

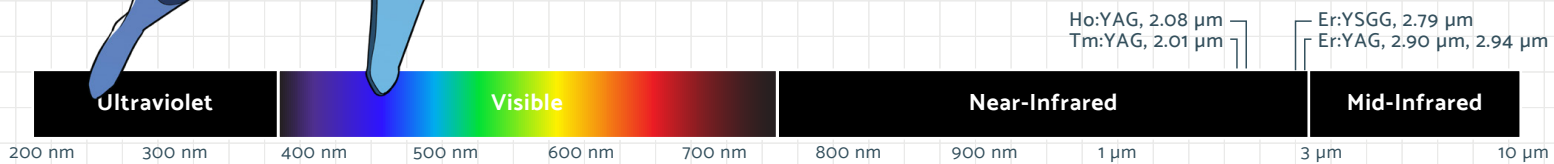
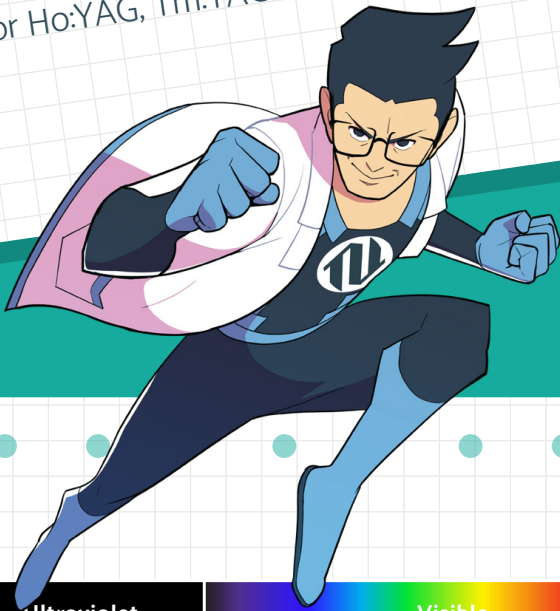
IBS COATED OPTICS

for Ho:YAG, Tm:YAG and Er:YAG Lasers by OPTOMAN

OPTOMAN

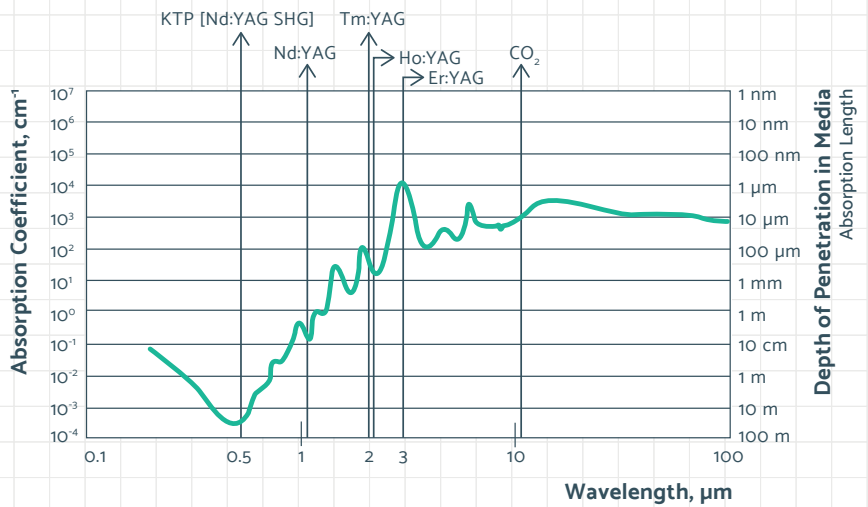
YOUR SIDEKICK FOR
LASER OPTICS DEVELOPMENT

KEEP YOUR PRECIOUS MEDICAL LASER SYSTEMS FREE OF WATER AND LASER DAMAGE.



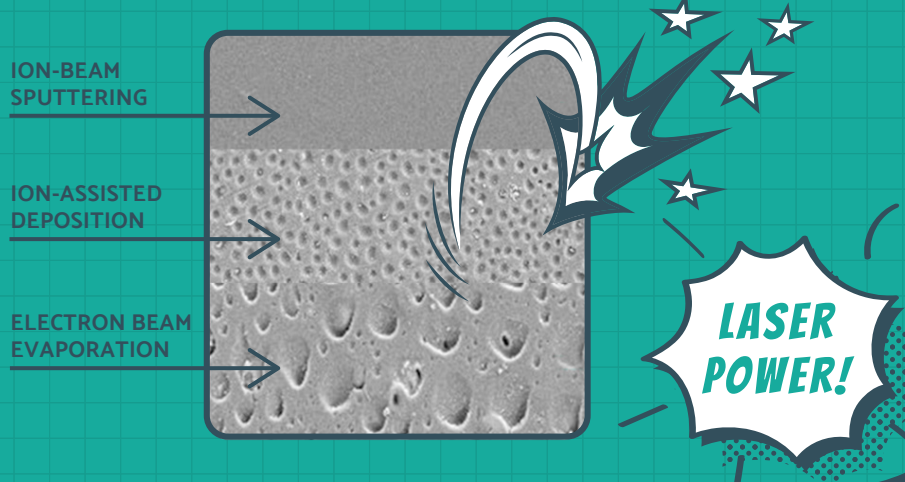
Holmium, Thulium, and Erbium-doped YAG lasers find a perfect spot in several medical applications. Listed laser lines nicely match water absorption peaks, which makes them super helpful tools to perform surgical, dental, and skin treatment procedures, where deep penetration of tissues is not desired.

But there is always a but... What makes these lasers perfect for medical applications, gives a lot of headaches for laser optics manufacturers. Water absorption causes serious problems with laser induced damage.



How come thin-film dielectric coatings get damaged due to absorption by water? It is because typical dielectric coatings are porous and H₂O molecules are likely to find their place in those pores over time. Sputtered coatings (such as IBS) feature near bulk structure due to the high atomic density of layers. So situation with IBS coatings gets simple:

A dense, poreless surface means the absence of water absorption, so your laser system is free of water, thus ugly laser induced damages too.



IBS COATED OPTICS

for Ho:YAG, Tm:YAG and Er:YAG Lasers



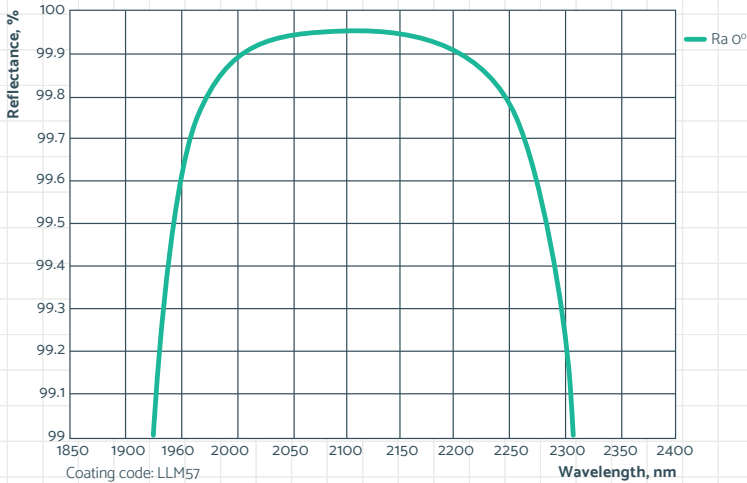
OPTOMAN has been addressing efficiency, performance stability, and laser induced damage threshold issues related to optics used in medical laser systems. As a result, we introduce a few typical design examples of coatings manufactured for Ho:YAG, Tm:YAG and Er:YAG laser lines.

Do not forget - OPTOMAN manufactures highly customized, and application optimized optics. Our mission is to draft & craft perfect components for your laser systems.

COATINGS FOR HO:YAG AND TM:YAG LASERS

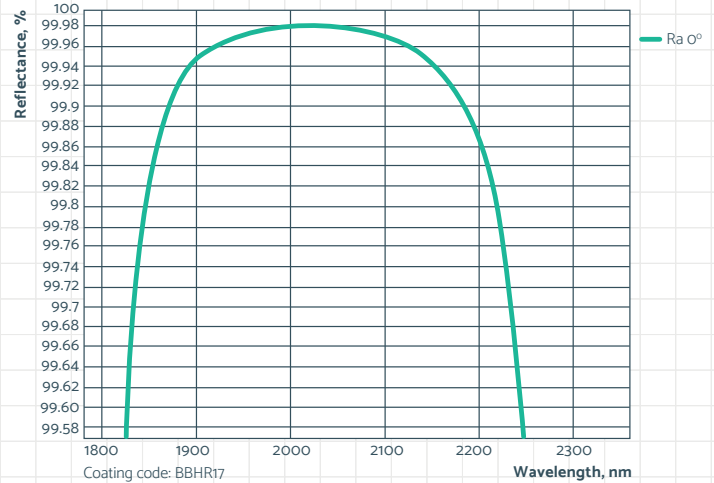
LIDT Optimized Cavity Mirrors

HR>99.9% @ 2100 nm, AOI=0°



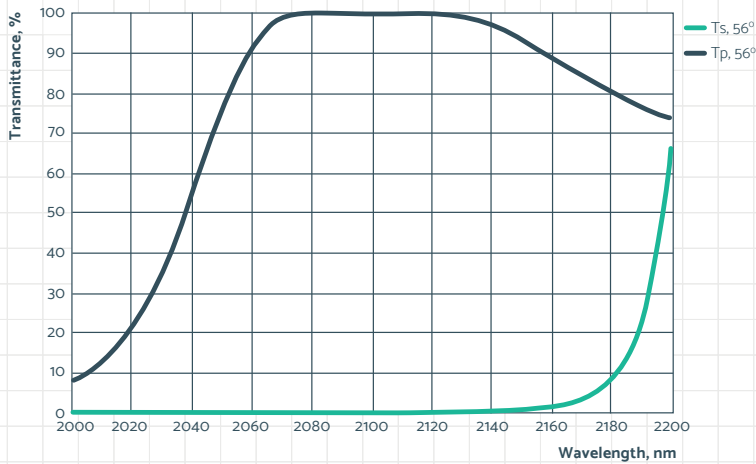
Broadband Bending Mirror

HR>99.9% @ 1900 nm - 2100 nm, AOI=0°



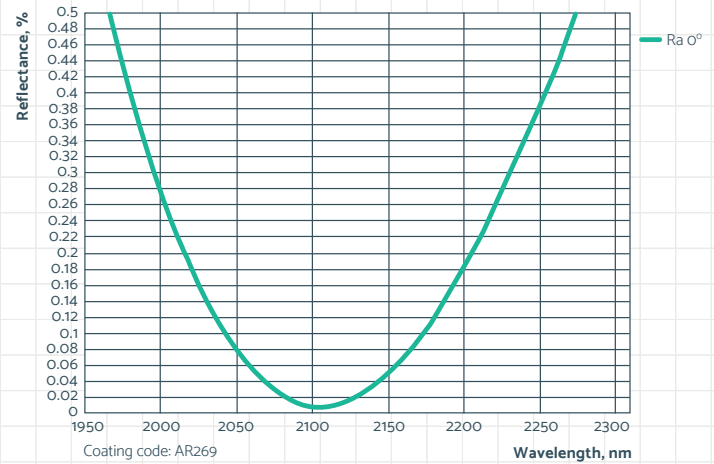
Thin Film Polarizers

HRs>99.9% @ 2100 nm & HTp>98% @ 2100 nm, AOI=56°
HRs>99.8% @ 2100 nm & HTp>97% @ 2100 nm, AOI=45°



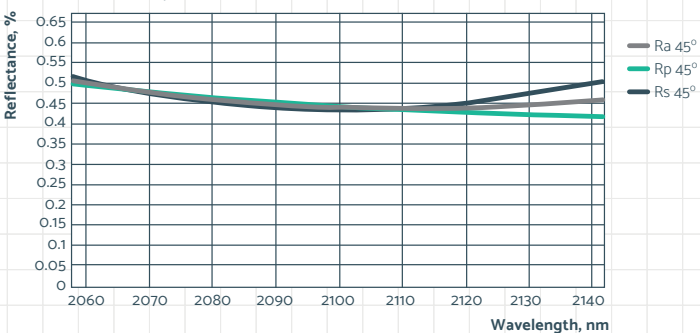
LIDT Optimized Cavity AR Coated Lenses

AR<0.1% @ 2100 nm, AOI=0°



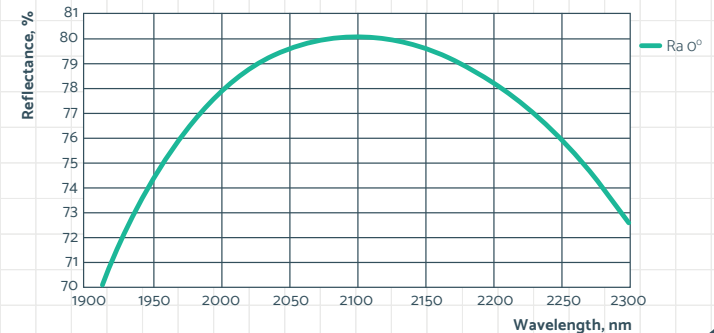
Sampler Window / Non-polarizing Power Pick Up Plate

PRs & PRp=0.5% +/-0.15% @ 2100 nm, AOI=45°



LIDT Optimized Output Coupler

PR=80% +/- 1% @ 2100 nm, AOI=0°



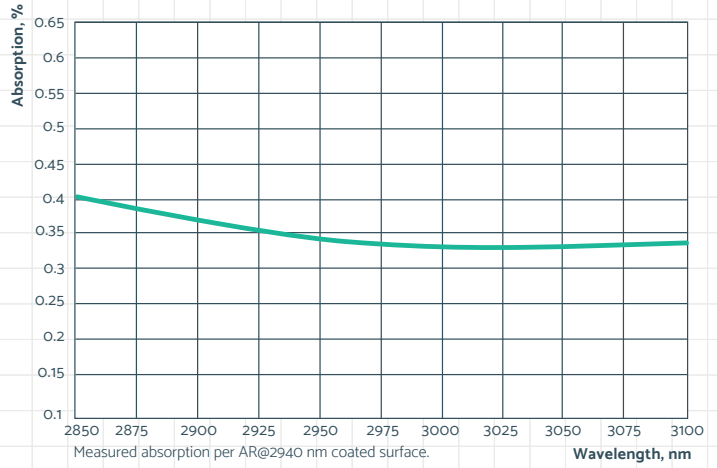
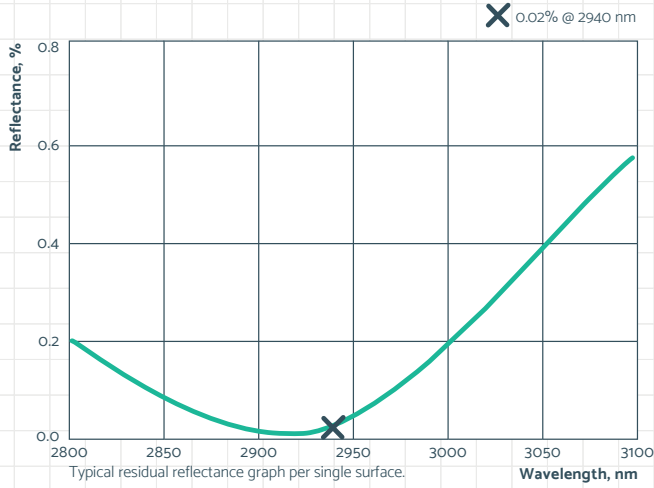
COATINGS FOR ER:YAG LASERS

2900 nm – 3000 nm range is more complicated and is still under intense development @ OPTOMAN.

Our ultimate goal: robust and high LIDT cavity and bending mirrors, thin film polarizers, dichroic filters.

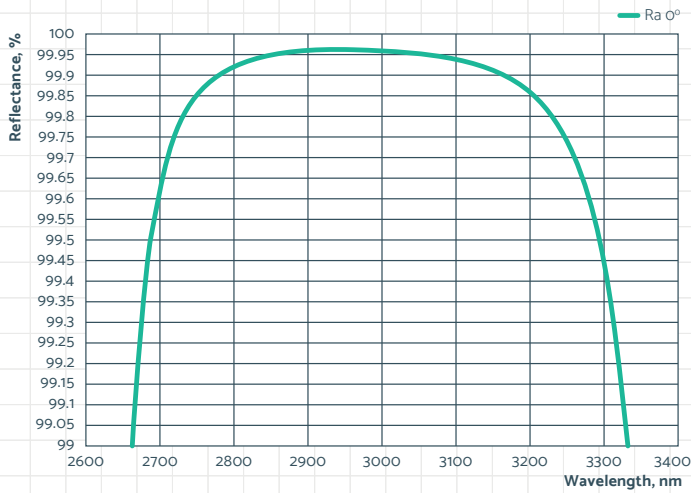
Sapphire AR/AR Coated Window

AR<0.1% @ 2940 nm, AOI=0°



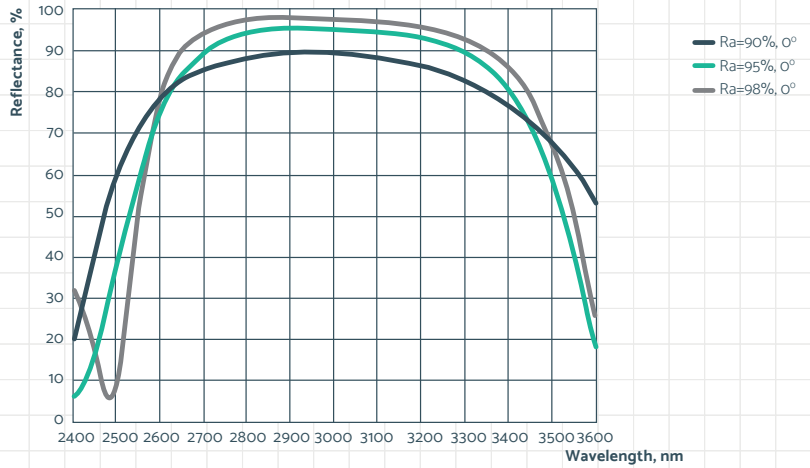
Cavity Mirror

HR>99.9% @ 2940 nm, AOI=0°



Output Couplers

PR=90% +/-1% @ 2940 nm, AOI=0°
 PR=95% +/-1% @ 2940 nm, AOI=0°
 PR=98% +/-0.5% @ 2940 nm, AOI=0°



Multi Wavelength Bending Mirror

HR>99% @ 2940 nm + HR>99% @ 1535 nm + Ta>20% @ 635 nm, AOI=0°

