PRESS INFORMATION

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Reflective waveguides for Augmented Reality: Lumus and SCHOTT enter into Strategic Partnership

Lumus, the pioneering innovator of reflective waveguide displays for Augmented Reality (AR) devices, has joined forces with SCHOTT, the leading supplier to the growing AR industry. Based on a strategic partnership agreement between the companies, SCHOTT has built a manufacturing setup to supply Lumus' core technology, the Lightguide Optical Element (LOE), which is based on reflective waveguide technology.

Mainz, Germany; Ness Ziona, Israel – July 1, 2020 – Today, international technology group SCHOTT, worldwide leader in the manufacturing of optical materials and components for Augmented Reality (AR) waveguides, announced that it has joined forces with Israeli company Lumus, the pioneering innovator of reflective waveguide displays. Under the agreement, LOEs offered by Lumus, including the brand-new and pioneering Lumus Maximus, are now manufactured by SCHOTT.

Reflective waveguides are acknowledged for excellent image quality. Achieving this quality requires the tightest control of manufacturing processes.

"Lumus is truly proud to announce this strategic partnership with SCHOTT to enable mass scale manufacturability of our waveguides at a competitive cost," said Ari Grobman, CEO of Lumus. "With our upcoming 'Maximus' 2D waveguide architecture ready to take advantage of the fast-approaching consumer AR market SCHOTT is the ideal partner to help scale our unique technology."

The partnership adds a new product line to SCHOTT's offerings to the AR industry. SCHOTT's groundbreaking RealView® high refractive index glass wafers are already a key enabler for AR devices using refractive waveguide technology with ever-wider field-of-view (FOV). Under the new partnership, SCHOTT broadens its technology offer to the market, in manufacturing optical components based on reflective waveguide technology.

“Reflective waveguides are acknowledged for excellent image quality. Achieving this quality requires the tightest control of manufacturing processes. SCHOTT’s integrated set-up covers all relevant process steps from material science, melting, processing of substrate and coatings, to final assembly and metrology. That level of control allows us to meet extremely tight manufacturing tolerances at favourable costs,” said Dr. Ruediger Sprengard, Head of Augmented Reality at SCHOTT. “Reflective waveguide LOEs complement our product portfolio giving our customers the option to pick the technology suited best for their application and underline our commitment to the AR industry.”

An emerging industry – looking for optical excellence

AR/MR devices are on their way to end consumers. The innovation roadmaps of leading tech giants around the globe include AR solutions as the “next big thing” in consumer electronics. End user-adoption of this technology requires uncompromised image quality, widest FOV, and a small, sleek device light enough to be worn on the face comfortably for extended periods. The AR/MR industry has devoted significant resources to achieve these goals, while meeting the retail price demands of consumers.

The AR/MR industry widely believes that a waveguide-based optical design will be a key enabler for end consumer adoption. In order to deliver images with uncompromised quality, those waveguides require optical glass of most pristine quality and surfaces manufactured to unprecedented precision. SCHOTT is serving AR/MR innovators worldwide as the leading provider of waveguide materials. Within this segment, SCHOTT’s customers use different technologies to manage the input and output functionality in such waveguides, among which surface gratings and volume holographic structures, all of them already using SCHOTT RealView® wafers defining the industry reference in quality and mass manufacturing maturity. Another waveguide technology, widely acknowledged in the market for its image quality, is the reflective waveguide approach pioneered by Lumus.

When making their choice, product designers have to make their technology selection between different trade-offs in image quality, power efficiency, FOV and manufacturing readiness.

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Lumus and SCHOTT team up to reshape the future

Within this cooperation, Lumus is responsible for research and development on the optical design of the reflective waveguides, as well as their commercialization. SCHOTT's focus is the manufacturing of the LOEs, leveraging its international production network with high-end optical glass melting in Germany; its field-proven substrate processing lines in China, operated as a joint venture with Crystal-Optech, being already the hub for SCHOTT RealView®, and its component factory in Malaysia, where the LOE assembly line is located. Dedicated engineering hubs in Germany, Switzerland, and China support required process innovation and metrology development.

An optical glassmaking heritage of more than 135 years keeps driving innovation

SCHOTT, the inventor of specialty glass, is fully committed to enabling the future of Augmented and Mixed Reality with outstanding optical glass components. The company's scientists and #glasslovers around the world keep on fueling the AR innovation pipeline, based on a proven and scalable mass-production-ready ecosystem. Acknowledging SCHOTT's pioneering role to the industry, SCHOTT's RealView® glass wafers received the 2019 Display Industry Award for Display Component of the Year from the Society of Information Display, SID.

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About SCHOTT

SCHOTT is a leading international technology group in the areas of specialty glass, glass-ceramics and related high-tech materials. With over 130 years of experience, the company is an innovative partner to many industries, including the home appliance, pharma, electronics, optics, life sciences, automotive and aviation industries. SCHOTT has a global presence with production sites and sales offices in 34 countries. In fiscal year 2018/2019, the Group generated sales of EUR 2.2 billion with its 16,200 employees. SCHOTT AG has its headquarters in Mainz (Germany) and is solely owned by the Carl Zeiss Foundation. This is one of the oldest private and largest science-promoting foundations in Germany. As a foundation company, SCHOTT assumes special responsibility for its employees, society and the environment.

About Lumus

Lumus (www.lumusvision.com) believes the future is looking up, and is working with today's leading augmented reality (AR) and smart eyewear manufacturers to free the world from the limitations of screen-based living. Lumus develops and produces exceptional transparent AR displays that fuse digital and physical worlds like never before. Lumus reflective waveguide optics are the foundational technology on which top global OEM brands are basing their products. The company's patented reflective waveguide optical technology enables true see-through performance and a wide field of view in the most natural-looking, sleek and compact design possible today. Lumus optics are in the market with leading brands such as Lenovo and with military aviation optics via our partnership with Thales Avionics, health care devices like the FDA approved Augmedics xvision, and industrial devices like Thirdeye's X2 MR Glasses.

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