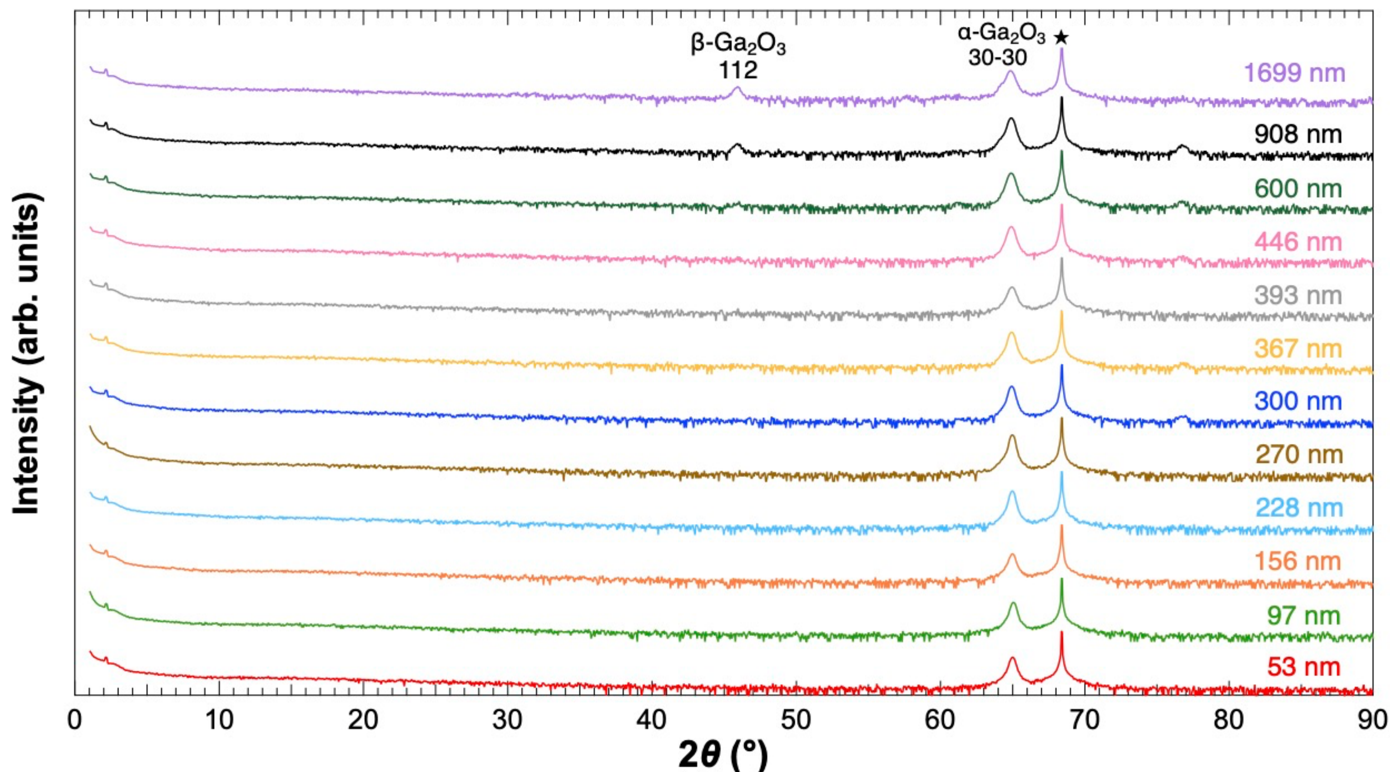

Figure 1: XRD θ-2θ scans for the α-Ga_2O_3 thin films with varying thicknesses grown on m-plane sapphire substrates using MOCVD. The heteroepitaxy of Ga_2O_3 films on m-plane sapphire substrates was performed at a reactor pressure of 15 Torr at a growth temperature of 600℃ (and 625℃ for the three Ga_2O_3 films with thicknesses of 270 nm, 446 nm, and 600 nm). We demonstrated that a single-phase α-Ga_2O_3 thin film with thickness 393 nm can be achieved on m-plane sapphire substrates via MOCVD.

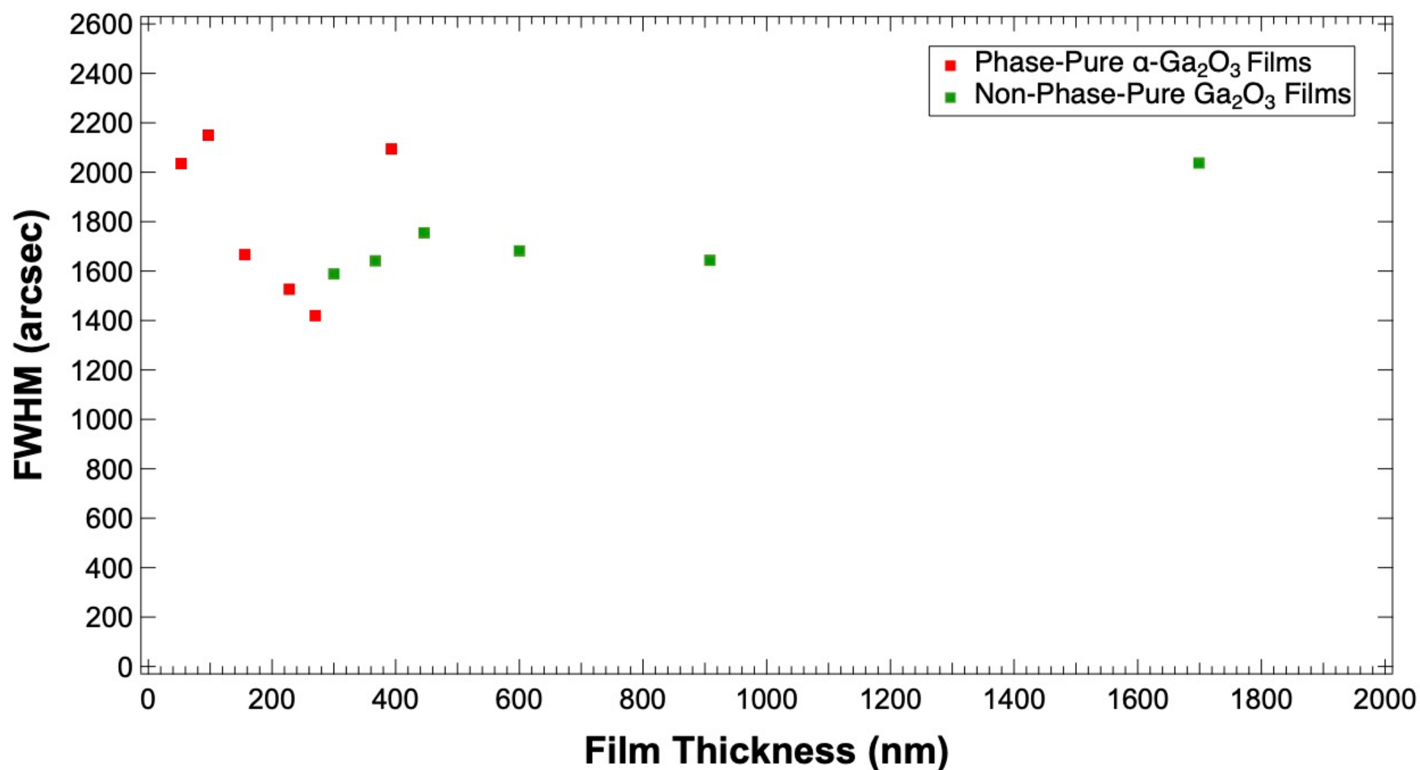

Figure 2: XRD rocking curve Full-Width-at Half-Maximum (FWHM) of Ga_2O_3 thin films grown on m-plane sapphire substrate using MOCVD as a function of film thickness. Single-phase α-Ga_2O_3 thin films are indicated by the red markers on the plot.