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Dependence of Aspect Ratio of InSb Self-Assembled Quantum Dots on Thickness and Indium Mole Fractions of Spacer Layers

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Short range biaxial and hydrostatic strains in quantum dots caused by spacer layers affect the aspect ratio to a great extent, leading to variations in the conduction and valence band energy levels. This paper aims to study the effect of the indium mole fraction and thickness of the spacer layer on the size and shape of multi-stack quantum dots grown by metalorganic vapour phase epitaxy. Quantum dots of varying aspect ratios (height:width) have been grown. Structures containing two stacks of quantum dots have been grown on etched GaSb (001) substrate, with different thickness and indium content of the GaInSb spacer layers. Experiments are currently under way to study the effect of the thickness of the spacer and the composition on the size distribution, shape and density of three stacks of InSb quantum dots. The structures are characterized by X-ray diffraction, photoluminescence, scanning and transmission electron microscopy.

Level (Hons, MSc, PhD, other)?

PhD

Consider for a student award (Yes / No)?

Yes

Would you like to submit a short paper for the Conference Proceedings (Yes / No)?

Yes

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