

# Investigation of some Optical Properties of Functional for Photonics Semiconductor Compounds with Nanosize Clusters.

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Semiconductor compounds of indium phosphide and indium arsenide are important materials for photonics. Effective photo elements, lasers, photodiodes, photo receivers are created on their base. In given paper there have been investigated the optical properties of these materials before and after irradiation, when nanosize clusters are created. The optical absorption by free charge carriers and lattice vibrations has been studied near the fundamental edge. It has been shown, that transition zones are preserved in the solid solutions of  $\text{InP}_x\text{As}_{1-x}$  when their composition changes from  $x = 0$  to 1. The mentioned allows developing high-quality lasers with continuously changing parameters. The spectra of the plasma reflection have been measured too and calculated the values of the effective mass of electrons, which are in very good agreement with the theory of Kane. There have been established the parabolic degree of conduction band and defined the law of zone dispersion.