# Multimodal Biomedical Imaging XII

Fred S. Azar Xavier Intes Editors

28 January 2017 San Francisco, California, United States

Sponsored and Published by SPIE

Volume 10057

Proceedings of SPIE, 1605-7422, V. 10057

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 *Multimodal Biomedical Imaging XII*, edited by Fred S. Azar, Xavier Intes, Proceedings of SPIE Vol. 10057 (SPIE, Bellingham, WA, 2017) Seven-digit Article CID Number

ISSN: 1605-7422 ISSN: 2410-9045 (electronic)

ISBN: 9781510605558 ISBN: 9781510605565 (electronic)

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 © 2017, 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 1605-7422/17/\$18.00.

Printed in the United States of America Vm7 i ffUb 5 gpc WUH/gr + WZi bXYf W/bg/ Zrca GD-9.

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



**Paper Numbering:** Proceedings of SPIE follow an e-First publication model. A unique citation identifier (CID) number is assigned to each article 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

- v Authors
- vii Conference Committee
- ix Introduction

## SESSION 1 INSTRUMENTS AND ALGORITHMS

- 10057 03 Optical skin assessment based on spectral reflectance estimation and Monte Carlo simulation [10057-2]
- 10057 04 Fiber based fast sparse sampling x-ray luminescence computed tomography [10057-3]
- 10057 05 Investigation of burn effect on skin using simultaneous Raman-Brillouin spectroscopy, and fluorescence microspectroscopy [10057-4]

## SESSION 2 MICROSCOPY AND ENDOSCOPY

- 10057 06 Combined optical coherence tomography and hyper-spectral imaging [10057-5]
- 10057 07 **Multimodal fluorescence and photoacoustic microscopy in the frequency domain** [10057-6]
- 10057 09 Spectral band optimization for multispectral fluorescence imaging [10057-8]

#### SESSION 3 CLINICAL APPLICATIONS

- 10057 0D Real-time fluorescence target/background (T/B) ratio calculation in multimodal endoscopy for detecting GI tract cancer [10057-12]
- 10057 OF Novel hybrid technology for early diagnostics of sepsis [10057-15]

#### SESSION 4 HYBRID AND PRECLINICAL IMAGING

- 10057 0H Combined multispectral spatial frequency domain imaging and computed tomography system for intraoperative breast tumor margin assessment [10057-17]
- 10057 01 Multimodal non-contact photoacoustic imaging and optical coherence tomography using all optical detection [10057-18]
- 10057 0K New contrasts for x-ray imaging and synergy with optical imaging (Invited Paper) [10057-16]

POSTER S	SESSION
----------	---------

10057 OL	Profiling wrist pulse from skin surface by Advanced Vibrometer Interferometer Device [10057-21]
10057 OM	A single pixel camera video ophthalmoscope [10057-22]
10057 OP	Application of kernel method in fluorescence molecular tomography [10057-25]
10057 OS	Multi-modality image registration for effective thermographic fever screening [10057-28]