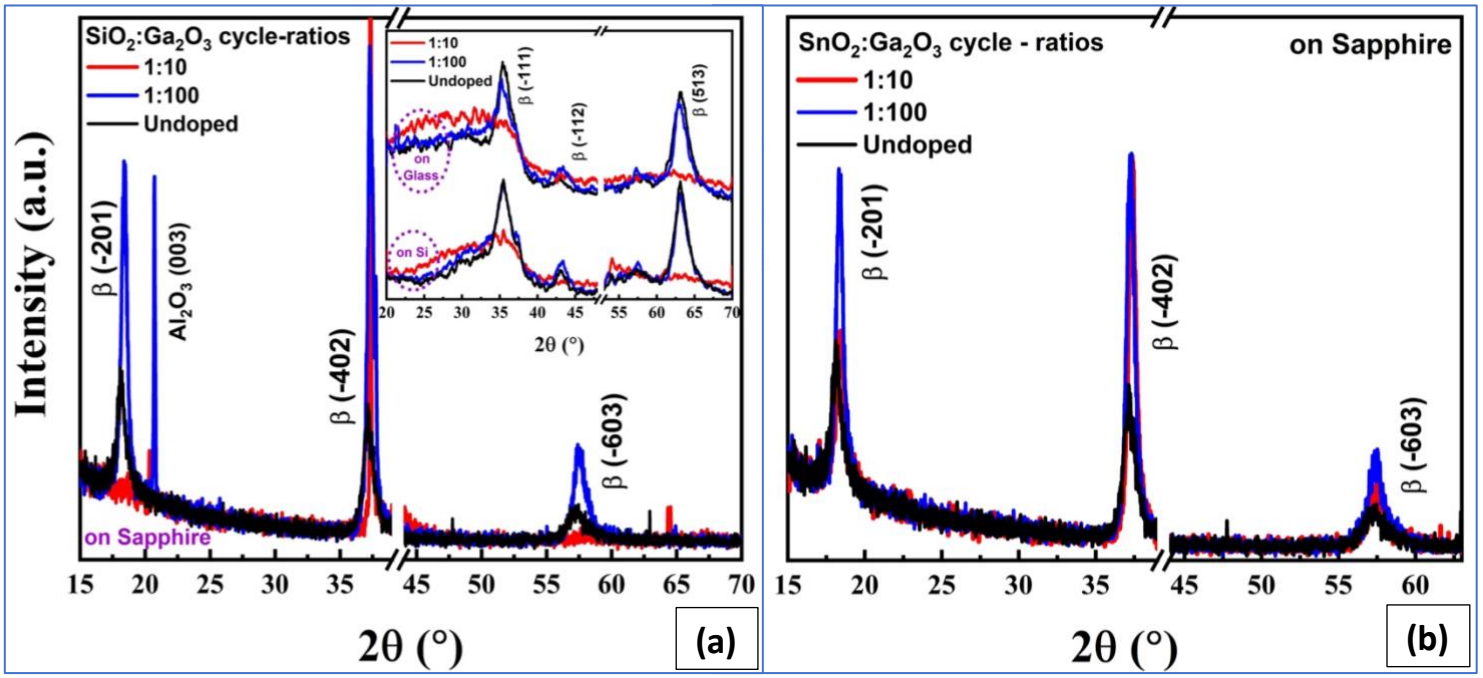

Figure 1. GIXRD spectra of 500-cycle grown Ga_2O_3 films using 50 W deposition and 250 W *in-situ* Ar-annealing plasma powers as a function of changing SiO_2:Ga_2O_3 cycle ratios on sapphire substrate. Inset shows the GIXRD spectra of 500-cycle grown Ga_2O_3 films under the same conditions while on Si and glass templates.

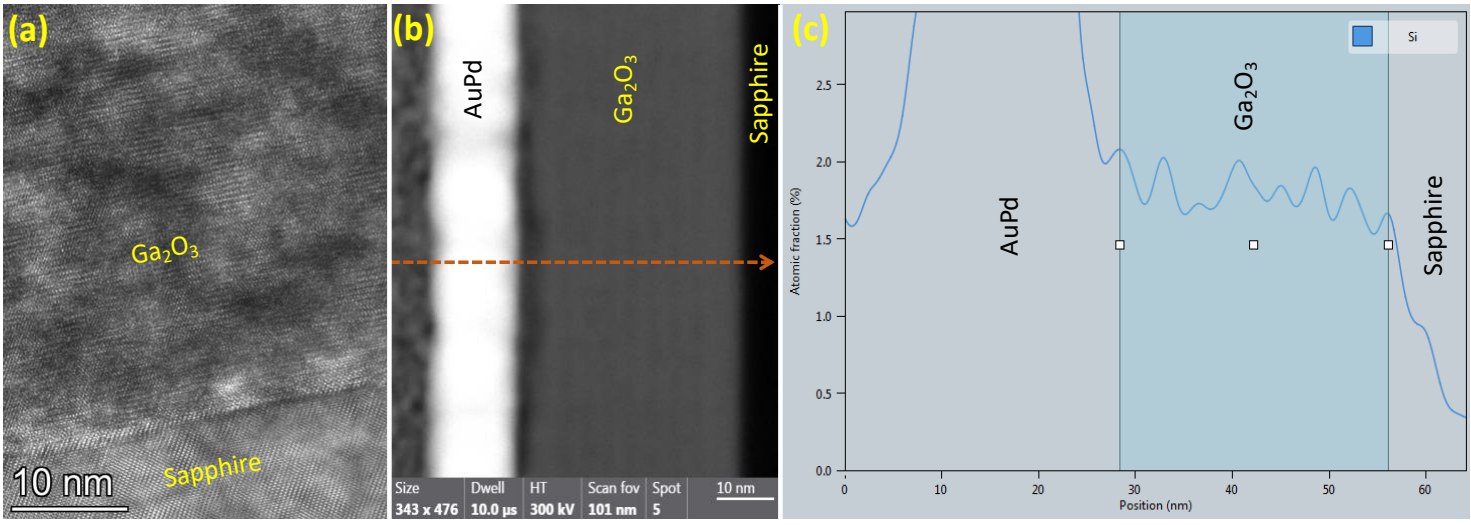

Figure 2. (a) HR-TEM micrograph of 500 cycles Ga_2O_3 film with 1:50 (SiO_2:Ga_2O_3) cycle-ratio grown at 240 ℃ substrate temperature on sapphire with 50 W Ar/O_2 plasma and 250 W *in situ* Ar-plasma annealing. (b) Cross-sectional high-angle annular dark-field (HAADF) STEM imaging of the sample revealing the Si-dopant layers in slightly darker contrast across the Ga_2O_3 film layer. (c) Atomic fraction signal of Si extracted from STEM-EDX elemental analysis as carried out along the dashed line shown on (b) resolving eight Si elemental peak positions as highlighted under the shaded-blue region, confirming the Si incorporation within the Ga_2O_3 layer.