

PROCEEDINGS OF SPIE

[SPIDigitalLibrary.org/conference-proceedings-of-spie](https://spiedigitallibrary.org/conference-proceedings-of-spie)

Front Matter: Volume 6831

, "Front Matter: Volume 6831," Proc. SPIE 6831, Nanophotonics, Nanostructure, and Nanometrology II, 683101 (14 March 2008); doi: 10.1117/12.783501

SPIE.

Event: Photonics Asia 2007, 2007, Beijing, China

PROCEEDINGS OF SPIE

Nanophotonics, Nanostructure, and Nanometrology II

Xing Zhu
Stephen Y. Chou
Yasuhiko Arakawa
Editors

12–14 November 2007
Beijing, China

Sponsored by
SPIE • COS—Chinese Optical Society

Cooperating Organizations
OSJ—Optical Society of Japan • OSK—Optical Society of Korea • Australian Optical Society • Optical Society of Singapore • Beijing Institute of Technology (China) • Beijing University of Posts and Telecommunication (China) • Peking University (China) • Tsinghua University (China) • Zhejiang University (China) • Changchun University of Science and Technology (China) • University of Shanghai for Science and Technology (China) • Shanghai Jiao Tong University (China) • Tianjin University (China) • Nankai University (China) • Shanghai Institute of Optics and Fine Mechanics (China) • Changchun Institute of Optics and Fine Mechanics (China) • Institute of Semiconductors (China) • Institute of Optics and Electronics (China) • Shanghai Institute of Technical Physics (China) • China Instrument and Control Society • China Solid State Lighting Research and Industry Alliance • Optoelectronics Technology Committee, COS (China)

Supporting Organizations
CAST—China Association for Science and Technology (China) • NNSF—National Nature Science Foundation (China) • The Ministry of Science and Technology (China)

Published by
SPIE

Volume 6831

Proceedings of SPIE, 0277-786X, v. 6831

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 *Nanophotonics, Nanostructure, and Nanometrology II*, edited by Xing Zhu, Stephen Y. Chou, Yasuhiko Arakawa, Proceedings of SPIE Vol. 6831 (SPIE, Bellingham, WA, 2007) Article CID Number.

ISSN 0277-786X
ISBN 9780819470065

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 © 2008, 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/08/\$18.00.

Printed in the United States of America.

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

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 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*
ix *Symposium Committees*

SESSION 1 NEAR-FIELD OPTICS AND SURFACE PLASMON POLARITON

- 6831 02 **Micro-cylinder mode in photonic quasicrystal observed by near-field optical microscopy** [6831-53]
Z. Fang, T. Dai, B. Zhang, X. Zhu, Peking Univ. (China)
- 6831 03 **Large Goos-Hänchen displacement of evanescent light beam in near-field enhanced configuration** [6831-17]
Y. Zhang, Shanghai Univ. (China); C.-F. Li, Shanghai Univ. (China) and Xi'an Institute of Optics and Precision Mechanics (China); X. Chen, Shanghai Univ. (China)
- 6831 04 **Analysis of resonant properties in surface plasmon polaritons nanocavities** [6831-01]
C. Hu, J. Liu, F. Sun, G. Zhang, Y. Liu, Beijing Jiaotong Univ. (China)
- 6831 05 **Evolution of microscopic interaction force and interpretation for major well-known optical phenomenon and experiments** [6831-07]
R. Zhu, China Metrology Institute Hangzhou (China); L. Zhu, The Second Hospital of Zhejiang Univ. (China); T. Wei, Y. Shi, China Metrology Institute Hangzhou (China)
- 6831 06 **Near-field intensity distribution from a bow-tie aperture VCSEL with its polarization state improved** [6831-57]
H. Gai, J. Wang, Q. Tian, Tsinghua Univ. (China); W. Xia, X. Xu, Shandong Univ. (China)

SESSION 2 METAMATERIALS

- 6831 08 **Nanometrology based on white-light spectral interferometry in thickness measurement** [6831-37]
H. Chen, T. Liu, Z. Meng, China Jiliang Univ. (China)
- 6831 09 **Single-negative negative index metamaterials with broad bandwidth** [6831-49]
J. Chen, Z. Fan, F. Yang, Institute of Semiconductors (China)

SESSION 3 PHOTONIC CRYSTALS

- 6831 0D **An ultracompact refractive index gas-sensor based on photonic crystal microcavity** [6831-16]
X. Wang, Beijing Univ. of Posts and Telecommunications (China) and Beijing Institute of Machinery (China); N. Lu, Beijing Institute of Machinery (China); J. Zhu, G. Jin, Tsinghua Univ. (China)

- 6831 OE **Comment on properties of one-dimensional photonic crystals containing negative refraction materials** [6831-24]
C. Hu, Y. Xu, H. He, South China Normal Univ. (China)

SESSION 4 OPTICAL CHARACTERIZATION

- 6831 OG **Simulation of optical surfaces and their PSD study** [6831-30]
S. Gan, Univ. of Science and Technology of China (China) and Hefei Univ. of Technology (China); Y. Bao, Hefei Univ. of Technology (China); Y. Hong, X. Xu, Y. Liu, S. Fu, Univ. of Science and Technology of China (China)
- 6831 OH **The specimen preparation methods for nano-indentation testing of biomaterials: a review** [6831-18]
J. Y. Sun, J. Tong, Z. J. Zhang, Jilin Univ. (China)
- 6831 OI **Improvement on thickness uniformity of large-area DLC thin films deposited by femtosecond pulsed laser** [6831-40]
J. Liu, Huazhong Univ. of Science and Technology (China) and High Speed Aerodynamics Institute of China (China); G. Zhang, X. Yuan, Huazhong Univ. of Science and Technology (China)
- 6831 OJ **Investigation on the laser transmission properties of nanofluids** [6831-06]
M. Qian, Z. Shen, J. Lu, X. Ni, Q. Li, Y. Xuan, Nanjing Univ. of Science and Technology (China)

SESSION 5 CALCULATION OF NANOSTRUCTURES

- 6831 OO **The energy levels of a nanoring in the presence of quantum barriers** [6831-25]
E. Faizabadi, K.N. Toosi Univ. of Technology (Iran) and Iran Univ. of Science and Technology (Iran); S. Ahmadi, P. Robot Sarpooshi, K.N. Toosi Univ. of Technology (Iran)
- 6831 OR **High efficiency fiber to waveguide optical coupler in silicon-on-insulator based slot waveguides** [6831-43]
Y. Liu, S. Chen, J. Yu, Institute of Semiconductors (China)
- 6831 OT **Confined optical fields based on surface plasmon polaritons** [6831-56]
Q. Wang, J. Wang, S. Zhang, Tsinghua Univ. (China)

SESSION 6 QUANTUM DOTS

- 6831 OU **Luminescent CdTe/CdS core-shell and CdTe/CdS/ZnS multi-layer quantum dots: synthesis and investigations for bio-application** [6831-20]
S. Xu, J. Zhang, X. Song, Z. Dai, Tianjin Polytechnic Univ. (China); B. Sun, Nankai Univ. (China)
- 6831 OV **Surface enhanced Raman scattering activity of core-shell Au nanoparticle film** [6831-08]
X. Hong, D. Du, Tianjin Univ. (China)

6831 0W **Mechanisms of plasmon-induced charge separation and recombination at gold nanoparticle supported on different size TiO₂ film systems** [6831-19]
L. Du, A. Furube, K. Hara, R. Katoh, M. Tachiya, National Institute of Advanced Industrial Science and Technology (Japan)

6831 0X **Electronic states in an infinite one-dimensional random binary quantum wire in the presence of electric field** [6831-41]
E. Faizabadi, Iran Univ. of Technology (Iran) and K.N. Toosi Univ. of Technology (Iran)

POSTER SESSION

6831 10 **Effect of scatterers shape between coupling channels on the photonic crystal coupler** [6831-02]
C. Guan, L. Yuan, Harbin Engineering Univ. (China)

6831 11 **Properties of ITO thin films prepared by APS-assisted EB evaporation** [6831-05]
G. He, C. Xiong, X. Yao, Huazhong Institute of Opto-Electronics (China)

6831 13 **Influence of SDBS on stability of Al₂O₃ nano-suspensions** [6831-11]
X.-J. Wang, South China Univ. of Technology (China) and Navy Arms of Services Command Academy (China); X.-F. Li, N. Wang, South China Univ. of Technology (China); X.-Y. Wen, Q. Long, Navy Arms of Services Command Academy (China)

6831 14 **The surface treatment of silicon wafer by microwave down-stream plasma etching** [6831-13]
H. Ju, Nagoya Univ. (Japan); W. Wang, The Hong Kong Polytechnic Univ. (Hong Kong China)

6831 15 **Threshold behavior of defect modes in one-dimensional active photonic crystal** [6831-14]
Y. Han, Huazhong Univ. of Science and Technology (China) and China Univ. of Geosciences (China); H. Wang, Shenzhen Univ. (China) and Univ. of Electronic Science and Technology of China (China); Z. Ouyang, Shenzhen Univ. (China)

6831 16 **Dispersion-induced localized modes in weakly random media** [6831-15]
Y. Han, China Univ. of Geosciences (China); H. Wang, Shenzhen Univ. (China) and Univ. of Electronic Science and Technology of China (China); Z. Ouyang, Univ. of Electronic Science and Technology of China (China)

6831 17 **Thermal treatment for tuning the lasing wavelength of quantum dot laser diodes** [6831-23]
K. W. Kim, Korea Institute of Science and Technology (South Korea) and Korea Univ. (South Korea); M. H. Park, Korea Univ. (South Korea); K. W. Jung, S. P. Ryu, N. K. Cho, J. Y. Lim, S. J. Park, J. D. Song, W. J. Choi, J. I. Lee, Korea Institute of Science and Technology (South Korea); J. H. Park, Korea Univ. (South Korea)

6831 18 **Accurate vibration detection of a rough surface** [6831-26]
H. Zeng, Y. Zhou, S. Fan, J. He, Institute of Semiconductors (China)

6831 19 **Fabrication of InGaN quantum dots by periodically interrupted growth in MOCVD** [6831-28]
S.-K. Choi, J.-M Jang, S.-H. Yi, J.-A Kim, W.-G. Jung, Kookmin Univ. (South Korea)

- 6831 1A **Properties of aluminum doped zinc oxide thin film by sol-gel process** [6831-29]
S.-H. Yi, S.-K. Choi, J.-M. Jang, J.-A Kim, W.-G. Jung, Kookmin Univ. (South Korea)
- 6831 1B **Fabrication of CoFe nanostructures by holographic lithography** [6831-31]
Z. Zhang, X. Wang, Y. Liu, Y. Guo, Y. Hong, X. Xu, S. Fu, P. Xu, J. Wang, Univ. of Science and Technology of China (China); J. Cai, Institute of Physics and Ctr. of Condensed Matter Physics (China)
- 6831 1C **Light emission from controlled multilayer comprising of thin amorphous and nanocrystalline silicon carbide layers** [6831-32]
W. Yu, L. Li, Y. Li, J. Du, X. Ding, S. Cui, G. Fu, Hebei Univ. (China)
- 6831 1D **Realization of super narrow pass-band and super narrow transmission-angle filters with one-dimensional defective photonic crystal hetero-structures** [6831-33]
D. Mao, Z. Ouyang, Y. Zhong, Shenzhen Univ. (China) and Shenzhen Key Lab. of Micro-Nano-Photonics Information Technology (China)
- 6831 1E **Structural and optical properties of doped silicon nanocrystals: first-principles calculation** [6831-42]
G. Fu, H. Gao, W. Lu, W. Ding, W. Yu, Hebei Univ. (China)
- 6831 1F **Optical modulator using silicon photonic crystals/nano-montmorillonite** [6831-47]
J. Li, J. Li, X. Wang, China Jiliang Univ. (China)
- 6831 1G **Influence of nano-scale dimension on properties of transmission in metallic gratings with narrow slits** [6831-52]
Y. Cao, P. Wang, C. Min, H. Ming, Univ. of Science and Technology of China (China)
- 6831 1K **New formalism in evaluation of the ground and few excited states of Hubbard chain nanostructures** [6831-39]
E. Faizabadi, Iran Univ. of Science and Technology (Iran) and K.N. Toosi Univ. of Technology (Iran); M. Soleimani, K.N. Toosi Univ. of Technology (Iran)

Author Index

Conference Committee

Conference Chairs

Xing Zhu, Peking University (China)
Stephen Y. Chou, Princeton University (USA)
Yasuhiko Arakawa, The University of Tokyo (Japan)

Program Committee

Yong Chen, Ecole Normale Supérieure (France)
Bert Hecht, University Basel (Switzerland)
Lin Huang, Veeco Metrology Group (USA)
Seongsin M. Kim, Stanford University (USA)
Olivier J. F. Martin, École Polytechnique Fédérale de Lausanne
(Switzerland)
Motoichi Ohtsu, The University of Tokyo (Japan)
Seung-Han Park, Yonsei University (South Korea)
Din-Ping Tsai, National Taiwan University (Taiwan, China)
Jia Wang, Tsinghua University (China)
Daozhong Zhang, Institute of Physics (China)
Jiasen Zhang, Peking University (China)

Session Chairs

- 1 Near-Field Optics and Surface Plasmon Polariton
Xing Zhu, Peking University (China)
- 2 Metamaterials
Jia Wang, Tsinghua University (China)
- 3 Photonic Crystals
Edris Faizabadi, K.N. Toosi University of Technology (Iran)
- 4 Optical Characterization
Jia Wang, Tsinghua University (China)
- 5 Calculation of Nanostructures
Jiaren Liu, National Research Council Canada (Canada)
- 6 Quantum Dots
Xing Zhu, Peking University (China)

Symposium Committees

General Chairs

Brian Culshaw, University of Strathclyde (United Kingdom)
Bingkun Zhou, Tsinghua University (China) and COS—Chinese Optical Society (China)

General Cochairs

Arthur Chiou, National Yang-Ming University (Taiwan, China)
Mitsuo Takeda, University of Electro-Communications (Japan)
Chungli Bai, Chinese Academy of Sciences (China)
Seung-Han Park, Yonsei University (South Korea)
Zhizhan Xu, Shanghai Institute of Optics and Fine Mechanics (China)
Jianlin Cao, China Ministry of Science and Technology (China)
Junhao Chu, Shanghai Institute of Technical Physics (China)
Jingming Kuang, Beijing Institute of Technology (China)
Xiaomin Ren, Beijing University of Posts and Telecommunications (China)
Dingbo Kuang, Shanghai Institute of Technical Physics (China)
Guozheng Yang, Institute of Physics (China)

Honorary Chairs

Daheng Wang, Chinese Academy of Sciences (China)
Guoqiang Mu, Nankai University (China)

Technical Program Chair

Songlin Zhuang, Shanghai University of Science and Technology (China)

Technical Program Cochairs

Xun Hou, Xian Institute of Optics and Precision Mechanics (China)
Qian Mao, Wuhan Research Institute of Posts and Telecommunications (China)
Xu Liu, Zhejiang University (China)

Local Organizing Committee Chair

Shusen Xie, Fujian Normal University (China)

Local Organizing Committee Cochairs

Guoqiang Ni, Beijing Institute of Technology (China)
Qihuang Gong, Peking University (China)
Ying Gu, PLA General Hospital (China)
Huilin Jiang, Changchun University of Science and Technology (China)

General Secretary

Guoqiang Ni, Beijing Institute of Technology (China)

Administrative Vice General Secretary

Boyu Ding, Beijing Institute of Technology (China)

Vice General Secretaries

Hanyi Zhang, Tsinghua University (China)

Ya Cheng, Shanghai Institute of Optics and Fine Mechanics (China)

Zhongwei Fan, Academy of Opto-electronics (China)

Jianxin Chen, Fujian Normal University (China)

Lan Wu, Zhejiang University (China)

Shaowen Wang, COS—Chinese Optical Society (China)

Yuejin Zhao, Beijing Institute of Technology (China)

Chongxiu Yu, Beijing University of Posts and Telecommunication (China)

Jun Ruan, China Solid State Lighting Research and Industry Alliance
(China)

Local Organizing Committee Members

Kangnan Qi, Beijing Optical Society (China)

Chunqing Gao, Beijing Institute of Technology (China)

Tiegen Liu, Tianjin University (China)

Lanxing Shao, Shanghai Optical Society (China)

Zaixuan Zhang, Chinese Jiliang University (China)

Hongda Chen, Institute of Semiconductors (China)

Baosheng Liu, Beijing Optical Society (China)

Xin Wang, Hubei Optical Society (China)

Lin Zhai, COS—Chinese Optical Society (China)

Zhiqiang Zhu, East China Normal University (China)

Lei Xu, Fudan University (China)

Hezhou Wang, Zhongshan University (China)

Zhiming Yi, Ofstar Tech Company, Ltd., Shenzhen (China)