PROCEEDINGS OF SPIE

SPIDigitalLibrary.org/conference-proceedings-of-spie

Front Matter: Volume 8271

, "Front Matter: Volume 8271," Proc. SPIE 8271, Quantum Dots and Nanostructures: Synthesis, Characterization, and Modeling IX, 827101 (21 March 2012); doi: 10.1117/12.931595

SPIE.

Event: SPIE OPTO, 2012, San Francisco, California, United States

PROCEEDINGS OF SPIE

Quantum Dots and Nanostructures: Synthesis, Characterization, and Modeling IX

**Kurt G. Eyink
Frank Szmulowicz
Diana L. Huffaker**
Editors

**24–25 January 2012
San Francisco, California, United States**

Sponsored and Published by
SPIE

Volume 8271

Proceedings of SPIE, 0277-786X, v. 8271

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

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 *Quantum Dots and Nanostructures: Synthesis, Characterization, and Modeling IX*, edited by Kurt G. Eyink, Frank Szmulowicz, Diana L. Huffaker, Proceedings of SPIE Vol. 8271 (SPIE, Bellingham, WA, 2012) Article CID Number.

ISSN 0277-786X

ISBN 9780819489142

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 © 2012, 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 0277-786X/12/\$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

- v *Conference Committee*
- vii *Spinoptics: Spin degeneracy removal in nanostructures (Plenary Paper) [8269-100]*
V. Kleiner, N. Shitrit, E. Hasman, Technion-Israel Institute of Technology (Israel)

SESSION 1 HYBRID STRUCTURES

- 8271 04 **Effect of silver nanoparticles on the spectral properties of rare-earth ions in a sodium borate glass [8271-03]**
V. O. Obadina, B. Rami Reddy, Alabama A&M Univ. (United States)
- 8271 06 **Optical properties of mesogen-coated gold nanoparticles [8271-05]**
J. Dintinger, Ecole Polytechnique Fédérale de Lausanne (Switzerland); B.-J. Tang, The Univ. of Hull (United Kingdom); X. Zeng, The Univ. of Sheffield (United Kingdom); T. Kienzler, Friedrich-Schiller-Univ. Jena (Germany); G. H. Mehl, The Univ. of Hull (United Kingdom); G. Ungar, C. Rockstuhl, The Univ. of Sheffield (United Kingdom); T. Scharf, Friedrich-Schiller-Univ. Jena (Germany)

SESSION 2 COLLOIDAL QUANTUM DOTS

- 8271 08 **Morphology, optical properties, charge transfer, and charge transport in nanocrystalline quantum dots (Invited Paper) [8271-08]**
S. Biswas, H. Jung, M. Stroschio, M. Dutta, Univ. of Illinois at Chicago (United States)
- 8271 09 **Transport properties of mid-infrared colloidal quantum dot films [8271-09]**
E. Lhuillier, S. Keuleyan, P. Guyot-Sionnest, The Univ. of Chicago (United States)
- 8271 0A **Fourier spectroscopy on PbS quantum dots [8271-10]**
B. Ullrich, J. S. Wang, X. Y. Xiao, G. J. Brown, Air Force Research Lab. (United States)

SESSION 3 OPTICAL DEVICES I

- 8271 0D **Single photon sources for quantum information applications (Invited Paper) [8271-13]**
S. Höfling, C. Schneider, T. Heindel, M. Lerner, Julius-Maximilians-Univ. Würzburg (Germany); T. B. Hoang, Technische Univ. Eindhoven (Netherlands); J. Beetz, T. Braun, Julius-Maximilians-Univ. Würzburg (Germany); L. Balet, Technische Univ. Eindhoven (Netherlands) and Ecole Polytechnique Fédérale de Lausanne (Switzerland); N. Chauvin, Technische Univ. Eindhoven (Netherlands); L. Li, Ecole Polytechnique Fédérale de Lausanne (Switzerland); S. Reitzenstein, Julius-Maximilians-Univ. Würzburg (Germany); A. Fiore, Technische Univ. Eindhoven (Netherlands); M. Kamp, A. Forchel, Julius-Maximilians-Univ. Würzburg (Germany)
- 8271 0E **Reducing dephasing in coupled quantum dot-cavity systems by engineering the carrier wavefunctions [8271-14]**
A. Nysteen, P. Kaer, J. Mørk, Technical Univ. of Denmark (Denmark)

SESSION 4 NOVEL MATERIALS

- 8271 0I **Evolution of micro-spikes on silicon surface etched by femtosecond laser with different fabrication conditions (Invited Paper)** [8271-18]
Y. Peng, Y. M. Zhu, Univ. of Shanghai for Science and Technology (China)
- 8271 0J **Hyperspectral polarized light scattering for dense nanomaterials characterization** [8271-19]
R. Ceolato, N. Riviere, L. Hespel, ONERA (France); B. Biscans, CNRS-LGC (France)

SESSION 5 GROWTH AND CHARACTERIZATION

- 8271 0L **Semiconductor quantum nanostructures by droplet epitaxy (Invited Paper)** [8271-21]
S. Sanguinetti, S. Bietti, C. Somaschini, Univ. degli Studi di Milano-Bicocca (Italy)
- 8271 0N **The impact of growth rate and barrier thickness on the thermal stability of photoluminescence for coupled InAs/GaAs quantum dot heterostructures with quaternary(InAlGaAs) capping** [8271-23]
A. Mandal, Indian Institute of Technology Bombay (India); U. Verma, Indian Institute of Technology Rajasthan (India); S. Chakrabarti, Indian Institute of Technology Bombay (India)
- 8271 0O **Ground state energy trend in single and multilayered coupled InAs/GaAs QDs capped with InGaAs layers: effect of thickness of InGaAs layer and the RTA treatment** [8271-24]
S. Jejurikar, A. Mishra, P. Bhat, S. Chakrabarti, Indian Institute of Technology Bombay (India)
- 8271 0R **Increase in photoluminescence intensity of InAs columnar quantum dots on InP(001) substrate by increasing indium and phosphorous composition in InGaAsP barrier layers** [8271-27]
S. Okumura, N. Yasuoka, Photonics Electronics Technology Research Association (Japan) and Fujitsu Ltd. (Japan); K. Kawaguchi, Fujitsu Labs., Ltd. (Japan); Y. Tanaka, Photonics Electronics Technology Research Association (Japan) and Fujitsu Ltd. (Japan); M. Ekawa, Fujitsu Labs., Ltd. (Japan)

SESSION 6 OPTICAL DEVICES II

- 8271 0S **Improvement of temperature stability in columnar quantum dots by introducing side barriers with larger bandgap energy for semiconductor optical amplifiers** [8271-29]
N. Yasuoka, S. Okumura, Fujitsu Labs., Ltd. (Japan) and Photonics Electronics Technology Research Association (Japan); H. Ebe, Fujitsu Labs., Ltd. (Japan); Y. Tanaka, Fujitsu Labs., Ltd. (Japan) and Photonics Electronics Technology Research Association (Japan); M. Ekawa, Y. Nakata, Fujitsu Labs., Ltd. (Japan); M. Sugawara, QD Laser Inc. (Japan); Y. Arakawa, Institute for Nano Quantum Information Electronics (Japan) and The Univ. of Tokyo (Japan)

POSTER SESSION

- 8271 0V **Computational analysis of the effects of gain material inclusion in engineered metal nanostructures** [8271-06]
J. Duan, Air Force Research Lab. (United States) and General Dynamics Information Technology (United States); R. Pachter, Air Force Research Lab. (United States)

Author Index

Conference Committee

Symposium Chair

Klaus P. Streubel, OSRAM GmbH (Germany)

Symposium Cochairs

David L. Andrews, University of East Anglia Norwich (United Kingdom)
Liang-Chy Chien, Kent State University (United States)

Program Track Chair

Ali Adibi, Georgia Institute of Technology (United States)

Conference Chairs

Kurt G. Eyink, Air Force Research Laboratory (United States)
Frank Szmulowicz, University of Dayton Research Institute (United States)
Diana L. Huffaker, University of California, Los Angeles (United States)

Program Committee

Massimo De Vittorio, Università del Salento (Italy)
Vinod M. Menon, Queen's College (United States)
Philip J. Poole, National Research Council Canada (Canada)
Jian Xu, The Pennsylvania State University (United States)

Session Chairs

- 1 Hybrid Structures
Valery Zwiller, Technische Universiteit Delft (Netherlands)
Pavlos G. Lagoudakis, University of Southampton (United Kingdom)
- 2 Collodial Quantum Dots
Sushmita Biswas, Air Force Research Laboratory (United States)
- 3 Optical Devices I
Holger Eisele, Technische Universität Berlin (Germany)
Sven Hoefling, Julius-Maximilians-Universität Würzburg (Germany)
- 4 Novel Materials
Jian Xu, The Pennsylvania State University (United States)

- 5 Growth and Characterization
Gregory J. Salamo, University of Arkansas (United States)
- 6 Optical Devices II
Baolai Liang, University of California, Los Angeles (United States)