Abstracts

Observations and Theory of High-Power Butt Coupling to LiNbO/sub 3/-Type Waveguides

J.M. Hammer and C.C. Neil. "Observations and Theory of High-Power Butt Coupling to LiNbO/sub 3/-Type Waveguides." 1982 Transactions on Microwave Theory and Techniques 30.10 (Oct. 1982 [T-MTT] (Special Issue on Optical Guided Wave Technology)): 1739-1746.

We report the study and observation of high-efficiency (greater than 60 percent) and high-power (13 mW CW and 27 mW, 5 µs 5 percent duty cycle pulse) butt coupling of diode lasers to indiffused LiNbO/sub 3/-type waveguides. We verified the predictions of the existing coupling theory at previously unreported power levels, and present a novel theoretical explanation of the effect of multiple reflections on laser output and waveguide coupling. The theory predicts our experimental observation that the amplitude of the periodic variation of laser output with laser-waveguide separation distance is a nonmonotonic function of laser drive current. Our measurements also lead us to infer that the onset of optical damage in Ti: LnbO/sub 3/ occurs at a CW power density of 4 X 10/sup 5/ W/cm² in the 0.83 µm wavelength region.

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