

The HiLASE Centre in a Nutshell

The HiLASE Centre represents an excellent technological infrastructure in the field of laser research and development at a global level. Our main goal is to create "**Superlasers for the real world**", therefore we combine experimental laser development with advanced industrial applications. Our expertise is in laser induced damage threshold (LIDT), laser shock peening (LSP), and laser micromachining and multi-beam laser nanostructuring. We use our highly professional knowledge to create tailor-made compact laser systems and solutions for industry and to provide laser safety trainings. To successful applicants from other institutions, we offer Open Access to our top-class facilities. We strive to make science more attractive to students and public.

More about us

Our vision is to become one of the respected leaders defining the trends in high power laser applications and to be the first-choice R&D partner for companies and research organizations seeking innovative laser technologies and solutions, on the Earth and beyond...

Our main mission is to create "**Superlasers for the real world**". We are eager to push the boundaries of laser technologies beyond their current limits, search for new applications and contribute to the prosperity of the Czech and European economy, daily lives of people and sustainable future. We strive to inspire the next generation of laser scientists, engineers, and entrepreneurs.

We are dedicated to the development of a new generation of diode-pumped solid-state lasers with high pulse energy or high repetition rate. This technology makes the lasers significantly more powerful, efficient, compact and stable than currently available lasers. To the most important equipment of the HiLASE Centre belongs the unique "[BIVOJ](#)" laser system, which is the most powerful laser in its category in the world thanks to its average power exceeding 140 J.

At the HiLASE Centre we combine experimental laser development with advanced industrial applications under one roof. We work closely with a number of companies for whom we create innovative laser solutions according to their specific needs. We offer our expertise in the following areas:

- Producing functional surfaces by [laser multi-beam nanostructuring](#)
- Increasing the durability of metal components by [laser shock peening \(LSP\)](#)
- [Laser micromachining](#)
- [Laser Induced Damage Threshold \(LIDT\)](#) in the ISO certified laboratory
- [Laser safety trainings](#)

We successfully cooperate with many universities and research institutions in the Czech Republic and worldwide. We strive to engage young people in science, organising competitions such as the [Talent Academy](#) and [Science Challenge](#) for gifted high school students.

Situated in Dolni Brezany near Prague, we are part of the dynamically developing [Science and Technology Advanced Region \(STAR\)](#). Our goal is to promote the collaboration of cutting-edge science with innovative industry, and thus improve the competitiveness of the Czech Republic.

We hold two [records in multi-beam laser nanostructuring](#). We have used 40,401 beams at once, which completely changes the possibilities for laser surface processing. This success was achieved thanks to the

[PERLA® laser system](#), that is widely applicable in industry. Like the [GOpico® fibre oscillator](#), the PERLA® laser can be modified according to customer requirements.

The top-class infrastructure of the HiLASE Centre is available also to successful applicants from other institutions within the [Open Access](#).

We are part of the [Institute of Physics \(FZU\) of the Czech Academy of Sciences](#) and is the holder of the HiLASE Centre of Excellence project, the first ever call of the [European Commission's Horizon 2020](#) programme "WIDESPREAD Teaming". We are also a member of the European Digital Innovation Hub (EDIH) [Brain4Industry](#), a joint project of the HiLASE Centre, FZU, [Institute of Thermomechanics of the CAS](#), [CARDAM](#), STAR and [SIC](#) that helps companies make the most of the benefits and opportunities of digital technologies and artificial intelligence.

Contact

HiLASE Centre

Institute of Physics of the CAS

Za Radnici 828

252 41 Dolni Brezany

Tel. +420 314 007 705

Email: communication@hilase.cz

Web: <https://www.hilase.cz/en/press-releases/>

Contact for media: Marie Thunova, marie.thunova@hilase.cz, +420 702 235 039

