

PROGRESS IN BIOMEDICAL OPTICS AND IMAGING  
Vol. 12 , No. 46

# ***Medical Laser Applications and Laser-Tissue Interactions V***

**Ronald Sroka**  
**Lothar D. Lilge**  
*Editors*

**24–26 May 2011**  
**Munich, Germany**

*Sponsored and Published by*  
SPIE  
The Optical Society of America (United States)

*Cooperating Organisations*  
Deutsche Gesellschaft für Lasermedizin (Germany)  
Visions for Better Healthcare–Biophotonics Research Program (Germany)

*With Support From*  
Air Force Office of Scientific Research (United States)  
Photonics 4 Life–European Network of Excellence for Biophotonics (Germany)

*Student Award Sponsors*  
Toptica Photonics AG (Germany)  
ThorLabs (United Kingdom)

**Volume 8092**

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 *Medical Laser Applications and Laser-Tissue Interactions V*, edited by Ronald Sroka, Lothar D. Lilge, Proceedings of SPIE-OSA Biomedical Optics Vol. 8092 (SPIE, Bellingham, WA, 2011) Article CID Number.

ISSN 1605-7422  
ISBN 9780819486899

Copublished 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](http://SPIE.org)  
and  
Optical Society of America  
2010 Massachusetts Ave., N.W., Washington, D.C., 20036 USA  
Telephone 1 202/223-8130 (Eastern Time) · Fax 1 202/223-1096  
<http://www.osa.org>

Copyright © 2011, Society of Photo-Optical Instrumentation Engineers and Optical Society of America

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](http://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 1605-7422/11/\$18.00.

Printed in the United States of America.

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



[SPIEDigitalLibrary.org](http://SPIEDigitalLibrary.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 as 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
xi	<i>Introduction</i>

---

## SESSION 1 NANOPARTICLE AND NS LASER APPLICATIONS

---

- 8092 02 **Stabilization of the longitudinal plasmon resonance absorption of nanorods by porous silica shell layer** [8092-01]  
F. Rudnitzki, Univ. of Lübeck (Germany); F. Ratto, Institute for Applied Physics, CNR (Italy); G. Hüttmann, Univ. of Lübeck (Germany)
- 8092 04 **Effect of gold nanoparticles in the local heating of skin tumors induced by phototherapy** [8092-03]  
I. Salas-García, F. Fanjul-Vélez, N. Ortega-Quijano, A. Lavín-Castanedo, P. Mingo-Ortega, Univ. of Cantabria (Spain); M. López-Escobar, Marqués de Valdecilla Univ. Hospital (Spain); J. L. Arce-Diego, Univ. of Cantabria (Spain)
- 8092 06 **Selective excavation of decalcified dentin using a mid-infrared tunable nanosecond pulsed laser: wavelength dependency in the 6 μm wavelength range** [8092-05]  
K. Ishii, M. Saiki, Osaka Univ. (Japan); K. Yoshikawa, K. Yasuo, K. Yamamoto, Osaka Dental Univ. (Japan); K. Awazu, Osaka Univ. (Japan), Univ. of Fukui (Japan), and Kyoto Univ. (Japan)
- 8092 07 **Experimental study of mechanical response of artificial tissue models irradiated with Nd:YAG nanosecond laser pulses** [8092-06]  
F. G. Pérez-Gutiérrez, Univ. Autónoma de San Luis Potosí (Mexico); S. Camacho-López, Ctr. de Investigación Científica y de Educación Superior de Ensenada (Mexico); G. Aguilar, Univ. of California, Riverside (United States)

---

## SESSION 2 POST-DEADLINE SESSION AND STUDENT AWARDS

---

- 8092 09 **Increased tissue contrast by high resolution simultaneous dual-band optical coherence tomography in three dimensions** [8092-63]  
S. Kray, M. Lenz, F. Spöler, H. Kurz, RWTH Aachen Univ. (Germany)
- 8092 0A **Detection of bacterial infection with a fiber optic microendoscope** [8092-64]  
N. Muffi, Texas A&M Univ. (United States); Y. Kong, J. D. Cirillo, Texas A&M Health Science Ctr. (United States); K. C. Maitland, Texas A&M Univ. (United States)
- 8092 0C **Improving time domain fluorescence lifetime imaging with an adaptive Monte Carlo data inflation (AMDI) algorithm** [8092-66]  
A. Leray, D. Trinel, C. Spriet, Interdisciplinary Research Institute, CNRS, Univ. of Lille 1 (France); Y. Usson, Lab. TIMC-IMAG, CNRS, Univ. Joseph Fourier (France); L. Héliot, Interdisciplinary Research Institute, CNRS, Univ. of Lille (France)

- 8092 0D **Single beam quantitative phase contrast 3D microscopy of cells** [8092-67]  
V. K. Chhaniwal, Univ. Stuttgart (Germany) and Parul Institute of Engineering & Technology (India); A. Anand, Maharaja Sayajirao Univ. of Baroda (India); A. Faridian, G. Pedrini, W. Osten, Univ. Stuttgart (Germany); B. Javidi, Univ. of Connecticut (United States)

---

**SESSION 3 PHOTODYNAMIC INVESTIGATION**

---

- 8092 0H **A model-based comparison of implicit and direct dosimetry for ALA-PDT of skin** [8092-09]  
B. Liu, T. J. Farrell, M. S. Patterson, McMaster Univ. (Canada) and Juravinski Cancer Ctr. (Canada)
- 8092 0I **PD and PDT for hepatoblastoma? Preclinical considerations** [8092-10]  
H. Stepp, F. Bergmann, A. Johansson, M. Heide, Klinikum der Univ. München (Germany); R. Metzger, U. Rolle, H. Till, Univ. of Leipzig (Germany)
- 8092 0K **Construction of an array of LEDs coupled to a concentrator for phototherapy** [8092-12]  
J. Almeida, D. Liang, Univ. Nova de Lisboa (Portugal)

---

**SESSION 4 LASER-ASSISTED DETECTION TECHNIQUES**

---

- 8092 0L **Comparison of 2- and 4-wavelength methods for the optical detection of sentinel lymph node (Invited Paper)** [8092-13]  
F. Tellier, Lab. d'Imagerie et de Neurosciences Cognitives, CNRS, Univ. de Strasbourg (France) and EURORAD (France); H. Simon, EURORAD (France); F. X. Blé, R. Ravelo, R. Chabrier, J. Steibel, Lab. d'Imagerie et de Neurosciences Cognitives, CNRS, Univ. de Strasbourg (France); J. F. Rodier, Ctr. Régional de Lutte Contre le Cancer Paul-Strauss (France); P. Poulet, Lab. d'Imagerie et de Neurosciences Cognitives, CNRS, Univ. de Strasbourg (France)
- 8092 0N **Skin autofluorescence photo-bleaching and photo-memory** [8092-15]  
J. Lesins, A. Lihachev, Univ. of Latvia (Latvia); R. Rudys, S. Bagdonas, Vilnius Univ. (Lithuania); J. Spigulis, Univ. of Latvia (Latvia)
- 8092 0O **Resolution limits between objects embedded in breast-like slab using the optical frequency-domain method: a numerical approach** [8092-16]  
V. Piron, J.-P. L'Huillier, ENSAM CER d'Angers (France)
- 8092 0P **Efficiency of an accelerated hybrid method for steady-state spatially resolved reflectance simulations in multilayered tissue-like media** [8092-17]  
C. Mansouri, E. Galbrun, W. C. P. M. Blondel, CNRS-UHP-INPL, Nancy Univ. (France)
- 8092 0Q **Determination of the optical properties of porcine dura mater tissue considering the anisotropy factor** [8092-18]  
M. T. Heine, R. Michels, F. Foschum, A. Kienle, Institut für Lasertechnologien in der Medizin und Meßtechnik (Germany)

- 8092 OR **Portable semiconductor disk laser for in vivo tissue monitoring: a platform for the development of clinical applications** [8092-19]  
R. Aviles-Espinosa, ICFO, The Institute of Photonic Sciences (Spain); G. Filippidis, Foundation for Research and Technology-Hellas (Greece); C. Hamilton, M Squared Lasers Ltd. (United Kingdom) and Solus Technologies Ltd. (United Kingdom); G. Malcolm, M Squared Lasers Ltd. (United Kingdom); K. J. Weingarten, Time-Bandwidth Products (Switzerland); T. Südmeier, Y. Barbarin, U. Keller, ETH Zurich (Switzerland); D. Artigas, ICFO, The Institute of Photonic Sciences (Spain) and Univ. Politècnica de Catalunya (Spain); P. Loza-Alvarez, ICFO, The Institute of Photonic Sciences (Spain)

---

#### SESSION 5 BIOMODULATION AND BLOOD

---

- 8092 OT **Red blood cell micromanipulation with elliptical laser beam profile optical tweezers in different osmolarity conditions** [8092-21]  
E. Spyratou, M. Makropoulou, A. A. Serafetinides, National Technical Univ. of Athens (Greece)
- 8092 OU **In vitro analysis of low-level laser irradiation on human osteoblast-like cells proliferation** [8092-22]  
N. Bloise, E. Saino, F. Bragheri, P. Minzioni, I. Cristiani, Univ. of Pavia (Italy); M. Imbriani, Univ. of Pavia (Italy) and Salvatore Maugeri Foundation (Italy); L. Visai, Univ. of Pavia (Italy), Salvatore Maugeri Foundation (Italy), and International Ctr. for Studies and Research in Biomedicine (Luxembourg)
- 8092 OV **Biochemical and topological analysis of bovine sperm cells induced by low power laser irradiation** [8092-23]  
T. R. Dreyer, Univ. Federal do ABC (Brazil); A. F. P. Siqueira, Univ. de São Paulo (Brazil); T. D. Magrini, P. A. Fiorito, Univ. Federal do ABC (Brazil); M. E. O. A. Assumpção, M. Nichi, Univ. de São Paulo (Brazil); H. S. Martinho, M. P. Milazzotto, Univ. Federal do ABC (Brazil)
- 8092 OX **Monte Carlo simulation of photon way in clinical laser therapy** [8092-25]  
I. Ionita, G. Voitcu, Univ. of Bucharest (Romania)
- 8092 OY **Newly developed photon-cell interactive Monte Carlo (pciMC) simulation for non-invasive and continuous diagnosis of blood during extracorporeal circulation support** [8092-26]  
D. Sakota, S. Takatani, Tokyo Medical and Dental Univ. (Japan)

---

#### SESSION 6 CLINICAL LASER APPLICATIONS

---

- 8092 OZ **Photoacoustic blood vessel detection during surgical laser interventions** [8092-27]  
J. Horstmann, Univ. of Lübeck (Germany); A. Baade, Medical Laser Ctr. Lübeck GmbH (Germany); R. Brinkmann, Univ. of Lübeck (Germany) and Medical Laser Ctr. Lübeck GmbH (Germany)
- 8092 10 **Diode laser supported partial nephrectomy in laparoscopic surgery: preliminary results** [8092-28]  
R. Sroka, G. Hennig, K. Zillnberg, W. Y. Khoder, Univ. Hospital of Munich (Germany)

- 8092 11 **In vivo study of partial liver resection on pigs using a 1.9 µm thulium fiber laser** [8092-29]  
D. Theisen-Kunde, Univ. of Luebeck (Germany); H. Wolken, Univ. Hospital Schleswig-Holstein (Germany); V. Danicke, Univ. of Luebeck (Germany); R. Brinkmann, Medical Laser Ctr. Luebeck (Germany); H. Bruch, M. Kleemann, Univ. Hospital Schleswig-Holstein (Germany)
- 8092 12 **In vivo laser assisted end-to-end anastomosis with ICG-infused chitosan patches** [8092-30]  
F. Rossi, P. Matteini, Institute of Applied Physics Nello Carrara, CNR (Italy); G. Esposito, A. Scerrati, A. Albanese, A. Puca, G. Maira, Catholic Univ. (Italy); G. Rossi, Univ. of Camerino (Italy); R. Pini, Institute of Applied Physics Nello Carrara, CNR (Italy)
- 8092 13 **Excimer laser debridement of necrotic erosions of skin without collateral damage** [8092-31]  
J. J. Wynne, IBM T. J. Watson Research Lab. (United States); J. M. Felsenstein, Consultant (United States); R. Trzcinski, D. Zupanski-Nielsen, D. P. Connors, IBM T. J. Watson Research Lab. (United States)
- 8092 14 **Optodynamic monitoring of laser tattoo removal** [8092-32]  
M. Jezeršek, Univ. of Ljubljana (Slovenia); L. Grad, Fotona d.d. (Slovenia); T. Požar, Univ. of Ljubljana (Slovenia); B. Cencic, I. Bacak, Fotona d.d. (Slovenia); J. Možina, Univ. of Ljubljana (Slovenia)
- 8092 15 **Fat tissue histological study at NIR laser treatment of the skin in vivo** [8092-33]  
I. Y. Yanina, Saratov State Univ. (Russian Federation); V. V. Tuchin, Saratov State Univ. (Russian Federation) and Institute of Precise Mechanics and Control (Russian Federation); N. A. Navolokin, O. V. Matveeva, A. B. Bucharskaya, G. N. Maslyakova, Saratov State Medical Univ. (Russian Federation)
- 8092 16 **Dependence of ablation depth on angle of incidence for hard tissue ablation using pulsed CO<sub>2</sub> laser** [8092-34]  
Y. Zhang, Karlsruher Institut für Technologie (Germany); J. Burgner, Vanderbilt Univ. (United States); J. Raczkowsky, H. Wörn, Karlsruher Institut für Technologie (Germany)

---

## SESSION 7 LASERS IN OPHTHALMOLOGY

---

- 8092 17 **Study of light scattering and transparency in human edematous corneas and application to corneal grafts** [8092-35]  
T. Marciano, D. Peyrot, C. Crotti, F. Alahyane, L. Kowalcuk, K. Plamann, Lab. d'Optique Appliquée, CNRS, ENSTA ParisTech-Ecole Polytechnique (France)
- 8092 18 **Accuracy of real-time optoacoustic temperature determination during retinal photocoagulation** [8092-39]  
A. Baade, K. Schlott, Medizinisches Laserzentrum Lübeck GmbH (Germany); S. Luft, Institut für Biomedizinische Optik (Germany); L. Ptaszynski, M. Bever, Medizinisches Laserzentrum Lübeck GmbH (Germany); R. Birngruber, R. Brinkmann, Medizinisches Laserzentrum Lübeck GmbH (Germany) and Institut für Biomedizinische Optik (Germany)

---

**SESSION 8 FS LASER APPLICATIONS**

---

- 8092 1C **High-power diode-pumped Er:YAG lasers for soft and hard tissue applications (Invited Paper)** [8092-40]  
A. Heinrich, Pantec Biosolutions AG (Liechtenstein); C. Hagen, Pantec Engineering AG (Liechtenstein); A. Vizhanyo, P. Krammer, S. Summer, S. Gross, C. Böhler, T. Bragagna, Pantec Biosolutions AG (Liechtenstein)
- 8092 1D **Femtosecond laser: the finest tool for hard tissue ablation** [8092-41]  
I. Ionita, Univ. of Bucharest (Romania); M. Zamfirescu, National Institute for Lasers, Plasma and Radiation Physics (Romania)
- 8092 1E **Focal spot shaping for femtosecond laser pulse photodisruption through turbid media** [8092-42]  
A. Hansen, T. Ripken, A. Heisterkamp, Laser Zentrum Hannover e.V. (Germany)
- 8092 1G **New compact femtosecond laser source for penetrating keratoplasty at 1.65 µm** [8092-44]  
C. Crotti, F. Deloison, D. A. Peyrot, Lab. D'Optique Appliquée, CNRS, ENSTA-Ecole Polytechnique (France); F. Aptel, Hôpital Edouard Herriot (France); F. Alahyane, L. Kowalcuk, T. Marciano, K. Plamann, Lab. D'Optique Appliquée, CNRS, ENSTA-Ecole Polytechnique (France); M. Savoldelli, J.-M. Legeais, Hôtel Dieu de Paris (France)
- 8092 1H **Interaction dynamics of fs-laser induced cavitation bubbles and their impact on the laser-tissue-interaction of modern ophthalmic laser systems** [8092-45]  
N. Tinne, T. Ripken, Laser Zentrum Hannover e.V. (Germany); H. Lubatschowski, Rowiak GmbH (Germany); A. Heisterkamp, Laser Zentrum Hannover e.V. (Germany)

---

**POSTER SESSIONS**

---

- 8092 1J **Quantitative analysis of endovenous laser ablation based on human vein optical properties** [8092-47]  
S. Nozoe, N. Honda, K. Ishii, Osaka Univ. (Japan); K. Awazu, Osaka Univ. (Japan), Univ. of Fukui (Japan), and Kyoto Univ. (Japan)
- 8092 1K **A simple color separation technique for solar tissue photocoagulation** [8092-49]  
N. Batista, D. Liang, Univ. Nova de Lisboa (Portugal)
- 8092 1L **In vivo N-acetyl cysteine reduce hepatocyte death by induced acetaminophen** [8092-50]  
C.-J. Lin, F.-C. Li, S.-S. Wang, National Taiwan Univ. (Taiwan); H.-S. Lee, National Taiwan Univ. Hospital (Taiwan); C.-Y. Dong, National Taiwan Univ. (Taiwan)
- 8092 1M **Photoswitchable bactericidal effects from novel silica-coated silver nanoparticles** [8092-51]  
G. Fuertes, E. Pedrueza, K. Abderrafi, R. Abargues, O. Sánchez, J. Martínez-Pastor, J. Salgado, E. Jiménez, Univ. de València (Spain)
- 8092 1N **Micromanipulation of cells and microparticles using optical fibers** [8092-52]  
D. G. Kotsifaki, M. Makropoulou, A. A. Serafetinides, National Technical Univ. of Athens (Greece)

- 8092 1Q **FEM modeling and histological analyses on thermal damage induced in facial skin resurfacing procedure with different CO<sub>2</sub> laser pulse duration** [8092-55]  
F. Rossi, Institute of Applied Physics Nello Carrara, CNR (Italy); T. Zingoni, E. Di Cicco, L. Manetti, PhotoBiolab Unit, El.En. Group (Italy); R. Pini, Institute of Applied Physics Nello Carrara, CNR (Italy); D. Fortuna, PhotoBiolab Unit, El.En. Group (Italy)
- 8092 1R **Soft tissue ablation by picosecond synchronously-pumped CdSiP<sub>2</sub>-based optical parametric oscillator tuned to 6.45 μm** [8092-56]  
N. Hendaoui, Univ. of Namur (Belgium) and Ctr. de Développement des Technologies Avancées (Algeria); A. A. Mani, E. Kakudji, A. Peremans, Univ. of Namur (Belgium); C. Silien, Univ. of Limerick (Ireland); V. Bruyninckx, Univ. of Namur (Belgium); A. Esteban, M. Ebrahim-Zadeh, ICFO-Institute of Photonic Sciences (Spain); S. Been, R. M. Verdaasdonk, Univ. Medical Ctr. (Netherlands); P. G. Schunemann, K. T. Zawilski, BAE Systems Inc. (United States); V. Petrov, Max Born Institute for Nonlinear Optics and Ultrafast Spectroscopy (Germany)
- 8092 1S **Evaluation of LED therapy at 945nm on bone repair by micro x-ray fluorescence spectroscopy and scanning electron microscopy** [8092-57]  
A. G. Diamantino, R. A. Nicolau, M. A. de Oliveira, Univ. do Vale do Paraíba (Brazil); A. M. E. Santo, Univ. do Vale do Paraíba (Brazil) and Univ. Federal de São Paulo (Brazil)
- 8092 1U **Viability for the conjugate use of electrosurgery and photodynamic therapy** [8092-59]  
F. G. Rego-Filho, Univ. Federal de Alagoas (Brazil); E. Vieira, WEM Equipamentos Eletrônicos Ltda. (Brazil); C. Kurachi, V. S. Bagnato, Univ. de São Paulo (Brazil); M. T. de Araujo, Univ. Federal de Alagoas (Brazil)

*Author Index*

# Conference Committee

## General Chairs

**Christoph K. Hitzenberger**, Medizinische Universität Wien (Austria)  
**Brian W. Pogue**, Dartmouth University (United States)

## Programme Chairs

**Peter E. Andersen**, Technical University of Denmark (Denmark)  
**Irene Georgakoudi**, Tufts University (United States)

## Conference Chairs

**Ronald Sroka**, Ludwig-Maximilians-Universität München (Germany)  
**Lothar D. Lilge**, Ontario Cancer Institute (Canada)

## Program Committee

**Stefan Andersson-Engels**, Lund University (Sweden)  
**Wolfgang Baeumler**, Universität Clinics Regensburg (Germany)  
**Ralf Brinkmann**, Universität zu Lübeck (Germany)  
**Santiago Camacho-López**, Centro de Investigación Científica y de  
Educación Superior de Ensenada (Mexico)  
**Frank Chuang**, Center for Biophotonics Science and Technology  
(United States)  
**Robert Fedosejevs**, University of Alberta (Canada)  
**Martin Frenz**, Universität Bern (Switzerland)  
**Christoph Haisch**, Technische Universität München (Germany)  
**Raimund Hibst**, Universität Ulm (Germany)  
**Carsten M. Philipp**, Elisabeth Klinik (Germany)  
**Brian W. Pogue**, Dartmouth College (United States)  
**Dominic J. Robinson**, Universitair Medisch Centrum Rotterdam  
(Netherlands)  
**Ricardas Rotomskis**, Vilnius University (Lithuania)  
**Stefan B. Spaniol**, CeramOptec GmbH (Germany)  
**Herbert Stepp**, Ludwig-Maximilians-Universität München (Germany)  
**Rudolf M. Verdaasdonk**, Vrije Universiteit Medisch Centrum  
(Netherlands)  
**Alfred Vogel**, Universität zu Lübeck (Germany)  
**Gang Zheng**, University of Toronto (Canada)

Session Chairs

- 1 Nanoparticle and NS Laser Applications  
**Ralf Brinkmann**, Universität zu Lübeck (Germany)  
**Martin Frenz**, Universität Bern (Switzerland)  
**Lothar D. Lilge**, Ontario Cancer Institute (Canada)
- 2 Post-Deadline Session and Student Awards  
**Stefan Andersson-Engels**, Lund University (Sweden)  
**Irene Georgakoudi**, Tufts University (United States)
- 3 Photodynamic Investigation  
**Herbert Stepp**, Ludwig-Maximilians-Universität München (Germany)  
**Lothar D. Lilge**, Ontario Cancer Institute (Canada)  
**Stefan Andersson-Engels**, Lund University (Sweden)
- 4 Laser-Assisted Detection Techniques  
**Raimund Hibst**, Universität Ulm (Germany)  
**Santiago Camacho-López**, Centro de Investigación Científica y de Educación Superior de Ensenada (Mexico)
- 5 Biomodulation and Blood  
**Ronald Sroka**, Ludwig-Maximilians-Universität München (Germany)  
**Lothar D. Lilge**, Ontario Cancer Institute (Canada)
- 6 Clinical Laser Applications  
**Ronald Sroka**, Ludwig-Maximilians-Universität München (Germany)  
**Lothar D. Lilge**, Ontario Cancer Institute (Canada)
- 7 Lasers in Ophthalmology  
**Ralf Brinkmann**, Universität zu Lübeck (Germany)
- 8 FS Laser Applications  
**Ralf Brinkmann**, Universität zu Lübeck (Germany)  
**Christoph Haisch**, Technische Universität München (Germany)

Poster Sessions

- Lothar D. Lilge**, Ontario Cancer Institute (Canada)  
**Ronald Sroka**, Ludwig-Maximilians-Universität München (Germany)

## **Introduction**

Medical Laser Applications and Laser-Tissue Interactions V was held as a three day conference during the European Conference on Biomedical Optics in Munich and was supported by the German Society of Lasermedicine (DGLM e.V.). Starting with the poster session, 14 posters were presented and discussed with highly motivated scientists and experts. In eight different sessions with 53 oral presentations, all fields of laser applications in medicine were represented: nanoparticle assisted applications, pulsed laser applications from ns to fs-pulses, photodynamic therapy, laser assisted diagnostics, biomodulation, clinical laser applications, and ophthalmology. Highly motivated presenters, in combination with the highly interested audience and encouraging chairs, resulted in exciting discussions immediately after each lecture as well as outside the lecture hall.

Most of the lectures are summarized within this volume, and while reading it you may remember the sessions. We hope you got some new ideas for your scientific research during this conference, as well as some new scientific contacts to improve the laser medical approaches for the benefit of patients.

We would like to thank all of the speakers and chairs for your motivation and cooperation during our time in Munich and hope to meet you again in 2013.

**Ronald Sroka  
Lothar D. Lilge**

