

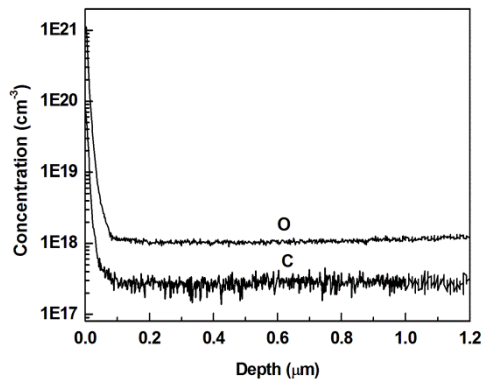
# **Nucleation and growth of $(10\bar{1}1)$ semi-polar AlN on $(0001)$ AlN by Hydride Vapor Phase Epitaxy**

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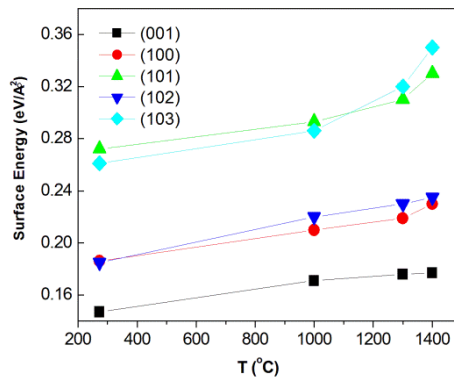
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**Supplementary Fig. S1** The result of SIMS shows the concentrations of oxygen and carbon are around  $3 \times 10^{17}$  and  $1 \times 10^{18} \text{ cm}^{-3}$ , respectively.



**Supplementary Fig. S2** The surface energy of a certain plane as a function of temperature.