

IAF EARTH OBSERVATION SYMPOSIUM (B1)
Earth Observation Sensors and Technology (3)

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SPEXONE READY FOR MANUFACTURING

Abstract

We have developed a compact optical instrument to characterize the microphysical properties of fine particulate matter or aerosol in the Earth atmosphere from low Earth orbit. This instrument, SPEXone, has now been confirmed to be part of the NASA PACE mission (to be launched in 2022), as a partnered payload. SPEXone is developed in a partnership between SRON Netherlands Institute for Space Research, Airbus Defence and Space in the Netherlands, and TNO. Funding is through the Netherlands Space Office, Netherlands Organisation for Scientific Research (NWO) and own contributions by the partners. SPEXone is being developed using a lean approach that is not typical for this type of high-end science mission.

SPEXone is a very compact instrument that contains an intricate design. It is only 9 kg, and has a size of 37x28x15 cm³. The SPEXone design is based on a concept that maps the linear polarization state onto the spectrum, using passive optical components. This allows us to characterize the full linear polarization state for a scene instantaneously. This improves the polarimetric accuracy, compared to current spaceborne polarimeters that operate in selected wavelength bands and use rotating polarizers. SPEXone attains a polarimetric accuracy of 0.3

We have successfully passed CDR for SPEXone and are preparing for a Manufacturing Readiness Review in August of this year. We will discuss the advantages and lessons learned from the DTC and DNH implementations that has allowed us to keep this fast development under control without compromising the scientific performance of the instrument.