

# Press Release

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## "Graphene Flagship" launches experimental 2D pilot line Integration of graphene and related 2D-materials into the semiconductor platform

**Frankfurt (Oder).** 2D Experimental Pilot Line (2D-EPL), a four-year project funded by the European Commission with 20 million euros, has set itself the task of closing the gap between laboratory-scale manufacturing and large-scale production of electronic components based on two-dimensional (2D) materials. With the first experimental production facility of its kind, in which European companies, research centres and academic institutions work together, new types of components can be manufactured on the basis of 2D materials on a pilot scale.

The aim of the project is to demonstrate how to manufacture and scale components based on 2D materials in a way that is effective for market applications. This is a crucial step before graphene technologies can be transferred to large-scale manufacturing.

The project consortium is composed of the renowned European players covering the entire value chain, including tool manufacturers, chemical and material suppliers and semiconductor manufacturing lines: Aixtron Ltd and Oxford Instruments (UK), imec (Belgium), AMO GmbH, Leibniz Institute for high performance microelectronics (IHP), Micro Resist Technology GmbH, Aixtron SA and Suss Microtech (Germany), Graphenea (Spain) and VTT (Finland).

"Two-dimensional materials have unique properties for electronic and photonic devices as well as for sensors," says Cedric Huyghebaert, programme manager for the integration of test materials and modules at imec and technical director of the 2D EPL project. "There are now numerous publications that show prototypes of components based on 2D materials, whose performance is well above the state of the art. But in order to bring these devices to market, we need to develop tool sets and design manuals for their manufacture that are compatible with the standards of the semiconductor industry."

The pilot line will make it possible to prototype new components for electronic, photonic and sensor applications in a representative environment for production. The process flow is carried out in ultra-modern clean room environments throughout Europe at imec (Belgium), VTT (Finland) AMO and the IHP (Germany).

"As the integration of graphene devices still lack the stability and compatibility with Si-technology processes, the developments of graphene in 200mm scale in the CMOS pilot line of IHP is important aspect towards the establishment of the technology platform that enables the fabrication of various graphene based devices", says Dr. Mindaugas Lukosius from IHP.

To support the development of a European 2D materials ecosystem covering the entire value chain, the 2D-EPL will be open to the entire R&D community working in the field of 2D materials, using a cost-sharing model between users and service providers. The aim is



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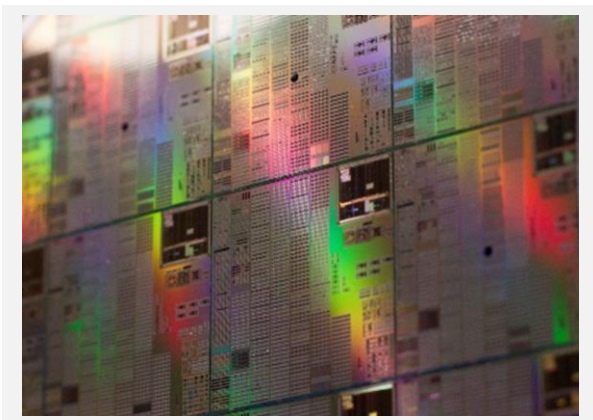


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to become a sustainable on-demand service for research and innovation actors in Europe and abroad, integrated into the framework of EURO PRACTICE.

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Further information: <https://graphene-flagship.eu/graphene/news/graphene-flagship-launches-first-european-epl/>



Wafer with integrated 2D materials © IHP

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## About IHP:

The IHP is an institute of the Leibniz Association and conducts research and development of silicon-based systems and ultrahigh frequency circuits and technologies including new materials. It develops innovative solutions for application areas such as wireless and broadband communication, security, medical technology, industry 4.0, automotive industry, and aerospace. The IHP employs approximately 350 people. It operates a pilot line for technological developments and the preparation of high-speed circuits with 0.13/0.25  $\mu\text{m}$  SiGe BiCMOS technologies, located in a 1500 m<sup>2</sup> DIN EN ISO 14644-1 3 certified clean room.

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