Supplementary materials

Compatibilize surface crack and crystallinity in 10-μm-thick AlN epilayer on 4-inch sapphire substrates

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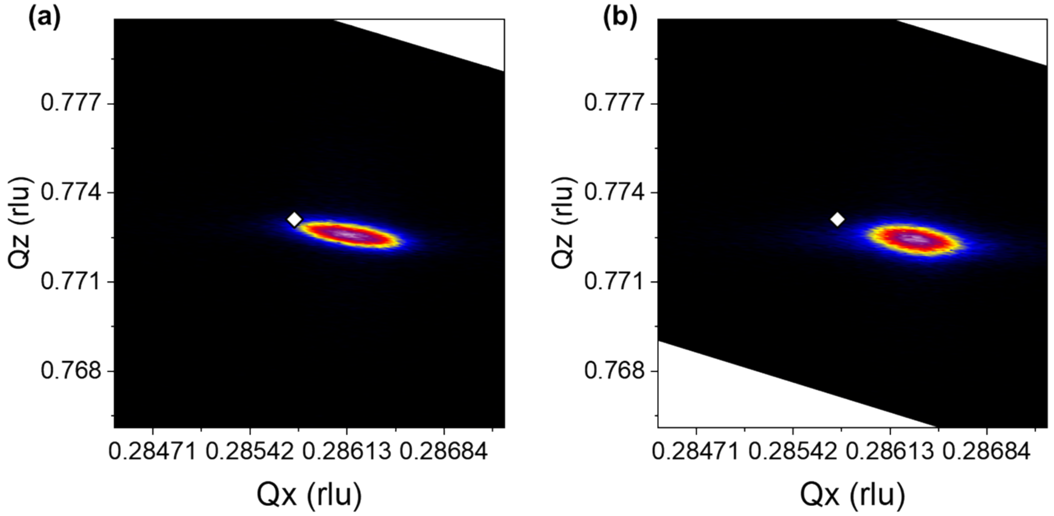

Figure S1. XRD reciprocal space mapping (RSM) of the (105) plane of (a) high-temperature annealed AlN/sapphire substrate and (b) AlN film after the growth of the LT AlN buffer. The white square represents the strain-free position of AlN, with coordinate (Q_x, Q_z) of (0.28575, 0.77311).

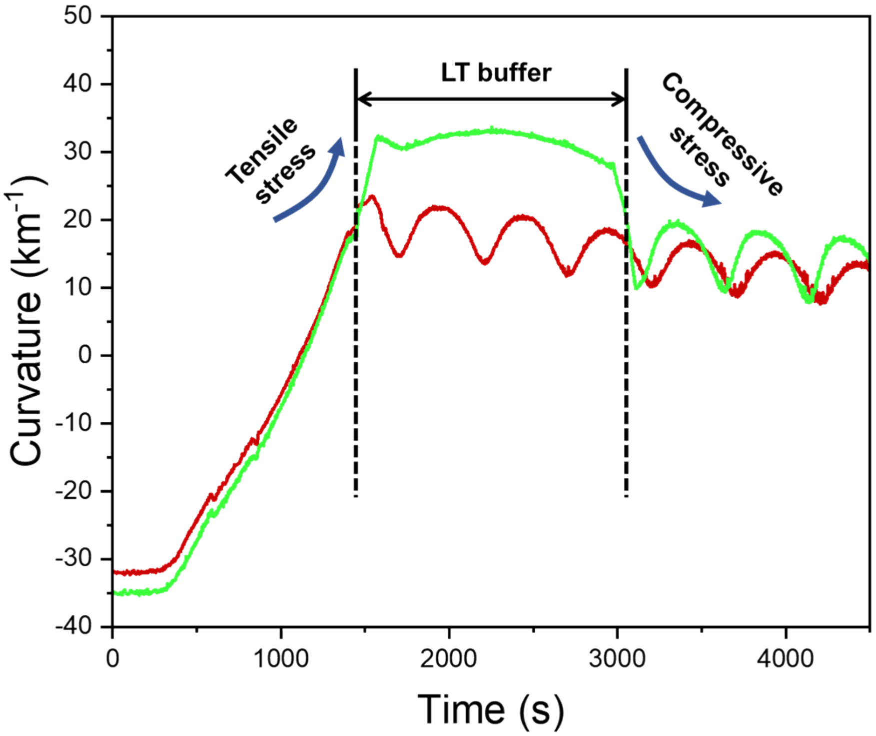

Figure S2. In situ wafer curvature monitoring results of AlN layer with (green color) and without (red color) LT AlN buffer.

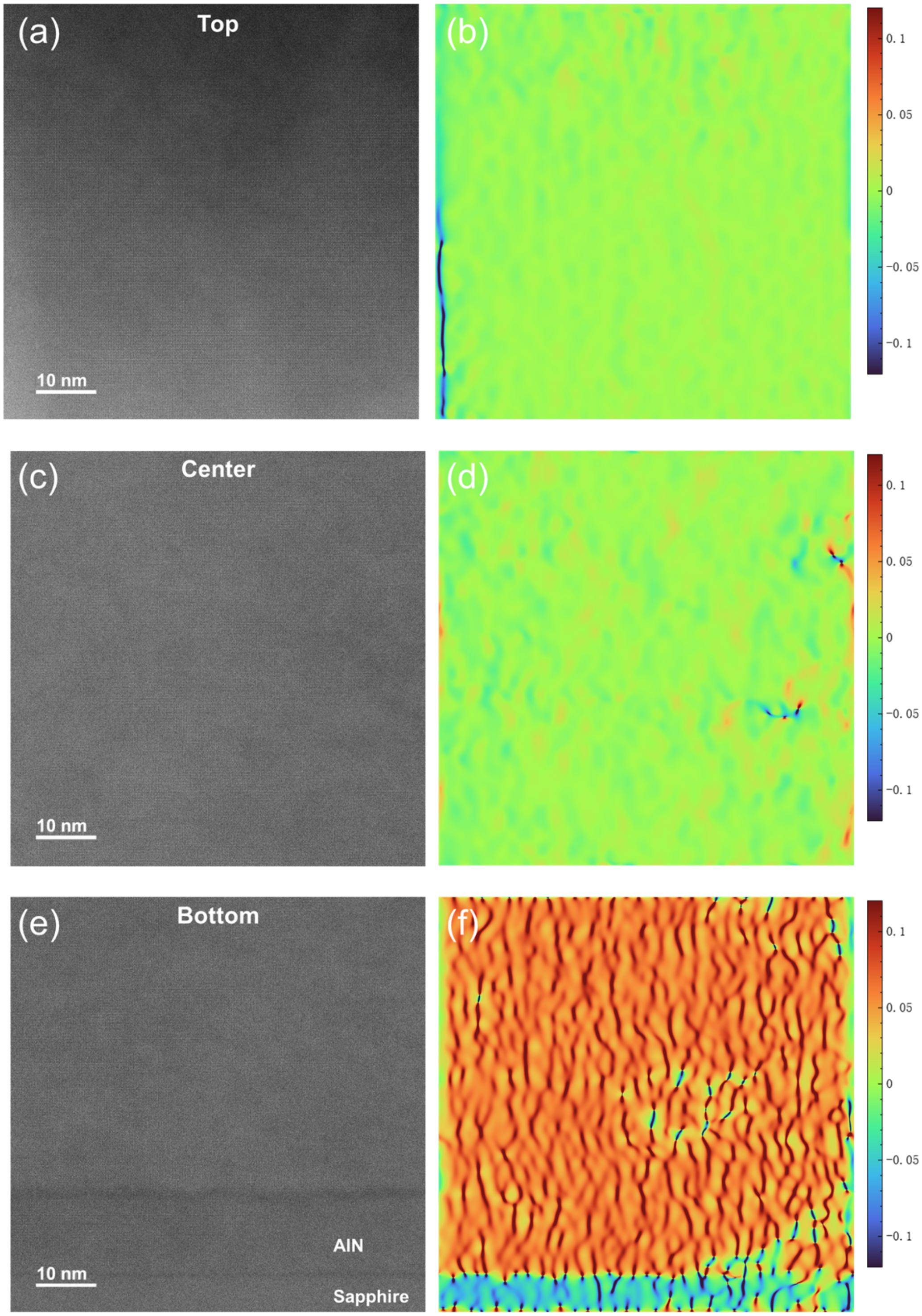

Figure S3. (a) A HRTEM image, and (b) strain distribution mapping of near the top region of 10-μm-thick AlN. (c) A HRTEM image, and (d) strain distribution mapping of near the center region of 10-μm-thick AlN. (e) A HRTEM image, and (f) strain distribution mapping of near the bottom region of 10-μm-thick AlN.