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The Optical and morphological properties of InAs quantum dot by changing flux for cooling down temperature GaAs substrate.

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Atomic force microscopy (AFM) and photoluminescence (PL) spectroscopy studies have been performed the self-assembled InAs quantum dots samples by molecular beam epitaxy (MBE). GaAs surfaces are cooling down temperature under no As₄ flux and under molecular In flux prior to InAs QDs deposition. When InAs monolayers (MLs) are equivalently deposited on GaAs surfaces, giving a QD arrangement with larger and higher than that of obtained for the InAs QDs grown conventionally. It is indicated that the combination of evaporated As₄ from GaAs buffer layer and supplied In causes the preformation of InAs QDs on the surface. From the Photoluminescence spectra of sample at low temperature (16K), we observe that the emission peak is red-shifted to 1.07eV.

Keywords : molecular beam epitaxy, atomic force microscopy, Photoluminescence, Indium