PROCEEDINGS OF SPIE

SPIDigitalLibrary.org/conference-proceedings-of-spie

Front Matter: Volume 7163

, "Front Matter: Volume 7163," Proc. SPIE 7163, Ophthalmic Technologies XIX, 716301 (11 March 2009); doi: 10.1117/12.827218

SPIE.

Event: SPIE BiOS, 2009, San Jose, California, United States

PROGRESS IN BIOMEDICAL OPTICS AND IMAGING

Vol. 10, No. 3

Ophthalmic Technologies XIX

**Fabrice Manns
Per G. Söderberg
Arthur Ho**
Editors

**24–26 January 2009
San Jose, California, United States**

Sponsored by
SPIE

Cosponsored by
Topcon Advanced Biomedical Imaging Laboratory, through the Pascal Rol Foundation
(United States)

Published by
SPIE

Volume 7163

Proceedings of SPIE, 1605-7422, v. 7163

SPIE is an international society advancing an interdisciplinary approach to the science and application of light.

The papers included in this volume were part of the technical conference cited on the cover and title page. Papers were selected and subject to review by the editors and conference program committee. Some conference presentations may not be available for publication. The papers published in these proceedings reflect the work and thoughts of the authors and are published herein as submitted. The publisher is not responsible for the validity of the information or for any outcomes resulting from reliance thereon.

Please use the following format to cite material from this book:

Author(s), "Title of Paper," in *Ophthalmic Technologies XIX*, edited by Fabrice Manns, Per G. Söderberg, Arthur Ho, Proceedings of SPIE Vol. 7163 (SPIE, Bellingham, WA, 2009) Article CID Number.

ISSN 1605-7422

ISBN 9780819474094

Published by

SPIE

P.O. Box 10, Bellingham, Washington 98227-0010 USA

Telephone +1 360 676 3290 (Pacific Time) · Fax +1 360 647 1445

SPIE.org

Copyright © 2009, Society of Photo-Optical Instrumentation Engineers.

Copying of material in this book for internal or personal use, or for the internal or personal use of specific clients, beyond the fair use provisions granted by the U.S. Copyright Law is authorized by SPIE subject to payment of copying fees. The Transactional Reporting Service base fee for this volume is \$18.00 per article (or portion thereof), which should be paid directly to the Copyright Clearance Center (CCC), 222 Rosewood Drive, Danvers, MA 01923. Payment may also be made electronically through CCC Online at copyright.com. Other copying for republication, resale, advertising or promotion, or any form of systematic or multiple reproduction of any material in this book is prohibited except with permission in writing from the publisher. The CCC fee code is 1605-7422/09/\$18.00.

Printed in the United States of America.

Publication of record for individual papers is online in the SPIE Digital Library.

SPIDigitalLibrary.org

Paper Numbering: Proceedings of SPIE follow an e-First publication model, with papers published first online and then in print and on CD-ROM. Papers are published as they are submitted and meet publication criteria. A unique, consistent, permanent citation identifier (CID) number is assigned to each article at the time of the first publication. Utilization of CIDs allows articles to be fully citable as soon they are published online, and connects the same identifier to all online, print, and electronic versions of the publication. SPIE uses a six-digit CID article numbering system in which:

- The first four digits correspond to the SPIE volume number.
- The last two digits indicate publication order within the volume using a Base 36 numbering system employing both numerals and letters. These two-number sets start with 00, 01, 02, 03, 04, 05, 06, 07, 08, 09, 0A, 0B ... 0Z, followed by 10-1Z, 20-2Z, etc.

The CID number appears on each page of the manuscript. The complete citation is used on the first page, and an abbreviated version on subsequent pages. Numbers in the index correspond to the last two digits of the six-digit CID number.

Contents

ix	Conference Committee
xiii	Ninth Pascal Rol Award for Excellence in Ophthalmic Technologies and the 2009 Pascal Rol Lecture on Ophthalmic Technologies

MODELS OF OCULAR DISEASE

7163 04	Laser speckle imaging of rat retinal blood flow with hybrid temporal and spatial analysis method [7163-03] H. Cheng, Y. Yan, T. Q. Duong, Emory Univ. (United States)
7163 05	High speed high resolution in vivo imaging of healthy rat retinas with FD-OCT operating at 1060nm [7163-04] S. Hariri, Univ. of Waterloo (Canada); A. Dracopoulos, St. Michaels Hospital (Canada) and Univ. of Toronto (Canada); A. Akhlagh Moayed, C. Hyun, Z. Ren, P. Puvanathan, Univ. of Waterloo (Canada); S. Boyd, St. Michaels Hospital (Canada) and Univ. of Toronto (Canada); K. Bizheva, Univ. of Waterloo (Canada)

OPHTHALMIC IMAGING TECHNOLOGY I

7163 07	Ultrahigh speed spectral/Fourier domain ophthalmic OCT imaging [7163-06] B. Potsaid, Massachusetts Institute of Technology (United States) and Thorlabs, Inc. (United States); I. Gorczynska, Massachusetts Institute of Technology (United States) and Tufts Univ. (United States); V. J. Srinivasan, Massachusetts Institute of Technology (United States); Y. Chen, Massachusetts Institute of Technology (United States) and Tufts Univ. (United States); J. Liu, Massachusetts Institute of Technology (United States); J. Jiang, A. Cable, Thorlabs, Inc. (United States); J. S. Duker, Tufts Univ. (United States); J. G. Fujimoto, Massachusetts Institute of Technology (United States) and Tufts Univ. (United States)
7163 08	Swept source OCT imaging of human anterior segment at 200 kHz [7163-07] K. Karnowski, M. Gora, Nicolaus Copernicus Univ. (Poland); B. Kaluzny, Collegium Medicum UMK (Poland); R. Huber, Ludwig-Maximilians Univ. (Germany); M. Szkulmowski, A. Kowalczyk, M. Wojtkowski, Nicolaus Copernicus Univ. (Poland)

OPHTHALMIC IMAGING TECHNOLOGY II

7163 0A	Wide field visualization of retinal and choroidal microstructure in vivo using frequency domain OCT at 1060 nm with up to 47000 lines/s [7163-09] B. Hermann, M. Esmaeelpour, B. Považay, B. Hofer, F. Bounaparte, N. Sheen, R. North, W. Drexler, Cardiff Univ. (United Kingdom)
7163 0B	Wavelength scanning digital interference holography for high-resolution ophthalmic imaging [7163-10] M. C. Potcoava, M. K. Kim, C. N. Kay, Univ. of South Florida (United States)

ADAPTIVE AND ISOTROPIC OPHTHALMIC IMAGING

- 7163 0F **Combined adaptive optics: optical coherence tomography and adaptive optics: scanning laser ophthalmoscopy system for retinal imaging** [7163-14]
R. J. Zawadzki, Univ. of California, Davis (United States); S. M. Jones, D. Chen, Lawrence Livermore National Lab. (United States); S. S. Choi, Univ. of California, Davis (United States); J. W. Evans, Univ. of California, Davis (United States) and Lawrence Livermore National Lab. (United States); S. S. Olivier, Lawrence Livermore National Lab. (United States); J. S. Werner, Univ. of California, Davis (United States)
- 7163 0G **Adding the third dimension on adaptive optics retina imager thanks to full-field optical coherence tomography** [7163-15]
M. Blavier, L. Blanco, LESIA, Observatoire de Paris, CNRS, Univ. Paris Diderot (France) and Univ. Paris VI (France); M. Glanc, LESIA, Observatoire de Paris, CNRS, Univ. Paris Diderot (France) and Groupement d'Intérêt Scientifique PHASE (France); F. Pouplard, S. Tick, Univ. Paris VI (France); I. Maksimovic, LESIA, Observatoire de Paris, CNRS, Univ. Paris Diderot (France) and Univ. Paris VI (France); L. Mugnier, DOTA ONERA (France) and Groupement d'Intérêt Scientifique PHASE (France); G. Chênégros, DOTA ONERA (France); G. Rousset, LESIA, Observatoire de Paris, CNRS, Univ. Paris Diderot (France) and Groupement d'Intérêt Scientifique PHASE (France); F. Lacombe, Mauna Kea Technologies (France); M. Pâques, J.-F. Le Gargasson, J.-A. Sahel, Univ. Paris VI (France)
- 7163 0I **1 μm wavelength adaptive optics scanning laser ophthalmoscope (Pascal Rol Award for Best Paper)** [7163-17]
K. Kurokawa, S. Makita, Y. Yasuno, Univ. of Tsukuba (Japan) and Computational Optics and Ophthalmology Group (Japan)
- 7163 0J **Compact adaptive optics line scanning laser ophthalmoscope** [7163-18]
D. X. Hammer, M. Mujat, N. V. Iftimia, R. D. Ferguson, Physical Sciences Inc. (United States)

OPHTHALMIC POLARIZATION IMAGING

- 7163 0K **Modeling human corneal polarization properties and comparison with PS-OCT measurements** [7163-19]
F. Fanjul-Vélez, Univ. of Cantabria (Spain) and Medical Univ. of Vienna (Austria); M. Pircher, B. Baumann, E. Götzinger, Medical Univ. of Vienna (Austria); J. L. Arce-Diego, Univ. of Cantabria (Spain); C. K. Hitzenberger, Medical Univ. of Vienna (Austria)
- 7163 0L **Fundus depolarization imaging with GDx VCC scanning laser polarimeter and depolarization characteristics of normal eyes** [7163-20]
Q. Zhou, Carl Zeiss Meditec, Inc. (United States); H. A. Leder, Duke Ctr. for Macular Diseases, Duke Univ. Eye Ctr. (United States); B. P.-W. Lo, G. C. Reed, Carl Zeiss Meditec, Inc. (United States); R. W. Knighton, Bascom Palmer Eye Institute (United States); S. W. Cousins, Duke Ctr. for Macular Diseases, Duke Univ. Eye Ctr. (United States)
- 7163 0M **Simultaneous birefringence and Doppler flow imaging of the anterior eye segment using multi-functional swept-source optical coherence tomography** [7163-21]
M. Yamanari, S. Makita, Univ. of Tsukuba (Japan) and Computational Optics and Ophthalmology Group (Japan); M. Miura, Univ. of Tsukuba (Japan), Computational Optics and Ophthalmology Group (Japan), and Tokyo Medical Univ. (Japan); Y. Yasuno, Univ. of Tsukuba (Japan) and Computational Optics and Ophthalmology Group (Japan)

- 7163 ON **Imaging the human retina in vivo with combined spectral-domain polarization-sensitive optical coherence tomography and scanning laser ophthalmoscopy** [7163-22]
B. Baumann, M. Pircher, E. Götzinger, H. Sattmann, Medical Univ. of Vienna (Austria); M. Wurm, D. Stifter, Upper Austrian Research GmbH (Austria); C. Schütze, C. Ahlers, W. Geitzenauer, U. Schmidt-Erfurth, General Hospital and Medical Univ. of Vienna (Austria); C. K. Hitzenberger, Medical Univ. of Vienna (Austria)
- 7163 OO **Investigation of anterior chamber angle by swept-source polarization sensitive optical coherence tomography** [7163-23]
Y. Yasuno, M. Yamanari, K. Kawana, Univ. of Tsukuba (Japan) and Computational Optics and Ophthalmology Group (Japan); M. Miura, Tokyo Medical Univ. (Japan) and Computational Optics and Ophthalmology Group (Japan); S. Makita, T. Oshika, Univ. of Tsukuba (Japan) and Computational Optics and Ophthalmology Group (Japan)

FUNCTIONAL OPHTHALMIC IMAGING I

- 7163 OP **A new imaging technique for retinal vessel oximetry: principles and first clinical results in patients with retinal arterial occlusion and diabetic retinopathy** [7163-24]
M. Hammer, Univ. of Jena (Germany); T. Riemer, W. Vilser, Imedos GmbH (Germany); S. Gehlert, D. Schweitzer, Univ. of Jena (Germany)
- 7163 OQ **Three-dimensional retinal blood flow analysis using joint spectral and time domain optical coherence tomography** [7163-25]
A. Szkulmowska, M. Szkulmowski, D. Szlag, D. Bukowska, S. Tamborski, A. Kowalczyk, M. Wojtkowski, Nicolaus Copernicus Univ. (Poland)
- 7163 OS **A simple model of oxygen diffusion out of the retinal artery** [7163-27]
J. M. Beach, Univ. of Iceland (Iceland); J. Ning, Tulane Univ. (United States); B. Khoobehi, Louisiana State Univ. Eye Ctr.(United States); D. A. Rice, Tulane Univ. (United States)

OPHTHALMIC LASER TISSUE INTERACTIONS I

- 7163 OT **Computational model of retinal photocoagulation and rupture** [7163-28]
C. Sramek, Y. M. Paulus, H. Nomoto, P. Huie, D. Palanker, Stanford Univ. (United States)

OPHTHALMIC LASER TISSUE INTERACTIONS II

- 7163 OX **Intraocular tissue ablation using an optical fibre to deliver the 5th harmonic of a Nd:YAG** [7163-32]
J. Miller, The Univ. of Western Australia (Australia); X. Yu, The Univ. of Western Australia (Australia) and Fudan Univ. (China); P. K. Yu, S. J. Cringle, D.-Y. Yu, The Univ. of Western Australia (Australia)
- 7163 OY **Investigation on fibrous collagen modifications during corneal laser welding by second harmonic generation microscopy** [7163-33]
P. Matteini, F. Ratto, F. Rossi, Istituto di Fisica Applicata Nello Carrara, CNR (Italy); R. Cicchi, C. Stringari, D. Kapsokalyvas, F. S. Pavone, Univ. of Florence (Italy); R. Pini, Istituto di Fisica Applicata Nello Carrara, CNR (Italy)

- 7163 11 **Photochemical effects in the lens from near infrared radiation?** [7163-36]
P. G. Söderberg, Uppsala Univ. (Sweden) and Univ. of Miami School of Medicine (United States); R. Al-Saqry, Uppsala Univ. (Sweden); K. Schulmeister, Austrian Research Ctrs. (Austria); K. Gallichanin, M. Kronschräger, Z. Yu, Uppsala Univ. (Sweden)

OPHTHALMIC IMAGE CORRECTION, ANALYSIS, AND VISUALIZATION

- 7163 12 **Comparison of real-time visualization of volumetric OCT data sets by CPU-slicing and GPU-ray casting methods** [7163-37]
A. R. Fuller, R. J. Zawadzki, B. Hamann, J. S. Werner, Univ. of California, Davis (United States)
- 7163 13 **Automated analysis of OCT images of the crystalline lens** [7163-38]
E. Kim, Institute for Eye Research (Australia) and Vision CRC (Australia); K. Ehrmann, Institute for Eye Research (Australia), Vision CRC (Australia), and Univ. of New South Wales (Australia); S. Uhlhorn, Bascom Palmer Eye Institute, Univ. of Miami School of Medicine (United States); D. Borja, Bascom Palmer Eye Institute, Univ. of Miami School of Medicine (United States) and Univ. of Miami (United States); J.-M. Parel, Vision CRC (Australia) and Bascom Palmer Eye Institute, Univ. of Miami School of Medicine (United States)
- 7163 15 **Fully automated corneal endothelial morphometry of images captured by clinical specular microscopy** [7163-40]
C. Bucht, Karolinska Institutet (Sweden); P. Söderberg, Uppsala Univ. (Sweden); G. Manneberg, Stockholm Royal Institute of Technology (Sweden)

OPTICS OF THE EYE AND VISION CORRECTION

- 7163 16 **Working sketch of an anatomically and optically equivalent physical model eye** [7163-41]
R. C. Bakaraju, K. Ehrmann, Institute for Eye Research Ltd. (Australia), Vision Cooperative Research Ctr. (Australia), and Univ. of New South Wales (Australia); D. Falk, Institute for Eye Research Ltd. (Australia) and Vision Cooperative Research Ctr. (Australia); E. B. Papas, A. Ho, Institute for Eye Research Ltd. (Australia), Vision Cooperative Research Ctr. (Australia), and Univ. of New South Wales (Australia)
- 7163 18 **Change in peripheral refraction and curvature of field of the human eye with accommodation** [7163-43]
A. Ho, Institute for Eye Research Ltd. (Australia) and Univ. of New South Wales (Australia); F. Zimmermann, Univ. of Applied Sciences (Germany); A. Whatham, Institute for Eye Research Ltd. (Australia) and Univ. of New South Wales (Australia); A. Martinez, S. Delgado, P. Lazon de la Jara, Institute for Eye Research Ltd. (Australia); P. Sankaridurg, Institute for Eye Research Ltd. (Australia) and Univ. of New South Wales (Australia)
- 7163 19 **A theoretical design of gradient index multifocal contact lens for correcting presbyopia and an attempt to elicit its performance using ray tracing** [7163-45]
R. C. Bakaraju, K. Ehrmann, E. B. Papas, A. Ho, Institute for Eye Research Ltd. (Australia), Vision Cooperative Research Ctr. (Australia), and Univ. of New South Wales (Australia)

OPHTHALMIC DEVICES AND INSTRUMENTS

- 7163 1B **High resolution optoelectronic retinal prosthesis** [7163-47]
J. Loudin, R. Dinyari, P. Huie, A. Butterwick, P. Peumans, D. Palanker, Stanford Univ. (United States)
- 7163 1C **Multimodal scanning laser ophthalmoscopy for image guided treatment of age-related macular degeneration** [7163-48]
D. X. Hammer, R. D. Ferguson, A. H. Patel, N. V. Iftimia, M. Mujat, Physical Sciences Inc. (United States); D. Husain, Boston Univ. School of Medicine (United States)
- 7163 1E **Optical power mapping using paraxial laser scanning** [7163-50]
K. Ehrmann, Institute for Eye Research Ltd. (Australia), Vision CRC (Australia), and Univ. of New South Wales (Australia); D. Falk, Institute for Eye Research Ltd. (Australia) and Vision CRC (Australia)
- 7163 1F **Laser eye protection in a contact lens using plasmon resonant particles** [7163-51]
G. P. Goodrich, J. D. Payne, J. C. Wang, J. B. Jackson, Nanospectra Biosciences, Inc. (United States)

FUNCTIONAL OPHTHALMIC IMAGING II

- 7163 1G **Evaluation of hypoxic swelling of human cornea with high speed ultrahigh resolution optical coherence tomography** [7163-52]
K. Bizheva, C. Hyun, J. Eichel, S. Hariri, A. Mishra, D. Clausi, P. Fieguth, T. Simpson, N. Hutchings, Univ. of Waterloo (Canada)
- 7163 1H **Optical coherence tomography in estimating molecular diffusion of drugs and analytes in ocular tissues** [7163-53]
M. G. Ghosn, Univ. of Houston (United States); V. V. Tuchin, Saratov State Univ. (Russian Federation) and Institute of Precise Mechanics and Control (Russian Federation); K. V. Larin, Univ. of Houston (United States) and Saratov State Univ. (Russian Federation)
- 7163 1J **In vivo functional retinal optical coherence tomography fOCT** [7163-55]
R. A. Leitgeb, T. Schmolli, Medical Univ. of Vienna (Austria)

POSTER SESSION

- 7163 1K **Surgical device for supporting corneal suturing** [7163-56]
L. Ventura, G. C. D. Oliveira, J.-J. De Groote, S. J. F. Sousa, P. Saia, Univ. de São Paulo (Brazil)
- 7163 1L **UVA system for human cornea irradiation** [7163-57]
F. R. A. Pereira, Opto Eletrônica S.A. (Brazil) and Univ. de São Paulo (Brazil); M. Stefani, J. A. Otobonil, E. H. Richter, G. Rossi, A. D. Mota, Opto Eletrônica S.A. (Brazil); L. Ventura, Univ. de São Paulo (Brazil)
- 7163 1M **Omni-focal refractive focus correction technology as a substitute for bi/multi-focal intraocular lenses, contact lenses, and spectacles** [7163-58]
S. Ben Yaish, A. Zlotnik, I. Raveh, O. Yehezkel, Xceed Imaging Ltd. (Israel); M. Belkin, Tel Aviv Univ. (Israel); K. Lahav, Xceed Imaging Ltd. (Israel); Z. Zalevsky, Bar-Ilan Univ. (Israel)

- 7163 1N **Automated spectroscopic imaging of oxygen saturation in human retinal vessels** [7163-59]
D. Nakamura, S. Sueda, N. Matsuoka, Y. Yoshinaga, Kyushu Univ. (Japan); H. Enaida, Kyushu Medical Ctr. (Japan); T. Okada, T. Ishibashi, Kyushu Univ. (Japan)
- 7163 1O **Characterization of the vitreous body of the human eye using a cyanine dye as a spectral and fluorescent probe** [7163-60]
I. G. Panova, Institute of Developmental Biology (Russian Federation); A. S. Tatikolov, Institute of Biochemical Physics (Russian Federation)
- 7163 1P **High brightness application of orange fiber laser for photocoagulator** [7163-61]
J. Nakanishi, J. Suzuki, K. Ito, K. Kojima, M. Adachi, T. Yamada, T. Ueno, K. Hayashi, NIDEK Co., Ltd. (Japan)
- 7163 1Q **Low-temperature corneal laser welding investigated by atomic force microscopy** [7163-62]
P. Matteini, Istituto di Fisica Applicata, CNR (Italy); F. Sbrana, Univ. di Firenze (Italy); B. Tiribilli, Istituto dei Sistemi Complessi, CNR (Italy); R. Pini, Istituto di Fisica Applicata, CNR (Italy)
- 7163 1R **Optical clearing of human eye sclera** [7163-63]
A. N. Bashkatov, E. A. Genina, V. I. Kochubey, Saratov State Univ. (Russian Federation); T. G. Kamenskikh, Saratov State Medical Univ. (Russian Federation); V. V. Tuchin, Saratov State Univ. (Russian Federation)
- 7163 20 **Oxygen saturation changes in the optic nerve head during acute intraocular pressure elevation in monkeys** [7163-72]
B. Khoobehi, H. Kawano, Louisiana State Univ. Eye Ctr.(United States); J. Ning, Tulane Univ. (United States); C. F. Burgoyne, Devers Eye Institute (United States); D. A. Rice, Tulane Univ. (United States); F. Khan, H. W. Thompson, Louisiana State Univ. Eye Ctr. (United States); J. M. Beach, Louisiana State Univ. Eye Ctr. (United States) and Stennis Space Ctr. (United States)
- 7163 21 **Bottlenose dolphin iris asymmetries enhance aerial and underwater vision** [7163-73]
A. Rivamonte, U.S. Army TMDE Activity (United States)

Author Index

Conference Committee

Symposium Chairs

James G. Fujimoto, Massachusetts Institute of Technology (United States)
R. Rox Anderson, Wellman Center for Photomedicine, Massachusetts General Hospital (United States) and Harvard School of Medicine (United States)

Program Track Chair

Reza S. Malek, Mayo Clinic (United States)

Conference Chairs

Fabrice Manns, University of Miami (United States)
Per G. Söderberg, Uppsala Universitet (Sweden)
Arthur Ho, Institute for Eye Research Ltd. (Australia)

Program Committee

Rafat R. Ansari, NASA Glenn Research Center (United States) and The University of Texas School of Health Information Sciences at Houston (United States)
Michael Belkin, Tel Aviv University (Israel)
Ralf Brinkmann, Universität zu Lübeck (Germany)
Wolfgang Drexler, Cardiff University (United Kingdom)
Daniel X. Hammer, Physical Sciences Inc. (United States)
Karen Margaret Joos, Vanderbilt University (United States)
Katsuhiko Kobayashi, Topcon Corporation (Japan)
Kirill V. Larin, University of Houston (United States)
Ezra I. Maguen, Cedars-Sinai Medical Center (United States)
Donald T. Miller, Indiana University (United States)
Peter J. Milne, National Science Foundation (United States)
Michael C. Mrochen, ETH Zürich (Switzerland)
Daniel V. Palanker, Stanford University Medical Center (United States)
Jean-Marie A. Parel, University of Miami Medical School (United States)
Roberto Pini, Istituto di Fisica Applicata Nello Carrara (Italy)
Luigi L. Rovati, Università degli Studi di Modena e Reggio Emilia (Italy)
Georg Schuele, OptiMedica Corporation (United States)
Jerry Sebag, University of Southern California (United States)
Peter Soliz, VisionQuest Biomedical LLC (United States)
William B. Telfair, IRIDEX Corporation (United States)
Valery V. Tuchin, Saratov State University (Russian Federation)

Session Chairs

Models of Ocular Disease

Wolfgang Drexler, Cardiff University (United Kingdom)

Daniel X. Hammer, Physical Sciences Inc. (United States)

Ophthalmic Imaging Technology I

Donald T. Miller, Indiana University (United States)

Michael Belkin, Tel Aviv University (Israel)

Ophthalmic Imaging Technology II

Donald T. Miller, Indiana University (United States)

Michael Belkin, Tel Aviv University (Israel)

Adaptive and Isotropic Ophthalmic Imaging

Katsuhiko Kobayashi, Topcon Corporation (Japan)

Daniel V. Palanker, Stanford University Medical Center (United States)

Ophthalmic Polarization Imaging

Kirill V. Larin, University of Houston (United States)

Rafat R. Ansari, NASA Glenn Research Center (United States) and The University of Texas School of Health Information Sciences at Houston (United States)

Functional Ophthalmic Imaging I

Rafat R. Ansari, NASA Glenn Research Center (United States) and The University of Texas School of Health Information Sciences at Houston (United States)

Peter Soliz, VisionQuest Biomedical LLC (United States)

Ophthalmic Laser Tissue Interactions I

Ralf Brinkmann, Universität zu Lübeck (Germany)

William B. Telfair, IRIDEX Corporation (United States)

Ophthalmic Laser Tissue Interactions II

Ezra I. Maguen, Cedars-Sinai Medical Center (United States)

Georg Schuele, OptiMedica Corporation (United States)

Ophthalmic Image Correction, Analysis, and Visualization

Arthur Ho, Institute for Eye Research Ltd. (Australia)

Wolfgang Drexler, Cardiff University (United Kingdom)

Optics of the Eye and Vision Correction

Per G. Söderberg, Uppsala Universitet (Sweden)

Donald T. Miller, Indiana University (United States)

Ophthalmic Devices and Instruments

Jean-Marie A. Parel, University of Miami Medical School (United States)

Jerry Sebag, University of Southern California (United States)

Rafat R. Ansari, NASA Glenn Research Center (United States) and The
University of Texas School of Health Information Sciences at Houston
(United States)

Functional Ophthalmic Imaging II

Roberto Pini, Istituto di Fisica Applicata Nello Carrara (Italy)

William B. Telfair, IRIDEX Corporation (United States)

Ninth Pascal Rol Award for Excellence in Ophthalmic Technologies
Supported by
Topcon Advanced Biomedical Imaging Laboratory
through the Pascal Rol Foundation

Presented on January 25, 2009

At the Ophthalmic Technologies XIX Conference to

Kazuhiro Kurokawa et al

for their excellent paper on

"1 μ m wavelength adaptive optics scanning laser ophthalmoscope"

Dr. Arthur Ho presents the 2009 Pascal Rol Award to Dr. Kurokawa.

Previous Pascal Rol Award Recipients

2008	Boris Povazay	<i>Minimum distance mapping using volumetric OCT: A novel indicator for early glaucoma diagnosis</i>
2007	Yoshiaki Yasuno	<i>Clinical examinations of anterior eye segments by three-dimensional swept-source optical coherence tomography</i>
2006	Enrique Fernandez	<i>Adaptive optics using a liquid crystal spatial light modulator for ultrahigh-resolution optical coherence tomography</i>
2005	Karsten König	<i>Cornea surgery with nanojoule femtosecond laser pulses</i>
2004	Daniel Palanker	<i>Attracting retinal cells to electrodes for high-resolution stimulation</i>
2003	Igor Ermakov	<i>Non-invasive optical techniques for the measurement of macular pigments</i>
2002	Georg Schuele	<i>Non-invasive temperature measurements during laser irradiation of the retina with optoacoustic techniques</i>
2001	Matthew Smith	<i>Minimizing the influence of fundus pigmentation on retinal vessel oximetry measurements</i>

The 2009 Pascal Rol Lecture on Ophthalmic Technologies
Saturday January 24, 2009

Professor Manfred Tetz, MD
Berlin Eye Research Institute
Berlin, Germany

Technology needs for tomorrow's treatment and diagnosis of glaucoma

"The Pascal Rol Lecture on Ophthalmic Technologies" is presented by a leading clinical ophthalmologist with a strong interest and pioneering research contributions to the field of ophthalmic technologies. This invited lecture is intended to trigger further development of ophthalmic technologies by stimulating discussions between basic scientists, engineers, and clinicians.

*The 2009 lecture was supported by the Swedish Ophthalmological Society, Resident optics course
(www.pascalrolfoundation.org)*