

Abstract Submitted
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A RHEED study on the self-assembly of InAs quantum dots on GaAs(001) by MBE¹ ITARU KAMIYA, KOHTARO MATSUURA, TSUYOSHI HIGASHINAKAGAWA, Toyota Technological Institute, TOYOTA TECHNOLOGICAL INSTITUTE TEAM — Control of size, density, and distribution of self-assembled (SA) quantum dots (QDs) by epitaxial growth remains to be a challenge. Reflection high-energy electron diffraction (RHEED) observation on nucleation and formation of SA InAs QD growth on GaAs(001) by MBE has been performed to shed light on this issue. RHEED specular beam, which provides us with information about the formation of QDs through rise of chevron-shape patterns, are measured *in situ*. The results obtained under low InAs growth reveal that there are processes dependent and independent of growth rate. In addition, the results indicate that surface migration of In/As atoms and their incorporation into QDs, with the aid of the wetting layer, can be observed. Such information is complementary to the previously obtained results by STM or AFM, and provides us with the opportunity to understand the dynamics during QD formation. Based on these results, we propose a model on the QD formation process.

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Itaru Kamiya
Toyota Technological Institute

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