

Abstract Submitted
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Initial growth of CrAs on GaAs(001)-c(4×4) α ¹ KAZUMA YAGYU, SHIGERU KAKU, JUNJI YOSHINO — CrAs is a ferromagnetic material which has a hexagonal structure. It is, however, predicted by first-principles calculation that zincblende (ZB) CrAs shows ferromagnetism and has a halfmetallic electronic structure [1-3]. Although ferromagnetism of a CrAs epitaxial film was confirmed so far, its crystal structure is still unclear. It turned out that ferromagnetism originated at the interface. In this study, initial growth of CrAs film has been investigated with scanning tunneling microscopy at 80 K. CrAs was grown on a GaAs(001)-c(4×4) α surface by means of exposing Cr as well as As₄ atoms at 250° C, followed by annealing at the same temperature. Randomly grown CrAs islands were observed from larger islands in proportion to the annealing time. Dimer structure which is similar to that of the substrate was confirmed on the surface of CrAs islands. This means that a CrAs island may have a ZB structure. The detailed structure and electric state of CrAs islands are discussed in the presentation.

[1] H. Akinaga et al., Jpn. J. Appl. Phys. 39 (2000) L1118

[2] M. Shirai, Physica E 10 (2001) 143

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