

Ultraviolet semiconductor laser diode



Overview

The advancement of a UV-C semiconductor laser diode marks a major milestone in photonics; promising powerful applications in disinfection, healthcare, sensing and beyond. Ultec is pioneering a new frontier of ultra-wide band gap semiconductors. Following gallium nitride (GaN)—the breakthrough material behind innovations like blue LEDs and transistors for compact AC adapters—aluminum nitride (AlN), an ultra-wide band gap semiconductor, is emerging as the. Numerous photonics applications in re-search and industry require ultraviolet (UV) laser light. Here, we present the latest developments in diode-based laser systems that produce continuous-wave. Ultraviolet (UV) rays are electromagnetic waves with wavelengths ranging from 100 to 380 nanometers (nm). These wavelengths can be classified into three regions: UV-A (315–380 nm), UV-B (280–315 nm), and UV-C (100–280 nm), with the latter two comprising deep UV rays. Laser light sources with. In a joint research project, Asahi Kasei and a research group led by Professor Hiroshi Amano of the Center for Integrated Research of Future Electronics, Institute of Materials and Systems for Sustainability, Nagoya University, have achieved the world's first continuous room-temperature operation. Our scientists have pioneered the development of cutting-edge visible and UV LEDs and lasers, with record-breaking device performances both in vertical and lateral device architectures. In this post we explore how the collaboration between Nagoya University and Asahi Kasei led to the world's shortest.



Article Content

Laser support for semiconductor laser fixation and laser support ...

For this reason, laser holders that allow the semiconductor laser element to be held and aligned via its periphery are frequently employed. One example of such a holder is described in document

Laser diode

Laser diodes form a subset of the larger classification of semiconductor p - n junction diodes. Forward electrical bias across the laser diode causes the two

Azerbaijan Laser Diode Market (2025-2031) | Trends, Outlook

Azerbaijan Laser Diode Market Synopsis The laser diode market in Azerbaijan encompasses semiconductor devices capable of emitting coherent light through the process of stimulated emission,

Short, shorter, shortest: Diode lasers in the deep ultraviolet

Here, we present the latest develop-ments in diode-based laser systems that produce continuous-wave (CW) tun-able UV output, in which digital con-trol electronics allow for improved per-formance and

Semiconductor Laser

Based on our deep understanding and extensive expertise in GaN (gallium nitride) and GaAs (gallium arsenide) materials, we have developed high-performance lasers that cover a wide

Diode Lasers Jump to the Deep Ultraviolet

After years of delays, a semiconductor diode laser has finally operated in the deep ultraviolet, pointing the way to bio-sensors and sterilization

Laser Diode Pushes into the Deep UV

Researchers in Japan have developed a semiconductor laser diode that operates in the deep ultraviolet, at a wavelength of 271.8 nm—the shortest

Australia Laser Diode Market (2025-2031) | Trends, Outlook & Forecast

Australia Laser Diode Market Overview Australia laser diode market provides semiconductor devices capable of emitting coherent light in various wavelengths and power outputs. Laser diodes serve

Ultraviolet and Visible Semiconductor Lasers

Our scientists have pioneered the development of cutting-edge visible and UV LEDs and lasers, with record-breaking device performances both in vertical and lateral device architectures.

UV Laserdioden

AlN offers exceptional potential for deep ultraviolet optoelectronics and next-generation power devices. Leveraging Ultec's expertise in AlN, they are developing groundbreaking devices that will shape the

Realizing vertical ultraviolet-B semiconductor laser

Against this background, a team of researchers from Japan, led by Professor Motoaki Iwaya from the Department of Materials Science and

Kyrgyzstan Laser Diode Market (2025-2031) | Trends, Outlook

Drivers of the market In Kyrgyzstan, the laser diode market is experiencing growth driven by factors such as expanding applications in telecommunications, healthcare, industrial processing, and consumer

Semiconductor Laser Market Size & Share 2026

Semiconductor Laser Market Size & Share Analysis - Growth Trends and Forecast (2026 - 2031) The Semiconductor Laser Market Report is

Short, shorter, shortest: Diode lasers in the deep ultraviolet

New laser sources operating in the deep-ultraviolet (DUV) range (the wave-length region below 300 nm) can help to streamline industrial and scientific applications. For example, state-of-the-art

Realizing vertical ultraviolet-B semiconductor laser diodes for high ...

Against this background, a team of researchers from Japan, led by Professor Motoaki Iwaya from the Department of Materials Science and Engineering at Meijo University, has

External-cavity Diode Lasers – ECDL, resonator,

External-cavity diode lasers are non-monolithic diode lasers where the laser cavity (resonator) is completed with external optical elements.

Developing Deep Ultraviolet Laser Diode: Design and Improvement of

A deep ultraviolet (DUV) laser diode is a compact and efficient semiconductor device that emits laser light in the deep ultraviolet range. Its unique properties make it suitable for a wide range

Asia Pacific Laser Diode Market Size, Competitors

The Asia Pacific Laser Diode Market would witness market growth of 13.0% CAGR during the forecast period (2023-2030). The China market dominated the Asia

Indie Semiconductor (INDI) Stock Price & Overview

Indie Semiconductor releases UV Visible Distributed Feedback 399 nm laser diode
indie has released its first Ultraviolet Visible Distributed Feedback 399 nm single-frequency laser diode

Asahi Kasei and Nagoya University achieve world's first continuous ...

In a joint research project, Asahi Kasei and a research group led by Professor Hiroshi Amano of the Center for Integrated Research of Future Electronics, Institute of Materials and Systems for

Performance improvement of nitride semiconductor-based deep-ultraviolet ...

A deep-ultraviolet (DUV) laser diode (LD) consisting of specifically designed cladding layers involving superlattice nitride alloy has been proposed. Simulation studies of different cladding

Electrically smoothing gain-switched optical pulses from a ...

Abstract and Figures The typical optical pulse from a gain-switched semiconductor laser diode (LD) usually consists of a first-spike (FS) component and a quasi-steady-state (QSS) lasing

Solid-State Laser Global Market Report 2026

Solid-State Laser Global Market Report 2026 - A solid-state laser produces a coherent light beam by utilizing a solid material, usually a crystal or glass infused with ions, as its medium for

UV-C Semiconductor Laser Diode Breakthrough

The advancement of a UV-C semiconductor laser diode marks a major milestone in photonics; promising powerful applications in disinfection, healthcare, sensing and beyond.

Laser Diode Market Size, Share and Opportunities,

Laser Diode Market Size and Trends The laser diode market is estimated to be valued at US\$ 11.26 billion in 2026 and is expected to reach US\$

Advances in Deep Ultraviolet Semiconductor Laser: From Material ...

AlGaIn-based deep ultraviolet (DUV) laser diodes (LDs) have garnered significant attention for a wide range of applications, including sterilization, sensing, an

Diode Lasers Jump to the Deep Ultraviolet

Now a team including Hiroshi Amano of Nagoya University, who shared the 2014 Nobel Physics Prize for inventing efficient blue light-emitting diodes, has scored another breakthrough by

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