

EPIC MEETING ON ADVANCED
MICROOPTICS: SIMULATION,
FABRICATION & CHARACTERIZATION
AT NANOSCRIBE

11-12 May 2022
Karlsruhe, Germany

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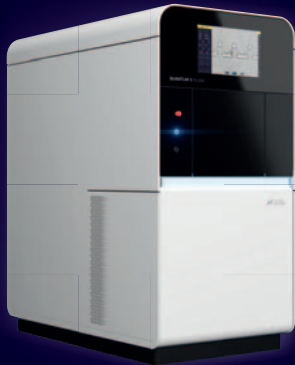
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EPIC Meeting on Advanced Microoptics: Simulation, Fabrication & Characterization at Nanoscribe

The purpose of this meeting is to connect the supply chain of advanced manufacturing of microoptics with use cases in different application fields, such as CMOS image sensors, automotive lighting, AR/VR, medical, datacom, consumer electronics etc. Some manufacturing processes will also be discussed from large area master fabrication to additive manufacturing with nm-scale resolution. Furthermore, material challenges as well as quantitative optical/surface measurements and lens shape fidelity, will be discussed.

Tuesday, 10 May 2022

19:00 – 22:00 **Dinner for early arrivers @ DOM Grill Kitchen Bar**
Address: Hirschhof 5 - 76133 Karlsruhe

Wednesday, 11 May 2022

11:30 **Bus transfer from Hotel Ambassador, Hirschstraße 34 - 76133 Karlsruhe to Nanoscribe, Hermann-von-Helmholtz-Platz 6 - 76344 Eggenstein-Leopoldshafen (optional)**

12:00 – 13:00 **Arrivals, registration, lunch @ Nanoscribe**

13:00 – 13:15 **Introduction, welcome speeches by host and EPIC**

- Welcoming words by Carlos Lee
Director General at EPIC – European Photonics Industry Consortium (Belgium)
- Welcoming words by Martin Hermatschweiler
CEO & Co-Founder at Nanoscribe (Germany)
- Setting the Scene by Jeremy Picot-Clemente
Photonics Technologies Manager at EPIC – European Photonics Industry Consortium (France)

SESSION 1 – DESIGN TOOLS FOR ADVANCED MICRO-OPTICAL SYSTEMS

13:15 – 13:45 **KEYNOTE: Freeform Micro-Optical Elements on Light Management Foils**
Claude Leiner, Senior Scientist at JOANNEUM RESEARCH (Austria)

13:45 – 14:00 **Examples of Flat Optics Designs**
Frank Wyrowski, President at LightTrans (Germany)

14:00 – 14:15 **Inverse Design for Advanced Nano-Photonic Components**
Jens Niegemann, Lead R&D Engineer at Ansys Lumerical (Canada)

14:15 – 14:30 **Design and Wafer-Scale Manufacture of Advanced Freeform Micro-Optics for Laser Applications**
Natalia Trela, Head of Solutions at PowerPhotonic (United Kingdom)

14:30 – 14:45 **From Nanometer Scale to Kilometer Scale – Process Routes from Nanofabrication to Mass Replication by Nanoimprint Technologies**
Christoph Baum, Executive Director at Fraunhofer IPT (Germany)

14:45 – 15:30 **Coffee break**

SESSION 2 – FABRICATION TECHNIQUES FOR INNOVATIVE REFRACTIVE AND DIFFRACTIVE MICRO-OPTICS

- 15:30 – 16:00 KEYNOTE: Additive Manufacturing for Industrial Micro-Optics Production**
Michael Thiel, CSO & Co-Founder at Nanoscribe (Germany)
- 16:00 – 16:15 Complex 3D Printed Micro-Optics: Fundamentals and First Applications**
Harald Gießen, Professor at University of Stuttgart (Germany)
- 16:15 – 16:30 Wafer-Level Manufacturing of Micro-Optics**
Wilfried Noell, Director R&D at SUSS MicroOptics (Switzerland)
- 16:30 – 16:45 2.5D and 3D Micro-Structures with Maskless Laser Lithography**
Dominique Colle, Process & Application Engineer at Heidelberg Instruments (Germany)
- 16:45 – 17:00 3D Printing for Advanced Glass Miniaturized and Micro-Optics**
Rolando Ferrini, Chief Regional Officer at FEMTOprint & Andrea Lovera, Chief Technology Officer at FEMTOprint (Switzerland)
- 17:15 Bus transfer to the dinner place**
- 17:45 – 22:00 Networking Dinner @ Das Hotel-Restaurant Hoepfner-Burghof**
Haid-und-Neu-Straße 18 - 76131 Karlsruhe
- 22:00 Bus transfer from Das Hotel-Restaurant Hoepfner-Burghof to Hotel Ambassador (optional)**
- 22:00 – 23:30 Guided tour from the dinner place to Ambassador hotel hosted by Nanoscribe (optional).**
Registration is available during the 1st coffee break at the EPIC help desk.
Max. group size is up to 30 people.

Thursday, 12 May 2022

- 08:00 Bus transfer from Hotel Ambassador to Nanoscribe**
- 08:30 – 09:10 Welcome coffee**
- 09:10 – 09:15 Welcome by EPIC**

SESSION 3 – MASS MANUFACTURING BY REPLICATION TECHNOLOGIES

- 09:15 – 09:45 KEYNOTE: Transfer and Upscaling of Micro and Nanostructures to Moulding Tools and Roll to Roll Processes, General Overview**
Marek Krehel, Director of Technologies and R&D at 3D AG (Switzerland)
- 09:45 – 10:00 Low Absorption Coatings on Transmissive Micro-Optics**
Konstantinas Zakalskis, Business Development Manager at OPTOMAN (Lithuania)
- 10:00 – 10:15 Monolithic Molding of Freeform Glass Micro-Optics**
Andrea Kneidinger, Business Development Manager at EV Group (Austria)

- 10:15 – 10:30 DPI – On Axis Diamond Turning of Full 8" Masters**
Marc Wielandts, CEO at WIELANDTS UPMT (Belgium)
- 10:30 – 10:45 In-Process Metrology for Microlenses Using Confocal Microscopy**
Jürgen Valentin, Head of Technology and Innovation at Nanofocus (Germany)
- 10:45 – 11:00 On-Flight, In-Line, and In-Situ during Manufacturing Process Micro-Optic Characterization by Digital Holography Microscopy (DHM)**
Yves Emery, CEO at Lyncée Tec (Switzerland)
- 11:00 – 11:45 Coffee break**

SESSION 4 – MATERIAL CHALLENGES & NOVEL APPLICATIONS

- 11:45 – 12:00 3D Printing & Injection Molding of Fused Silica Glass**
Patrick Risch, Head of Manufacturing at Glassomer (Germany)
- 12:00 – 12:15 Deterministic Diffusers for Efficient Light-Shaping**
Robert Leitel, Group Leader at Fraunhofer IOF (Germany)
- 12:15 – 12:30 Advanced Materials for Wafer-Level Micro-Optics**
Stephan Prinz, Product Manager at DELO (Germany)
- 12:30 – 12:45 Integrated structured illumination concepts by complex optical 3d-printing**
Sören Schmidt, Optical System Engineer, Carl Zeiss (Germany)
- 12:45 – 13:00 Closing words**
- 13:00 – 14:00 Lunch**
- 14:00 – 15:30 Company visit**
- 15:40 Bus transfer from Nanoscribe to Frankfurt airport (optional)**

» CONTACTS

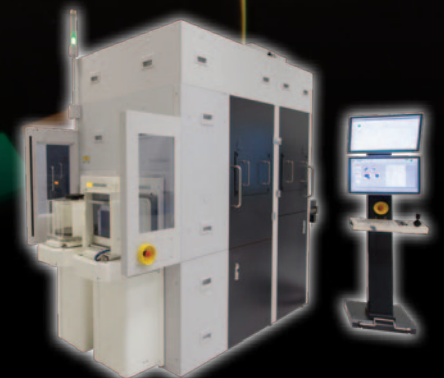
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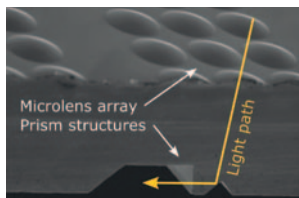
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Name	Surname	Job Title	Company	Country
Alexander	Legant	Sales Manager	Nanoscribe	Germany
Andrea	Kneidinger	Business Development Manager	EV Group	Austria
Andrea	Lovera	CTO	FEMTOprint	Switzerland
Andreas	Voelker	Head Research and BD Photonics	CSEM	Switzerland
Armando	Zecchi	Managing Director/Editor	Tecnoservizi	Italy
Benno	Züger	Senior Research Engineer	Neutrik	Liechtenstein
Carlos	Lee	Director General	EPIC	Belgium
Carlos	Viana	CEO	ICON Photonics	France
Christoph	Baum	Scientist	Fraunhofer IPT	Germany
Claude	Leiner	Scientist	JOANNEUM RESEARCH	Austria
Dominique	Colle	Engineer	Heidelberg Instruments	Germany
Frank	Wyrowski	President	LightTrans	Germany
Georg	Draude	General Manager	Chroma Technology	Germany
Gerald	Ihninger	Engineer	Sony DADC	Austria
Harald	Gießen	Professor	University Stuttgart	Germany
Henning	Kaufmann	Product Manager	SCHOTT	Germany
Holger	Schlüter	Business Development	SCANLAB	Germany
Holger	Quast	Vice President	TOPTICA Photonics	Germany
James	Schildknecht	Head of Sales	Nanoscribe	Germany
Jens	Niegemann	Lead R&D Engineer	Ansys Lumerical	Canada
Jeremy	Picot-Clemente	Photonics Technology Manager	EPIC	France
Jessica	van Heck	Managing Director	PHABULOU S Pilot Line	The Netherlands
Jochen	Zimmer	Sales Manager	Nanoscribe	Germany
Johannes	Lang	Head of Marketing Communications	Nanoscribe	Germany
Johannes	Eble	Group Manager R&D Optics/Mechanics	SICK	Germany
Jörg	Smolenski	Business Development Manager	Nanoscribe	Germany
Jürgen	Valentin	Head of Technology & Innovation	NanoFocus	Germany



Download the full white paper here

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Name	Surname	Job Title	Company	Country
Konstantinas	Zakalskis	Business Development Manager	Optoman	Lithuania
Laura	Jenni	Process Development Engineer	Axetris	Switzerland
Marc	Wielandts	CEO	WIELANDTS UPMT	Belgium
Mareike	Trappen	Senior Process Engineer	Nanoscribe	Germany
Marek	Krehel	Director of Technologies and R&D	3D AG	Switzerland
Martin	Hermatschweiler	CEO & Co-Founder	Nanoscribe	Germany
Martin	Forrer	Senior VP Business Development	FISBA	Switzerland
Michael	Thiel	CSO & Co-Founder	Nanoscribe	Germany
Natalia	Trela-McDonald	Head of Solutions	PowerPhotonic	United Kingdom
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Nicholas	Psaila	CTO	Optoscribe	United Kingdom
Nicolas	Gueroult	Optical Engineer	Holophane	France
Patrick	Schuster	Process Technology Engineer	EV Group	Austria
Patrick	Risch	Head of Manufacturing	Glassomer and Neptunlab	Germany
Patrick	Müller	Product Manager	Nanoscribe	Germany
Robert	Leitel	Scientist	Fraunhofer IOF	Germany
Rolando	Ferrini	Chief Regional Officer	FEMTOprint	Switzerland
Rolf	Ellerbrock	Business Development Manager	PI	Germany
Simon	Thiele	Research Scientist	University of Stuttgart	Germany
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Sören	Schmidt	Optical System Engineer	Carl Zeiss	Germany
Stephan	Prinz	Product Manager	DELO Industrie Klebstoffe	Germany
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Yasar	Kutuvantavida	Senior Engineer	Huawei	Germany
Yves	Emery	CEO	Lyncée Tec	Switzerland



3D AG is specialized in the processing of micro and nanostructures. We cover the support along the entire production chain from origination, tooling, upscaling and all the way to different replication types - and this all on a small prototype scale, as well as for mass production. Our core competencies are durable nickel shims and tools from several base materials, i.e.: photoresist, polymers, wafers, steel alloys and others. Our state of the art galvanic tanks allow us to manufacture small shims and such of sizes up to 1100 mm x 1700 mm. Additionally, if you only hold a small-sized sample, we have a self-developed high precision step&repeat UV recombination machine enabling us to upscale your structure up to 1300 mm x 1500 mm. This can be as a large structured surface area, or a combination of features according to any layout. From lab to industrial sizes we manufacture your tooling for the mass replication of your structure. www.3dag.ch



Marek Krehel (Director of Technologies and R&D) received his doctoral title from ETH Zurich for his work at Empa (Swiss Federal Laboratory for Material Science and Technology) on application of polymeric optical fibers in biomedical sensing. After finishing the doctoral studies, he continued his career in academia at University of Applied Sciences Lucerne with the main research interest focused on non-imaging optics with utilization of the daylight in architecture. In 2017, he joined the team of 3D AG, micro and nanotechnology tooling center. After three years of working in the field as project engineer, he changed to the position of director of technology R&D where he oversees the company's technology and supports its constant growth.



Ansys is the global leader in engineering simulation. If you've ever seen a rocket launch, flown on an airplane, driven a car, used a computer, touched a mobile device, crossed a bridge, or put on wearable technology, chances are you've used a product where Ansys software played a critical role in its creation. Through our strategy of Pervasive Engineering Simulation, we help the world's most innovative companies deliver radically better products to their customers. By offering the best and broadest portfolio of engineering simulation software, we help them solve the most complex design challenges and create products limited only by imagination. Founded in 1970, Ansys is headquartered south of Pittsburgh, Pennsylvania, U.S.A. www.ansys.com



Jens Niegemann (Lead R&D Engineer) is Lead R&D Engineer at Ansys where he focuses on the development and implementation of efficient algorithms for photonic simulations. Jens received his PhD in theoretical physics from the University of Karlsruhe, Germany and has contributed to over 50 peer-reviewed publications and conference presentations.

Axetris serves OEM customers with micro technology based (MEMS) infrared light sources, laser gas sensors, gas flow sensors & controllers and micro-optical components used in industrial, telecom, environmental, medical and automotive applications. Our multi-disciplinary and highly skilled engineering and manufacturing teams combine broad experience in design, manufacturing and metrology from MEMS components to advanced optical and electronic sensor modules. Axetris supports its customers with in-depth application know-how. Customers benefit from excellent product value, consistent high product quality and outstanding customer support. OEMs rely on Axetris worldwide as a competent partner for customer-specific solutions from concept to volume production. Axetris is ISO 9001:2008 certified and ISO TS 16949 compliant and operates its own 6-inch to 8-inch wafer MEMS foundry for its own products and contract manufacturing for external customers. A wafer back end, a sensor assembly and calibration facility under clean room conditions completes the manufacturing infrastructure of Axetris. www.axetris.com



Laura Jenni (Process Development Engineer) is part of the R&D wafer process technology development group at Axetris. She has a background in materials science and micro- and nanotechnology due to her PhD at ETH Zürich on CNT based FETs used for gas and resonant sensing. In 2019, she joined Axetris to support the development in the micro-optics field. The main tasks of the group include scouting for new technologies to expand the current capabilities in fabricating refractive and diffractive micro-optical elements, evaluating new technologies and processes and eventually transferring them the operations side of the company.



Chroma Technology is an employee-owned company that specializes in the design and manufacture of precision optical filters and coatings. The most advanced coating techniques have been developed that provide the greatest accuracy in color separation, optical quality and signal purity economically for OEM applications. We provide application engineering support, short cycle times and are as comfortable designing and manufacturing custom filters. The engineering team from Chroma's instrumentation subsidiary 89North is focused on production of light sources and other opto-mechanical products for OEM and end-users. Founded in 1991 with the focus on optical filters for fluorescence microscopy, Chroma became a global player in the optical world, serving bio-medical research and diagnostic, machine vision and medical instrumentation. www.chroma.com



Georg Draude (General Manager) studied biology at Kassel University with a diploma in microbiology in the field of environmental cleaning. In 1999, he finished his PhD at the medical faculty of LMU Munich. Georg worked for several years as sales engineer for imaging-solutions in medical and biological research and in the laser industry. He joined Chroma 2010 as key account manager Europe, became European sales director in July 2012 and General Manager of Chroma Europe in September 2015.

CSEM: Swiss Center for Electronics and Microtechnology, founded in 1984, is a private applied R&D center. Our 550-strong workforce specializes in micro- and nanotechnologies, systems and surface engineering, low-power information and communications technologies, and photonics. The main focus of CSEM's photonics program is the development of optoelectronics components and their optimal integration into innovative products. Our technologies are able to address the needs of a very wide range of fields, from healthcare, watch-making, aerospace, security and medical, to consumer electronics and cleantech. www.csem.ch



Andreas Voelker (Head of Research and Business Development) is Head of Research and Business Development at CSEM, Switzerland and holds a PhD in nano photonics from the University of Fribourg, Switzerland. He has a research background in bio-medical imaging and diagnostics, as well as nano particle characterization. He was CEO of LS Instruments, Switzerland for more than 10 years (2008-2019) and also worked at Roche and Ypsomed in the past.

DELO is a leading manufacturer of high-tech adhesives and other multifunctional materials as well as the corresponding dispensing and curing equipment. The company's products are mainly used in the automotive, consumer, and industrial electronics industries. They can be found in almost every mobile phone and every second car worldwide, for example in cameras, loudspeakers, electric motors, or sensors. Customers include Bosch, Daimler, Huawei, Osram, Siemens, and Sony. DELO's headquarters are in Windach near Munich, with subsidiaries in China, Japan, Malaysia, Singapore, and the USA as well as representative offices and distributors in numerous other countries. The company has 820 employees and achieved a turnover of 167 million euros in last the financial year. www.delo.de



Stephan Prinz (Product Manager) is the responsible Product Manager for high-performance optical polymers at DELO Industrial Adhesives. He obtained his M.Sc. in optics and photonics from Karlsruhe Institute of Technology and his Ph.D. in physics from Technical University of Munich. For seven years he developed cutting-edge ultra-short pulsed laser systems at TRUMPF for scientific applications like attosecond metrology or multiphoton spectroscopy. Stephan joined DELO in 2020 where he is now in charge of the company's strategic development in the field of micro- and nano-optical applications.

EPIC is the European industry association that promotes the sustainable development of organisations working in the field of photonics. Our members encompass the entire value chain from LED lighting, PV solar energy, Silicon photonics, Optical components, Lasers, Sensors, Displays, Projectors, Optical fibres, and other photonics-related technologies. We foster a vibrant photonics ecosystem by maintaining a strong network and acting as a catalyst and facilitator for technological and commercial advancement. EPIC works closely with related industries, universities, and public authorities to build a more competitive photonics industrial sector, capable of both economic and technological growth in a highly competitive world-wide marketplace. www.epic-assoc.com



Carlos Lee (Director General) brings with him a background in microelectronics which was acquired through several management positions held at the international association SEMI. He has been responsible in Europe for the SEMI International Standards program, managed technical and executive programs, and together with the advisory board advocated for a more competitive semiconductor and photovoltaic manufacturing industry. Carlos has a BBA in Finance and an MBA in Leadership & Change Management from United Business Institutes. He lives with his spouse and three children in Belgium.



Jeremy Picot-Clemente (Photonics Technologies Program Manager) is a physicist specializing in optics. After a PhD in Physics/optics and an MBA in Dijon (France), he decided to explore the photonics industry for several years by managing photonics systems integration for various applications and in different companies. At EPIC, Jeremy oversees the development of the optics and micro-optics fields, and all related technologies and applications. He has a strong interest in new technologies involving photonics, such as AR/VR, LiDAR, 3D sensing, and imaging devices.



Neringa Noreikienė (Events Manager) is conferences and events professional with interest and experience in HR, marketing, and sales. Her previous background includes extensive experience in talent acquisition, events & PCO (professional conferences organizer) companies where she was responsible for team management. She has organized numerous international events from 50 up to 2000 people, in Europe and USA. Neringa graduated in business information management as BA (2012, Lithuania), human resources management as MA (2015, Lithuania) and was studying international events management during her exchange semester (2010, the Netherlands).



Ulrike Helfferich (Chief Operating Officer) has a Diploma in Engineering Physics and a deep knowledge of the photonic market after more than 20 years of working at international companies in the sector. Ulrike has extensive sales and business development experience with wide knowledge in optics, photonics, semiconductor, and machine-building market, based on business relationships to large scale and medium-sized businesses. Ulrike worked among others with applications related to spectroscopy, distance sensors, optical measurement, and image sensors. Her broad experience includes among others creating new business cooperation and especially in the past years a structured approach in different leadership roles.



EV Group (EVG) is a leading supplier of high-volume production equipment and process solutions for the manufacture of semiconductors, MEMS, compound semiconductors, power devices and nanotechnology devices. A recognized market and technology leader in wafer-level bonding and lithography for advanced packaging and nanotechnology, EVG's key products include wafer bonding, thin-wafer processing and lithography/nanoimprint lithography (NIL) equipment, photoresist coaters, as well as cleaning and inspection/metrology systems. With state-of-the-art application labs and cleanrooms at its headquarters in Austria, as well as in the U.S. and Japan, EVG is focused on delivering superior process expertise to its global R&D and production customer and partner base – from the initial development through to the final integration at the customer's site. Founded in 1980, EVG services and supports an elaborate network of global customers and partners all over the world, with more than 1000 employees worldwide and fully-owned subsidiaries in the U.S., Japan, South Korea, China and Taiwan. www.EVGroup.com



Andrea Kneidinger (Business Development Manager) is Business Development Manager at EV Group, where she focuses on Micro- and Nanoimprint Lithography (NIL) Technology for a variety of applications, in particular nanophotonics and wafer level optics. Andrea received her master's degree (M.Eng) from the Deggendorf Institute of Technology and Budapest University of Technology and Economics where she studied "Technology and Innovation Management". She has several years of professional experience in electrical engineering as well as product management - especially in materials, optics and photonics.



Patrick Schuster (Process Technology Engineer) is a Process Technology Engineer within the SmartNIL® R&D team at EV Group. His focus is on process development for EVG equipment in the field of Nanoimprint Lithography (NIL) as well as handling specific customer process requirements. Patrick received his Bachelor of Science in Sensor Technology and Analytics from the University of Applied Sciences Regensburg where he focused on microtechnology processes within the semiconductor industry.



Femtika is a spin off company from the Laser Research Center (Vilnius University). A team of precision micro processing experts founded the company in 2013. FEMTIKA is a microfabrication company that specializes in hybrid femtosecond laser microfabrication. We offer research, small scale manufacturing services and we build advanced Laser Nanofactory workstations. Hybrid micro-fabrication allows manufacturing using additive and subtractive approach. Our workstations are equipped with amplified femtosecond lasers and are applicable for various process: multiphoton polymerization, selective ablation, selective glass etching, welding, hidden marking, refractive index modification, surface reshaping or modifications of its properties (color, wettability, wearing, roughness). Femtika is targeting the growing worldwide demand for custom design components in micro- and sub-micro scale. Microstructures provided by Femtika are used in development of future products in semiconductors, photonics, medical, automotive and space industries. www.femtika.com



Titas Gertus (CEO) is a new leader for FEMTIKA. Titas has been interested in femtosecond laser micromachining for more than 15 years. He has a PhD degree from Vilnius University in material engineering. Titas is looking only forward to see challenges market will bring for hybrid manufacturing.



FEMTOprint SA, founded in 2013 in Muzzano (Switzerland), is a pioneer and market leader in high-precision, 3D microfabrication of custom-designed glass microdevices. Its activities focus on the Contract Development and Manufacturing of microsystems, from rapid prototyping to pilot and volume production at wafer-level, to serve leading international entities and fast-paving tech companies in biotechnology, life sciences, medical, watchmaking, automotive, aerospace, semiconductors, etc. In addition, with its new subsidiary located in Neuchâtel (Switzerland) the company aims to expand its business in photonics and miniaturized optics. The FEMTOPRINT® microfabrication platform enables indeed truly free-form surface/volume definition, welding, surface treatment, and ablative solutions in glass, thus creating a large variety of unique, three-dimensional microdevices. With a monolithic approach to avoid challenging assembly and alignment steps, it enables the integration of microoptical, micromechanical, and microfluidic functionalities. The company employs 35+ multi-disciplinary professionals and is certified ISO13485:2016 for medical device manufacturing. www.femtoprint.ch



Andrea Lovera (Chief Technology Officer) received a BS in Physics Engineering in 2007 and a MS in Micro- and Nanotechnologies for Integrated Systems in 2009. From 2010 to 2014, he worked on a PhD in the Photonics domain at the Nano-photonics and Metrology Laboratory of the EPFL, where he gained experience in laser-matter interaction and nanofabrication and was also involved in the European Project SPEDOC for surface plasmon early detection of heat shock proteins. In 2014, Andrea joined the newly incorporated startup FEMTOprint as Field Engineer and worked on the development of the microfabrication platform and process. Thanks to the significant contribution to mature the technology, he helped the company in adapting the business model and further expanding. From 2016, Andrea is leading the R&D department of FEMTOprint and supervising production and machine development groups. He is currently the project coordinator of two European projects and deeply involved in the definition of the strategic evolution of the company.



Rolando Ferrini (Chief Regional Officer & Head of FEMTOprint Neuchâtel) joined FEMTOprint in 2022 as Chief Regional Officer and Head of FEMTOprint Neuchâtel, the new subsidiary devoted to photonic-related microdevices in glass. In 1999, he obtained his PhD degree in Physics at the Università degli Studi di Pavia, Italy, with a thesis on the optical properties of III-V semiconductor materials for electronics and optoelectronics. From 2000 to 2004, he worked as Research Associate at EPFL, Lausanne, Switzerland, where he studied the optical properties of semiconductor-based photonic crystal devices. From 2004 to 2011, as Senior Research Associate at EPFL, he was in charge of the activities on organic devices for optics, photonics and lighting. From 2011 to 2022, he worked at CSEM as Group Leader MicroNano Optics and in 2021 as Head of the Focus Area Photonics. From 2020 to 2021, he founded the PHABULOus pilot line for the manufacturing of freeform micro-optical components, acting both as project coordinator of the related H2020 project and as Managing Director.

FISBA is a global company dedicated to shaping light through excellence in optical design, system engineering, high precision volume production and advanced optical coating. Specialties include lenses down to 0.3 mm, complex flat optics, precise optical assemblies, sophisticated optical systems and compact laser modules. In the broad field of photonics, FISBA focuses on solutions for Life Sciences, Industrial Applications and Aerospace and Defense – always with the mission of empowering customers to exceed their goals. FISBA operates from its headquarters in Switzerland with subsidiaries in Germany, the US and China. The company is privately owned and builds its strength based on traditional Swiss values. www.fisba.com



Martin Forrer (Senior Vice President Business Development) is assigned Senior Vice President of Business Development for FISBA AG. In this role, Martin is leading FISBA's strategic development with a focus on innovative and scalable solutions and technologies in micro-photonics. In the past he was responsible for FISBA's R&D as CTO including product and process development for customer specific solutions. His experience will enable our current and future customers with new and unique technologies, methods and products to solve mission critical photonics needs. Martin obtained his Diploma in physics from the ETH Zurich, earned a PhD from the University of Berne at the Institute of Applied Physics and in 2006, he completed a "Master of Technology Enterprise" with IMD business school in Lausanne.

Fraunhofer Institute for Applied Optics and Precision Engineering develops innovative solutions with light for the future fields of energy, environment, information, communication, health, production, security, and mobility. Applied research and development are linked with excellent fundamental research for the control of light - from creation and manipulation to application. We cover the entire process chain, from system design to manufacturing of prototypes within our five research units: optical components and systems, precision engineering components and systems, functional surfaces and coatings, photonic sensors and measuring systems, and laser technology. Due to the close interaction of these research units, we provide customized and optimized solutions for our partners. www.iof.fraunhofer.de



Robert Leitel (Group Leader) graduated from University of Jena in physics on inhomogenous dielectric thin-film coatings and received his PhD degree in 2008 on the formation and characterization of stochastic subwavelength structures on polymer surfaces for antireflection purposes. Since 2009, he is with the microtechnology group of the micro-optical systems department and is familiar with the entire process chain based on photolithographic mastering, replication by UV-molding, RIE etching, and stacking for the generation of wafer-level optics. He is heading the group "Advanced Micro-Optical Components".

Fraunhofer Institute for Production Technology IPT in Aachen was founded in 1980 with the mission of conducting application-oriented research and development. Fraunhofer IPT has a strong background on optical technologies starting from optics manufacturing, over optical metrology until the assembly of optical systems. The structure of the Fraunhofer IPT offers solutions to highly specific problems as well as problems that require integrated system-wide solutions. This is done by combining interdisciplinary contributions from the fields of process technology, machine and control components, metrology, quality management, technology planning and organization. www.ipt.fraunhofer.de



Christoph Baum (Managing Director) is the Managing Director of the Fraunhofer Institute for Production Technology IPT since June 2018. He studied mechanical engineering in Aachen, Málaga (Spain) and Beijing (China), specializing in design and development. In addition to his diploma in engineering from RWTH Aachen University, he graduated with a Master of Science degree from Tsinghua University (China). In January 2017, he received his doctorate in engineering from RWTH Aachen University with his dissertation "Process and machine development for multi-step micro hot stamping", for which he was awarded the Borchers Medal of RWTH Aachen University. As coordinator of several international research projects, Christoph developed various technologies for the microstructuring of large surfaces and expanded the competence of the Fraunhofer IPT into the field of continuous roll-to-roll production. Christoph is co-founder of the Fraunhofer spin-off Polyscale GmbH & Co. KG and since July 2016 Managing Director of the "Forschungsgemeinschaft Ultrapräzisionstechnik e.V."

Glassomer produces high-precision fused silica glass parts on the nano-, micro- and macroscopic scale. The worldwide unique Glassomer process ensures part production with maximum precision at minimum energy requirements. The patented technology relies on Glassomer solid or liquid nanocomposites that are shaped like polymers, e.g. by injection molding, CNC machining, casting or 3D printing. After shaping, the parts are sintered to high-purity fused silica glass. Glassomer provides never-before seen glass designs for the future of optics, photonics, biochips, solartec and healthcare. Glassomer has won numerous awards and was awarded the EIC Accelerator Grant from the European Union's Horizon 2020 research and innovation programme. www.glassomer.com



Patrick Risch (Head of Manufacturing) is responsible for the development and the production within Glassomer. He obtained his master's degree in Chemical Engineering and Process Technology at the Karlsruhe Institute of Technology in 2017. Patrick has multidisciplinary background in the additive and mass manufacturing of several materials, especially on special-purpose glasses for optics and photonics.

Heidelberg Instruments designs, develops, and manufactures maskless laser lithography systems for the fabrication of micro-structures, serving the global photolithography community in both the direct writing field and in photomask production. Application areas include MEMS, micro-optics, advanced packaging (3DIC), IC, flat panel displays (FPD), micro-fluidics, sensors, and other analog and digital electronic components. Our systems are used in more than 50 countries in Research and Development, rapid prototyping, and industrial production. In 2018, Heidelberg Instruments was joined by SwissLitho, a young and innovative high-tech company with an expertise in Scanning Thermal Probe Lithography (STPL), a technology realized with their NanoFrazor systems. In March 2021, Heidelberg Instruments acquired Multiphoton Optics, a pioneer of two-photon lithography that has developed a high-performance exposure system for 3D printing down to the sub-micrometer range. Together, Heidelberg Instruments, Heidelberg Instruments Nano and Multiphoton Optics are now able to provide customers with additional choice of tools and options in the 2D, 2.5D & 3D Nano- and Microlithography field. www.heidelberg-instruments.com



Dominique Collé (Technical Marketing & Application Manager) studied Mathematics in Nancy (France). He started to work for Heidelberg Instruments as a field service engineer in Taiwan. He moved to the headquarters in Germany where he became a process and application engineer, giving system demonstration and fabricating samples for potential customers. He specialized in grayscale lithography and recently joined the marketing team.



Holophane provides a complete range of optical glass components. Specialized in glass pressing and polishing for industrial markets and automotive applications. Footprint in France and China, we deliver worldwide with 95% overseas. Our products are solar concentrators, watermeter covers, collimators, working glasses, glass covers or lighting applications in UV, visible and NIR. We are able to provide polishing lenses (singlet, achromatic doublet) and pressing lenses (custom design, aspherical lenses, primary lenses, MicroLens Array) for your applications. Holophane, your glass partner for your projects. www.holophane.fr



Nicolas Gueroult (Optical Engineer) graduated with a master's degree in Optronics from the Paris XI-Orsay University. He has an expertise in optics, lighting solution for automotive and laser. After 3 years in biotechnologies during his studies and 2 years in multinational group in safety and identity technologies, he co-founded a high-speed laser marking start-up for agri-food. For ten years, he has joined the automotive industry in headlamp and rearlamp optical design.



Huawei, founded in 1987, is a leading global provider of information and communications technology (ICT) infrastructure and smart devices. We have nearly 195,000 employees, and we operate in more than 170 countries and regions, serving more than three billion people around the world. Huawei's end-to-end portfolio of products, solutions and services are both competitive and secure. At Huawei, innovation focuses on customer needs. We invest heavily in basic research, concentrating on technological breakthroughs that drive the world forward. www.huawei.com



Yasar Kutuvantavida (Senior Engineer) received an M.Sc. in Physics from the Indian Institute of Technology (IIT) Madras and a PhD in Photonics from Massey University New Zealand. Yasar has been working on electro-optic polymers for communication and sensing applications as part of Victoria University of Wellington, Callaghan Innovation New Zealand, and University of Wollongong Australia. Yasar joined Karlsruhe Institute of Technology (KIT), Germany in 2014, where he was actively involved in the development of high speed and power-efficient silicon-organic and plasmatic-organic hybrid electro-optic modulators. Yasar joined Huawei in 2019; Huawei Weilheim Manufacturing Technology Center (WMTC), active in precision manufacturing (R&D) for optics and photonics.



ICON Photonics has developed a wafer-level integration platform combining a Silicon Optical bench and a unique on wafer polymer microoptics technology. This platform is ideal to create custom and reliable optical micro-benches integrating fiber coupling and attaching solutions as well as high-speed electrical interconnects, enabling the next generation connectivity addressing the optical transceiver market and the Quantum photonics markets. www.icon-photonics.com



Carlos Viana (CEO) is the Co-founder and Chief Executive Officer of a deep tech startup company, ICON Photonics SAS, developing advanced chip optical I/O interconnects for the next generation connectivity. He holds a PhD in Photonics from Université Paris-Est, France and he has more than 10 years of experience in photonics technologies, Administration & Business development.



JOANNEUM RESEARCH is a business-oriented leader of innovation and technology providers. It is linked to a worldwide network and has been providing leading research according to the highest international standard since the 1960s. With focusing on applied research and technology development, the INNOVATION COMPANY plays a key role in transferring technology and know-how in Styria. More than 450 employees carry out research work at 7 research units. www.joanneum.at



Claude Leiner (Scientist) in 2011 received his diploma in Physics and in 2015 he finished his doctoral studies about multiscale optical simulations at the Karl-Franzens-University of Graz. Since 2014 he is working at JOANNEUM RESEARCH, where he became senior scientist in 2019. He is specialized in optical simulation methods, multi-scale simulations and the calculation of extremely flat optical free-form structures.



LightTrans offers solutions for the entire development cycle of optical components. Our products and services include optical design software, optical engineering, training and consulting. All the products and services of LightTrans are based on the physical optics design software "VirtualLab Fusion" developed and produced by Wyrowski Photonics, which provides ray tracing and fast physical optics methods. LightTrans provides solutions for, among others, the following fields:

- Light Shaping
- Optical Metrology
- Imaging Systems
- Laser Systems
- Virtual and Mixed Reality

www.lighttrans.com



Frank Wyrowski (President) co-founded the company LightTrans in 1999 and the company Wyrowski Photonics in 2014. He has been professor of technical physics at the Friedrich Schiller University of Jena and head of the Applied Computational Optics Group since 1996. His work as entrepreneur, researcher and teacher is dedicated to developing fast physical-optics techniques and software to address the increasing demand to overcome the limitations of ray optics in modern optics and photonics applications. Customers worldwide benefit from his engagement through the companies' consulting and engineering services, and the commercial optical design software VirtualLab Fusion. Current R&D topics include applications like lightguides for AR&VR, light shaping, microscopy, interferometry, fiber coupling, diffractive and meta lenses, DOE, HOE, freeform, microlens arrays and physical optics theory in general.



Lyncée tec



Lyncée Tec is the reference company in the field of 4D microscopy and of Quantitative Phase Imaging (QPI). Its unique technology, based on digital holography (DHM®), provides simultaneously high acquisition rate and interferometric resolution optical profilometry, and label-free bio imaging. It opens new quality control possibilities and novel research opportunities, enabling applications that were not possible before. Lyncée offers complete solutions, from sample handling to data analysis, in the field of MUT, micro production, semiconductor, micro-optics, watch industry, high content screening, and cell imaging. www.lynceetec.com



Yves Emery (CEO) holds a PhD in Physics (Optics) and a Business Administration Postgraduate certificate (HEC-UNIL). Prior to Lyncée, he has worked several years as Director of R&D and production in two start-ups active in the field of medical devices. His experience enables him to understand production, quality, and researchers' issues and to develop products in accordance with customers' needs over a very wide spectrum of technologies and markets.



NanoFocus is a developer and manufacturer of measurement technology and software packages for the characterization of technical surfaces. The company has been active in this field since 1994. NanoFocus AG's analysis systems allow high precision micro and nano scale 3D surface measurements. The innovative systems enable extremely fast, user-friendly and contactless 3D measurements of topography, micro-geometry, roughness and other surface characteristics. Since 2017, there has been a close cooperation with the company Mahr, which markets optical surface measurement systems of the Mahr brand based on NanoFocus technology. www.nanofocus.de



Jürgen Valentin (Head of Technology and Innovation) studied physics (diploma 1993) with a focus on materials science after training and practical work as a materials tester at Siemens AG. Jürgen was involved in founding and building up several companies in the field of optical metrology. As co-founder of NanoFocus AG and long-time technical director (2001-2017), he laid the foundation for innovative new optical measurement methods and new applications with resolutions down to the nanometre range. Since 2014, Jürgen has been involved in the industrial steering committee of VDMA Photonics, in addition to other activities in innovation and entrepreneurial networks.



Nanoscribe is the pioneer and market leader in high-precision additive manufacturing with 3D printers and grayscale lithography systems as well as specially developed printing materials and application-specific solutions for various microfabrication applications. With the Quantum X product line, Nanoscribe offers a platform with specific capabilities for manufacturing optical components such as microoptics and waver-level optics. Quantum X align moreover supports precisely aligned 3D printing on optical fibers and photonic chips with automatic compensation of substrate tilt, enabling innovative approaches to photonic integration. Founded in 2007 as a spin-off of the Karlsruhe Institute of Technology (KIT), Nanoscribe is part of the BICO Group since June 2021. More than 3,000 users and operators at top universities and innovative companies worldwide benefit from the groundbreaking technology and application-specific solutions for 3D Microfabrication. www.nanoscribe.com



Martin Hermatschweiler (CEO) is Co-founder and CEO of Nanoscribe ever since the company was founded in 2007. His main task is driving the company's growth, particularly through the development of new markets. The scientific expertise of the graduate physicist lies in laser patterning of polymers as well as surface coating techniques based on semiconductor processes. In 2015, he has been listed among the TOP 40 entrepreneurs within Germany younger than 40 years by the journal "Capital", the so-called "young elite".



Michael Thiel (CSO) is Co-founder, authorized officer and Chief Science Officer (CSO) of Nanoscribe. His focus lies on driving technical innovations in research and development. As a graduate physicist, he earned his PhD at the Karlsruhe Institute of Technology (KIT) in 3D laser lithography and received the KIT PhD Award in 2011 for his work. Michael Thiel is INSEAD alumnus since 2015. In 2016, he was chosen to be one of Germany's best innovators under 35. In the same year, he received the European CTO of the year 2016 award.



The **Neutrik Group** develops, designs, manufactures, and globally distributes innovative electrical and optical interconnect products and systems under the NEUTRIK, REAN and CONTRIK brands. As a multi-brand company, Neutrik Group has long dominated the world of professional entertainment and industrial applications, setting new standards in a wide range of segments. With about 1,000 employees, the Neutrik Group is a global leader in audio, video, power, and data connectors, digital network components, and power distribution and potential equalization systems. The Neutrik Group includes strategically placed subsidiaries in the United States of America, Great Britain, France, Japan, China, Hong Kong and Germany. A network of exclusive distributors in more than 80 countries worldwide provides global sales, technical support and distribution. The corporate headquarters is based in Schaan in the Principality of Liechtenstein where management, R&D, logistics, manufacturing and finance are located. www.neutrikgroup.com



Benno Züger (Senior Research Engineer) has a Physics Diploma from the University of Neuchatel and a PhD from the University of Berne. Benno worked for 13 years for Ziemer Ophthalmics in the R&D and developed the eye investigation device GALILEI. Then he worked some years at the Universities of Applied Science of Lucerne and Bern before he found his current working place a Neutrik AG in Liechtenstein. At Neutrik AG, Benno is the Senior Research Engineer at the Research & Innovation Department responsible for activities regarding optics.



Nolden Cars & Concepts entered the market more than 40 years ago with a wide product range of vehicle accessories. Since the mid-90s, lighting technology for vehicles in a huge variety of segments, such as automotive, agricultural, municipal, special purpose vehicles and buses became the core business. We also offer infrared lighting solutions for the most demanding requirements in the defense segment. Started with halogen headlights by taking over the ZKW aftersales business, through the later introduction of LED daytime running lights for automotive, Nolden Cars & Concepts developed into a leading manufacturer for vehicle lighting. Our lighting solutions consist of both off-the-shelf products and custom developments. The most important innovation driver are our customers: Unlike many market competitors, we not only offer the lighting modules, but on request Nolden Cars & Concepts can also develop and supply the appropriate electronics for plug&play integration in the customer's vehicle. www.noldengmbh.de



Alexander Neustadt (Lead Lighting Engineer) has over seven years working experience in the automotive lighting industry acquired at OEMs like Ford and engineering services companies. Since 2020, he assumed his new position as lead lighting and product safety responsible engineer at the Tier1 supplier Nolden Cars&Concepts based in Cologne. As industrial engineer, Alexander is focused on scouting optics and plastic material cross-industry innovation for exterior lighting products.



OPTOMAN designs, develops and manufactures advanced, high accuracy, and repeatability IBS thin film coatings and laser optics since 2017. R&D driven culture forces the OPTOMAN team to constantly improve the performance and reliability of thin film coatings so our partners eventually could enjoy the benefits of lower total cost of ownership. OPTOMAN as your sidekick is always willing and ready to help you with finding optimized solutions (ultra)fast and back you up in critical situations and finally get the job done as was promised. High level development is possible with experienced staff and innovative ion-beam sputtering (IBS) technology. Progressive control and automated process allow the deposition of complex structures of several hundred thin film layers. The advantages of spectral control include features, such as: higher contrast, repeatable performance, and tighter tolerances. In combination with ISO-6 clean room environment, OPTOMAN manufactures outstanding overall quality laser optics. Do not forget that with great laser power comes great responsibility for coaters! www.optoman.com



Konstantinas Zakalskis (Business Development Manager) is curious on learning about new technologies. After Nuclear Energy Physics studies his career took turn to Photonics. Learning the ropes of laser technology in one of the oldest Lithuanian laser manufacturing companies, for 6 years Konstantinas worked in laser system sales across the world. Generally passionate about photonics application, his career took another turn. At Optoman, as business development manager, he gets to seek for possible collaborations between companies. He is looking for solutions related not only with laser applications but within lasers as well.



Optoscribe is a world leader in the design and manufacture of 3D glass-based integrated photonics components. The Company's technology uses laser-based manufacturing to directly write optical waveguide circuits and micromachined structures within a block of glass, for applications ranging from data center optical transceiver interconnects, to fiber connectivity and consumer electronics. Optoscribe's products are compatible with standard Single Mode Fiber (SMF), Multimode Fiber (MMF), as well as advanced Multicore Fiber (MCF) and Few Mode Fiber (FMF) technologies. www.optoscribe.com



Nicholas Psaila (CTO) is an expert in the manufacturing and use of photonic technologies in optical communications, with a particular focus on laser-based manufacturing techniques. He is responsible for both strategic and technical facets of the business and has led the company from its formation. Nicholas has a PhD in Photonics from Heriot Watt University, an MSc in Photonics and Optoelectronic Devices from St Andrews University and BSc in Physics from Imperial College London. In 2010, he was awarded an Enterprise Fellowship from the Royal Society of Edinburgh. He has co-authored more than 60 publications and several patents in the field of laser-based manufacturing.

MICRO-OPTICS IS...

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PHABULOuS is the European pilot line and one-stop-shop for all requests for prototyping and manufacturing of free-form micro-optics services: from pilot to full-scale production. PHABULOuS serves as the single entry point to a full supply chain of Europe's leading Companies and Research & Technology Organizations. PHABULOuS's goal is the industrial manufacturing of innovative and highly demanded micro-optical components for various photonics applications, with a clear roadmap for high volume production in Europe at a competitive cost. www.phabulous.eu



Jessica van Heck (Managing Director) has a bachelor's degree in engineering from the University of Applied Sciences in the Netherlands and has over 20 years of experience in the corporate world. As Managing Director, she is the entry point to the pilot line and its services for companies aiming to pilot and produce devices integrating free-form micro-optical components.

PI



PI (Physik Instrumente) with headquarters in Karlsruhe, Germany, in the past five decades has become the leading manufacturer of nanopositioning systems with accuracies in the nanometer range. With four company sites in Germany and fifteen sales and service offices abroad, the privately managed company operates globally. Over 1500 highly qualified employees around the world enable the PI Group to meet almost any requirement in the field of innovative precision positioning technology. All key technologies are developed in-house. This allows the company to control every step of the process, from design right down to shipment: precision mechanics and electronics as well as position sensors. The required piezoceramic elements are manufactured by its subsidiary PI Ceramic in Lederhose, Germany, one of the global leaders for piezo actuator and sensor products. PI miCos GmbH in Eschbach near Freiburg, Germany, is a specialist for positioning systems for ultrahigh vacuum applications as well as parallel-kinematic positioning systems with six degrees of freedom and custom-made designs. www.pi.ws



Rolf Ellerbrock (Business Development Manager) started his career at Physik Instrumente (PI) in 1992 as sales and application engineer working in the field of ultra-precision positioning devices based on piezo technology and motorized positioners after successfully completing his studies in Physics. The markets, Rolf supported, range from optics adjustment, measurement technologies, medical technologies, astronomy, to machine tooling applications. In 2002, he took over the Key Account Management for a customer

working in the field of semiconductor technology. In 2011, Rolf became head of domestic sales, and since 2018, have been leading a team of 12 technical sales engineers. Since 2019, he focuses his expertise as Business Development Manager for Europe. In this role, Rolf currently working on identifying cross-border potential to assess the needs for PI's products in the fields of "Photonics", "Precision Industrial Automation", "Semiconductor industries" and "Life Science and Microscopy". He then analyzes these needs in each respective application and cooperate with PI product specialists to provide a solution for the task.



PowerPhotonic is a global leader in the design and manufacture of precision freeform fused silica micro-optics. Our business was founded with the objective of providing unsurpassed excellence in all aspects of micro-optics product realization for laser applications. Our world-class design skills are supported by an innovative and flexible manufacturing process that allows the company to design both a broad range of state-of-the art industry standard laser micro-optics products and, uniquely, to offer a low-cost rapid fabrication service for creating completely freeform optical surfaces. www.powerphotonic.com



Natalia Trela-McDonald (Head of Solutions) is leading new product-, process- and metrology development, specializing in design, simulation and development of freeform micro-optics for laser applications including beam shaping for material processing, direct diode systems, telecom systems and medical devices. Prior to joining PowerPhotonic, Natalia was a Research Associate at Heriot-Watt University. In this role, she worked on high power diode lasers and micro-optics for beam combining and fibre coupling, including projects with high profile industrial partners. Natalia's work has led to a number of published papers and patent applications.



SCANLAB has been developing and manufacturing galvanometer scanners and scan solutions since its founding in 1990. SCANLAB's products turn lasers into precise, highly dynamic and flexible tools that provide the basis for performing countless processing tasks. Our highly qualified and motivated team of more than 400 employees possesses extensive market and application experience. SCANLAB's headquarters in Germany now manufactures and globally sells more than 35,000 scan solutions annually. As market leader, we have the largest installed base in the world. www.scanlab.de



Holger Schlüter (Head of Business Development) studied Physics in Aachen and got his Ph.D. at the Institut Lasertechnik there. He then worked for TRUMPF in Germany and the United States in various leading positions for 12 years. He returned to Germany 2008 to Technolas Perfect Vision as COO and CTO. In 2015, he joined SCANLAB as head of business development.



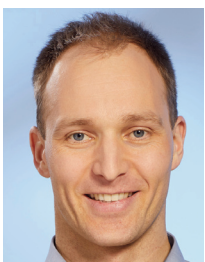
SCHOTT is a leading international technology group in the areas of specialty glass, glass-ceramics and related high-tech materials. Founder Otto Schott is considered its inventor and became the pioneer of an entire industry. Always opening up new markets and applications with a pioneering spirit and passion – this is what has driven the #glasslovers at SCHOTT for more than 130 years. Represented in 34 countries, the company is a highly skilled partner for high-tech industries: Healthcare, Home Appliances & Living, Consumer Electronics, Semiconductors & Datacom, Optics, Industry & Energy, Automotive, Astronomy & Aerospace. In the fiscal year 2021, its 17,300 employees generated sales of 2.5 billion euros. SCHOTT AG is owned by the Carl Zeiss Foundation, one of the oldest foundations in Germany. It uses the Group's dividends to promote science. As a foundation company, SCHOTT has anchored responsibility for employees, society and the environment deeply in its DNA. The goal is to become a climate-neutral company by 2030. www.schott.com



Henning Kaufmann (Product Manager) holds a PhD in quantum optics from Johannes Gutenberg University Mainz and joined SCHOTT in 2017. Before joining the product management team in early 2021, he was in responsible positions in the production unit for melting of optical glass and for process developments. As product manager at SCHOTT Advanced Optics, he is responsible for Plano Optics & Wafers, which are used in many industries. Examples for such plano optical components are coated optical interference filters, dielectric mirrors or Beamsplitters.



SICK drives industries with sensors for factory automation, logistics automation, and process automation. As a technology and market leader, SICK provides sensors and application solutions that create the perfect basis for controlling processes securely and efficiently, protecting individuals from accidents, and preventing damage to the environment. Founded in 1946 by Dr.-Ing. h.c. Erwin Sick, the company with headquarters in Waldkirch/Germany ranks among the technological market leaders. With more than 50 subsidiaries and equity investments as well as numerous agencies, SICK maintains a presence all around the globe. In the fiscal year 2020, SICK had over 10,000 employees worldwide and achieved Group sales of EUR 1.7 billion. www.sick.com



Johannes Eble (R&D Manager) received his Ph.D. degree in the field of quantum information processing at the University of Ulm. The focus herein laid on operations with calcium and multi-species ion crystals in segmented Paul traps. Since 2011, he is working for the sensor specialist SICK AG. Leading a team of optics experts and design engineers, he both invents novel optical concepts and sensors and develops them to serial products. Therefore his interest lies in co-developing innovative ideas with suppliers, particularly in the realm of micro-optics. He is inventor of over 30 patent applications.

Sony DADC is a world leading manufacturer and service provider for all kind of optical media. 35 years of experience and thriving business in the entertainment sector paired with our passion for customer satisfaction, innovation and quality empowers us to enter new business areas now. We're focusing on the mass fabrication of challenging next generation Micro Optics products made of polymers and other cutting edge materials. With our skilled team of 30+ engineers of all fields of technology we combine the right fully automated processes to offer quality and cost competitiveness in large scale fabrication from simple to complex optical products. In our 41 000m² manufacturing site in Thalgau/Austria we're running 6 000m² of an ISO 7 clean room with a best in class security setup to protect the IP of our customer. www.sonydadc.com



Gerald Ihninger (Senior Engineering Manager) graduated 1993 in physics at the Johannes Kepler University (JKU, Linz Austria) on semiconductor physics. After his diploma, he joined Sony DADC as an automation engineer for cleanroom mass production. Since 2003 Gerald is responsible for automation/electronics-lab and metrology. After some years he as well took on responsibility for quality assurance for disc business. In addition to physics, his experience covers a wide range from mechanical engineering, software engineering to electronics. For more than a year, he leads a project to evaluate market, technology and processes for mass production of nano/micro optics elements.



Wolfgang Huber (Development/Process Engineer) studied physics at the Technical University of Graz (Austria). After finishing his diploma, he started at LG.Philips Displays. Since 2002 he has been working in the mastering department at Sony DADC. His main research interests are direct laser lithography with all preliminary and subsequent processes. He is also in charge of high-accuracy optical metrology together with other kind of measurement systems like AFM, REM. For one year, he is now working on several projects in the field of nano/micro optics.



SUSS MicroOptics SA manufactures high-quality refractive and diffractive micro-optics on 200mm wafers for applications in automotive, photolithography, fiber optics, silicon photonics and more. Our production facilities in Neuchatel, Switzerland, exemplify excellence and our volume production line imprints micro-optics for automotive lighting applications. Suss MicroOptics is ISO 9001:2015 and IATF 16949:2016 certified and is a subsidiary of Suss MicroTec SE. www.suss.ch



Wilfried Noell (Director R&D) is responsible for R&D projects, advanced technology, optical designs and special client requests with his dedicated team of scientists and engineers. Before joining SUSS MicroOptics, he was an R&D scientist and process engineer in the industrial x-ray business unit of the COMET AG, Switzerland. From 1994 through 2012, he worked on InP PICs, Silicon Photonics (SiPH), Optical MEMS (MOEMS) and MEMS actuators at TU Darmstadt, IMM Mainz, IMT/Uni Neuchâtel and EPFL, Switzerland, respectively. Since 2021, he is a member of the Swiss NTN Photonics Innovation Board.



Tecnoservizi is a publishing company, founded on 2007. Based on Milan Tecnoservizi also organized Technical Conferences and Technical Trade Fairs in Italy. From 2003 to 2007 Tecnoservizi organized Microelettronica in Vicenza (40.000 square meters fairs) and in 2008 Energy Planet (30.000 square meters). Tecnoservizi publish 4 tech magazines Eco Design Magazine, Production & Electronics Magazine, Automation Design Magazine, Electrosea.it. Tecnoservizi is now planning the 7th edition of Yacht Design Forum in Italy. www.tecnoservizi.es and www.electrosea.it



Armando Zecchi (Managing Director/Editor), who is enrolled by the order of journalists, boasts an ultra-year-old collaboration with various sector magazines (wrote over 2,200 technical articles in about 30 years), Automazione Integrata, Elettronica Integrata (Tecniche Nuove), PCB Magazine (JCE), Industrial Components (Publitech), Eco Design Magazine and Automation Design Magazine, Production & Electronic Magazine, Elctrosea.it). He published over 18 technical books, including the official technical text ASI (Blue Book). Currently he directs a small publishing house (Tecnoservizi srl) which publishes technical magazines and organizes conference exhibitions. Armando collaborated for several years as cultore della materia with Prof. Cottafava (Corso PSN) at the University of Milan Computer Science.



TOPTICA



TOPTICA develops and manufactures high-end laser systems for scientific and industrial applications. The portfolio includes diode lasers, ultrafast fiber lasers, terahertz systems and frequency combs. These systems are widely used in quantum optics and spectroscopy, biophotonics and microscopy, as well as test and measurement. www.toptica.com



Holger Quast (Vice President) studied physics and business administration at Goethe University Frankfurt am Main. After his PhD in physics from the Technical University Berlin for his work on high-frequency measurement technology using ultrafast lasers, he left academia to start building business based on novel technologies. Next to being involved in several ventures for various markets, Holger was COO and co-founder of the VCSEL specialist VI Systems GmbH in Berlin, and co-founder, COO, and head of business development at the Terahertz imaging specialist SynView GmbH in Bad Homburg. Before Holger joined TOPTICA in October 2019, he had been working for Siemens as Venture Director of the Siemens Technology Accelerator in the area of technology transfer and start-up building. At TOPTICA, Holger uses his experience in successfully bringing technology-driven products to market in his role of Vice President for Materials and Biophotonics.

The University of Stuttgart is one of the leading technically oriented universities in Germany with global significance. The Stuttgart Way stands for the interdisciplinary integration of engineering, natural, cultural and social sciences on a foundation of top-flight disciplinary research. Simulation science, production technologies, quantum technologies, digital humanities as well as the topic of adaptive building stand out as particular highlights in the University of Stuttgart's research program. The University of Stuttgart is among the leading German universities participating in Horizon 2020. Currently, the university participates in 124 projects. Among other research institutes of the University of Stuttgart who are focusing on photonics (e.g. Institut für Technische Optik (ITO)), one can cite the Institut für Strahlwerkzeuge (IFSW) is one of the leading research institute in laser technology and optics. Within the last few years the IFSW has been involved in and coordinated several FP7 (Ultrafast_RAZipol, TiSa-TD), H2020 (Hiperdias, Tresclean, kW-Flexiburst) and Marie-Curie ITN (GREAT) projects. www.uni-stuttgart.de



Harald Giessen (Professor) graduated from Kaiserslautern University with a diploma in Physics and obtained his M.S. and Ph.D. in Optical Sciences from the University of Arizona in 1995 as J.W. Fulbright scholar. After a postdoc at the Max-Planck-Institute for Solid State Research in Stuttgart, he moved to Marburg as assistant professor. From 2001-2004, he was associate professor at the University of Bonn. Since 2005, he is full professor and holds the Chair for Ultrafast Nanooptics in the Department of Physics at the University of Stuttgart. Harald is co-chair of the Stuttgart Center of Photonics Engineering, SCoPE, and guest researcher at the University of Cambridge as well as guest professor at the University of Innsbruck and the University of Sydney, at A*Star, Singapore, as well as at Beijing University of Technology. He is associated researcher at the Center for Disruptive Photonic Technologies at Nanyang Technical University, Singapore. He is on the advisory board of several prestigious journals (e.g. "Advanced Optical Materials") and is topical editor of the journal "Light: Science & Applications". A Fellow of the Optical Society of America, Harald is the "Highly Cited Researcher" (top 1%) by the Institute of Scientific Information (2018, 2019, 2020 and 2021) and is a 2021 Gips-Schüle Research Prize awardee. His research interests include Ultrafast Nano-Optics, Plasmonics, Metamaterials, 3D Printed Micro- and Nano-Optics, Medical Micro-Optics, Miniature Endoscopy, Novel mid-IR Ultrafast Laser Sources, Applications in Microscopy, Biology, and Sensing.



Simon Thiele (Start-up Founder) graduated in Microsystems Engineering and finished his PhD on the topic of 3D printed micro-optics at the Institute for Applied Optics (ITO), University of Stuttgart. Afterwards, he was leading the Optical Design group at ITO with a strong focus on micro-optical systems. During his >10 years of work on micro-optical design and manufacturing, he was involved in more than 50 publications and 8 patents. Recently, he also co-founded the university spin-off Printoptix GmbH that offers a design and 3D printing service for micro-optics and works on novel micro-optical solutions.

Wielandts UPMT is a Belgian start-up company incorporated in 2013 developing innovative technologies related to lens arrays. Using its patented technology called DPI™, the company proposes ultra-precision machining services for MLA masters and monolithic multi-cavity molds to customer specifications for a wide range of applications: wafer level optics, R2R, R2P injection molding inserts, ... Wielandts UPMT is also developing an iso-thermal molding technology called HiFiOptics™, taking profit of the advantages of DPI™. www.upmt.be



Marc Wielandts (CEO) decided to develop, patent and commercialize the DPI™ technology by founding Wielandts UPMT in September 2013. Marc has gained experience as engineer, project manager and mechatronics department manager for AMOS (Belgium), successfully piloting many optomechanical projects for space and astronomy. He was General Manager of Nanoshape, an AMOS subsidiary that became a reference partner for ultra-precision machining, especially in the field of multi aspheric mirror assemblies for space instruments.



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Sören Schmidt (Optical System Engineer) studied physics at the Friedrich-Schiller University of Jena followed by a Phd-research phase with a focus on the simulation of micro-optical structures and the solution of connected inverse problems, e.g., for integrated freeform illumination concepts. After graduation he joined the optical design department at the Carl Zeiss AG. There he mainly is involved with projects for digital optical Co-Design with a focus on optical metrology and illumination design for various applications.

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