Pressemitteilung

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Leibniz Institute for high performance microelectronics

New development: Electronic noses detect diseases of crops at an early stage

Innovation from the Lusatia region

Cottbus/Frankfurt (Oder). If plant diseases are detected before the first visual symptoms appear, plant protection products can be used in a targeted manner and thus significantly reduced. In the future, so-called electronic noses, which are being developed by a consortium consisting of the BTU Cottbus-Senftenberg, Leibniz Institute for Agricultural Engineering and Bioeconomy (ATB), IHP – Leibniz Institute for High Performance Microelectronics and Photonic Insights GmbH as part of the BMBF's "Innovation & Structural Change" funding measure, are to help in this process. A first prototype, which was developed as part of the BMBF project "Innovation Campus Electronics and Microsensors Cottbus", is currently on display in the Science Gallery of the BTU library in Cottbus.

Numerous plant diseases can be detected by changes in the emissions of volatile organic compounds from the affected plants. In this context, a cost-effective detection method coupled with intelligent on-site data evaluation is crucial for successful application in agriculture. Therefore, the electronic nose is realised within the project "AgriNose"on the basis of semiconductor sensors that can be manufactured with modern, industrial microelectronic methods.

Set-up of the AgriNose demonstrator in the Science Gallery of the BTU Cottbus-Senftenberg
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The combination of modern microelectronics with agricultural questions creates opportunities for establishing Lusatia as a high-tech location e.g. for environmental monitoring. The cooperation of experts from IHP, BTU and ATB, who come from the fields of agriculture, physics and biotechnology, as well as from microelectronics, together with the industrial expertise of the project partner Photonic Insights GmbH, offers excellent scientific and technical prospects for success in achieving the joint project goals in 2024. It is essential that the research work does not start at the basic level, but builds on the expertise of the partners in order to successfully complete the ambitious project within the three-year term. IHP Project leader Professor Inga Fischer explains: "Many field and reliability studies are necessary for the development of the electronic nose. We are

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currently investigating winter rye as a field crop, as we did in the first year of the project. Our project will support monitoring in crop production and enable innovative cultivation techniques."

More on the project partners:

- BTU Cottbus-Senftenberg
- Leibniz-Institute for Agricultural Engineering and Bioeconomy
- Photonic Insights GmbH

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About IHP:

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. 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 µm SiGe BiCMOS technologies, located in a 1500 m² DIN EN ISO 14644-1 3 certified clean room.

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