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Fabrice Manns
Per G. Söderberg
Arthur Ho
Editors

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Contents

ix	<i>Conference Committee</i>
xi	<i>Introduction</i>
xiii	<i>Eleventh Pascal Rol Award for Excellence in Ophthalmic Technologies</i>
xv	<i>2011 Pascal Rol Lecture on Ophthalmic Technologies Summary</i>

KEYNOTE PRESENTATION

7885 02	Technology needs for corneal transplant surgery [7885-12] P. K. Vaddavalli, S. H. Yoo, Bascom Palmer Eye Institute (United States)
---------	--

SESSION 1 OCULAR IMAGING AND BIOMETRY

7885 03	Analysis of water film thickness on contact lens by reflectometry technique [7885-01] M. R. Wang, H. Lu, Univ. of Miami (United States); J. Wang, M. Shen, Bascom Palmer Eye Institute (United States)
7885 04	Noncontact detection of dry eye using a custom designed IR thermal image system [7885-02] T. Y. Su, National Yang-Ming Univ. (Taiwan); K. H. Chen, Taipei Veterans General Hospital (Taiwan); P. H. Liu, M. H. Wu, D. O. Chang, United Integrated Services Co., Ltd. (Taiwan); H. Chiang, National Yang-Ming Univ. (Taiwan)
7885 08	In utero mouse embryonic imaging with OCT for ophthalmologic research [7885-06] S. H. Syed, Univ. of Houston (United States); I. V. Larina, M. E. Dickinson, Baylor College of Medicine (United States); K. V. Larin, Univ. of Houston (United States), Baylor College of Medicine (United States), and Saratov State Univ. (Russian Federation)

SESSION 2 ADAPTIVE OPTICS I

7885 09	Imaging microscopic structures in pathological retinas using a flood-illumination adaptive optics retinal camera [7885-07] C. Viard, Imagine Eyes (France); K. Nakashima, CHNO Quinze-Vingts (France); B. Lamory, Imagine Eyes (France); M. Pâques, CHNO Quinze-Vingts (France); X. Levecq, N. Château, Imagine Eyes (France)
7885 0A	Advanced capabilities of the multimodal adaptive optics imager [7885-08] D. X. Hammer, R. D. Ferguson, M. Mujat, D. P. Biss, N. V. Iftimia, A. H. Patel, E. Plumb, Physical Sciences Inc. (United States); M. Campbell, Univ. of Waterloo (Canada); J. L. Norris, A. Dubra, Univ. of Rochester (United States); T. Y. P. Chui, J. D. Akula, A. B. Fulton, Children's Hospital Boston (United States) and Harvard Medical School (United States)

- 7885 0B **AO-OCT with reference arm phase shifting for complex conjugate artifact-free imaging of in vivo retinal structures** [7885-09]
R. J. Zawadzki, D. Y. Kim, Univ. of California, Davis (United States); S. M. Jones, Lawrence Livermore National Lab. (United States); S. Pilli, Univ. of California, Davis (United States); S. S. Olivier, Lawrence Livermore National Lab. (United States); J. S. Werner, Univ. of California, Davis (United States)
- 7885 0C **3D imaging of cone photoreceptors over extended time periods using optical coherence tomography with adaptive optics** [7885-10]
O. P. Kocaoglu, S. Lee, R. S. Jonnal, Q. Wang, A. E. Herde, J. Besecker, W. Gao, D. T. Miller, Indiana Univ. (United States)
- 7885 0D **Correction of eye-motion artifacts in AO-OCT data sets** [7885-11]
A. G. Capps, R. J. Zawadzki, Univ. of California, Davis (United States); Q. Yang, D. W. Arathorn, C. R. Vogel, Montana State Univ. (United States); B. Hamann, J. S. Werner, Univ. of California, Davis (United States)

SESSION 3 RETINAL VASCULATURE AND FLOW

- 7885 0E **Effect of timolol on sub-foveal choroidal blood flow using laser Doppler flowmetry** [7885-13]
N. Palanisamy, L. Rovati, Univ. degli Studi di Modena e Reggio Emilia (Italy); M. Cellini, C. Gizzi, E. Strobbe, E. Campos, Univ. degli Studi di Bologna (Italy); C. E. Riva, Univ. of Lausanne (Switzerland)
- 7885 0G **Stable absolute flow estimation with Doppler OCT based on virtual circumpapillary scans** [7885-15]
A. S. G. Singh, C. Kolbitsch, T. Schmoll, R. A. Leitgeb, Medical Univ. of Vienna (Austria)
- 7885 0H **Retinal blood flow measurement with ultrahigh-speed swept-source / Fourier domain optical coherence tomography** [7885-16]
B. Baumann, Massachusetts Institute of Technology (United States) and Tufts Univ. (United States); B. Potsaid, Massachusetts Institute of Technology (United States) and Thorlabs, Inc. (United States); J. J. Liu, Massachusetts Institute of Technology (United States); M. F. Kraus, Massachusetts Institute of Technology (United States) and Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany); D. Huang, Doheny Eye Institute (United States); J. Hornegger, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany); J. S. Duker, Tufts Univ. (United States); J. G. Fujimoto, Massachusetts Institute of Technology (United States)
- 7885 0I **Extended volume retinal vascular imaging with phase variance contrast optical coherence tomography** [7885-17]
J. Fingler, California Institute of Technology (United States); D. M. Schwartz, Univ. of California, San Francisco (United States); S. E. Fraser, California Institute of Technology (United States)

SESSION 4 VISION CORRECTION AND RESTORATION I: SURGICAL, LIGHT, LASER

- 7885 0L **VR-simulation cataract surgery in non-experienced trainees: evolution of surgical skill** [7885-20]
P. Söderberg, Uppsala Univ. (Sweden) and Univ. of Miami (United States); M. Erngrund, St. Eriks Eye Hospital (Sweden); E. Skarman, L. Nordh, Melerit AB (Sweden); C.-G. Laurell, St. Eriks Eye Hospital (Sweden)

- 7885 OM **Optimization model for UV-Riboflavin corneal cross-linking** [7885-21]
S. Schumacher, J. Wernli, S. Scherrer, M. Bueehler, T. Seiler, M. Mrochen, IROC AG (Switzerland)
- 7885 ON **Improved method of laser thermal keratoplasty to overcome presbyopia** [7885-22]
K. J. Rodgers, Vision Rejuvenation Ctr. (Bahamas); H. G. Glen, Advanced Eye Ctr., Inc. (United States); J. J. Salz, E. Maguen, American Eye Institute (United States); M. J. Berry, NTK Enterprises, Inc. (United States)

SESSION 5 OPTHALMIC LASER-TISSUE INTERACTIONS

- 7885 OP **Sutureless closure of scleral wounds in animal models by the use of laser-welded biocompatible patches** [7885-24]
F. Rossi, P. Matteini, CNR, Istituto di Fisica Applicata Nello Carrara (Italy); L. Menabuoni, I. Lenzetti, U. O. Oculistica (Italy); R. Pini, CNR, Istituto di Fisica Applicata Nello Carrara (Italy)
- 7885 OQ **Lowering threshold energy for femtosecond laser pulse photodisruption through turbid media using adaptive optics** [7885-25]
A. Hansen, T. Ripken, Laser Zentrum Hannover e.V. (Germany); R. R. Krueger, Cole Eye Institute (United States); H. Lubatschowski, Laser Zentrum Hannover e.V. (Germany)
- 7885 OR **Real-time temperature determination during retinal photocoagulation on patients** [7885-26]
R. Brinkmann, Medizinisches Laserzentrum Lübeck GmbH (Germany) and Univ. zu Lübeck (Germany); S. Koinzer, Eye Clinic Univ. of Schleswig-Holstein (Germany); K. Schlott, Medizinisches Laserzentrum Lübeck GmbH (Germany) and Univ. zu Lübeck (Germany); L. Ptaszynski, M. Bever, A. Baade, Medizinisches Laserzentrum Lübeck GmbH (Germany); Y. Miura, Univ. zu Lübeck (Germany); R. Birngruber, Medizinisches Laserzentrum Lübeck GmbH (Germany) and Univ. zu Lübeck (Germany); J. Roider, Eye Clinic Univ. of Schleswig-Holstein (Germany)
- 7885 OS **Dynamics of laser induced micro bubble clusters on tissue phantoms** [7885-27]
A. Fritz, A. Zegelin, L. Ptaszynski, Medizinisches Laserzentrum Lübeck GmbH (Germany); R. Birngruber, Medizinisches Laserzentrum Lübeck GmbH (Germany) and Univ. zu Lübeck (Germany); R. Brinkmann, Univ. zu Lübeck (Germany)
- 7885 OT **Optoacoustic temperature determination and automatic coagulation control in rabbits** [7885-28]
K. Schlott, Medical Laser Ctr. Luebeck (Germany); S. Koinzer, Univ. of Schleswig-Holstein (Germany); L. Ptaszynski, Medical Laser Ctr. Luebeck (Germany); S. Luft, Univ. of Luebeck (Germany); A. Baade, M. Bever, Medical Laser Ctr. Luebeck (Germany); J. Roider, Univ. of Schleswig-Holstein (Germany); R. Birngruber, R. Brinkmann, Medical Laser Ctr. Luebeck (Germany) and Univ. of Luebeck (Germany)

SESSION 6 OPTHALMIC OCT I: TECHNOLOGY

- 7885 OV **Full-range imaging of the whole anterior segment of eye by high-speed optical frequency domain imaging using a reflective Fabry-Perot tunable laser** [7885-30]
H. Furukawa, H. Hiro-Oka, R. Yoshimura, D.-H. Choi, M. Nakanishi, A. Igarashi, Kitasato Univ. (Japan); K. Ohbayashi, Kitasato Univ. School of Medicine (Japan); K. Shimizu, Kitasato Univ. (Japan)

- 7885 0X **The effect of collimator lenses on the performance of an optical coherence tomography system** [7885-32]
P. Fält, Univ. of Eastern Finland (Finland) and Utsunomiya Univ. (Japan); R. J. Zawadzki, Univ. of California, Davis (United States); B. Cense, Utsunomiya Univ. (Japan)

SESSION 7 VISION CORRECTION AND RESTORATION II: OPTICS AND IMPLANTS

- 7885 10 **Telescopic vision contact lens** [7885-35]
E. J. Tremblay, Univ. of California, San Diego (United States); R. D. Beer, Pacific Science & Engineering Group, Inc. (United States); A. Arianpour, J. E. Ford, Univ. of California, San Diego (United States)
- 7885 12 **An ocular prosthesis which reacts to light** [7885-36]
J. Lapointe, A. Harhira, Ecole Polytechnique de Montréal (Canada); J.-F. Durette, Oculo-Plastik, Inc. (Canada); S. Beaulieu, Univ. de Sherbrooke (Canada); A. Shaat, Ain Shams Univ. (Egypt); P. R. Boulos, Hôpital Maisonneuve-Rosemont (Canada) and Univ. de Montréal (Canada); R. Kashyap, Ecole Polytechnique de Montréal (Canada)
- 7885 13 **Photovoltaic retinal prosthesis (Best Paper Award)** [7885-37]
J. Loudin, Stanford Univ. (United States); K. Mathieson, Univ. of Glasgow (United Kingdom); T. Kamins, L. Wang, L. Galambos, P. Huie, Stanford Univ. (United States); A. Sher, Univ. of California, Santa Cruz (United States); J. Harris, D. Palanker, Stanford Univ. (United States)

SESSION 8 ADAPTIVE OPTICS II

- 7885 15 **A compact adaptive optics scanning laser ophthalmoscope with high-efficiency wavefront correction using dual liquid crystal on silicon - spatial light modulator** [7885-39]
F. Hirose, K. Nozato, K. Saito, Y. Numajiri, Canon Inc. (Japan)
- 7885 16 **Towards real-time wavefront sensorless adaptive optics using a graphical processing unit (GPU) in a line scanning system** [7885-40]
D. P. Biss, A. H. Patel, R. D. Ferguson, M. Mujat, N. Iftimia, D. X. Hammer, Physical Sciences Inc. (United States)
- 7885 17 **Retinal imaging system with adaptive optics enhanced with pupil tracking** [7885-41]
B. Sahin, National Univ. of Ireland, Galway (Ireland); B. Lamory, X. Levecq, L. Vabre, Imagine Eyes (France); C. Dainty, National Univ. of Ireland, Galway (Ireland)

SESSION 9 OPHTHALMIC OCT II: MOTION AND IMAGE PROCESSING

- 7885 1B **Segmentation of retinal layers in volumetric OCT scans of normal and glaucomatous subjects** [7885-45]
K. A. Vermeer, The Rotterdam Eyehospital (Netherlands) and Rotterdam Ophthalmic Institute (Netherlands); J. van der Schoot, The Rotterdam Eyehospital (Netherlands), Rotterdam Ophthalmic Institute (Netherlands), and VU Univ. Amsterdam (Netherlands); H. G. Lemij, The Rotterdam Eyehospital (Netherlands) and VU Univ. Amsterdam (Netherlands); J. F. de Boer, The Rotterdam Eyehospital (Netherlands), Rotterdam Ophthalmic Institute (Netherlands), and VU Univ. Amsterdam (Netherlands)

POSTER SESSION

- 7885 1L **Critical evaluation of the ultrasonic pachymetry for "in-vitro" corneas** [7885-55]
V. A. C. Lincoln, L. Ventura, S. J. Faria e Sousa, Univ. de São Paulo (Brazil)
- 7885 1M **Portable prototype for ultraviolet analysis of donated corneas** [7885-56]
L. Ventura, V. A. C. Lincoln, H. Schiabel, S. J. Faria e Sousa, Univ. de São Paulo (Brazil)
- 7885 1O **Laser welding of chitosan-GNRs films for the closure of a capsulorhexis** [7885-58]
F. Rossi, P. Matteini, F. Ratto, CNR, Istituto di Fisica Applicata Nello Carrara (Italy);
L. Menabuoni, I. Lenzetti, U. O. Oculistica (Italy); R. Pini, CNR, Istituto di Fisica Applicata Nello Carrara (Italy)
- 7885 1S **Endoscopic device for functional imaging of the retina** [7885-64]
S. Barriga, VisionQuest Biomedical, LLC (United States) and Univ. of New Mexico (United States); S. Lohani, B. Martell, SUNY Upstate Medical Univ. (United States); P. Soliz, VisionQuest Biomedical, LLC (United States) and Univ. of Iowa (United States); D. Ts'o, SUNY Upstate Medical Univ. (United States)
- 7885 1T **Impact of uneven pupil irradiance on Hartmann Shack measurements** [7885-65]
B. Emica, S. Meimon, J.-M. Conan, T. Fusco, ONERA (France); M. Glanc, Lab. d' Etudes Spatiales et d'Instrumentation en Astrophysique (France)
- 7885 1V **3D assessment of mechanical wave propagation in the crystalline eye lens using PhS-SSOCT** [7885-67]
R. K. Manapuram, N. Sudheendran, V. R. Manne, S. A. Baranov, Univ. of Houston (United States); S. Aglyamov, S. Emelianov, The Univ. of Texas at Austin (United States); K. V. Larin, Univ. of Houston (United States) and Saratov State Univ. (Russian Federation)
- 7885 1W **Adaptive prediction of human eye pupil position and effects on wavefront errors** [7885-68]
A. Garcia-Rissmann, C. Kulcsár, H.-F. Raynaud, Y. El Mrabet, Univ. Paris 13 (France); B. Sahin, B. Lamory, Imagine Eyes (France)
- 7885 1X **Measuring the retina optical properties using a structured illumination imaging system** [7885-69]
A. Basiri, T. A. Nguyen, M. Ibrahim, The Catholic Univ. of America (United States);
Q. D. Nguyen, The Johns Hopkins Univ. (United States); J. C. Ramella-Roman, The Catholic Univ. of America (United States) and The Johns Hopkins Hospital (United States)
- 7885 1Y **Correlation of spatial intensity distribution of light reaching the retina and restoration of vision by optogenetic stimulation** [7885-70]
S. Shivalingaiah, L. Gu, S. K. Mohanty, The Univ. of Texas at Arlington (United States)
- 7885 1Z **Smart polymers containing substituted coumarin side groups enable photo-induced tuning of focal length of intraocular lenses** [7885-71]
M. Schraub, Univ. of Marburg (Germany); N. Hampp, Univ. of Marburg (Germany) and Material Science Ctr. Marburg (Germany)
- 7885 20 **Wavefront conjugated ray tracing aberrometry** [7885-72]
V. Molebny, Institute of Biomedical Engineering (Ukraine)

Author Index

Conference Committee

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Keynote Presentation

Per G. Söderberg, Uppsala University (Sweden)

- 1 Ocular Imaging and Biometry
Ezra I. Maguen, American Eye Institute (United States)
Georg Schuele, OptiMedica Corporation (United States)
- 2 Adaptive Optics I
Katsuhiko Kobayashi, Topcon Corporation (Japan)
Don Miller, Indiana University (United States)
- 3 Retinal Vasculature and Flow
Rafat R. Ansari, NASA Glenn Research Center (United States)
Karen M. Joos, Vanderbilt University (United States)
- 4 Vision Correction and Restoration I: Surgical, Light, Laser
Ralf Brinkmann, Universität zu Lübeck (Germany)
Roberto Pini, Istituto di Fisica Applicata Nello Carrara (Italy)
- 5 Ophthalmic Laser-Tissue Interactions
Ezra I. Maguen, American Eye Institute (United States)
William B. Telfair, IRIDEX Corporation (United States)
- 6 Ophthalmic OCT I: Technology
Wolfgang Drexler, Medizinische Universität Wien (Austria)
Kirill V. Larin, University of Houston (United States)
- 7 Vision Correction and Restoration II: Optics and Implants
Daniel V. Palanker, Stanford University School of Medicine (United States)
Jean-Marie A. Parel, Bascom Palmer Eye Institute (United States)
- 8 Adaptive Optics II
Daniel X. Hammer, Physical Sciences Inc. (United States)
Peter Soliz, VisionQuest Biomedical, LLC (United States)
- 9 Ophthalmic OCT II: Motion and Image Processing
Don Miller, Indiana University (United States)
Wolfgang Drexler, Medizinische Universität Wien (Austria)
- 10 Ophthalmic Imaging: Polarization
Luigi L. Rovati, Università degli Studi di Modena e Reggio Emilia (Italy)
Per G. Söderberg, Uppsala University (Sweden)

Introduction

The papers contained in this volume were presented at the twenty-first conference on Ophthalmic Technologies, held from January 22 to 24, 2011, at the Moscone Center in San Francisco, California as a part of the SPIE Photonics West BIOS Meeting.

A total of 53 papers and 15 posters were presented by scientists, clinicians, and engineers from academia, private clinics, and industry representing 24 different countries in 5 different continents. Topics included advances in adaptive optics for retinal imaging, new developments in ophthalmic optical coherence tomography, and novel uses of lasers for diagnostic and surgery. The lively poster session held on Monday evening was one of the highlights of the meeting.

The eleventh Pascal Rol Award was presented to Dr. James Loudin and his colleagues from Stanford University, CA for their excellent paper on "*Photovoltaic retinal prosthesis*" (7885-37). Established in memory of Dr. Pascal O. Rol, former chair and co-founder of the Ophthalmic Technologies conference, the award is in recognition of the best manuscript and presentation. We are extremely grateful to Drs. Wolfgang Drexler, Arthur Ho, Karen Joos, Ezra Maguen, Daniel Palanker, and Jean-Marie Parel who reviewed the manuscripts and had the difficult task of selecting the winner among six excellent finalists. The other finalists were Drs. Baumann (7885-16), Brinkmann (7885-26), Furukawa (7885-30), Kocaoglu (7885-10), and Leitgeb (7885-18).

The conference hosted its sixth presentation on the topic of unmet technological needs in a clinical area. Prof. Sonia Yoo, from the Bascom Palmer Eye Institute in Miami, USA, gave an outstanding overview of the challenges and technological needs in the field of corneal transplant surgery.

We are very grateful to Topcon Advanced Biomedical Imaging Laboratory and The Swedish Ophthalmological Society, Resident Optics Course for sponsoring the 2011 award and keynote lecture through the Pascal Rol Foundation.

We thank the Program Committee members, session chairs, speakers and participants, as well as the SPIE staff, especially Annie Gerstl and Marilyn Gorsuch, for their support and dedication in making this conference a success.

We extend an invitation for the Ophthalmic Technologies XXII conference, which is scheduled for January 21, 22, and 23, 2012 in San Francisco, CA.

Fabrice Manns
Per G. Söderberg
Arthur Ho

Eleventh Pascal Rol Award for Excellence in Ophthalmic Technologies

Supported through the Pascal Rol Foundation

Presented on January 23, 2011 to

James Loudin et al

for their excellent paper on

"Photovoltaic Retinal Prosthesis"

Fabrice Manns presents the 2011 Pascal Rol Award to James Loudin

2010	Daniel Hammer	Multimodal adaptive optics for depth enhanced high-resolution ophthalmic imaging
2009	Kazuhiro Kurokawa	1 μ m wavelength adaptive optics scanning laser ophthalmoscope
2008	Boris Povazay	Minimum distance mapping using volumetric OCT: A novel indicator for early glaucoma diagnosis
2007	Yoshiaki Yasuno	Clinical examinations of anterior eye segments by three-dimensional swept-source optical coherence tomography
2006	Enrique Fernandez	Adaptive optics using a liquid crystal spatial light modulator for ultrahigh-resolution optical coherence tomography
2005	Karsten König	Cornea surgery with nanojoule femtosecond laser pulses
2004	Daniel Palanker	Attracting retinal cells to electrodes for high-resolution stimulation
2003	Igor Ermakov	Non-invasive optical techniques for the measurement of macular pigments
2002	Georg Schuele	Non-invasive temperature measurements during laser irradiation of the retina with optoacoustic techniques
2001	Matthew Smith	Minimizing the influence of fundus pigmentation on retinal vessel oximetry measurements

The 2011 Pascal Rol Lecture on Ophthalmic Technologies

Saturday January 22, 2011

Professor Sonia Yoo, MD

Bascom Palmer Eye Institute, University of Miami, Miami, FL

Technology needs for corneal transplant surgery

SUMMARY

Corneal transplant surgery has undergone numerous modifications over the years with improvements in technique, instrumentation and eye banking. The main goals of corneal transplantation are achieving excellent optical clarity with long-term graft survival. Penetrating, anterior and posterior lamellar surgery along with femtosecond laser technology have partially met these goals, but outcomes are often unpredictable and surgeon dependent. Technology to predictably separate stroma from Descemet's membrane, techniques to minimize endothelial cell loss, improvements in imaging technology and emerging techniques like laser welding that might replace suturing, eventually making corneal transplantation a refractively predictable procedure are on the wish list of the cornea surgeon..

"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 2011 lecture was supported by Topcon Advanced Biomedical Imaging Laboratory
and the Swedish Ophthalmological Society, Resident Optics Course (www.pascalrolfoundation.org)*