

PROCEEDINGS OF SPIE

Smart Materials for Opto-Electronic Applications

**Ivo Rendina
Lucia Petti
Domenico Sagnelli
Giuseppe Nenna**
Editors

**25–27 April 2023
Prague, Czech Republic**

Sponsored by
SPIE

Cooperating Organisations
ELI Beamlines (Czech Republic)
HiLASE (Czech Republic)
Laserlab Europe
AWE (United Kingdom)
STFC (United Kingdom)

Published by
SPIE

Volume 12584

Proceedings of SPIE 0277-786X, V. 12584

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

Smart Materials for Opto-Electronic Applications, edited by Ivo Rendina, Lucia Petti,
Domenico Sagnelli, Giuseppe Nenna, Proc. of SPIE Vol. 12584, 1258401
© 2023 SPIE · 0277-786X · doi: 10.1117/12.2688818

Proc. of SPIE Vol. 12584 1258401-1

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 SPIDigitalLibrary.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 these proceedings:
Author(s), "Title of Paper," in *Smart Materials for Opto-Electronic Applications*, edited by Ivo Rendina, Lucia Petti, Domenico Sagnelli, Giuseppe Nenna, Proc. of SPIE 12584, Seven-digit Article CID Number (DD/MM/YYYY); (DOI URL).

ISSN: 0277-786X
ISSN: 1996-756X (electronic)

ISBN: 9781510662889
ISBN: 9781510662896 (electronic)

Published by
SPIE
P.O. Box 10, Bellingham, Washington 98227-0010 USA
Telephone +1 360 676 3290 (Pacific Time)
SPIE.org
Copyright © 2023 Society of Photo-Optical Instrumentation Engineers (SPIE).

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 fees. To obtain permission to use and share articles in this volume, visit Copyright Clearance Center 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.

Printed in the United States of America by Curran Associates, Inc., under license from SPIE.

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

SPIE. DIGITAL LIBRARY
SPIDigitalLibrary.org

Paper Numbering: A unique citation identifier (CID) number is assigned to each article in the Proceedings of SPIE at the time of 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 and print versions of the publication. SPIE uses a seven-digit CID article numbering system structured as follows:

- The first five 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.

Contents

v *Conference Committee*

SMART MATERIALS I

- 12584 02 **Mechanochromic luminescent derivatives based on xanthenone and thioxanthenone for the fabrication of OLED devices as emitter layer (Invited Paper)** [12584-2]
- 12584 03 **Ultrafast control of exciton dynamics by optically-induced thermionic carrier injection in a metal-semiconductor heterojunction** [12584-16]

SMART MATERIALS II

- 12584 04 **Widely tunable long period gratings using 3D printed periodic grooved plates (Invited Paper)** [12584-10]

PULSE-COM I WORKSHOP

- 12584 05 **Optimization of PMP films' production and mechanical properties based on ZnO nanoparticles addition (Invited Paper)** [12584-18]
- 12584 06 **ZnO nanowires-based piezoelectric energy transducers: the role of size and semiconducting properties (Invited Paper)** [12584-19]
- 12584 07 **New range of light driven actuation devices (Invited Paper)** [12584-20]
- 12584 08 **ZnO nanorods as a piezoelectric energy harvester from light induced flexions (Invited Paper)** [12584-21]

PULSE-COM II WORKSHOP

- 12584 09 **Photo-mobile polymers in energy harvesting applications under simulated solar light (Invited Paper)** [12584-22]
- 12584 0A **Printed ZnO nanoparticle seed layers to grow ZnO nanowires on flexible substrates (Invited Paper)** [12584-23]
- 12584 0B **Visible photomobile response of azobenzene-based polymer/carbon black films (Invited Paper)** [12584-24]

12584 0C **The comparative analysis of 2D photonic crystals applications based on specific modeling/simulation results (Invited Paper)** [12584-25]

SMART MATERIALS IV

12584 0D **Feedbacks in light-active soft materials (Invited Paper)** [12584-27]

SMART MATERIALS V

12584 0E **Light rectification with plasmonic nano-cone point contact-insulator-metal architecture (Invited Paper)** [12584-29]

POSTER SESSION

12584 0F **Effects of nanodiamonds layer in organic light emitting diode** [12584-35]

12584 0G **Electromagnetic modelling of near-field plasmonic switches based on fractal nanoantennas** [12584-39]

12584 0H **Structural and luminescent properties of dysprosium ions-doped tungstate phosphor for w-LEDs (Best Student Paper)** [12584-43]

12584 0I **Enhanced light harvesting in PM6:Y6 organic solar cells using plasmonic nanostructures** [12584-44]

12584 0J **Photomobile films based on liquid crystal polymer-carbon black composites** [12584-45]

12584 0K **Optical effects by opal/reverse opal structures, laser polymerizing and plasmonic Ag ultra-thin films** [12584-46]

Conference Committee

Symposium Chairs

Bedřich Rus, ELI Beamlines (Czech Republic)
Saša Bajt, Deutsches Elektronen-Synchrotron (Germany)
Ivo Rendina, Istituto per la Microelettronica e Microsistemi, CNR (Italy)
Mike Dunne, SLAC National Accelerator Laboratory (United States)
Chris Edwards, Central Laser Facility, Science and Technology
Facilities Council (United Kingdom)

Conference Chairs

Ivo Rendina, Istituto per la Microelettronica e Microsistemi, CNR (Italy)
Lucia Petti, Istituto di Scienze Applicate e Sistemi Intelligenti "Eduardo
Caianiello" (Italy)
Domenico Sagnelli, Istituto di Scienze Applicate e Sistemi Intelligenti
"Eduardo Caianiello" (Italy)
Giuseppe Nenna, ENEA (Italy)

Conference Programme Committee

Gaetano Assanto, Università degli Studi di Roma Tre (Italy)
Malgosia Kaczmarek, University of Southampton (United Kingdom)
Katarzyna Matczyszyn, Wrocław University of Science and
Technology (Poland)
Alberto Naldoni, Università di Torino (Italy)
Hao Zeng, Tampere University (Finland)
Joseph Zyss, École normale supérieure Paris-Saclay (France)

