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Temperature-Dependence of the Resonant Pump Wavelength in Optical Pumping Injection Cavity Lasers L.J. OLAFSEN, Baylor University, K.G. YOUNG, University of Houston, T.C. MCALPINE, College of Wooster, W.W. BEWLEY, I. VURGAFTMAN, J.R. MEYER, U. S. Naval Research Laboratory, H. LEE, R.U. MARTINELLI, Sarnoff Corporation — An optical pumping injection cavity (OPIC) laser contains a type-II W active region enclosed between two GaSb/AlAsSb distributed Bragg reflector mirrors, where the thickness of the etalon cavity surrounded by the mirrors is tuned to the desired pump wavelength. Multiple reflections of the pump photons result in more efficient absorption of the pump beam and consequently higher efficiencies and lower lasing thresholds. An optical parametric oscillator is used to pump the OPIC lasers at resonance, where the threshold pump intensities are minimized and output efficiencies are maximized. The resonant pump wavelength varies linearly with temperature. In addition to presenting light-light results, including efficiencies and thresholds as a function of temperature, the temperature-dependence of the resonant pump wavelength will be discussed, including the relative variations and contributions of lattice constant and refractive index with temperature.

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