

Abstract Submitted
for the MAR13 Meeting of
The American Physical Society

Method for Reducing the Nano-Cracks on the Surface of the Heterostructure GAGIK SHMAVONYAN, OVSANNA ZADOYAN, State Engineering University of Armenia — The sizes of dislocations in the hetero-interface and nano-cracks on the surface of the heterostructure conditioned by lattice mismatch of semiconductors are sometimes close to those of nano-layer structures made up of a few atomic layers. Elimination of such defects becomes important in the elaboration of high quality semiconductor nanostructured optoelectronic devices. So, it is actual to develop new technological processes and elaborate adequate regimes, which will allow decreasing the sizes of defects in the heterointerface from the characteristic sizes of the structure. The method of reducing the dislocations in the heterointerface and nano-cracks on the surface of the heterostructure grown on the substrate is suggested: applying substrates with high crystallographic indices (bent substrate) and then depositing various buffer nano-layers based on compositionally graded films to the bent substrate. By solving the problem of obtaining high-quality hetero-interface and surface through epitaxial technologies it is possible to a) decrease mechanical and thermal strain in the heterointerface, b) obtain relaxed and high-quality nanoheterostructures based on big lattice mismatch.

Gagik Shmavonyan
State Engineering University of Armenia

Date submitted: 26 Dec 2012

Electronic form version 1.4