
A Joint Venture on Performing Nanoimprint Lithography on 300-mm Glass Wafers

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As a glass and glass-ceramics manufacturer, SCHOTT will employ the EV Group's SmartNIL technology to perform 300-mm nanoimprint lithography (NIL) for the high-volume patterning of high-refractive-index glass wafers for the next-generation augmented/mixed reality (AR/MR) headsets. Scaling up to 300-mm is a critical step in bringing such headsets into industrial markets.

V Group ([EVG](#)), a leading supplier of wafer bonding and lithography equipment for the MEMS, nanotechnology and semiconductor markets, today announced that it has teamed up with [SCHOTT](#), one of the world's leading technology groups in the areas of specialty glass and glass ceramics, to demonstrate the readiness of 300-mm (12 inch) nanoimprint lithography (NIL) for high-volume patterning of high-refractive index (HRI) glass wafers used in the manufacture of waveguides/light guides for next-generation augmented/mixed reality (AR/MR) headsets.

The partnership involves EVG's proprietary SmartNIL® process and SCHOTT RealView™ high-refractive index glass wafers, and will be carried out within EVG's NILPhotonics® Competence Center at the company's headquarters in [Austria](#). SCHOTT will showcase a 300-mm SCHOTT RealView™ glass wafer patterned with EVG's SmartNIL technology at the [China](#) International Optoelectronic Expo (CIOE), to be held September 4-7 at the Shenzhen Convention Center.

"Scaling up to 300-mm manufacturing of high-refractive index glass wafers is critical to achieving the production volumes at the economies of scale that our customers need to meet growing market demand for today's and tomorrow's leading AR/MR devices," stated Dr. Ruediger Sprengard, Head of Augmented Reality at SCHOTT. "Through this joint effort, EVG and SCHOTT are demonstrating the equipment and supply-chain readiness for 300-mm HRI glass manufacturing today."



300-mm and 200-mm SCHOTT RealView™ glass substrates imprinted in an EVG® HERCULES® NIL system utilizing SmartNIL® UV-NIL technology.

Until now, the use of NIL to pattern glass substrates with structures for photonics applications has been limited to 200-mm substrates. The migration to 300-mm wafer processing is an important step forward in bringing AR/MR headsets into the mass consumer and industrial markets. However, maintaining high substrate quality and process uniformity on these larger substrates is difficult to control, and requires advanced automation and process control capabilities. EVG's SmartNIL technology is the result of years of research, development and field experience to address the needs of nanopatterning, and has been field proven to be easily scalable from die-level sample sizes all the way up to large-area substrates. This past June, EVG introduced the HERCULES NIL 300 mm, which brings SmartNIL into 300-mm manufacturing to support the production needs for a variety of devices and applications, including optical devices for AR, MR and virtual reality (VR) headsets, as well as 3D sensors, bio-medical devices, nanophotonics and plasmonics.



HERCULES® NIL Fully Modular and Integrated SmartNIL® UV-NIL System up to 300 mm.

“Established in 2014, EVG's NILPhotonics Competence Center provides an open access innovation incubator for a diverse set of partners and companies across the NIL supply chain to collaborate with EVG to shorten development cycles and time to market for innovative photonic devices and applications,” stated Markus Wimplinger, corporate technology development and IP director at EV Group. “We are excited to partner with companies like SCHOTT to demonstrate the value of EVG's NIL solutions in not only enabling the development of new technologies and processes, but also accelerating their introduction to mass markets. This current work we are doing with SCHOTT proves the maturity of NIL equipment and processes, and is laying the groundwork for 300-mm manufacturing for a variety of exciting new photonics-based products and applications.”

SCHOTT RealView™ high-refractive index glass wafers are a key component in leading AR/MR

devices and available in mass production. The product portfolio offers refractive indices up to 1.9, enabling deeply immersive AR/MR applications with a wider field of view of up to 65 degrees. SCHOTT unveiled the first generation of SCHOTT RealView™ in 2018 after years of research and development in cooperation with AR hardware makers. Just one year after its market launch, the high-end product won the prestigious SID Display Industry Award 2019.

Read the [original article](#) on EV Group.