

Droplet-epitaxy GaAs quantum dots and compositional fluctuations in AlGaAs

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Engineering the shape and composition of quantum dots (QDs) has long been a field of interest for nanoscientists working on diverse applications. One important application is single photon emission, where the shape is crucial for the quality of the emission. Using cross-sectional scanning tunneling microscopy we analyze droplet epitaxy GaAs QDs grown in AlGaAs at low temperature, a regime where the QDs exhibit the shape of hexagonal pyramids. At these low growth temperatures we also find compositional fluctuations in the surrounding AlGaAs layers. These fluctuations appear anisotropic, with preferential direction in the [111] growth direction of the samples. More in-depth studies will be performed.

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