PROPERTIES AND INTERCONVERSION OF SELF-INDUCED SiGe NANOISLANDS OF DIFFERENT SHAPES

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S u m m a r y

In this work, SiGe nanoislands formed on Si and $Si_{0.9}Ge_{0.1}$ buffer layers are studied with the use of the atomic force microscopy and Raman spectroscopy techniques. To study the islands of a certain shape, the monomodal arrays of the islands of this shape (hut-clusters, pyramids, domes) were formed by means of a variation of both the thickness of a deposited Ge layer and the growth temperature. It is established that, among the uncaped islands of different shapes, the greatest values of elastic deformation are characteristic of the pyramids, while the smallest ones — of the domes. A degree of the stress relaxation due to a geometric factor is greatest in the dome-like islands, minimal in size. The utilization of a $Si_{0.9}Ge_{0.1}$ buffer layer for the subsequent growth of islands on it favors their lateral ordering.