

AlN barrier - 30 nm
QW3 - 10 nm
AlN barrier - 30 nm
QW2 - 10 nm
AlN barrier - 30 nm
QW1 - 10 nm
AlN buffer - 500 nm
Si(111) substrate

Fig. 1. Scheme of the QW structures grown at 450 °C. The shutters time sequence in one cycle of the MME process was:

- Al-2s followed by In-1s for QW1,
- Al-2s followed by In-2s for QW2, and
- Al-1s followed by In-2s for QW3.

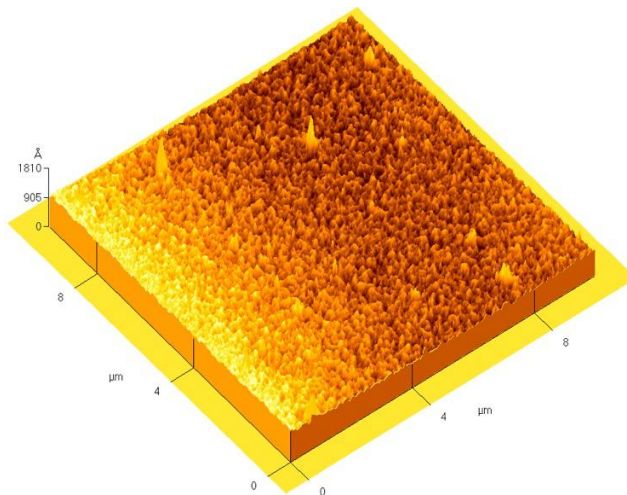


Fig. 3. AFM surface scan over a 10  $\mu\text{m}^2$  area. The RMS in this region is 8 nm

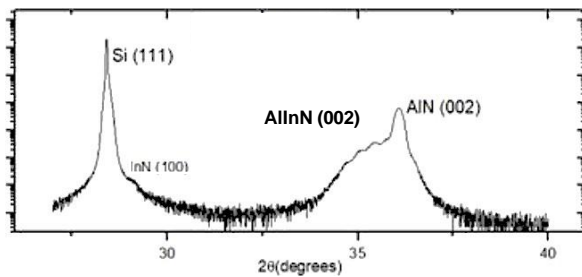


Fig. 5. XRD diffraction plot in the  $\theta$ -2 $\theta$  geometry.

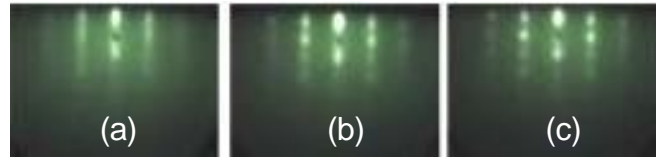


Fig.2. RHEED patterns taken at different stages of the MME process: (a) after the growth of QW1, (b) after growth of QW2, and (c) after growth of QW3.

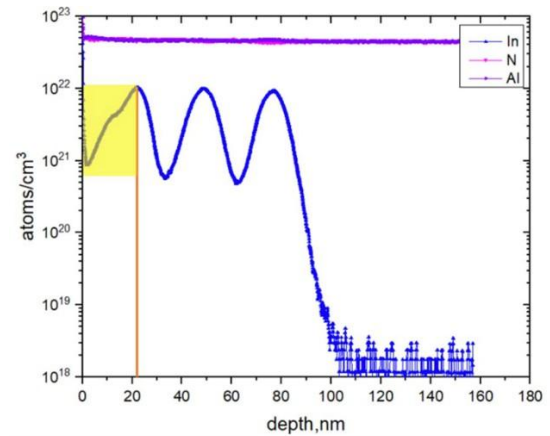


Fig. 4. SIMS depth profiles for In (blue line), Al (purple line), and N (magenta line). The yellow-colored area highlights a region of In segregation.

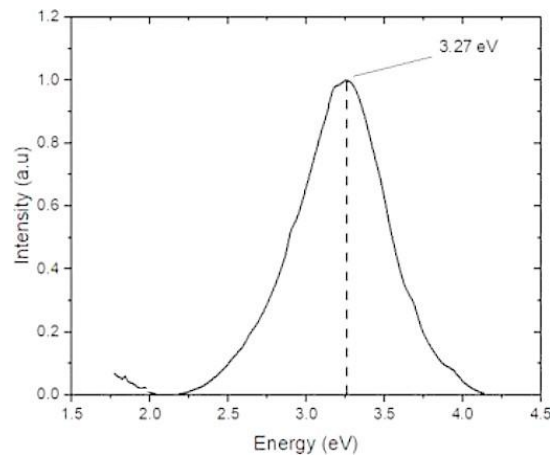


Fig. 6 CL spectrum measured at 300 K.