

PROCEEDINGS OF SPIE

[SPIDigitalLibrary.org/conference-proceedings-of-spie](https://spiedigitallibrary.org/conference-proceedings-of-spie)

Front Matter: Volume 7179

, "Front Matter: Volume 7179," Proc. SPIE 7179, Optics in Tissue Engineering and Regenerative Medicine III, 717901 (14 March 2009); doi: 10.1117/12.824920

SPIE.

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

PROGRESS IN BIOMEDICAL OPTICS AND IMAGING

Vol. 10, No. 19

Optics in Tissue Engineering and Regenerative Medicine III

Sean J. Kirkpatrick
Ruikang Wang
Editors

24 January 2009
San Jose, California, United States

Sponsored and Published by
SPIE

Volume 7179

Proceedings of SPIE, 1605-7422, v. 7179

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 *Optics in Tissue Engineering and Regenerative Medicine III*, edited by Sean J. Kirkpatrick, Ruikang Wang, Proceedings of SPIE Vol. 7179 (SPIE, Bellingham, WA, 2009) Article CID Number.

ISSN 1605-7422
ISBN 9780819474254

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.

The logo for SPIE Digital Library features the word "SPIE" in a bold, sans-serif font above the words "Digital Library" in a smaller, lighter font. To the right of the text is a stylized graphic consisting of three vertical bars of increasing height, resembling a bar chart or a signal waveform.

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

vii *Conference Committee*

SESSION 1 OCT IN TISSUE ENGINEERING

- 7179 02 **Visualization of 3D cell migration using high speed ultrahigh resolution optical coherence tomography (Invited Paper)** [7179-01]
S. Rey, A. Harwood, B. Považay, B. Hofer, A. Unterhuber, B. Hermann, W. Drexler, Cardiff Univ. (United Kingdom)
- 7179 03 **Monitoring the effect of magnetically aligned collagen scaffolds on tendon tissue engineering by PSOC** [7179-02]
Y. Yang, M. Ahearne, I. Wimpenny, Keele Univ. (United Kingdom); J. Torbet, Grenoble High Magnetic Field Lab., CNRS (France)
- 7179 05 **Optically characterizing collagen gels made with different cell types** [7179-04]
D. Levitz, N. Choudhury, K. Vartanian, M. T. Hinds, S. R. Hanson, S. L. Jacques, Oregon Health & Science Univ. (United States)
- 7179 06 **The effect of wavelength on optical properties extracted from images of engineered tissue** [7179-05]
D. Levitz, K. G. Phillips, L. An, F. Truffer, R. Samatham, N. Choudhury, M. T. Hinds, S. R. Hanson, S. L. Jacques, Oregon Health & Science Univ. (United States)
- 7179 07 **Elastin peptides increase lung cancer cell growth in 3D models** [7179-06]
J. K. Pijanka, Y. Yang, P. O. Bagnaninchi, Keele Univ. (United Kingdom); L. Debelle, Lab. SiRMA, CNRS-MEDyC, Univ. de Reims (France); G. D. Sockalingum, CNRS-MEDyC, Univ. de Reims Champagne-Ardenne (France); J. Sulé-Suso, Keele Univ. (United Kingdom) and Univ. Hospital of North Staffordshire (United Kingdom)

SESSION 2 POLARIZATION

- 7179 08 **Polarized light based birefringence measurements for monitoring myocardial regeneration** [7179-07]
M. F. G. Wood, N. Ghosh, Ontario Cancer Institute (Canada) and Univ. of Toronto (Canada); S.-H. Li, R. D. Weisel, Toronto General Research Institute (Canada) and Toronto General Hospital (Canada); B. C. Wilson, Ontario Cancer Institute (Canada) and Univ. of Toronto (Canada); R.-K. Li, Toronto General Research Institute (Canada) and Toronto General Hospital (Canada); I. A. Vitkin, Ontario Cancer Institute (Canada) and Univ. of Toronto (Canada)
- 7179 09 **Spectral polarimetry for assessing cell alignment in cultured tissues** [7179-08]
J. C. Gladish, D. D. Duncan, Oregon Health & Science Univ. (United States)

- 7179 0A **Raman spectroscopy and rotating orthogonal polarization imaging for non-destructive tracking of collagen deposition in tissue engineered skin and tendon** [7179-09]
M. L. Mather, S. P. Morgan, D. E. Morris, Q. Zhu, Univ. of Nottingham (United Kingdom); J. Kee, Loughborough Univ. (United Kingdom); A. Zoladek, J. A. Crowe, I. Notingher, Univ. of Nottingham (United Kingdom); D. J. Williams, Loughborough Univ. (United Kingdom); P. A. Johnson, Intercytex (United Kingdom)
- 7179 0B **Regeneration of spine disc and joint cartilages under temporal and space modulated laser radiation** [7179-19]
E. Sobol, Institute on Laser and Information Technologies (Russian Federation) and Arcuo Medical Inc. (United States); A. Shekhter, Medical Academy of Moscow (Russian Federation) and Arcuo Medical Inc. (United States); A. Baskov, Ctr. for Vertebrology and Orthopedics (Russian Federation) and Arcuo Medical Inc. (United States); V. Baskov, Ctr. for Vertebrology and Orthopedics (Russian Federation); O. Baum, Institute on Laser and Information Technologies (Russian Federation) and Arcuo Medical Inc. (United States); I. Borchshenko, V. Golubev, Ctr. for Vertebrology and Orthopedics (Russian Federation) and Arcuo Medical Inc. (United States); A. Guller, I. Kolyshev, Medical Academy of Moscow (Russian Federation); A. Omeltchenko, A. Sviridov, O. Zakharkina, Institute on Laser and Information Technologies (Russian Federation) and Arcuo Medical Inc. (United States)

SESSION 3 FUNCTIONAL IMAGING AND MECHANICS

- 7179 0C **Destructive fat tissue engineering using photodynamic and selective photothermal effects (Invited Paper)** [7179-11]
V. V. Tuchin, Saratov State Univ. (Russian Federation) and Institute of Precise Mechanics and Control (Russian Federation); I. Yu. Yanina, G. V. Simonenko, Saratov State Univ. (Russian Federation)
- 7179 0D **Application of laser to measurement of cyclic contractile movement of cultured myotubes** [7179-12]
S. Hashimoto, Osaka Institute of Technology (Japan); H. Tonami, Kyoto Univ. (Japan); E. Yamada, S. Mochizuki, J. Takase, M. Ohsuga, Osaka Institute of Technology (Japan)
- 7179 0E **Cellular functional image using hyperspectral technology for application to regenerative medicine** [7179-13]
M. Ishihara, National Defense Medical College (Japan); M. Iwasa, M. Doshida, Ministry of Defense Technical Research and Development Institute (Japan); M. Kikuchi, National Defense Medical College (Japan)

SESSION 4 IMAGING

- 7179 0G **Ultrasound and photoacoustic imaging to monitor vascular growth in tissue engineered constructs** [7179-15]
S. Y. Nam, S. Mallidi, G. Zhang, L. J. Suggs, S. Emelianov, The Univ. of Texas at Austin (United States)

7179 01 **Reconstruction of thin fluorophore-filled capillaries in thick scattering medium using fluorescence diffuse optical tomography within the diffusion approximation** [7179-17]
J. Desrochers, P. Vermette, R. Fontaine, Y. Bérubé-Lauzière, Univ. de Sherbrooke (Canada)

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 Chairs

Steven L. Jacques, Oregon Health & Science University (United States)

William P. Roach, Air Force Research Laboratory (United States)

Conference Chairs

Sean J. Kirkpatrick, Oregon Health & Science University (United States)

Ruikang Wang, Oregon Health & Science University (United States)

Program Committee

Stephen A. Boppart, University of Illinois at Urbana-Champaign
(United States)

Irene Georgakoudi, Tufts University (United States)

Miya Ishihara, National Defense Medical College (Japan)

Stephen J. Matcher, The University of Sheffield (United Kingdom)

Steve P. Morgan, The University of Nottingham (United Kingdom)

Peter H. Tomlins, National Physical Laboratory (United Kingdom)

Ying Yang, Keele University (United Kingdom)

Session Chairs

- 1 OCT in Tissue Engineering
Ruikang Wang, Oregon Health & Science University (United States)
- 2 Polarization
Miya Ishihara, National Defense Medical College (Japan)
- 3 Functional Imaging and Mechanics
Ying Yang, Keele University (United Kingdom)
- 4 Imaging
Irene Georgakoudi, Tufts University (United States)

