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# ***Photons Plus Ultrasound: Imaging and Sensing 2010***

**Alexander A. Oraevsky**

**Lihong V. Wang**

*Editors*

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- 7564 2F **Photothermal heterodyne phase imaging of gold seed and germanium nanowire** [7564-86]  
Y. Jung, N. Lin, C. Yang, J.-X. Cheng, Purdue Univ. (United States)

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#### POSTER SESSION

- 7564 2G **Novel laser-induced cavitation: the constrained ring bubble** [7564-87]  
P. Prentice, Ninewells Hospital (United Kingdom); S. Zolotovskaya, E. Rafailov, Univ. of Dundee (United Kingdom)
- 7564 2I **Photoacoustic correlation technique for low-speed flow measurement** [7564-89]  
S.-L. Chen, T. Ling, Univ. of Michigan (United States); S.-W. Huang, Univ. of Washington (United States); H. W. Baac, Univ. of Michigan (United States); Y.-C. Chang, National Changhua Univ. of Education (Taiwan); L. J. Guo, Univ. of Michigan (United States)
- 7564 2J **Photoacoustic microscopy using Evans Blue dye as a contrast agent** [7564-91]  
J. Yao, K. I. Maslov, S. Hu, L. V. Wang, Washington Univ. in St. Louis (United States)
- 7564 2K **Clinical combination of multiphoton tomography and high frequency ultrasound imaging for evaluation of skin diseases** [7564-92]  
K. König, JenLab GmbH (Germany) and Saarland Univ. (Germany); M. Speicher, JenLab GmbH (Germany); M. J. Koehler, Friedrich-Schiller-Universität Jena (Germany); R. Scharenberg, Taberna pro medicum GmbH (Germany); P. Elsner, M. Kaatz, Friedrich-Schiller-Universität Jena (Germany)
- 7564 2M **Photoacoustic concave transmitter for generating high frequency focused ultrasound** [7564-96]  
H. W. Baac, T. Ling, S. Ashkenazi, S. Huang, L. J. Guo, Univ. of Michigan (United States)
- 7564 2N **Design and characterization of acoustic 4f imaging system by using an optical microring ultrasound detector** [7564-97]  
H. W. Baac, T. Ling, L. J. Guo, Univ. of Michigan (United States)
- 7564 2O **Frequency-selective multiphoton-excitation-induced photoacoustic microscopy (MEPAM) to visualize the cross sections of dense objects** [7564-98]  
Y. Yamaoka, M. Nambu, T. Takamatsu, Kyoto Prefectural Univ. of Medicine (Japan)
- 7564 2P **Photoacoustic and ultrasound imaging contrast enhancement using a dual contrast agent** [7564-99]  
K. Wilson, K. Homan, S. Emelianov, The Univ. of Texas at Austin (United States)

- 7564 2Q **Photoacoustic microscopy of collagenase-induced Achilles tendinitis in a mouse model** [7564-100]  
P.-H. Wang, National Tsing Hua Univ. (Taiwan); W. Chen, National Taiwan Univ. Hospital (Taiwan) and National Taiwan Univ. (Taiwan); M.-L. Li, National Tsing Hua Univ. (Taiwan)
- 7564 2R **Tissue classification by wavelet modified generic Fourier descriptor and their recognition using hybrid correlator** [7564-101]  
R. B. Yadav, The Univ. of Electro-Communications (Japan); A. K. Gupta, Instruments Research and Development Establishment (India)
- 7564 2S **Reconstruction of photoacoustic tomography with finite-aperture detectors: deconvolution of the spatial impulse response** [7564-102]  
M.-L. Li, C.-C. Cheng, National Tsing Hua Univ. (Taiwan)
- 7564 2T **Multispectral photoacoustic microscopy using a photonic crystal fiber supercontinuum source** [7564-103]  
Y. N. Billeh, Univ. of Michigan (United States); M. Liu, T. Buma, Univ. of Delaware (United States)
- 7564 2U **Photoacoustic micro-imaging of focused ultrasound induced blood-brain-barrier opening in a rat model** [7564-104]  
P.-H. Wang, National Tsing Hua Univ. (Taiwan); P.-H. Hsu, H.-L. Liu, Chang Gung Univ. (Taiwan); C.-R. C. Wang, National Chung-Cheng Univ. (Taiwan); M.-L. Li, National Tsing Hua Univ. (Taiwan)
- 7564 2V **Multicolor photoacoustic imaging by a single transducer with piezoelectric copolymer film in a wide frequency range** [7564-105]  
T. Ohmori, M. Ishihara, National Defense Medical College (Japan); K. Tsujita, FUJIFILM Corp. (Japan); I. Bansaku, M. Kikuchi, National Defense Medical College (Japan)
- 7564 2W **In vivo dual-modality imaging of lymphatic systems using indocyanine green in rats: three-dimensional photoacoustic imaging and planar fluorescence imaging** [7564-106]  
C. Kim, Washington Univ. in St. Louis (United States); K. H. Song, Univ. of Texas Southwestern Medical Ctr. at Dallas (United States); L. V. Wang, Washington Univ. in St. Louis (United States)
- 7564 2X **Photoacoustic tomography of pathological tissue in ex vivo mouse hearts** [7564-108]  
M. Holotta, Innsbruck Medical Univ. (Austria); H. Grossauer, Leopold-Franzens-Univ. Innsbruck (Austria); C. Kremser, P. Torbica, J. Völkl, G. Degenhart, R. Esterhammer, Innsbruck Medical Univ. (Austria); R. Nuster, G. Paltauf, Karl-Franzens-Univ. Graz (Austria); W. Jaschke, Innsbruck Medical Univ. (Austria)
- 7564 2Z **Multiparametric optimization of multispectral optoacoustic tomography for deep tissue imaging** [7564-110]  
J. Glatz, N. C. Deliolanis, L. Ding, A. Taruttis, A. Rosenthal, R. Schulz, D. Razansky, V. Ntziachristos, Technische Univ. München (Germany) and Helmholtz Zentrum München GmbH (Germany)

- 7564 30 **Photoacoustic quantification of the optical absorption cross-sections of gold nanostructures** [7564-111]  
C. Kim, E. C. Cho, Washington Univ. in St. Louis (United States); F. Zhou, Institute of Physics (China); C. M. Cobley, Washington Univ. in St. Louis (United States); K. H. Song, Univ. of Texas Southwestern Medical Ctr. at Dallas (United States); J. Chen, Washington Univ. in St. Louis (United States); Z.-Y. Li, Institute of Physics (China); Y. Xia, L. V. Wang, Washington Univ. in St. Louis (United States)
- 7564 31 **Optimization of the acousto-optic signal detection in cylindrical geometry** [7564-112]  
S. Gunadi, S. Powell, C. E. Elwell, T. S. Leung, Univ. College London (United Kingdom)
- 7564 32 **Analysis of a photoacoustic imaging system by singular value decomposition** [7564-113]  
M. Roumeliotis, Lawson Health Research Institute, St. Joseph's Health Care (Canada) and Univ. of Western Ontario (Canada); G. Chaudhary, M. Anastasio, Illinois Institute of Technology (United States); R. Stodilka, Lawson Health Research Institute, St. Joseph's Health Care (Canada) and Univ. of Western Ontario (Canada); A. Immucci, Lawson Health Research Institute, St. Joseph's Health Care (Canada); E. Ng, J. J. L. Carson, Lawson Health Research Institute, St. Joseph's Health Care (Canada) and Univ. of Western Ontario (Canada)
- 7564 33 **Combined photoacoustic and magneto-motive ultrasound imaging (Best Poster Award)** [7564-114]  
M. Qu, S. Kim, M. Mehrmohammadi, S. Mallidi, P. Joshi, K. Homan, Y.-S. Chen, S. Emelianov, The Univ. of Texas at Austin (United States)
- 7564 34 **Comparison of reconstruction algorithms for sparse-array detection photoacoustic tomography** [7564-115]  
G. Chaudhary, Illinois Institute of Technology (United States); M. Roumeliotis, J. J. L. Carson, Lawson Health Research Institute, St. Joseph's Health Care (Canada) and The Univ. of Western Ontario (Canada); M. A. Anastasio, Illinois Institute of Technology (United States)
- 7564 35 **Evaluation of Her2 status using photoacoustic spectroscopic CT techniques** [7564-116]  
M. Shaffer, Purdue Univ. (United States); R. Kruger, D. Reinecke, OptoSonics, Inc. (United States); H. Chin-Sinex, M. Mendonca, Indiana Univ. (United States); K. M. Stantz, Purdue Univ. (United States) and Indiana Univ. (United States)
- 7564 37 **Biodegradable plasmonic nanoclusters as contrast agent for photoacoustic imaging** [7564-118]  
S. J. Yoon, S. Mallidi, J. M. Tam, J. O. Tam, A. Murthy, P. Joshi, K. P. Johnston, The Univ. of Texas at Austin (United States); K. V. Sokolov, The Univ. of Texas at Austin (United States) and The Univ. of Texas M.D. Anderson Cancer Ctr. (United States); S. Y. Emelianov, The Univ. of Texas at Austin (United States)
- 7564 38 **Characterization of sparse-array detection photoacoustic tomography using the singular value decomposition** [7564-119]  
G. Chaudhary, Illinois Institute of Technology (United States); M. Roumeliotis, P. Ephrat, R. Stodilka, J. J. L. Carson, Lawson Health Research Institute, St. Joseph's Health Care (Canada) and The Univ. of Western Ontario (Canada); M. A. Anastasio, Illinois Institute of Technology (United States)

- 7564 39 **Monitor hemoglobin concentration and oxygen saturation in living mouse tail using photoacoustic CT scanner** [7564-120]  
B. Liu, Purdue Univ. (United States); R. Kruger, D. Reinecke, OptoSonics, Inc. (United States); K. M. Stantz, Purdue Univ. (United States) and Indiana Univ. (United States)
- 7564 3A **Ex vivo hemoglobin status study using photoacoustic computed tomography small animal scanner** [7564-121]  
B. Liu, Purdue Univ. (United States); R. Kruger, D. Reinecke, OptoSonics, Inc. (United States); K. M. Stantz, Purdue Univ. (United States) and Indiana Univ. (United States)
- 7564 3B **In vivo multi-modality photoacoustic and pulse echo tracking of prostate tumor growth using a window chamber** [7564-122]  
D. R. Bauer, R. Olafsson, L. G. Montilla, R. S. Witte, The Univ. of Arizona (United States)
- 7564 3C **Real-time pulse echo and photoacoustic imaging using an ultrasound array and in-line reflective illumination** [7564-123]  
L. G. Montilla, R. Olafsson, R. S. Witte, The Univ. of Arizona (United States)
- 7564 3D **Optical-resolution photoacoustic microscopy of amyloid- $\beta$  deposits in vivo** [7564-124]  
S. Hu, P. Yan, K. Maslov, J.-M. Lee, L. V. Wang, Washington Univ. in St. Louis (United States)
- 7564 3E **In vivo label-free photoacoustic microscopy of the anterior segment of the mouse eye** [7564-125]  
B. Rao, S. Hu, L. Li, K. Maslov, L. V. Wang, Washington Univ. in St. Louis (United States)
- 7564 3F **In vivo functional photoacoustic micro-imaging of the electrically stimulated rat brain with multiwavelengths** [7564-126]  
L.-D. Liao, National Chiao Tung Univ. (Taiwan); M.-L. Li, National Tsing Hua Univ. (Taiwan); H.-Y. Lai, Y.-Y. Chen, P. C.-P. Chao, National Chiao Tung Univ. (Taiwan); P.-H. Wang, National Tsing Hua Univ. (Taiwan)
- 7564 3G **Photoacoustic characterization of human ovarian tissue** [7564-127]  
A. Aguirre, Y. Ardeshirpour, Univ. of Connecticut (United States); M. M. Sanders, M. Brewer, Univ. of Connecticut Health Ctr. (United States); Q. Zhu, Univ. of Connecticut (United States)
- 7564 3H **Photoacoustic tomography of foreign bodies in soft biological tissue** [7564-128]  
X. Cai, C. Kim, M. Pramanik, L. V. Wang, Washington Univ. in St. Louis (United States)
- 7564 3I **Optoacoustic imaging of HIFU-induced thermal lesions in tissue** [7564-129]  
P. V. Chitnis, Riverside Research Institute (United States); H.-P. Brecht, R. Su, A. A. Oraevsky, Fairway Medical Technologies, Inc. (United States)
- 7564 3J **Effect of ultrasound transducer face reflectivity on light fluence distribution inside turbid medium** [7564-130]  
B. Tavakoli, P. D. Kumavor, A. Aguirre, Q. Zhu, Univ. of Connecticut (United States)
- 7564 3N **Time-resolved photoacoustic Doppler characterization of flow using pulsed excitation** [7564-146]  
A. Sheinfeld, S. Gilead, A. Eyal, Tel Aviv Univ. (Israel)

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## Conference Committee

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- 3 Algorithms and Models  
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- 4 Novel Detectors and Methods  
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- 5 3D Microscopy  
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- 9 Molecular Imaging  
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- 12 Novel Systems and Applications  
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Industrielles (France)  
**Charles A. DiMarzio**, Northeastern University (United States)



## Introduction

Our conference on Photons plus Ultrasound: Imaging and Sensing celebrated its 11th anniversary in San Francisco. With a 35% increase in the number of presentations, this conference continues to lead the Photonics West BIOS Symposia in size. This volume of SPIE Proceedings reflects the high-quality research being conducted by our community and offers the latest information on developments in the field of optoacoustic (photoacoustic) computed tomography, microscopy, sensing, and monitoring as well as other related fields.

As in the past, the organizing committee recognized the leading researchers in the field by presenting the Best Paper Award and the Best Poster Award, sponsored by Fairway Medical Technologies, Houston, Texas. This year, the Best Paper Award went to the presenting author Konstantin Maslov, and his coauthors Geng Ku and Lihong V. Wang, Washington University in St. Louis (United States), for the presentation entitled "Photoacoustic microscopy with submicron resolution" (Paper 75640W:7564-31). The Best Poster Award was given to the presenting author Min Qu and her coauthors Seungsoo Kim, Mohammad Mehrmohammadi, Srivalleesha Mallidi, Pratixa Joshi, Kimberly Homan, Yun-Sheng Chen, and Stanislav Emelianov, The Univ. of Texas at Austin (United States), for the poster entitled "Combined photoacoustic and magneto-motive ultrasound imaging" (Paper 756433:7564-114).

We would like to congratulate the winners and thank all the contributors to this conference for making it another great success!

**Alexander A. Oraevsky**  
**Lihong V. Wang**

