



MATERION

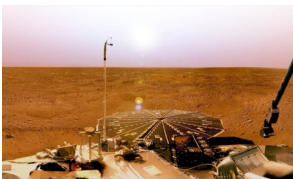
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Optical Coatings Used in Space

Optical coatings have been used in discovery, exploratory and monitoring missions since the beginning of space-borne missions. The first application was in the 1958 US launch of the Vanguard satellite in reaction to the USSR Sputnik a year earlier.

Coatings that perform critical optical functions have been used in space instrument applications for the National Aeronautics & Space Administration (NASA), the National Oceanic & Atmospheric Administration (NOAA), and the Dept. of Defense (DoD) for 30+ years. The performance of the first coatings launched into space had been observed to change with time. Investigations seeking the cause of the instability were initiated. Pre-flight testing on the earth's surface in simulated space environments revealed changes in spectral and efficiency performance that are comparable to those changes observed in space. It has been learned that coating layers tend to absorb water in the atmosphere, and when inserted in the vacuum of space, the volatile water leaves. Another effect discovered early was the loss of transmission caused by energetic irradiation from electrons and protons trapped in the radiation belts with equatorial orientation, known as earth's Van Allen belts.

It is normally considered that the environment of space imposes benign influences on optical instruments and their coatings compared to that of the earth's surface where weather and other environmental stresses are factors. Thin-film coatings employed in the extraterrestrial environment for numerous mission-specific functions have compositions such as:



- Anti-reflective coatings
- Reflectors
- UV to IR band-pass filters
- Thermal control films
- Environmentally-protective coatings

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How to Choose the Appropriate Backing Plate

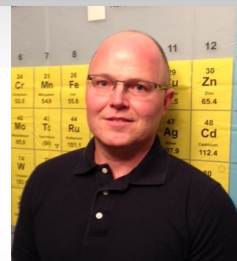
As the "Internet of Things" forces overlap and collaboration between traditionally separate but equal technologies, materials companies must strive to maintain traditional products while simultaneously enhancing products and support for customers. Recent Coating Materials News articles have focused on the complex nature of factors that influence e-beam deposition stability and consistency. Also, on materials that require increasingly sophisticated techniques to assure performance such as granule sizes, melted preforms and metals for contacts or mirrors. Before we begin digging deeper into sputtering processes, this article will address the often overlooked and practical issues pertaining to backing plates. This is an area that continues to vex engineers if only due to being legacy practices or stock.

In its simplest form, a backing plate (bp) is used to mechanically mount a target to the tool. In addition, the plate enhances the mechanical strength and facilitates cooling of the target and target assembly. Even when not directly in contact with cooling water, the bp lowers target risks due to process-induced expansion/contraction or cooling water pressure distortion.

[Read more...](#)

Face to Face

Tim Landvatter, Sr. Development Chemist, has been a key player at Materion and its predecessor CERAC for over 27 years since first accepting employment after college graduation. He currently focuses on product development for the inorganic chemical business which entails creating new specific materials for customers as well as enhancing existing products. He reports directly to Katie Gardinier, Advanced Materials Group Director of Technology.



When asked what he likes best about employment with Materion, Tim responded: "I really enjoy working with such a diverse product mix. It is amazing the range of different technologies that employ our products. Also, a great bunch of fellow employees and a chance to contribute to the success of the company make this more than just a job."

[Read more about Tim...](#)

Events

SVC TECHCON 2016

May 9-13, 2016
Indianapolis, IN
Booth # 308

OSA Optical Interference Coatings (OIC)

June 19-24, 2016
Tucson, AZ

MATERION ADVANCED MATERIALS GROUP

407 N. 13th Street
Milwaukee, WI 53233
AdvancedMaterials@materion.com
www.materion.com

USA: 800.327.1355
Europe: +44.1635.22.3831
Asia: +65.6559.4450