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Introduction

This volume contains a selection of 89 papers from 135 contributions presented during the sixth Photonics Prague 2008 conference dedicated to the development of photonics particularly in the Eastern European countries, with special highlights on systems and devices in photonics.

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

1. Lasers and Photodetectors in Industry, Imaging, and Sensors
2. Lasers for Medical Applications
3. Photonic Biosensors
4. Design, Simulation, and Modelization of Photonic Devices
5. Photonic Crystals and Photonic Bandgap Structures
6. Diffractive Photonic Devices
7. Guided Wave Photonics
8. Organic Photonic Materials and Devices
9. Nonlinear Materials, Devices, and Applications
10. Photonics In Multimedia
11. Nanophotonic and Nanooptics
12. Solid State Lighting + LED, LD, OLED
13. Education In Photonics

All submitted papers were reviewed by members of the program committee.

We would like to thank all authors for their excellent contributions, which made for this outstanding high-level conference. We also thank the members of the program committee for their fine effort in preparing the conference technical program as well as for their opinions concerning the submitted papers. Last, but not least, we would like to thank the staff of SPIE for their support in preparing this proceedings.

We expect that this Photonics Prague series will continue and we are looking forward to inviting scientists from around the world to attend the next Photonics Prague conference in 2011.

Pavel Tománek
Dagmar Senderáková
Miroslav Hrabovský

Welcome Address

Ladies and gentlemen, dear participants, dear friends,

We welcome all of you, who come from countries all over the world, to the sixth International Conference of Photonics, Prague 2008 on "Photonics, Devices, and Systems," held from 27–29 August 2008 at Artemis Olympik Hotel in Prague, Czech Republic.

This conference is the sixth one in a series. It follows the national Czech and Slovak Society for Photonics (CSSF) meeting held in Olomouc (1992) and four International conferences in Prague (1995, 1999, 2002, 2005), and traditionally represents the most important event organized by the CSSF, held every three years.

Photonics is an extraordinarily strong and dynamic field, one of the most important key technologies for markets in the 21st century. Its diverse applications play a vital role in the information society, ranging from industry to telecommunications, energy, medicine, and environment.

The principal idea of the organizers is 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, and life science and health. Furthermore, this year the trend is very important in light of the 7th Framework Programme of the European Commission and increasing international collaboration.

The main target of the photonics conference series in 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 an important regional forum for advances in the nature of physical phenomena used in photonics, instruments and device development, and a wide range of industrial photonics applications.

The conference program committee has suggested four plenary talks. We are very happy that we can start "historically" with a talk about Theodore Harold Maiman and his way to the invention of the laser source. Due to this discovery, the field of photonics was launched. A replica of this first laser setup using original contemporary components will also be shown here. Then, a cutting-edge development in disk, fiber, rod, and slab laser concepts which opens new application perspectives will be presented. Two following plenary talks, "Structured light fields for the biosciences" and "Controlling light at the nanoscale using plasmonic antennas and nanostructures" will show us the latest use of photonics in emerging bioscience and nanoscale areas.

From the numerous abstracts that have been submitted, 19 were selected as invited, 72 for oral presentation, and 51 for poster presentation, which will all be presented during a three-day meeting. The presentations are thematically distributed over 13 sessions. About 140 scientists from 34 countries are attending the conference. A quick glance at the program shows that most of participants are local (Czech) or from Eastern European countries. A more detailed look reveals the current trends in the research field.

This is the first time the conference is honored by a SPIE Best Student Paper Award. The student applicants and candidates for this award are almost exclusively young ladies, therefore the conference also contributed to the development of the SPIE Women in Optics program.

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

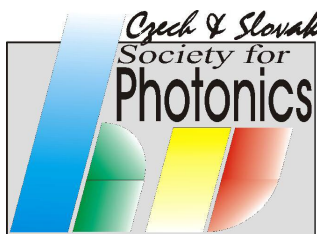
We would like to thank the International program committee for its help in the selection of papers and the review procedures, and members of the local organizing committee for their efforts in preparing this conference. Especially we want to stress the importance of Action M Agency staff in the preparation as well as in assistance during the conference. Without its enthusiasm and good spirit the conference routing would not be excellent (which is one of our principal objectives).

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

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

Prague, August 27, 2008

Dr. Miroslav Jedlička
President of Czech and
Slovak Society for
Photonics



Prof. Dr. Pavel Tománek
Conference Chairperson

Conference Photos



Wednesday, August 27, 2008, 9:00 a.m. – the Photonics Prague Conference is opened.



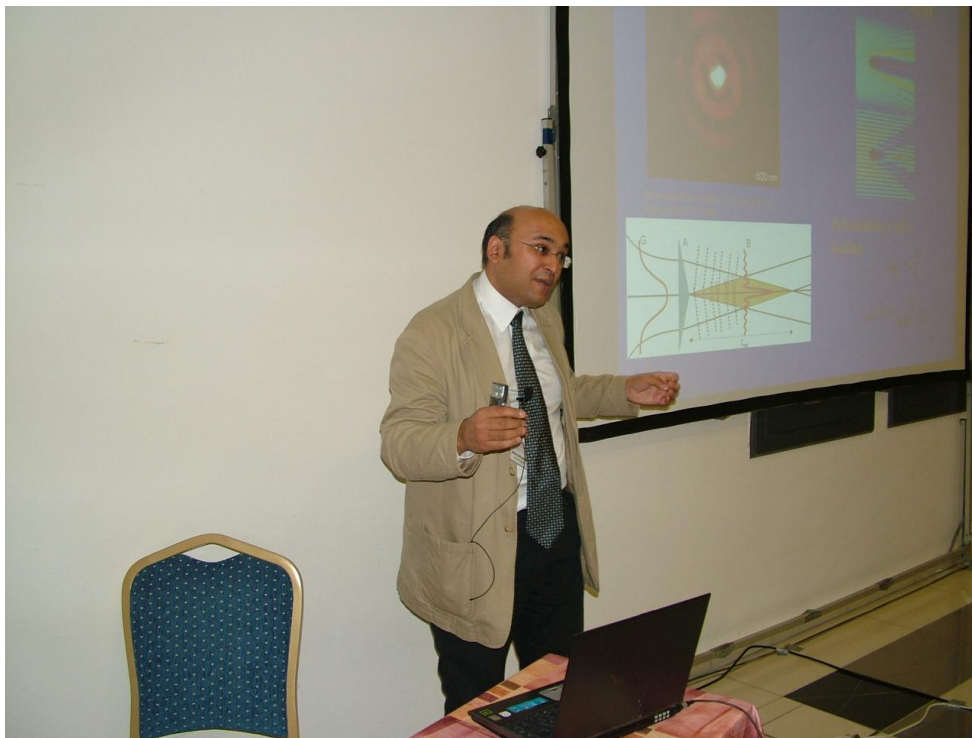
Pavel Tománek (Brno University of Technology) welcomes 146 participants from 34 countries.



Andrew Rawicz (*Simon Fraser University, Burnaby, BC, Canada*) begins his "historical" and emotional plenary talk on Theodore Maiman's life and his way to the laser investigation.



Reinhart Poprawe (*Fraunhofer Institute for Laser Technology, Aachen, Germany*) explaining the cutting edge industrial applications of novel lasers.



Kishan Dholakia (*University of St. Andrews, Scotland, UK*) is dancing during his plenary talk on biophotonics,



while Olivier Martin (*Ecole Fédérale Polytechnique, Lausanne, Switzerland*) was heart and soul walking...during the topic of plasmonics and nanoworlds.



Gert von Bally (*University of Muenster, Germany*) explains the use of new technologies in biophotonics.



Jürgen Popp (*Friedrich-Schiller University, Jena, Germany*) presents advanced Raman spectroscopy in life sciences.



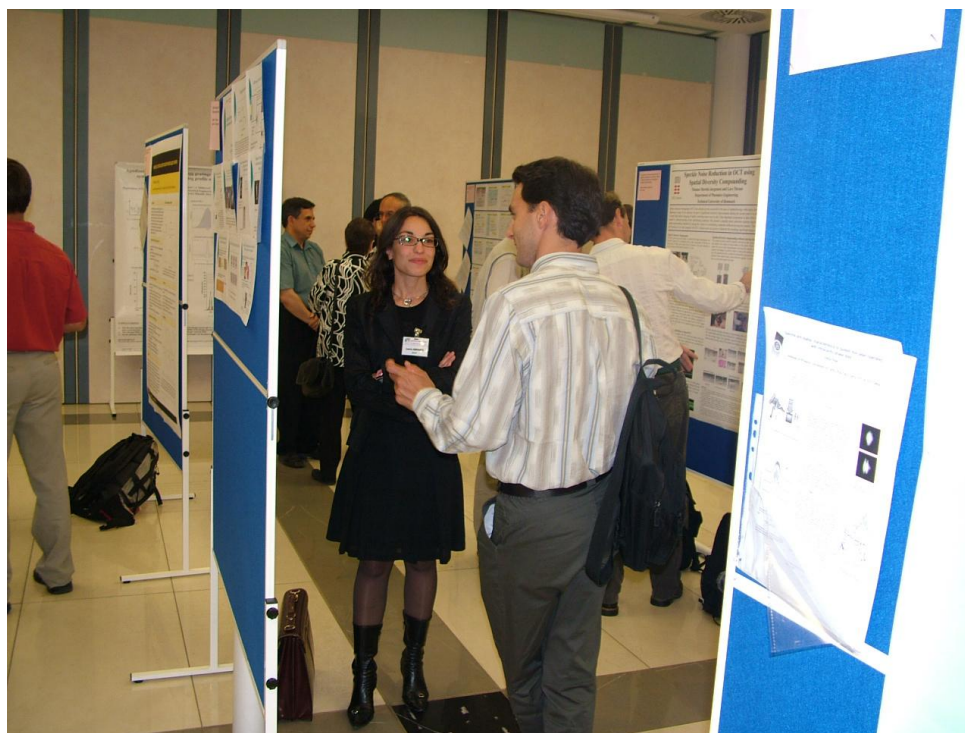
Amnon Yariv (Caltech, USA) is explaining, and Roberto Li Votti (*Universita di Roma I, Italy* - left) and session chairman Hyungsuck Cho (*Korea Advanced Institute of Science and Technology, Daejeon, Korea* – in the middle) are all ears.



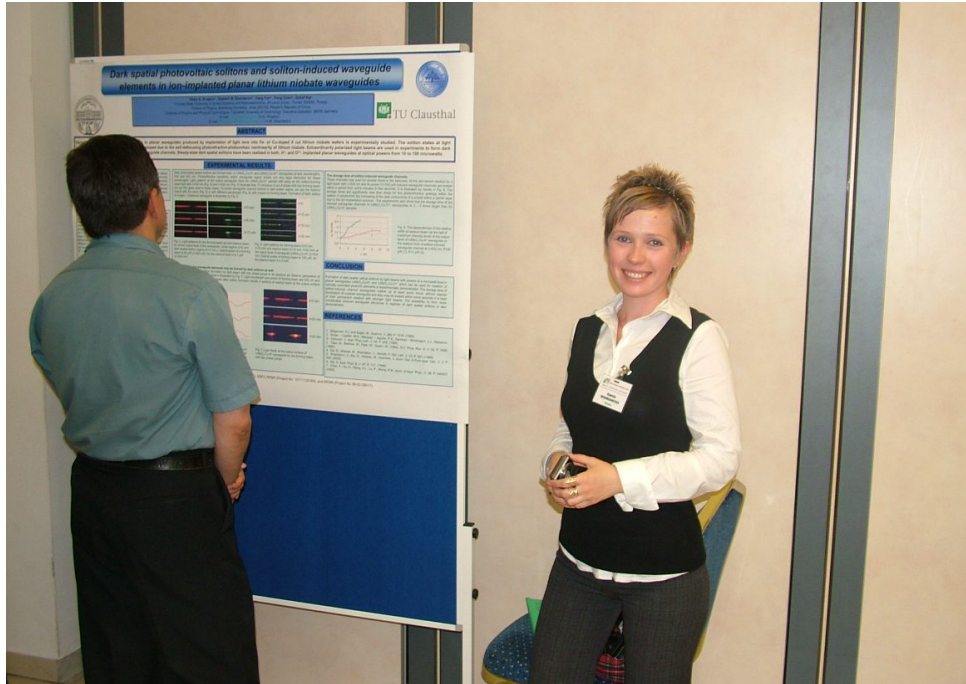
Fruitful discussion during coffee break – Helena Jelínková (*Czech Technical University in Prague*) and Andrew Rawicz (*Simon Fraser University, Burnaby, Canada*)



Poster session.



Poster session continues – Laura Abrardi (Spain).



I wonder but I am really here. You must read my poster first
(Ksenia Shandarova - Russia)



How can I explain it?



The conference Welcome Banquet (Wednesday August 27, 2008) on the 19th level of Olympik Hotel is prepared and the first participants are arriving. Members of the local organizing committee welcome each participant.



Beautiful sunset in Prague seen from the Banquet Hall. Do not miss it next time in 2011.



How delicious the food



and music is here.



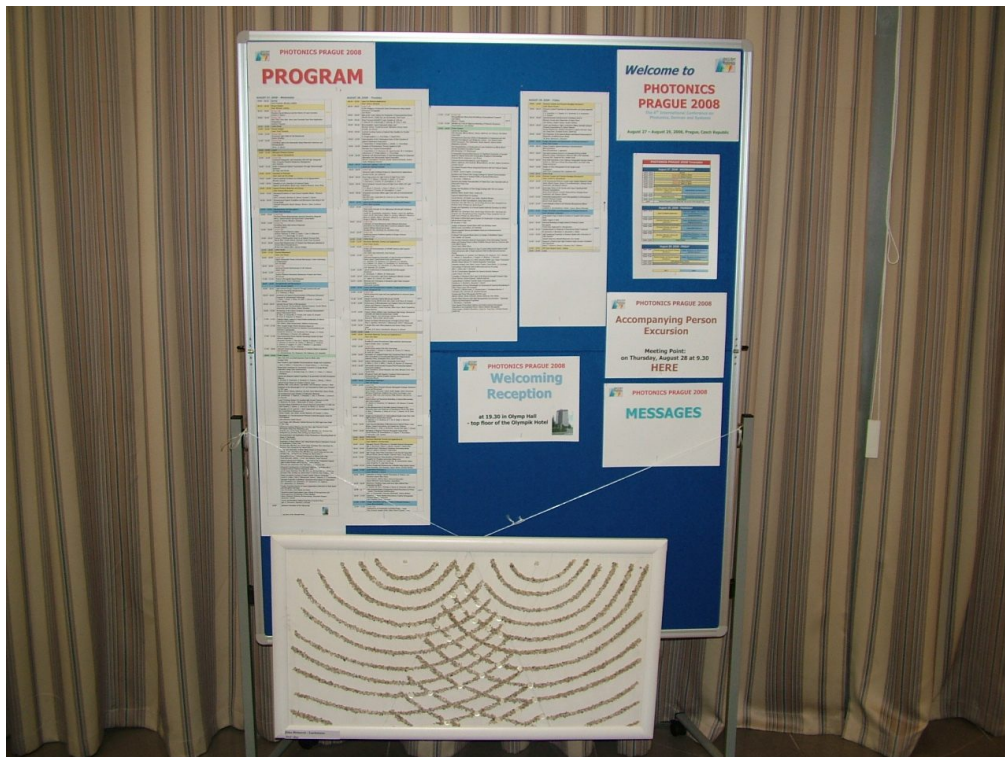
Organizers Miroslav Jedlička, Milena Zeithamlová, and Ivan Glesk are satisfied,



and participants (Santander group, Spain) too.



Preeti Patil (India) competes for the SPIE award while Vladimir Kocharovsky (Russia) evaluates her talk.



Conference information and tableau "Two-waves interference" by Jitka Brůnová-Lachmann.

**Photonics Prague 2008
SPIE Best Student Presentation Award**



“Who will be awarded by our prize?” Alex Pulchart (SPIE *Europe*) asks.

This year the conference honoured laureates with the first SPIE Best Student Presentation Award.
This action was also our contribution to reinforce the role of SPIE Women in Optics program,
because...all prizewinners are young ladies (next page).



SPIE Best Student Presentation Award Recipients

Pictured from left to right:

Pavel Tománek – Conference chair,
Alex Pulchart – SPIE Europe representative,

and the award recipients:

Kamila Hrabovská (*Technical University Ostrava, Czech Republic – 3rd place*)
for her presentation on
“Optical and magneto-optical properties of as-quenched CoFeSiB amorphous ribbons,”

Preeti B. Patil (*Indian Institute of Technology, Bombay, India – 2nd place*)
for her presentation on
“Electrical modeling of single defects in photonic crystal waveguide”, and

Alena Zavadilová (*Czech Technical University in Prague, Czech Republic – winner*)
for her presentation on
“Intracavity synchronously pumped PPLN picosecond optical parametric oscillator.”

CSSF Young Scientists Prize 2008

The Czech and Slovak Society for Photonics (CSSF) contributes on the occasion of these Photonics Prague meetings its prize for Best Presentation by young Czech and Slovak Society scientists.

This time there were two coequal prizes:

Zdeněk Buchta, Institute of Scientific Instruments, Academy of Science, Brno,
for his presentation on
"High-power laser diode array system for optical pumping of Rb"

and

Jan Fiala, Faculty of Nuclear Physics and Physical Engineering, Czech Technical University in Prague,
for his presentation on
"Study of enhanced optical transmission through subwavelength apertures."



Jan Fiala (left) and Zdeněk Buchta (right) receive their diploma.

Conference Sponsors

We wish to thank following organizations for their contribution to the success of the conference.



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