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Ultrafast Fiber Lasers for Scientific Purposes

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The new generation of fiber-based femtosecond lasers is considerably more reliable and economical than the previous generation of ultrafast lasers which was based on bulk optics. The fibers ensure robust alignment of the laser cavity, perfect overlap of the laser beam and the pump beam inside the fiber gain medium, as well as a very high efficiency because of the long gain length. The most popular gain mediums are Ytterbium-doped fibers lasing at app. 1030 nm wavelngth and Erbium-doped fibers lasing at app. 1550 nm wavelength. Both are pumped by telecom laser diodes which can last 10 years or longer.

TOPTICA's Erbium-based FemtoFiber Scientific laser (FFS) is the highest power laser of its kind. It is also available with the largest set of modular units for frequency conversion and pulse compression. The synchronisation option with phase-locked loop electronics enables the user to synchronise the FemtoFiber Scientific laser to another pulsed laser for example.