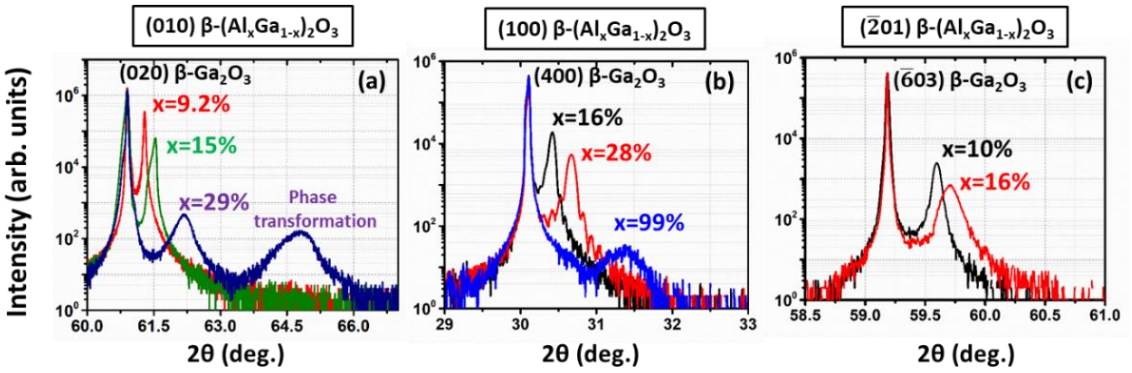

Figure 1. XRD ω-2θ scan profiles of the (a) (020), (b) (400), and (c) ($\bar{6}03$) reflections of MOCVD β-$(Al_xGa_{1-x})_2O_3$ films grown on (010), (100) and ($\bar{2}01$) β-Ga_2O_3 substrates with Al compositions up to 29%, 99% and 16%, respectively.

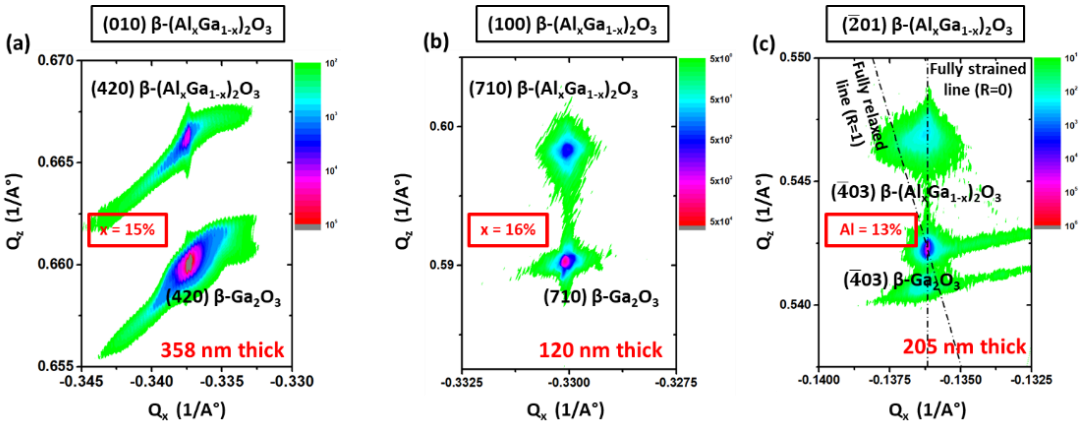

Figure 2. Asymmetric reciprocal space maps (RSMs) around (a) (420), (b) (710), and (c) ($\bar{4}03$) reflections of (010), (100) and ($\bar{2}01$) β-$(Al_xGa_{1-x})_2O_3$ films with x = 15%, 16%, and 13% respectively.

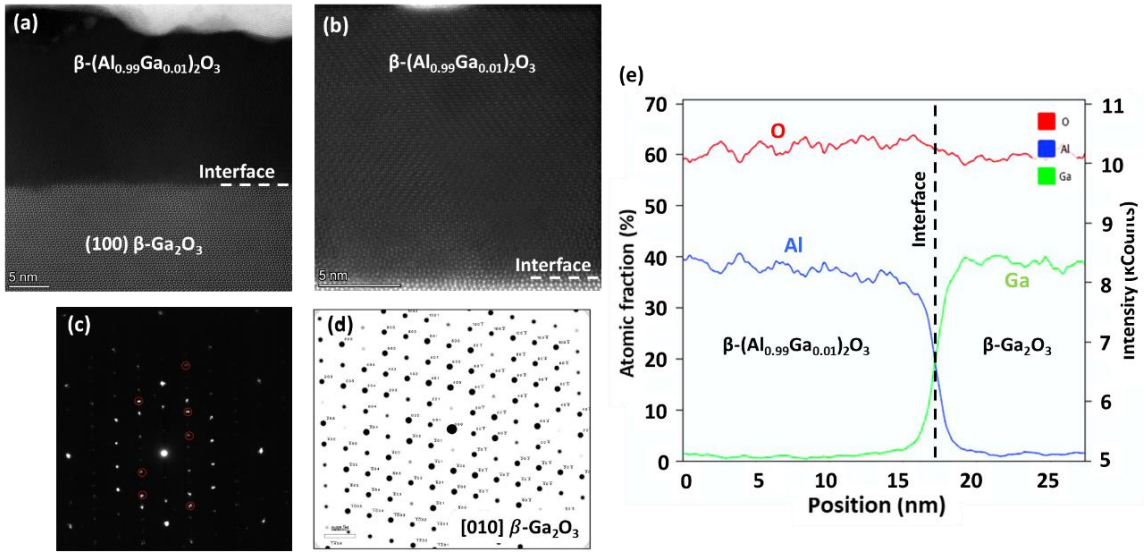

Figure 3. (a) High resolution HAADF-STEM images taken from the $[010]_m$ zone axis of (100) β-$(Al_{0.99}Ga_{0.01})_2O_3$ film grown on a 65 nm thick (100) β-Ga_2O_3 buffer layer on top of an on-axis (100) β-Ga_2O_3 substrate. (b) High magnification STEM images of the β-$(Al_{0.99}Ga_{0.01})_2O_3$ film. Electron nano-diffraction pattern obtained from the (c) β-$(Al_{0.99}Ga_{0.01})_2O_3$ film and (d) simulation. (e) STEM EDX atomic fraction elemental profile of β-$(Al_{0.99}Ga_{0.01})_2O_3$ film, confirming an average Al composition of ~99% in the epilayer.