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Introduction

These proceedings are from the Optical Coherence Tomography and Coherence Domain Optical Methods in Biomedicine XXI (Conference 10053), held Sunday–Wednesday 29 January–1 February 2017 at SPIE Photonics West in San Francisco, California. This year's conference featured 128 oral and poster presentations from leading national and international research groups.

Optical coherence tomography and other coherence domain optical methods and instruments are proved to be effective tools for noninvasive medical diagnostics and monitoring a wide spectrum of pathologies as well as fundamental biomedical research. The focus of this conference is on the physical and mathematical grounds of coherence domain methods, as well as presentation of innovative instrumentation and techniques and their applications in biomedical science and clinical practice.

The conference was organized into several sessions including: New Ophthalmic Imaging Technology, Endoscopy/Cardiology, Ophthalmology, Small Animal, New OCT Technology I and II, Doppler and OCTA, Functional OCT I and II, Clinical Applications, OCT with New Light Sources, Image and Signal Processing, and two poster sessions. A predominant fraction of the papers focused on optical coherence tomography—basic research, instrumentation and applications. In general, good discussions and many questions were characteristic for many sessions.

This year, significant advances were presented in the development of new OCT technologies (two sessions) with discussion of OCT novel and upgraded technologies (New Ophthalmic Imaging Technology, Endoscopy/Cardiology, and Doppler and OCTA sessions). Innovative hardware and software achievements were also presented (OCT with New Light Sources and Image and Signal Processing sessions). In many cases, innovative approaches were tested for biomedical applications to demonstrate their new facilities (Small Animal, Ophthalmology, Clinical Applications sessions, and two sessions on Functional OCT).

These high quality researchers presenting recent achievements in biological and clinical applications of OCT were a good addition to numerous OCT papers presented at the Clinical Conferences of BiOS. Many Conferences once again had special sessions on OCT, such as **Photonics in Dermatology and Plastic Surgery** (Skin Cancer III: Optical Microscopy and OCT, OCT Angiography, OCT); **Therapeutics and Diagnostics in Urology** (OCT/DOT); **Optical Imaging, Therapeutics, and Advanced Technology in Head and Neck Surgery and Otolaryngology** (OCT and Related Technologies for Middle and Inner Ear Imaging); **Diagnostic and Therapeutic Applications of Light in Cardiology** (Multimodality Imaging, Optical Coherence Tomography); **Diagnosis and Treatment of Diseases in the Breast and Reproductive System III** (Breast Cancer,

Developmental Biology, and Cardiovascular Developmental Biology); **Clinical and Translational Neurophotonics** (Optical Spectroscopy and Tomography II and III); **Endoscopic Microscopy XII** (Optical Coherence Tomography); **Optical Techniques in Pulmonary Medicine IV** (Imaging Cillia, Mucus, and Airway Structure and Function, Increasing Clinical Utility with Custom Catheter Designs, and Novel Techniques for Pulmonary Imaging); **Lasers in Dentistry XXIII** (OCT in Dental Tissues and Early Caries Detection, OCT in Oral Tissues and Biofilm, NIR Imaging); **Ophthalmic Technologies XXVII** (Ocular Elastography, Ophthalmic Imaging: Small Animal Models, Ophthalmic Imaging: Structure and Function, Ocular Angiography and Blood Flow, Ophthalmic Imaging: Adaptive Optics, Ophthalmic Imaging: Technology, and Ocular Biometry, Vision Correction and Vision Assessment), and **Neural Imaging and Sensing** (OCT I and II).

The two poster sessions contained a total of 44 papers on the major topics mentioned above and were held Sunday, 29 January, POSTERS I: Technology and Image Processing, with 18 posters and Monday, 30 January, POSTERS II: Functional and Applications, with 26 posters.

On Sunday, 29 January, a half-day short course for engineers, scientists, and clinicians *SC312 - Principles and Applications of Optical Coherence Tomography* by James Fujimoto accompanied the conference.

All submissions were fully peer reviewed. Authors were requested to submit a 3-page summary of their paper and the program committee evaluated the submissions for technical content and assigned a numerical score to each paper. The selection of the papers as oral presentations, posters, or non-acceptance was based upon the program committee score. We have had very positive feedback and a record number of submissions and attendees again this year.

Not all presented papers are published in this volume 10053; however, the Conference Program and this Introduction reflect the full range of topics discussed during this very successful meeting.

The conference chairs would like to thank the members of the technical program committee for their help in organizing the meeting. We sincerely appreciate the support of SPIE and the conference staff. Finally, we would like to thank all of the conference attendees and manuscript authors for their contributions and participation which helped to make this meeting a success.

James G. Fujimoto
Joseph A. Izatt
Valery V. Tuchin