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Photons Plus Ultrasound: Imaging and Sensing 2009

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Introduction to the 10th Proceedings of *Photons Plus Ultrasound: Imaging and Sensing*

This year marks the 10th anniversary of our conference. In these years we saw continuous and dynamic growth of our community and the corresponding number of inventions, peer-reviewed publications, and conference abstracts. It is significant that this year's conference was the biggest ever--with 98 papers submitted and 92 papers presented! The reports presented this year can be characterized as very mature, with deep theories and experiments performed in live subjects or equally complex phantoms.

The technologies developed by our community, optoacoustic (photoacoustic) imaging and sensing, attracts continuously growing interest from the medical imaging industry.

In order to recognize the leading researchers and attract young investigators to the field, in 2005 we established the Best Paper Award, sponsored by Fairway Medical Technologies of Houston, Texas. The following Best Papers have been presented:

2005 "Acoustically modulated x-ray phase contrast and vibration potential imaging" by **A.C. Beveridge**, C. J. Bailat, T. J. Hamilton, S. Wang, C. Rose-Petruck, Brown Univ.; V. E. Gusev, Univ. du Maine (France); G. J. Diebold, Brown Univ.

2006: "Technical considerations in quantitative blood oxygenation measurement using photoacoustic microscopy in vivo" by **K. I. Maslov**, M. Sivaramakrishnan, H. F. Zhang, G. Stoica, L. V. Wang, Texas A & M Univ.

2007: "Detection and noninvasive diagnostics of breast cancer with two color laser optoacoustic imaging system" by **S. A. Ermilov**, A. Stein, A. Conjusteau, R. R. Gharieb, R. Lacewell, T. Miller, S. Thompson, P. Otto, B. McCorvey, T. Khamapirad, M. Leonard, and A. A. Oraevsky (Fairway Medical Technologies (Houston, Texas), Seno Medical Instruments (San Antonio, Texas), Univ. of Texas Cancer Therapy and Research Center, San Antonio, and Univ. of Texas Medical Branch at Galveston.

2008: "3D photoacoustic imaging system for in vivo studies of small animal models" by **E. Z. Zhang,** J. Laufer, R. B. Pedley, P. Beard, Univ. College London (UK).

This year, our congratulations go to **H-P. Brecht** and the entire teams from Fairway Medical Technologies and Seno Medical Instruments, recipients of this year's Best Paper Award. Their paper entitled "Optoacoustic 3D whole-body tomography: experiments in nude mice" represents a leap in the systems for preclinical research, showing impressive images of the mouse body, organs and vasculature.

This year's competition was very close, which motivated 14 members of the organizing committee to also recognize the second-best paper entitled: "Combined ultrasound and photoacoustic imaging of pancreatic cancer using nanocage contrast agents" by **K. Homan**, J. Shah, S. Gomez, H. Gensler, A. B. Karpiouk, L. Brannon-Peppas, and S. Y. Emelianov, The Univ. of Texas at Austin.

In addition to oral papers, 20 poster papers were presented this year as part of our conference. The poster session exceeded everybody's expectations in terms of the depth and excitement of discussions. We hope that very interesting poster sessions will no longer be of any surprise to the attendees. In order to motivate researchers to present their papers as posters, this year we established the Best Poster Award, which will be annual tradition. Due to a strong competition, two equally interesting posters received the 2009 award:

> "Monitoring wound healing in mouse microvasculature using optical-resolution photoacoustic microscopy" by **S. Hu**, K. I. Maslov, L.V. Wang, Washington Univ. in St. Louis.
>
> "Enhanced sensitivity targeted photoacoustic molecular imaging agents in living mice" by **A. de la Zerda**, Z. Liu, C. Zavaleta, Suni Bodapati, S. Vaithilingam, T-J. Ma, Ö. Oralkan, X. Chen, B. T. Khuri-Yakub, H. Dai, S. S. Gambhir, Stanford Univ.

Manuscripts included in this volume have been editor-reviewed by the two conference Chairs based on oral presentations and posters. Due to copyright conflicts, not all of these papers will appear in scientific journals. Therefore, this volume of SPIE Proceedings can serve as a comprehensive current status report for researchers and doctors working in the field of preclinical and clinical medical imaging employing photons and ultrasound.

Alexander A. Oraevsky
Lihong V. Wang