

3photon



**CRYSTALS
COATINGS
OPTICS**



LASERS



OPHTHAL-
MOLOGY



MEDICAL



BIO &
CHEMICAL



R&D



DEFENSE

MARIUS ŠEMETA, 2022 VILNIUS



Founded in 2017



>20 years in different
photonics products
development



Technical knowledge in
crystals, optics, lasers

CUSTOM LASER OPTICS

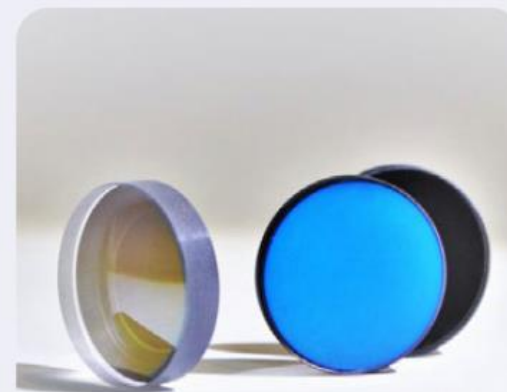


**Dichroic mirrors
(Wavelength
separators)**

190 - 12 500 nm

**Output (cavity)
mirrors**

190 - 8000 nm



**Laser line
mirrors**

**213, 266, 355, 532,
632, 1053, 1064 nm,
...**

Within
190 - 7000 nm region

**Broadband
mirrors**

**400-700 nm,
900-1100 nm,
...**

Within
190 - 12 000 nm region





POLARIZERS

Thin film plates & Beamsplitter cubes

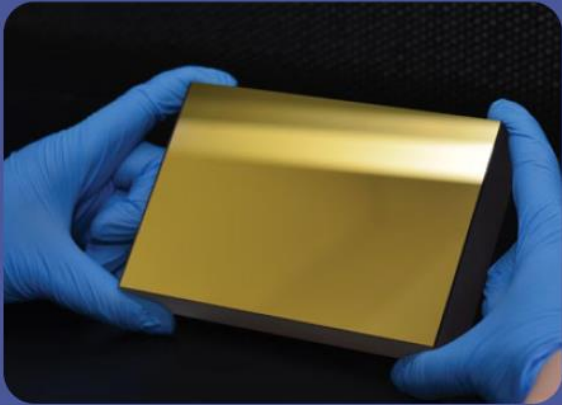
Extinction Ratio 1:2000 | Up to Ø230 mm | High LIDT

WAVEPLATES

Low order, zero order, true zero order, achromatic

Up to Ø30mm | High LIDT

METALLIC COATINGS



High durability & lifetime > 10 years

- UV Enhanced Aluminum mirrors down to 193 nm
- High LIDT Ag + Protective Coating > 2 J/cm² @ 1064 nm
- Low absorption Au coatings

COATING ON CRYSTALS



Precisely controlled process allows:

- Coatings on hygroscopic, light sensitive, soft crystals (e.g. BBO, BiBO, LBO, DKDP, AgGaS₂, Cr: CdSe...)
- Coatings on high value crystals e.g. Ti:Sapphire, Cr:ZnSe, Yb:KGW, Co:MAL0, LiNbO₃, AgGaSe₂, ZGP...)

UNCOATED OPTICAL ELEMENTS



Various shapes and sizes of:

- Windows, lenses, prisms, axicons
- Custom optical components

OPTICAL COATINGS FACILITY

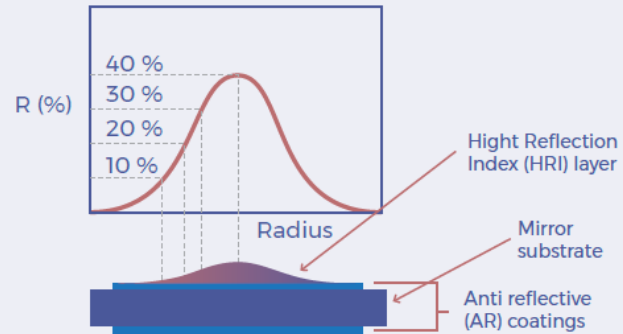
COMPLEX OPTICAL COATINGS



Coating technologies

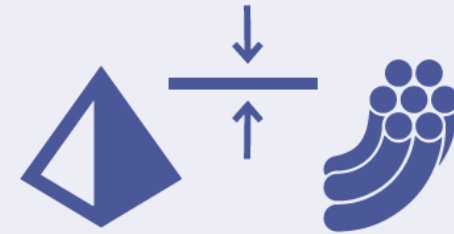
- TE - thermal evaporation
- EBE - electron beam evaporation
- IAD - ion assisted deposition
- IBS - ion beam sputtering
- MS - magnetron sputtering

VARIABLE REFLECTIVITY MIRRORS



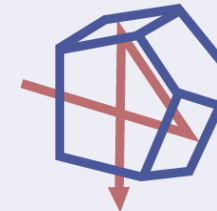
- Reflection at the center up to 40%
- Custom dimensions
- Reflectivity profile according to your specifications
- Used in resonators

COATINGS ON NON-STANDARD PARTS



- Prisms
- Fiber ends
- Thin wafers
- Custom components

From Idea to R&D to commercial production, custom optics, beam delivery systems...





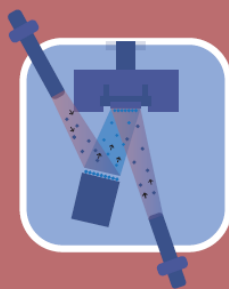
OPTICAL COATINGS FACILITY

IBS (Ion Beam Sputtering) coatings

- Fully automatic PVD coating plant with load-lock
- Fast coating process
- Lower maintenance costs
- 24/7 non stop production
- Highly precision coatings
- High LIDT, Durable & Environment stable coatings

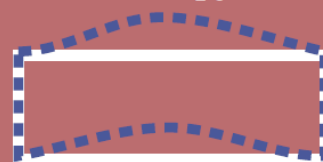


IBS (Ion Beam Sputtering) coatings



Dedicated ion source for substrate pre-cleaning/etching

$$n\lambda \rightarrow \frac{\lambda}{10}$$

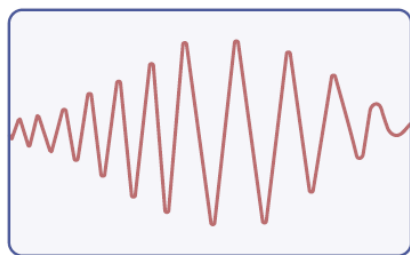


Special coating stress reducing techniques

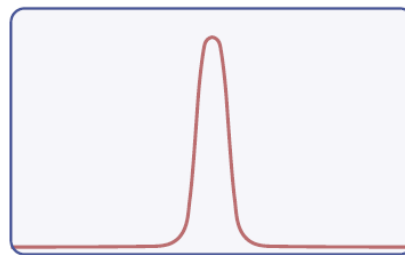


Low coating defect density

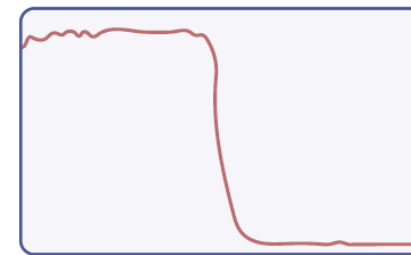
Reliable and repeatable batch-to-batch deposition of complex multilayer coatings with precisely controlled spectral, dispersion properties:



Chirped mirrors



Interference filters



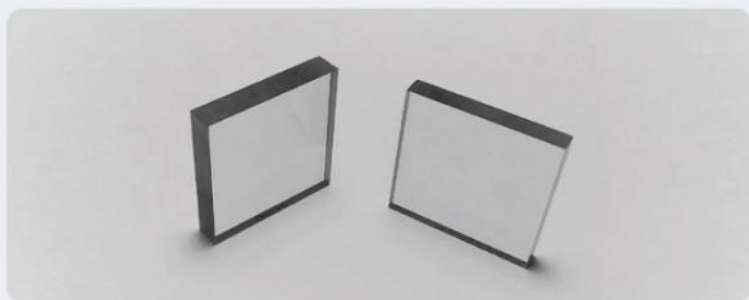
Cut-off filters



OPTICAL COATINGS FACILITY

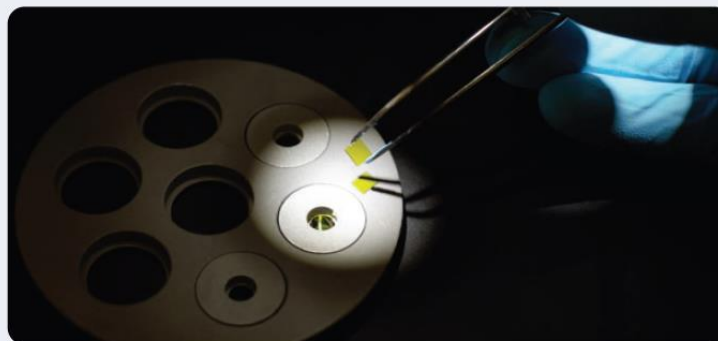
Coatings on Crystals

COMPLEX OPTICAL COATINGS



Hygroscopic, Soft (<3 MOHS), sensitive
(BBO, LBO, DKDP, AgGaSe₂, Calomel...)

NON-STANDARD COATING SOLUTIONS ON CRYSTALS



Full apertures, multiple surfaces,
small crystals

COATING SERVICE ON HIGH VALUE CRYSTALS



Large, custom shapes
Ti:sapphire, Cr:ZnSe, Yb:KGW, Co:MAL0,
LiNbO₃, AgGaSe₂, ZGP, ...



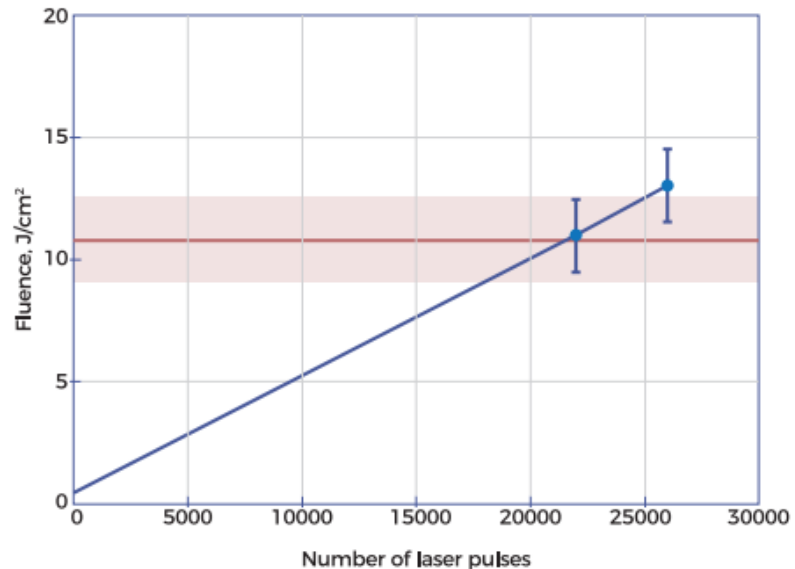
CRYSTALS

SINGLE-PASS CONFIGURATION

LBO for THG

S1: AR @ 1064 +532 nm; S2: AR @ 355 nm;

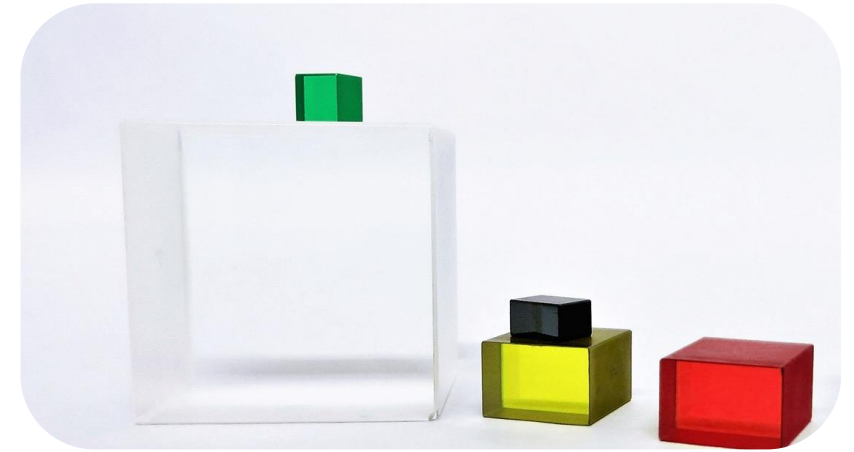
LIDT > 10 J/cm² @ 355 nm



Non-Linear Crystals:
BBO, LBO, KTP, DKDP,
AgGaS₂, ZnGeP₂, GaSe, ...

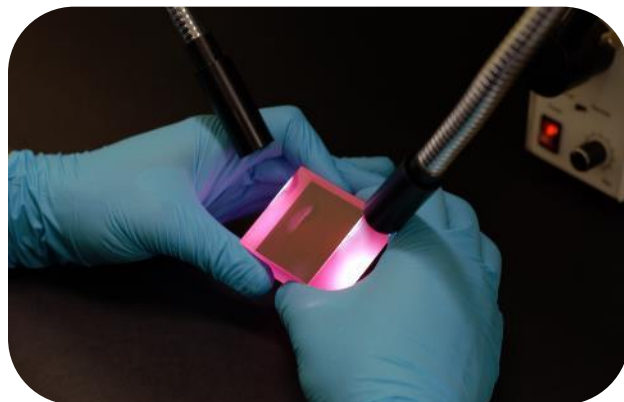
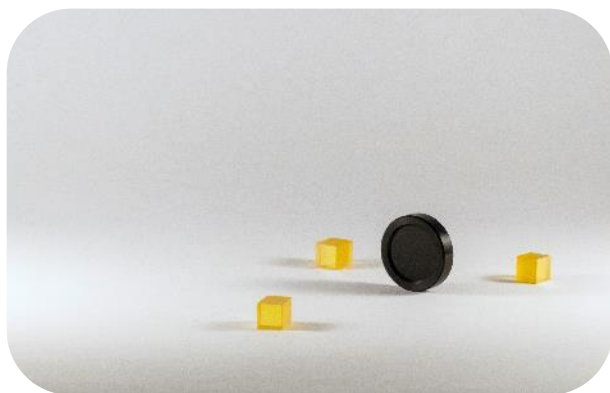
Laser Crystals:
Nd:YAG, Nd:YVO₄,
Yb:YAG, Cr:ZnSe, Cr:CdSe,
Nd:YLF, ...

Passive Q-switch crystals





CRYSTALS



Support and simulations
for your applications

Polishing and coating

Custom dimensions

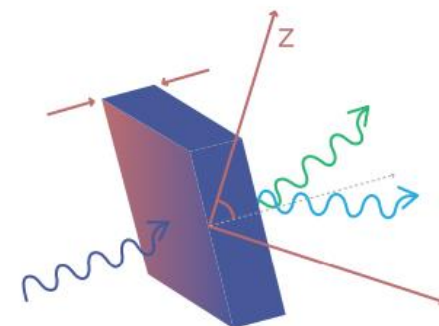
Mounting

Crystals Repair

**HUMIDITY SENSITIVE, LOW
MOHS CRYSTALS POLISHING**

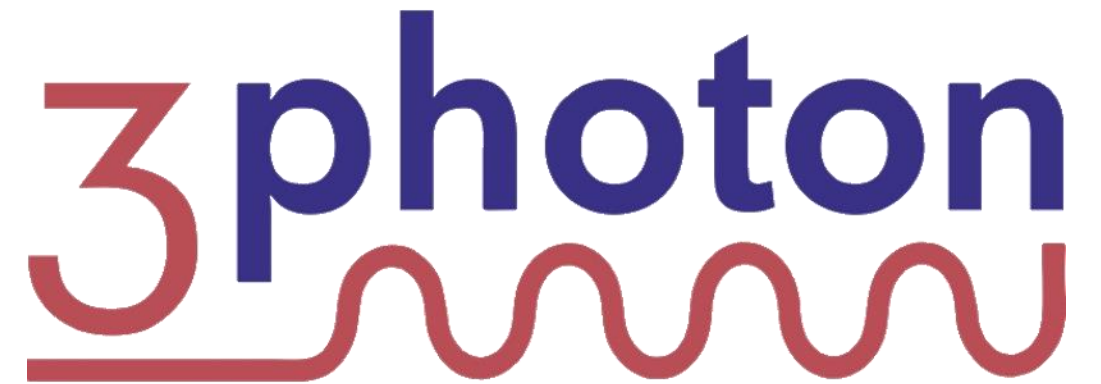


**DEVELOPMENT, SIMULATIONS AND
TECHNICAL CONSULTATIONS FOR CRYSTALS**





New Facility 2022



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