

Keynote Lecture

Nanomaterial systems for integrated quantum photonics applications

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For the implementation of the Paris climate targets to limit global warming to 1.5 degrees, measuring the greenhouse gases that cause it is an important building block. Only in this way can emissions be recorded in the right places and the success of measures introduced be demonstrated. The CO₂M project, in which two earth observation satellites are being developed to measure greenhouse gases, is making an important contribution to meeting this global challenge.

Fraunhofer-IOF is developing the ambitious optical components (so-called PG+P dispersers) for three channels of the spectrometer, the NIR, SWIR1 and SWIR2 spectral range, on behalf of ESA and EU. The PG+P assemblies each consist of two prisms and one grating, which are connected by direct bonding. The nanostructured gratings have a particularly high efficiency of more than 90 % and a low degree of polarization of less than 10 %. This is achieved by a special grating design in which functional optical layers on and within the structures are essential. Various anti-reflective and absorbing coatings, as well as laser-modified surfaces, optimize the signal-to-noise ratio of the spectrometer. Both physical deposition processes (IAPVD) and chemical deposition processes (ALD) are used. Please send the file as docx-File back.

