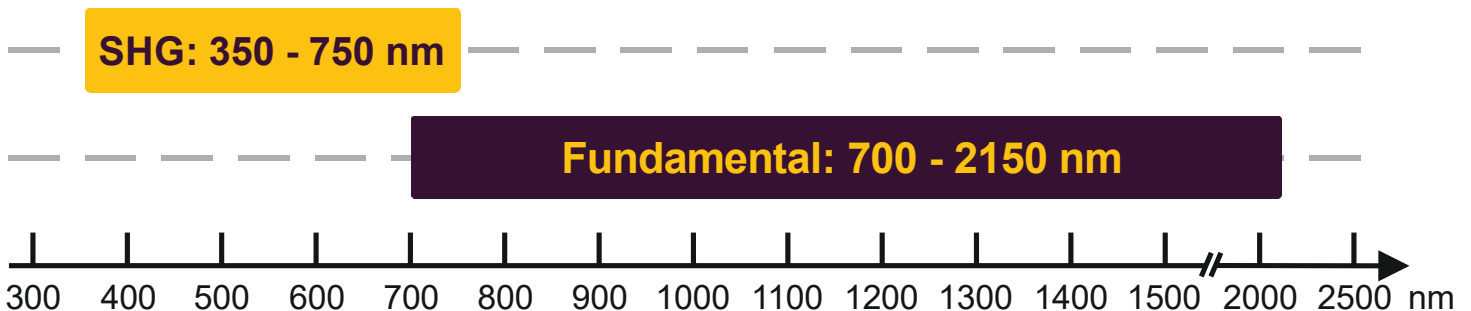


# VALO SHG SF SINGLE-FREQUENCY VISIBLE VECSEL

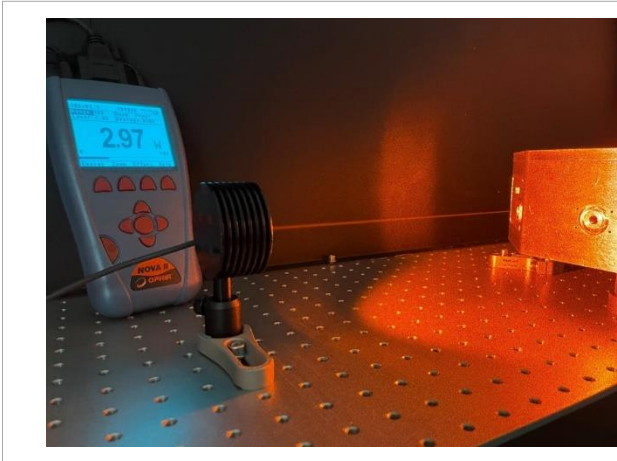


- ▶ VECSEL system for quantum technology (Vertical-External-Cavity Surface-Emitting Laser)
- ▶ Efficient intracavity doubling from NIR to UV & VIS
- ▶ Broad wavelength coverage
- ▶ Single-frequency
- ▶ Tunable (up to 8 THz with a single system)
- ▶ Excellent beam quality

Wavelength	350 – 750 nm (target wavelength selection range)
CW power, free-space, with integrated pump	350 – 450 nm: up to 1 W 450 – 600 nm: up to 5 W 600 – 750 nm: up to 3 W
Coarse tuning (typical)	350 – 500 nm: up to 3 THz around the target wavelength 500 – 750 nm: up to 8 THz around the target wavelength
Mode-hop free tuning (typical)	> 2 GHz (cavity free spectral range)
Free-running linewidth	< 10 kHz (100 μs), < 100 kHz (10 ms)
Beam quality (typical)	$M^2 < 1.2$ TEM <sub>00</sub>
Frequency locking	Two cavity piezos, RF-SMA interface Intracavity etalon EOM (patent pending), RF-SMA interface Secondary fundamental wavelength output port
VECSEL head size	320 mm x 190 mm x 100 mm (L x W x H)
System includes	VECSEL head with pump laser VALO Control Unit for CW operation, 19"-rack installable Low vibration chiller (water-to-air or water-to-water), 19"-rack installable
System excludes	Frequency locking electronics Optical isolator (35 dB single-stage isolation recommended) Fiber coupling (typical single-mode fiber coupling efficiency 70 – 90 %)



# VALO SHG SF SINGLE-FREQUENCY VISIBLE VECSEL



- ▶ Example data for orange 606 nm system
- ▶ For laser cooling of calcium fluoride (CaF)
- ▶ 3 W output power with diffraction limited beam
- ▶ Up to 10 nm coarse tuning range (8 THz)

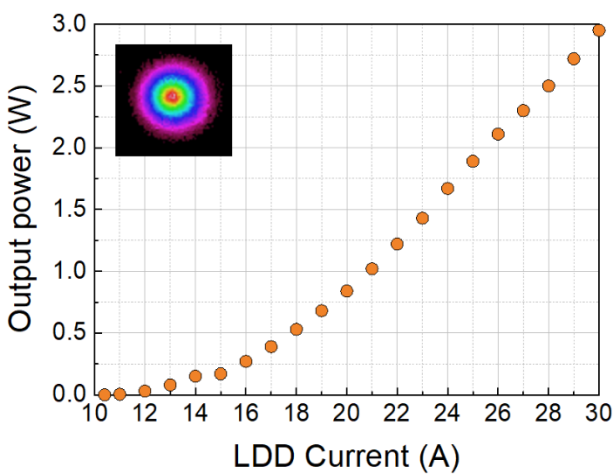


Figure 1. 606 nm output power vs pump current

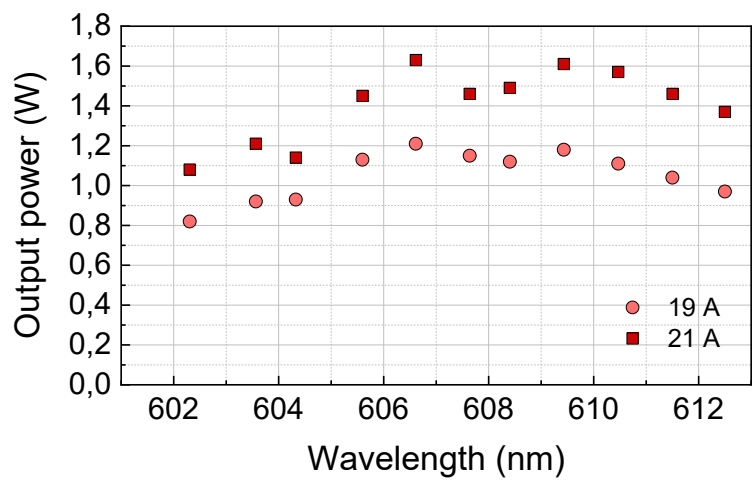
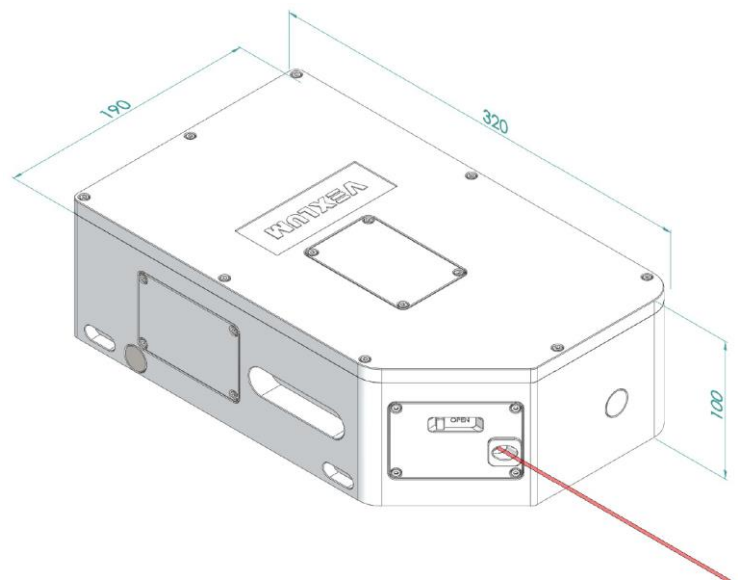


Figure 2. Tuning with birefringent filter rotation



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