

Figure 1. Cross-sectional bright-field scanning transmission electron microscopy images of (a) as-bonded and (b) 1 hr anneal in ambient air. The bonded interface is between the alumina layer and 4H-SiC substrate. The thermal conductivity of the  $\beta$ -Ga<sub>2</sub>O<sub>3</sub> layer is: (a) 2.9 W/m·K and (b) 6.0 W/m·K. The thermal boundary conductance is: (a) 66 MW/m<sup>2</sup>·K and (b) 77 MW/m<sup>2</sup>·K.

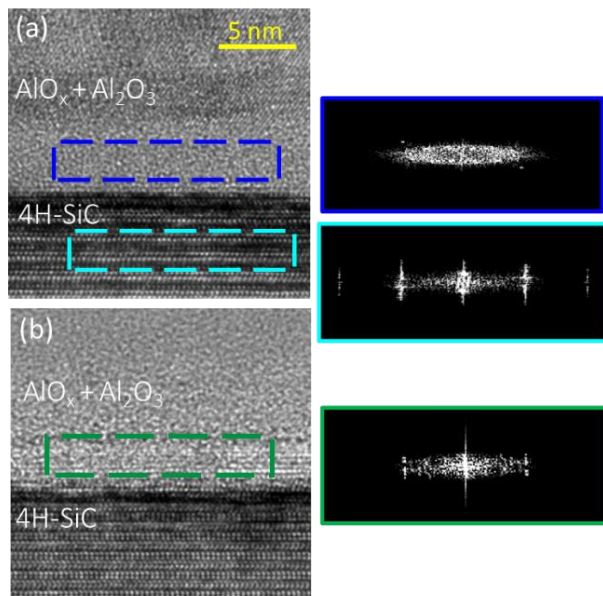


Figure 2. Cross-sectional transmission electron microscopy images of the bonded interface: (a) as-bonded and (b) 1 hr anneal at 800 °C with fast Fourier transforms for each of the boxed areas.

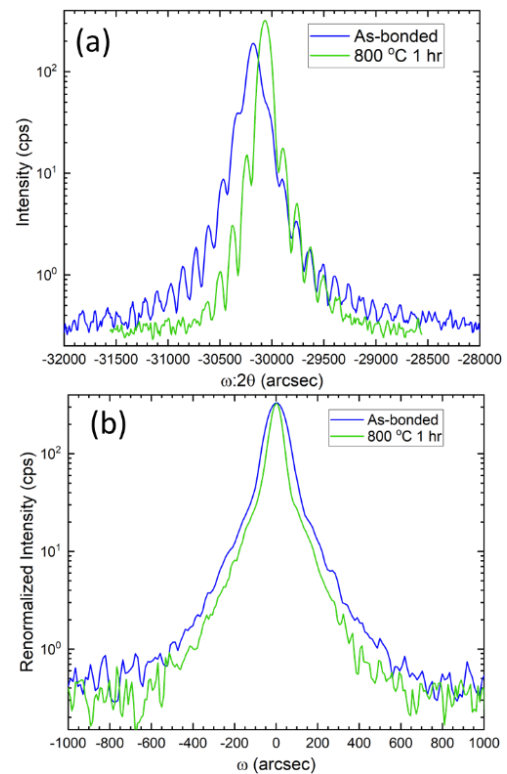


Figure 3. Triple-axis X-ray diffraction (a)  $\omega$ : $2\theta$  and (b)  $\omega$  of the symmetric  $(\bar{2}01)$   $\beta$ -Ga<sub>2</sub>O<sub>3</sub> layer. After annealing for 1 hr, residual strain from the ion implantation was reduced and the rocking curve FWHM decreased from 120'' to 70''.