



FOR IMMEDIATE RELEASE

EV GROUP AND INKRON PARTNER ON HIGH REFRACTIVE INDEX MATERIALS AND NANOIMPRINT LITHOGRAPHY DEVELOPMENT FOR NEXT-GENERATION OPTICAL DEVICES

Partnership at EVG's NILPhotonics® Competence Center to support new materials development for diffractive optics needed for waveguides, facial recognition sensors and other photonic devices

ST. FLORIAN, Austria and ESPOO, Finland, January 22, 2020—EV Group (EVG), a leading supplier of wafer bonding and lithography equipment for the MEMS, nanotechnology and semiconductor markets, today announced that it is partnering with Inkron, a manufacturer of high and low refractive index (RI) coating materials, to provide optimized processes and matching high RI materials for the development and production of high-quality diffractive optical element (DOE) structures. These DOE structures include waveguides for augmented/mixed/virtual reality (AR/MR/VR) devices, as well as beam splitters and diffusers for advanced optical sensing used in automotive, consumer electronic and commercial applications.

This partnership is being carried out within EVG's NILPhotonics® Competence Center at its headquarters in St. Florian, Austria. EVG's NILPhotonics Competence Center provides an open access innovation incubator for customers and partners across the NIL supply chain to collaborate to shorten development cycles and time to market for innovative photonic devices and applications. As part of this agreement, Inkron has also purchased an [EVG® 7200 NIL system](#) for use in its own research and development facility to accelerate the development and qualification of new optical materials. The EVG 7200 system leverages EVG's innovative SmartNIL® technology and materials expertise to enable mass manufacturing of micro- and nanoscale structures as small as 30 nm over a large area with unmatched low-force and conformal imprinting, fast high-power exposure and smooth stamp detachment.

“Demand for wafer-based optical components and sensors across commercial and consumer markets is accelerating at a breakneck pace, driving the need for materials and processes that are optimized to meet the performance requirements and production volumes required in these markets,” stated Markus Wimplinger, corporate technology development and IP director at EV Group. “Inkron has extensive know-how in optical materials, and is one of the leading manufacturers of high and low RI coatings, making the company an ideal partner to work with at our NILPhotonics Competence Center. Collaborations such as this one enable EVG to further explore and expand the applications and capabilities of our NIL technology, ensuring the availability of production-ready solutions for next-generation optical devices and end products.”

The material properties of optical elements and components have a major impact on the overall performance and form factor of the packaged optical device. For example, higher refractive indices (up to 1.9x and above) enable optimized designs for improved outcoupling of the light, which can significantly increase the field of view of waveguides, providing a more immersive experience in AR/VR headsets. Higher RI materials can also provide higher optical density and enable more efficient diffractive optics used for beam splitting (such as for facial recognition sensors), supporting further miniaturization of the optics. Additional optimization of high RI materials can provide better contrast due to improved film transparency as well as reduced haze and scattering, while improved resin stability can address more stringent thermal requirements, such as those needed in automotive applications.

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EV GROUP PARTNERS WITH INKRON ON HIGH REFRACTIVE INDEX MATERIALS AND NANOIMPRINT LITHOGRAPHY FOR OPTICAL DEVICES.....Page 2 of 3

Optimizing the high RI materials for NIL processing helps ensure their implementation in volume production. NIL is a proven method for manufacturing optical elements due to its ability to provide cost-effective patterning of nanometer-scale features at high volume, while being insensitive to feature size, shape and complexity.

“We are excited to be teaming up with EV Group to accelerate the introduction of new, optimized and innovative optical material technologies that help to address critical performance roadmaps of our customers,” stated Juha Rantala, CEO of Inkron. “Our nanoimprintable high refractive index materials and matching gap filling coatings, combined with EVG’s leading NIL systems, provide critical wafer-level solutions that optics manufacturers need in order to quickly scale up production on their latest products.”

Applications and Solutions for Wafer-level Optics

EVG's NIL systems form a key component of the company's WLO manufacturing solutions, which enable a multitude of novel optical sensing devices for mobile consumer electronics products. Key examples include 3D sensing, time of flight, structured light, biometric authentication, facial recognition, iris scan, optical fingerprint, spectral sensing, environmental sensing and infrared imaging. Other applications include automotive lighting, light carpets, heads-up display, in-car sensing and LiDAR as well as medical imaging for endoscopic cameras, ophthalmic applications and surgical robotics. EVG's WLO solutions are supported by the company's NILPhotonics Competence Center. More information about EVG's WLO solutions can be found at: <https://www.evgroup.com/technologies/wafer-level-optics/>.

About Inkron

Inkron, a member of Nagase Group, is a developer and manufacturer of high and low Refractive Index (RI) coating materials. These industry leading optical coatings cover record breaking RI range between 1.1 and 2.0 in VIS/NIR range. The high RI materials are optimized for the Nano Imprint Lithography (NIL) process. Targeted applications include DOE (Diffractive Optics Elements) such as Waveguides for XR devices, optical diffusers, LIDAR and other photonic applications. High refractive index materials are complemented by Inkron's matching low refractive index materials with RI range of 1.1-1.4. Typical applications of the low RI materials cover anti-reflective coatings (visible and NIR range), waveguide claddings and adhesive layers. The in-house synthesized resins and formulations are optically clear, thermally stable and commercially ready for demanding applications. Other products offered by Inkron cover thermally conductive adhesives, encapsulant materials and a range of printable inks. For more information, visit www.inkron.com.

About EV Group (EVG)

EV Group (EVG) is a leading supplier of equipment and process solutions for the manufacture of semiconductors, microelectromechanical systems (MEMS), compound semiconductors, power devices and nanotechnology devices. Key products include wafer bonding, thin-wafer processing, lithography/nanoimprint lithography (NIL) and metrology equipment, as well as photoresist coaters, cleaners and inspection systems. Founded in 1980, EV Group services and supports an elaborate network of global customers and partners all over the world. More information about EVG is available at www.EVGroup.com.



EV GROUP PARTNERS WITH INKRON ON HIGH REFRACTIVE INDEX MATERIALS AND NANOIMPRINT LITHOGRAPHY FOR OPTICAL DEVICES.....Page 3 of 3

Inkron Contacts:

Juha Rantala
CEO
Inkron Oy
E-mail: juha.rantala@inkron.com

Jukka Perento
VP Operations
Inkron Oy
Tel: +358 40 5910 419
E-mail: jukka.perento@inkron.com

EV Group Contacts:

Clemens Schütte
Director, Marketing and Communications
EV Group
Tel: +43 7712 5311 0
E-mail: Marketing@EVGroup.com

David Moreno
Principal
Open Sky Communications
Tel: +1.415.519.3915
E-mail: dmoreno@openskypr.com

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