Investigating the chemical and morphological evolution of GaAs capped InAs/InP quantum dots emitting at 1.5μm using aberration-corrected scanning transmission electron microscopy

The emission wavelength of InAs quantum dots grown on InP has been shown to shift to the technologically desirable 1.5μm with the deposition of 1–2 monolayers of GaAs on top of the quantum dots. Here, we use aberration-corrected scanning transmission electron microscopy to investigate morphological and compositional changes occurring to the quantum dots as a result of the deposition of 1.7 monolayers of GaAs on top of them, prior to complete overgrowth with InP. The results are compared with theoretical models describing the overgrowth process.

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