

# Wettability Measurement of Nitrided Sapphire Substrate by Ga-Al Solutions Using a Sessile Drop Method

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AlN is a promising substrate material for AlGaIn-based ultraviolet light emitting diodes, because of its high thermal conductivity, high ultraviolet transmittance and small lattice mismatch with AlGaIn crystal. Recently, we have developed an original liquid phase epitaxy (LPE) method using Ga-Al solution to grow AlN layer on the nitrided sapphire [1]. Using this method, a 1.2-micrometer-thick AlN layer was successfully obtained for 5 h under normal pressure [2-3]. In the case of LPE method, wettability of a substrate by a liquid is important to design the optimum growth process. Therefore, in this study, we measured the wettability of the nitrided sapphire substrate by the Ga-Al solution using a sessile drop method. To prevent oxidation of the droplet, zirconium sponges were used as an oxygen getter. Moreover, to shorten the exposing time of the droplet during experiment, the molten Ga-Al was drained out from an alumina dispenser on the substrate just before the measurement. As a result, it was clarified that the contact angle decreased with increasing temperature ranging from 700 to 1300 degree C. In the symposium, we will present the details of the results and improvement of the AlN-LPE process considering the temperature dependence of the wettability.

## References

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