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Fabrice Manns
Per G. Söderberg
Arthur Ho
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Ralf Brinkmann, Universität zu Lübeck (Germany)
Roberto Pini, Istituto di Fisica Applicata Nello Carrara, CNR (Italy)

Ophthalmic Adaptive Optics I: Retinal Imaging
Daniel V. Palanker, Stanford University School of Medicine (United States)
Luigi L. Rovati, Università degli Studi di Modena e Reggio Emilia (Italy)

Ophthalmic Adaptive Optics II: Vision Correction
Peter Soliz, VisionQuest Biomedical, LLC (United States)
Michael Belkin, Tel Aviv University (Israel)

Ophthalmic Imaging: Animal Models
Karen M. Joos, Vanderbilt University (United States)
Daniel X. Hammer, Physical Sciences Inc. (United States)

Ophthalmic Imaging: Cellular, Resolution, Speed, Penetration I
Kirill V. Larin, University of Houston (United States)
Roberto Pini, Istituto di Fisica Applicata Nello Carrara, CNR (Italy)

Ophthalmic Imaging: Cellular, Resolution, Speed, Penetration II
Donald T. Miller, Indiana University (United States)
Wolfgang Drexler, Cardiff University (United Kingdom)

Introduction

The papers in this volume were presented at the 20th conference on Ophthalmic Technologies, held on 23–25 January 2010, at the Moscone Center in San Francisco, California as a part of the SPIE Photonics West BiOS Meeting. In 2010, we celebrated not only the 50th anniversary of the laser, but also the 20th installment of the Ophthalmic Technologies conference. Ophthalmic Technologies I, chaired by Prof. Jean-Marie Parel, was held in Los Angeles in 1991. After 4 years in Los Angeles followed by 15 years in San Jose, our meeting was held for the first time in San Francisco.

In total, 56 talks and 32 posters (a record number) were presented by scientists, clinicians, and engineers from academia, private clinics, and industry representing 19 different countries spread over 4 continents. The topics covered included advances in adaptive optics for retinal imaging and vision assessment, new applications of femtosecond lasers, and the use of advanced microscopy techniques for corneal and retinal imaging. The crowded poster session held on Monday evening was one of the highlights of the meeting, with lively discussions about the 31 posters.

The tenth Pascal Rol Award was presented to Dr. Daniel X. Hammer and his colleagues from Physical Sciences Inc., Andover, MA for their excellent paper on "*Multimodal adaptive optics for depth-enhanced high-resolution ophthalmic imaging* " (#7550-35). 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, Ezra Maguen, Daniel Palanker, and Jean-Marie Parel who reviewed the abstracts and manuscripts submitted to the conference, and had the difficult task of selecting the winner among five excellent finalists. The other finalists were Drs. Makita (#7550-14), Ferguson (#7550-34), Alt (#7550-45), and Pircher (#7550-54).

The conference hosted its fifth presentation on the topic of unmet technological needs in a clinical area. Prof. Okihiro Nishi, from the Nishi Eye Hospital in Osaka, Japan, gave an overview and personal perspective on "*Technology needs for the development of the accommodative intraocular lens*" (#7550-100).

We are very grateful to Topcon Advanced Biomedical Imaging Laboratory and The Swedish Ophthalmological Society, Resident Optics Course for sponsoring the 2010 award and keynote lecture through the Pascal Rol Foundation.

The Chairs would also like to thank all the Program Committee members, session chairs, speakers, and participants, as well as the SPIE staff, for their dedication in making this conference a success.

We extend an invitation for the Ophthalmic Technologies XXI conference, which is scheduled for 22–25 January 2011 in San Francisco, California.

Fabrice Manns
Per G. Söderberg
Arthur Ho

Tenth Pascal RoI Award for Excellence in Ophthalmic Technologies

Supported through the Pascal RoI Foundation by

Topcon Advanced Biomedical Imaging Laboratory
The Swedish Ophthalmological Society, Resident Optics Course

Presented on 24 January 2010 to

Daniel X. Hammer et *al.*

for their excellent paper on

"Multimodal adaptive optics for depth-enhanced high-resolution ophthalmic imaging"

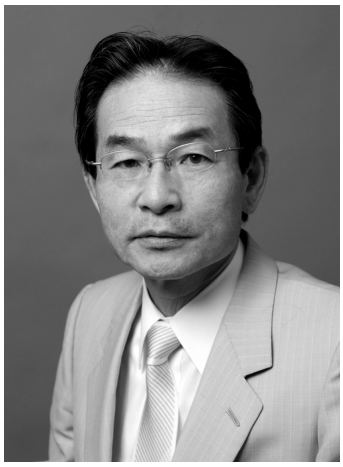
Award Committee members and Conference Chairs present the 2010 Pascal RoI Award to Dr. Hammer.
From left to right: Wolfgang Drexler, Jean-Marie Parel, Daniel X. Hammer, Per G. Söderberg, Fabrice Manns, Daniel Palanker, Arthur Ho

Past Recipients of Pascal Rol Award for Excellence in Ophthalmic Technologies:

2009	**Kazuhiro Kurokawa**	*1µm wavelength adaptive optics scanning laser opthalmoscope*
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 2010 Pascal Rol Lecture on Ophthalmic Technologies

Saturday January 23, 2010



Professor Okihiro Nishi, MD
Nishi Eye Hospital, Osaka, Japan

Technology needs for the devleopment of the accommodative intraocular lens

SUMMARY

Refilling the lens capsule while preserving capsular integrity offers the potential to restore ocular accommodation. There are two persisting problems in capsular bag refilling for possible clinical application: Leakage of the injectable material through the capsular opening and capsular opacification. Numerous attempts for solving these cardinal problems have not been proven to be clinically applicable. Recently, we developed a novel capsular bag refilling procedure using a novel accommodative intraocular lens that serves as an optic as well as a plug for sealing the capsular opening. The procedure and the results of monkey experiments were presented.

"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 2010 lecture was supported by Topcon Advanced Biomedical Imaging Laboratory and the Swedish Ophthalmological Society, Resident Optics Course (www.pascalrolfoundation.org)