



HiLASE LASER CENTRE

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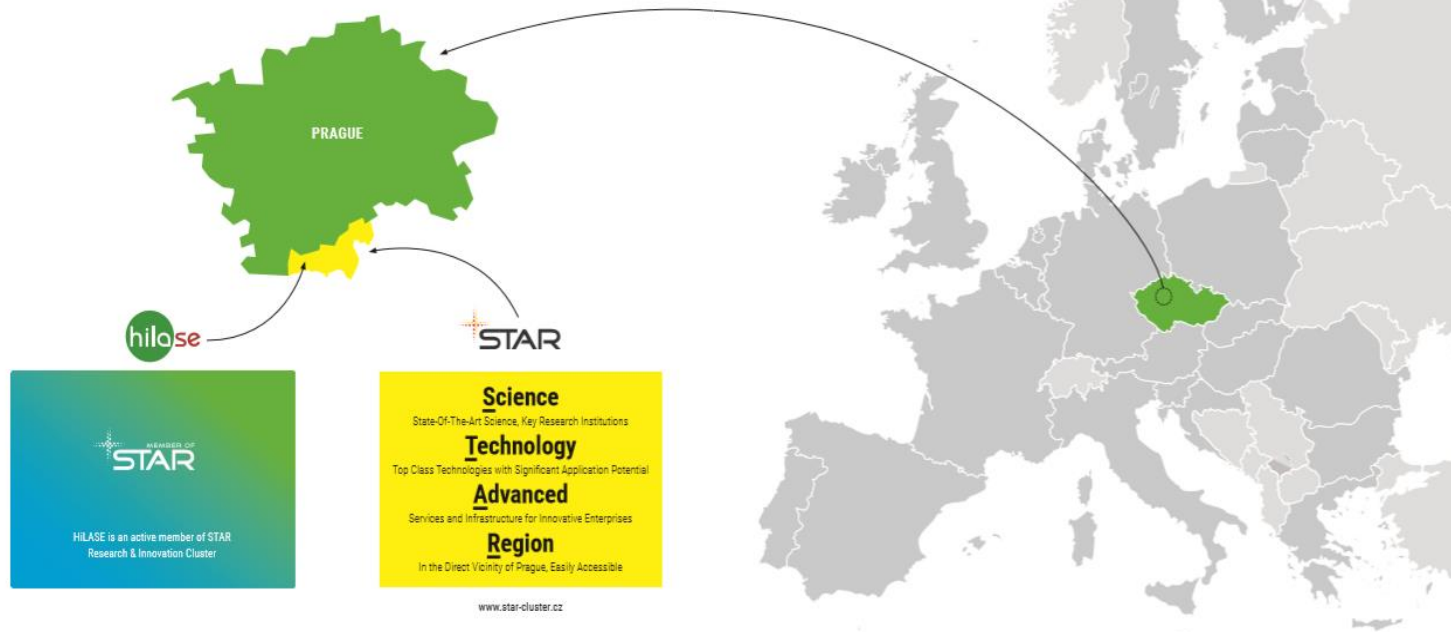
EPIC Online Technology Meeting on Surface Structuring

HiLASE at a Glance

- Part of the Institute of Physics – Czech Academy of Sciences
- R&D centre providing Diode-Pumped Solid State Lasers (DPSSLs) with breakthrough parameters
- Project of (inter)national interest - Teaming project

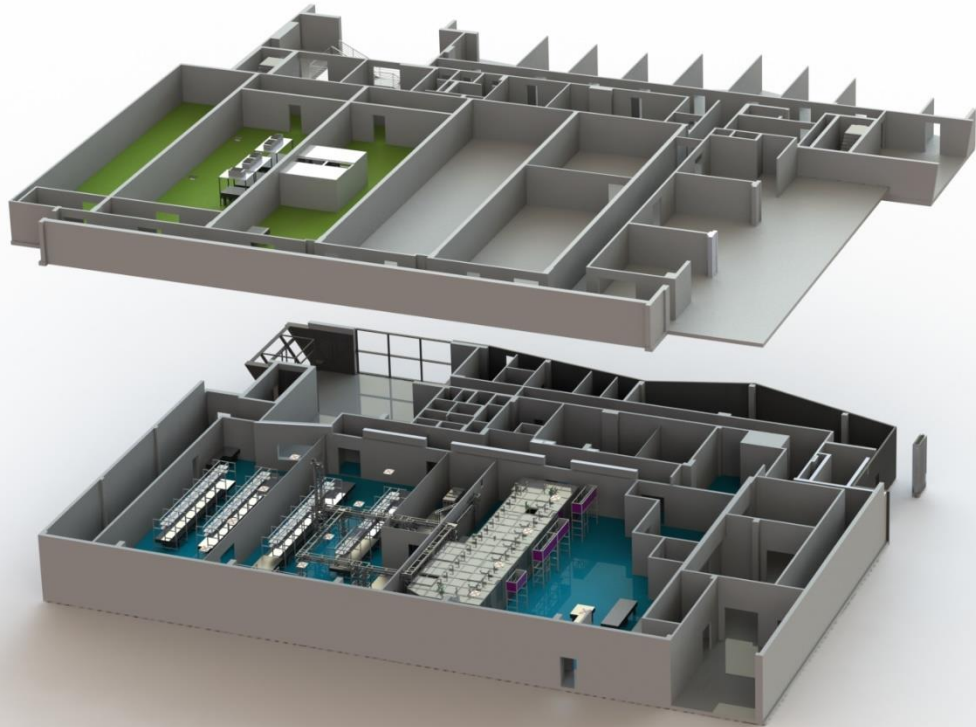
Dolní Břežany, Czech Republic

LOCATION OF HiLASE CENTRE



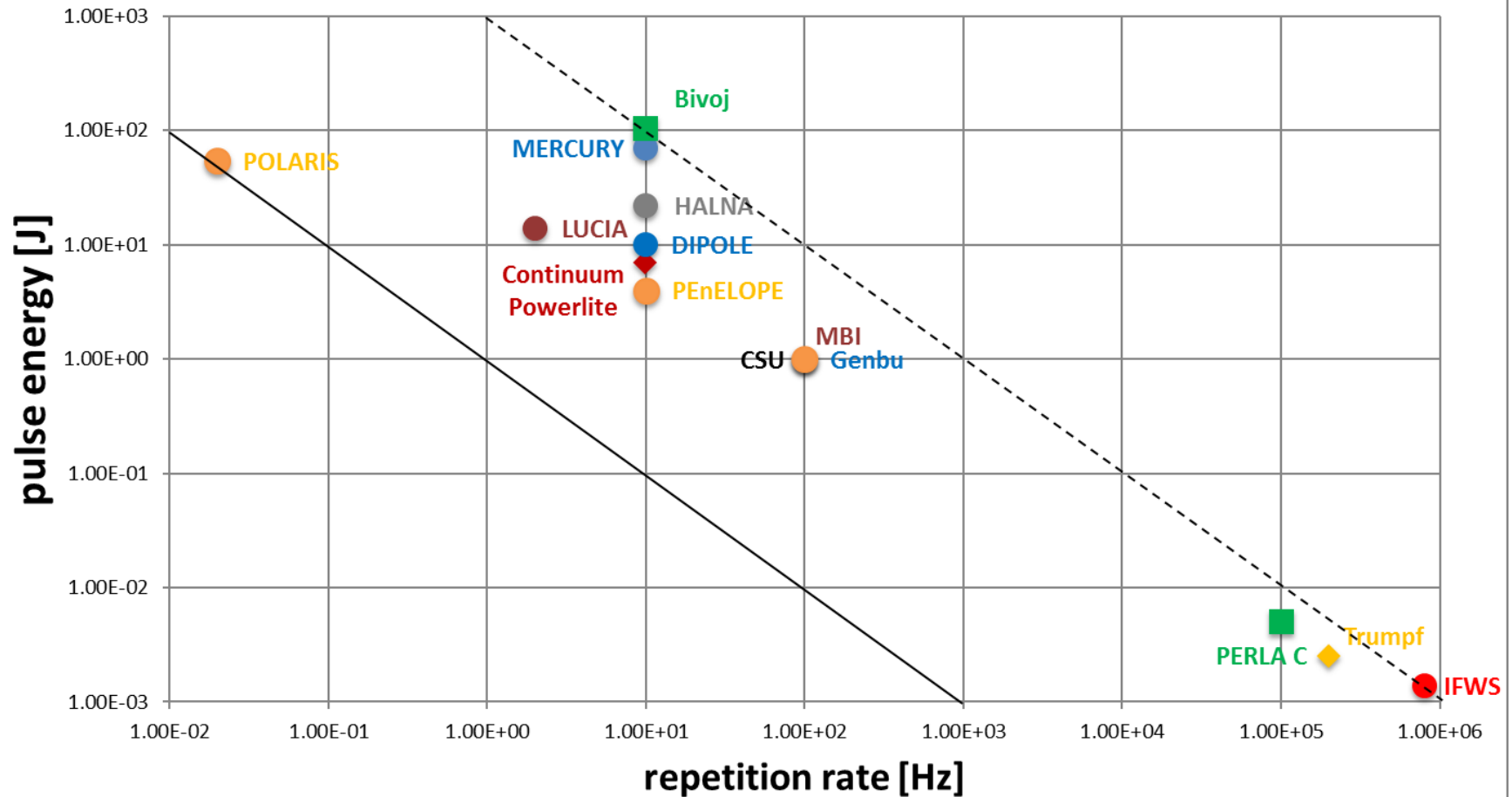
HiLASE Facility

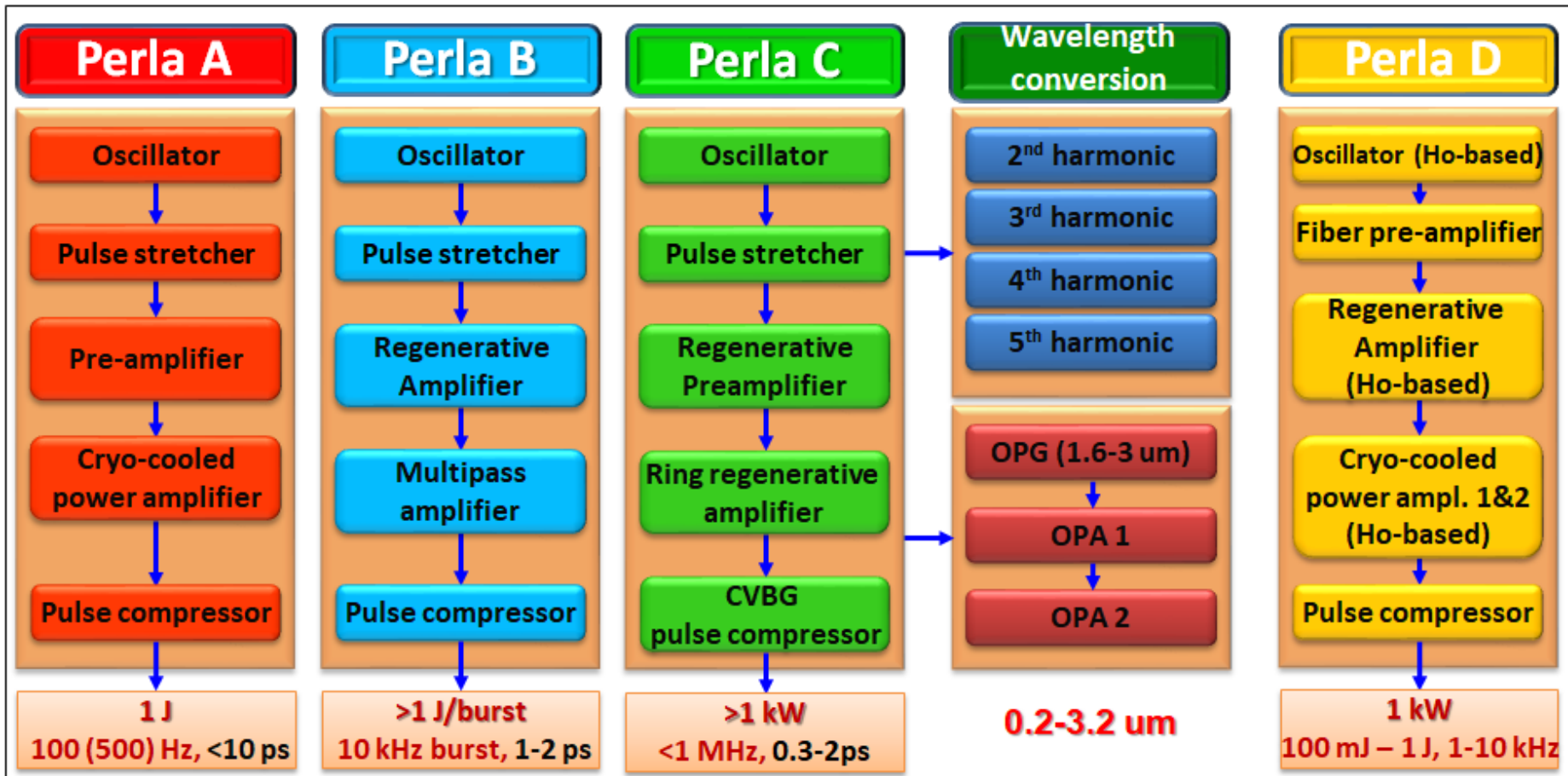
- Built in 2012 - 2014
- More than 700 m² of laboratories and experimental halls



World-leading Performance

Average power of diode pumped systems





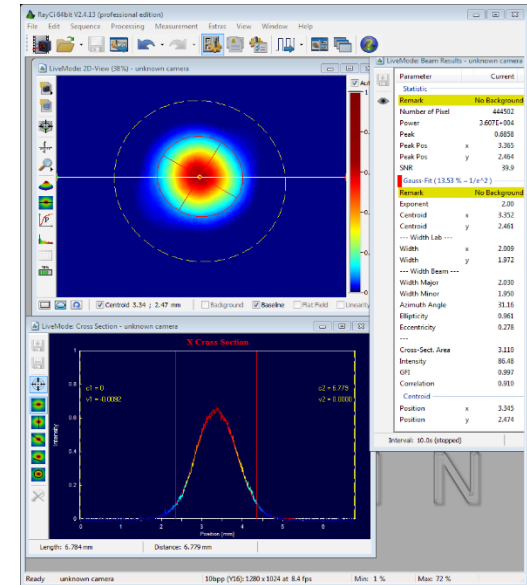
PERLA 100

Standard PERLA 100 configuration:

- 100 W, 100 kHz, 1 mJ, 1030 nm
- Pulse compressor for <2 ps
- Integrated all-in-one control system
- Active beam stabilization system
- Thermally-stabilized robust housing

Options:

- Integrated pulse-picker
- Motorized and automated attenuator
- Laser safety output shutter
- Air or water cooling possible
- Stand-alone amplifier
- 2nd, 3rd, 4th harmonics or Mid-IR OPA stage on the output of the laser in a form of additional module with thermally-stabilized robust housing and control system integration



M²: Horizontal: 1.11
Vertical: 1.09

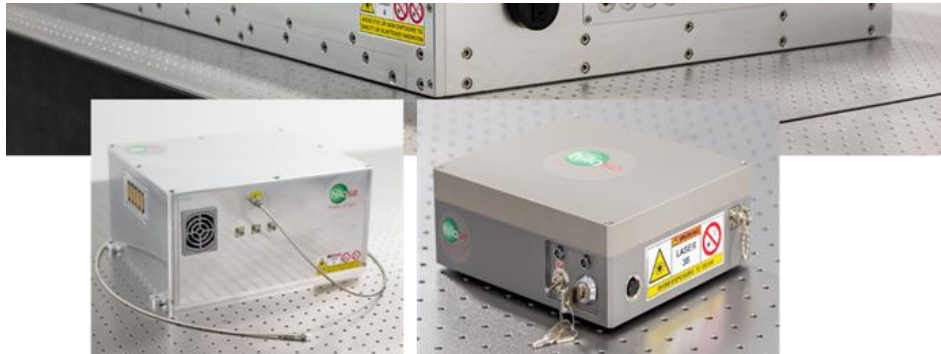
PERLA 100 thin-disk laser platform

Customized solutions:

- 50 W, 10 kHz, 5 mJ; 1030nm +Mid-IR
- 100 W, 100 kHz, 1 mJ; 1030nm +515nm
- 60 W, 50 kHz, 1.2 mJ; 1030nm +515nm & 257nm
- 70 W, 200 kHz, 0.35 mJ; 1030nm +515nm



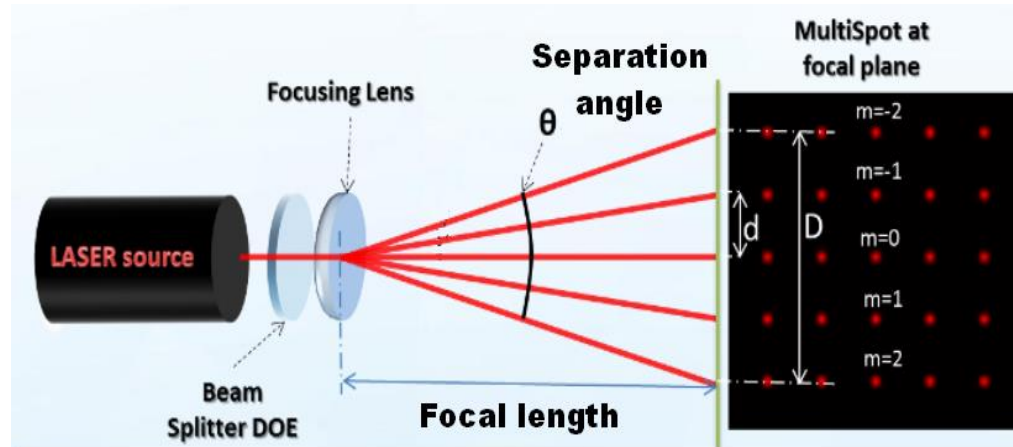
2 systems delivered with integrated processing station



PERLA C-100 for surface structuring

Multi beam approach

- DOE

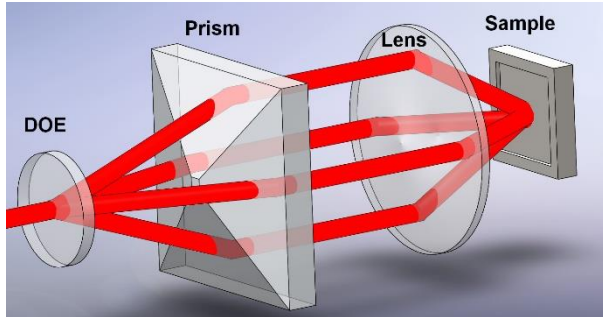


- Piercing thin metal sheets using 784 beams at once
- High beam quality allowing to use pre-design DOE and to imprint structures over mm^2 area in few pulses with high resolution

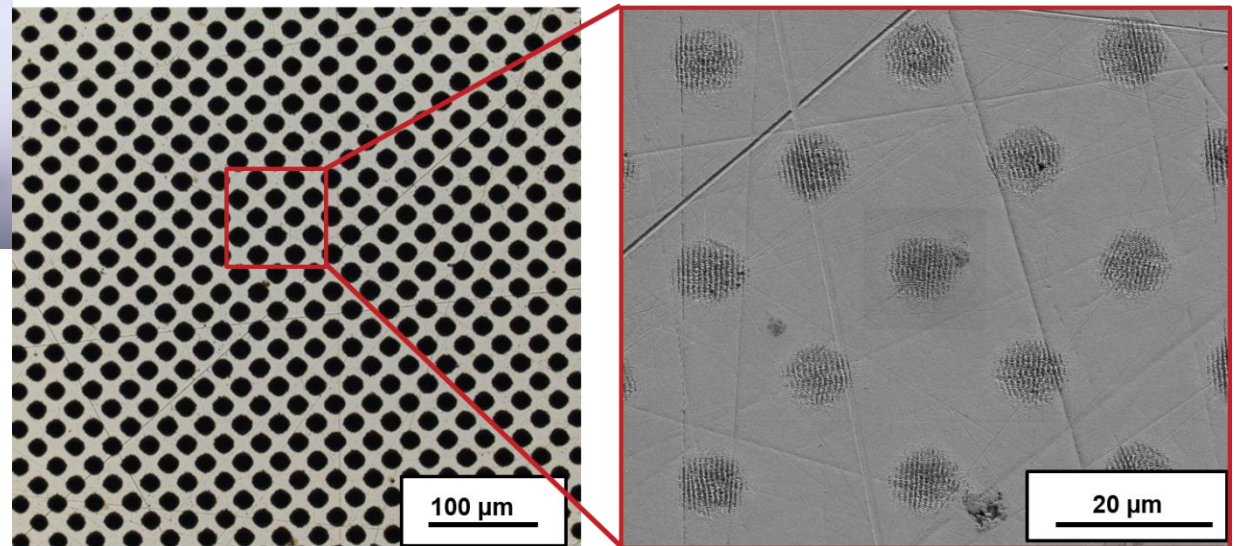
PERLA C-100 for surface structuring

Multi beam approach

- **DLIP**



So far experiments with 2 and 4 beams



Using basic “scientific” setup processing speed up to 100 cm² per minute with 1kHz laser repetition rate

Issues: FAST and PRECISE movement of stages.

Pros: Laser can go up to 50 kHz with the same pulse energy.

What we are offering/need ?



Expertize in developing customized high intensity ultrashort laser systems



- **“scanner /optics” for efficient usage of mJ energy per pulse**
- **faster and precise stages**



End user(s) applications which will benefit from usage of mJ ultrashort pulses

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THANK
YOU!