



Figure 1: (a) Band gap energies vs. lattice constants for the III-V semiconductors. Existing IMF-based GaSb-on-Si virtual buffers has a lattice constant of 6.1 Å (black circle). By extending this approach to produce strain-relieving IMF arrays in ternary III-V compounds on Si substrates, we targeted specific compositions ranging from 6.05 Å to 6.4 Å (colored circles). (b) X-ray diffraction measurements of 1 μm-thick ternary IMF-based virtual buffers (colors consistent with circles in (a)), showing the Si substrate and ternary epilayer peaks. The extracted lattice constants of the epilayers are shown indicating that we have good control, while the narrow FWHM of these peaks suggests good material quality.