

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

Author: Mr. Roland Le Goff
SODERN, France, roland.legoff@sodern.fr

Mr. Eddie Prevost
Sodern, France, Eddie.Prevost@sodern.fr

Mrs. Stéphanie Sallard
Sodern, France, stephanie.sallard@sodern.fr

Mrs. Christelle Tuambilangana
SODERN, France, Christelle.tuambilangana@sodern.fr

Mrs. Christiane Kessler
Optics Balzers Jena, Germany, christiane.kessler@opticsbalzers.com

Mr. Andrea Guazzora
Airbus DS GmbH, Germany, andrea.guazzora.external@airbus.com

BANDPASS FILTERS FOR MULTISPECTRAL REMOTE SENSING IMAGERS

Abstract

Bandpass (BP) optical filters are key elements, in today's Earth remote sensing optical imagers, which contribute substantially to the overall performance. Some new instruments require reduce full width half maximum bandwidths with excellent central wavelength uniformity while minimizing scatter and reflection losses and blocking transmission over a large out-of-band wavelength range. In this particular case Plasma Assisted Reactive Magnetron Sputtering (PARMS) is the thin film manufacturing deposition process which ensures highly efficient and repeatable coating batches and therefore is well suited for those advanced bandpass coatings.

Sodern offers special multi-line optical filters requiring many spectral channels for multi-spectral imaging applications in the visible and near infrared of the spectrum. In sodern's approach, each bandpass coating is deposited on wafers which are then sliced. Stripes are finally attached together using a robust assembly method and taken into account the spatial arrangement that distributes the different spectral channels according to the user's requirement. This approach can be performed with optical thin film stacks applied by classical Ion-Assisted Deposition (IAD). With this evaporation technology, the qualification has already been verified through successful in-orbit demonstration. Sodern's recent R&T studies also demonstrate that this approach is viable with PARMS promising deposition process through on-ground performance verification.

METimage is an advanced multispectral imaging radiometer provided by the German DLR space administration as part of the MetOp-SG Program. The instrument is developed by Airbus DS GmbH. Sodern involves in the VNIR multispectral filter assembly with Optics Balzers Jena GmbH as subcontractor of PARMS bandpass coatings.

This paper provides the relevant state-of-the-art for multi-spectral filter assemblies and presents the specific approach proposed for METimage instrument. The paper also contains recent results on absorbing coating with structure apertures.