

## Press Release

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](mailto:elke.marchthaler@toptica.com)

**Sales**

Bernhard Wondra  
Phone + 49 89 85837-114  
Fax + 49 89 85837-200  
[bernhard.wondra@toptica.com](mailto:bernhard.wondra@toptica.com)

[www.toptica.com/page/news.php](http://www.toptica.com/page/news.php)

March 31, 2008

### **iBeam / iPulse diode laser system now available at 488 nm**

Key wavelength for bioanalytics accomplished  
by single-mode diode

TOPTICA Photonics AG extends its established diode laser series iBeam / iPulse by the wavelength 488 nm, a crucial excitation line for biophotonics and bioanalytics. Typical applications include flow cytometry, confocal microscopy and high throughput / high content screening (HTS / HCS).

Previously 488 nm excitation was obtained solely by Argon gas lasers or frequency doubled solid state lasers. From now on, the iBeam / iPulse diode laser system provides this wavelength, taking advantage of the new 488 nm single-mode diodes.

**Key specifications of iBeam / iPulse 488 include:**

- Excellent beam quality, i.e. wavefront error  $< 0.05 \lambda$ ,  $M^2 < 1.2$
- Ultrafast asynchronous pulse modulation up to 250 MHz (iPulse)
- Highest single mode fiber coupling efficiencies, i.e.  $> 60 \%$  guaranteed,  $> 75 \%$  typical and  $87 \%$  demonstrated
- Highest power stability ( $< 0.5 \%$  drift within 48 hours)

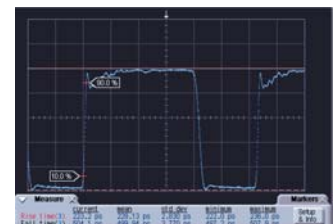
Presently a power level of approx. 5 mW is achieved. In late 2008, up to 20 mW will be available. The beam diameter is approx. 1 mm  $1/e^2$ , compatible to its gas or solid state laser counterparts.

Comparing such diode lasers to gas or solid state lasers, the vital benefit is its direct modulation capability. The iPulse 488 offers both fast digital and analog modulation. Thus external AOMs or similar devices become redundant. On special request, the iPulse switches between 3 power levels within few nanoseconds. Typical warm-up time lasts no longer than 5 minutes, significantly less than common Argon lasers require.

To support demanding applications, high attention is paid to best optical performance. High quality optics components and cutting-edge micro-optical adjustment devices contribute to convert the diode's standard



iBeam / iPulse 488 nm diode laser system.



Ultrafast direct diode modulation, pulse width min. 2 ns / up to 250 MHz.

**Author:**

Bernhard Wondra, TOPTICA Photonics AG

elliptical emission into a circular (ellipticity typically < 5%), nearly perfect Gaussian beam.

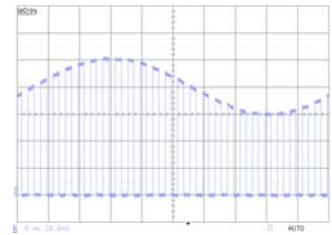
All lasers can be optionally coupled to single mode fibers by TOPTICA's FiberDock unit. Due to the patented flexure mount unit, easy adjustment, best long-term stability and highest coupling efficiencies are achieved.

Besides perfect optical performance, a superior electrical control is crucial in many applications: Sophisticated low noise electronics guarantees a power drift of less than 0.5% over at least 48 hours.

Easy and reliable control of all laser parameters and status reports are achieved by the RS 232 serial interface and a standard terminal software package (e.g. WindowsHyperTerminal®).

**Typical applications for the iBeam and iPulse series include:**

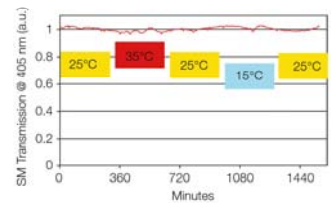
- Flow cytometry
- Confocal microscopy
- Micro lithography
- Computer-to-plate
- Disc mastering
- Ellipsometry



Combined analog and digital modulation of laser system iPulse.



Patented fiber coupling unit FiberDock - easy operation and best physical parameters.



Due to the thermal stabilized flexure mount set-up, the fiber coupling efficiency is virtually independent of outer temperature changes.

*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.*