



EU-project VERTIGO sets new standards for 2.X μ m OPSDLs:

The European project "Versatile two micron light source" explores optically pumped semiconductor disk lasers (OPSDLs) based on the group III-antimonide (III-Sb) compound semiconductor materials system, and so, develops novel OPSDLs emitting in the 2.0-2.5 μ m wavelength range. This wavelength range is of special importance for applications such as gas detection, including long-range LIDAR applications, free-space optical communication, medical diagnostics, laser surgery and optical pumping of longer wavelength solid-state lasers.

During the last months, the consortium was able set new standards for high-power, high efficiency semiconductor disk lasers (OPSDL) in the 2.X μ m wavelength range. The results achieved so far include

- a **2.25 μ m OPSDL**, emitting more than **3 W** in **CW**-operation at -10°C heatsink temperature and still 2.3 W CW at +10°C (see Fig.1 and [1])
- a **2.0 μ m OPSDL**, emitting more than **5 W** in **CW**-operation at -15°C heatsink temperature and still 3.8 W CW at +15°C (see Fig.2 and [2])
- optical power conversion efficiencies in the range of 18 – 22 % at room temperature
- direct diode laser pumping with 980 nm pump diodes for all these OPSDL devices.

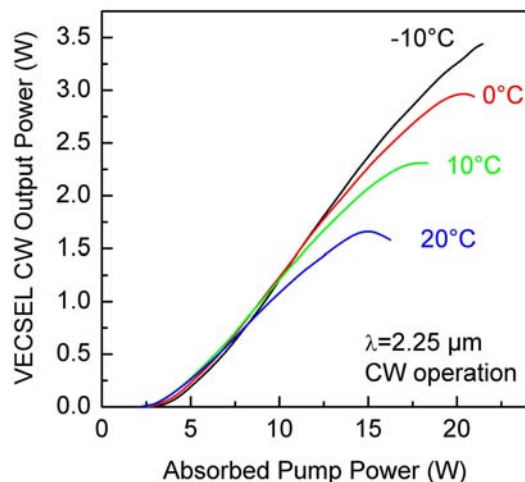


Fig. 1: CW output power vs. absorbed pump power of a 2.25 μ m OPSDL for several heatsink temperatures.

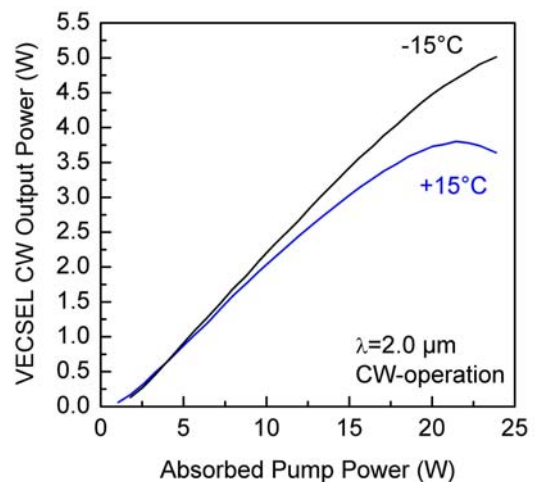


Fig. 2: CW output power vs. absorbed pump power of a 2.0 μ m OPSDL for several heat sink temperatures.

More detailed information can be found in

- [1] B.Rösener, N. Schulz, M. Rattunde, C. Manz, K. Köhler, and J. Wagner, IEEE Photon. Technol. Lett. 20, 502 (2008)
 [2] J.M. Hopkins, N. Hempler, D. Burns, N. Schulz, B. Rösener, M. Rattunde, C. Manz, K. Köhler and J. Wagner, Optics Lett. 33, 201, (2008).

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