Photonics in Dermatology and Plastic Surgery 2023

Bernard Choi Haishan Zeng Editors

28–29 January 2023 San Francisco, California, United States

Sponsored and Published by SPIF

Volume 12352

Proceedings of SPIE, 1605-7422, V. 12352
SPIE is an international society advancing an interdisciplinary approach to the science and application of light.

The papers 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. Additional papers and presentation recordings may be available online in the SPIE Digital Library at SPIEDigitalLibrary.org.

The papers 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 these proceedings: Author(s), "Title of Paper," in Photonics in Dermatology and Plastic Surgery 2023, edited by Bernard Choi, Haishan Zeng, Proc. of SPIE 12352, Seven-digit Article CID Number (DD/MM/YYYY); (DOI URL).

ISSN: 1605-7422

ISSN: 2410-9045 (electronic)

ISBN: 9781510658097

ISBN: 9781510658103 (electronic)

Published by

SPIE

P.O. Box 10, Bellingham, Washington 98227-0010 USA Telephone +1 360 676 3290 (Pacific Time)

SPIE.org

Copyright © 2023 Society of Photo-Optical Instrumentation Engineers (SPIE).

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 fees. To obtain permission to use and share articles in this volume, visit Copyright Clearance Center 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.

Printed in the United States of America by Curran Associates, Inc., under license from SPIE.

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



Paper Numbering: A unique citation identifier (CID) number is assigned to each article in the Proceedings of SPIE at the time of 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 and print versions of the publication. SPIE uses a seven-digit CID article numbering system structured as follows:

- The first five 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.

Contents

Conference Committee

	SKIN CANCER II
12352 02	True digital hair removal with real value inpainting for improved dermoscopy based on image fusion $[12352\text{-}6]$
·	MACHINE LEARNING AND ALGORITHM DEVELOPMENT
12352 03	Development of an automatic algorithm enabling layer segmentation and optical characteristic analysis in skin optical coherence tomography imaging [12352-14]
12352 04	Pre-processing dermatological image data to significantly improve the performance of cyclic GAN models [12352-15]
	AGING AND PHOTODAMAGE
12352 05	In vivo multiphoton multiparametric 3D quantification of human skin aging on forearm and face [12352-19]
	PHOTOTHERAPEUTICS
12352 06	Controlled hyperthermia and monitored protocol for basal cell carcinoma: interim report [12352-25]
12352 07	Use of an indocyanine green nano-emulsion for the treatment of cutaneous melanoma by photothermal therapy [12352-27]
	WOUND HEALING
12352 08	Post-operative monitoring of tissue perfusion in skin flaps in a murine model using enhanced thermal imaging [12352-28]
12352 09	Beneath the skin: multi-frequency SFDI to detect thin layers of skin using light scattering [12352-29]

SKIN CHARACTERIZATION I 12352 0A Microcirculatory response to lower body negative pressure and the association to large vessel function [12352-32] 12352 OB Visible-light optical coherence tomography platform for the development of novel atopic dermatitis treatment [12352-34] SKIN CHARACTERIZATION II 12352 OC Absorption and reduced scattering coefficients in epidermis and dermis from a Swedish cohort **study** [12352-37] **POSTER SESSION** 12352 0D Deep learning algorithms for predicting basement membrane involvement of acral lentiginous melanomas [12352-43] 12352 OE Laser-induced thermal decomposition with Diffractive Lens Array (DLA) in ex vivo and in vivo skin tissue [12352-44] 12352 OF Wound image segmentation using deep convolutional neural network [12352-45] 12352 0G A fast normalization and despeckled method for skin optical coherence tomography image via deep learning [12352-47] Implementing the quantitative study of ultrasound imaging of skin [12352-49] 12352 OH **DIGITAL POSTER SESSION** 12352 01 Photodynamic therapy effects on hydrogel viscoelastic properties [12352-21] 12352 OJ Noninvasive assessment of morphological and vascular features of the normal vulvar skin using multimodal OCT [12352-42]

Conference Committee

Symposium Chairs

Sergio Fantini, Tufts University (United States) **Paola Taroni**, Politecnico di Milano (Italy)

Symposium Co-chairs

Jennifer K. Barton, The University of Arizona (United States) **Wolfgang Drexler**, Medizinische Universität Wien (Austria)

Program Track Chairs

 Brian Jet-Fei Wong, Beckman Laser Institute and Medical Clinic (United States) and University of California, Irvine (United States)
 Eva M. Sevick, The University of Texas Health Science Center at Houston (United States)

Conference Chairs

Bernard Choi, Beckman Laser Institute and Medical Clinic (United States)

Haishan Zeng, BC Cancer Research Institute (Canada)

Conference Program Committee

Anthony J. Durkin, Beckman Laser Institute and Medical Clinic (United States)

Conor L. Evans, Wellman Center for Photomedicine (United States)

Yusuke Hara, Shiseido Company, Ltd. (Japan)

Manu Jain, Memorial Sloan-Kettering Cancer Center (United States)

Hanna Jonasson, Linköpings universitet (Sweden)

Kristen M. Kelly, University of California, Irvine (United States)

Boris Majaron, Institut "Jožef Stefan" (Slovenia)

Milind Rajadhyaksha, Memorial Sloan-Kettering Cancer Center (United States)

Jessica C. Ramella-Roman, Florida International University (United States)

Lise Lyngsnes Randeberg, Norwegian University of Science and Technology (Norway)

Rolf B. Saager, Linköpings universitet (Sweden)

InSeok Seo, Johnson and Johnson Consumer Products (United States)
Eric R Tkaczyk, Vanderbilt Health One Hundred Oaks (United States)

Hequn Wang, Johnson and Johnson Consumer Products (United States)

Ruikang K. Wang, University of Washington (United States) **Mihaela Balu**, Beckman Laser Institute and Medical Clinic (United States)