# **Press Release**

2025-09-04

### Two Research and Transfer Awards 2025 for IHP cooperative activities

Technical University of Applied Sciences Wildau has awarded two prestigious prizes to teams associated with IHP, one for an outstanding transfer-oriented achievement and one for an outstanding research-oriented achievement.

**Frankfurt (Oder).** The Technical University of Applied Sciences (UAS) Wildau has awarded two prestigious prizes for research and technology transfer 2025. Both award-winning projects are based on close cooperation within the Joint Lab between the IHP – Leibniz Institute for High Performance Microelectronics and the UAS. The awards confirm IHP's key role in the development of innovative semiconductor and photonic technologies.

The EXIST project HyPHoX received an award for outstanding achievements in technology transfer. Its aim is to implement photonic technologies for life science, moving from basic research to an innovative deep-tech start-up. The most important work on photonic-integrated circuits, so called PICs, was carried out at IHP, which has already been recognized with the Leibniz Prize for Start-ups 2021 and the BMWK Digital Startups Award 2024, among others. Within the project advanced photonic chip technologies that are used in sensors for medical diagnostics and biology have been developed. A key aspect of the development was the transfer of the EXIST project to UAS Wildau in order to use the biology laboratories where the novel sensors were optimized and tested. HyPHoX was formally founded in the third quarter of 2024 and is currently in the ramp-up phase. The EXIST project runs until September 2025.

The project 'Optical Through Silicon Waveguides for 3D Chip-to-Chip Interconnections' was awarded for groundbreaking research into a new method of integration of photonic integrated circuits. This work opens up new possibilities in the field of optical interconnects for microelectronic systems. Currently, semiconductor technology uses through-silicon vias (TSVs), which enable vertical electrical connections in 3D integrated circuits. The winning project investigated the use of Optical Through Silicon Waveguides (OTSWs), which perform a similar function but in the optical domain. This technology can significantly improve the performance of microelectronic systems by increasing data transmission rates, removing electrical limitations and reducing power consumption, which is crucial for efficient and energy-saving computing systems. The project is being carried out as part of the IKC PhD program of the UAS Wildau in collaboration with BTU Cottbus-Senftenberg. The main researcher is Francesco Villasmunta, a PhD student, who is currently in his third year and about to defend his thesis. His research focuses on the first demonstrations of optical waveguides through silicon, an important step towards 3D optical integration.

"These awards confirm IHP's key role in the development of advanced semiconductor and photonic technologies. Both the HyPHoX project and the research on optical through silicon waveguides have great potential for application and could revolutionize various fields in the future – from medicine to next-generation opto-electronic systems," says Prof. Dr. Andreas Mai, head of the Technology Department at IHP and supervisor and mentor of both projects.



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For more information please visit: HyPHoX website: <u>https://www.hyphox.com</u> Project website: Optical through Silicon Waveguides for 3D Chip-to-Chip Interconnections

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The certificates for the Research and Transfer Awards 2025 of the TH Wildau for 'HyPhoX' and 'Optical through-Silicon Waveguides for 3D Chip-to-Chip Interconnections' © IHP 2025/Juliane Schlegel

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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 400 people. It operates a pilot line for technological developments and the preparation of high-speed circuits with 0.13/0.25  $\mu$ m SiGe BiCMOS technologies, located in a 1500 m<sup>2</sup> DIN EN ISO 14644-1 3 certified clean room.

#### www.ihp-microelectronics.com



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