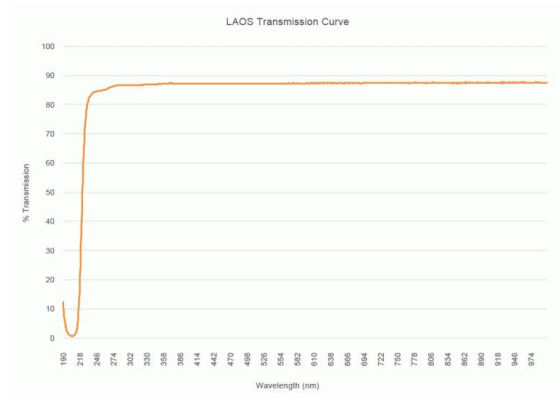
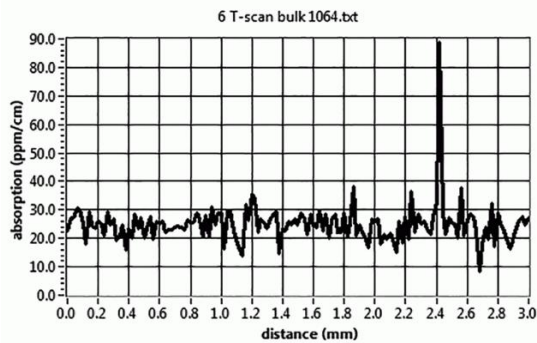


HEM LAOS Sapphire

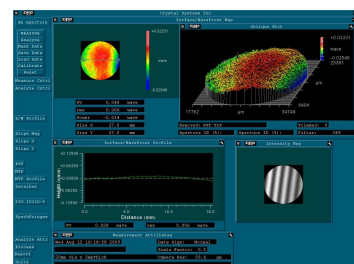
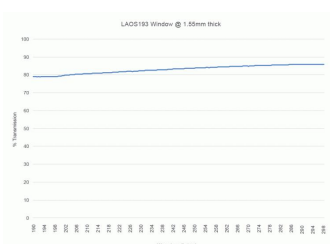
Product: HEM LAOS Sapphire

Product Overview: HEM LAOS Sapphire is recognized for being the premium crystal material for sapphire optics and sapphire lenses



Crystal Systems has developed a special class of sapphire crystals called HEM® LAOS®, used for precision sapphire windows, sapphire lenses and sapphire filters. This material has shown the lowest absorption of all commercial sapphire materials available on a worldwide basis.

HEM® LAOS® high-performance sapphire lens material was developed to address the high energy fluence requirements of High Energy Laser (HEL) windows and other critical, low absorption optical applications. This sapphire lens material is manufactured in a proprietary process which eliminates almost all intrinsic photon absorption in the bulk sapphire material. The material has been tested with Photothermal Common-path Interferometry and has shown less than 80 ppm of bulk absorption at 1064 nm. HEM® LAOS® is offered with superior crystal lattice structure having high refractive index homogeneity. HEM® LAOS® is ultra-high purity and is ideally suited for UV applications where solarization affects other sapphire materials. HEM® LAOS® material can be optimized for different wavelengths of interest in the spectral range of 150 nm to 5.5 microns.



Attributes of HEM® LAOS® and HEM® LAOS®193

- Bulk absorption < 80 ppm/cm @ 1064
- Refractive index homogeneity in the 0.02 PV range
- 1/40th wave PV wave fronts
- Ultra-high purity
- Low thermal optic coefficient (dn/dt)
- Wide spectral range of 150nm to 5.5 microns
- Solarization resistant
- Large C-plane (non-birefringent) sizes up to 9" diameter

Hemex® Grade

HEMEX® is the highest grade of HEM® Sapphire produced with optical homogeneity measured at 0.02 PV.

Hemex® grade is offered in either HEM® LAOS® or HEM® LAOS®193. This means that you can take advantage of the low absorption properties of LAOS® for applications above 250 nm or LAOS®193 for applications below 250 nm.

HEM® LAOS® Applications

HEM® LAOS® and HEM® LAOS®193 are aboard the International Space Station, in advanced gravitational-wave interferometers, and in other leading-edge technology platforms. High Energy Lasers utilize HEM® LAOS® because of the low absorption requirements at 1064 nm, low dn/dt and high purity levels. Crystal Systems' C-plane sizes of up to 9" diameter with rectangles of 20" x 9" allows you to replace lower-performing glass, cleartran and ALON with our high-performance sapphire optics.

HEM® LAOS® material has been shown by third parties to have increased Raman Spectroscopy performance relative to other sapphire suppliers.

HEM® LAOS® 193 Sapphire

HEM® LAOS®193 sapphire is specifically optimized for sapphire optics operating at or below 250 nm. This specialty material outperforms all other sapphire optics in the UV and EUV regimes.

HEM® LAOS®193 sapphire optics transmit light below 250 nm where other sapphire materials have a sharp absorption band centered at 220 nm. This low bulk absorption sapphire optical material has extremely uniform optical homogeneity so optics of 1/40th wave are possible. If your optical sapphire application calls for material working below 250 nm, LAOS® should be considered as a solution.

HEM® LAOS® 193 is the clear choice for today's semiconductor applications where leading companies are using it as a sapphire glass replacement. Semiconductor equipment companies will benefit from HEM® LAOS193 sapphire optics which are extremely hard, inert to high-temperature gasses, are thermally shock resistant, and have much longer lifetimes than engineered glasses. Sapphire is superior to glass and leading companies are appreciating the improved cost of ownership of HEM® LAOS® 193 sapphire optics and sapphire lenses in the semiconductor fabs.

