

PROGRESS IN BIOMEDICAL OPTICS AND IMAGING
Vol. 17 No. 13

Multimodal Biomedical Imaging XI

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Editors

13 February 2016
San Francisco, California, United States

Sponsored and Published by
SPIE

Volume 9701

Proceedings of SPIE 1605-7422, V. 9701

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Multimodal Biomedical Imaging XI, edited by Fred S. Azar, Xavier Intes, Proc. of SPIE
Vol. 9701, 970101 © 2016 SPIE · CCC code: 1605-7422/16/\$18 · doi: 10.1117/12.2229258

Proc. of SPIE Vol. 9701 970101-1

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.

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Please use the following format to cite material from these proceedings:

Author(s), "Title of Paper," in *Multimodal Biomedical Imaging XI*, edited by Fred S. Azar, Xavier Intes, Proceedings of SPIE Vol. 9701 (SPIE, Bellingham, WA, 2016) Six-digit Article CID Number.

ISSN: 1605-7422
ISSN: 2410-9045 (electronic)
ISBN: 9781628419351

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

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Introduction

Optical techniques offer the potential to contribute greatly to the expansion of clinical multimodality techniques. Their ability to image structural, functional, and molecular information at different spatial and temporal scales makes them very attractive to the biomedical community. There is critical need for new instrumental approaches and computational techniques to provide rapid, accurate and cost-effective means for acquisition, quantification and characterization of multimodal data. Multimodality approach can be understood as the combination of multiple optical techniques in an instrument and/or fusion of an optical technique with other well-established imaging modalities such as CT, MRI, US, or PET. These instrumental and computational methods will enable faster acceptance of novel imaging modalities into viable clinical and/or pre-clinical systems. The applications are diverse and range from imaging at the cellular level to the whole body while incorporating molecular, functional and anatomical information.

The conference objectives are to provide a forum:

- to review and share recent developments in novel multimodal imaging techniques,
- to report development of novel computational methods, and
- to bring together the optical imaging and image analysis communities.

Topics include, but are not limited to:

- Multimodal imaging integrating structural, molecular and functional information
- Multimodal microscopic imaging
- 2D, 3D, 4D tomographic and / or multi-spectral imaging
- Imaging analysis and/or image processing techniques applied to optical imaging (e.g. visualization, segmentation, registration)
- Multimodal imaging instrumentation and system design
- Detection and diagnostic analysis techniques which may provide better quantitative and/or diagnostic insight into clinical and pre-clinical imaging (e.g. methods for quantitative measurements, computer-assisted diagnosis)
- Imaging analysis and/or image processing techniques used to combine optical imaging with other imaging modalities (e.g. MR, x-ray, PET)
- Image analysis, computational methods and reconstruction approaches which may help bring optical imaging into the clinic (visual rendering of complex data set, novel algorithms for assisted optical reconstruction)
- Clinical evaluation of these new technologies (physiological and functional interpretation of image data, visual perception and observer performances, validation of quantitative assessment of optical signatures in-vivo).

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