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Femtosecond fiber lasers
superior lifetime & performance

fs fiber Lasers for Science and Industry

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CZECH AUSTRIAN PHOTONICS 2023 19.–20. 4.

Velké Pavlovice
The Czech Republic

About Fluence

2003 — 2016 — 2023

13 YEARS OF PRE-COMMERCIAL TECHNOLOGY DEVELOPMENT

7 YEARS OF CORPORATE EXPERIENCE

- Femtosecond laser manufacturer
- Unique all-fiber technology, perfected since 2003
- Founded in 2016*

  * Leveraging 13 years of fs product and application development at Polish Academy of Sciences
- Headquarters in Warsaw, Poland
- Ultrafast Laser Application Laboratory (ULAL) in Wrocław, Poland
- High power, industrial-grade lasers for materials processing, science and medicine

FEMTOSECOND FIBER LASERS: SUPERIOR LIFETIME AND PERFORMANCE

Halite
All-Fiber Amplified Femtosecond Oscillator

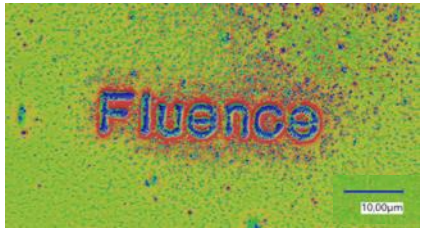
2 W
100 nJ
100 fs

- ✓ 2 photon polymerization
- ✓ 2-photon imaging
- ✓ Optigenetics

NEW

Jasper Micro
Compact Femtosecond Fiber Laser

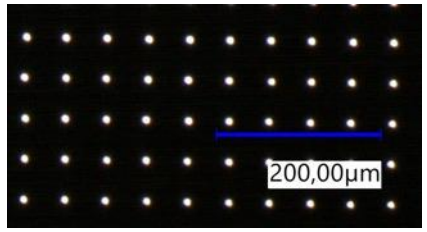
7 W
5 µJ



- ✓ Marking
- ✓ Ophthalmology
- ✓ OEM integration

Jasper Flex
Compact High Power Femtosecond Fiber Laser

30 W
30 µJ



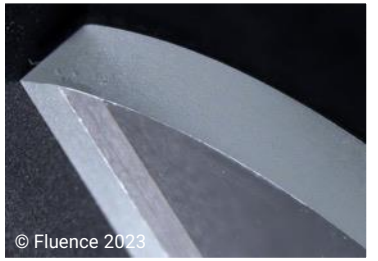
- ✓ Micromachining
- ✓ Surface structuring
- ✓ Waveguide writing

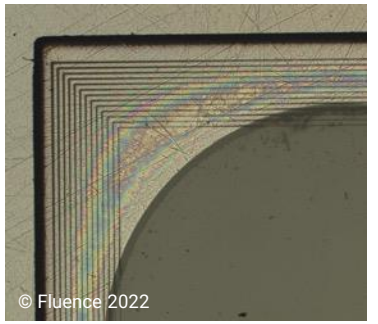
Jasper X0
High Power Femtosecond Fiber Laser

HGM
Harmonic Generation Module

Average power:	up to 60 W
Max. Energy:	100 µJ (200 µJ)
Max. Peak Power:	0.5 GW
Pulse duration:	<270 fs – 20 ps*
HGM wavelengths:	515, 343, 258 nm

Most powerful and versatile





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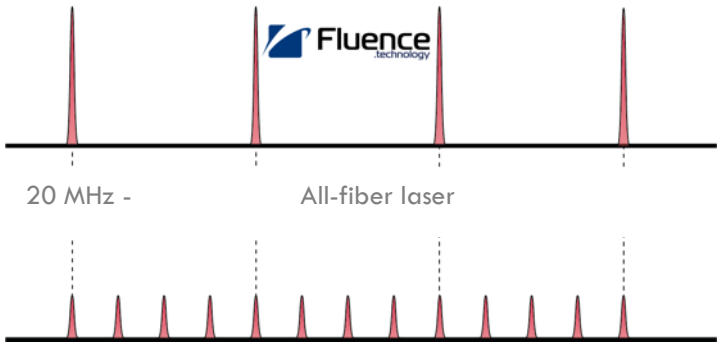
Halite 2

All-Fiber Amplified Femtosecond Oscillator

Laser Source Comparison

Fluence Halite (20MHz) vs. competitor's laser (80MHz)

Structural 2-photons imaging @ 1030nm of pyramidial neurons and their dendrites.
Fixed tissue, coronal slice, YFP-H mouse line



80 MHz – typical solid state
(SESAM-based laser)

Stanford University

Fluence Halite[1]	Competitor's Laser[1]
1 frame, 60 ms	1 frame, 60 ms
400 frames - average	400 frames - average

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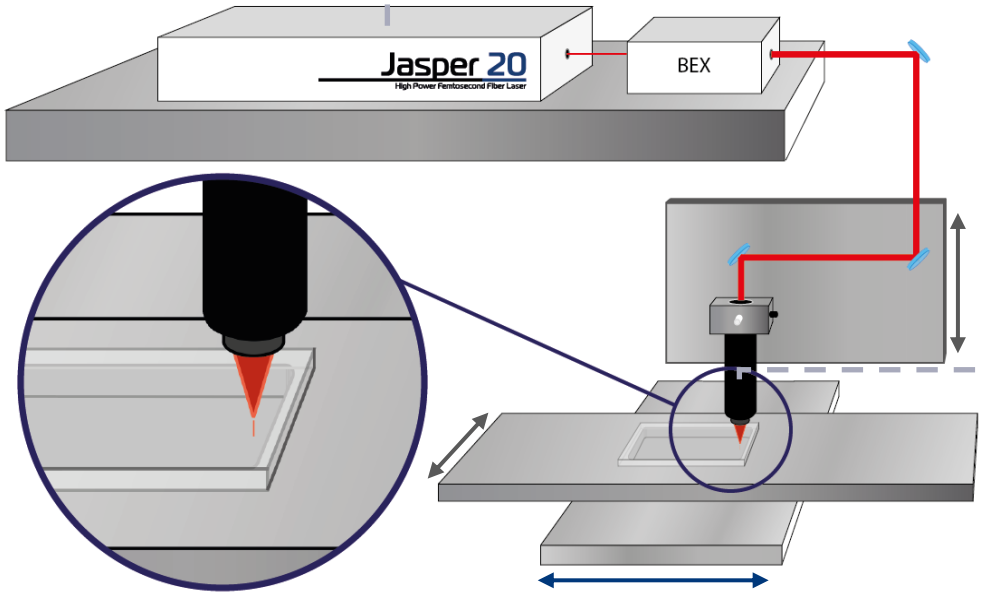
EXPERIMENTAL SETUP



Laser Jasper 20:

- Average power: **20 W**
- Wavelength: **1030 nm**
- $M^2 < 1.1$
- < 270 fs up to 20 ps
- < 100 µJ (200 µJ in a burst)
- Single pulse to 20 MHz

Optics:

- The focused spot is equivalent to NA 0.35
- 1.8 µm central lobe diameter
- 7.4 mm working distance
- DOF = 1.0 mm in air
- Flat-top distribution along focus (DeepCleave)

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THANK YOU FOR YOUR ATTENTION

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