

OPTOMAN designs, develops, and manufactures advanced, high accuracy and repeatable yet cost-effective thin film coatings and laser optics.

## Manufacturing capabilities

### General facts:

OPTOMAN concentrates on single manufacturing technology - ion-beam sputtering (IBS);  
Orientation towards product development - from prototype to series production;  
Performance and total cost of ownership (TCO) optimization approach.

### Optics for ultrafast applications:

- Dispersive mirrors – chirped and GTI design
- Spectral range 250nm - 5000 nm
- Negative GDD down to -5000 fs<sup>2</sup>
- Positive dispersion mirrors
- Low (flat) or predefined GDD behavior
- LIDT >0.3 J/cm<sup>2</sup> @ 1030nm, 50 fs, 150 kHz
- LIDT >0.25 J/cm<sup>2</sup> @ 266 nm, 180 fs, 10 kHz
- Pulse compression analysis

### Application optimized optics for:

- Medical lasers (Er:YAG/glass, Ho:YAG, Nd:YAG, Alexandrite...)
- Mirrors for galvo-scanners (Silicon, UVFS...)
- Membrane mirrors for deformable mirror assemblies.
- OPO, OPA, OPCPA.
- Defense & Aerospace industries

### High damage threshold optics:

- >80 J/cm<sup>2</sup>, 1030 nm, 10 ns
- >50 J/cm<sup>2</sup>, 1064 nm, 10 ns, S-pol, 56°
- >1 J/cm<sup>2</sup>, 1030 nm, 1 ps
- >30 kW/cm, 1070 nm CW

### Extreme low-loss coatings:

- Super Mirrors HR (R>99.998%)
- Precision Thin-film Polarizers (Tp/Ts ratio > 10000:1)
- R<0.01% Anti-Reflective Coatings
- Coating with an absorption loss of <1 ppm

### Optics for Mid-IR applications:

- Low absorption coatings
- Spectral range 1–5 μm
- Broadband turning/bending mirrors with R>99.8%
- Chirped and GTI mirrors for ultrafast laser systems
- Coatings on CaF<sub>2</sub>, MgF<sub>2</sub>, YAG, Sapphire, Silicon substrates

### Some of the cool stuff we do:

- Knife-edge coated optics (edge chips <50 μm)
- 100% coated aperture components
- Segmented/Masked coatings
- Stress-compensated coatings (PV flatness <λ/20 @633 nm)
- Coatings on multi-surface prisms
- Coatings on micro lens assemblies
- Large diameter wafers (up to Dia250 mm)
- Zero phase shift mirrors
- Coatings on laser and nonlinear crystals

### Bread and butter:

- Laser line and broadband mirrors HR >99.9%
- R<0.1% Anti-Reflective coatings.
- Thin Film Polarizers (Tp/Ts extinction ratio > 1000:1).
- Pump, dichroic Mirrors (eg. HR>99.9% + HT>99%).
- Output couplers, plate beam splitters (eg. PR 50% +/-1%)
- Spectral range: 200 nm - 5000 nm
- Component size: from 3 mm up to 250 mm
- Coatings on plane, spherical, cylindrical, aspherical, elliptical surfaces, prisms and other exotic configurations.
- Typical turnaround for custom coatings 5-7 weeks.



YOUR SIDEKICK FOR  
LASER OPTICS DEVELOPMENT

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## Characterization

Cosmetic surface quality inspection	MIL-PRF-13830B, ISO 10110 or customer-specific conditions
Spectral measurements	Tsp, Rsp @ 220 nm - 5000 nm, from 0° to 75° AOI
LIDT & Lifetime testing	ISO 21254 (CW, ns, ps, fs)
Environmental testing	MIL-C-484197
GD, GDD, TOD measurements	500 nm - 1400 nm
Absorption measurements (Photothermal technology)	355 nm, 1064 nm 405 nm, 532 nm, 690 nm, 785 nm, 830 nm, 1342 nm
Cavity ring-down measurements	532 nm, 638 nm, 1064 nm, AOI=0° and 45° (S-pol, P-pol)
Surface form errors	down to $\lambda/20$ @ 633 nm. Measured aperture up to 100 mm
Product design verification - First article inspection (FAI)	

## R&D activities

- About 20% of OPTOMAN annual revenue goes back to R&D activities.
- We cooperate with leading research institutions for extensive characterization and prove of concepts.
- Cooperation with Center for Physical Sciences and Technology, Vilnius University.
- Ongoing R&D projects:
  - INTENSITY - extreme-low loss coatings:  $<10$  ppm for HR &  $<1$  ppm for AR coatings
  - UNIPULSE - Low-stress, high LIDT and chirped mirrors and pairs of mirrors for ps-fs applications
  - INOSTART - MID-IR (1-5  $\mu$ m) coatings