

SI_8290_Improved Crystallinity and Polarity Determination of Gallium Nitride on Si (111) Using Atomic Layer Annealing_SeongUk Yun_UCSD

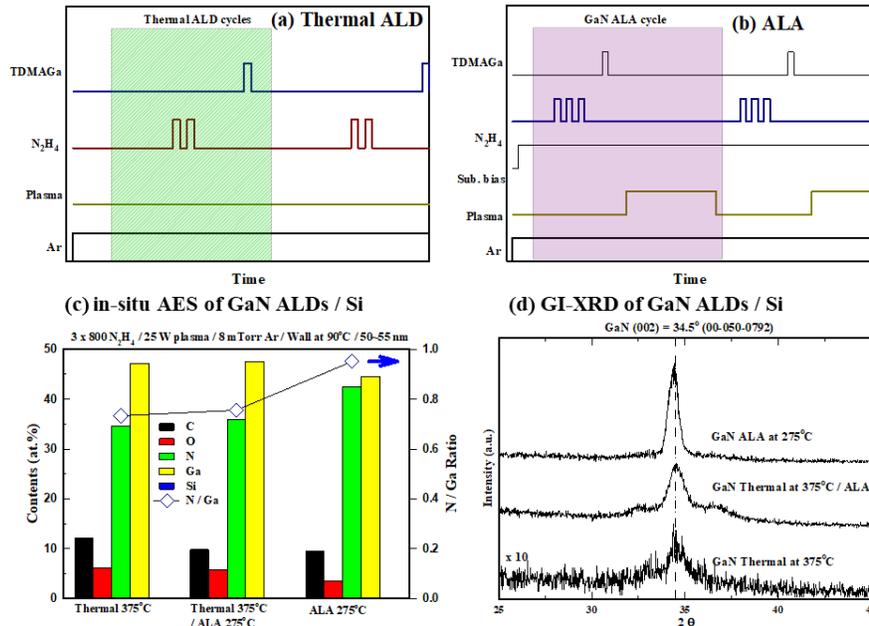


Figure 1. (a, b) Process parameter switching diagram of thermal ALD and ALA, (c) in-situ AES of GaN ALDs / Si, and (d) ex-situ GI-XRD of GaN ALDs / Si. Low impurity contents and high N/Ga ratio were observed in GaN ALA film and GaN ALA buffer layer significantly improved the GaN thermal ALD layers.

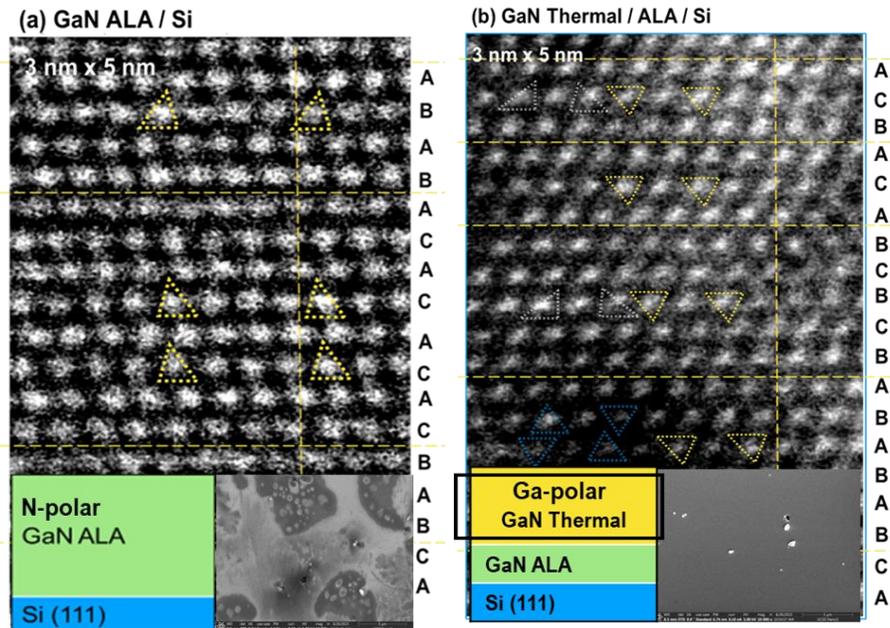


Figure 2. HAADF-STEM, scheme of ALD layers, and ex-situ top-view SEM images of KOH wet-etched GaN surface over (a) GaN ALA / Si, (b) GaN thermal / ALA / Si. N-polar (upward triangles) GaN in ALA film and Ga-polar (downward triangles) GaN in thermal ALD were observed in the HAADF-STEM images. The Ga-polar GaN surface of GaN thermal ALD layers was resistant to KOH wet-etching as compared to the N-polar GaN surface of GaN ALA layers consistent with the assigned polarities.