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Photonic Therapeutics and Diagnostics X

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Conference Chairs

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Henricus J. C. M. Sterenborg, Erasmus MC (Netherlands)
Session Chairs

1 Advanced Imaging and Novel Treatment Strategies in Otology
   Justus F. Ilgner M.D., Universitätsklinikum Aachen (Germany)
   Chung-Ku Rhee M.D., Dankook University Hospital
   (Korea, Republic of)

2 OCT for Functional Laryngeal Imaging
   Brian Jet-Fei Wong, Beckman Laser Institute and Medical Clinic
   (United States)

3 Basic Research and Engineering Concepts for Advanced Head and Neck Imaging
   Brian Jet-Fei Wong, Beckman Laser Institute and Medical Clinic
   (United States)
   Justus F. Ilgner, Universitätsklinikum Aachen (Germany)

4 Practical Results of Novel Imaging Technology in Head and Neck Lesions
   Christian S. Betz, Ludwig-Maximilians-Univ. Hospital München
   (Germany)
   Waseem K. Jerjes, University College London (United Kingdom)

5 PDT and Related Technology for Malignant and Pre-Malignant Head and Neck Lesions
   Milind Rajadhyaksha, Memorial Sloan-Kettering Cancer Center
   (United States)

6 Current Concepts in Laser Surgery and Optical Tracking
   Justus F. Ilgner, Universitätsklinikum Aachen (Germany)
   Christian S. Betz, Ludwig-Maximilians-Univ. Hospital München
   (Germany)

7 Upper Airway OCT and Spectroscopy
   Brian Jet-Fei Wong, Beckman Laser Institute and Medical Clinic
   (United States)
   Christian S. Betz, Ludwig-Maximilians-Univ. Hospital München
   (Germany)
Part D  Diagnostic and Therapeutic Applications of Light in Cardiology

Conference Chairs

Guillermo J. Tearney, Wellman Center for Photomedicine (United States)
Kenton W. Gregory, Oregon Medical Laser Center (United States)
Laura Marcu, University of California, Davis (United States)

Conference Program Committee

Gijs van Soest, Erasmus MC (Netherlands)
Carlo Di Mario, University College London (United Kingdom)
Stanislav Y. Emelianov, The University of Texas at Austin (United States)

Session Chairs

14 Spectroscopy
Laura Marcu, University of California, Davis (United States)

15 Myocardium and Therapy
Kenton W. Gregory, Oregon Medical Laser Center (United States)

16 Multimodality OCT
Hongki Yoo, Hanyang University (Korea, Republic of)

17 Light and Sound
Antonius F. W. van der Steen, Erasmus MC (Netherlands)

18 Advanced OCT
Gijs van Soest, Erasmus MC (Netherlands)

19 Tissue Characterization
Jennifer E. Phipps, The University of Texas Health Science Center at San Antonio (United States)

20 Laser Speckle Imaging
Seemantini K. Nadkarni, Harvard Medical School (United States)
Part E       Optics in Bone Surgery and Diagnostics

Conference Chair

Andreas Mandelis, University of Toronto (Canada)

Conference Co-chair

Michael D. Morris, University of Michigan (United States)

Conference Program Committee

Robert R. Alfano, The City College of New York (United States)
Bennett T. Amaechi, The University of Texas Health Science Center at San Antonio (United States)
Peter Fratzl, Max-Planck-Institut für Kolloid- und Grenzflächenforschung (Germany)
Huabei Jiang, University of Florida (United States)
Stephen J. Matcher, The University of Sheffield (United Kingdom)
Eleftherios P. Paschalis, Ludwig Boltzmann Institut (Austria)
Rahul Tandon D.D.S., Loma Linda University (United States)
Victor X. D. Yang, Ryerson University (Canada)

Session Chairs

21 Bone Surgery and Ablation
Andreas Mandelis, University of Toronto (Canada)

22 Musculoskeletal Imaging and Diagnostics I
Rahul Tandon D.D.S., Loma Linda University (United States)

23 Musculoskeletal Imaging and Diagnostics II
Andreas Mandelis, University of Toronto (Canada)

24 Bone Spectroscopy and Surgery
Andreas Mandelis, University of Toronto (Canada)
Introduction

The field of Otolaryngology, Head and Neck Surgery continues to be a challenging specialty for the application of novel diagnostic methods and therapeutic concepts. The contributions presented at the conference and issued hereafter reflect the responses to this challenge. The evolution of optical diagnostics, namely optical coherence tomography in its variants, fluorescence imaging, elastic scattering spectroscopy, confocal laser scanning microscopy has proceeded to an extent that most of the research presented is related to in vivo studies compared to more in vitro oriented projects of previous years. Moreover, many practical issues regarding the usability of optical diagnostic devices have been addressed, such as integrating OCT scanners in handheld otoscopes or the automated working distance adjustment for an OCT scanner in a conventional handheld laryngoscope. On the side of basic science, OCT scanners have become capable of scanning vibrational modes of the human tympanic membrane over a wide range of frequencies, thereby confirming data that have been postulated from finite element models in past years.

In addition to practical issues concerning the use of photonic imaging devices, increasing their predictive value compared to current diagnostic procedures and standards is of importance. Many workgroups have successfully combined variants of these imaging modalities in order to increase specificity and sensitivity in contrast to one method alone for differentiating benign, pre-malignant and malignant lesions of inner mucosal and outer skin surfaces of the head and neck. Co-registering and co-locating two-dimensional images from different methods and different orientation of the same lesion further helps to understand patterns of cellular growth in the context of pre-malignant and malignant neoplasms. This understanding enables the physician to tailor therapeutic regimes for the benefit of the patient, maximizing therapeutic security while minimizing loss of organ function and adverse effects.

In this context, the conference has been co-located with the annual scientific meeting of the Head and Neck Optical Diagnostic Society (HNODS) successfully for the second time. Within the scope of the society is also the propagation of minimally invasive therapeutic concepts in photodynamic therapy. Key research over the past years has been, among others, establishing and validating reliable dosimetry regimes for interstitial and superficial applications of PDT.

As photonics diagnostic and therapeutic technology will undoubtedly advance and mature in future years, one of the main challenges will be to propagate its use in clinical settings on a broad scale, generating a broad knowledge base for future research and increasing the quality of medical care in general for a greater public.

Brian J. F. Wong
Justus F. Ilgner