

Press release

Swiss-led and PHABULOU^S: New European pilot line to provide highly advanced and robust manufacturing technology for optical free-form micro-structures

A new era for free-form micro-optics

Neuchâtel, January 16, 2020: Led by CSEM, the PHABULOU^S consortium is unifying Europe's leading Companies and Research & Technology Organizations (RTOs), through the creation of self-sustainable pilot line for the design and manufacturing of free-form micro-optical solutions. These solutions will be integrated into high added-value devices, spanning from micro displays for augmented reality, to innovative systems for professional, automotive, and transportation lighting to optical effects for luxury. The PHABULOU^S consortium will synchronize its efforts to translate urgent and high-impact industrial needs into industrially relevant predictive software packages, manufacturing tools and processes, characterization methods for quality inspection and integration schemes, all necessary for the successful demonstration of this technology in pre-commercial production runs.

The EU project PHABULOU^S (Pilot-line providing highly advanced & robust manufacturing *technology for optical free-form μ -structures*) is being launched on January 15 and 16, 2020, at CSEM in Neuchâtel.

There is an urgent need to provide miniaturized optical components due to the exponential growth of the micro-optics market over the last decade. This is in tandem with an increasing need for free-form micro-optics that can address the challenges set by the photonics market over the next five to ten years. Industrial demand for free-form micro-optics is a current market reality, however, the high access barriers to pre-commercial production capabilities in Europe prevent companies, especially SMEs, from commercially exploiting this technology.

Among the objectives of the project, are:

- the general increase of the current technology and manufacturing readiness levels of free-form micro-optics
- the implementation of 6 industrial user cases demonstrating pilot manufacturing in operational environments for applications spanning from augmented reality, to professional, automotive, and transportation lighting to luxury
- the establishment of an open-access, sustainable, distributed pilot-line infrastructure with a single entry point
- the validation of the pilot-line services through the implementation of 20 industrial pilot cases in different fields, such as solid-state & day-lighting, photovoltaics, displays & imagers, consumer electronics & wearables, anti-counterfeiting & branding.

Dr. Rolando Ferrini, the project's coordinator from CSEM, is extremely satisfied by the whole project concept and stated: "PHABULOU^S will open a new era for free-form micro-optics enabling the industrial

manufacturing of innovative micro-optical components for a wealth of different photonics applications, thus becoming the unique entry point in Europe for SMEs and LMEs aiming to pilot and produce devices integrating free-form micro-structures.”

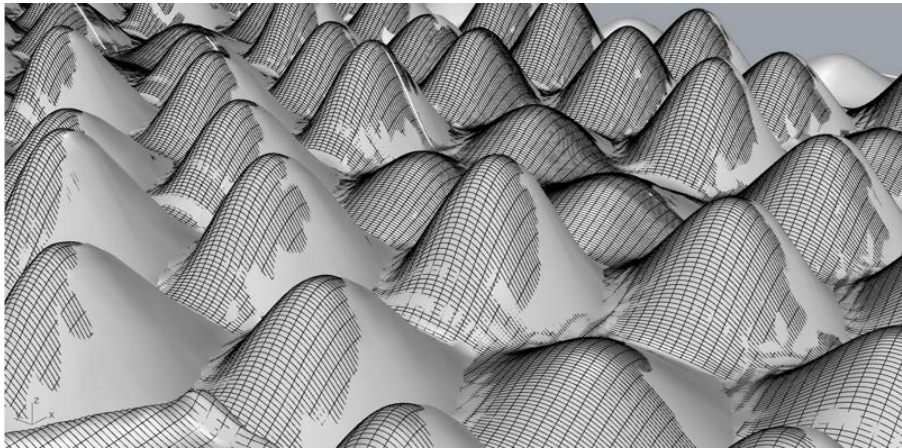
Dr. Reinhard Voelkel, CEO of SUSS MicroOptics and a partner of the consortium also stated that: “We are very honored to participate in the Free-Form Photonics EU-Pilot Line Project PHABULOuS and to accommodate the Wafer-Level Optics (WLO) part in our new cleanroom wafer factory in Neuchatel, Switzerland. He notes that: “PHABULOuS is a strong consortium and we are very confident that the new Pilot Lines will enforce the competitiveness of European Photonics companies and manufacturing industry in Europe.”

One of the six industrial use case partners is the automotive supplier HELLA. Dr. Daniela Karthaus, responsible for new optical technologies at HELLA, said: "As a leading manufacturer of automotive lighting systems we strive for developing the latest innovations in order to provide the best solutions to our customers. Within the PHABULOuS project, HELLA looks at highly innovative micro-optics for miniaturizing the existing automotive lighting solutions to enable new design possibilities as well as the reduction of construction space and weight to contribute to an efficiency increase for electric vehicles and autonomous driving.”

PHABULOuS has received funding in the order of 15 Mio. EUR in the framework of the Horizon 2020 Work Programme.



Kick off meeting PHABULOuS EU Project in Neuchatel 15-16/01/2020



Sketch of a free-form micro-optics component

Additional information

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About PHABULOuS

The PHABULOuS consortium consists of 19 Companies and RTOs along the whole manufacturing value chain, namely: CSEM as coordinator, Johanneum Research, VTT, Fraunhofer Gesellschaft, CEA, SUSS MicroOptics, Morphotonics, Nanocomp, WIELANDTS UPMT, LASEA, PowerPhotonic, Limbak, Microoled Sarl, Seisenbacher, Swarovski, HELLA, Zumtobel Lighting, EPIC-European Photonics Industry Consortium, and Amires.

This project has received funding from the European Union's Horizon 2020 research and innovation program under the Grant Agreement n° 871710, in Public Private Partnership with Photonics 21 (www.photonics21.org)

A homepage of the project is under preparation (www.phabulous.eu) and additional information can be found on [LinkedIn](#) and [Twitter](#) @PHABULOuS_eu

About CSEM

CSEM—technologies that make the difference

CSEM, founded in 1984, is a Swiss research and development center (public-private partnership) specializing in microtechnology, nanotechnology, microelectronics, system engineering, photovoltaics and communications technologies. Around 500 highly qualified specialists from various scientific and technical disciplines work for CSEM in Neuchâtel, Zurich, Muttenz, Alpnach, and Landquart.

Further information is available at www.csem.ch

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About SUSS MicroOptics

SUSS MicroOptics produces high-quality refractive and diffractive micro-optics for fiber coupling, collimation and beam homogenizing based on extensive experience in optical design, engineering, wafer-level manufacturing, metrology and packaging. SUSS MicroOptics is automotive qualified and key supplier for innovative photonic solutions in telecom, datacom, life science, laser, semiconductor equipment and automotive lighting.

SUSS MicroOptics SA was formed in 1999 with the remit to supply its parent SUSS MicroTec AG with micro-optical elements for their lithography equipment. As the market for micro-optics grew, SUSS MicroOptics expanded to meet the new and diverse requirements, developing its product portfolio and expertise to become one of the leading producers of precision refractive and diffractive micro-optics in the world. www.suss-microoptics.com/

SUSS MicroOptics is a wholly owned subsidiary of SUSS MicroTec SE, a leading supplier of products and solutions for backend lithography, wafer bonding and photomask processing. For more information please visit www.suss.com.

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