PROCEEDINGS OF SPIE

Photonic Crystal Materials and Devices XII

Dario Gerace Gabriel Lozano Christelle Monat Sergei G. Romanov Editors

5–7 April 2016 Brussels, Belgium

Sponsored by SPIE

Cosponsored by B-PHOT—Brussels Photonics Team (Belgium) Research Foundation Flanders (Belgium) Visit Brussels (Belgium)

Cooperating Organisations
Photonics 21 (Germany)
EOS—European Optical Society (Germany)
KTN—the Knowledge Transfer Network (United Kingdom)
Graphene Flagship (Belgium)
Photonics Public Private Partnership (Belgium)

Published by SPIE

Volume 9885

The papers 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. Additional papers and presentation recordings may be available online in the SPIE Digital Library at SPIEDigitalLibrary.org.

The papers 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 *Photonic Crystal Materials and Devices XII*, edited by Dario Gerace, Gabriel Lozano, Christelle Monat, Sergei G. Romanov, Proceedings of SPIE Vol. 9885 (SPIE, Bellingham, WA, 2016) Six-digit Article CID Number.

ISSN: 0277-786X

ISSN: 1996-756X (electronic) ISBN: 9781510601307

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 © 2016, 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/16/\$18.00.

Printed in the United States of America 'Vm7 i ffUb '5 ggc WJUh' gž +b Wži b XYf 'JW bgY 'Zfca 'GD-9.

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. Papers are published as they are submitted and meet publication criteria. A unique 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.

Contents

9885 OX

Authors V vii Conference Committee QUANTUM OPTICS IN PHC STRUCTURES AND LIGHT EMISSION CONTROL 9885 06 Numerical characterization of symmetry properties for photonic crystals with hexagonal **lattice** [9885-5] 9885 07 Modulation of quantum dot photoluminescence in porous silicon photonic crystals as a function of the depth of their penetration [9885-6] PHOTONIC CRYSTAL-BASED DEVICES AND PHOTONIC INTEGRATED CIRCUITS 9885 0C Efficient coupling to slow light photonic crystal waveguide [9885-11] HYBRID PHOTONIC CRYSTAL-BASED DEVICES Graphene-covered 1D photonic crystals enabling TE-polarized graphene modes [9885-16] 9885 OH **NONLINEAR OPTICS AND LASERS** 9885 OI Soliton dynamics in semiconductor photonic crystals (Invited Paper) [9885-17] LIGHT CONTROL AND CONFINEMENT IN PHC STRUCTURES AND CAVITIES II 9885 OR Transition from photonic crystals to dielectric metamaterials: A phase diagram and the order parameter [9885-27] 3D PHOTONIC CRYSTALS AND COLLOIDAL STRUCTURES 9885 OS Colloidal crystal formation: nano-dewetting and the assembly process (Invited Paper) [9885-28] Angle-resolved retroreflection: what can it tell us about optical properties of three-9885 0V dimensional photonic crystals? [9885-31] PLASMONICS AND BIOSENSING

Photonic crystal based 2D integrating cell for sensing applications [9885-33]

9885 0Z Selectivity, cycling stability and temperature dependence of touchless finger motion tracking devices based on 1D photonic crystals (Best Student Paper) [9885-35]

POSTER SESSION

9885 14	Exploring the promising properties of 2D exfoliated black phosphorus for optoelectronic applications under 1.55 µm optical excitation [9885-40]
9885 15	Fano resonance can make a homogeneous cylinder invisible: theoretical proposal and experimental demonstration [9885-41]
9885 18	Photonic crystal based spatial filters: working principle and applications in micro-optical devices [9885-44]
9885 19	Fabrication of controllable form submicrometer structures on positive photoresist by one-photon absorption direct laser writing technique [9885-45]
9885 1A	Comprehensive analysis of photonic effects on upconversion of β -NaYF ₄ :Er ₃₊ nanoparticles in an organic-inorganic hybrid 1D photonic crystal [9885-46]
9885 1D	Optical limiter based on two-dimensional nonlinear photonic crystals [9885-49]
9885 1F	Optical properties of nanocrystalline (Ho _{0,05} Y _{0,95}) ₂ Ti ₂ O ₇ for optical amplifiers [9885-53]
9885 1G	Surface waves in mesh synthetic photonic lattices [9885-54]
9885 1H	Design and fabrication of 2D tungsten photonic crystal for thermophotovoltaic systems with high efficiency [9885-55]
9885 1I	Colloidal photonic glass for electro-optic display stabilized with potassium persulfate (KPS) in polar solvent [9885-56]
9885 1J	Characterization of photonic amorphous structures with different characteristic lengths [9885-57]
9885 1K	Refractory absorber/emitter using monolayer of ceramic microparticles [9885-58]
9885 1L	Resonance splitting effect in one-dimensional photonic crystal with nanocomposite layer [9885-59]
9885 1M	Unconventional optical Tamm defect states in metal-terminated opal photonic crystals [9885-60]
9885 1N	THz TDS of substance covered by disordered structure [9885-61]
9885 1P	Comparison of experimental approaches to study selective properties of thick phase-amplitude holograms recorded in materials with diffusion-based formation mechanisms [9885-63]