

Optically Pumped Semiconductor Disk Lasers For High Power

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Optically Pumped Semiconductor Disk Lasers

Ion laser tech - nology has succumbed to CW diode-pumped solid-state (DPSS) technology, and more recently Optically Pumped Semiconductor Lasers have replaced DPSS lasers. This new generation of lasers provide higher reliability and lower cost per watt than all earlier technologies.

Optically Pumped Semiconductor Lasers - Coherent

Optically pumped semiconductor disk lasers (OP-SDL) also known as vertical-external-cavity surface-emitting lasers (VECSEL) have high potential for applications that need high power and excellent beam quality, e.g. red, green and blue sources, spectroscopy, medical instruments, etc.

MBE grown optically pumped semiconductor disk lasers ...

Semiconductor disk lasers (SDLs), also known as vertical-external-cavity surface-emitting lasers (VECSELs) are optically-pumped semiconductor lasers (OPSLs), with oscillation perpendicular to the epitaxial gain structure with an external macroscopic laser resonator.

Semiconductor disk lasers (VECSELs) - ScienceDirect

Optically-pumped semiconductor disks lasers or vertical-external-cavity surface-emitting lasers (VECSELs), offer many advantages over standard semiconductor lasers such as high brightness, ultra-short pulse generation, single-frequency operation, the use of intracavity elements, and low noise operation.

New Platforms for High-Power Optically-Pumped ...

We report high power distributed Bragg reflector (DBR)-free semiconductor disk lasers. With active regions lifted off and bonded to various transparent heatspreaders, the high thermal impedance and narrow bandwidth of DBRs are mitigated. For a strained InGaAs multi-quantum-well sample bonded to a single-crystalline chemical-vapor deposited diamond, a maximum CW output power of 2.5 W and a ...

OSA | Optically pumped DBR-free semiconductor disk lasers

The Optically Pumped Semiconductor Laser (OPSL) technology offers numerous advantages over other types of CW lasers, including wavelength flexibility. In particular, an OPSL can be designed to match the wavelength requirements of the application, which represents a paradigm shift over legacy technologies. This is a major reason why OPSLs are the lasers of choice in applications across the life sciences, as well as for entertainment/light shows, scientific research, and many other applications.

Optically Pumped Semiconductor Laser Advantages ...

Optically pumped semiconductor disk laser (OP-SDL) is also known as the vertical external cavity surface emitting laser. It combines the advantages of the wavelength flexibility of traditional semiconductor laser and high power with good beam quality of solid state laser⁴.

Progress of optically pumped GaSb based semiconductor disk ...

Optically pumped, external-cavity, surface emitting semiconductor lasers (also known as optically pumped semiconductor lasers, OPS lasers, and vertical external cavity surface emitting lasers,...

(PDF) High power optically pumped semiconductor lasers

Semiconductor Disk Lasers with Intracavity Second-Harmonic Generation 91 Optically-Pumped Semiconductor Disk Lasers with Intracavity Second-Harmonic Generation Frank Demaria and Alexander Kern In this contribution, we present experimental results of our research on frequency-doubled semiconductor lasers emitting in the visible spectral range.

Optically-Pumped Semiconductor Disk Lasers with Intracavity ...

An in-well pumped InGaAs disk laser emitting at 984nm is presented. The device is designed to eliminate major loss mechanisms attributed to heat generation in semiconductor disk lasers. An output power of close to 7W at room temperature is achieved by optical excitation with a fiber-coupled 940nm diode laser. Strong cooling or the use of

Optically In-Well-Pumped Semiconductor Disk Laser With Low ...

This thesis concerns the so-called optically pumped semiconductor disk laser (OP-SDL), which represents a relatively new class of lasers showing great promise for future applications.

Optically pumped semiconductor disk lasers for high-power ...

We report a wafer fused high-power optically-pumped semiconductor disk laser incorporating InP-based active medium fused to a GaAs/AlGaAs distributed Bragg reflector. A record value of over 2.6 W of output power in a spectral range around 1.57 μm was demonstrated, revealing the essential advantage of the wafer fusing technique over monolithically-grown all-InP-based structures.

OSA | 2.6 W optically-pumped semiconductor disk laser ...

The design, fabrication, and characteristics calculation of 980-nm optically pumped semiconductor disk laser are reported. The laser combines a vertical cavity semiconductor laser with a partially reflecting out coupler and an external cavity for mode control. Pumped by 808-nm diode laser, the disk laser

980-nm optically pumped semiconductor disk laser

2.6 W optically-pumped semiconductor disk laser operating at 1.57- μm using wafer fusion Jussi Rautiainen, Jari Lyytikäinen, Alexei Sirbu, Alexandru Mereuta, Andrei Caliman, Eli Kapon, and Oleg G. Okhotnikov Opt. Express 16(26) 21881-21886 (2008) 3 W of 650 nm red emission by frequency doubling of wafer-fused semiconductor disk laser

OSA | 1.3- μm optically-pumped semiconductor disk laser by ...

The optically pumped semiconductor (OPS) laser has gained significant market share in recent years for low-power applications, primarily in OEM bioinstrumentation applications at the 488 nm heritage wavelength, as well as 473 nm for photofinishing.

SEMICONDUCTOR LASERS: Optically pumped semiconductor ...

Conceptually, the idea of an optically-pumped semiconductor laser with a vertical geometry was suggested as early as 1966 by Basov et al in a paper describing lasers with radiating mirrors [15]. However, it was not until the early 1990s that the concept was acknowledged and the first working devices were reported [16, 17].

Optically pumped VECSELS: review of technology and ...

As the geometry of a VECSEL gain medium is that of a thin disk, optically pumped VECSELS are sometimes called semiconductor disk lasers. In fact, they are similar to solid-state thin-disk lasers, with which they share their concept of power scaling, despite the different kind of gain medium.

Vertical External-cavity Surface-emitting Lasers

This thesis concerns the so-called optically pumped semiconductor disk laser (OP-SDL), which represents a relatively new class of lasers showing great promise for future applications. The advantages include the wavelength versatility that is common for most semiconductor lasers, but also adds the ability to deliver multi-Watt output powers into ...

Optically pumped semiconductor disk lasers for high-power ...

Optically pumped semiconductor disk lasers (OPSDLs), also referred to as vertical- external-cavity surface-emitting lasers (VECSELS), have emerged recently as a new category of semiconductor...

High brightness GaSb-based optically pumped semiconductor ...

An optically pumped semiconductor disk laser with a double-band Bragg reflector mirror is presented. This mirror not only reflects the laser light at a wavelength of 980 nm but also the pump light at 808 nm. An inverted epitaxial layer sequence allows the complete removal of the GaAs substrate after the semiconductor laser disk has been mounted ...