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Pavel Tománek
Dagmar Senderáková
Petr Páta
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5 Photonic Crystals and Photonic Bandgap Structures
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6 Diffractive Optical Devices
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7 Waveguide Photonics
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8 Organic Photonic Materials and Devices
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9 Non-linear Materials, Devices, and Applications
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10 Solid State Lighting and LED, LD, OLED, Solar Cells
Steve J. Smith, South Dakota School of Mines and Technology (United States)

11 Nanophotonics and Nanooptics
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12 Photonics and Multimedia
Joël Cox, The Institute of Photonic Sciences (ICFO) (Spain)

13 Photonics and Education
Pavel Tománek, Brno University of Technology and Czech and Slovak Society for Photonics (Czech Republic)

Introduction

This volume contains a selection of 67 peer-reviewed submitted papers from 85 contributions presented during the eighth Photonics Prague 2014 conference. The conference is dedicated to the development of photonics, particularly in the eastern European countries, with special emphasis on systems and devices in Photonics.

The conference included 13 topical sessions covering various aspects of Photonics as:

1. Lasers in Industry
2. Optical Sensors
3. Biophotonics
4. Simulation of Photonic Devices
5. Photonic Crystals and Photonic Bandgap Structures
6. Diffractive Optical Devices
7. Waveguide Photonics
8. Organic Photonic Materials and Devices
9. Non-linear Materials, Devices, and Applications
10. Solid State Lighting and LED, LD, OLED, Solar Cells
11. Nanophotonic and Nanooptics
12. Photonics and Education
13. Photonics and Multimedia

Also, this volume contains papers of the SPIE Best Student Presentation Awards winners:

1. Matteo Barozzi, Università degli Studi di Parma, Italy, for oral presentation of paper [PPR100-71] **All-optical polarization control and noise cleaning based on a nonlinear lossless polarizer** by Matteo Barozzi, Armando Vannucci and Giorgio Picchi

2. Gernot Schaffernak, Karl-Franzens-Universität Graz, Austria, for oral presentation of paper [PPR100-50] **Fluorescence coupling to plasmonic nanoparticles** by Gernot Schaffernak, Christian Gruber, Joachim R. Krenn, Markus Krug, Marija Gašparić, Martin Belitsch, and Andreas Hohenau

3. Jakub Cajzl, Institute of Photonics and Electronics of the ASCR, Czech Republic, for oral presentation of paper [PPR100-77] **Characterization of fluorescence lifetime of Tm-doped fibers with increased quantum conversion efficiency**, by Jakub Cajzl, Pavel Peterka, Pavel Honzátko, Jan Mrázek, Ondřej Podrazký, Filip Todorov, Petar Gladkov, Jayanta Sahu, Miguel Nunez-Velazquez, Pavla Nekvintová, and Ivan Kašík

As well as of ex-equo CSSF Young Scientist Award Winners:

1. **Petr Janout**, Czech Technical University in Prague, Czech Republic, for oral presentation of paper [PPR100-125] **Stellar objects identification using wide-field camera** by Petr Janout, Petr Páta, Jan Bednář, Elena Anisimova, Martin Blažek, and Petr Skála (CZE)

2. **Dinara Dallaeva**, Brno University of Technology, Czech Republic, (CZE) for oral presentation of paper [PPR100-15] **Realization of microscale detection and localization of low light emitting spots in monocrystalline silicon solar cells** by Dinara Dallaeva, Paval Tománek, Pavel Škarvada, and Lubomír Grmela

We would like to thank all authors for their excellent contributions, which made for an outstanding high-level conference, and members of the Program Commitee for their fine effort in preparing the conference technical program, as well as for their opinion concerning the submitted papers and awards. Last, but not least, we would like also thank the staff of SPIE for their support in preparing these Proceedings.

We expect that this Photonics Prague series will continue, and we look forward to inviting scientists from all countries to attend next Photonics Prague conference in 2017.

Pavel Tománek
Dagmar Senderáková
Petr Páta

Welcome Address

Prague
27 August 2014

Ladies and Gentlemen, Dear Participants, Dear Colleagues,

We welcome you who are coming from countries all over the world to the Eighth International Conference Photonics Prague 2014 (Photonics, Devices, and System VI) held 27–29 August 2014 at Clarion Congress Hotel in Prague, Czech Republic.

The Conference traditionally represents the most important event organized by Czech and Slovak Society for Photonics (CSSF) every three years.

Photonics is driving innovation in Europe, and is one of the most important key technologies for markets in 21st century. Photonics is cross-sectoral technology, which comprises ten sectors in Europe, and more than 40 major product segments. Its diverse applications play a vital role in the information society.

Today, lighting; measurement and automated vision; production technology; medical technology and life science; defense photonics; and optical components and systems share more than 10% of the total European production volume. While optical communications, solar energy, information technology, and flat panel displays cover share less than 10%.

European photonics production is now comparable to that of microelectronics in Europe, and it is expected to exceed it soon. To reach this result, it is necessary to ensure and strengthen a close cooperation between academia, the research community, and industry. The foremost idea of the organizers was to show the variety of photonic approaches to the current development of the high-technology in Europe and worldwide in areas such as: information and communication, lighting, manufacturing, security or life science, and health. Furthermore, this year, the trend is very important in view of the Horizon 2020 Framework Programme of the European Commission and of further international collaboration.

Therefore, a principal task of the photonics conference series at Prague is to create an environment for open exchange of topical research information and to stimulate a discussion of novel concepts and fields of application. This conference series also represents the important regional forum for advances in nature of physical phenomena used in photonics, instruments and devices development, and a wide range of industrial photonics applications.

The conference program committee has suggested three plenary talks showing the emerging trends in photonics, not only from experimental or technical points of view, but also from its theoretical principles. In the first part, Radan Slavík gives a talk entitled "Phase sensitive amplification," and I. M. Dharmadasa gives a talk entitled "Next generation solar cells based on graded bandgap structure utilizing low-cost electroplated materials." In the second part, Alex Vitkin presents "Photon mayhems: using light for structural and functional assessment of biological tissues."

From the numerous abstracts that have been submitted, six were selected as invited, 43 for oral presentation, and 35 for poster presentation, which will be presented during a three-day meeting. The presentations are thematically distributed over 13 topics.

About 90 scientists from 24 countries are attending the conference. A quick glance at the program shows that most of participants are local (Czech and Slovak) or from Eastern European countries. A more detailed look reveals the current trends in the research fields.

We acknowledge all the contributors for submitting the manuscripts in time and for preparing their oral or poster presentations.

We would like to thank the International Program Committee for its help in the selection of papers and the review procedures, and especially the members of the local organizing committee for their efforts in preparing this conference.

We hope that you will profit not only from the conference scientific program and its social events, but also from the beauties of the wonderful city of Prague.

We wish you all an inspiring meeting, and we hope you will enjoy it.

Prof. Dr. Pavel Tománek
President of Czech and Slovak
Society for Photonics
Conference Chair

SPIE Best Student Presentation Award
Photonics Prague 2014

This year, the Conference honoured three Laureates with SPIE Best student presentation Awards.

Eighteen students took part in the competition. The evaluation commission chose three oral presentations.

Podium of SPIE Best Student Presentation Award:
Dr. Petr Páta, General Secretary of the Czech and Slovak Society for Photonics and Pavel Tománek, conference chair, announcing the results:

From the left to right: **Matteo Barozzi** (Università degli Studi di Parma, Italy): 1st place for his presentation on "All-optical polarization control and noise cleaning based on a nonlinear lossless polarizer"

Gernot Schaffernak (Karl-Franzens-Universität Graz, Austria): 2nd place for his presentation on "Fluorescence coupling to plasmonic nanoparticles"

Jakub Cajzl (Institute of Photonics and Electronics, Academy of Sciences of the Czech Republic, Prague, Czech Republic): 3rd place for his presentation on "Characterization of fluorescence lifetime of Tm-doped fibers with increased quantum conversion efficiency"

CSSF Young Scientist Award 2014

The Czech and Slovak Society for Photonics (CSSF) awarded its prize for best presentation of young Czech and Slovak scientists at the Photonics Prague 2014 conference.

This year, there were two coequal prizes:

Petr Janout, Czech Technical University in Prague, Czech Republic, for his presentation on "Stellar objects identification using wide-field camera," and **Dinara Dallaeva**, Faculty of Electrical Engineering and Communication, Brno University of Technology, Czech Republic, for her presentation on "Realization of microscale detection and localization of low light emitting spots in monocrystalline silicon solar cells."

Petr Páta, Pavel Tománek and Dinara Dallaeva.