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CFEL Seminar room IV, 01.111 (Bldg. 99)

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Photogeneration of nonequilibrium charge carriers in heterostructures Si_{1-x}Ge_x/Si with nanoislands

The work generalizes the results of studies of morphological, structural, optical and electrical properties of semiconductor nanoheterostructures. To research the photogeneration and recombination processes of nonequilibrium charge spectral and time dependencies of lateral photoconductivity of the Si/Ge nanoheterostructures were studied. It is shown that the photoconductivity of nanoheterostructures SiGe/Si in the infrared range depending on the component composition, size and magnitude of the mechanical stresses in nanoislands Si_{1-x}Ge_x is determined by interband and intraband transitions involving localized states of the valence band of the nanoislands. The high efficiency of recombination centers of electron-hole pairs in SiGe nanoislands was observed. Using computer aided design, the energy diagram of studied heterostructures was build.