MATERION ADVANCED MATERIALS GROUP

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In This Issue

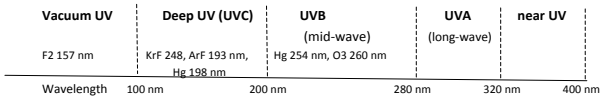
Understanding Deep Ultra Violet Coatings

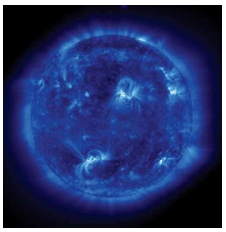
The wavelength of light imposes a limit on the smallest feature that can be resolved or imaged. This explains the motivation to extend optical systems to shorter wavelengths than visible light and into the short-wave ultra-violet (UV) region. Here we will introduce information about newly processed deep ultra violet (DUV) coating materials as discussed in earlier issues of *Coating Materials News*.

The UV Spectrum and DUV Applications

The UV spectrum is illustrated in Figure 1. The deep UV (DUV) region occupies wavelengths between 280 nm and ~200 nm, about half that of visible light. Typical light sources that are used in the regions of the UV spectrum are noted. Included is the single important wavelength of F2 at 157 nm used for high-density photolithography.

Figure 1: UV Spectrum





DUV optics and devices can also be employed to excite fluorescence and phosphorescence of specific mineral elements and novel compounds. That in turn has several uses, such as identifying mineral compositions on remote locations such as planet surfaces; or to produce high quality, intense light sources. A very specialized scientific application of UV light and devices is to monitor activity of the sun's surface features, as illustrated in this image.

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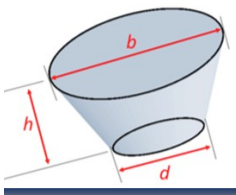
Variety of Shapes & Sizes Influence Outcomes

One of the first things a coating operator asks when they are introduced to new coating materials to be used in the coating chamber (especially a multi-pocket e-beam chamber) is "how will the form of this material influence the process?" This is in fact an excellent question. Depending on the material (metal, opaque compound or glass/crystalline material), there are many shapes and sizes to choose from even within the same chemical family. These may include compound powders, granules, pieces, cones, or solid charges. While the most obvious answer is it affects cost and density, it is more complex than that. The manufacturing process - as well as the material - will impact the outcome.



Cones As Basic Material

Let us start with a "truncated cone" the most familiar pocket and workhorse holder for classical electron beam platforms. While other options do exist, choosing this as a starting point will set the foundation for more detailed discussion.

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Face to Face

Rick Vehlow, Product Specialist for the Materion Advanced Materials business, has been with Materion and its predecessor CERAC for close to 20 years. His current responsibilities include handling technical questions from customers, addressing quality issues, and costing/pricing products manufactured in the Milwaukee, WI facility. While Rick works mainly out of Milwaukee, he occasionally travels to visit with customers. He reports to EJ Strother, Vice President of Marketing for Advanced Materials.

When asked about his work experience at Materion, Rick commented: "A key part of my job is getting customers the help they need, usually by connecting them with the most appropriate members of the sales, technical or operations team."

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