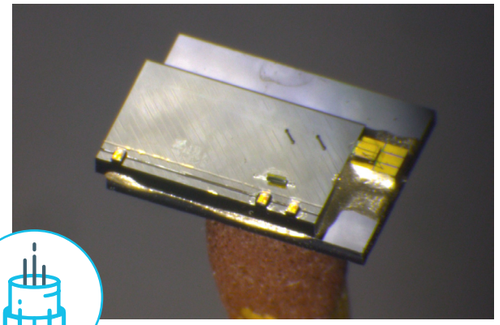
Sensors technology
at Fraunhofer HHI

Whether in space telescopes, in the detection of natural gases, in non-destructive measurement technology or in the analysis of two- or three-dimensional camera images: Sensors technology of the real world is always at the beginning of a digital processing chain. Fraunhofer HHI offers solutions based on its diverse technological expertise and combines them in the sensor technology area.

Competencies at Fraunhofer HHI

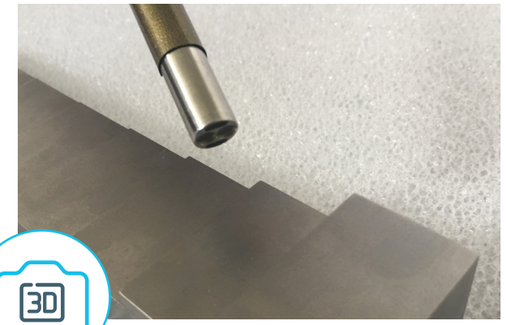


Photonic sensors technology

- Fiber Bragg gratings and interrogators for the detection of temperature, strain, torsion, etc.
- Fiber Bragg gratings and interrogators for diagnostics of rechargeable batteries
- Microring-based medical diagnostics - from hospital to patient
- Lasers and photodetectors at eye-safe wavelengths
- Fiber optic sensor technology for three-dimensional detection of movements and shapes
- Fiber optic data glove - from human-machine interaction to tactile prostheses
- Multifunctional sensor technology in an optical fiber

Terahertz sensors and non-destructive testing

- Determination of the layer thicknesses of coatings in the µm area, e.g. for painting in the automotive sector or plastics extrusion
- Contactless thickness measurement also on non-conductive components
- Resolution of multiple layers with a single measurement and high contrast for materials that are indistinguishable by ultrasound
- Spectroscopy of (toxic) gases by terahertz radiation, e.g. in fire detection
- Depth-resolved imaging on plastic or ceramic components



Camera sensors

- Camera arrays for optical analysis and 3D measurement of environments
- Calibrating and synchronizing of camera sensors and multi-camera systems
- Construction of high-resolution, omnidirectional recording systems
- Multispectral analysis for material and tissue classification
- Camera-based environment detection for scene analysis and object tracking

Applications

- Non-contact layer thickness determination with terahertz sensor technology, e.g. in the coating process
- Detection of explosives, viruses and hazardous substances in real-time using evanescent field sensors
- LIDAR at eye-safe wavelengths
- 3D measurement

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