

EpiCurve® TT: AlInN composition control for III-Nitride VCSELs

High-efficiency and high-power operation have been recently demonstrated for blue GaN-based vertical-cavity surface-emitting lasers (VCSELs) with AlInN / GaN distributed Bragg reflectors (DBRs) [1]. These AlInN / GaN DBRs are used at the front (emitting) side of the VCSEL that emits through the GaN substrate and is completed by a second, dielectric DBR at the VCSEL's back-side. Hence, perfect lattice match of the AlInN in the front DBR is

essential for enabling extremely low-defect InGaN layers in the active zone of the device that is grown on top of the AlInN / GaN DBRs.

A recent paper of Meijo University demonstrates, that LayTec's **EpiCurve® TT** metrology is a powerful tool to reveal and control the AlInN strain and alloy compositions at accuracy levels of XRD already during growth of the epitaxial layers. We highly recommend the reading of [2].

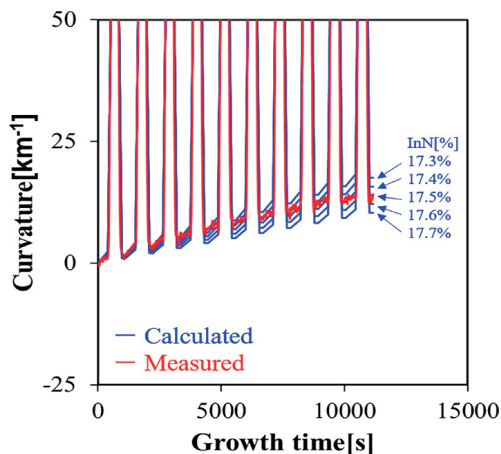


Fig. 1a: Measured in-situ wafer bow of GaN/AlInN DBRs on GaN substrate as measured (red line) and simulated for several InN mole fractions (blue lines). Shown is a magnified view to the low-temperature (825°C) AlInN wafer curvature sequence.

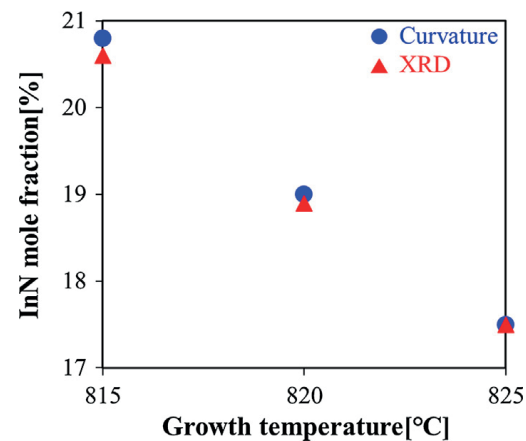


Fig. 1b: InN mole fraction values estimated from the in-situ curvature measurements and the ex-situ XRD measurements.

[1] Kuramoto et al., Appl. Sci. 2019, 9, 416; doi:10.3390/app9030416

[2] Hiraiwa et al., Journal of Crystal Growth 531 (2020) 125357

LayTec is ongoingly keeping support services on duty

The coronavirus outbreak is having a growing impact on all our industry and research community. Of course, LayTec has been directly impacted by local restrictions on movement, and also indirectly by other changes affecting our customers, suppliers and research partners. Despite these circumstances we continually aim to provide safe, dependable and reliable products and 100% service availability. As most of our customers and partners, we do our best to keep operations running for you.

Currently at LayTec, our main concern is for the health and safety of our employees. Therefore, we strictly apply "social distancing" and implemented even tighter personal hygiene guideline into our office and production procedures. We suspended all business traveling and customer visits until further notice, to minimize risks to our customers

and employees. However, as part of our commitment to providing world-class engineering products and support, we are continually developing innovative methods to effectively support our customers. Please, see the **new tools and platforms** for remote delivery of all our former on-site support services.

LayTec provided a special significant donation to:

Médecins sans Frontières / Ärzte ohne Grenzen

In order to support medical workers who are fighting the virus in the hotspots.

