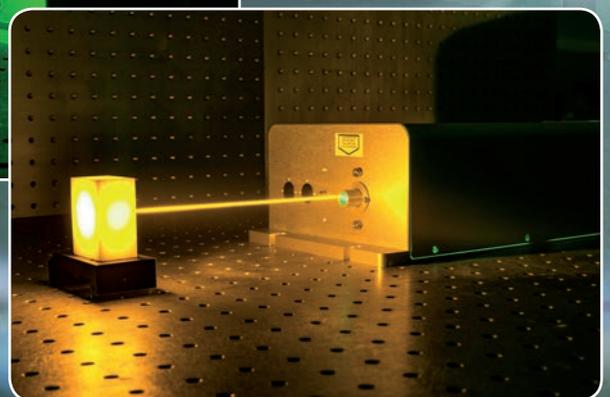
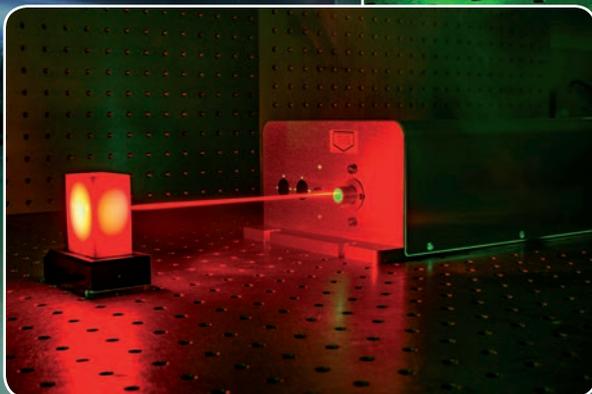
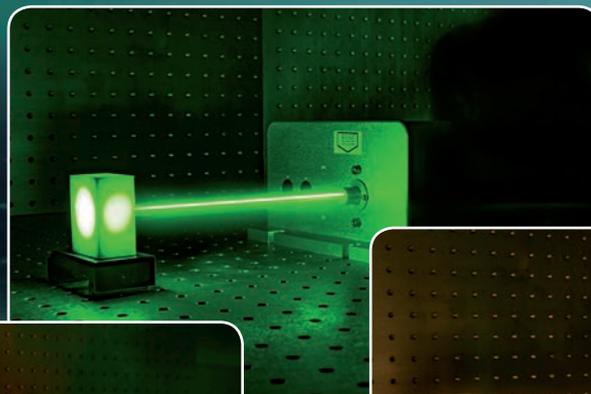
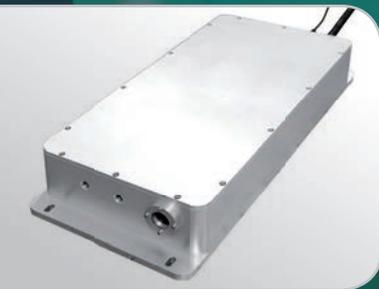


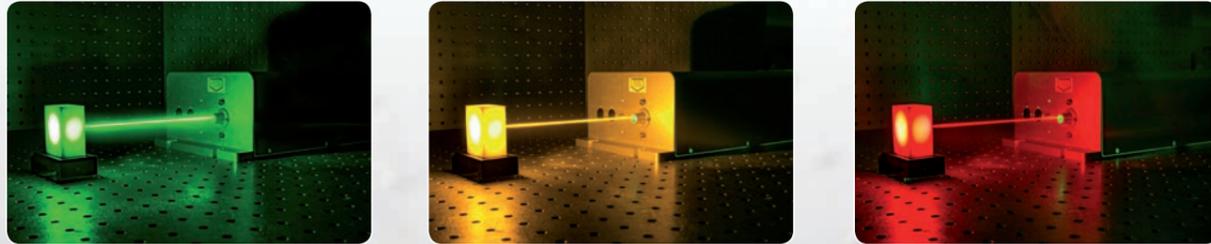
rapidly tunable solid-state laser system

four wavelengths, pulse-by-pulse selectable

- ✱ four visible, biologically useful wavelengths: 532 nm, 555 nm, 579 nm, 606 nm
- ✱ pulse-by-pulse wavelength selection
- ✱ repetition rate 1 kHz
- ✱ energy 20 μ J for each wavelength*
- ✱ pulse width < 5 ns



rapidly tunable solid-state laser system



four wavelengths – pulse-by-pulse selectable



Our rapidly tunable solid-state laser system (by Elforlight, part of AMS Technologies) emits visible laser pulses with four different wavelengths that are particularly suitable for use in life science applications. With a high pulse repetition frequency of 1 kHz, the laser system can switch between these four wavelengths from pulse to pulse. In addition, pulse widths of less than 5 ns and pulse energies of up to 20 μ J can be achieved.

Based on a 532 nm laser, the rapidly tunable laser system additionally generates the wavelengths 555 nm, 579 nm and 606 nm, using the Raman effect. An optical filter then separates the four wavelengths and routes one wavelength at a time onto the optical output of the unit – with a switching frequency in the kilohertz range.

With this high switching frequency, the system clearly surpasses tunable lasers based on OPOs (Optical Parametric Oscillators) – typical frequencies of such OPO systems range from 100 Hz to 200 Hz – and is also considerably more cost-effective.

system set-up: two separate units

The rapidly tunable solid state laser system consists of two separate units: One box contains the electronics for the entire power supply as well as the pump laser diode. The optical output of this laser diode is coupled via an optical fiber to the second box, which contains the actual laser head. Due to this design, the heat dissipated by the power supply circuit and the pump diode remains within the power supply unit, and the laser head heats up significantly less. In addition, the pump laser diode can be easily replaced in the event of a defect without affecting the sensitive adjustment of the geometry in the laser head.

key features

- four visible, biologically useful wavelengths: 532 nm, 555 nm, 579 nm, 606 nm
- pulse-by-pulse wavelength selection
- repetition rate: 1 kHz
- energy: 20 μ J for each wavelength*
- pulse width: < 5 ns
- different wavelengths available on request: 532 nm, 559 nm, 588 nm, 621 nm, infrared variants around 1200 nm

* 10 μ J for 606 nm

rapidly tunable solid-state laser system



ideal for photoacoustic imaging

Particularly in the field of photoacoustic imaging for biomedical or life science applications, the system's ability to quickly switch between different wavelengths offers clear advantages: During a scan of biological tissue, the absorption of four different wavelengths can now be measured quasi-simultaneously at each individual pixel at a frame rate comparable to single-wavelength scans. This avoids artifacts that can occur with multiple sequential complete scans with one wavelength each.

main specifications	
wavelengths	532 nm, 555 nm, 579 nm, 606 nm (559 nm, 588 nm, 621 nm and infrared variants around 1200 nm on request)
repetition rate	1 kHz total (e.g. each of 4 wavelengths at 250 Hz)
energy	20 μ J for each of the specified wavelengths (606 nm: 10 μ J)
beam quality	close to TEM00, M2 < 1.3. (capable of launch into multimode optical fibre)
beam profile	circular
tuning	laser can be operated in sweep mode, wavelengths tunable for every pulse - sweep order of available wavelengths user-definable, no. of wavelengths within a single sweep user-selectable
triggering	external laser pulse trigger option (input trigger signal 5 V)
pulse width	< 5 ns
pulse-to-pulse stability	< 10% (subsequent pulses of the same wavelength)
control	RS232 interface with: switch laser on/off, set laser energy, set wavelengths of sweep mode, enable/disable emission
laser output	single outlet with collinearity for all wavelengths
power supply	110 VAC to 240 VAC, 50/60 Hz, ~ 200 W
safety features	redundant interlock, warning outputs

enabling your ideas.

Optical, Power and Thermal Management Technologies

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