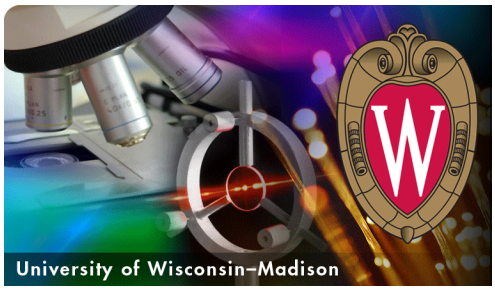
Two-Dimensional, Surface-Emitting, Semiconductor Diode Laser with High Coherent Power



INVENTORS • Dan Botez

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The Wisconsin Alumni Research Foundation (WARF) is seeking commercial partners interested in developing a two-dimensional, surface-emitting, semiconductor diode laser capable of two to three watts of output power during single-mode, single-frequency operation, and tens of watts of coherent power when scaled at the wafer level.

OVERVIEW

Second order, surface-emitting, distributed feedback (DFB) lasers possess a number of attractive features, including dynamic single-mode operation, high output power and compatibility with other optical components.

THE INVENTION

A UW-Madison researcher has combined second order DFB and distributed Bragg reflector (DBR) grating structures with a phase-locked, anti-guided array to result in a two-dimensional, surface-emitting, semiconductor diode laser capable of two to three watts of output power during single-mode, single-frequency operation, and tens of watts of coherent power when scaled at the wafer level. The grating provides both feedback and light out-coupling, selects the desired in-phase array mode and can be designed to double the array-emitting aperture (from 100 to 200 microns) for increased power. The combination of anti-guided arrays with gratings also allows for scaling at the wafer level.

APPLICATIONS

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

KEY BENEFITS

- Delivers watts of coherent power from large apertures (200 by 1200 microns)

THE WARF ADVANTAGE

Since its founding in 1925 as the patenting and licensing organization for the University of Wisconsin-Madison, WARF has been working with business and industry to transform university research into products that benefit society. WARF intellectual property managers and licensing staff members are leaders in the field of university-based technology transfer. They are familiar with the intricacies of patenting, have worked with researchers in relevant disciplines, understand industries and markets, and have negotiated innovative licensing strategies to meet the individual needs of business clients.

- Provides a high-power diode laser for biotechnology applications
- When applied to mid-infrared diode lasers, this technology could greatly increase the sensitivity of non-invasive medical diagnostics, as well as sensors for chemical and biological agents
- Provides high-power in both single spatial and single frequency modes

ADDITIONAL INFORMATION

Tech Fields

Analytical Instrumentation - Lasers

CONTACT INFORMATION

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