

EUV Schwarzschild 対物鏡

Within the scope of the BMBF project KOMPASS a modified Schwarzschild objective for 13.5 nm was designed and adapted to the table-top EUV source. The optics consist of two spherical ULE substrates mounted in a separate vacuum chamber, providing a numerical aperture of 0.44 and a demagnification factor of 10 with respect to the plasma source. The substrates were coated with high reflectivity Mo/Si multilayers by Fraunhofer IOF/Jena.

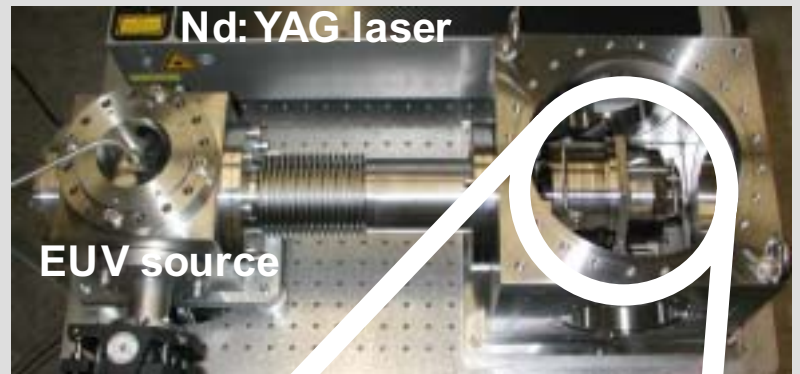
With the help of this compact EUV source and optics system a focal spot with a diameter $< 30\mu\text{m}$ at energy densities of several mJ/cm^2 can be generated. Thus, using mask projection, direct structuring of different materials is possible. One example is the direct writing of color centres in LiF crystals with a spot size of $5\mu\text{m}$.



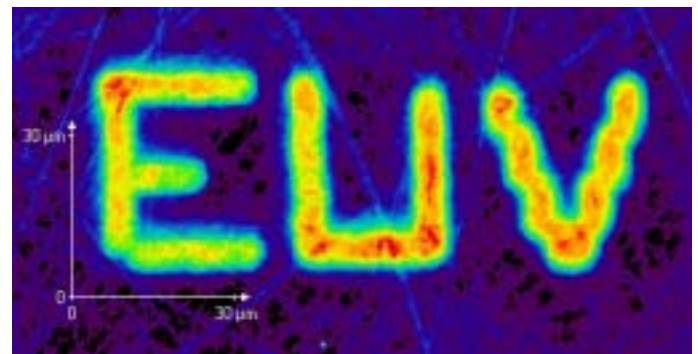
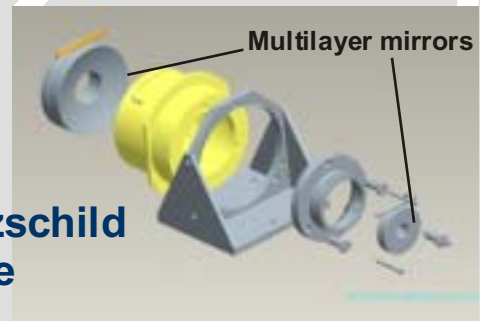
▶ Mo/Si multilayer mirrors

Specifications:

- ▶ Numerical aperture 0.44
- ▶ Demagnification 10x
- ▶ Spherical ULE substrates
- ▶ Mo/Si multilayer coating (Reflectivity @ 13.5nm $> 65\%$)
- ▶ Focus diameter $< 30\mu\text{m}$



Schwarzschild objective



- ▶ Direct writing of color centres in LiF crystal by raster-scanning an EUV spot ($5\mu\text{m}$ diameter)



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