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Self-Assembled Unstrained InGaAs Quantum Dashes ALEXANDER UKHANOV, US Naval Research Laboratory, ALLAN BRACKER, GEORO BOISHIN, JOE TISCHLER, JIM CULBERTSON — We describe a technique for MBE-based fabrication of unstrained quantum dashes with $Al_xIn_yGa_{1-x-y}As$ alloys lattice-matched to InP substrates. Templates for lattice-matched quantum dash growth are obtained by combining molecular beam epitaxy with *in situ* etching by arsenic bromide. A seed layer of self-assembled InAs quantum dashes is converted into nanotrench templates through overgrowth followed by strain-enhanced etching. We have explored limitations on the accessible range of alloy compositions imposed by the etch process and found that strain-induced etching is limited to compounds with low Al content. Nanotrench templates can be filled with lattice-matched alloys of varied compositions to define barriers and quantum wires that could lead to optoelectronic devices in a spectral range around 1.5 μm. Here we also present Atomic Force Microscopy and Photoluminescence data obtained from self assembled unstrained $In_{0.53}Ga_{0.47}As$ Quantum Dashes.

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