

non-polar a-plane GaN growth on r-plane sapphire substrate by MOCVD

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We report a high crystalline nonpolar a-plane (11-20) GaN on r-plane (1-102) sapphire substrates with $+0.15^\circ$, -0.15° , $+0.2^\circ$, -0.2° and $+0.4^\circ$ misoriented by metalorganic chemical-vapor deposition (MOCVD). The multi-quantum wells (MQWs) active region consists of 5 periods of the nonpolar a-plane InGaN/GaN (a-InGaN/GaN) on a high quality a-plane GaN (a-GaN) template grown by using the multibuffer layer technique. The full widths at half maximum (FWHMs) of x-ray rocking curve (XRC) obtained from the specimen that was grown up to nonpolar a-plane GaN layers with double crystal x-ray diffraction. The FWHM values of $+0.4^\circ$ misoriented sapphire substrate were decreased down to 426 arc sec for 0° and 531 arc sec for -90° , respectively. Also, the samples were characterized by photoluminescence (PL).