Red single-photon emission from InAs/AlGaAs quantum dots

© M.V. Rakhlin¹, K.G. Belyaev¹, G.V. Klimko¹, I.S. Mukhin^{2,3}, S.V. Ivanov¹, A.A. Toropov¹

194021 St. Petersburg, Russia

197101 St. Petersburg, Russia

E-mail: maximrakhlin@mail.ru

We report on single-photon emission of InAs/AlGaAs self-assembled quantum dots (QDs) grown by molecular beam epitaxy. By varying the growth conditions the QDs luminescence could be tuned over a wide wavelength range from 0.64 to $1\,\mu\rm m$, including red part of the visible spectrum. Emission properties of individual QDs are investigated by micro-photoluminescence (μ -PL) spectroscopy using 500 nm-size etched mesa structures. Autocorrelation functions of photons from single QDs, measured in the wide spectral range demonstrate antibunching effect at zero delay time with a value of $g^{(2)}(0) \sim 0.17$ that is a clear evidence of non-classical light.

Acknowledgement

The authors gratefully acknowledge the financial support of the Russian Science Foundation (project #14-22-00107).

¹ loffe Institute,

¹⁹⁴⁰²¹ St. Petersburg, Russia

² St. Petersburg Academic University, Russian Academy of Sciences,

³ ITMO University,