VEXLUM

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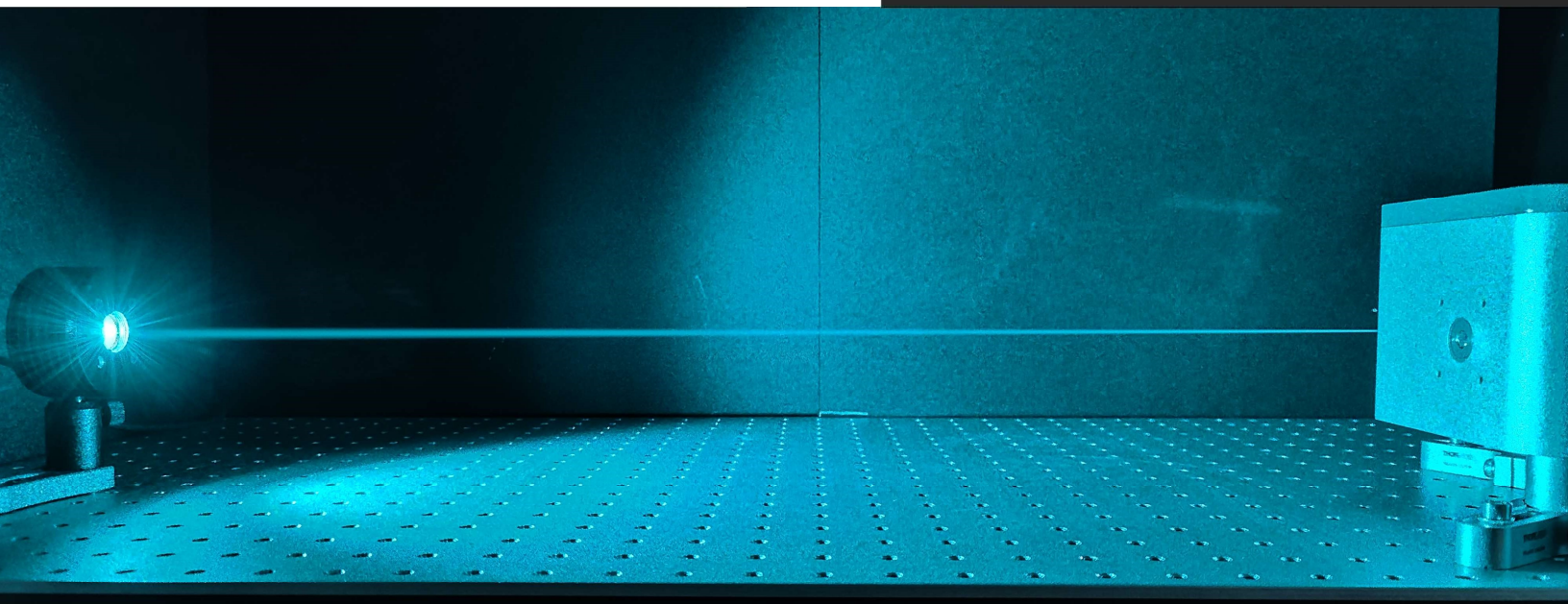


HIGH-POWER / LOW-NOISE / SINGLE-MODE LASERS FOR RESEARCH AND INDUSTRY

Optically pumped vertical-external-cavity surface-emitting lasers (VECSELs)

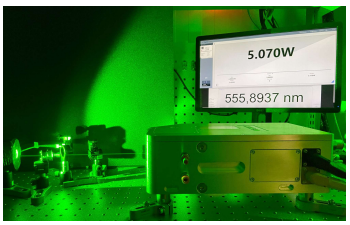
VECSELs combine the benefits of semiconductor quantum-well gain with the external cavity architecture of disk lasers, resulting in wavelength-versatile high-power systems. These lasers are also commonly known as optically pumped semiconductor lasers (OPSLs).

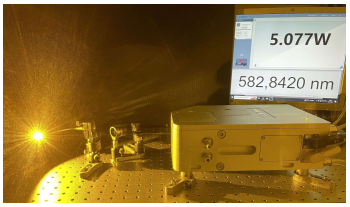
KEY SPECIFICATIONS

Broad-wavelength selection	High-power output	Low noise	Excellent spatial quality	Narrow linewidth
350 – 2150 nm	Up to 10 W	No ASE. SNR > 80 dB	$M^2 < 1.1$	< 100 Hz (instantaneous)

VEXLUM is a **semiconductor laser company** with a **vertically integrated manufacturing process:**

- Design and growth of gain structures
- Cleanroom processing of gain chips
- Optomechanical design and assembly
- Control systems development





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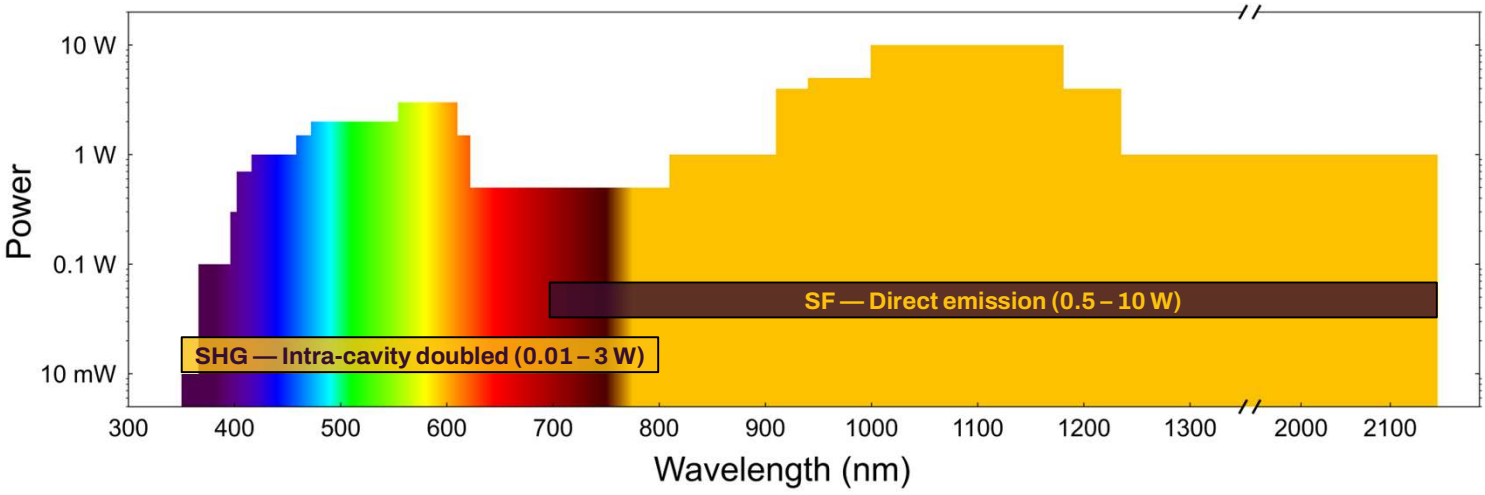
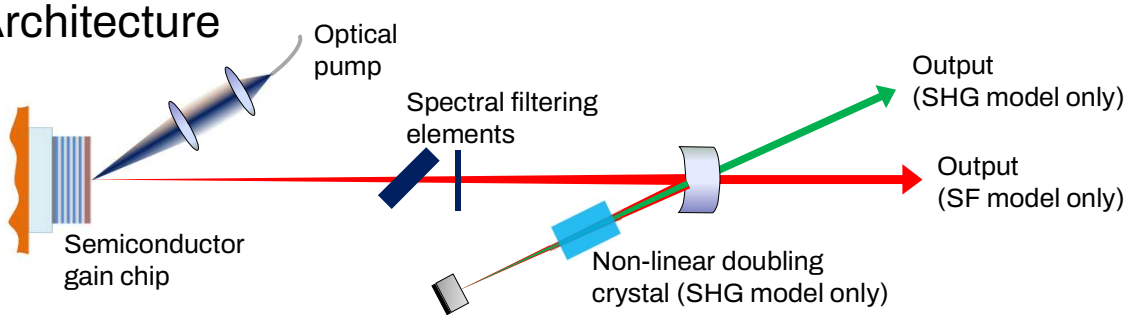
Available Output Powers



VECSEL Architecture



Key Features and Benefits

Optical pumping	Semiconductor gain	Vertical external cavity	Intracavity SHG
High power & beam quality	Target wavelength flexibility	Tunable single frequency	High-power at visible λ

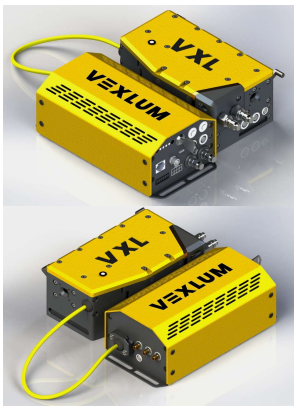
Products

VALO system

Laser, control electronics, and chiller

VXL® system

Next-generation modular, rugged design



Example Quantum Use Cases

Laser Application	Sr	Yb	Ba^+
Cooling	461 nm > 1.5 W	399 nm > 0.3 W	493 nm > 3 W
Photoionization	N/A	N/A	791 nm > 1 W
Narrow cooling	689 nm > 0.5 W	556 nm > 2 W	N/A
Clock	698 nm > 0.5 W	578 nm > 2 W	1762 nm > 1 W
Trapping (magic wavelength)	813 nm > 1 W	759 nm > 0.5 W	N/A

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