

# LASER-INDUCED DAMAGE THRESHOLD

HiLASE offers LIDT (Laser Induced Damage Threshold) services, thanks to unique laser sources under a new testing regime with big top-hat spot and high energy.

## Benefits

- Test accurate damage threshold limits of various optical components and materials
- Support the development of high-power optical components
- Identify production defects of optical elements
- Test large size optical elements
- Provide processing window values for laser material processing

### Can be used to test:

- dielectric, amorphous or crystalline materials,
- metals,
- ceramics,
- various exotic compounds and alloys.

## HiLASE Equipment

Picosecond pulsed laser	@1030 nm, <1.8 ps, 1 kHz rep. rate, up to 100 mJ energy in pulse
Nanosecond pulsed laser (Bivoj laser)	@ 1030 nm, 10 ns, 10 Hz rep. rate, up to 10 J energy in pulse
Experimental chamber	Testing at vacuum down to $10^{-3}$ mBar or in the presence of non-corrosive gas pressured up to 1.4 Bar
Spot size range	From 0.4 mm to 15 mm
Sample surface area	Up to 100 x 100 mm <sup>2</sup>
Available weight of samples	Up to 1.5 kg
Beams	Up to 15 mm spot diameter Gaussian beam, 3x3 mm <sup>2</sup> top-hat beam,
Wavelength	1030 / 515 / 343 nm
Pulse duration	10 ns / 1.8 ps

**HiLASE Centre** · Institute of Physics of the ASCR, v.v.i. · Za Radnici 828, CZ-25241 Dolni Brezany  
✉ solutions@hilase.cz · in hilase-centre · 📞 (+420) 314 007 718 / 314 007 710 · 🌐 www.hilase.cz

## HiLASE Services

- Types of measurement: ISO-standardised 1-on-1 and S-on-1 or custom raster-scan and ramp
- ISO class 7 clean laboratory allows measurements with unbeatable precisions
- ISO-certified or custom-designed tests with results delivered on ISO-compliant protocols
- Samples mounting: high-precision vacuum-compatible motorised micrometric stages with a cryo-cooled sample holder
- Advanced on-site and ex-post samples monitoring and analysis: 1k fps 1.3 Mpix camera, beam profilers, confocal microscope

- ✓ Extensive R&D capabilities to develop and apply LIDT testing
- ✓ State-of-the-art pulsed laser systems with unprecedented intensities
- ✓ Capability to perform LIDT at truly edge conditions
- ✓ ISO certified tests

## Areas of Application



HIGH-POWER OPTICAL COMPONENTS DEVELOPMENT



DEFECTS IDENTIFICATION



LARGE SCALE OPTICS TESTING



MATERIAL ANALYSIS