



Optical components for Earth observation

Space qualified according to ECSS standards



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Cover: CO2M PG+P
Disperser SWIR2

Top: FORUM Diamond
Beamsplitter

Motivation

Greenhouse gases such as CO₂ damage our climate and lead to global changes, e.g. the melting of ice in Greenland or changes in ocean currents and water temperatures. To record these changes continuously and globally, a series of earth observation satellites have been under construction or already in use, e.g. as part of the EU and ESA Copernicus programme (SENTINEL 1 to 6, CO2M, LSTM, CHIME and further) or ESA FORUM mission, among many others. The heart of these observation satellites are often very specialised and sensitive optical instruments that provide their measurement data via spectral measurements from the UV to the far-IR wavelength range.

IOF Contribution

With our expertise in all key optical technologies, as well as with our know-how in the realization of precision optical systems, we at IOF have all the prerequisites to support such projects. In addition to technical know-how, however, other skills are required, particularly for space projects:

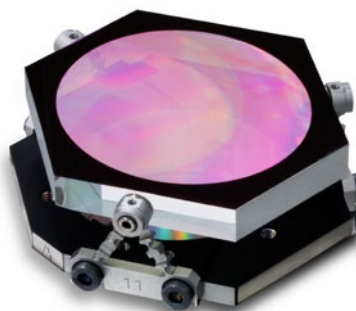
- Processing of projects according to ECSS
- Separate and independent quality assurance

All this has been implemented and makes the IOF a sought-after partner for such projects.

Flight Hardware

A few examples of successfully realized space projects at IOF, among many others

- **Sentinel-4: Spectrometer Gratings**
NIR dielectric reflection gratings with thin film aperture stop, isostatic mount, see image below
- **CO2M: SW1, SW2, NIR Disperser**
PG+P (prism-grating compound + prism 2) assemblies for SW1, SW2 and NIR channel for 2 satellites PFM, FM2 (FM3 planned), see image on cover
- **FORUM: Diamond Beamsplitter**
FIR broadband (6.5 μm–100 μm) AR structured polycrystalline diamond windows, see image on top



Qualification Model of the Sentinel-4 NIR grating unit

Contact

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