

This work is focused on examining photoluminescent properties of InAs quantum dots (QDs) on GaAs substrate covered by GaAs_{1-x}Sb_x strain reducing capping layer (SRL) prepared by Stranski-Krastanow method. We measured luminescence decay time of two samples with different concentration of Sb in this layer. We investigated the influence of temperature, intensity and wavelength of the excitation pulse on the luminescent decay time. We also compared the properties of the samples after excitation by 760 nm pulse and 850 nm pulse – the former one is energetically above the substrate band gap; in the second case we excited only the QDs and the wetting layer (WL). We consequently derived recombination and relaxation processes occurring inside InAs QDs and also the transport of charge carriers from the substrate and the WL into QDs. One part of this diploma thesis was to learn about the methods of measuring ultrafast photoluminescence and build the experimental set-up.