Characterization of Random Alloy $Al_{0.85}Ga_{0.15}As_{0.07}Sb_{0.93}$ for Mid-Wave Infrared Avalanche Photodiodes – Supplemental Information

Nathan Gajowski, Manisha Muduli, TJ Ronningen, Sanjay Krishna

The Ohio State University, Department of Electrical and Computer Engineering, Columbus, OH 43210, USA

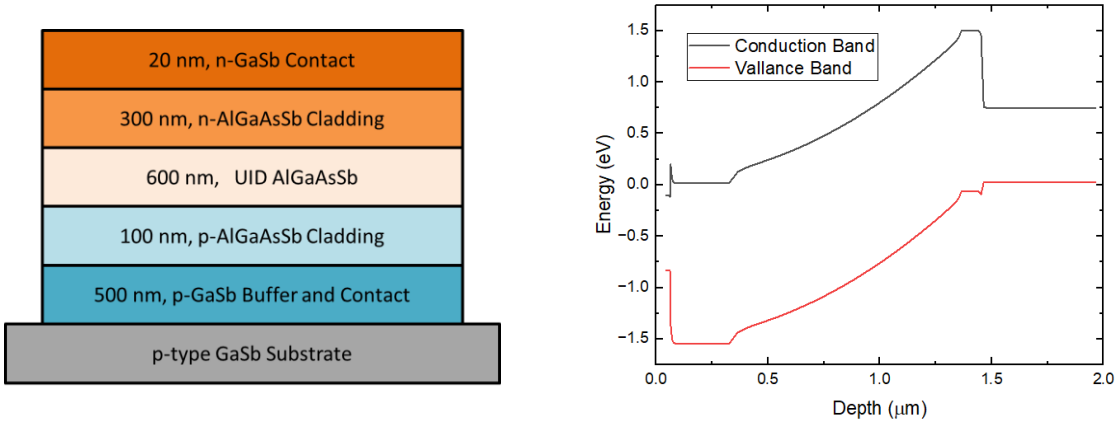

Fig. 1 Heterostructure (left) and band diagram (right) for MBE grown, random alloy $Al_{0.85}Ga_{0.15}As_{0.07}Sb_{0.93}$ NIP devices.

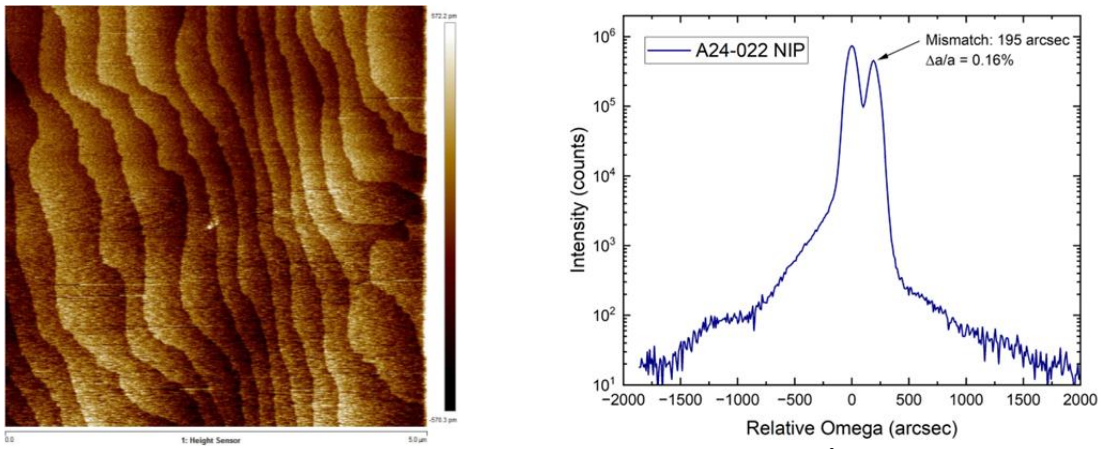

Fig. 2 AFM of 5x5 μm area showing atomic steps and an RMS surface roughness of 1.63 Å (left), and an omega-2theta coupled XRD scan showing the mismatch (right) for NIP heterostructure samples.

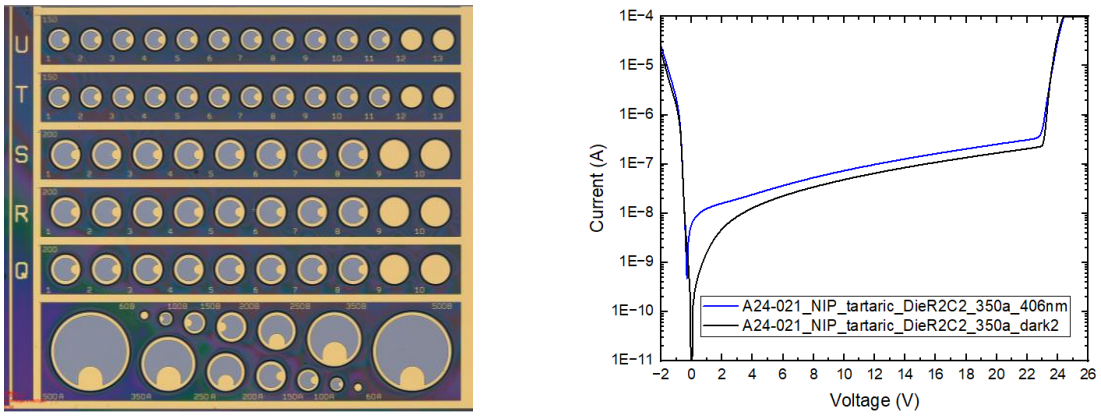

Fig. 3 Optical microscope image of fabricated NIP devices (left) and IV curves of a 350 μm diameter NIP device under dark conditions and 406 nm laser illumination (right).