ANALYSIS OF LASERS DIODES BASED ON INGAN / GAN

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Blue-violet laser diodes (LD) available based on InGaN quantum studies (MQW) were first introduced by Nakamura and colleagues over a decade ago. Currently, they are widely used in many applications such as high-performance optical data collection systems or optical spectroscopy. LD emitting in the blue-green wavelength range also attract attention as a light source for full-color displays and laser projectors. However, many applications are still limited by the low output power involved (for example, laser displays). Key parameters that increase LD output power Configuration on nitrides at reasonable operating voltages are lowered external quantum yields. These parameters strongly depend on the structural best ranges of the InGaN MQW (AR) region. Emissions at such wavelengths require large molar fractions in quantum studies of indual nitride (InGaN) (QW), which results in strong piezoelectric fields due to the high deformation and piezoelectric properties of materials (Al, In, Ga) N. Under conditions of low excitation of separate piezoelectric fields electrons and holes in QW, and therefore significantly reduces the strength of the oscillator. Moreover, the emission will be shifted towards longer waves as a result of closed quantum closure (QCSE). For devices used at high excitation, material increase consists due to degradation in the quality of the crystal in the active layer with an increase in In in QWs. Because the two wave functions overlap and the quality of the QW material may depend on the QW width (dQW), this parameter has a big impact on the device performance. Waveguide structures (WG) emitting light with a wavelength of about 420nm made of InAlGaN / GaN were analyzed by photoluminescence (PL) and photoconductive (PC) spectroscopy using a scanning optical microscope near field (NSOM) for excitation and detection.