OPTICAL COMPONENTS FOR 1 µm CLASS LASERS

FOR LASER APPLICATIONS IN INDUSTRY, LARGE FACILITIES AND RESEARCH

FOR PULSED AND CW LASERS

OPTICAL COATINGS

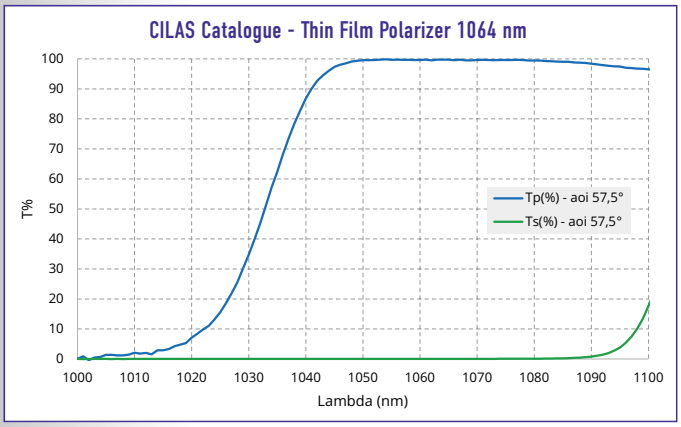
FEATURES OF 1-1,1 µm COATINGS	
COATING TYPE	Dielectric coatings based on oxides
COATING PROCESS	Plasma Ion Assisted deposition (dense coating) In-situ optical monitoring 900m² of clean room ISO5 to ISO8
COSMETICS	5/C 1x0.16 per 25mm pupil according to ISO 10110-7 S/D 40-20
ENVIRONMENTAL COMPATIBILITY	Suitable for severe environments (ATOX, radiations, vacuum, humidity...) Space heritage available upon request Cleanable
COATING FREE AREAS	Coating free areas masked upon request

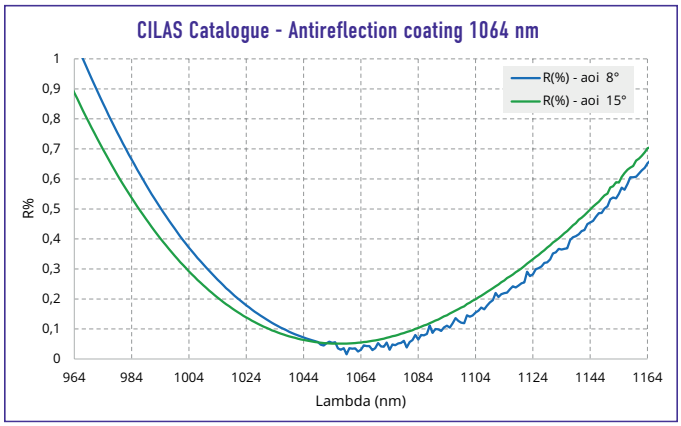
TYPE	NOMINAL	CUSTOM OPTIONS
Thin Film Polarizer (on Fused Silica substrate)	Tp > 98.5 % ; Ts < 0.1 % Extinction ratio 1000:1 AOI 57.5° LIDT: 10 J/cm², 10 ns, 1064 nm	AOI 45° Higher extinction ratio Blocking of unwanted other wavelengths
Antireflection coating (on Fused silica or BK7 substrates)	R < 0.1 % AOI 0-15° LIDT: 30 J/cm², 10 ns, 1064 nm	Higher AOI Dual-band AR: 1064/1550 nm, 1064/800 nm, 1064/532 nm
Antireflection coating (on high index substrates)	R < 0.2 % AOI 0-15° LIDT depends on substrate	Higher AOI Dual-band AR: 1064/1550 nm, 1064/800 nm, 1064/532 nm
Beamsplitter (on Fused Silica substrate)	Rp/Tp Tolerance: +/-2% AOI 45° Available ratios: 50/50 %; 67/33 % ; 75/25 % ; 80/20 % ; 83/17 %	Other R/T ratios S-polarization
Dichroic (on Fused Silica substrate)	Long-pass coating 1064/830 nm Ts & Tp (1064 nm) > 98 % Rs & Rp (830 nm) > 99 % AOI 45°	Short-pass coating 1064/532 nm, 1064/355 nm Other AOI
Laser mirror (on Fused silica or BK7 substrates)	R > 99.5 % (AOI 0-15°) Rp > 99 %, Rs > 99.3 % (AOI 45°) LIDT: 45 J/cm², 10 ns, 1064 nm	Zerodur®, metallic substrates

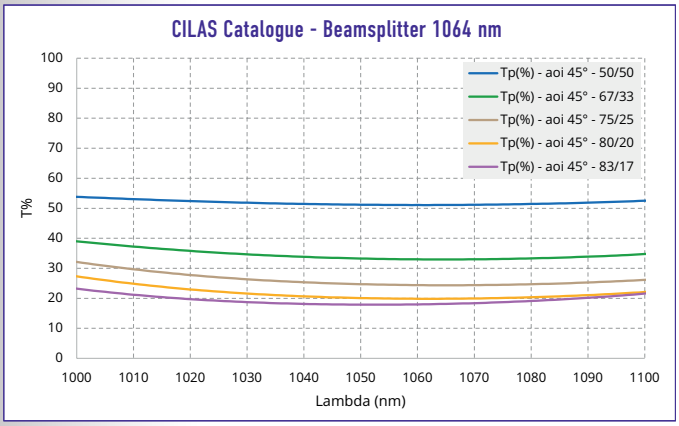
OPTICAL COMPONENTS FOR 1 µm CLASS LASERS

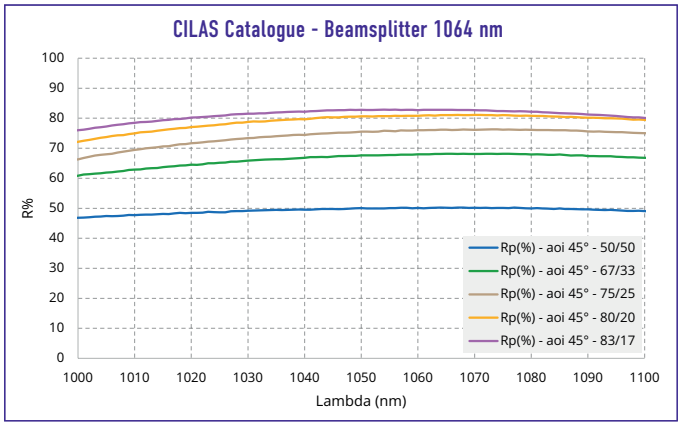
- Feasibility studies and design service
- For high laser damage threshold
- From prototype to mass production
- From small to large dimensions

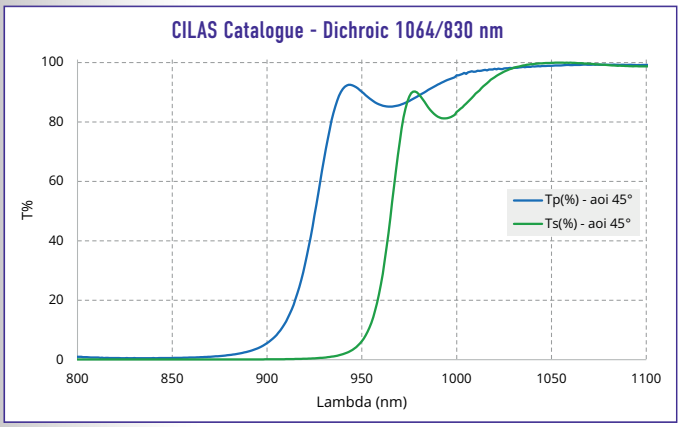
SPECTRAL MEASUREMENTS

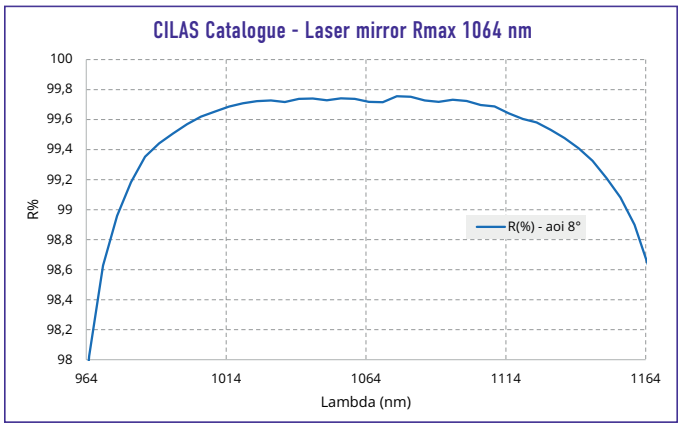












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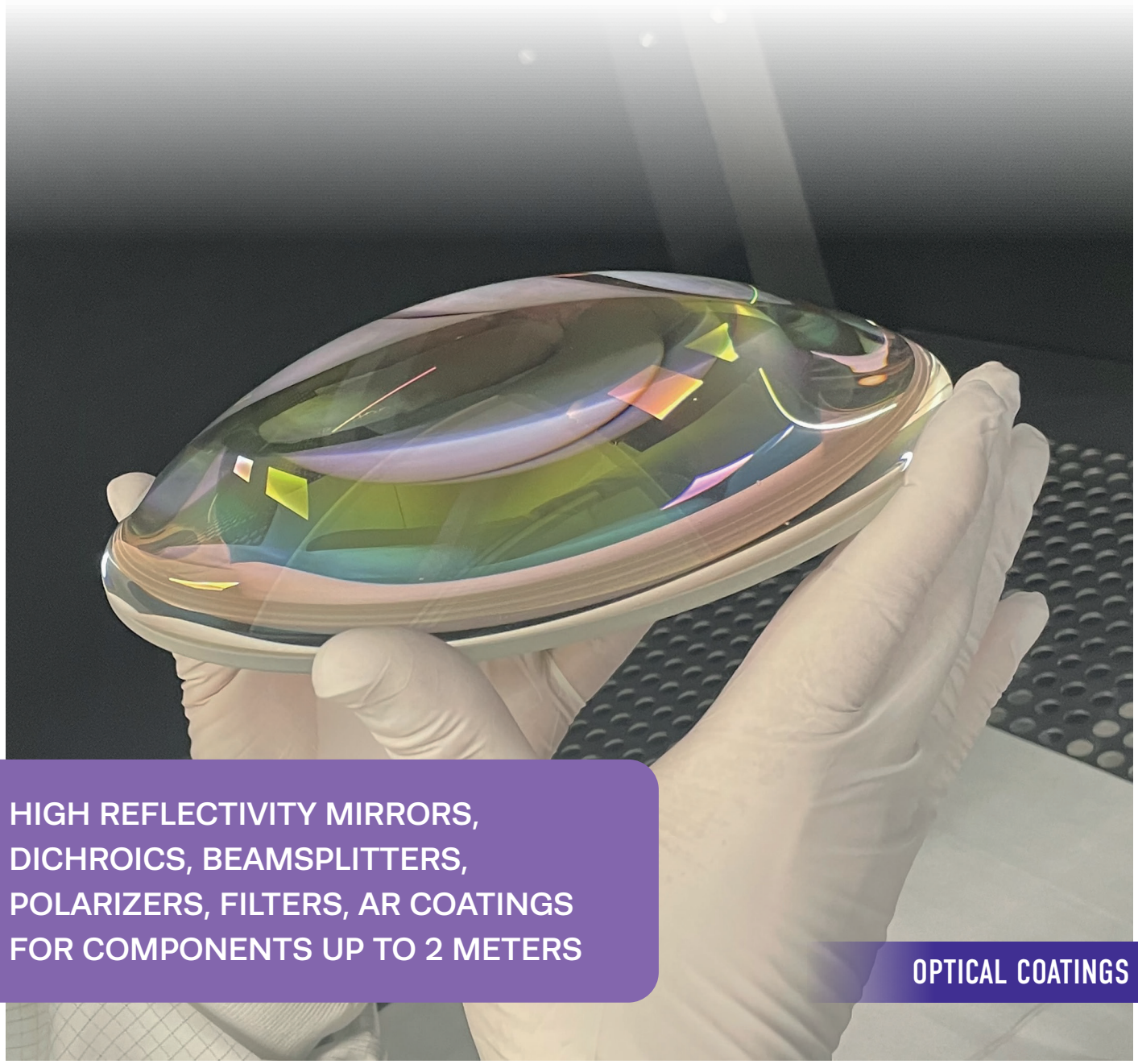
DIELECTRIC COATINGS

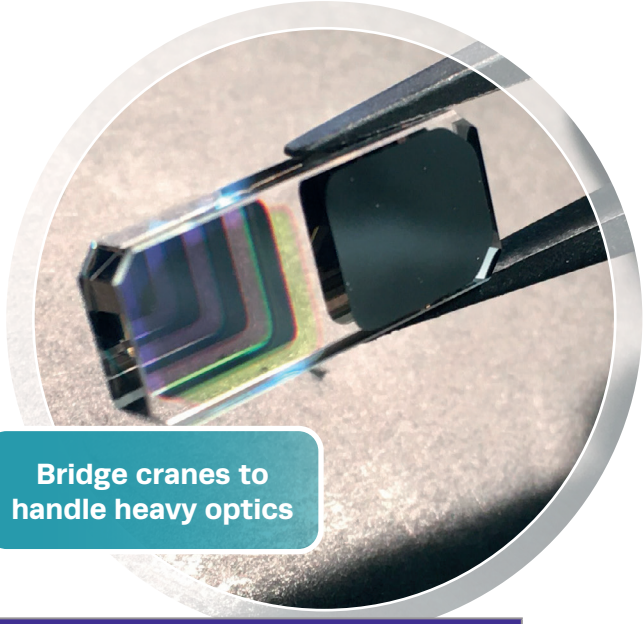
FOR SPACE, SATCOM, INDUSTRY, BIOMEDICAL, ASTRONOMY AND RESEARCH



HIGH REFLECTIVITY MIRRORS, DICHROICS, BEAMSPLITTERS, POLARIZERS, FILTERS, AR COATINGS FOR COMPONENTS UP TO 2 METERS

OPTICAL COATINGS

DIELECTRIC COATINGS



From small to large dimensions:

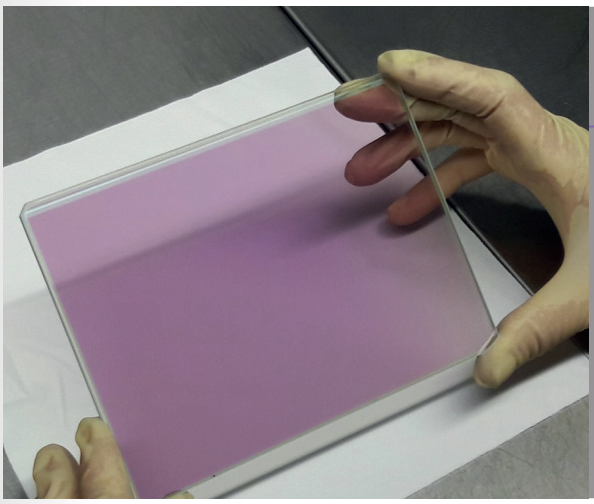
- up to 2 meters for AR coatings
- up to 400 mm for dichroics and mirrors
- up to 200 mm for filters

Feasibility studies and design service

From prototype to mass production

Bridge cranes to handle heavy optics

FEATURES OF DIELECTRIC COATINGS	
SUBSTRATE MATERIALS	Silica, BK7, BK7G18, CaF2, various glasses
SUBSTRATES SHAPES	Lenses, windows, wedges, freefrom optics
COATING TYPE	Dielectric coatings based on oxides
COATING PROCESS	Magnetron sputtering (dense coating) Plasma Ion Assisted deposition (dense coating) In-situ optical monitoring 900 m² of clean room ISO5 to ISO8
SPECTRAL RANGE	220 nm to 2.5 µm
COSMETICS	5/C 1 x 0.16 per 25 mm pupil according to ISO 10110-7
ENVIRONMENTAL COMPATIBILITY	Suitable for severe environments (ATOX, radiations, vacuum, humidity...) Space heritage available upon request Cleanable
COATING FREE AREAS	Coating free areas masked upon request
WAVE FRONT ERROR (WFE)	Stress compensation available upon request



MAIN REFERENCES

- Anti-reflective coatings for microelectronic industry
- UV Filter for decontamination
- Earth observation filters for Microcarb satellite
- Dichroic for Perseverance Supercam
- Filters for SPHERE IRDIS instrument of VLT

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METALLIC COATINGS

FOR SPACE, INDUSTRY, ASTRONOMY AND RESEARCH

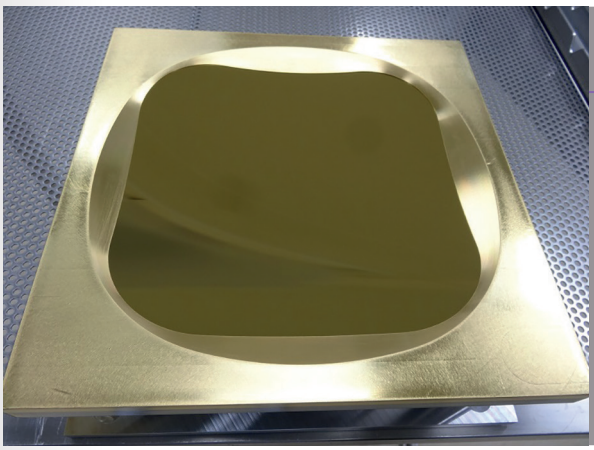
ENHANCING OPTICAL SYSTEMS PERFORMANCES FOR MIRRORS UP TO 2 METERS

OPTICAL COATINGS

METALLIC COATINGS

- Catalogue available upon request
- Feasibility studies and design service
- From prototype to mass production
- From small to large dimensions
- Bridge cranes to handle heavy optics

FEATURES OF METALLIC COATINGS	
SUBSTRATE MATERIALS	Silica, Zerodur®, Aluminum + NiP, Bare aluminum, Stainless steel, SiC, etc.
SUBSTRATES SHAPES AND DIMENSIONS	Flat, concave and convex mirrors Up to diameter 2000 mm, 400 mm height and 1.5 tons
COATING TYPE	Protected and enhanced silver Protected and enhanced aluminum Unprotected gold
COATING PROCESS	Magnetron sputtering (dense coating) 900 m² of clean room ISO5 to ISO8 Grounding upon request
REFLECTIVITY	From 250 nm to 16 µm
COSMETICS	5/C 1 x 0.16 per 100 mm pupil according ISO 10110–7
ENVIRONMENTAL COMPATIBILITY	Suitable for severe environments (ATOX, radiations, vacuum, humidity...) Space heritage available upon request Cleanable
COATING AREAS	Full surface coating Coating free areas masked upon request



MAIN REFERENCES

- Laser Mégajoule reflectors
- Proba–V and TROPOMI instruments
- Space telescope mirrors
- Euclid OGSE
- OAJ secondary mirror
- Solar simulators

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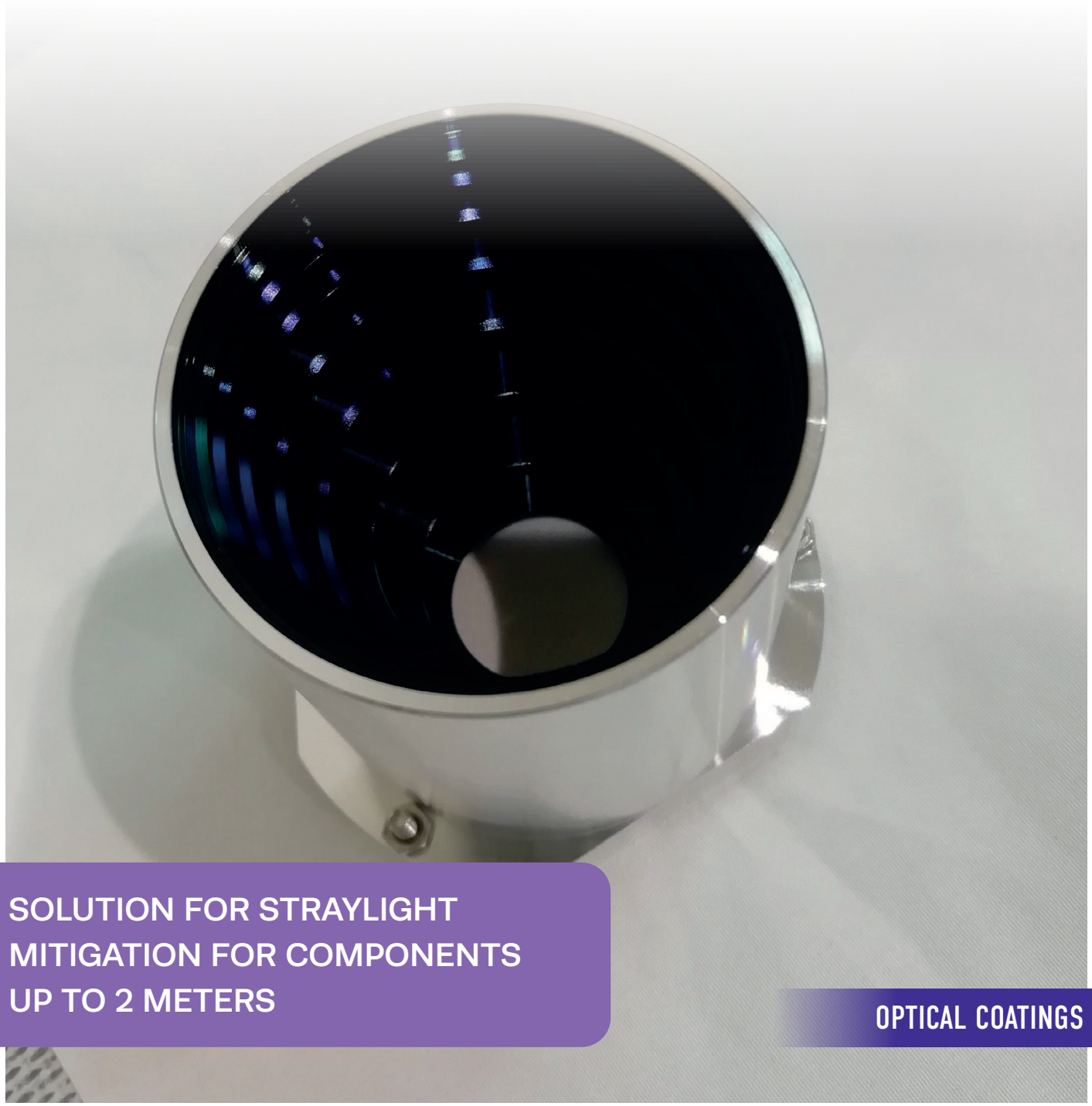
BLACK COATINGS

FOR SPACE, INDUSTRY, ASTRONOMY AND RESEARCH



SOLUTION FOR STRAYLIGHT MITIGATION FOR COMPONENTS UP TO 2 METERS

OPTICAL COATINGS

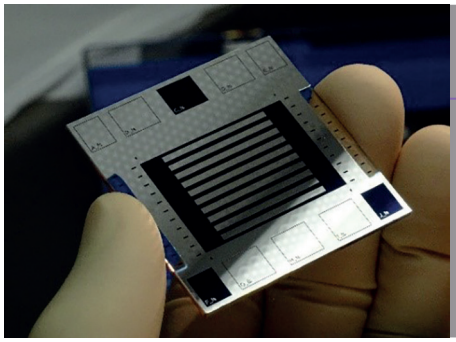
BLACK COATINGS

Feasibility studies and design service

From prototype to mass production

From small to large dimensions

FEATURES OF BLACK COATINGS	
SUBSTRATE MATERIALS	Silica, Zerodur®, Titanium, Aluminum + NiP, Bare aluminum, Stainless steel, SiC, CFRP, etc.
SUBSTRATES SHAPES AND DIMENSIONS	Applicable to a wide range of components and shapes: slits, windows, prims, stripe filters, baffles, barrels, etc. Up to diameter 2000 mm, 20 mm height
COATING TYPE	Metal-dielectric multilayer coating
COATING PROCESS	Magnetron sputtering (dense coating) 900 m² of clean room ISO5 to ISO8
COATING THICKNESS	< 1 µm
SPECULAR REFLECTIVITY	R < 1% over [400-900 nm] for AOI 0-30° Other spectral ranges upon request
HEMISPHERIC REFLECTIVITY	R < 1.6%
TRANSMITTANCE	T < 10-5
EMISSIVITY	ε < 0.35 on aluminum
COSMETICS	5/C 1 x 0.16 per 100 mm pupil according to ISO 10110-7
ENVIRONMENTAL COMPATIBILITY	Suitable for severe environments (ATOX, radiations, vacuum, humidity...) Space heritage available upon request Cleanable
CONTACT AREAS OR NON-USEFUL AREAS	Coating free areas masked mechanically or using photolithography techniques



MAIN REFERENCES

- TROPOMI
- Eyesat
- METimage
- Sentinel-5

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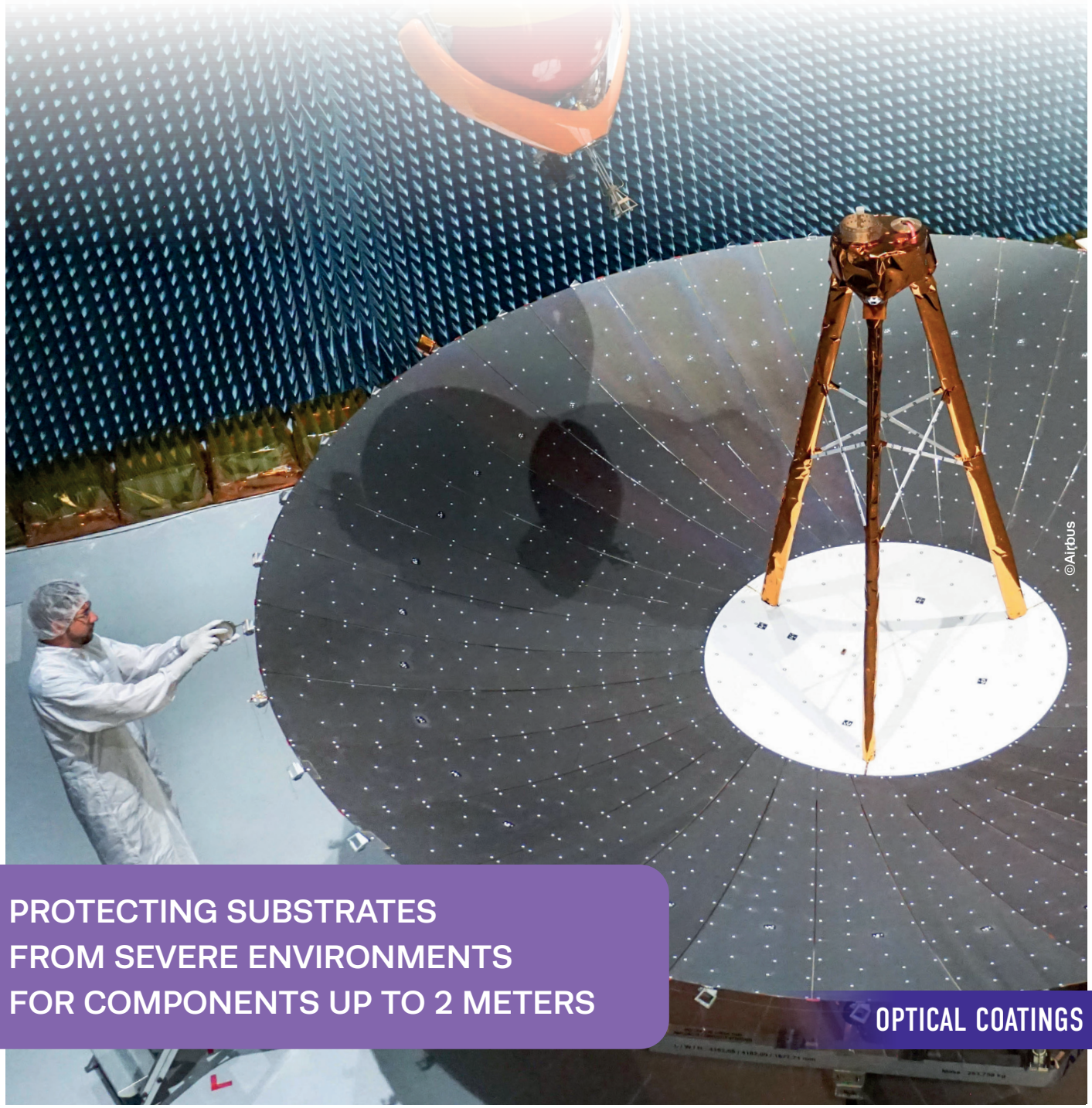
PROTECTIVE COATINGS

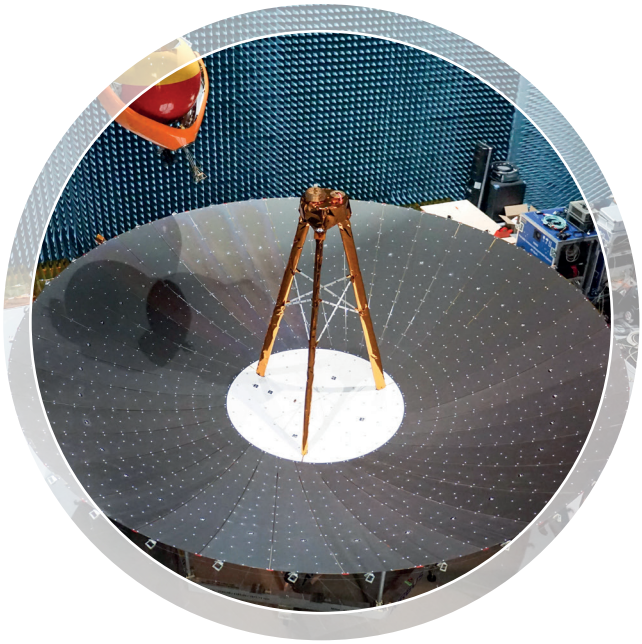
FOR SPACE, INDUSTRY, ASTRONOMY AND RESEARCH



PROTECTING SUBSTRATES
FROM SEVERE ENVIRONMENTS
FOR COMPONENTS UP TO 2 METERS

OPTICAL COATINGS

PROTECTIVE COATINGS



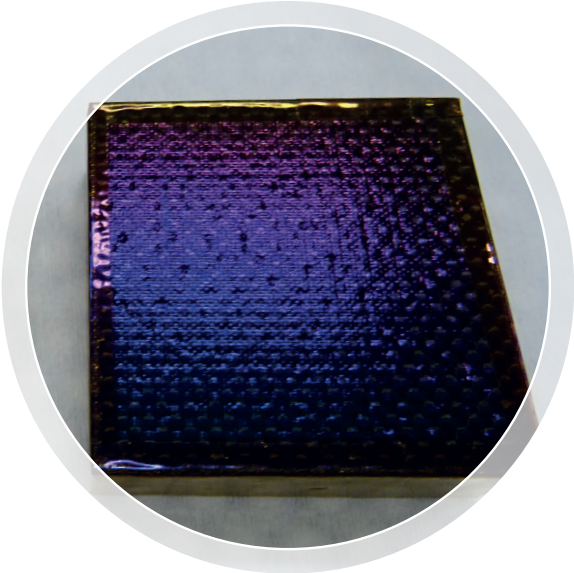
Feasibility studies and design service

From small to large dimensions

From prototype to mass production

Bridge cranes to handle heavy optics

FEATURES OF PROTECTIVE COATINGS	
SUBSTRATE MATERIALS	Silica, Zerodur®, Aluminum + NiP, Bare aluminum, Stainless steel, SiC, CFRP etc.
SUBSTRATES SHAPES AND DIMENSIONS	Flat, concave and convex Up to diameter 2000 mm, 400 mm height and 1.5 tons
COATING TYPE	Dielectric layers: SiO2, Al2O3, ZrO2, etc. Metallic layers: Al, Si, Ni, etc.
COATING PROCESS	Magnetron sputtering (dense coating) 900 m² of clean room ISO5 to ISO8
EXAMPLES OF APPLICATIONS	Protection against ATOX Management of the emissivity
COSMETICS	5/C 1 x 0.16 per 100 mm pupil according ISO 10110–7
ENVIRONMENTAL COMPATIBILITY	Suitable for severe environments (ATOX, radiations, vacuum, humidity...) Space heritage available upon request Cleanable
COATING AREAS	Full surface coating Coating free areas masked upon request



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