Descriptions

Two- or three-inch epiwafers grown by MOVPE are available for 650 nm Resonant cavity light emitting diode (RCLED) fabrication. The active region comprises multiple quantum wells of InGaP/InAlGaP sandwiched by InAlGaP layers to form a resonant cavity between P- and N-DBR mirrors. Since N-DBR has higher reflection, the light is emitted from the P-DBR mirror. 650nm RCLED can be used as light source in plastic optical fiber (POF) communication application.

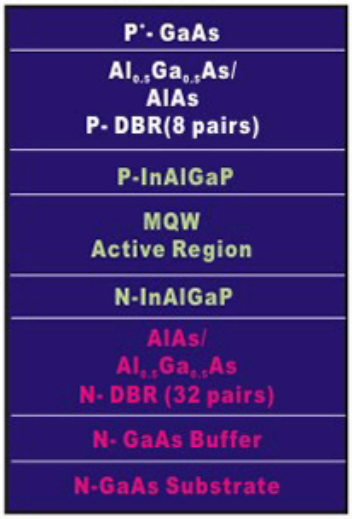

FIG.1

Wafer Characterization

Figure 2 shows the PL test result of 650nm RCLED epiwafer. Due to the high reflection of N-DBR beneath the active region, the FWHM is as narrow as 7.5 nm .

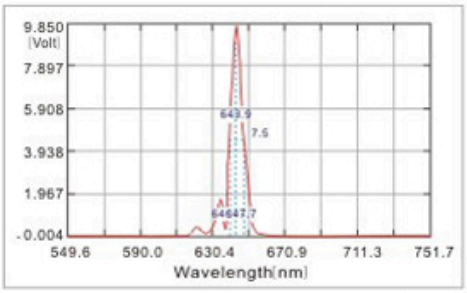

FIG.2

Figure 3 shows the reflectivity spectrum of five distinct points. Both Atlon dip and stop-band center have good uniformity.

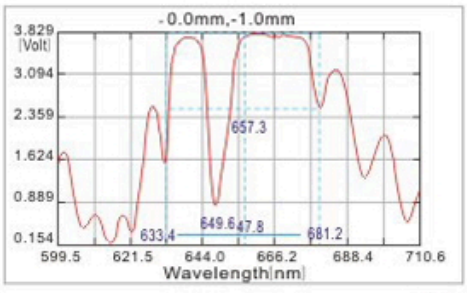

FIG.3

650 nm RCLED

Wafer Characterization

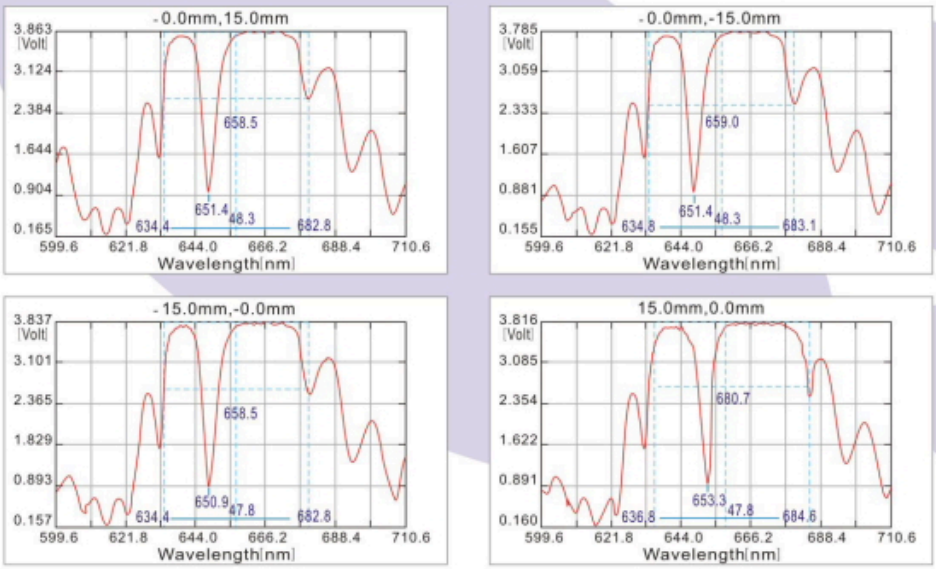

FIG.3

Typical Epitaxial Capability

Parameters	Values
PL wavelength	± 5nm of specified value
Etlon dip	±10nm of specified value
SB center	±10nm of specified value
Thickness uniformity	Better than ± 2.5%
Doping control	~ ± 30%
P-AlGaAs doping (cm^{-3})	C doped; 5E17 to 1E20
N-AlGaAs doping (cm^{-3})	Si doped; 1E17 to 5E18
P^{++} - GaAs doping (cm^{-3})	C doped; >1E19
Defect density control (Diameter)	<100 cm^{-2} (D>10um)

Typical Epitaxy Parameters

Parameter	Symbol	Typical
Forward Voltage @20mA	V_f	~2.0 V
Output Power @20mA	P_o	~0.5 mW
Beam Divergence @20mA	2θ	~100 degree
Rise / Fall Time @ 20mA	T_r / T_f	5ns / 5ns
Aperture diameter	ϕ	80 μm