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NEWSBREAKS

High-power mid-infrared diode-laser bars generate peak power of 3 watts at 3200 nm

Scientists at Northwestern University (Evanston, IL) have developed an antimonide-based laser bar that yields 3 W of peak output power at 3200 nm operating at 90 K. The far-field beam width perpendicular to the junction is as narrow as 12° (FWHM). The device was tunable by current injection over a range of about 70 nm. Manijeh Razeghi at the Northwestern Center for Quantum Devices reported part of her team's findings in June at the US Air Force 1997 Diode Laser Technical Review (Albuquerque, NM).

The 3-W output was obtained from a stack of three InAsSb/InAsSbP double-heterostructure lasers bonded *p*-side down, each with a 100- μm -wide aperture and 700- μm cavity length; this design had a threshold current of 40 A/cm². A surface-passivation process, developed at Northwestern, enabled the *p*-side-down bonding and improved heat dissipation, Razeghi said. Device performance was measured in pulse mode (4–7- μs pulsewidth and 200-Hz repetition rate) at temperatures varying from 77 K to 300 K.

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