Welcome to Optatec 2024

Willkommen zur Optatec 2024

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Alignment and testing of:

- Single optical components
- Lens systems
- Opto-electronic systems

Meet our experts at Optatec

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Welcome to Optatec – come see ‘excellence in optical technologies’

The 16th Optatec takes place this week in Frankfurt-am-Main, in the heart of Europe. The motto of this year’s must-visit industry get-together is: “Excellent Optical Technologies”.

International fans of optics and photonics have traveled to meet in Frankfurt/Main.

The sixteenth edition of Optatec is a highly specialized platform for optics and photonics. It is recognized across the industry as a leading trade fair with a high level of internationality, which showcases optical technologies, components and systems at the highest level. No other trade fair venue brings together international experts, manufacturers and users of optics, precision optics, photonics and image processing in such a focused way as Optatec.

Meeting place for friends of light

This year’s highly specialized event will cover optics, image processing, new technologies, manufacturing processes and machines. For three days, the trade fair brings together all sorts of optics professionals and enthusiasts from different sectors and different countries. The expo builds bridges between research and industry and will impress attendees with its top-class supporting program. Furthermore, with its specific range of products and services for the development, production and industrial application of optical components, optomechanics, optoelectronics, fiber optics, optical fibers, laser components and manufacturing systems, Optatec has firmly established itself in this growing industry and offers a reliable platform for suppliers and users to meet at the highest level.

The trade fair for optical technologies, components and systems takes place in Hall 3.1 at the Frankfurt exhibition grounds. It will cover innovations from the fields of optical components, optomechanics, optoelectronics, fiber optics, optical fibers, laser components, digital microscopy as well as processing machines and production systems for manufacturing optics.

For full event information, www.optatec-messe.de/en
Optatec presents a specific range of products for the development, production and application of optical components, optomechanics, optoelectronics, fiber optics, optical fibers, laser components, digital microscopy as well as processing machines and production systems for the manufacture of optics. The topics considered at Optatec deal with the technical utilization of light – photonics technologies are rapidly gaining in importance in all industrial and non-industrial sectors.

The exhibition portfolio includes lighting and lighting systems, light sources and light guides, image recognition and image processing systems, scanners and cameras, optomechanical components and assemblies, various sensor systems, mirrors, lenses, films and coatings. The trade fair topics also include filters and apertures, lenses, microscopes and endoscopes, production systems for manufacturing optical components, detectors, measuring and testing systems, laser system components, photovoltaic components, mechanical processing systems for grinding and polishing as well as analysis and evaluation software.

Outstanding supplementary program

Optatec 2024 will be distinguished by a highly impressive supplementary programme. To begin with, the SPECTARIS Industry Association for Photonics will report on current market figures at the opening press conference and offer specialised seminars on the following day: “New developments in the DIN Standards Committee for Precision Mechanics and Optics (NAFuO)” will then be held (in English) from 13.00 – 15.00. The Fraunhofer IOF from Jena, Germany, will also be in Frankfurt for Optatec 2024 and will provide information on topics including “Micro- and Nano-Optics – from the Street to Outer Space”.

The exhibitor forum at Optatec has been conceived as a communication platform targeted at expert visitors, which provides additional information about participating companies, as well as their technologies and their respective range of offerings. The participating exhibitors provide expert visitors with additional, in-depth information which goes above and beyond the exhibition programme. This results in increased decision-making security for expert visitors with a propensity to buy and invest. World-class speakers from research and science institutes will report on their innovations and experiences – in theory and in practice – thus providing users with an expanded knowledge base.

High degree of specialization

With its specific offering for the development, production and application of optical components, this trade fair is firmly anchored in the industry. Optatec is a meeting place for specialists: a highly interested trade audience meets highly specialized exhibitors, almost 60 per cent of whom come from abroad this year. Exhibitors and visitors will benefit from the exclusivity of the topic, the high degree of specialization and the precise targeting of target groups.

Optical technologies are among the most important industries of the 21st century. The drivers of optical technologies are growing quality requirements, but also increasing automation, digitalization, autonomous systems and assistance systems in various areas. Optical technologies are cross-sectional technologies – they combine engineering sciences with natural sciences. They drive innovation in areas such as mechanical and plant engineering, production automation, automotive engineering, microelectronics and optoelectronics, lighting technology, the pharmaceutical and medical device industry, laboratory automation, defense and general safety and security applications. Manufacturers of optical technologies bridge the gap between basic physical research and technical applications.
Introduction from Optatec’s project manager Fabian Krüger

Ladies and gentlemen, visitors to Optatec 2024, the P. E. Schall trade fair company warmly welcomes you to the 16th Optatec. The optotechnology specialists are already looking forward to this industry highlight, which takes place every two years. This year, we are meeting again through 16 May 2024 at the regular location of Frankfurt/Main. This is a highly specialized event for everyone involved in light research. Manufacturers and users can meet in person to discuss optics, image processing, new technologies, manufacturing processes and machines.

International profile

Over three days, this leading trade fair – refined, highly specialized and international – inspires all optics fans from different sectors and different countries. Well over half of the exhibitors have come from abroad. Optatec is now recognized worldwide as the leading trade fair in the field of optical manufacturing technologies. At no other trade fair location do international experts, manufacturers and users come together in such a focused and specialized way as at Optatec.

Optical technologies are among the most important industries of the 21st century. Drivers are growing quality requirements, but also increasing automation, digitalization, autonomous systems and assistance systems in various areas. Optical technologies are cross-sectional technologies – they combine engineering sciences with natural sciences. They drive innovation in areas such as mechanical and plant engineering, production automation, automotive engineering, microelectronics and optoelectronics, lighting technology, the pharmaceutical and medical device industry, laboratory automation, defense and general safety and security applications. Manufacturers of optical technologies bridge the gap between basic physical research and technical applications.

Specialized orientation

Exhibitors and visitors will benefit from the exclusivity of the topic, the high degree of specialized orientation and the precise target group approach. In Hall 3.1, exhibitors will be presenting practical solutions and fostering personal dialogue. Visiting the trade fair is convenient in the exhibition centre, which is located at ground level and is easily accessible with direct S-Bahn connections.

We very much look forward to enjoying the 16th Optatec with you and wish both exhibitors and trade visitors a lively and successful exchange of ideas in Frankfurt.

Have a great show!

Fabian Krüger, Project Manager Optatec Trade Fair Company P. E. Schall.
Optatec welcomes all visitors to our expanded Frankfurt event

The long-established trade fair for optical technologies, components and systems, Optatec, which takes place every two years in Frankfurt, offers attendees a wide range of experiences. Besides the exhibition, there are industry sessions, and the “Education and Research Technology Park” involving Darmstadt University of Applied Sciences, Mittelhessen University of Applied Sciences and Rhein-Main University of Applied Sciences. Matthew Peach, Editor in Chief of optics.org, interviews Bettina Schall, managing director of P. E. Schall GmbH & Co, the owner and organizer of the expo.

Matthew Peach: Considering the 16th edition of Optatec, summarize what is here for attendees who make the journey to Frankfurt?

Bettina Schall: Optatec is a highly specialized top event for everyone involved in light research. This is where manufacturers and users from all over the world come together to discuss optotechnology and photonics in person and in great detail. Trade visitors experience an inspiring meeting over three days. This leading trade fair for optotechnology is refined, highly specialized and international. Well over half of the exhibitors come from abroad. Happily, this year’s edition coincides with the International Day of Light on 16 May 2024. UNESCO launched this day of action in 2017 to draw attention to light-based technologies and raise global awareness of the achievements of light science. Optical technologies are recognized as cultural heritage and worthy of protection. We look forward to welcoming many guests from a wide range of industries and out of many countries to Optatec 2024!

Which topics will be covered here, this week?

The topics at Optatec deal with the technical utilization of light. Optical technologies are driving a wide range of innovations in areas such as mechanical and plant engineering, production automation, automotive engineering, microelectronics and optoelectronics, lighting technology, the pharmaceutical and medical device industries, laboratory automation, defense and general safety and security applications. Manufacturers of optical technologies bridge the gap between basic physical research and technical applications. This is of interest to many users from various sectors - such as robotics and automation technology, laser technology, the automotive industry, aerospace, medical technology, medical imaging and lighting technology. Production managers, quality assurance managers, production managers and system integrators appreciate Optatec’s highly specialized focus and are regular guests in Frankfurt am Main.

What is special about Optatec?

Optatec presents a specific range of products for the development, production and application of optical components, optomechanics, optoelectronics, fiber optics, optical fibers, laser components, digital microscopy as well as processing machines and manufacturing systems for the production of optics. At no other trade fair location do experts, manufacturers and users come together in such a focused way on optotechnology topics as at Optatec. These topics are rapidly gaining in importance in all industrial and non-industrial sectors.

How far and in which way?

Optical technologies are among the most important future industries of the 21st century. Because growing quality requirements, but also increasing automation, digitalization, autonomous
What does the city of Frankfurt am Main have to offer to visitors?

Frankfurt am Main certainly offers a wide range of attractions. Frankfurt is historically a very interesting place as far as trade fairs are concerned. This city combines tradition and modernity. The opera house, the cathedral, the trade fair tower, the skyline, the “Zeil” shopping mile, art galleries, and many quaint pubs and restaurants are all found within easy reach of the Messe and its nearby hotels. Frankfurt is known for its typical regional food and drink – the Äppelwoi and Frankfurt Green Sauce, for example, are famous far beyond the city’s borders. You should definitely try them. Plan a visit to the small market hall for this. The city is very centrally located in the middle of Germany, can be reached quickly and easily by plane and train and has excellent hotels. It is also home to the European Central Bank. In other words, an ultra-modern city with a long history and a lot of tradition that is absolutely worth a visit.

Matthew Peach, Editor in Chief of optics.org

The modern fairground where Optatec takes place is located near the heart of Frankfurt.

Keep yourself informed!

There is a wealth of information about the event, exhibition and presentations, exhibitors, new products, and all the contact information you will need at:

www.optatec-messe.de

Technical information on the trade fair and the industry:

www.optatec-messe/news-stories

Subscribe to the Optatec newsletter here:

www.optatec-messe.de/#newsletter

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62 years of trade fairs for tech markets – Schall Trade Fairs’ formula for success

P. E. Schall has developed successful business platforms with internationally recognised trade fairs for quality assurance (Control), optical technologies, components and systems (Optatec), stamping technology (Stanztec), automation in production and assembly (Motek), bonding technology (Bondexpo), plastics processing (Fakuma), sheet metal working (Blechexpo) and joining technology (Schweisstec). This breadth of experience has given rise to entirely new markets in various sectors, whose protagonists are distinguished by tremendous innovative strength, comprehensive systems competence and practical application solutions.
Optatec Technology Park: visit Booth 636 in Hall 3.1 to learn about training and research – and studying photonics

Photonics is the technical mastery and exploitation of light. In contrast to electronics, i.e. the technical mastery and exploitation of electrons or the flow of electrical current, photonics encompasses the use of photons in optical technologies such as laser, digital image processing, optical measuring technology, optical data transmission and lighting technology.

Darmstadt University of Applied Sciences, Rhein Main University of Applied Sciences and Technische Hochschule Mittelhessen will be presenting their Master’s degree programmes such as “Optotechnology and Image Processing”, “Applied Physics” and “Optical System Engineering” live at the trade fair from 14 to 16 May.

The Common Booth in Hall 3.1 offers a unique opportunity for interested parties to find out more about these specialised degree courses. Visitors will have the opportunity to talk to lecturers and representatives of the universities to gain insights into the content and career opportunities of photonics-related degree programs.

Anyone who has already completed a bachelor’s degree or training in a technical or scientific field and would like to find out more about cameras, lasers, optics and light is invited to attend – completely for free.

On May 16th during the trade fair, students and other young people interested in the field of photonics will be welcomed onto the site to be given introductions to the diverse sectors and opportunities offered by photonics.

Great insights for school graduates

On May 16th during the trade fair, young people who are interested in these modern technologies will be presented with hands-on optical technology and opportunities for asking questions: three universities of applied sciences will present their courses of study relating to optical technologies and photonics and invite all interested school classes and teachers to Optatec on the 16th of May, 2024.

The following offerings will be available:

- Free admission to the trade fair
- Presentations dealing with actual practice held by graduates
- Presentation of the courses of study
- Guided tours of the courses of study from the industry sector

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Mittelhessen University of Applied Sciences
Departments of Mathematics, Natural Sciences and Data Processing (MND), as well as Information Technology, Electrical Engineering and Mechatronics (IEM)
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martin.eckhardt@mnd.thm.de
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**Duma Optronics - Revolutionizing Optical Solutions**

Are you ready to redefine precision in optics? Look no further than Duma Optronics, your trusted partner in cutting-edge optical technology.

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3. **Global Reach:** With a worldwide network of partners and distributors, we deliver excellence across borders.

**Visit Us at Optatec 2024**

Join us at Optatec 2024 to experience firsthand the future of optics. Discover live demonstrations, interact with our experts, and explore our wide range of products and services. Whether you're in research, manufacturing, or academia, Duma Optronics has the tools you need to succeed.

**Contact Us Today**

Can't wait for Optatec? Reach out to us now to discuss your optical challenges and discover how Duma Optronics can elevate your projects to new heights. Set up a meeting by e-mailing us!

*Duma Optronics - Where Precision Meets Possibility*

[www.dumaoptronics.com](http://www.dumaoptronics.com)  
[sales@duma.co.il](mailto:sales@duma.co.il)
Mask wafer co-optimization makes it practical to create curved shapes using variable shaped beam mask writers, as described in the SPIE Journal of Micro/Nanopatterning, Materials, and Metrology.

At the heart of advancing semiconductor chip technology lies a critical challenge: creating smaller, more efficient electronic components. This challenge is particularly evident in the field of lithography, the process used to create intricate patterns on semiconductor materials (wafers) for the production of chips.

Lithography uses a kind of template, called a photomask for creating patterns on semiconductor wafers. The industry is always looking for methods that improve resolution and manufacturability for both masks and wafers, which will produce faster chips with higher yield of properly functioning chips.

Computational lithography techniques that improve resolution and pattern fidelity, such as optical proximity correction (OPC), have made significant strides in addressing these challenges by modifying the individual mask patterns to improve both mask and wafer printing. Inverse lithography technology (ILT) — a mathematically rigorous inverse approach that determines the mask shapes that will produce the desired on-wafer results — has been seen as a promising solution to many of the challenges of lithography for advanced chips. Since its introduction more than a decade ago, there have been numerous studies that demonstrate that curvilinear ILT mask shapes, in particular, produce the best wafer results.

However, until recently, the runtimes associated with this computational technique have limited its practical application to critical “hotspots” on chips. In 2019, an entirely new, purpose-built system was proposed, including a unique GPU-accelerated approach that emulates a single, giant GPU/CPU pair that can compute an entire full-chip ILT solution at once. This novel approach, systematically designed for ILT and GPU acceleration, made full-chip ILT a practical reality in production.

However, this approach relied on multi-beam mask writing, an important new development in mask writing that is pixel-based and so is shape-agnostic in terms of write-time.

The question that remained was if the benefits of full-chip, curvilinear ILT could be extended to the variable shaped beam (VSB) mask writers that write rectilinear (and sometimes triangle) shapes rather than pixels, and that make up the majority of mask writers around the world today. While VSB writers create larger rectangular shapes quickly by writing one rectangular shot at a time, complex mask patterns can be an issue because the high number of small rectangles needed to create them would take too long to write.

Reporting their work in the SPIE Journal of Micro/Nanopatterning, Materials, and Metrology, the team at D2S, Inc., San Jose, Ca., USA, and Yokohama, Japan, invented a method called mask wafer co-optimization (MWCO) with three insights: the mask writer and the wafer scanner are both low-pass filters; overlapping shots guided by mask/wafer simulation can create curvilinear shapes with fewer shots; by targeting the wafer pattern, instead of the mask pattern, one can create much simpler shots to print the correct wafer pattern. By using this double simulation, wafer print quality is iteratively optimized while manipulating VSB shot edges to produce rectilinear target mask shapes that are known to be writable on a VSB writer, with a known and acceptable shot count.

D2S and Micron Technology have demonstrated MWCO can reduce the wafer variation by 3x, and can improve the wafer process window by 2x compared to Micron OPC, indicating a substantial improvement in the precision and reliability of the lithography process. The write time for a full curvilinear ILT mask would be less than 12 hours, satisfying high-volume production requirements.

This means that all semiconductor manufacturers can now produce chips that are not only smaller but also have higher performance and lower power consumption, even if they do not have access to a multi-beam mask writer.

Author: SPIE
For many other technical articles like this, visit: spie.org/publications/spie-digital-library#_=._
The Micro-LAM and SCHNEIDER collaboration marks a revolutionary step forward in glass optics manufacturing. The novel approach: The delicate material is processed with single point diamond turning, thanks to a winning combination of SCHNEIDER’s ultra-precision machining platform with Micro-LAM’s brand new laser-assisted G1 toolpost.

The outcomes are game-changing: Fastest production of precision and ultra-precision glass optics, all while maintaining the highest quality standards.

We invite you to celebrate this milestone with us on May 15th at 2 pm at the SCHNEIDER booth 503 at Optatec 2024.

www.schneider-om.com
www.micro-lam.com
LZH develops fast, precise, and wear-free process for laser drilling CFRP

Holes can be drilled in carbon-reinforced plastics and other composite materials.

Scientists at Laser Center Hannover (LZH), Germany, have developed an automated process for laser drilling that facilitates the machining of carbon fiber-reinforced plastics (CFRP). They say that this is particularly interesting for applications in lightweight construction and sound insulation.

Composite materials such as carbon fiber-reinforced plastics (CFRP) are excellent for lightweight construction and are used, among other things, in automotive and aircraft construction. In order to simplify the machining of CFRP and sandwich materials, scientists from LZH, together with Invent and KMS Technology Center, have developed an innovative process with associated system setup.

Small diameters

In this process, a laser beam is split into partial beams by specially designed diffractive optical elements, so that it hits multiple locations on the material and generates multiple bores simultaneously. Ideally, says the LZH team, “this can be done with up to 25 partial beams, reducing the drilling time to only a 25th of the original time, resulting in less than a tenth of a second per bore – a value that cannot be achieved with conventional methods even for larger bores.”

With this process, the scientists were able to create bores with diameters ranging from only 1.2 mm to 0.25 mm. This makes them smaller than bores that can currently be implemented with conventional mechanical methods in sandwich and CFRP materials. The use of optomechanics manufactured by KMS Technology Center also enables high flexibility in bore diameter and pattern without the need for tool changes.

Construction applications

Micro-drilling with lasers is also interesting for the aviation sector. To reduce aircraft noise emissions, sound-absorbing cladding elements are used to line engines, for example. Such components are often made of CFRP or CFRP sandwich materials and then provided with many small bores over a large area.

Micro-drilling with lasers is suitable for acoustic drilling because it is contactless and therefore force- and wear-free. This eliminates high costs due to tool wear and quality problems due to dull drills. In acoustic tests, project partner Invent evaluated the sound damping properties of the laser-drilled sandwich panels as “very good”.

The project “Micro-drilling of Sandwich Materials: Development of a Laser Process” (miBoS) is funded by the German Federal Ministry of Economics and Climate Protection.

Author
Matthew Peach, Editor in Chief, optics.org

Micro-drilling by laser is interesting for the aviation sector.

At this week’s Optatec, Laser Center Hannover is exhibiting on booth 627.

Ion Beam Etching of Slanted Surface Relief Gratings

- Waveguide direct etching
- Etching of master stamps for NIL
- Constant or varying slant angles are possible
- Precise control of etching behavior, substrate angle, substrate temperature, ...

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Learn how to improve your SRG design!
Fraunhofer ILT announces ‘dawn of laser-based optics production’

Digitally controlled laser processes save both time and costs in production of aspheres, freeform optics.

The optical industry “almost completely relies on mechanical processes in its process chains,” So says laser and photonics research center Fraunhofer Institute for Laser Technology (ILT).

This, however, could soon change. The ILT, based in Aachen, Germany, this week announced that it is pushing ahead with digitally controlled laser processes that save both time and costs when aspheres and freeform optics are shaped, polished and their final shape is corrected.

The ILT will be presenting the laser-based process chains of the future at Optatec trade fair, between May 14-16th, in Frankfurt, and at the first Laser-based Optics Production conference, in Aachen, between October 15-16th.

The trend towards aspheres and freeform optics is pushing traditional process chains – ones based on purely mechanical processing in the optical industry – to their limits, contends ILT. To overcome this, the institute will be presenting its vision of highly flexible laser-based process chains for optics production at Optatec.

Even today, individually designed aspheres and freeform optics can be produced using laser processes. “The key advantage of the laser is its digital control in conjunction with massless and contactless material processing,” said Dr. Edgar Willenborg, Head of the Polishing Group at the ILT.

Since the process is digitally controlled and does not need forming tools, processing times no longer depend on the lens shape. This results in clear cost benefits, especially for complex geometries. “As no consumables are used, laser processes also minimize the amount of cleaning required,” said Willenborg.

CO2 lasers are also used for laser polishing. Four-fifths of their energy is absorbed in the uppermost layers of glass. The penetration depths are between 3 µm and a maximum of 30 µm. This is where the glass melts, transforms into a honey-like state and then automatically smoothes out as it cools on account of the surface tension.

This remelting of the surface layer, including surface smoothing due to interfacial tension, results in outstanding surface qualities: Roughness in the sub-nanometer range sets new standards and predestines laser processes for applications that require the highest optical performance.

Laser-based processes are already supplementing the mechanically dominated process chains in the industry as they can eliminate the micro-roughness that causes light to scatter and lenses to appear cloudy.

“We are systematically working on using hybrid approaches like this to create all-round laser-based process chains in optics production,” said Uluz. The spectrum ranges from micro and macro optics or individually shaped special optics to glass bodies that can also be structured internally using SLE.

Mechanical and laser-based processes still complement each other, but the clear goal of the Fraunhofer ILT is to make the advantages of laser technology useful for all areas of optics production. "Laser-based processes offer considerable advantages as they can save both energy and resources, especially for complex geometries," concluded Willenborg.

Fraunhofer ILT is exhibiting at booth 610.

Author:
Matthew Peach, Editor in Chief, optics.org
Trade fair program: technical presentations and webcasts

Tuesday 14th - Thursday 16th May 2024

Optatec, the world’s leading trade fair, invites you to participate in the diverse, know-how-intensive technical presentations at the Optatec Forum, at the booths of the exhibiting companies, below; on the Presentation Forum (booth 831); and in free webcasts.

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<td>Ansys Optics</td>
<td>Optics and Photonics Simulation Software</td>
<td>Dr. Oliver Osswald</td>
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<tr>
<td>MORN. 9:30 - 10:00</td>
<td></td>
<td>How to secure your Optics Supply chain</td>
<td>Dipl.Ing. (FH) Jens Meyer</td>
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<td>MORN. 10:20 - 11:00</td>
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<td>Automation in Lens Production</td>
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<td>Kunststoffoptik von VIAOPTIC, Stärken von Materialien nutzen und typische Fehler vermeiden</td>
<td>Dr. Markus Cremer</td>
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<td>The design and configuration of a large off-axis grinding machine for freeform optics</td>
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<td>AFTERNOON 12:30 - 12:50</td>
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<td>Advantageous OEM solutions from hyperspectral cameras towards spectrometers and gratings</td>
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<td>Dipl.Ing. (FH) Jens Meyer</td>
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<td>AFTERNOON 13:40 - 14:20</td>
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<td>Mit Mikro- und Nanooptik von der Straße bis in den Weltraum</td>
<td>Dr. Steffen Runkel</td>
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<td>Laser Systems for Enhancing Productivity in Manufacturing</td>
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<tr>
<td>AFTERNOON 14:30 - 15:00</td>
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<td>How to secure your Optics Supply chain</td>
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<td>AFTERNOON 15:30 - 16:30</td>
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<td>CEO Round Table: The photonics and optics industry in times of uncertain markets</td>
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### Daily Event Schedule

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<td>How to secure your Optics Supply chain</td>
<td>Dipl Ing. (FH) Jens Meyer</td>
<td>CASIX, Inc. Hall 3.1 Booth 614</td>
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<td>09:40 to 10:20</td>
<td>Ecosystem of Innovation</td>
<td>Mr. Paul Dumas, Manager of Applications</td>
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<td>10:20 to 11:00</td>
<td>Optische Messtechnik vergleichbar machen - das EMPIR-Projekt TracOptic</td>
<td>Dan Limnert und Dr. Uwe Brand</td>
<td>PTB - Physikalisch-Technische Bundesanstalt Braunschweig und Berlin Hall 3.1 Booth 831</td>
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<td>Laser-Assisted Diamond Turning to Enable Deterministic Polishing of Glass Optics</td>
<td>Mr. COO Mike Ivanovski</td>
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<td>Potential of polarizers: applications and their benefits</td>
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<td>codixx AG colorpol® polarizers Hall 3.1 Booth 831</td>
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<td>12:20 to 13:00</td>
<td>Laser Cutting of Micro Optics – Opportunity in Cost-Optimized Mass Production</td>
<td>Herr Nicolai Hänel</td>
<td>Corning GmbH Corning International EMEA Hall 3.1 Booth 831</td>
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<tr>
<td>13:00 to 13:40</td>
<td>Highly-durable coatings on chalcogenide glasses for infrared applications</td>
<td>Mr. COO Mike Ivanovski</td>
<td>I-Photonics Hall 3.1 Booth 831</td>
</tr>
<tr>
<td>13:40 to 14:20</td>
<td>Finishing the largest eye into the sky: Surface improvement by ion beam processing</td>
<td>Dr. Michael Gempe</td>
<td>scia Systems GmbH Hall 3.1 Booth 831</td>
</tr>
<tr>
<td>14:00 to 16:00</td>
<td>New product release of 8-inch lithium niobate wafer and related LNOI wafers</td>
<td>Tim Xu &amp; Julie Zhu</td>
<td>Hangzhou Freqcontrol Electronic Technology Ltd. Hall 3.1 Booth 125</td>
</tr>
<tr>
<td>14:20 to 15:00</td>
<td>Measurement of smooth surfaces with white-light-interferometer</td>
<td>Dr. Özgür Tan</td>
<td>Polytec GmbH Hall 3.1 Booth 125</td>
</tr>
<tr>
<td>14:30 to 15:00</td>
<td>How to secure your Optics Supply chain</td>
<td>Dipl Ing. (FH) Jens Meyer</td>
<td>CASIX, Inc. Hall 3.1 Booth 614</td>
</tr>
<tr>
<td>15:00 to 15:40</td>
<td>Slicing of technical material for optics</td>
<td>Frederic Cuillere</td>
<td>SOMOS SAS Hall 3.1 Booth 831</td>
</tr>
</tbody>
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#### THURSDAY 16 MAY

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Speaker(s)</th>
<th>Organization/Location</th>
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<tbody>
<tr>
<td>09:30 to 10:00</td>
<td>How to secure your Optics Supply chain</td>
<td>Dipl Ing. (FH) Jens Meyer</td>
<td>CASIX, Inc. Hall 3.1 Booth 614</td>
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2024 SPIE Global Industry Report highlights strength of the photonics industry

By William G. Schulz

Consistent growth, solid financial performance, and being a source of good jobs have defined the global photonics core-components business over the past 10 years—a trend expected to continue, according to the newly released SPIE Optics & Photonics Global Industry Report.

Global annual revenues from the production of optics and photonics core components reached $368 billion in 2022, up 26 percent from 2020 and well above global gross domestic product (GDP) growth of 18 percent for the same period. Since 2012, the photonics components industry has grown at a rate more than twice that of the global GDP.

Beyond core components, SPIE projects global annual revenues for photonics-enabled products to exceed $2.39 trillion in 2023. “The report largely confirms what most of us in the optics and photonics industry already know, that light-based technologies underpin a significant portion of the global economy, and their impact continues to grow,” notes Andrew Brown, SPIE Senior Director of Global Business Development. “Anecdotally, we can point to some mainstream technology or application and explain how photonics enables or powers the components that make it work. This report puts all of those individual cases together into tangible numbers that policymakers, industry executives, and investors can use to understand the impact of our industry.”

The report draws on the Society’s industry expertise, world-class database, and global footprint, which uniquely position SPIE for its analysis and understanding. For more than a decade, the report has tracked metrics such as the number of companies, distribution of global revenues, jobs based on company headquarters, and more, to paint a solid picture of the photonics industry whose growth outpaces global GDP and other benchmarks.

As defined in this 10th edition of the Industry Report, core photonics components underpin all light-enabled products and services like smartphones, computers, laser-based instruments for industrial and medical applications, cloud computing, streaming content services, and e-commerce. Estimates of the total monetary value of all light-enabled products and related services exceed 15 percent (~ $16 trillion) of worldwide economic output.

Core photonics components range from raw materials to image sensors, and light-emitting diodes (LEDs) to lasers. By focusing on the core components and the companies that produce them, SPIE has leveraged its comprehensive understanding of the photonics business to characterize the global photonics industry. “With ten years of accumulated data, this report delivers a unique perspective on the thriving global ecosystem of photonics components continued overleaf
manufacturing, the companies involved, where they are headquartered, their revenues, and the number of jobs created globally by optics and photonics components production,” the report says.

Other key findings of the report include:

• Production of optics and photonics core components is a global enterprise spanning more than 50 countries.

• Core components production employs more than 1.25 million people worldwide.

• Over the past 10 years, companies headquartered in China, Korea, and Taiwan have increased their global share of the photonics components business.

• In 2022, photonics components manufacturers headquartered in Japan generated the most revenue and employed the most people.

• Manufacturing of photonics-enabled products generates more than five million jobs worldwide.

SPIE tracked and evaluated 4,706 companies that produced core photonics components in 2022, 84 percent of which are small-to-medium enterprises (SMEs). “Although most of the companies are SMEs, the larger entities generate the majority of the revenues. In fact, only about five percent of all companies, including such household names as Samsung, Corning, Nikon, and Carl Zeiss, generated more than 85 percent of total revenues in 2022,” the report notes. To examine the global distribution of photonics revenue, SPIE follows a methodology that captures the company’s global revenues in the local currency of the country where it is headquartered and then converts them to USD for global comparison purposes.

For 2022, the report reveals that, over the past decade, companies headquartered in Japan have had total revenues higher than other world regions. Those revenues had also been relatively flat until 2022, when they jumped 15 percent over 2020 revenues, with growth also seen in revenues for companies based in Korea and Taiwan that year.

Conversely, in China, growth in revenues in 2022 moderated somewhat. The report notes that the core photonics components industry “has grown to the point that combined demand for lasers and all other photonics components in 2022 underwrote more than 1.2 million jobs worldwide…. As employment has grown, so has the number of countries hosting components manufacturers, making it a truly global industry.”

In all, the report notes, the global photonics industry has experienced a decade of consistent growth despite headwinds like chip shortages, regional conflicts, rising costs, and a global pandemic. SPIE forecasts continued but moderate growth in 2024, and more of this data, including challenges ahead, will be explored at SPIE conferences and exhibitions throughout the year.

William G. Schulz is Managing Editor of Photonics Focus.

spie.org/news/photonics-focus #_=_=
Optatec in focus 2024

Messe Frankfurt, Ludwig-Erhard-Anlage, 60327 Frankfurt, Germany
14 - 16 May 2024

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We’re publishing further issues of the optics.org Product Focus for SPIE Optics+Photonics 2024, and SPIE Photonics West 2025

To ensure that your product is included, contact optics.org as soon as possible as space will be limited.

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New InGaAs Area Image sensors for hyperspectral cameras at Optatec 2024
Visit Hamamatsu Photonics’ booth at Hall 3.1, Stand 701 at Optatec 2024 to learn about the new G1656x series of InGaAs Area Image Sensors. They are designed to enhance the performance of hyperspectral cameras and can be used in various applications, including quality control in pharmaceuticals and plant-based foods.

Don’t miss our presentation “Laser Systems for Enhancing Productivity in Manufacturing”, Hall 3.1, booth 831, 14/5/2024, 14:20 to 15:00.

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TOMOE Research Institute
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Optatec in focus 2024

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Optatec 2024
Exhibitor Directory

<table>
<thead>
<tr>
<th>Company Name</th>
<th>Hall 3.1 - Stand</th>
<th>Contact Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>TREAMS GmbH</td>
<td>3.1 - Stand 401</td>
<td><a href="http://www.treams-gmbh.de">www.treams-gmbh.de</a> E-Mail: <a href="mailto:treibacher@treibacher.com">treibacher@treibacher.com</a></td>
</tr>
<tr>
<td>Treibacher Industrie AG</td>
<td>3.1 - Stand 414</td>
<td><a href="http://www.treams-gmbh.de">www.treams-gmbh.de</a> E-Mail: <a href="mailto:treibacher@treibacher.com">treibacher@treibacher.com</a></td>
</tr>
<tr>
<td>Universal Photonics, Inc. FLP Microfinishing Gmbh</td>
<td>3.1 - Stand 710</td>
<td><a href="http://www.universalphotronics.com">www.universalphotronics.com</a></td>
</tr>
<tr>
<td>Uvata (Shanghai) Precision Optoelectronics Co., Ltd.</td>
<td>3.1 - Stand 136</td>
<td><a href="http://www.uvataled.com">www.uvataled.com</a></td>
</tr>
<tr>
<td>Veeco GmbH</td>
<td>3.1 - Stand 827</td>
<td><a href="http://www.veeco.com">www.veeco.com</a></td>
</tr>
<tr>
<td>VITRON Spezialwerkstoffe GmbH</td>
<td>3.1 - Stand 629</td>
<td><a href="http://www.vitron.de">www.vitron.de</a></td>
</tr>
<tr>
<td>VON ARDENNE GmbH</td>
<td>3.1 - Stand 318</td>
<td><a href="http://www.vonardenne.com">www.vonardenne.com</a></td>
</tr>
<tr>
<td>VY Optoelectronics Co., Ltd.</td>
<td>3.1 - Stand 225</td>
<td><a href="http://www.vyoptics.com">www.vyoptics.com</a></td>
</tr>
<tr>
<td>Wavelength Opto-Electronic(S) Pte. Ltd.</td>
<td>3.1 - Stand 213</td>
<td><a href="http://www.wavelength-oe.com">www.wavelength-oe.com</a></td>
</tr>
<tr>
<td>WEO Corporation Pte Ltd</td>
<td>3.1 - Stand 515</td>
<td><a href="http://www.wgdicing.de">www.wgdicing.de</a></td>
</tr>
<tr>
<td>Wafer &amp; Glasssubstrate Dicing GmbH &amp; Co.KG</td>
<td>3.1 - Stand 134</td>
<td><a href="http://www.wgdicing.de">www.wgdicing.de</a></td>
</tr>
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<td>Wavelength Opto-Electronic(S) Pte. Ltd.</td>
<td>3.1 - Stand 213</td>
<td><a href="http://www.wavelength-oe.com">www.wavelength-oe.com</a></td>
</tr>
<tr>
<td>WEO Corporation Pte Ltd</td>
<td>3.1 - Stand 515</td>
<td><a href="http://www.wgdicing.de">www.wgdicing.de</a></td>
</tr>
<tr>
<td>Wafer &amp; Glasssubstrate Dicing GmbH &amp; Co.KG</td>
<td>3.1 - Stand 134</td>
<td><a href="http://www.wgdicing.de">www.wgdicing.de</a></td>
</tr>
</tbody>
</table>

The documents contain information about various companies attending Optatec in focus 2024, including their stands, contact details, and the products they will be showcasing at the event. The text describes the services and products of each company, such as polishing agents for glass processing, precision optics, and various optoelectronic products. The companies are listed in alphabetical order by their stand number, with links to their websites and contact information provided. The information is presented in a tabular format for clarity and easy reference.
Optatec 2024
Exhibitor Directory

Wuhan Genuine gaoli Optics Co., Ltd.
Hall 3.1 - Stand 233
Wuhan Genuine gaoli Optics Co., Ltd.
No.4, 3rd Road, Huanggang Science & Technology Park
430000 Wuhan
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Telefon: +86-27-87180058
E-Mail: sales@gaoligx.com
www.hggaoligx.com

Wuhan Guangzhi Technology
Hall 3.1 - Stand 427
Wuhan Guangzhi Technology
Room 202, 6th Building
430000 Wuhan
China
Telefon: +86-2787531505
E-Mail: sales@gaoligx.com
en.glasertechnology.com

Wuhan Union Optic, Inc.
Hall 3.1 - Stand 417
Wuhan Union Optic, Inc.
Building 19, Bio Accelerator, No 388, 2nd
430000 Wuhan
China
Telefon: +86-2787531505
E-Mail: sales@u-optic.com
www.u-optic.com

Wuhan Yusheng Optoelectronic
Hall 3.1 - Stand 427
Wuhan Yusheng Optoelectronic
No. 5, 3rd Road
430000 Wuhan
China
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E-Mail: marketing@ysod.com
www.ysod.com

Wuxi Qingxin Optical Technology Co., Ltd.
Hall 3.1 - Stand 803
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D17 Building, Formwork Science & Technology Park
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E-Mail: Sales1@qxoptical.com
www.qingxindome.com

Xiamen Alaud Optical Co., Ltd.
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China
Telefon: +86-592 5770718
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www.alaudoptical.com

Xiamen Betensh Optical Technology Co., Ltd.
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361021 Xiamen
China
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E-Mail: sales@bts-optics.com
www.bts-optics.com

Xiamen Innovacera Advanced Materials Co., Ltd.
Hall 3.1 - Stand 109
Xiamen Innovacera Advanced Materials Co., Ltd.
No.588 Jiahe Road
361006 Xiamen
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Telefon: 86 18059869863
E-Mail: charlie@innovacera.com
www.innovacera.com

Xi’an SNP Precision Optics Co., Ltd.
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Xi’an SNP Precision Optics Co., Ltd.
No.15, First Road
710000 Xi’an
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Telefon: 862981123264
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www.xachaona.com

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Telefon: +44 1530 815832
E-Mail: sales@zeeko.co.uk
www.zeeko.co.uk

Zhejiang Lante Optoelectrical Co., Ltd.
Hall 3.1 - Stand 411
Zhejiang Lante Optoelectrical Co., Ltd.
1108 Hongfu rd., Honghe Town
314033 Jiaxing
China
Telefon: +8657383382809
E-Mail: luwxz@lante.com.cn
www.lante.com.cn

Zhongshan Jiejun Optical Tooling Co., Ltd.
Hall 3.1 - Stand 103
Zhongshan Jiejun Optical Tooling Co., Ltd.
Dabu Pingpu Industrial Zone, Sanyang Town,
528463 Zhongshan
China
Telefon: 0760-23386888
E-Mail: zhaohaojiang@ciec.com.cn
www.jiejunworld.com

Zhongshan Pris Optical Technology Co.
Hall 3.1 - Stand 803
Zhongshan Pris Optical Technology Co.
Level 3, Building 4, 21 Yanjiang East 3 Road,
528437 Zhongshan
China
Telefon: +86-760-8555 5349
E-Mail: yw@zspris.com
www.zspris.com

Zhongshan Zhongying Optical Co., Ltd.
Hall 3.1 - Stand 139
Zhongshan Zhongying Optical Co., Ltd.
Xinluan village section,
528441 Zhongshan
China
Telefon: +86 85573299-8043
E-Mail: DQ@zenithpe.com
www.zenithpe.com
The next milestone on the way to climate-neutral production has been reached: After successfully testing glass production with 100 percent hydrogen on a laboratory scale last spring, the technology group Schott has now completed the much anticipated industrial-scale application.

For three days, the Mainz-based specialty glass maker melted optical glass in a furnace using the new technology for the first time — exclusively heated by hydrogen, completely free of natural gas. So far, Schott has been conducting its tests with grey hydrogen because green hydrogen, produced from renewable energies, is not yet available in sufficient quantities. The large-scale test received excellent marks, and the quality of the glass is now being analyzed.

“The test with 100 percent hydrogen is pioneering work for the specialty glass industry. If the tests show that the quality of the glass is also right and the glass properties remain unchanged, hydrogen would indeed be a suitable technology option,” said Schott project manager Dr. Lenka Deneke.

The test manager emphasized that the experience gained from last year’s tank tests with an initial 35 percent hydrogen-by-volume helped with this success, but also asserts that there are still many unanswered questions requiring further research. For example: How does the use of hydrogen impact the complex melting processes, and therein, the quality of different products?

To address these questions, Schott chose an optical glass as the first test product. Background: The technology group manufactures over 100 types of optical glass from high-quality raw materials for various applications, such as consumer goods and measurement technology, as well as optical systems in research and development. The challenge is that the glass must have the highest homogeneity and transmission properties. This also applies to the molten glass, which undergoes strict quality testing.

If the glass meets the high product requirements, it will be sent to the customer. “We would then have confirmation that the use of 100 percent hydrogen instead of fossil fuels delivers the same quality under industrial conditions,” said Deneke. A permanent changeover would then also require further long-term tests and a continuous supply via a hydrogen pipeline.

Schott says it has already achieved the switch to 100 percent green electricity, and energy efficiency is being continuously and systematically increased. The technology change is primarily about replacing natural gas for the operation of the furnaces. Either through electrification with green electricity or in future through green hydrogen. Schott AG is exhibiting at Optatec at booth 201.

Since its inception in 2023, the Coherent Lean System has completed projects that it says will result in 2.5 million kWh of energy savings per year. Coherent is also working to eliminate fossil fuel usage in its facilities. For example, its Highyag facility in Kleinmachnow, Germany, installed a heat pump in 2023 to help reduce Scope 1 gas emissions and set a goal to decrease gas emissions by 65% in 2024.

Matthew Peach, Editor in Chief, optics.org
Make plans to attend this annual event and join leading researchers and scientists as they contribute to advancements in optical engineering, nanotechnology, and organic photonics. This year enjoy a special focus on sustainability and AI/ML.

Meet face-to-face with premier researchers and discuss your product needs with top optics and photonics suppliers at the free 3-day exhibition. Industry partners will be there to help solve problems, cut costs, and increase capabilities.

Registration is open. We look forward to seeing you in San Diego.
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