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Fraunhofer Institute for Applied
Optics and Precision Engineering IOF

Protected aluminum coating

Highest VUV reflectance

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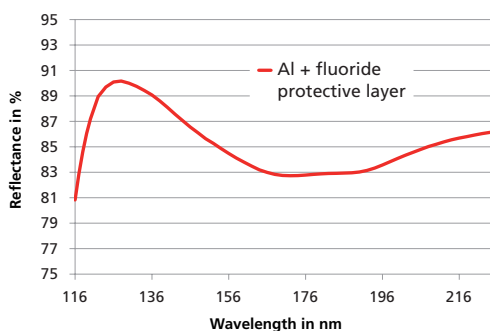
Cover: Coating plant.

Top: Special coating technology for high-rate Al deposition.

Motivation

Coatings that provide the highest reflectance in the Vacuum UV (VUV) are usually based on aluminum. To avoid an oxidation of the aluminum surface, which would lead to a drastic loss of reflectivity, the Al has to be protected with a fluoride coating. For the highest reflectivity in the short wave VUV (< 150 nm), an accurate process control is essential as the smallest deviations within the coating process can result in a considerable deterioration of the reflectance performance.

In addition to the optical requirements, a customized optimization of the environmental stability is carried out because protective fluoride coatings, common for VUV, do not exhibit very good barrier properties.



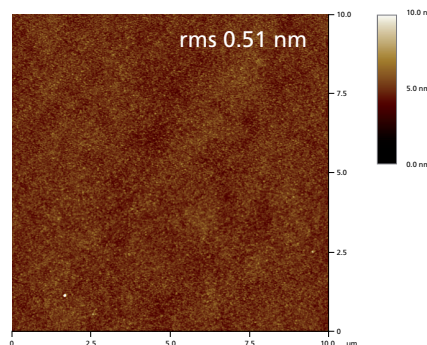
Measured VUV reflectance of a protected Al coating.

Our expertise

- Vacuum evaporation of Al with the highest deposition rates > 25 nm/s
- Selection of suitable material combinations for protective layers
- Process development for the deposition of fluoride layers on aluminum

What we offer

- Coating development for customized optical functions in the VUV spectral range
- Adaption of protective coatings according to optical requirements as well as environmental stability
- Prototype coating on variously shaped components up to 400 x 400 mm



AFM micrograph of a protected Al coating with extremely low roughness.

Contact

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