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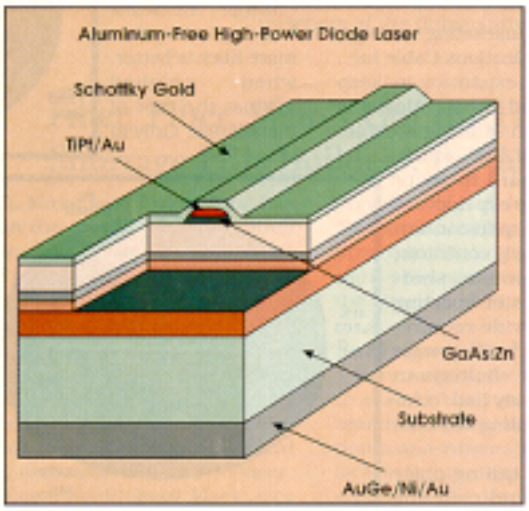
Laser Firm Gets University License for Marketing Al-Free Laser Diodes

EVANSTON, Ill. — Northwestern University has granted an exclusive license to Semiconductor Laser International Corp. (SLI) of Endicott, N.Y., to develop, manufacture, market and sell aluminum-free high-power semiconductor lasers worldwide for applications ranging from medicine to telecommunications to precision machining in the automotive industry.

Geoffrey Burnham, president of SLI, expects that these



In this schematic of the aluminum-free semiconductor laser, scientists at Northwestern University etch GaAs contact layers and deposit TiPt/Au to form an ohmic contact with a width of 100μm.

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aluminum-free lasers, which may have longer lifetimes than other types, will account for half of the $200 million to $250 million high-power laser diode market.

Most commercial high-power semiconductor lasers employ aluminum, but the properties of the metal reduce output power and the lifetime of a device. The new technique, patented by the university's Center for Quantum Devices (CQD), replaces aluminum with phosphorus or indium, and is said to improve laser performance and increase power levels, thus increasing power capabilities of light emitted by a diode laser.

Manijeh Razeghi, electrical engineering professor at Northwestern who is advising SLI on implementing the technology commercially, said that the lasers will offer five times the power at one-tenth the cost of an aluminum-based device of similar design.

To illustrate the lasers' capability, the CQD team recently demonstrated 30,000 h of continuous operation with uncoated facets. Razeghi said that the laboratory test showed no degradation in output power and no change in wavelength, threshold current or efficiency at 1 W output power for a 100-μm aperture of 60 °C.

Quick to market

SLI expects to have the laser diodes on the market next year. "We can go to market very soon since the technology is fairly simple and has already been developed," Razeghi said.

Meanwhile, researchers will look into the possibility of using the technology in frequency-doubling and digital video disc applications. □

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