International Workshop and Conference on Photonics and Nanotechnology 2007

Preecha P. Yupapin
Wicharn Techitdheera

Editors

16–18 December 2007
Pattaya, Thailand

Organized by
Department of Applied Physics, Faculty of Science, King Mongkut’s Institute of Technology Ladkrabang (Thailand)

Cooperating Organizations
SPIE
OSA—Optical Society of America (USA)
IEEE-LEOS Thailand Chapter (Thailand)
CH Karnchang Public Company Ltd. (Thailand)
National Electronics and Computer Technology Center (Thailand)

Published by
SPIE

Volume 6793
Contents

vi Conference Committees
ix Preface

6793 02 Nonlinear effects in optical fibers: limitations and benefits (Keynote Paper) [6793-01]
M. F. S. Ferreira, Univ. of Aveiro (Portugal)

6793 03 Method for generating and measuring static and dynamic small forces (Invited Paper)
[6793-02]
Y. Fujii, Gunma Univ. (Japan)

6793 04 Negative differential capacitance of AlGaN/GaN heterostructure in presence of InN quantum dots [6793-03]
A. Asgari, Univ. of Tabriz (Iran)

6793 05 Particle tracking from in-line holograms by using single wavelet coefficient [6793-04]
S. Soontaranon, J. Widjaja, Suranaree Univ. of Technology (Thailand)

6793 06 Widely tunable ultraviolet C generation using wavelength selective external high-Q-cavity and a blue laser diode system [6793-05]
C. Tangtrongbenchasil, K. Nonaka, Kochi Univ. of Technology (Japan)

6793 07 Propagation characteristics of a random-metal dielectric film for an optical near-field generator (Invited Paper) [6793-06]
A. Utsumi, M. Fukuda, Toyohashi Univ. of Technology (Japan)

6793 08 Application of reflection-spectrum envelope for sampled gratings [6793-07]
X. He, Huazhong Univ. of Science and Technology (China) and The Hong Kong Polytechnic Univ. (Hong Kong China); D. N. Wang, The Hong Kong Polytechnic Univ. (Hong Kong China); D. Huang, Y. Yu, Huazhong Univ. of Science and Technology (China)

6793 09 Estimation of coupling power parameter of fused coupled fibers [6793-08]
Saktioto, Univ. of Riau (Indonesia); J. Ali, Univ. Teknologi Malaysia (Malaysia); M. Fadhali, Ibb Univ. (Yemen); J. Zainal, Univ. Teknologi Malaysia (Malaysia)

6793 0A Dynamic displacement measurements with a dual-cavity fiber Fabry-Perot interferometer [6793-09]
S. Pullteap, H. C. Seat, Lab. d’Optoélectronique pour les Systèmes Embraqués, ENSEEIHT-INPT (France)

6793 0B Improving the opal-based photonic crystals by noise-assisted crystallisation [6793-10]
W. Khunsin, G. Kocher, S. G. Romanov, Univ. College Cork (Ireland); C. M. Sotomayor Torres, Univ. College Cork (Ireland), Institució Català de Recerca i Estudis Avançats (Spain), and Catalan Institute of Nanotechnology (Spain)
Temperature-dependent photoluminescence investigation of narrow well-width InGaAs/InP single quantum well [6793-11]
W. Pecharapa, W. Techitthedra, P. Thanomgam, J. Nukeaw, King Mongkut’s Institute of Technology Ladkrabang (Thailand)

The effect of nanotechnology on education [6793-12]
C. Viriyavejakul, King Mongkut’s Institute of Technology Ladkrabang (Thailand)

Q-factor and waveguide-sphere separation effects in waveguide-coupled microsphere resonators [6793-13]
Y. Panitchob, G. Senthil Murugan, M. N. Zervas, J. S. Wilkinson, Univ. of Southampton (United Kingdom)

Steady state numerical model of a Q-switched double-clad fiber laser [6793-14]
S. A. S. Zyabari, Islamic Azad Univ. of Iran (Iran); A. Zarifkar, Iran Telecommunication Research Ctr. (Iran)

Mode matching for efficient laser diode to single mode fiber coupling [6793-15]
M. Fadhali, Saktioto, J. Zainal, Y. Munajat, J. Ali, R. Abdul Rahman, Univ. Technology Malaysia (Malaysia)

Toward single molecule detection through tip-enhanced near-field Raman spectroscopy (Invited Paper) [6793-16]
P. Verma, T. Ichimura, T. Yano, Y. Inouye, Osaka Univ. (Japan); S. Kawata, Osaka Univ. (Japan) and RIKEN (Japan)

Electrical and optical properties of Al doped Zno film prepared by spray pyrolysis technique [6793-17]
S. P. Shrestha, Tribhuvan Univ. (Nepal) and Abdus Salam International Ctr. for Theoretical Physics (Italy); P. Basnet, Tribhuvan Univ. (Nepal)

Determination of the optical constants and thickness of titanium oxide thin film by envelope method [6793-18]
N. Witit-anun, P. Rakkwamsuk, P. Limsuwan, King Mongkut’s Institute of Technology Thonburi (Thailand)

Electrical spin injection from an iron-rich iron-platinum thin film into gallium arsenide [6793-19]
A. Sinsarp, Mahidol Univ. (Thailand) and National Institute of Advanced Industrial Science and Technology (Japan); T. Manago, Tokyo Univ. of Science (Japan); F. Takano, H. Akinaga, National Institute of Advanced Industrial Science and Technology (Japan)

Shooting method calculation of temperature dependence of transition energy for quantum well structure [6793-20]
B. Jukgoljun, W. Pecharapa, W. Techitthedra, King Mongkut’s Institute of Technology Ladkrabang (Thailand)

Design of optical ring resonator filters for WDM applications [6793-21]
P. Saeung, P. P. Yupapin, King Mongkut’s Institute of Technology Ladkrabang (Thailand)
An optical tunable band-pass filter using chaotic signals in a nonlinear micro-ring resonator [6793-22]
P. P. Yupapin, W. Suwancharoen, S. Pipatsart, King Mongkut's Institute of Technology Ladkrabang (Thailand)

An aerosol optical thickness investigation in the Suvarnabhumi Airport using an inexpensive sunphotometer [6793-23]
K. Udomwech, P. P. Yupapin, S. Pipatsart, King Mongkut's Institute of Technology Ladkrabang (Thailand)

An alternative optical switch using Mach Zehnder interferometer and two ring resonators [6793-24]
P. P. Yupapin, P. Saeung, King Mongkut's Institute of Technology Ladkrabang (Thailand); P. Chunpang, Mahasarakham Univ. (Thailand)

The entangled photon regeneration and characterization in a nonlinear fiber ring resonator incorporating an erbium-doped fiber [6793-25]
W. Khunnam, P. P. Yupapin, King Mongkut's Institute of Technology Ladkrabang (Thailand)

Chaotic signal filtering device using a serial connection of micro-ring resonators [6793-26]
P. P. Yupapin, W. Suwancharoen, S. Chaiyasootnorn, S. Thongmee, King Mongkut's Institute of Technology Ladkrabang (Thailand)

Nonlinear effects in fiber grating to nano-scale measurement resolution [6793-27]
P. Phiphithirankarn, P. Yabosdee, P. P. Yupapin, King Mongkut's Institute of Technology Ladkrabang (Thailand)

Quantum chaotic signals generated by a nonlinear micro-ring resonator [6793-28]
C. Sripakdee, W. Suwancharoen, P. P. Yupapin, King Mongkut's Institute of Technology Ladkrabang (Thailand)

Photorefractive effect in Pb-based relaxor ferroelectric materials [6793-29]
S. Suttirak, P. Buranasiri, King Mongkut's Institute of Technology Ladkrabang (Thailand); P. P. Banerjee, Univ. of Dayton (USA); N. Witthayakorn, W. Neeyakorn, King Mongkut's Institute of Technology Ladkrabang (Thailand)

Author Index
Conference Committees

General Chair

Preecha P. Yupapin, King Mongkut's Institute of Technology
Ladkrabang (Thailand)

General Cochair

Wicharn Techitdheera, King Mongkut's Institute of Technology
Ladkrabang (Thailand)

International Advisory and Steering Committee

T. Achariyapaopan, Fabrinet (Thailand)
M. A. Allen, Mahidol University (Thailand)
W. Boyle, City University London (United Kingdom)
P. L. Chu, City University of Hong Kong (China)
P. Drummond, The University of Queensland (Australia)
C. Gheorghiu, T. Popavicia (Romania)
K. T. V. Grattan, City University London (United Kingdom)
W. Loeksmanto, Bandung Institute of Technology (Indonesia)
C. H. Oh, National University of Singapore (Singapore)
H. Ohno, Tohoku University (Japan)
K. Phommasone, National University of Laos (PDR)
K. Weir, Imperial College London (United Kingdom)

Technical Committee

R. Chitaree, Mahidol University (Thailand)
T. Kaewdang, King Mongkut's Institute of Technology Ladkrabang
(Thailand)
J. Nukeaw, King Mongkut’s Institute of Technology Ladkrabang
(Thailand)
M. Oi, Tokyo Gakugei University (Japan)
W. Pecharapa, King Mongkut’s Institute of Technology Ladkrabang
(Thailand)
V. Quang, IOP (Vietnam)
A. Roeksabutr, Mahanakorn University of Technology (Thailand)
M. M. Salleh, University Kebangsaan (Malaysia)
D. N. Wang, The Hong Kong Polytechnic University (Hong Kong China)
J. Widjaja, Suranaree University of Technology (Thailand)
T. Wongchareun, Bangkok University (Thailand)
L. Yong-Hee, Korea Advanced Institute of Science and Technology
(South Korea)
Preface

The papers published in this SPIE volume were presented at the International Conference on Photonics and Nanotechnology (ICPN-2007), that took place 16–18 December 2007, in Pattaya, Thailand. The conference was organized by the Department of Applied Physics, Faculty of Science, King Mongkut’s Institute of Technology Ladkrabang (KMITL), Thailand. The event was supported by SPIE, OSA—Optical Society of America, IEEE-LEOS-Thailand, CH Karnchang (Thailand), NECTEC (Thailand), and the Department of Applied Physics, Faculty of Science, KMITL, Thailand.

Twenty-nine papers were selected for publication in this volume. The papers were selected by the ICPN-2007 committee from the 60 submitted manuscripts. The published papers have been edited and modified by the corresponding authors of the presented papers, and finally, edited by the editors of this volume. The technical quality of the papers was carefully reviewed and edited before publication in these proceedings.

We would also like to thank all contributing authors for their quality work and expect to have this collaboration again in the next two years.

Preecha P. Yupapin