PROCEEDINGS OF SPIE

SPIDigitalLibrary.org/conference-proceedings-of-spie

Front Matter: Volume 8597

, "Front Matter: Volume 8597," Proc. SPIE 8597, Plasmonics in Biology and Medicine X, 859717 (28 March 2013); doi: 10.1117/12.2021955

SPIE.

Event: SPIE BiOS, 2013, San Francisco, California, United States

PROGRESS IN BIOMEDICAL OPTICS AND IMAGING

Vol. 14, No. 33

Plasmonics in Biology and Medicine X

Tuan Vo-Dinh
Joseph R. Lakowicz
Editors

3–4 February 2013
San Francisco, California, United States

Sponsored and Published by
SPIE

Volume 8597

Proceedings of SPIE, 1605-7422, V. 8597

SPIE is an international society advancing an interdisciplinary approach to the science and application of light.

Plasmonics in Biology and Medicine X, edited by Tuan Vo-Dinh, Joseph R. Lakowicz,
Proc. of SPIE Vol. 8597, 859717 · © 2013 SPIE · CCC code: 1605-7422/13/\$18
doi: 10.1117/12.2021955

Proc. of SPIE Vol. 8597 859717-1

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 *Plasmonics in Biology and Medicine X*, edited by Tuan Vo-Dinh, Joseph R. Lakowicz, Proceedings of SPIE Vol. 8597 (SPIE, Bellingham, WA, 2013) Article CID Number.

ISSN: 1605-7422

ISBN: 9780819493668

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 © 2013, 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 1605-7422/13/\$18.00.

Printed in the United States of America.

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

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 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

vii *Conference Committee*

SERS AND PLASMONICS II

- 8597 07 **Dynamic SERS imaging with gold nanoparticles transported in a living cell** [8597-7]
K. Fujita, J. Ando, N. I. Smith, Osaka Univ. (Japan); S. Kawata, Osaka Univ. (Japan) and RIKEN (Japan)

PLASMONIC STRUCTURES: FABRICATION AND PROPERTIES

- 8597 08 **Controlling the nanopore fabrication using high energy electron beam exposure** [8597-9]
S. S. Choi, M. J. Park, T. Yamaguchi, Sun Moon Univ. (Korea, Republic of); N. K. Park, Seoul National Univ. (Korea, Republic of)
- 8597 09 **Plasmonic properties of weakly interacting silver nanocubes on high refractive index substrates** [8597-10]
A. Bottomley, A. Staff, D. Prezgot, A. Ianoul, Carleton Univ. (Canada)
- 8597 0A **Optical properties of strongly interacting supported silver nanocube monolayers** [8597-11]
D. Prezgot, A. Ianoul, Carleton Univ. (Canada)

SENSING APPLICATIONS OF PLASMONIC STRUCTURES

- 8597 0D **Paired surface plasma waves biosensor using degree of coherence** [8597-15]
C.-W. Ho, National United Univ. (Taiwan); S.-Y. Chang, Ming Chi Univ. of Technology (Taiwan); N.-C. Chen, Y.-F. Chang, C. Chou, Chang Gung Univ. (Taiwan)
- 8597 0E **Real time monitoring in-vivo micro-environment through the wound heal mechanism** [8597-16]
J. Yan, Consultant (Canada)
- 8597 0F **An integrated platform for biomolecule interaction analysis** [8597-17]
C.-M. Jan, P.-I. Tsai, S.-T. Chou, National Taiwan Univ. (Taiwan); S.-S. Lee, National Taiwan Ocean Univ. (Taiwan); C.-K. Lee, National Taiwan Univ. (Taiwan) and National Taiwan Ocean Univ. (Taiwan)
- 8597 0G **Aptamer-based surface plasmon resonance sensing of glycated human blood proteins** [8597-18]
N. G. F. Reaver, R. Zheng, D.-S. Kim, B. D. Cameron, The Univ. of Toledo (United States)
- 8597 0I **Monolithic porous gold nanostructures as surface-enhanced Raman spectroscopy substrates for molecular and biosensing** [8597-14]
J. Qi, P. Motwani, J. C. Wolfe, W.-C. Shih, Univ. of Houston (United States)

PLASMONICS AND FLUORESCENCE

- 8597 0J **Plasmon-enhanced emission from single fluorescent proteins** [8597-20]
J. E. Donehue, B. L. Haas, E. Wertz, C. N. Talicska, J. S. Biteen, Univ. of Michigan (United States)
- 8597 0N **A comprehensive study on metallic nano-hole arrays with a surface plasmon energy matching property** [8597-24]
M. Najiminaini, F. Vasefi, Simon Fraser Univ. (Canada), Lawson Health Research Institute (Canada), and Univ. of Western Ontario (Canada); B. Kaminska, Simon Fraser Univ. (Canada); J. J. L. Carson, Univ. of Western Ontario (Canada) and Lawson Health Research Institute (Canada)
- 8597 0O **Wide-field interferometric phase imaging of plasmonic nanoparticles at the subcellular level** [8597-25]
N. A. Turko, A. Peled, N. T. Shaked, Tel Aviv Univ. (Israel)

PLASMONICS AND IMAGING

- 8597 0P **Plasmon saturation induced super-resolution imaging** [8597-26]
H. Lee, T.-Y. Su, National Taiwan Univ. (Taiwan); Y. Yonemaru, Osaka Univ. (Japan); M.-Y. Lee, National Taiwan Univ. (Taiwan); M. Yamanaka, Osaka Univ. (Japan); K.-F. Huang, National Taiwan Univ. (Taiwan); S. Kawata, K. Fujita, Osaka Univ. (Japan); S.-W. Chu, National Taiwan Univ. (Taiwan)
- 8597 0Q **Molecularly defined plasmonic engineering to visualize antibody binding events by eye** [8597-27]
A. W. Clark, J. M. Cooper, Univ. of Glasgow (United Kingdom)
- 8597 0R **Nanoplasmonic co-localization for highly sensitive surface plasmon resonance detection of molecular interactions** [8597-28]
Y. Oh, Y. Kim, W. Lee, D. Kim, Yonsei Univ. (Korea, Republic of)

PLASMONICS AND SENSING

- 8597 0Y **Planar chiral metamaterials for biosensing applications** [8597-35]
S. Murugkar, I. De Leon, M. Horton, H. Qassim, Univ. of Ottawa (Canada); J. Leach, Heriot-Watt Univ. (United Kingdom); R. W. Boyd, Univ. of Ottawa (Canada) and The Univ. of Rochester (United States)
- 8597 0Z **Viscoelastic shear wave at thermal steady state in gelatin** [8597-36]
S.-Y. Chang, Ming Chi Univ. of Technology (Taiwan); C.-W. Ho, National United Univ. (Taiwan); T.-S. Hsieh, Taipei Veteran General Hospital (Taiwan); L.-P. Yu, C. Chou, Chang Gung Univ. (Taiwan)
- 8597 11 **Spectro-angular optical biosensor based on surface plasmon resonance operating in the visible spectrum** [8597-38]
S. Filion Côté, P. J. R. Roche, A. G. Kirk, McGill Univ. (Canada)

- 8597 15 **Transmission resonance of a three-dimensional nanostructure with a localized surface plasmon property** [8597-42]
M. Najjiminaini, F. Vasefi, Simon Fraser Univ. (Canada, Lawson Health Research Institute (Canada), and Univ. of Western Ontario (Canada); B. Kaminska, Simon Fraser Univ. (Canada); J. J. L. Carson, Lawson Health Research Institute (Canada) and Univ. of Western Ontario (Canada)

Author Index

Conference Committee

Symposium Chairs

James 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

Paras Prasad, SUNY/Buffalo (United States)
Dan V. Nicolau, The University of Liverpool (United Kingdom)

Conference Chairs

Tuan Vo-Dinh, Duke University (United States)
Joseph R. Lakowicz, University of Maryland School of Medicine
(United States)

Conference Cochair

Krishanu Ray, University of Maryland School of Medicine
(United States)

Conference Program Committee

A. Claude Boccara, Ecole Supérieure de Physique et de Chimie
Industrielles (France)
Michael T. Canva, Laboratoire Charles Fabry (France)
Volker Deckert, Institut für Photonische Technologien e.V. (Germany)
Bruce S. Dunn, University of California, Los Angeles (United States)
Christopher D. Geddes, University of Maryland, Baltimore
(United States)
Zygmunt Karol Gryczynski, University of North Texas Health Science
Center at Fort Worth (United States)
Naomi J. Halas, Rice University (United States)
Ho-Pui A. Ho, The Chinese University of Hong Kong
(Hong Kong, China)
Jiri Homola, Institute of Photonics and Electronics of the ASCR, v.v.i.
(Czech Republic)
Laura María Lechuga, Centro d'Investigacions en Nanociència i
Nanotecnologia (Spain)
Boris Mizaikoff, Universität Ulm (Germany)

Shuming Nie, Emory University (United States)
Weihong Tan, University of Florida (United States)
Andrew Taton, University of Minnesota, Twin Cities (United States)
Richard P. Van Duyne, Northwestern University (United States)
Jeffrey I. Zink, University of California, Los Angeles (United States)

Session Chairs

- 1 SERS and Plasmonics I
Tuan Vo-Dinh, Duke University (United States)
- 2 SERS and Plasmonics II
Tuan Vo-Dinh, Duke University (United States)
- 3 Plasmonic Structures: Fabrication and Properties
Tuan Vo-Dinh, Duke University (United States)
- 4 Sensing Applications of Plasmonic Structures
Tuan Vo-Dinh, Duke University (United States)
Wei-Chuan Shih, University of Houston (United States)
- 5 Plasmonics and Fluorescence
Joseph R. Lakowicz, University of Maryland School of Medicine (United States)
- 6 Plasmonics and Imaging
Joseph R. Lakowicz, University of Maryland School of Medicine (United States)
- 7 Plasmonics and Therapy
Jean-François Masson, Université de Montréal (Canada)
- 8 Plasmonics and Sensing
Jean-François Masson, Université de Montréal (Canada)