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Optimization of the growth temperature of α-Ga_2O_3 epilayers grown by halide vapor phase epitaxy

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ABSTRACT

We report the optimized temperature for the growth of α-Ga_2O_3 on α-Al_2O_3 substrate using halide vapor phase epitaxy. The α-Ga_2O_3 layer grown at 470 □ exhibited the lowest full-width-at-half-maximum values for the (0006) and (10-14) peaks in the X-ray omega-scan rocking curve, which confirmed that the growth temperature strongly influenced the phase transition of Ga_2O_3 and affected the crystal quality of the α-Ga_2O_3 epitaxial layers. In addition, the impurity concentration in this α-Ga_2O_3 epilayer as determined by secondary ion mass spectroscopy was found to be in the range of 10^{16}-10^{18} cm^{-3}.

Keywords : α-Ga_2O_3, HVPE, phase transition, growth temperature

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