

## Community

# Conference Notes

### Laser Optics Berlin/OSA Optics and Photonics Congress (Review)

Berlin, Germany, 19–21 March, 2012

The German capital has a vivid optics community which meets every even year at the Laser Optics Berlin trade show and at the co-located Optics and Photonics Congress. The scientific event is organized by the Optical Society of America and in particular by the local OSA Fellow Thomas Elsaesser. After years of careful development of the event it is now a valuable meeting in the field of ultra-strong and ultra-short laser science (Figure 1).

#### The OSA Congress

The Congress included three meetings which brought together world renowned researchers to discuss forefront advances in the optical sciences. The High-Intensity Lasers and High Field Phenomena (HILAS) meeting discussed the latest developments in high peak power lasers and the material interactions resulting from the use of these lasers. A related meeting was the 2nd International Conference on Ultrafast

Structural Dynamics (ICUSD), which examined material system structural modifications at ultra-short time scales and the time evolution of these modifications. The third meeting, Quantum Information and Measurement (QIM), presented the most recent research advances in the field of entanglement phenomena and examined how these phenomena may be exploited to advance information transfer and processing technologies.

#### Student Workshop ‘How to Start Your Own Company’

One particularly interesting event in addition to the three academic meetings was the Special Student Workshop ‘How to Start Your Own Company’ held by Wolfgang Gries. He is a serial founder and laser entrepreneur with a long record of successful activities in Berlin as well as in the Silicon Valley. Currently he is CEO of DirectPhotonics Industries GmbH, his most recent foundation. He gave practical advice on starting a business to young professionals and students starting on their career path. This event was sponsored by the Berlin Optik Student Chapter (which indeed mixes both German and English words in its name) and OSA.



**Figure 1** Laser Optics Berlin (LOB) 2012: On the first evening of LOB, a team from the Ferdinand-Braun-Institut was awarded the transfer prize WissensWerte 2012 for sustainable transfer of specifically powerful diode lasers for materials processing (Photo: FBH/Immerz).



**Figure 2** SPIE Photonics Europe 2012: SPIE Immediate Past President Katarina Svanberg presented SPIE Fellow Hans Tiziani with the 2012 Chandra S. Vikram Award in Optical Engineering (Photo: SPIE).

### LOB Trade Show

The exhibition was held for the 10th time, now at the big trade show area Messe Berlin under the famous Funkturm tower. The first-time combination of the fair with Microsys Berlin – micro-optics and micro-optical systems – certainly supported the increase in exhibitors, display area and visitor numbers. The collaboration with the optics region of Warsaw (Poland) and the laser industry association of the Wuhan Optics Valley in China gave the trade fair an added international dimension. Approximately 3000 trade visitors came to see the 142 exhibitors, attendance from abroad rose to almost 30%. The next LOB and OSA Optics and Photonics Congress will take place from March 18 to 20, 2014 in Berlin. [www.laser-optics-berlin.de](http://www.laser-optics-berlin.de).

### SPIE Photonics Europe (Review)

Brussels, Belgium, 16–19 April, 2012

Compared to other Photonics events, SPIE Photonics Europe has a rather short history. Started in 2004, it rapidly became the meeting point for European photonics researchers. And now it is Europe's biggest photonics meeting in even years with more than 2000 attendees (up 6% from 2010) from all over the world. Parallel to the scientific conference, an industry exhibition was held with approximately 60 participating companies and organizations.

This year's scientific program of more than 1500 presentations was divided into 18 conferences, the topics included:

- Micro/Nano Technologies
- Disruptive Organic and Bio-Photonics
- Highly Integrated and Functional Photonic Components
- Advances in Laser and Amplifier Technologies
- Photonics in Industrial Applications

Although sponsored by the American SPIE, Photonics Europe keeps its particular European spirit. Networking on

various levels was a prominent intention of the program. Furthermore, European funding programs and business opportunities attracted the attention of visitors.

### SPIE Award presented to Hans Tiziani

SPIE Immediate Past President Katarina Svanberg (Lund University Hospital) presented SPIE Fellow Hans Tiziani (retired from Universität Stuttgart) with the 2012 Chandra S. Vikram Award in Optical Engineering, recognizing his lifetime achievements in optical metrology and optical testing (Figure 2), pioneering contributions to the field of high-precision microscopic surface and three-dimensional measurement and multisensor techniques, and advances in heterodyne temporal speckle-pattern interferometry.

### Hot Topics Session

Most conference days were opened by a hot topics session with important plenary talks (Figure 3). This was well appreciated by a full auditorium. The organizers arranged for three such sessions, the hot topics spanned a wide range from the EC address by EC director Thierry van der Pyl over some photovoltaics issues, latest fiber technologies to 'Recent advances in solid state lighting' by Berit Wessler (OSRAM, Germany).

### 80 Billion Euro for innovation

In his address from the European Commission, Thierry van der Pyl, director for components and systems within the EC's information society and media division, framed the opportunities for photonics presented by the new Horizon 2020 framework program for research. A budget of 80 billion € is planned for this program over the next 7 years, representing 8% of the total EU budget. He identified several major areas of opportunity and sketched some of the challenges to be solved:

- optical broadband, with the challenges of meeting capacity while serving more people throughout the world, and developing greener practices,
- solid-state lighting, with OLEDs that offer such capabilities as very large surfaces delivering light on flexible substrates at the front of the next technology wave,
- lasers – an area in which Europe is clearly the leader and in which development results in jobs – moving into mass customization for lightweight structures, as well as new, more efficient sources,
- sensors, for safety and security of people, goods, and the physical environment,
- photonic integrated circuits and nanophotonics, for greater efficiency.

The new budget and allocation of Horizon 2020 funding is yet to be ratified by the European Parliament and by the various member states, but by all accounts there is a political consensus to spend more on photonics research, development and innovation (RD&I). Creating jobs thereby will be a key feature of future photonics funding in the region.



**Figure 3** The hot topics sessions at the SPIE Photonics Europe meeting attracted a full auditorium (Photo: SPIE).

### Innovation Village

Innovative researchers and start-up founders were invited to join the Innovation Village, a special area on the industry exhibition. Participants received a complimentary 'mini-booth'. Part of the program was also a competition to find the most innovative project in the village. 'A low-cost LED-based device that improves wound healing processes by the use of light' (Light4Tech, associated with Photonics4Life), and a non-invasive device for monitoring blood vessels won top honors in the Photonics Innovation Village competition. The competition was organized by B-PHOT (Brussels Photonics Team, Vrije Universiteit Brussels) with the support of SPIE.

### Industry-related Workshops

The congress hosted several separate workshops and smaller meetings in addition to the central academic tracks. One was the *NARNIA Conference IAS12 – IAS100 on Integrated Approaches to the Study of Historical Glass*. Peter Hartmann from Schott (Mainz, Germany) presented a more contemporary view on glass in the *SCHOTT Workshop on the properties of optical glass and special optical materials*. In this tutorial style, short course attendees were introduced to the current state-of-the-art of glass as a key material for optical technology.

Other workshops were related to plasmonics (*PLAISIR Project: Plasmonics in the Infrared*) and advanced numerical simulation techniques (*LovaLite-Lumerical Workshop: Advanced Opto-Electronic Simulation, from Devices to Photonic Integrated Circuits*).

### Industry Perspectives Program

This event provided a series of executive briefings covering the growing markets and consequent business opportunities in

one afternoon. Only a few keynote speakers gave a summary on programs, trends and new applications related to photonics. Among the speakers were Ronan Burgess (Horizon 2020), Steve G. Anderson (Global Photonics Markets) and Jürgen Popp (Life Science Opportunities in Photonics).

### Outlook

Opposite to the last meeting in 2010, when volcano ashes caused an air traffic break down, the attendees had a relaxed meeting and a safe return home. The next Photonics Europe meeting will take place from 13 to 17 April, 2014 in Brussels. <http://spie.org/photonicseurope>.

### 8th EOS Topical Meeting on Diffractive Optics DO 2012 (Review)

Delft, Netherlands, 27 February to 1 March, 2012

After 20 years of active research and development of design and fabrication techniques, diffractive optics is approaching the status of a mature technology. It can be found in increasingly many applications which are either completely based on diffraction phenomena or for which the diffraction solution is remarkably more compact, light weight, or cheaper than its alternatives. Therefore, it is not surprising that this year's 8th EOS Topical Meeting on Diffractive Optics (DO 2012), from 27 February to 1 March, 2012, attracted more than 140 attendees from 21 countries – as many as never before (Figure 4).

Hosted by the University of Technology in Delft, the Netherlands, and chaired by Professor Paul Urbach (TU Delft) and Professor Jani Tervo (University of Eastern Finland), the conference focused on diffraction optics in the high-tech industry. The topics gave a wide picture of the spectrum, from fundamental modeling of light-matter interaction



**Figure 4** A particular highlight at the DO 2012 was whiskey tasting during the conference.

to design techniques and from fabrication techniques to novel applications.

In his plenary talk, Martin Wegener (Karlsruhe Institute of Technology) gave a review on diffraction-unlimited far-field optical lithography based on stimulated-emission-depletion (STED) inspired direct laser writing (DLW) which, for example, enabled the first three-dimensional polarization-independent visible-frequency invisibility cloak.

Seven invited papers highlighted other aspects of this research field, such as wave propagation, diffraction, and focusing in uniaxially and biaxially anisotropic media (Stamnes), scattering lenses (Mosk), perfect blazing for

echelle gratings in Littrow mount (Kleemann), switchable diffraction gratings realized in liquid crystalline composite structure with metamaterial applications, polarization control with artificial chiral structures (Kuwata-Gonokami) and modified quantum dot emission with arrays of plasmonic nanoparticles (Gomez-Rivas).

DO 2012 gathered scientists and engineers working in the field of diffractive optics in industry and academia and achieved the aim to provide once again an excellent platform for discussions. For the next meeting which will be held in Gdansk, Poland in 2014, the organizers also expect a strong interest among the community.