support.

Ammasi Periasamy
Peter T. C. So
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