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Cascaded Emission Regions in 2.4 μm GaInAsSb Light Emitting Diode's for Improved Current Efficiency JOHN PRINEAS, JEFF YAGER, Dept. Physics and Astronomy, University of Iowa, JONATHON OLESBERG, Optical Science and Technology Center, University of Iowa, CHUANSHUN CAO, Dept. Physics and Astronomy, University of Iowa, MADHU REDDY, Dept. of Physics and Astronomy, University of Iowa, CHRIS CORETSOPOULOS, Optical Science and Technology Center, University of Iowa — Infrared optoelectronics play an important role in sensing of molecules through characteristic vibrational resonances that occur at those wavelengths. For molecules in aqueous and at room temperature, where optical transistions tend to be broad, the broadband emission of light emitting diodes (LEDs) are well suited for obtaining molecular absorption spectra. The 2-2.6 μm range is an advantageous range for sensing of glucose. Voltages available in batteries and control electronics are limited to much higher voltages than those required to turn on an infrared LED, and moreover have limited current supply. Here, we demonstrate room temperature operature of 5-stage cascaded emission regions in 2-2.6 μm GaInAsSb LEDs. We report three times higher turn on voltage, and nine times improved current efficiency compared to a single stage device.

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