Optical coatings are key elements of any optical system. They can reduce surface reflection loss, isolate spectral bands, re-direct the light path and split light beams by wavelength. For decades, astronomers have made use of these special characteristics embodied in Anti-Reflection (AR) coatings, Band Pass (BP) filters, mirrors and Dichroic Beamsplitters (DBS). In the last several years, a need has arisen for much larger high performance filters and coatings than previously required. This is being driven by the ever increasing size of new and planned telescopes with their correspondingly larger focal planes.

To respond to the astronomy community's requirement for very large narrow bandpass filters, Materion has developed a low risk path that consists of scaling a proven deposition process and associated controls to a corresponding size. To support the technology, we designed a facility with specific performance targets consistent with narrow bandpass filters but in much greater sizes than previously produced. The results of this work have for the most part exceeded our target performance goals. Read a technical paper detailing the large narrow bandpass filter capability and the new Materion facility...

Infrared (IR) detection is poised for high growth over the coming years largely powered by the technology advances in wafer level packaging (WLP). These new MEMS-based platforms and the applications they serve are acting as catalysts to expand the market and help reduce costs.

Wafer Level Packaging Streamlines Production

The advantage of wafer-level packaging is that it uses the same manufacturing process as that for a computer chip, but simplifies the process. In the traditional manufacturing model, the IR sensors would be assembled one unit at a time, which could include over 10 parts. The new streamlined WLP process can produce hundreds or even thousands of sensors per
With WLP technology and its mass production, the cost per individual unit will continue to decrease. With the price of commercial goods dropping, consumers will be able to afford products once thought too expensive. Markets with the greatest potential to multiply under heightened consumer interest include thermal imaging, non-contact temperature measurement, motion sensing, surveillance and gas detection. As one of the projected growth industries, thermal imaging is gaining in popularity for a variety of applications. Read more about WLP impact...

Evolution in Projection

The lamp illuminated projector has dominated the projector market for many years. However, more recently manufacturers have introduced advanced laser projectors and LED hybrid illuminated projectors. These projectors are playing an increasingly important role in the overall display market.

Compared to the older lamp illumination technology, laser and LED illumination is more efficient, has a longer lifetime, delivers improved color performance, and provides a lower lifetime cost-of-ownership. In addition to these advantages, laser and hybrid LED illumination projectors are environment-friendly, which is now a key requirement for most countries.

Many commercial markets, such as television and high-end entertainment lighting, are now switching to laser or hybrid illumination due to its many benefits. Some new laser illumination projection TVs have been launched that deliver a much better consumer viewing experience on a large screen. They are able to project with greater light sensitivity for an improved picture and at a reduced cost compared to comparably-sized OLED TVs. Read more about laser and hybrid systems...

More Than Just Optical Thin Films!

While you may be familiar with Materion's optical filters and coatings, you may be unaware that our expertise extends to non-optical thin films as well. This is a unique capability, not found at most optical coating companies. Drawing on over 35 years of thin film deposition experience, we are able to provide custom, patterned or non-patterned, metallic and non-metallic thin film stacks for a variety of applications. We serve a variety of markets and industries, including defense, medical and consumer electronics.
Precious Metal Advantage
As one of Materion Corporation's diverse businesses, we have access to the Advanced Materials Group's supply chain of precious metal sputtering targets and evaporation materials. They are one of the world's largest manufacturers of these "high value" products. This provides us with an uncommon opportunity that no other company can touch. While others have to purchase these precious metal materials from outside vendors, we can formulate special compositions and source these materials in-house at significantly less cost to our customers. Read more...