

Highly Strained InGaAs Ridge Waveguide Lasers Fabricated with Pulsed Anodic Oxidation

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ABSTRACT

There is a strong need for $\sim 1.02 \mu\text{m}$ semiconductor laser diodes to replace solid lasers used for pump sources of thulium-doped fiber amplifiers (TAFAs) to amplify S-band optical signals. Highly strained InGaAs ridge waveguide lasers were fabricated with pulsed anodic oxidation. The laser structure was grown by molecular beam epitaxy (MBE) system. The output powers up to 110 mW in CW mode were reached at room temperature for the 10- μm stripe lasers. The threshold current density of 389 A/cm^2 was achieved. The emission wavelength at 100 mA was 1.02 μm . The slope efficiency was 0.45 W/A in linear output region of light-current characteristics.

Keywords: InGaAs, lasers, pulsed anodic oxidation