Smart Biomedical and Physiological Sensor Technology VIII

Brian M. Cullum Eric S. McLamore Editors

28 April 2011 Orlando, Florida, United States

Sponsored and Published by SPIE

Volume 8025

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 *Smart Biomedical and Physiological Sensor Technology VIII*, edited by Brian M. Cullum, Eric S. McLamore, Proceedings of SPIE Vol. 8025 (SPIE, Bellingham, WA, 2011) Article CID Number.

ISSN 1605-7422 ISBN 9780819485991

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 © 2011, 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 1605-7422/11/\$18.00.

Printed in the United States of America.

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



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

v Conference Committee

SESSION 1	NANO/MICRO-SENSORS FOR CELLULAR ANALYSES
8025 02	Optimization of SAM-based multilayer SERS substrates for intracellular analyses: the effect of terminating functional groups [8025-01] C. K. Klutse, B. M. Cullum, Univ. of Maryland, Baltimore County (United States)
8025 03	Nitrocellulose-based SERS immunosensor for detection of biological molecules [8025-02] A. C. Dykes, Univ. of Hawai'i (United States); L. Kamemoto, Univ. of Hawai'i (United States) and John A. Burns School of Medicine, Univ. of Hawai'i (United States); A. K. Misra, S. K. Sharma, Univ. of Hawai'i (United States)
8025 05	Self-referencing luminescent optrodes for non-invasive, real time measurement of extracellular flux [8025-04] E. S. McLamore, Univ. of Florida (United States); D. M. Porterfield, R. B. Borgens, M. K. Banks, Purdue Univ. (United States)
SESSION 2	SPECTROSCOPIC TOOLS FOR TISSUE AND BACTERIAL ANALYSES
8025 08	Raman discrimination of bacterial strains using multilayered microcavity substrates [8025-07] S. K. Sharma, A. C. Dykes, A. K. Misra, Univ. of Hawai'i (United States); L. E. Kamemoto, Univ. of Hawai'i (United States) and John A. Burns School of Medicine, Univ. of Hawai'i (United States); D. E. Bates, Univ. of Hawai'i (United States)
8025 09	Fluorescence intensity measurements with display screen as excitation source [8025-08] S. Park, S. G. Achanta, CS. Kim, Missouri Univ. of Science and Technology (United States)
8025 0A	Development of a depolarized Raman spectrometer for potential surface-enhanced Raman optical activity (SEROA) measurements [8025-09] H. Li, Biotools Inc. (United States)
8025 OB	Colorimetric phosphorescence measurements with a color camera for oxygen determination [8025-10] P. Bhagwat, G. S. Achanta, Missouri Univ. of Science and Technology (United States); D. Henthorn, Saint Louis Univ. (United States); CS. Kim, Missouri Univ. of Science and Technology (United States)

SESSION 3	IN-VITRO AND IN-VIVO IMAGING AND DIAGNOSTICS
8025 OC	Micro-Raman spectroscopy study of ALVAC virus infected chicken embryo cells [8025-11] A. K. Misra, Univ. of Hawai'i (United States); L. E. Kamemoto, John A. Burns School of Medicine, Univ. of Hawai'i (United States); N. Hu, Indiana Univ. School of Medicine (United States); A. C. Dykes, Univ. of Hawai'i (United States); Q. Yu, Indiana Univ. School of Medicine (United States); P. V. Zinin, S. K. Sharma, Univ. of Hawai'i (United States)
8025 OD	Raman spectroscopy of HIV-1 antigen and antibody [8025-12] P. V. Zinin, Univ. of Hawai'i (United States); N. Hu, Indiana Univ. School of Medicine (United States); L. E. Kamemoto, John A. Burns School of Medicine, Univ. of Hawai'i (United States); Q. Yu, Indiana Univ. School of Medicine (United States); A. K. Misra, S. K. Sharma, Univ. of Hawai'i (United States)
8025 0E	Depth and resolution characterization of two-photon photoacoustic spectroscopy for noninvasive subsurface chemical diagnostics [8025-13] S. Dahal, J. B. Kiser, B. M. Cullum, Univ. of Maryland, Baltimore County (United States)
8025 OF	Studies of MRI relaxivities of gadolinium-labeled dendrons [8025-14] H. Pan, MC. Daniel, Univ. of Maryland, Baltimore County (United States)
SESSION 4	TOWARD THE CLINIC/FIELD
8025 0G	Temperature elevations in prostatic tumors during laser photothermal therapy [8025-15] L. Zhu, A. Attaluri, H. Cai, R. Edziah, E. Lalanne, C. Bieberich, R. Ma, A. M. Johnson, Univ. of Maryland, Baltimore County (United States)
8025 OH	Synthesis and biological studies of highly concentrated lisinopril-capped gold nanoparticles for CT tracking of angiotensin converting enzyme (ACE) [8025-16] W. E. Ghann, Univ. of Maryland, Baltimore County (United States); O. Aras, T. Fleiter, Univ. of Maryland Medical Ctr. (United States); MC. Daniel, Univ. of Maryland, Baltimore County (United States)
8025 OK	An infrared illuminator for a healing bed [8025-22] M. A. Acharekar, E. Crowley, Sensors World, Inc. (United States)
	POSTER SESSION
8025 OL	Anti-sleepiness sensor systems for sober mental condition [8025-19] W. H. Han, H. S. Jung, H. G. Lee, Hana Academy Seoul (Korea, Republic of)
8025 0M	Two-stage microfluidic device for acoustic particle manipulation [8025-21] M. C. Jo, R. Guldiken, Univ. of South Florida (United States)
	Author Index

Conference Committee

Symposium Chair

William Jeffrey, HRL Laboratory, LLC (United States)

Symposium Cochair

Kevin P. Meiners, Office of the Secretary of Defense (United States)

Conference Chairs

Brian M. Cullum, University of Maryland, Baltimore County (United States)

Eric S. McLamore, University of Florida (United States)

Program Committee

Karl S. Booksh, University of Delaware (United States)

Marie-Christine F. Daniel, University of Maryland, Baltimore County (United States)

Andre J. Gesquiere, University of Central Florida (United States)

Ilko K. Ilev, U.S. Food and Drug Administration (United States)

T. Joshua Pfefer, U.S. Food and Drug Administration (United States)

Shiv K. Sharma, University of Hawai'i (United States)

Brian S. Sorg, University of Florida (United States)

Chang-Soo Kim, Missouri University of Science and Technology (United States)

Anhong Zhou, Utah State University (United States)

William Todd Monroe, Louisiana State University (United States)

Majed Dweik, University of Missouri-Columbia (United States)

Liju Yang, North Carolina Central University (United States)

Mark R. Riley, The University of Arizona (United States)

Liang Zhu, University of Maryland, Baltimore County (United States)

Session Chairs

- Nano/Micro-sensors for Cellular Analyses
 Liju Yang, North Carolina Central University (United States)
 Shiv K. Sharma, University of Hawai'i (United States)
- Spectroscopic Tools for Tissue and Bacterial Analyses Eric S. McLamore, University of Florida (United States)

- 3 In-vitro and In-vivo Imaging and Diagnostics Shiv K. Sharma, University of Hawai'i (United States) Marie-Christine F. Daniel, University of Maryland, Baltimore County (United States)
- 4 Toward the Clinic/Field
 Marie-Christine F. Daniel, University of Maryland, Baltimore County (United States)
 Liang Zhu, University of Maryland, Baltimore County (United States)