

## **Fraunhofer ISIT wins award for best customer acquisition of the month**

**Itzehoe, 11.02.2025 – The Fraunhofer Institute for Silicon Technology (ISIT) has received the award for the best customer acquisition of December 2024. The winners are Shanshan Gu-Stoppel, Björn Jensen, Christian Beckhaus and Fabian Lofink. Together with an industrial partner from Asia that specializes in special processes for integrated circuits, the team is implementing an innovative project with a total volume of 3.75 million euros. The aim of the project is to produce a so-called IMU (Inertial Measurement Unit) with 6 degrees of freedom on the basis of a special micromechanical manufacturing process developed at ISIT.**

### **Pioneering work in sensor development**

ISIT has established itself as one of the leading institutes in miniaturized sensor technology with the development of micro-electro-mechanical systems (MEMS). MEMS combine minimal size, low manufacturing costs and maximum reliability. They can now be found in a wide range of everyday applications, from the automotive industry to consumer goods and medical technology.

ISIT can look back on decades of expertise in the field of IMU sensor design and process development. With its in-depth understanding of the complex requirements of sensors for measuring rotation rates and accelerations in multiple spatial axes, ISIT has developed a variety of innovative and process-oriented solutions. It combines state-of-the-art manufacturing processes with real-world test scenarios to ensure sensor reliability and efficiency and to secure a technological leadership role through continuous improvements in design processes.

### **USP - the MEMS technology platform**

An essential component of the project is a technology platform that has been specially developed over the years for these applications and optimized for mass production, which enables the production of highly integrated and high-performance MEMS components by using low-stress polysilicon layers with a thickness of 10-30 µm. Structure widths of up to 0.5 µm can be achieved using high-resolution lithography processes.

A patented, integrated capping process at wafer level with hermetic sealing ensures a stable internal pressure of up to  $10^{-6}$  bar. The so-called multi-pressure WLP process allows the setting of different cavity pressures in one component, which is the prerequisite for the integrated realization of IMUs at wafer level.

### **IMU sensors for the future**

IMU sensors (Inertial Measurement Units) are integral components of numerous modern applications when it comes to measuring position and movement in space. They enable the precise measurement of rotation rates and accelerations in all three spatial axes and are used in vehicle dynamics control systems, navigation systems and consumer devices such as smartphones and games consoles.

### **International cooperation as the key to success**

The collaboration with the industrial partner not only underlines the international reach and innovative strength of Fraunhofer ISIT. It shows how the principle of application-oriented research is put into practice, developing innovative solutions for industry and society and promoting the transfer of science into practice. "This partnership shows how successfully science and industry can work together to advance pioneering technologies," says Prof. Dr. Shanshan Gu-Stoppel, group leader at ISIT.