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Topics in biomedical optics: Introduction to the feature issue

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This *Applied Optics* feature issue on Topics in Biomedical Optics highlights papers presented at the 2008 Biomedical Topical meeting sponsored by the Optical Society.
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This feature issue highlights papers from the 2008 Biomedical Topical meeting sponsored by the Optical Society of America. The meeting, biennial since 1994, was held 16–20 March in St. Petersburg, Florida, and was well attended with 457 registered attendees, 3 plenary talks, 9 invited talks, and 364 contributed papers. The conference also included 9 tutorials that provided broader introductions to key topics of the conference. The 18 sessions covered 9 topics including Methods for Diffuse Optical Imaging and Tomography, Methods for Optical Spectroscopy and Spectroscopic Imaging, Optical Coherence Tomography, Optical Microscopy Techniques, Photonic Biomedical Nanotechnology, Optics in Neuroscience, Optics in Diagnostics and Clinical Translation, Optics in Molecular and Small Animal Imaging, and Optical Therapeutics.

The conference chairs were Gregory Faris and David M. Rector, with Vasilis Ntziachristos and Lihong Wang acting as co-chairs. The program chairs were Joseph P. Culver, Wolfgang Drexler, Rebekah A. Drezek, Irene Georgakoudi, Elizabeth M.C. Hillman, Lothar D. Lilge, Rebecca Richards-Kortum, and Tony Wilson. Many of these program chairs are also editors for this feature issue.

In vivo optical imaging techniques remain a dominant theme. Emerging techniques were presented for imaging at length scales ranging from subcellular (less than a micrometer) to organ level (several centimeters). For microscopy, the topics included advances in optical coherence tomography (e.g., ultrahigh resolution and speed, functional contrasts and phase sensitive contrasts) and other novel microscopy approaches (e.g., nonlinear, multiphoton, and intravital techniques). Deeper tissue imaging topics included advances in tomography methods (e.g., fluorescence, fluorescence lifetime, diffuse correlation spectroscopy, and image reconstruction) and spectroscopy (e.g., Raman and light scattering). In addition multimodal approaches were presented that combine light with other imaging modalities (e.g., ultrasound, MRI, and computed tomography).

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A continuing trend in this topical meeting was a growing number of submissions in applied areas. Specifically, 4 out of the 9 topical areas had application-based themes. These topical sessions focused on Neuroscience, Diagnosis and Clinical Translation, Molecular and Small Animal Imaging and Therapeutics. Collectively they demonstrated the growing impact that optical methods have in both the basic and the clinical biological sciences.

The 33 papers of this feature issue provide an excellent cross section of the topics covered in the 2008 edition of the Biomedical Topical meeting. We thank all the authors for their efforts in contributing the manuscripts and look forward to the next Topical Meeting in Biomedical Optics to be held in 2010.