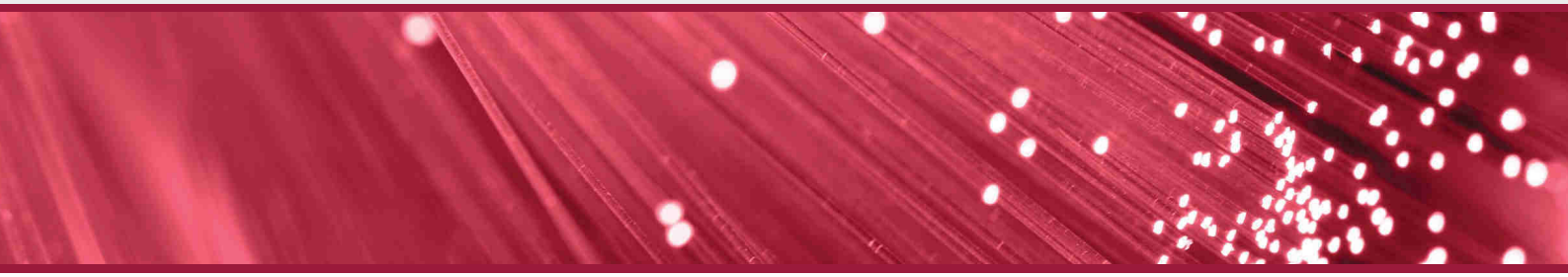
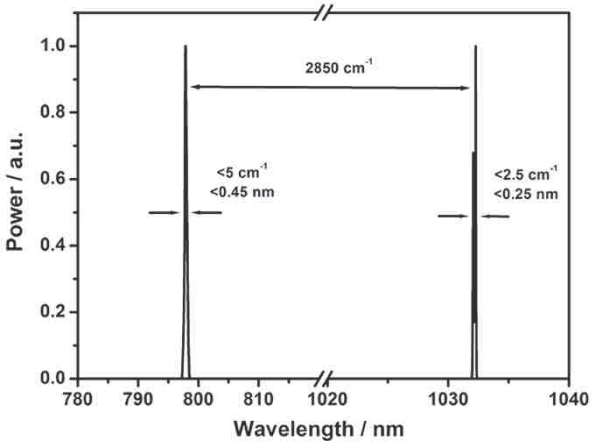
PICOSECOND DUAL-WAVELENGTH FIBER-LASER FOR CARS & SRS MICROSCOPY

activefiber systems





Typical emission spectrum

AFS turnkey laser sources for nonlinear microscopy deliver synchronized picosecond pulses with a tunable wavelength difference. They are completely software controlled and available with either a free-space output or a single fiber end. Due to the all-fiber pulse generation and frequency conversion, maximum compactness and alignment-free operation can be realized.

MORE INFORMATION

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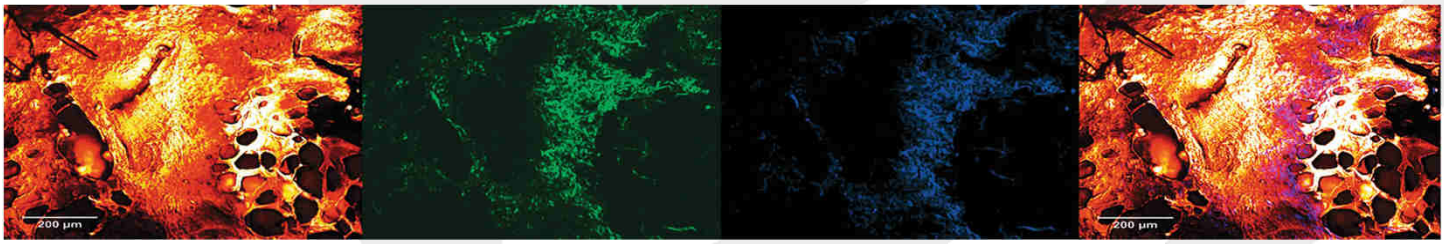
The Active Fiber Systems GmbH is located in Jena, known as 'city of photonics' in Germany. As a spin-off from the Fraunhofer IOF Jena and the Institute of Applied Physics at the University of Jena, the Active Fiber Systems GmbH represents the expertise of innovative solid-state laser development.

The mission of Active Fiber Systems GmbH is to transfer experimental results to reliable laser systems suitable for scientific and industrial applications. Among the extra-ordinary features of pulsed fiber lasers from AFS are compact dimensions, considerably reduced production costs as well as flexible and outstanding laser parameters, which can be customized.

APPLICATIONS

- CARS spectroscopy and microscopy
- Microscopic multi-modal nonlinear imaging (CARS, SHG, TPEF)
- SRS microscopy



Multimodal composite image of human connective tissue showing an overlay of CARS (red), SHG (blue) and T PEF (green) signals. Courtesy of IPHT Jena

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	VERSION FOR CARS	VERSION FOR CARS & SRS
Tuning range (continuous)	2700 cm^{-1} to 3300 cm^{-1}	930 cm^{-1} to 3300 cm^{-1}
Tuning speed	< 1 s (full range)	< 2 s (full range)
Output wavelength 1	1025 nm ... 1040 nm	1025 nm ... 1050 nm
Output wavelength 2	770 nm ... 810 nm	770 nm ... 960 nm
Spectral width wavelength 1 (FWHM)	< 15 cm^{-1}	< 5 cm^{-1}
Spectral width wavelength 2 (FWHM)	< 40 cm^{-1}	< 6 cm^{-1} @ 770 - 850 nm < 20 cm^{-1} @ 850 - 960 nm
Repetition rate wavelength 1 (FWHM)	1 MHz ... 3 MHz	18 MHz
Repetition rate wavelength 2 (FWHM)	1 MHz ... 3 MHz	9 MHz
Pulse duration	< 30 ps	< 10 ps @ 770 - 850 nm < 20 ps @ 850 - 960 nm
Average power wavelength 1	> 100 mW @ 1 MHz > 300 mW @ 3 MHz	> 200 mW
Average power wavelength 2	> 10 mW @ 1 MHz > 30 mW @ 3 MHz	> 50 mW
Peak power wavelength 1	> 1 kW	> 0.5 kW
Peak power wavelength 2	> 1 kW	> 0.5 kW
RIN of wavelength 1 (a 9 MHz)	Not applicable	< -145 dBc
Polarization	Linear	
Beam quality	M^2 < 1.2	
Dimensions (width x depth x height)	260 mm x 320 mm x 150 mm	560 mm x 410 mm x 140 mm
Mass	< 15 kg	< 35 kg
Power connection	230 V	
Cooling	Air cooled	
Output	Fiber coupled / Free space	

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