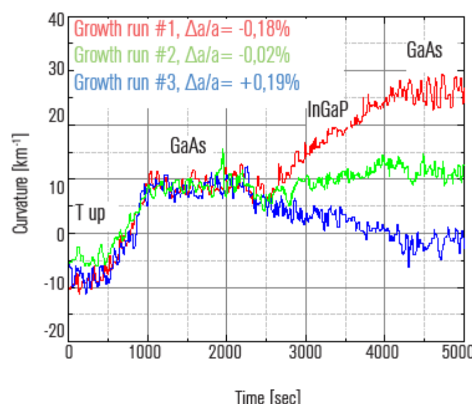
EpiCurve® TT– faster up-ramping after GaAs MOCVD maintenance

Jenoptik offers the entire process and technology chain in the field of GaAs based diode lasers (see: www.jenoptik.com/en-diode-laser). Recently, at CS Mantech in Denver, Jenoptik presented in a joined contribution with Ferdinand-Braun-Institute (FBH) on "In-situ Curvature measurements applied to MOVPE-based growth of edge-emitting diode lasers" latest results on how in-situ wafer bow measurements can be used for immediate re-calibration of precursor settings after reactor maintainance. The thermal expansion coefficient of InGaP is slightly smaller than that of GaAs. Therefore, for growing exactly lattice matched InGaP on GaAs, a specific wafer curvature slope towards concave bow is characteristic during InGaP growth above 600°C. As can be seen in Fig.1, this enables immediate in-situ calibration of the InGaP composition after MOCVD maintenance. For further information on other highlights of the Jenoptik/Ferdinand-Braun-Institute (FBH) contribution at CS Mantech (e.g., EpiCurve® TT tuning of tensile strained AlGaAsP cladding layers for reducing the final bow of GaAs/AlGaAs based edge emitting lasers) please refer to the presentation.



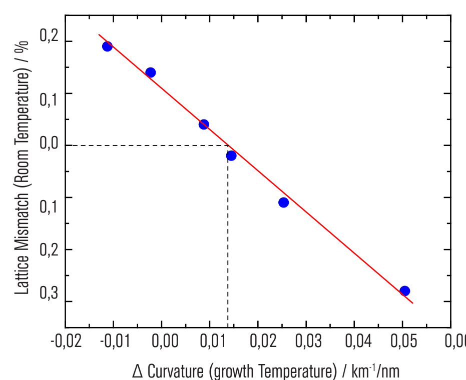


Fig. 1: Top: In-situ wafer bow data of InGaP grown nearly lattice matched to GaAs (three slightly differing compositions). Bottom: based on careful correlation to ex-situ XRD the normalized slope of in-situ curvature measurement can be translated directly into the related RT lattice mismatch. Perfect lattice match of InGaP to GaAs can be achieved at a normalized curvature slope of 0.014 km^{-1}/nm. The normalization to growth rate has been done by measuring the growth rate in-situ through analysis of the 633nm reflectance signal.

EpiCurve® TT – InAlN DBR back-reflectors taken under tight control

Researchers from Otto-von-Guericke University (OvGU) in Magdeburg presented their latest results on InAlN DBR growth on sapphire last month at ISGN-5 in Atlanta. Growth of InAlN DBRs has to be performed at rather low growth rates for avoiding surface roughening. Hence, the challenge is to keep all growth conditions in-spec for several hours. Fig.2 shows the pocket temperature (measured by 950 nm pyrometry) and the wafer curvature: The increasingly concave bow of the wafer indicates that apparently less Indium is incorporated into the InAlN during the second half of this process. A copy of the talk can be downloaded at www.laytec.de.

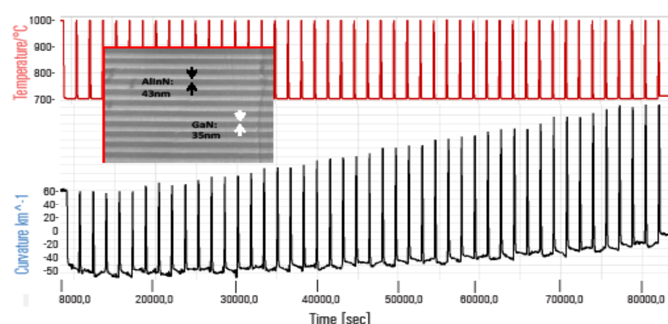


Fig.2: Wafer curvature during InAlN/GaN DBR growth (data curtesy of OvGU). The inset gives a TEM picture of the structure.

Jsun – our sales and service partner for PV in China

Jsun and LayTec signed cooperation agreement regarding sales and service cooperation in the China photovoltaics (PV) market. Jsun is a well established distributor of advanced production equipment for solar cells and modules. Through cooperation with JSun LayTec will provide its Chinese PV customers superior metrology tools and services.

You can meet us at the following workshops, conferences and trade fairs:

8 – 10 July 2014 | Intersolar North America 2014, San Francisco | www.intersolar.us

13 – 18 July 2014 | ICMOVPE XVII, Lausanne | Booth 12 | www.icmovpe2014.epfl.ch

14 July 2014 | LayTec´s 19th In-situ Seminar at ICMOVPE XVII 2014

24 – 29 August 2014 | IWN 2014, Wroclaw | Booth A9 | www.iwn2014.pl

26 August 2014 | LayTec's and PANalytical's 1st Metrology Workshop at IWN 2014