

【TP-11】

Influence of coherent strain layer on structural and optical properties of InAs quantum dots

Sukhyun Hwang, Hyonkwang Choi, Yonkil Jeong, Yumi Park, Jewon Lee, Jae-Young Leem and Minhyon Jeon*

Department of Broadband information and communication, Institute for Nanotechnology Applications, Inje University, Gimhae-shi, Kyungnam, 621-749, Korea(POK)

We investigated various high potential barrier effect influenced emission wavelength, line width and modification of wetting layer of InAs quantum dots (QDs) by photoluminescence (PL), photoreflectance (PR) spectroscopy. Conventional InAs QDs samples embedded single AlGaAs barrier and AlGaAs/GaAs superlattice barrier structures were designed and grown by molecular beam epitaxy (MBE) to identify various high potential barrier and coherent strain effects. From PL spectra of reference sample QD1, the peak positions of sample QD2 with AlGaAs barrier and sample QD3 with AlGaAs/GaAs superlattice were blue-shifted as much as 100meV with FWHM of 72.24meV and 80meV with FWHM of 56meV respectively. In case of the wetting layer related peaks by PR measurement, QD3 was relatively higher than QD2. And the wetting layer thickness of QD3 was thinner than QD2.

Keywords : MBE, Quantum Dot, InAs, Photoluminescence, Superlattice barriers.