## Electroluminescence enhancement in mid-infrared InAsSb resonant cavity light emitting diodes for CO, detection 😾

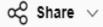
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In this work, we demonstrated a mid-infrared resonant cavity light emitting diode (RCLED) operating near  $4.2\,\mu\text{m}$  at room temperature, grown lattice-matched on a GaSb substrate by molecular beam epitaxy, suitable for CO $_2$  gas detection. The device consists of a  $1\lambda$ -thick microcavity containing an InAs $_{0.90}$ Sb $_{0.1}$  active region sandwiched between two high contrast, lattice-matched AlAs $_{0.08}$ Sb $_{0.92}$ /GaSb distributed Bragg reflector (DBR) mirrors. The electroluminescence emission spectra of the RCLED were recorded over the temperature range from 20 to 300 K and compared with a reference LED without DBR mirrors. The RCLED exhibits a strong emission enhancement due to resonant cavity effects. At room temperature, the peak emission and the integrated peak emission were found to be increased by a factor of  $\sim 70$  and  $\sim 11$ , respectively, while the total integrated emission enhancement was  $\sim \times 33$ . This is the highest resonant cavity enhancement ever reported