

Small
Business
Innovation
Research

Single Mode Tunable Diode Lasers From 1.9 to 2.3 Microns *Focused Research, Inc.* Santa Clara, CA



INNOVATION

External-cavity diode laser that emits single-mode radiation tunable from 1.87-2.06 and operates at room temperature

ACCOMPLISHMENTS

- ◆ Tunable diode lasers providing greater than 1 milliwatt of narrow linewidth (less than 1 MHz, full width half maximum) infrared light for spectroscopic and molecular sensing applications.
- ◆ Rapid single-mode scanning (greater than 6 nanometer per second) over the greater than 80 nm tuning range.
- ◆ In cooperation with the High Temperature Gas-Dynamics Laboratory at Stanford University, one laser is currently being used to analyze CO₂ and H₂O for combustion diagnostics.

COMMERCIALIZATION

- ◆ Press releases in Laser Focus World and NASA Tech Briefs.
- ◆ New laser system is available as a commercial product and has been highlighted at the Spring Topical meeting of the Optical Society of America and at CLEO.
- ◆ Commercial orders in excess of \$100K have been received.
- ◆ Estimated product revenue of \$1M over 4 years.

Goddard Space Flight Center

1994 Phase II; SS5-025; 1/25/99



Tunable Diode Laser

GOVERNMENT SCIENCE/APPLICATIONS

- ◆ Tunable lasers from 1.8 to 2.3 microns can monitor gaseous molecular and transient species such as CO₂, CO, NH₃, CH₄, and CN, which are not amenable to probing with standard diode lasers (0.6 to 1.6 microns).
- ◆ Rapid tuning and narrow-linewidth facilitate direct absorption spectroscopy.
- ◆ Used at NASA Goddard Space Flight Center for laboratory spectroscopy e.g., low temperature linewidth and linestrength measurements of CO₂ transitions.
- ◆ New laser is used as a calibration source for ongoing work with tunable acousto-optic filters.

Points of Contact:

- NASA - John Allen; 301-286-5896
- Focused Research - Timothy Day; 408-980-8088