The Office of Technology Management

UNIVERSITY OF TEXAS ARLINGTON

Method and Apparatus for Laser Reshaping

Tech ID: UTA 07-01

INVENTOR: Nicolai M. Stelmakh

TECHNOLOGY NEED

Laser diodes as laser sources are ideal for several applications due to their high efficiency, compactness, availability, and most importantly their ability to provide high-power output. However, their use as high-power direct light source is limited by the complex mode structure of output emission at the high power levels. Single-element semiconductor lasers can be used for producing multimode emission at high power levels. However, since the current techniques for utilizing the high-power output of these lasers are cavity modification-based, they suffer from low efficiency, instabilities, and low yield in practical applications. As lasers are extensively utilized in a variety of fields such as material processing, telecommunications, and military instruments, there arises a need for better and more economical laser setup, especially for high demand laser sources such as laser diodes.

INVENTION DESCRIPTION/SOLUTION

Researchers at UT Arlington have developed an innovative technique for reshaping the emission of a semiconductor laser, thus narrowing a wide-band beam into one single spot. As a result, the emission yield of a high-power semiconductor is dramatically improved, along with higher efficiency. Moreover, the laser beam can be of various shapes, and this technique can also be used for an arrays of lasers, especially broad-area laser diodes.

APPLICATIONS

- Industrial processing
- LIDAR/LADAR
- High-definition compact disc recording devices
- Research instrumentations

KEY BENEFITS

- Cost-effective
- Compact design
- Compatible with various lasers

STAGE OF DEVELOPMENT

Prototype

INTELLECTUAL PROPERTY STATUS

Patent granted
US7724789B2

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