

Community

Conference Notes

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Review: 115. Annual Meeting of the DGaO

Karlsruhe, Germany, 11–14 May 2014

The German Association of Applied Optics DGaO held its 115th annual meeting in the neoclassical town of Karlsruhe. Experts from the optical industry and various research institutions met here in the week after Pentecost to discuss recent trends in various fields of applied optics such as micro and nano optics, biophotonics and microfluidics, and all kinds of optical design.

Beside these regular topics, the organizer Christian Koos from the Karlsruhe Institute of Technology KIT arranged a full day under the headline “Photonic Integrated Circuits: Technology and Applications”. Beginning with an overview on “Low-cost Access to Development and Manufacturing of Photonic Integrated Circuits” industry pioneer Meint Smit showed how technology from the development of electronic integrated circuits has successfully been transferred to photonics. It was very exciting to see how the separate technologies of electronics and photonics have been united. And it was also interesting

to see how the community of optical designers embraced this introduction to a new field of photonics that most of them had not studied before.

DGaO Young Scientist Award

For the second time, the DGaO awarded the best dissertation and the best Master’s thesis from a German speaking country in the field of applied optics. The DGaO Young Scientist Award 2014 for the best Master’s thesis was presented to Tobias Tiess from the Leibniz Institute for Photonic Technologies, Jena, Germany (formerly known as IPHT). The award for the best Doctoral theses went to Daniel Dregely from the group of Harald Giessen at Stuttgart University for his research on optical nano antennas. The awardees received separate cash prizes, along with a 1-year full membership of the DGaO.

Networking at an UNESCO World Heritage site

Once again, the networking event was a particular highlight of the conference. This year, the attendees went to the Maulbronn Monastery. Founded in 1147, this



Kloster Maulbronn, the place of this year’s DGaO networking event. (Photo copyright: Elke Wetzig (Elya) - CC BY SA 3.0, Wikimedia Commons).

well-preserved medieval Cistercian monastery belongs to the list of UNESCO World Heritage. On a wonderful summer day the conference participants enjoyed sightseeing and a splendid dinner.

Almost the last but certainly not least highlight of the conference was the Fraunhofer Lecture on the Friday evening. This lecture has become a very nice tradition. Martin Wegener from nearby KIT enjoyed the honor of presenting his work on the surprisingly simple invisibility experiments based on his research on metamaterials. The optics experts in the audience, usually busy with making things as visible as possible, gave the speaker standing ovations for his appealing application of optical principles to make things invisible.

During the member's general meeting the chairs of the society announced Brno (Czech Republic) as the location of the 116th DGaO Meeting. The focus there will be on topics such as precision optics and mechanics, and optical measurement. Again the conference will be held in the week after Pentecost, that is 27–30 Mai 2015.

www.dgao.de

Review: LASYS and SLT'14

Stuttgart, Germany, 24–26 May 2014

Surrounded by famous industrial sites such as Zuffenhausen (Porsche), Sindelfingen (Daimler-Benz) and Ditzingen (Trumpf), the Stuttgart trade fair hosted the LASYS, the International Trade Fair for Laser Material Processing and the SLT congress in June 2014.

The fourth edition of LASYS ended after three action-packed days with an increase of 4% in the number of visitors. Around 5500 trade visitors from Germany and abroad came to Stuttgart to see innovations, advance developments and trends in laser material processing. Almost every third visitor came from the mechanical engineering sector, 17% from motor vehicle construction followed by the optical industry, plant and apparatus construction and the metal working and processing industry. The international origin of the exhibitors also increased. Of the 187 exhibitors at LASYS 2014 (2012: 178) 34% came from abroad (2012: 28).

Information at first hand in the Solution Center: “Meet the experts”

Messe Stuttgart, together with five renowned laser institutes, had once again set up the Solution Center “Meet the experts”, which was positioned directly at the entrance

to Hall 4. Here trade fair visitors could obtain competent and non-binding advice on special problems. Experienced employees from the Bavarian Laser Center (blz), the Institut für Strahlwerkzeuge of the University of Stuttgart (IFSW), the Hanover Laser Center (LZH), the Fraunhofer Institut for Material and Beam Technology (IWS), as well as the Fraunhofer Institute for Laser Technology (ILT), were present on all three trade fair days on a rotating basis to providing advice, and additionally, created contacts to related exhibitors.

Excellent training platform

On the morning of 25 and 26 June 2014, from 10 am on both days, practical experts provided a clear overview of the possibilities of laser technology with the “Short Course – Basics of Laser and Laser Material Processing”. It was aimed specifically at visitors with little or no experience in laser technology. Prof. Andreas Ostendorf, President of the Scientific Association for Laser Technology (WLT e.V.) and Dr. Cemal Esen, Managing Director of the WLT, organized the seminar in cooperation with Messe Stuttgart.

The first day dealt with the basics of laser material processing, and also explained how large components can be processed using lasers and how precision laser material processing functions in electronics production and precision engineering. It also addressed rapid prototyping, rapid manufacturing, the monitoring of laser processes, as well as ways for obtaining state aid.

The second day focused on laser system technology and laser beam sources, for instance beam shaping, beam guidance or variants of the system technology. Finally, the topic of safety was on the agenda, which should not be neglected when handling lasers.

Current market data and trends at the Stuttgart Laser Marketplace '14

Market observations are interesting and important for the planning of every company. LASYS also takes this into consideration with its market-oriented concepts and offered the workshop “Stuttgart Laser Marketplace”. Markets, technologies and applications of industrial laser technology were examined by leading experts from market research and industry. Dr. Arnold Mayer from Optech Consulting presented the latest data on the global market for laser and laser systems for material processing. Dr. Kunihiro Washio from Paradigm Laser then analyzed the current market and technology trends in Japan.

High-resolution displays based on LCD, OLED as well as Flex-Displays require laser processes and technology in manufacturing. Rainer Pätzelt from Coherent spoke of his experiences here. Klaus Löffler from Trumpf spoke about the current success of laser ablation and structuring and future applications in the electronics industry through to the automotive industry. Finally, during the presentation by Matt Wood from Amada the focus was on new technologies and developments for laser cutting and welding in metal working.

Stuttgart Laser Technology Forum SLT'14

Along with LASYS, the SLT'14 congress opened its doors on 24th and 25th June. This scientific congress on laser material processing technologies has taken place on a bi-annual cycle since 1999 and aims at a scientific dialogue between experts and users from academic research, industrial development and applications in manufacturing.

Eagerly awaited was the plenary presentation from Peter Leibinger, Vice Chairman of the TRUMPF GmbH + Co. KG and President of the Laser Technology and Electronics Division. He spoke about "The Industrial Laser as a Commodity – Prerequisites and Consequences". He showed how the laser went through several stages of development as an industrial tool: The laboratory phase, the early adopter phase, the implementation phase and the phase of accelerated development through the success of laser diodes. Now, some lasers have become a commodity, i.e., marketable items produced to satisfy the needs

of industrial customers. These are no longer technological pioneers and the lasers are now replaceable goods, mostly distinguished by the price. Some lasers may still be in earlier phases, others such as lasers for marking have indeed reached this point of technological development. Peter Leibinger could not see a real consolidation in the laser market. The laser market is still very heterogenic he said. Consolidation may come, but only in markets where commoditization reigns.

Ultrashort laser power up to 1 kW

A laser system that certainly has not yet reached the stage of full maturity is the ultrashort pulsed laser system. While being a candidate for big application like glass or CFRP cutting it still needs large improvements with regard to productivity to enter mass production lines. A step forward in this direction are high power or high energy pulsed lasers as presented by Rudolf Weber (IFSW, University of Stuttgart) and his team. They hold the record of an output of 1420 watts and a record pulse energy of 4.7 mJ from a 40 mirror dirk amplifier. Dirk Sutter from Trumpf spoke about some achievements of their subsidiary Trumpf Scientific lasers: 30 and 50 mJ ultrashort laser energy has been demonstrated, but the next step will be a device with 200 mJ pulses at 5 kHz repetition rate later this year. A kilowatt laser for scientific and industrial (CFRP cutting) applications from various manufacturers will come to the market soon.

LASYS 2016 (and probably SLT'16) will take place from 31.05.2016 to 02.06.2016, again congruent with the automotive trade fairs, O&S and parts2clean.

www.slt.uni-stuttgart.de/