



## DEVELOPMENT OF VACUUM COMPATIBLE COMPACT CAMERAS FOR EUV/SXR APPLICATIONS

### Task

Extreme ultraviolet (EUV) and soft X-ray radiation (SXR) are applied in lithographic and metrological processes, and also widely used in the semiconductor industry or in nanoscience applications. The use of this short wavelength radiation (2 - 50 nm) offers advantages both in terms of achievable structure size and measurement sensitivity. However, since this radiation experiences strong absorption in any matter as well as in the atmosphere, technical setups must be used in a vacuum environment. In such setups, compact and vacuum-compatible camera systems are extremely important as they can be flexibly positioned in the limited installation space of the vacuum chambers for measurement and alignment tasks. In addition, sensitivity to EUV/SXR radiation should be ensured. However, commercially available in-vacuum cameras for the given radiation range are only available from a few manufacturers and usually not compact enough to be placed in vacuum chambers with sufficient room to move.

### Method

In cooperation with the company khs-instruments, the Chair for Technology of Optical Systems (TOS) at RWTH Aachen University is developing a compact in-vacuum camera for EUV and soft X-ray radiation. Based on the special requirements of the vacuum environment, it has developed a prototype of the camera, which is being tested and optimized in a vacuum and EUV test station.

### Results

In the first year of the project, TOS and khs-instruments developed a compact prototype of the camera, including control technology. With a vacuum and EUV test stand, the prototype is being tested for vacuum compatibility, thermal stability and sensitivity to EUV radiation.

### Applications

The developed camera can be used in technical systems for the detection of EUV and SXR radiation for measurement and alignment tasks. Examples are EUV lithography systems or metrological systems.

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3 Prototype of the EUV camera,  
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