I-PHOTONICS

I-Photonics

Optical coatings manufacturer

CONTENT

ABOUT I-PHOTONICS

I-Photonics has many years experience in working with Ion Beam technology and the Physics of Thin Films. Our team have decades of experience in Research and Development of coatings for all aspects of precision optics, as well as expertise in developing hardware to improve the capability of existing coating technologies. Over the years, we have built a large portfolio of coating equipment and processes within optics and for other industries. This has allowed I-Photonics to provide competitive turn-key equipment and coating solutions to a range of customers worldwide.
Following the demands of the global market we developed: Magnetron Sputtering Technology (MS, RMS, PARMS), Diamond Like Carbon Technology for IR optics (DLC by PECVD), E-Beam Evaporation (IBAD) and Ion Beam Sputtering (IBS, RF IBS) for precision optics.

To improve accuracy and reliability in optical coatings we developed a automatic optical process control system called OCP BroadBand and OCP SingleWave Monitoring. This advanced technology allows the user to make high precision multilayer optical coatings for UV, VIS, NIR, Mid IR ranges with an improved high yield.

The wide range of requests and specifications from customers for unusual and high precision optics, has pushed our team to continuous Research & Development. This has lead to the constant improvement to our equipment and techniques, and has defined I-Photonics not just as a coating systems provider, but as a developer of holistic industrial coating solutions.

The accumulated experience of our team in process integration and the methodology of thin film coating has helped I-Photonics to become specialized to provide our own “in house” coating services as well. It also positioned I-Photonics as a company which provides ongoing technological support for each customer and shares our knowledge of thin films.

With each customer our aim is to establish long-term cooperation based on our experience and our capacity to continuously improve as a coating solution provider.

CAPABILITIES

Optical coatings design

With extensive experience in the calculation and design of optical coatings, as well as the use of advanced software and in-situ optical monitoring systems, our specialists will help you to find the best solution for your industrial or development requirements.

Optical coatings service

At I-Photonics, we offer a wide range of custom optical coatings tailored to meet the specific requirements of our customers.

We cover an extensive wavelength range from 250 nm to 16,000 nm, supporting a broad spectrum of applications—from UV to far-infrared.

Our portfolio includes multiple advanced deposition technologies, such as:
- Ion Beam Sputtering (IBS)
- Ion Beam Assisted Deposition (IAD)
- Magnetron Sputtering & PARMS (Plasma-Assisted Reactive Magnetron Sputtering)
- Electron Beam Evaporation (EBE)
- Direct Ion Beam PECVD Deposition

Equipped with a modern base of state-of-the-art vacuum coating systems, our facilities enable rapid development and delivery of high-performance coatings for a wide variety of optical and industrial applications.

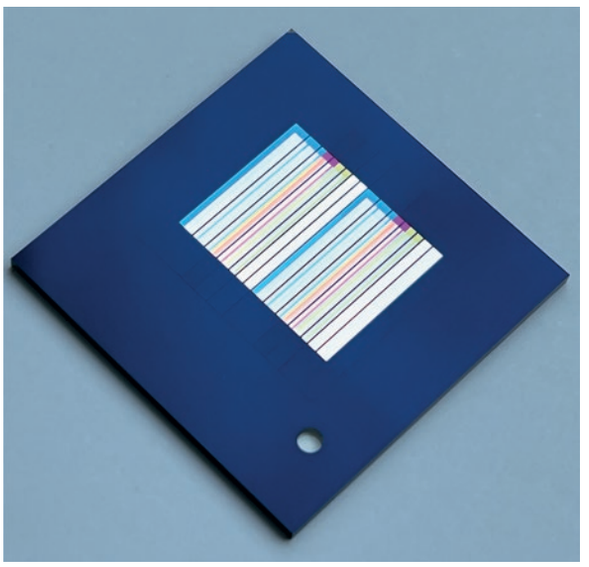
Optical components production

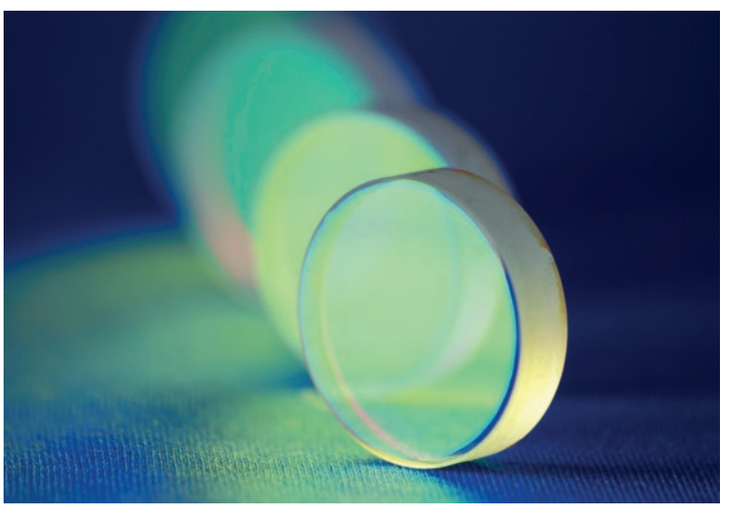
We provide a wide variety of thin-film-coated optical components, precisely tailored to customer specifications and technical drawings.

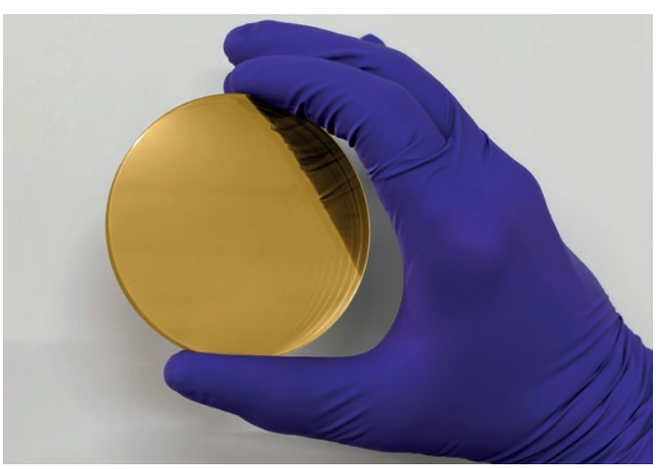
Our production process is highly flexible — we can deliver trial batches of just a few pieces on short notice, making it ideal for experimental validation, process development, and proof-of-concept testing.

R&D in thin-film technologies

We place strong emphasis on research and development as a cornerstone of our innovation-driven approach.
Our experienced R&D team specializes in a broad spectrum of physical thin-film deposition technologies. Through continuous exploration and development, we create advanced optical coatings and custom coating components, engineered for maximum performance, durability, and spectral precision.
This commitment allows us to support our partners with cutting-edge solutions across a wide range of applications—from prototyping to scalable production.



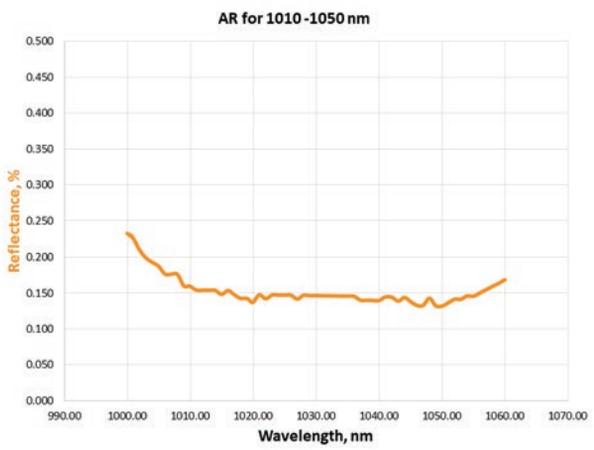




ANTI-REFLECTION COATINGS

We offer single/double/triple AR coating as well as broad band or multiple anti-reflection coating on the desired wavelength range. Wide angle AR coating can be optimized for required AOI.
In addition to standard anti-reflection coatings we offer durable diamond-like optical coatings on silicon and germanium substrates.

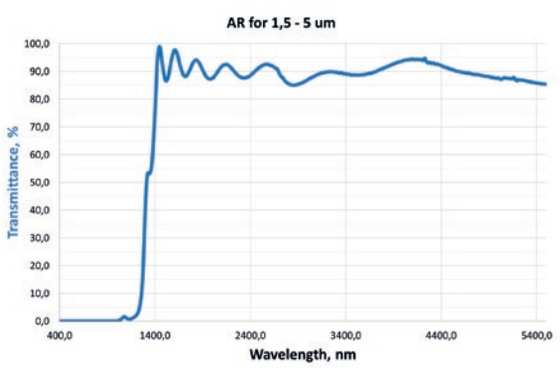
AR coatings for VIS - NIR region



Material	Fused Silica
Face dimensions	Ø50.8 mm
Thickness	2 mm

Coating S1:
AR coating (λ=1010-1050nm) 45 deg. < 0.15%

AR coatings for 1,5- 5,0 um

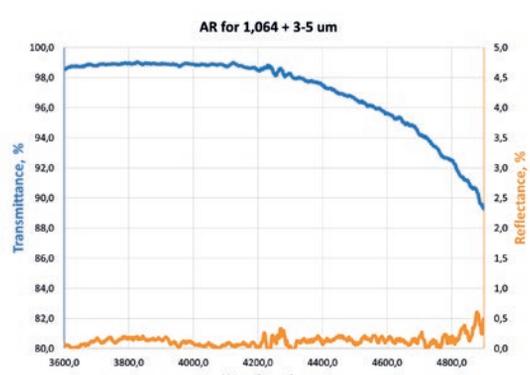


Material	Silicon
Face dimensions	Ø25,4 x1 mm
Surface quality	60-40

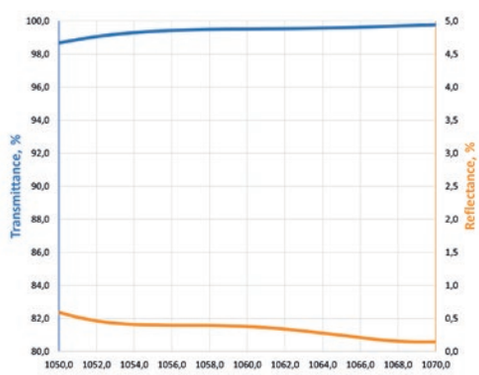
Coating S1+S2 (AOI 0-25 deg)

Ta (λ=1.5 - 5.0 um)	90.2 %
Tmin (λ=1.5 - 5.0 um)	85.0 %

Anti-reflection coatings for 1,064+ 3,5 - 5 um



Material	Sapphire
Face dimensions	Ø12.2 x 1 mm
Surface quality	60-40



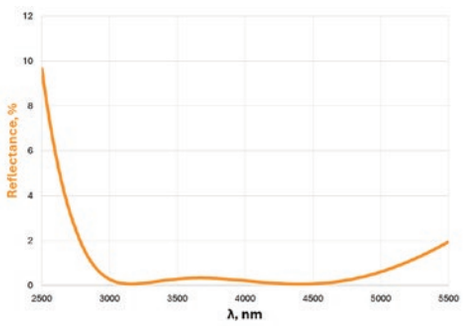
Coating S1+S2:

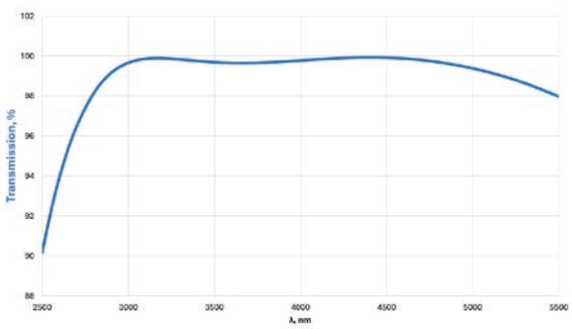
Ta (λ=3.6 - 4.9 um)	97.1 %
Ra (λ=3.6 - 4.9 um)	0.1 %
Tmin (λ=1.058-1.062 um)	99.5 %
Rmax (λ=1.058-1.062 um)	0.3 %

AR COATINGS FOR MIR/FIR

Our anti-reflection (AR) coatings for the mid- and far-infrared (IR) spectrum are carefully optimized for various substrate materials and angles of incidence (AOI).
We offer AR coatings for Germanium (Ge), Silicon (Si), Zinc Sulfide (ZnS), Zinc Selenide (ZnSe), IG6, Chalcogenide glasses. All coatings undergo climatic testing according to MIL standards to ensure high durability and long-term stability in demanding environments.

Anti-reflection coatings for 3-5 um

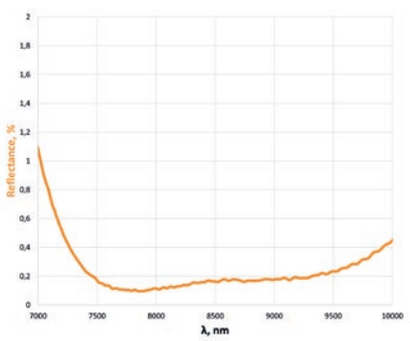


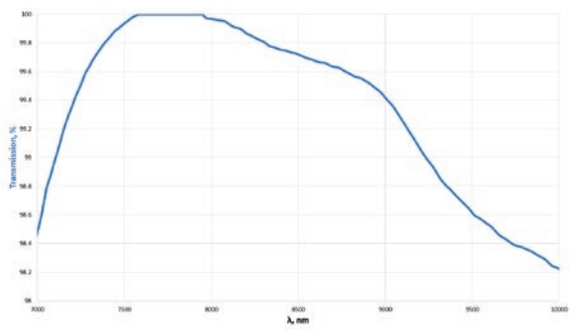


Material	Si
Size	25,4mm
Thickness	1,1 mm

Ravg (λ=3-5 μm) <0.5%
Rabs (λ=3-5 μm) <1.0%

Anti-reflection coatings for 7-9 um

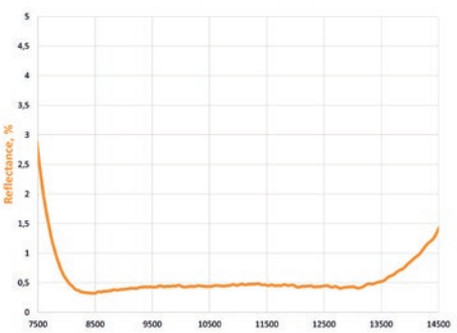


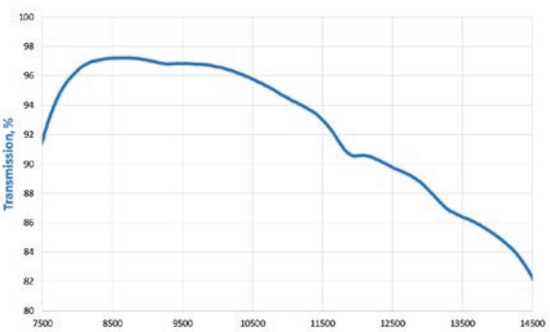


Material	Ge
Face dimensions	Ø25.4mm
Thickness	1.1mm

Coating per side:
Ravg (λ=7.1-9.7 um) <0.4 %
Tavg (λ=7.1-9.7 um) > 99.5%
Tabs (λ=7.1-9.7 um) > 98%

Anti-reflection coatings for 8-14 um





Material	Ge
Face dimensions	Ø50 mm
Thickness	5 mm

Coating single side:	Requirements
Rmax (λ=8000-12000 nm) AOI0	<1%
Rmax (λ=12000-14000 nm) AOI0	<2%
Rmax (λ=8000-12000 nm) AOI30	<1%
Rmax (λ=12000-14000 nm) AOI30	<2%

HIGH-REFLECTIVITY OPTICAL COATINGS

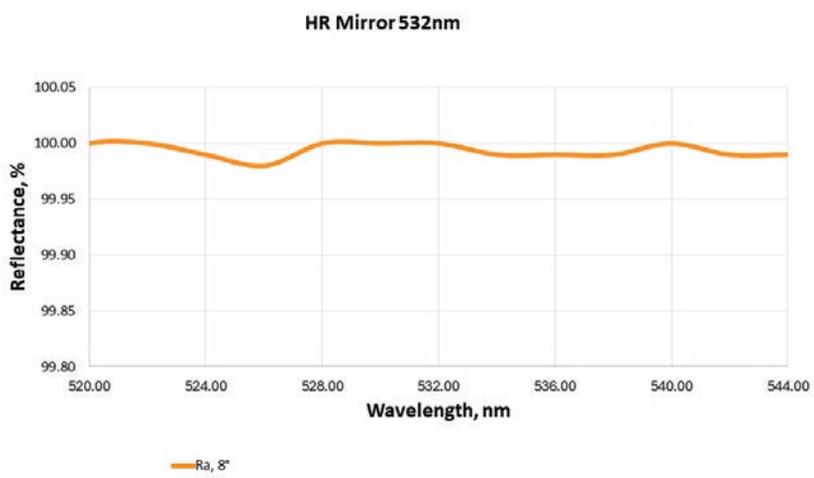
We offer a wide range of high-reflectivity (HR) coatings, including:
- Single, double, and triple-layer HR coatings
- Broadband HR coatings
- Multi-wavelength HR coatings tailored to specific spectral ranges

Our metallic (Ag, Au with protective layers) and dielectric mirrors are optimized for wide angles of incidence (AOI) and are designed to meet demanding optical specifications, including:
- Low optical losses
- High laser-induced damage threshold (LIDT)
- Customized performance across the visible, NIR, or IR range

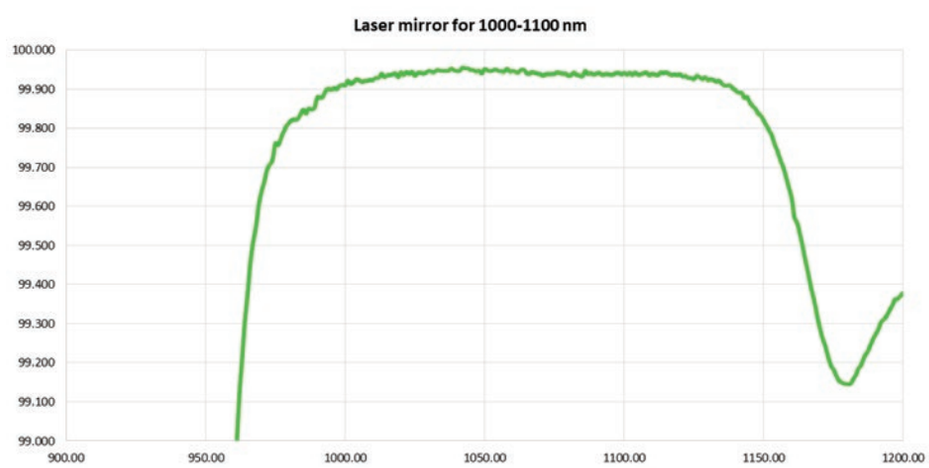
Super mirror 532 nm

Material	Synthetic Fused Silica
Face dimensions	Ø25.4 mm
Thickness	1.1 mm
Clear aperture	80% of the diameter

Coating S1:	
Ra (λ=0.532 μm)	99.993%
Coating S2:	
AR coating (λ=0.532 μm)	< 0.004%
Optical losses , ppm	< 35



Low-Stress Laser Mirror for 1000–1100 nm



Material	Cu
Face dimensions	Ø50.8 mm
Thickness	8 mm

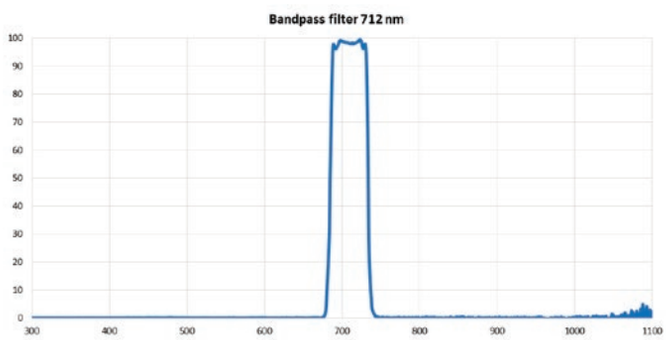
Coating :
Ravg (λ=-1-1.1 um) > 99.5%

OPTICAL FILTERS

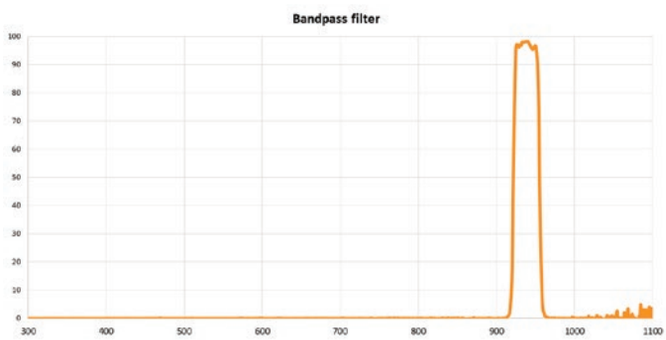
At I-Photonics, we provide fully customized filter solutions tailored to your precise specifications.

Using advanced PVD coating technologies, we manufacture filters that operate across a wide spectral range — from 250 nm to 16,000 nm — enabling performance across a diverse set of fields, including: scientific Research, medical diagnostics, sensing and imaging Systems, analytical and industrial Instrumentation.

Optical bandpass filters for VIS- IR range

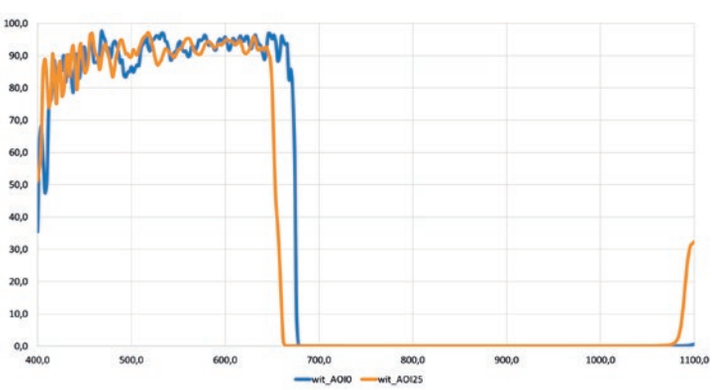


Material	Fused silica
Face dimensions	Ø50.8 mm
CWL, nm	712 nm
FWHM, nm	40 nm
Transmission, %	>95 %
Blocking range,nm	300 – 1000
Blocking density	OD4



Material	Fused silica
Face dimensions	Ø50.8 mm
CWL, nm	940 nm
FWHM, nm	40 nm
Transmission, %	>95 %
Blocking range, nm	300 – 1000
Blocking density	OD4

Short pass filters

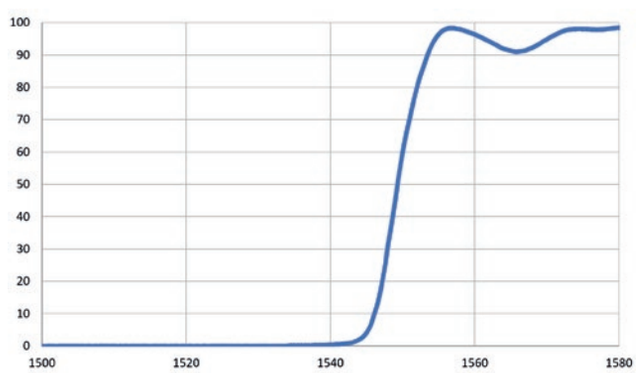


Material	KG1
Face dimensions	Ø50.8 mm

Coating S1+S2:

Taver(λ=420-680 nm) (AOI 0 °)	> 85%
Tabs(λ=694 nm) (AOI 0 °)	0.01 %
Tabs(λ=694nm) (AOI 25 °)	0.02 %
Tabs(λ=800-1064 nm) (AOI 0 °)	>OD6
Tabs(λ=800-1064 nm) (AOI 25 °)	>OD6

Long pass filters



Material	FS
Face dimensions	25.4 mm

Coating S1:

T(λ=1554nm) (AOI 0 °)	> 95%
Tabs(λ=1500-1540nm) (AOI 0 °)	O6

OPTICAL FILTERS

Ultra-Narrow Bandpass Filter – 1550 nm

Our ultra-narrow bandpass filter is precisely engineered for applications centered around the 1550 nm wavelength, offering:

High transmission at center wavelength (T > 90%)

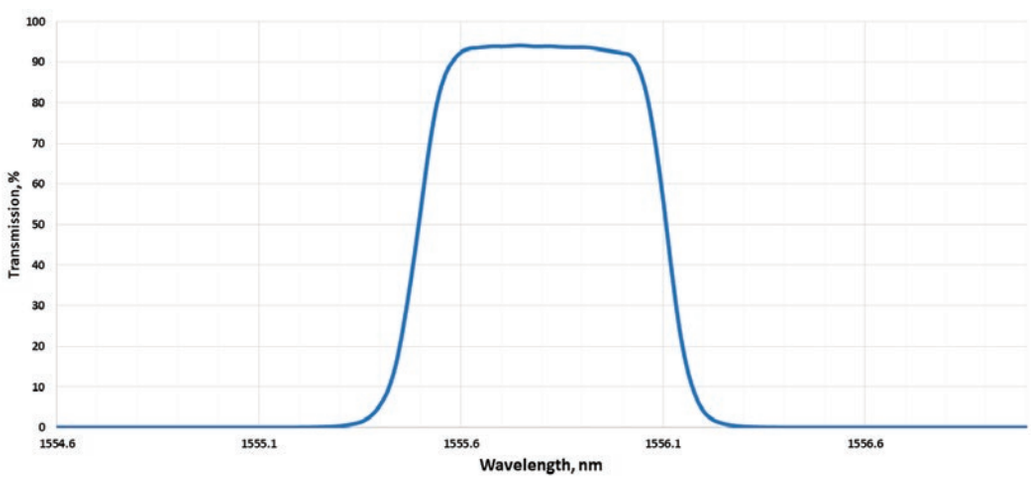
Ultra-narrow bandwidth (FWHM as low as 1–5 nm)

Deep blocking outside the passband (OD ≥ 4)

High stability and low drift, ideal for demanding environments

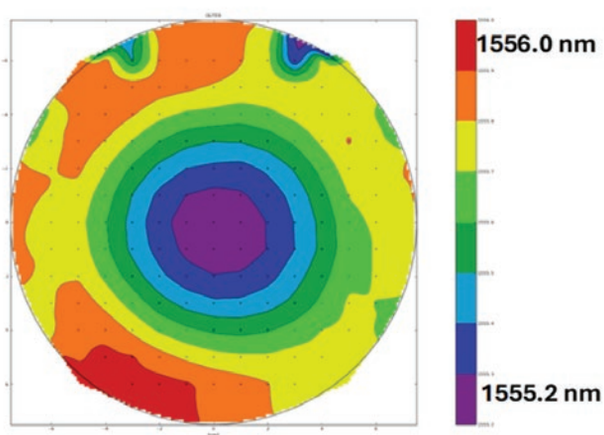
Designed for telecom, LiDAR, sensing, and quantum optics

Available with custom center wavelengths, angles of incidence, and substrate options upon request



Material	Fused silica
Face dimensions	Ø151.6 mm

CWL, nm	1555.6 nm
FWHM, nm	0,6 nm
Transmission, %	>92 %
Blocking range, nm	300 – 1000
Blocking density	OD6



OPTICAL FILTERS

Notch filters

Notch filters are designed to precisely block a narrow band of wavelengths while transmitting light on both sides of the stopband — making them ideal for applications requiring the elimination of specific spectral lines without sacrificing overall signal throughput.

At I-Photonics, we manufacture high-performance notch filters featuring:

Deep blocking (OD ≥ 4–6) at the center wavelength

High transmission (>90%) outside the stopband

Ultra-steep edges for minimal transition zones

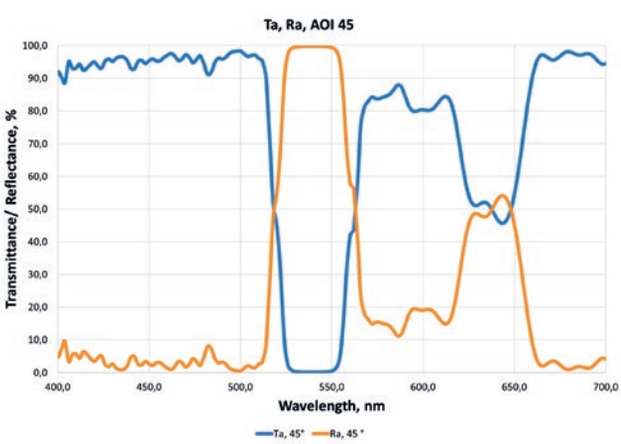
Low angle sensitivity and excellent spectral stability

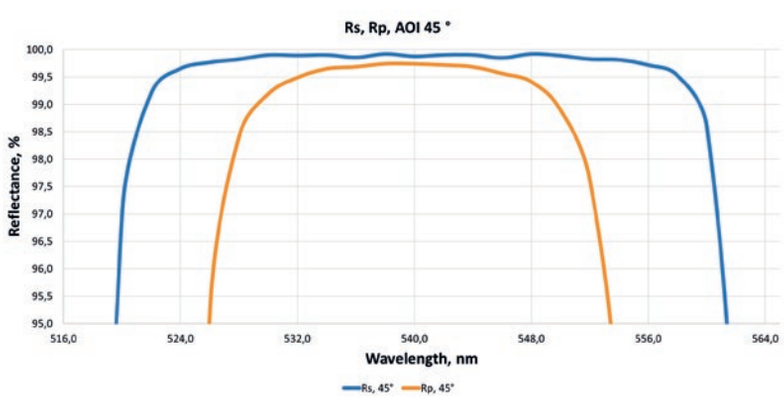
Custom center wavelengths available across UV, VIS, NIR, and IR

These filters are widely used in:
- Laser rejection systems
- Raman spectroscopy
- Fluorescence microscopy
- Sensing and LIDAR systems

Available on a range of substrates including fused silica, IR materials, and custom optics

Notch filter for 532 and 635 nm





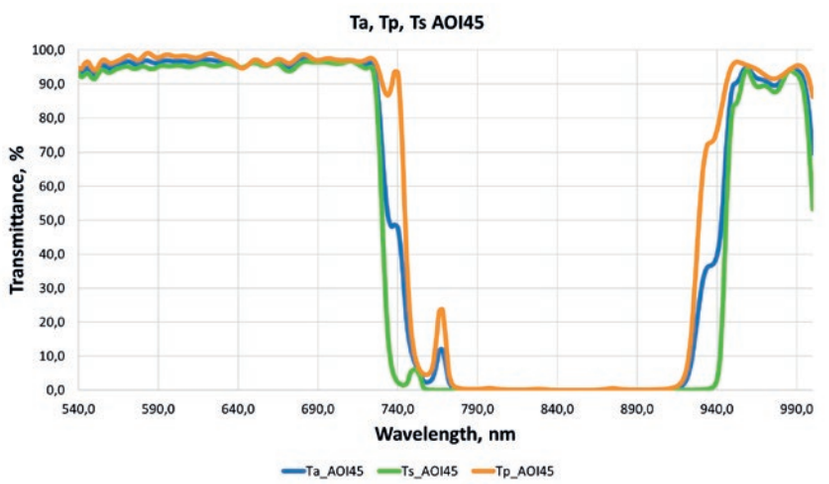
Material	Fused Silica
Face dimensions	Ø50.8 mm
Thickness	2 mm

Coating S1:	
Ta (λ=400-510 nm)	95.12 %
Ta (λ=660-700 nm)	96.22 %
Rs (λ=532±5 nm)	99.90 %
Rp (λ=532±5 nm)	99.44 %
Ra (λ=635±10 nm)	49.67 %
Coating S2:	
Ra (λ=400-700 nm)	<2 %
Incident angle	α=45°

OTHER COATINGS

At I-Photonics, we specialize in customized optical solutions, offering a wide range of nonstandard optical components tailored to unique application needs. Whether for prototyping or specialized system integration, we deliver precision optics designed to meet specific spectral, angular, and environmental requirements.
Custom geometries, coatings, and substrate materials available on request.

Dichroic mirrors



Material	Optical glass
Face dimensions	Ø25 mm
Thickness	1.1 mm

Coating S1:

Tp (λ=0.55-0.7 μm), α=45°	>97.3 %
Ts (λ=0.55-0.7 μm), α=45°	>95.2 %
Rp (λ=0.8-0.89 μm), α=45°	>98.6 %
Rs (λ=0.8-0.89 μm), α=45°	>99.9 %

Coating S2:

AR coating (λ=0.4-1μm)	< 2%

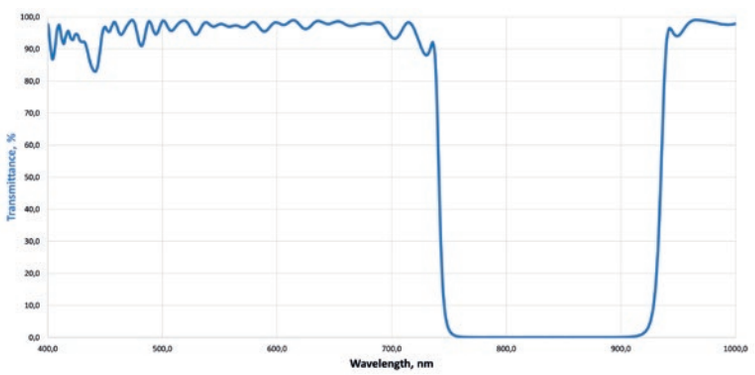
Material	Optical glass
Face dimensions	Ø12.5 mm
Thickness	1.5 mm

Coating S1:

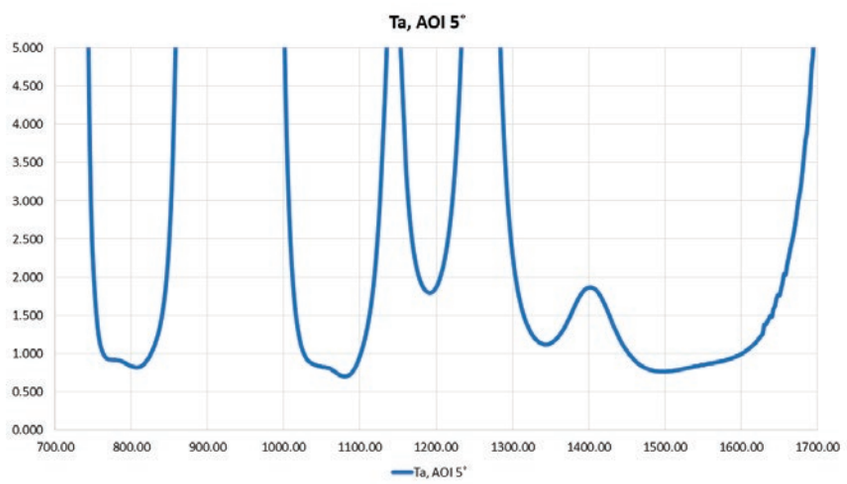
Ta (λ=400-700 nm)	96.2 %
Ta (λ=940-1000 nm)	97.3 %
Ta (λ=780-915 nm)	0.05 %

Coating S2:

Ra (λ=400-1000 nm)	<2 %



Neutral density coatings



Material	BK-7
Face dimensions	Ø76
Thikness	6±0.2 mm

Coating S1:

Ta (λ=0.8 μm)	0.839 %
Ta (λ=1.064μm)	0.783 %
Ta (λ=1.53 - 1.57 μm)	0.857 %
Incident angle	5°

THIN FILM TECHNOLOGY SOLUTIONS

Diamond-Like Carbon (DLC) Coatings for Infrared Optics

I-Photonics has developed and successfully implemented advanced diamond-like carbon (DLC) anti-reflection coatings for germanium and silicon optical substrates. These coatings not only enhance the transmission performance but also significantly improve the mechanical durability of the components.
Our proprietary DLC process utilizes ion beam sources to achieve exceptional thickness uniformity and coating quality.

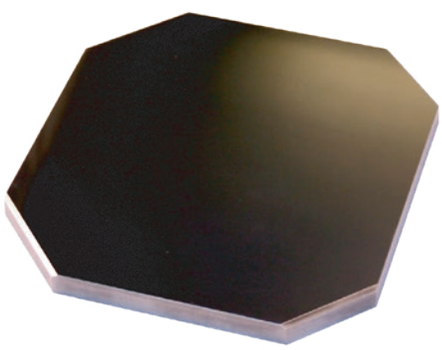
Key Features:

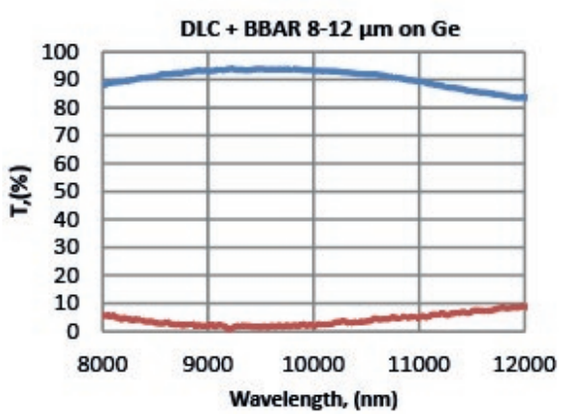
Optimized for Germanium and Silicon substrates
Maximum substrate dimensions: 380 × 410 mm
Guaranteed coating uniformity: ±3%
High mechanical strength and enhanced transmittance

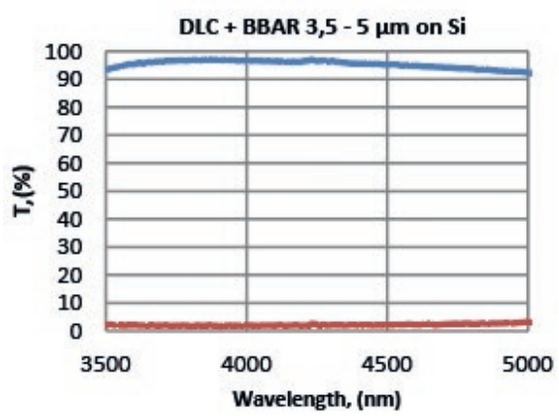
All DLC-coated components are qualified to MIL-685C and MIL-810G standards, ensuring reliability in demanding environmental and mechanical conditions.

The main characteristics of DLC coating

Hardness
Durability
Chemical resistance
Climatic resistance
Stability
High adhesion to germanium, silicon and glass surfaces
Broad band anti-reflection for germanium and silicon







Parameter	Measured data
Average reflection in the 8-12 µm range	<5%
Average transmission in the 8-12 µm range	>90%

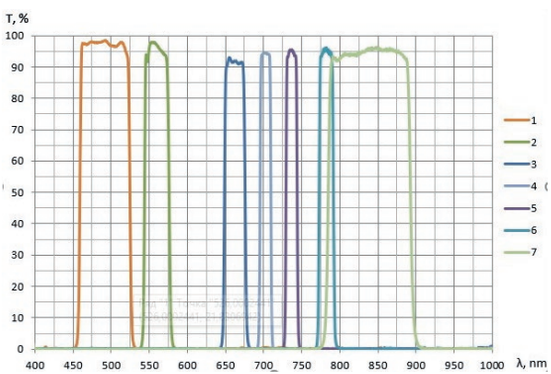
Parameter	Measured data
Average reflection in the 3.5-5 µm range	<3%
Average transmission in the 3.5-5 µm range	>95%

Multi-zone filters

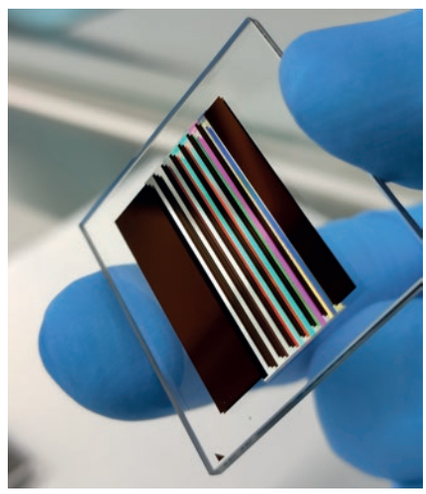
Multi-zone optical filters offer spatially varying spectral performance on a single substrate. We offer custom patterned as well as assembled multi-zone filters of various types.

Main features

Customization for size, spectral performance, and lay-out (number and size of zones)
Different approaches are possible: patterning or assembling
IBS sputtering technology guarantees reliability and no shifts in time
Black absorbing coatings between zones
High level of accuracy - up to 10 μm between zones



7 zones filter with bandpass zones in 400-900 nm range



	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	Zone 6	Zone 7
Bandpass, nm	460-525	545-575	650-675	695-710	730-745	775-795	785-895
Transmission, %	>90						
Blocking range, nm	300-1100						

Hydrophobic and oleophobic coating

I-Photonics offers an oleophobic (anti-fingerprint) coating technology on glass and polymer surfaces. Oleophobic coatings could be combined with anti-reflective coatings on one glass side. These coatings obtain an extreme long-term resistance, withstanding up to 10,000 cycles of abrasion steel wool with a load of 10 N. The contact angle of water remains in the range of 115-105°.
The multifunctional AR+AF coating is well suited for use in surface protection of optical glasses from contamination and mechanical scratches, wear-resistant coatings for displays, touch screens, architectural glass, cameras, optics and many more applications.

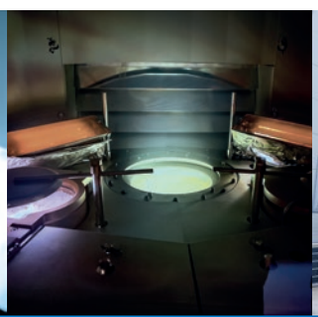
The main performance features of the hydrophobic coating

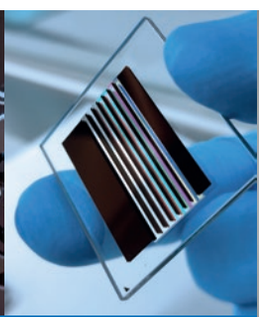
High contact angle – >105 deg Combination with anti-reflective coating
Long term wear-resistance and dirt-repellent properties Reduces visual reflections
Resists more than 10,000 cycles of abrasion steel wool with a load of 10 N

Chemically inert
Transparent
Low thickness
Defects free

For notes

I-PHOTONICS

I-Photonics is one of the world leaders in the development of thin film technologies and the design and manufacture of vacuum coating systems.

Originating from a scientific lab, today the company represents a great team of professionals in the area of physics of surfaces, plasma physics, ion beam source developments and the design and the production of turn key low pressure vacuum coating machines.

Our strength lies in the accurate selection and design of best performing hardware for the specific precision optics coating applications. Our, both active and if needed even pro-active, customer support on coating process questions, requirements and developments bring outstanding value and productivity intelligence to our customer´s production facilities.

We believe that the quality of support to be performed for the customer by training and supervising production specialists and providing production solutions with automatic real time deposition process control is and will be the key for all future precision optical coating business.

We strive to best perform on behalf and this with the highest priority and accuracy.

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