

# OPT↓MAN

IBS HERO



Your sidekick for laser optics development

# WHAT IS OPTOMAN?





Highly customized and applications optimized laser optics for high power and ultrafast lasers with ultrafast turnaround.

Concentration on a single manufacturing technology – IBS.

# Manufacturing capabilities



Reflectance  $>99.99\%$   
for mirrors



Reflectance  $R < 0.05\%$   
for AR coatings



Size range  
5 - 120 mm



Spectral range  
200 nm - 6000 nm



Damage  
threshold  
 $>80 \text{ J/cm}^2$



Flatness &  
irregularity  $< \lambda/20$  @  
633 nm



Extinction ratio  
higher than  
3000:1



Custom shapes



High purity FS substrates,  
optimized for specific  
wavelength range



Ultrafast coatings with  
GDD down to  
 $-2000 \text{ fs}^2$  and beyond



Custom  
coatings in 2-3  
weeks



Series  
production

# Core competence

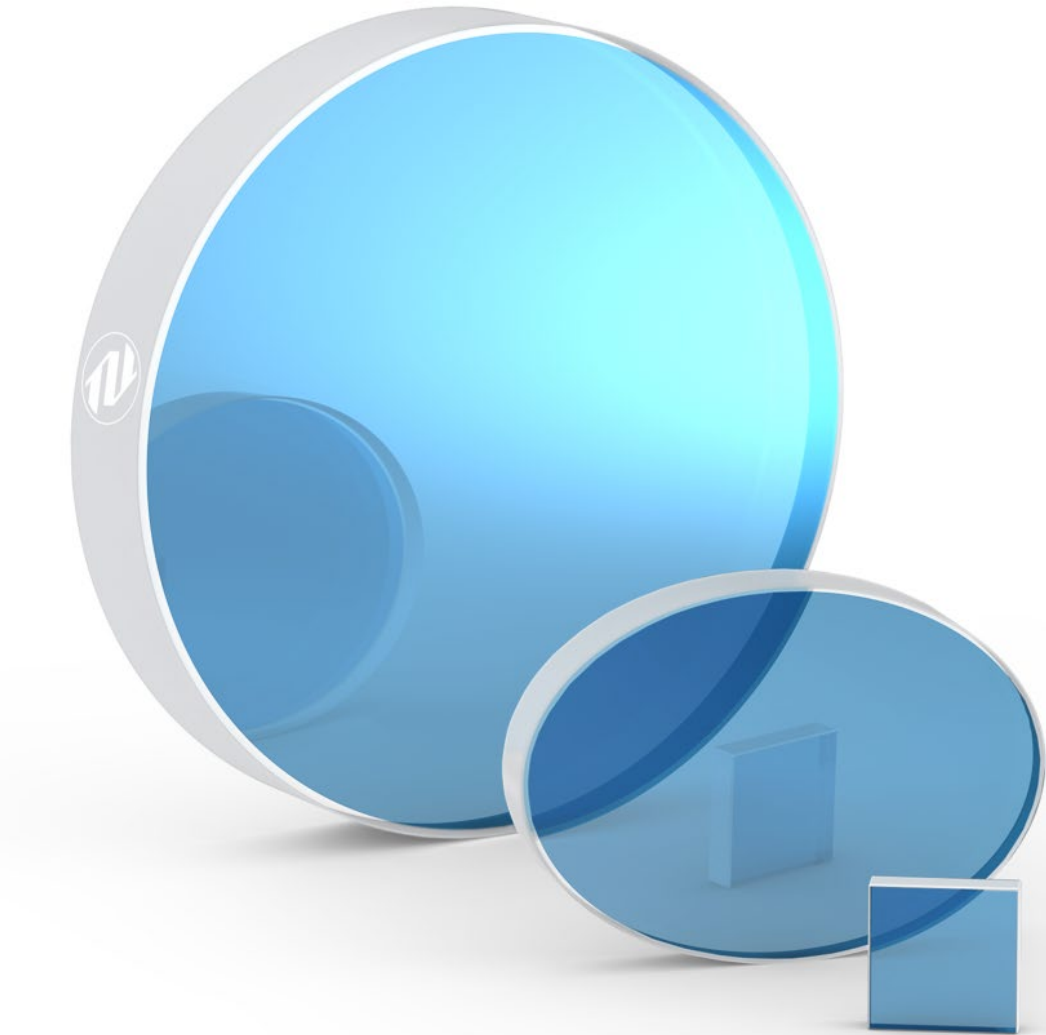
Ultrafast laser optics

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High LIDT and enhanced duty cycle

...

Quick prototyping of custom components

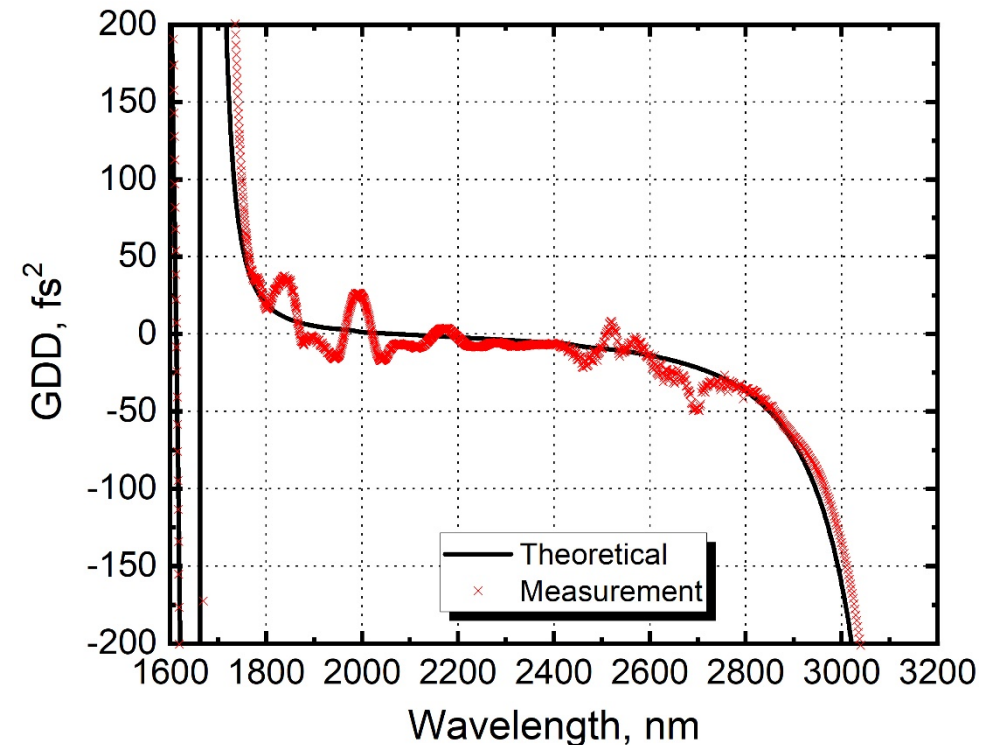
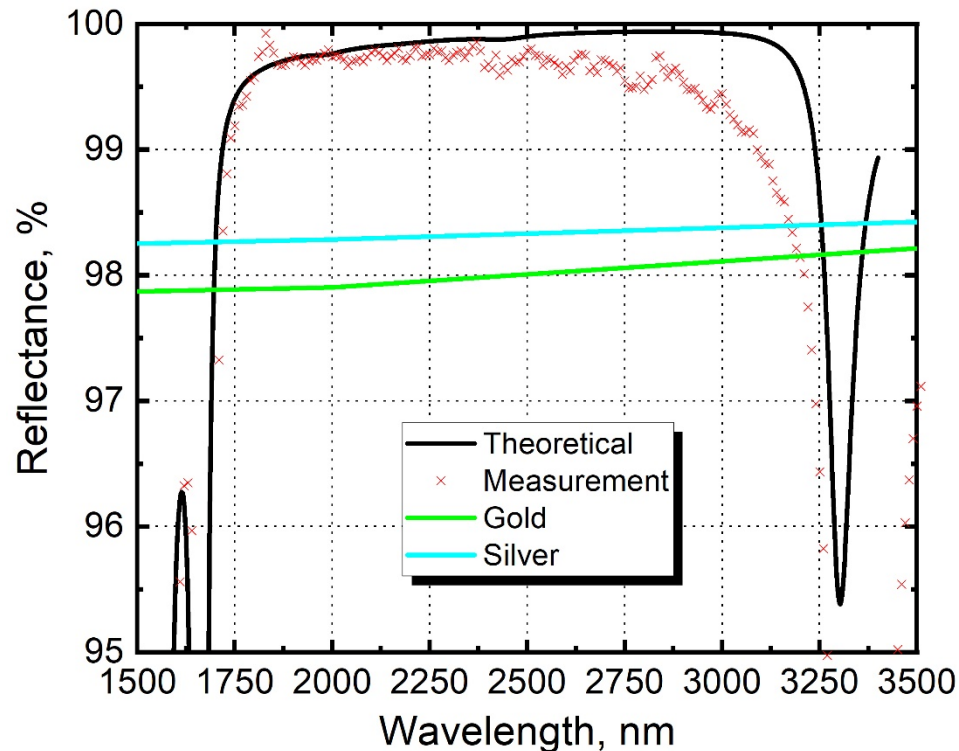


# Mid-IR IBS COATINGS for ultrafast applications



# Broadband low GDD mirrors

HR\_avg > 99,5% @ 1750-3100nm AOI=0deg; |GDDr| < 30 fs<sup>2</sup> @ 1780-2860 nm



These mirrors were successfully used in the soft X-ray (SXR) generation experiment in the OPCPA system :

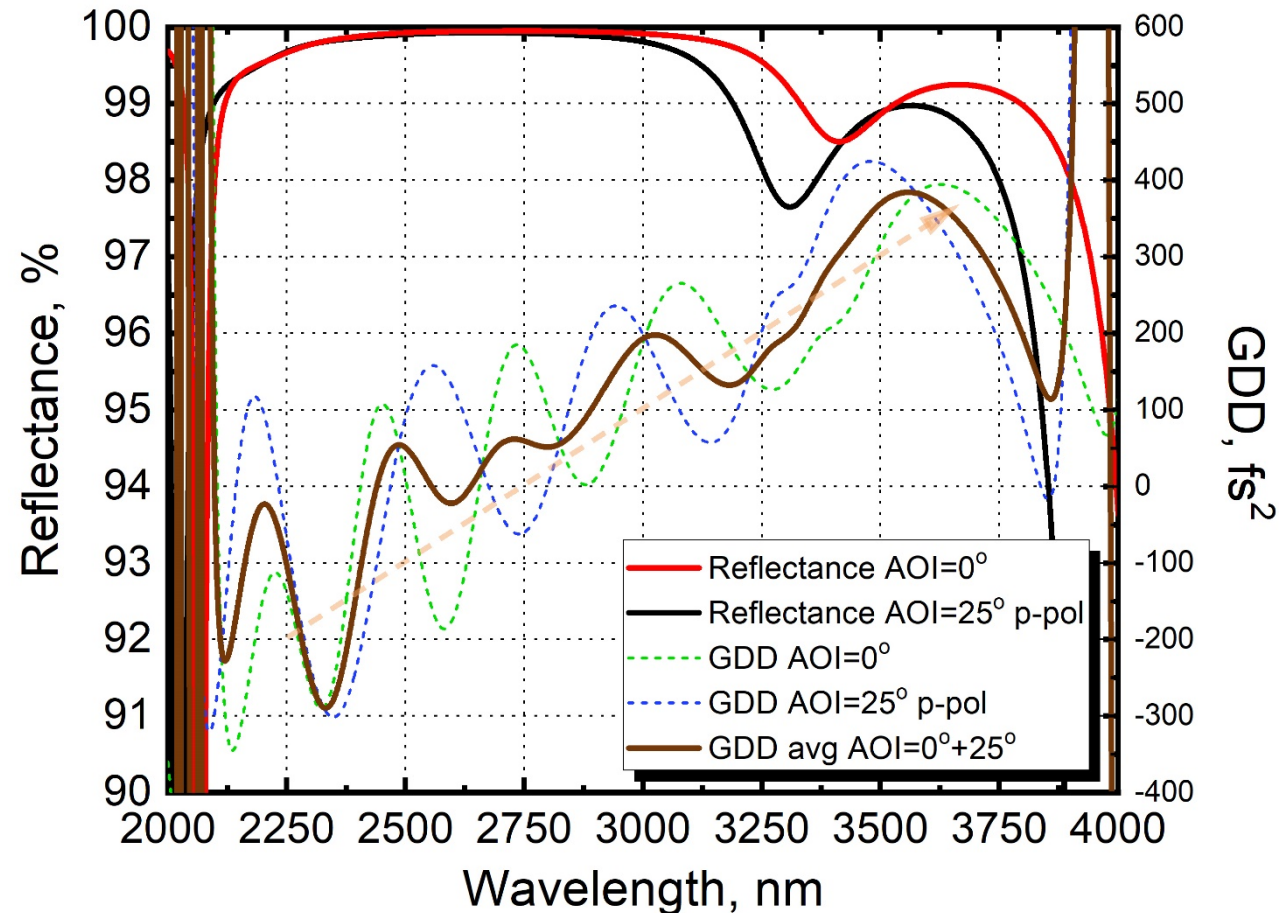
J. Pupeikis, P.-A. Chevreuil, N. Bigler, L. Gallmann, C. R. Phillips, ir U. Keller, "Water window soft x-ray source enabled by a 25 W few-cycle 22  $\mu$ m OPCPA at 100 kHz," *Optica* **7**, 168 (2020)

GDD was measured at the 0° angle of incidence at Christian-Doppler Laboratory for Mid-IR Spectroscopy and Semiconductor Optics, University of Vienna, Austria

# Dispersive mirrors in Mid-IR range

HRp\_avg > 99%@ 2150-3700nm AOI=0-25deg;

GDD Rp\_avg = -200 fs<sup>2</sup>@ 2150 nm → 300 fs<sup>2</sup>@ 3700 nm (predefined shape for pulse compression)





# IBS coated Mid-IR optics

- 1-5  $\mu\text{m}$  spectral range
- LIDT:  $>10 \text{ mJ/cm}^2$ , 15 fs@ 2,2 $\mu\text{m}$  (stretched pulse)
- Low GDD mirrors
- Dispersive mirrors
- AR coatings

WHAT

WHY

WHERE

WHEN

WHO

HOW



———— IBS HERO ————

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