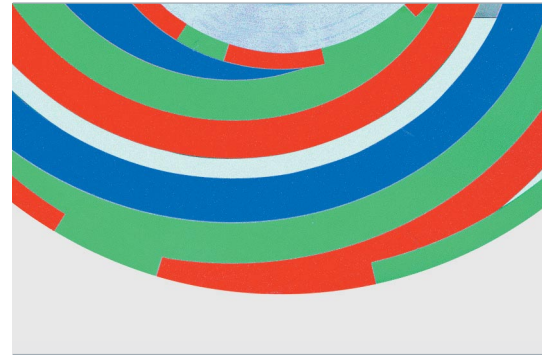


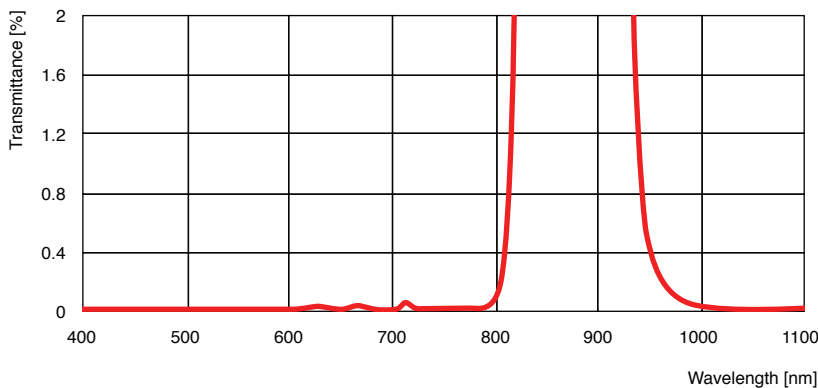
Coated Optics for Sensor Applications

Optical Sensor Product Overview

Ocean Thin Films designs and produces coated optical components for sensor applications. The product range includes filters and mirrors for signal management – selecting and routing optical signals with optimized signal-to-noise ratio. Blocking filters define wavelength windows and prevent sensors from reacting to out of band radiation. Furthermore, low defect cover glasses are applied for optical packaging to protect and enhance high value added components. Patterning capabilities and a broad range of coating techniques allow for meeting explicit customer needs – of which we are aware that cost effectiveness and environmental stability are of special interest.



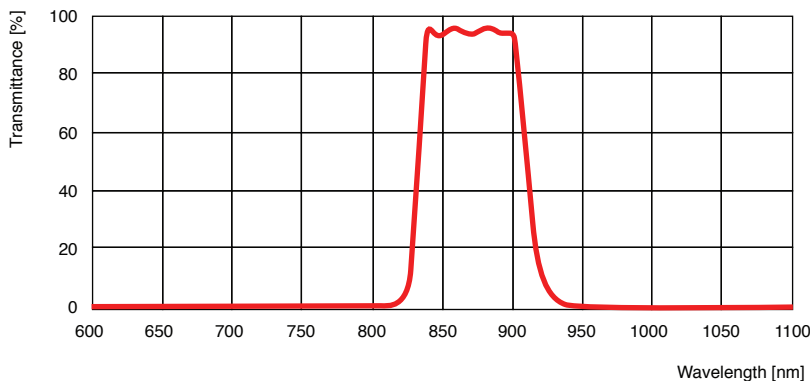
Imaging IRB Filter



NIR Blocking Filters

Si-based photo-diodes, like CMOS or CCD, are more sensitive to infrared radiation than to visible light. Ocean Thin Films produces NIR blocking filters, which prevent those sensors from disturbances on infrared radiation and enhance contrast in the range of visible light. NIR blocking filters are superior to absorbing glasses because of the excellent transmittance and variable slope at the edge that they offer. Furthermore, the blocking ratio is not dependent on the thickness of the glass, which yields decisive advantages for assembly purposes.

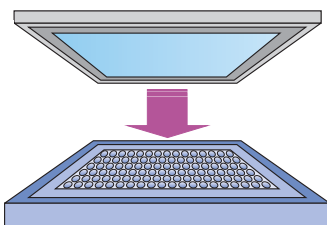
NIR Bandpass Filter



Bandpass Filters VIS and NIR

Bandpass filters select signals and improve signal-to-noise ratios of single-wave photo detectors. Furthermore, large blocking ranges protect the sensor from undesired background radiation. Ocean Thin Films provides bandpass filters in the range of 400–1500nm in a customized manner as central wavelength, halfband width and blocking range can individually be chosen. Most important, the environmental stability of such filters is enhanced to avoid long term effects such as shifting of the transmitting gap.

Cover Glass with Chrome Aperture

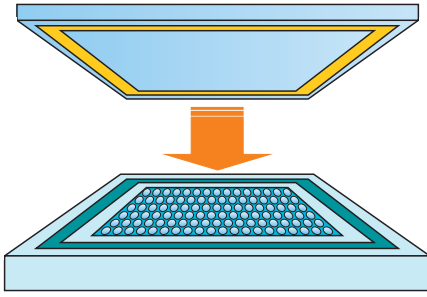


Sensor Cover-Glass with Chrome Aperture

The edges of some light sensitive sensors must be protected against radiation of light in order to avoid damage or to define the active area of the sensor. Ocean Thin Films manufactures Chrome apertures on sensor over glasses for such purposes. These cover glasses can be produced to low defect specifications. The absorption of the Chrome can be chosen in a wide range and the aperture may be coated with different AR types, filters or UV-/NIR-blockers depending on the sensor application.

Coated Optics for Sensor Applications

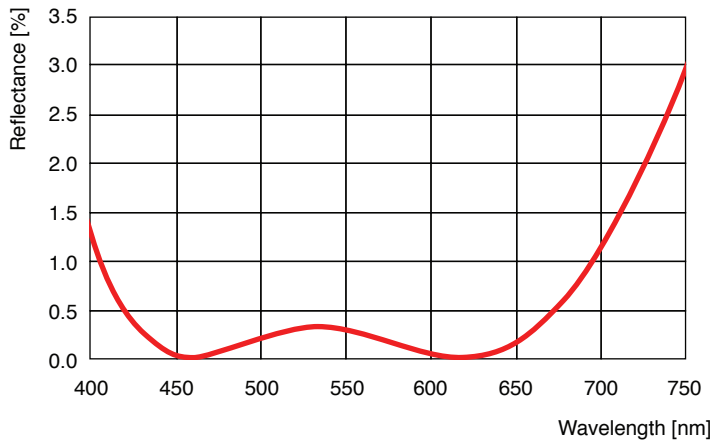
Cover Glass on MEMS



Solderable Coating for Hermetic Sealing

Optical sensor devices such as MEMS for example are very sensitive to adverse environmental impacts. Ocean Thin Films Gold Solderable Coating allows for sealing glass to metal or ceramics and make hermetical enclosure possible. Patterned Gold Solderable Coating frames are an advantage to cover glasses because they combine optical function, aperture and a sealing joint on one single piece of glass.

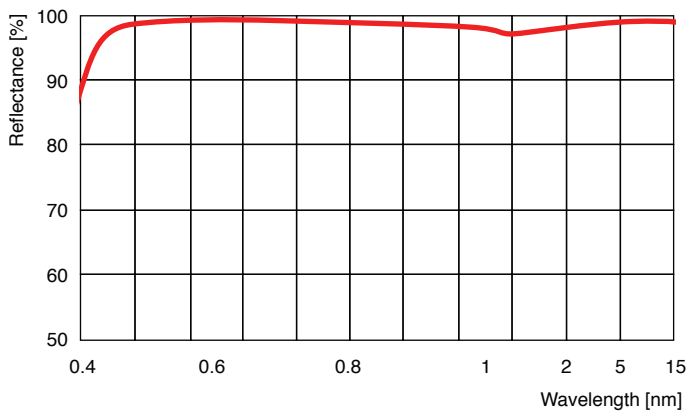
Typical Reflectance curve of a Broadband NIR AR Coating



Anti-Reflection Coating

The transition of light through any optical component is accompanied with reflection on glass surfaces. This can effectively be minimized with an anti reflection coating. Ocean Thin Films provides a whole range of antireflection coatings. Position and width of the wavelength range with optimized transmittance can be chosen.

Typical Reflectance curve of SILFLEX™

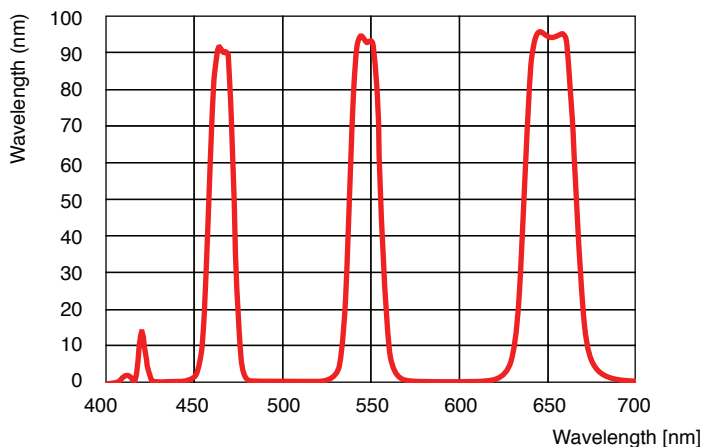


Mirrors

Ocean Thin Films offers a wide range of dielectric and metallic mirrors. Precise flatness, high reflectivity and remarkable durability of dielectric mirrors make them ideal for applications in the range between UV and IR.

Silver coated mirrors are multifunctional broadband mirrors, Gold based mirrors are non polarizing and ultra efficient in the infrared, and aluminum coated mirrors finally are broadband mirrors with a high stability and a long life time.

Triple Band Color Filter



Dichroic Color Filters

Sensor applications using visible light require highly accurate bandpass, shortpass and longpass filters. Ocean Thin Films dichroic color filters offer narrow cuton and cut-off tolerances and further a high degree of freedom of the transmission characteristic for a custom specific definition of the spectrum. The all dielectric interference filters have almost no absorption and offer maximum long-term thermal and environmental stability of the cut-on and cut-off wavelengths.

oceanthinfilms.com

E: info@oceanthinfilms.com

8060 Bryan Dairy Road
Largo, FL 33777
T: +1.727.545.0741

16080 Table Mountain Parkway
Suite 100, Golden, CO 80403
T: +1.303.273.2995