

EFFICIENT LASER SURFACE FUNCTIONALIZATION

The HiLASE Centre holds two records in laser manufacturing: speed production of laser-induced periodic nanostructures on stainless steel surface reaching 1909 cm²/min, and using over 40 thousand beams in a laser multi-beam nanostructuring. These achievements make this eco-friendly technology creating new properties on the treated material surface even more attractive for industry.

Benefits

- Friction and wear resistance
- Water and bacteria repellence
- Increased adhesion
- Modulation of optical properties
- Decorative and aesthetic

Materials

- Metals and alloys
- Glass and dielectrics
- Polymers
- Composite materials

Performance

Super-hydrophobicity / self-cleaning surface	CA up to 180°
Hydrophilicity	CA < 10°
Reflectance	< 5% of UV to near IR (NIR)
Reduced bacteria growth	up to 98%
Productivity	> 100 cm ² /min

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Laser Systems and Equipment

- High intensity ps laser systems (<2 ps, 1-10 mJ, 1-100 kHz @ 1030 nm)
- Exceptional beam quality (M₂<1.2)
- From IR – UV
- Different scanners

HiLASE Services

- Evaluating customers problem
- Proposing suitable structure
- Creating and testing sample surfaces
- Process development and optimization
- Consulting and support during process implementation

- ✓ **Multi beam approach** (DLIP and DOE)
- ✓ **Dual size structures** (nm and μm size structures)
- ✓ **Custom laser system design** with process specific parameters

Areas of Application



AEROSPACE



AUTOMOTIVE



BIOMEDICAL AND PHARMACEUTICAL



POWER GENERATION



TOOLING



FOOD PRODUCTION



HOME APPLIANCES