

Abstract Submitted
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Effects of annealing on InAs/InAsSb type-II infrared superlattices SARAH HIERATH, University of Dayton, ELIZABETH STEENBERGEN, Air Force Research Laboratory, ARTHUR SIWECKI, MO AHOJJJA, SAID ELHAMRI, University of Dayton — InAs/InAsSb type-II superlattices (SLs) are a current material of interest for mid- and long-wavelength infrared detectors. Recent studies on InAs/(In)GaSb SLs involving annealing treatments have shown some improvement in the material properties, which may indicate increased dopant activation and decreased dislocation density. This study investigates the effect of rapid thermal annealing (RTA) on the electrical, optical, and structural properties of a mid-wavelength infrared InAs/InAsSb SL design doped with Be at a concentration of $5 \times 10^{16} \text{ cm}^{-3}$. Samples cut from a single InAs/InAsSb SL wafer were annealed utilizing RTA at two temperatures (440 °C and 460 °C) and two different time intervals (30 seconds and 1 minute). Hall Effect, photoluminescence, and high resolution x-ray diffraction measurements were taken before and after annealing to determine the impact on SL properties. Results of these measurements will be presented and discussed.

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