A Passion for Precision.

TOPTICA Photonics AG
Lochhamer Schlag 19
D-82166 Graefelfing / Munich

Contact:

Marketing
Elke Marchthaler
Phone + 49 89 85837-123
Fax + 49 89 85837-200
elke.marchthaler@toptica.com

Sales
Dr. Thomas Renner
Phone + 49 89 85837-0
Fax + 49 89 85837-200
sales@toptica.com

www.toptica.com/page/news.php

Press Release

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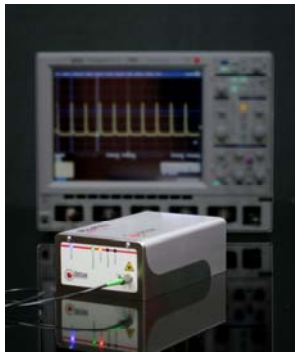
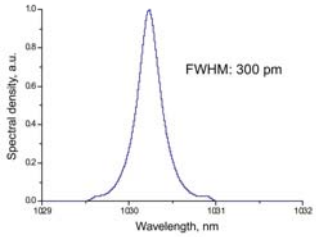
PicoFYb – Industrial Picosecond Fiber Lasers at 1030 and 1064 nm

Ultrafast technology has arrived at a variety of real world applications. Material processing, biophotonics, medical inspection and ophtamology now all look for reliable picosecond lasers with high average power and peak power.
Conventional ultrafast lasers like DPSS pumped TiSa or diode pumped solid state/glass lasers provide sufficient power but still have drawbacks on long term stability of ultrafast pulse generation. The reason for the drawbacks is the complex free space setup, which is susceptible to mechanical vibrations and temperature changes.
The latest state of the art ultrafast fiber lasers have proven their reliability over several years. Mainly based on telecom components, the fiber laser concept offers intrinsic advantages: Price and size are significantly more attractive than comparable conventional concepts. Reliability, long-term stability and hands-off operation show a robustness, which is suitable for industrial requirements.
The major restriction of fiber based ultrafast lasers is the power limitation. Due to the long interaction length between light and glass fibers, dispersion management and nonlinearities are difficult to handle above power levels of approximately 1 Watt.



The PicoFYb is a hands-off picosecond Ytterbium fiber laser for high power seeding.



Spectral linewidth < 0.5 nm, pulse duration < 10 ps, TBP = 0.5 ⇒ ideal source for solid state amplifiers.

Hybrid concepts between fiber based pulse generation and solid state based power generation have proven to be the most attractive concept for the future. In a variety of possible setups the ultrafast fiber laser seed amplifier lasers e.g. in a MOPA (master oscillator power amplifier) or regenerative amplifier setup.

TOPTICA once again introduces state of the art industrial technology with the PicoFYb: an ideal hands-off fiber based picosecond seeder for high power generation.
The fiber is Ytterbium doped – resulting in possible emission wavelengths between 1025 and 1070 nm. TOPTICA has decided to launch OEM products at 1030 and 1064 nm, which are major wavelengths for Yb:YAG

Author:
Dr. Thomas Renner, TOPTICA Photonics AG

and Nd:YAG/Nd:YVO_4 amplifiers. Other wavelengths can be available for more unique OEM conditions.

- The standard pulse duration is less than 10 ps. The spectral width and accuracy is approximately 0.5 nm, which makes the PicoFYb ideally suited for matching the absorption requirement of narrow linewidth solid state amplifiers.
- Time-Bandwidth-Product is 0.5 – resulting in bandwidth limited pulses. Other pulse durations in the ps or sub-ps regime can be available under OEM conditions.
- Average power is 10 mW with an RF side mode suppression of more than 60 dB.
- Repetition rate is 20 MHz (instead of conventional 80 MHz), which makes the PicoFYb highly attractive for pulse picker setups but also for fluorescence life-time experiments.

The PicoFYb is available with single-mode polarization maintaining outcoupling fiber and hence extremely easy to integrate.

The PicoFYb incorporates SAM technology, which guarantees standard OEM long lifetime and automatic hands-off starting procedures.
The robust mechanical shock proof cabinet includes all control electronics and power components.

A major attraction of the PicoFYb is the single-mode fiber outcoupling – making this module extremely easy for integration and alignment at customer sites.

Main applications include high power seeding of Yb:YAG/YVO_4 or Nd:YAG amplifiers. In addition, research laboratories in ultrafast physics or biophotonics lifetime measurements find highest interest in easy to operate picosecond lasers in the near infrared.

The PicoFYb laser will be displayed at our Photonics West 2009 booth in San Jose at the booth #433 (BIOS booth 8433).

TOPTICA Photonics AG develops, manufactures, services and distributes technology-leading diode and fiber lasers and laser systems for scientific and industrial applications. Sales and service is offered worldwide through TOPTICA Germany and its subsidiary TOPTICA USA, as well as all through 13 distributors. A key point of the company philosophy is the close cooperation between development and research to meet our customers' demanding requirements for sophisticated customized system solutions and their subsequent commercialization.

Author:
Dr. Thomas Renner, TOPTICA Photonics AG