

Abstract Submitted
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Enhancement of optical sensitivity of quantum dots near metal-dielectric interface PRABATH HEWAGEEGANA, VADYM APALCOV — We study theoretically the enhancement of the incident light transmitted through the diffraction grating. We are interested in the mid-infrared frequency range, corresponding to the intraband absorption by quantum dots. We show that for the s-polarized light the enhancement is much stronger than for p-polarized light. By tuning the parameters of the diffraction grating the enhancement of the light can be increased by a few orders of magnitude. The distribution of the transmitted light is highly nonuniform with very sharp peaks with the spatial width about 10 nm. Due to strongly inhomogeneous distribution of electromagnetic field the quantum dots should be placed at special points, i.e. hot spots, with large intensity of the field. We discuss the application of this effect to the quantum dot infrared photodetectors.

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