



High Coherent Power, Two-Dimensional Surface-Emitting Semiconductor Diode Array Laser

[View U.S. Patent No. 7,457,340 in PDF format.](#)

WARF: P05334US

Inventors: Dan Botez

The Wisconsin Alumni Research Foundation (WARF) is seeking commercial partners interested in developing a semiconductor laser that provides seven times the power previously seen from surface-emitting semiconductor lasers.

Overview

A UW-Madison researcher previously described a high-power, single-mode, two-dimensional, semiconductor diode laser formed on a substrate with an anti-guided array of laterally spaced grating surface emitters (see WARF reference number P02180US). However, scaling that device to include longer arrays reduces device efficiency and output power due to a destructive interference effect inherent in devices with long gratings of constant periodicity.

The Invention

The UW-Madison researcher has now developed a semiconductor laser that uses a variable periodicity, or chirped, grating. The grating works with the previous device to prevent the laser emissions from canceling each other out. The grating structure ensures single longitudinal-mode operation and can also be formed to act as a highly efficient selector of the in-phase array mode.

Applications

- Non-invasive medical diagnostics
- Biotechnology
- Laser projection systems
- Optical communications

Key Benefits

- Provides seven times the power previously seen from surface-emitting semiconductor lasers
- Enables CW watt-range, stable, single-mode laser light sources
- Single frequency makes it ideally suited for power scalability via frequency multiplexing in external beam-combining configurations
- Simplified packaging as compared to edge-emitting devices
- Capable of providing tens of watts of power for applications such as high-efficiency, high-resolution magnetic resonance imaging (MRI) with noble gases

We use cookies on this site to enhance your experience and improve our marketing efforts. By continuing to browse without changing your browser settings to block or delete cookies, you agree to the storing of cookies and related technologies on your device. [See our privacy policy.](#)

For More Information About the Inventors

• Dan Botez

OK



WARF
Wisconsin Alumni Research Foundation

| info@warf.org | 608.960.9850

Related Technologies

- [See WARF reference number P02180US for the inventor's previous laser.](#)

Tech Fields

- [Analytical Instrumentation, Methods & Materials : Lasers](#)

For current licensing status, please contact Jeanine Burmania at jeanine@warf.org or 608-960-9846

We use cookies on this site to enhance your experience and improve our marketing efforts. By continuing to browse without changing your browser settings to block or delete cookies, you agree to the storing of cookies and related technologies on your device. [See our privacy policy.](#)

OK



WARF
Wisconsin Alumni Research Foundation

| info@warf.org | 608.960.9850