

LASER LINE MIRRORS FOR ULTRA-VIOLENT LASERS

**343 NM & 355 NM HIGH
REFLECTIVITY MIRRORS**

Can OPTOMAN defend optics from ULTRA-VIOLENT lasers?

**OPTIMIZED FOR NANOSECOND &
PICOSECOND HIGH-POWER LASERS**

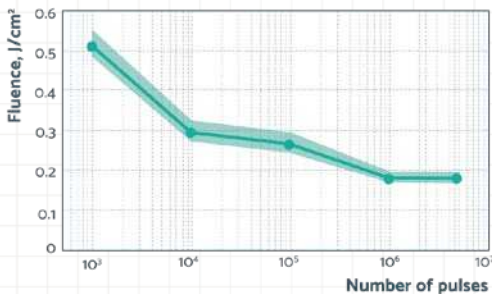
To ensure a high degree of reflection in the UV range, scattering and absorption losses need to be well managed, as they increase considerably, when the wavelengths go down. Long-term degradation of the mirrors is another big issue when working with intense UV lasers.

However, OPTOMAN by exploiting his superpowers of a strong focus on the surface quality and well-optimized coating technology CAN defend his optical components from most of UV lasers and increase the longevity of optics.

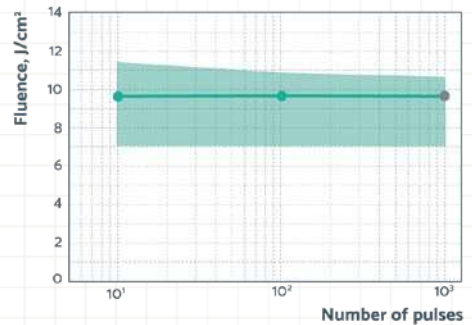
What makes OPTOMAN UV optics different?

1. HIGH LIDT

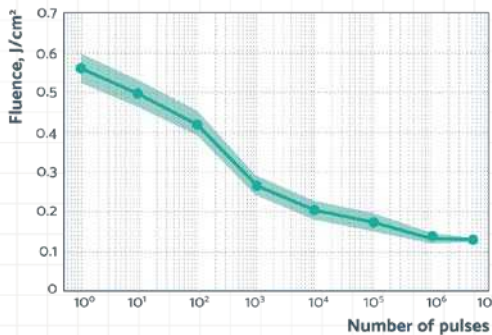
Laser damage is the arch-enemy of UV optics. To fight it, one must measure it. So OPTOMAN does, for picosecond and nanosecond scale.



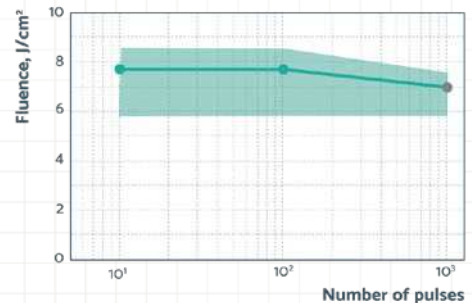
● Offline detect on
■ 95% confidence interval
Wavelength: 343 nm
Pulse duration (FWHM): 1.0 ps
Repetition rate: 50 kHz
AOI: 45°
Polarization: Linear S
Beam diameter (1/e²): (62.3 ± 0.5) μm



● Offline detect on
● Online detect on
■ 95% confidence interval
Wavelength: 355 nm
Pulse duration (FWHM): (5.7 ± 0.3) ns
Repetition rate: 100 Hz
AOI: 45°
Polarization: Linear S
Beam diameter (1/e²): (230.8 ± 4.0) μm



● Offline detect on
■ 95% confidence interval
Wavelength: 343 nm
Pulse duration (FWHM): 1.0 ps
Repetition rate: 50 kHz
AOI: 45°
Polarization: Linear P
Beam diameter (1/e²): (62.3 ± 0.5) μm



● Offline detect on
● Online detect on
■ 95% confidence interval
Wavelength: 355 nm
Pulse duration (FWHM): (5.7 ± 0.3) ns
Repetition rate: 100 Hz
AOI: 45°
Polarization: Linear P
Beam diameter (1/e²): (230.8 ± 4.0) μm

2. COST-EFFECTIVE COATING DESIGN

OPTOMAN Superhero League mirrors feature high batch-to-batch repeatability and are suitable for high volume serial production.

3. CONSISTENT QUALITY

OPTOMAN Superhero League mirrors feature high batch-to-batch repeatability and are suitable for high volume serial production.

Parameters	Requirements	Measured parameters						
		Standard mirrors as samples					OPTOMAN samples	
		#1	#2	#3	#4	#5	1562	1563
Rabs @ 343 nm, AOI=45°	>99.8 %	99.66%	99.64%	-	-	-	99.79%	99.70%
Ravg @ 339-346 nm, AOI=45°	>99.5 %	99.68%	99.67%	-	-	-	99.82%	99.73%
Surface flatness @633 nm over CA	<λ/10	-	-	0.088 λ	0.087 λ	0.053 λ	0.093 λ	0.035 λ
Surface quality over CA	20-10 S-D	20-20	20-20	20-10	20-10	20-10	20-10	20-10



	SuperHero League @ 343 nm	SuperHero League @ 355 nm
Substrate	UV FS	
Surface Quality	10-5 S-D	
Surface Flatness	$< \lambda/8$ @ 633 nm over CA	
AOI	45°	
Coating	HRsp > 99.7% (at design wavelength)	
Laser Induced Damage Treshold	<p>Picosecond (measured values):</p> <ul style="list-style-type: none"> > 0.27 J/cm², 343 nm, 1 ps, 50 kHz, p-pol > 0.52 J/cm², 343 nm, 1 ps, 50 kHz, s-pol 	<p>Nanosecond (measured values):</p> <ul style="list-style-type: none"> > 6.97 J/cm², 355 nm, 6 ns, 100 Hz, p-pol > 9.6 J/cm², 355 nm, 6 ns, 100 Hz, s-pol <p>Picosecond (scaled values):</p> <ul style="list-style-type: none"> > 0.25 J/cm², 355 nm, 1 ps, 50 kHz, p-pol > 0.5 J/cm², 355 nm, 1 ps, 50 kHz, s-pol

Design example:

