Electronic Supplementary Material (ESI) for Physical Chemistry Chemical Physics


# Supporting Information

# Modulated Photoluminescence Spectrum of Graphene Quantum Dot in the Vicinity of Individual Silver Nano-Octahedron

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The GOQ used here was synthesized through hydrothermal method, which was well described in ref.2 and ref. 23. The average diameter of GQD prepared by this method was about 10 nm or less. The atomic force microscopy images were obtained using a SPM-9600 (Shimadzu, Japan), tapping-mode applied to provide the largest amount of structural detail. Fluorescence spectrum was recorded using a LS-55 fluorophotometer (Perkin Elmer, America).

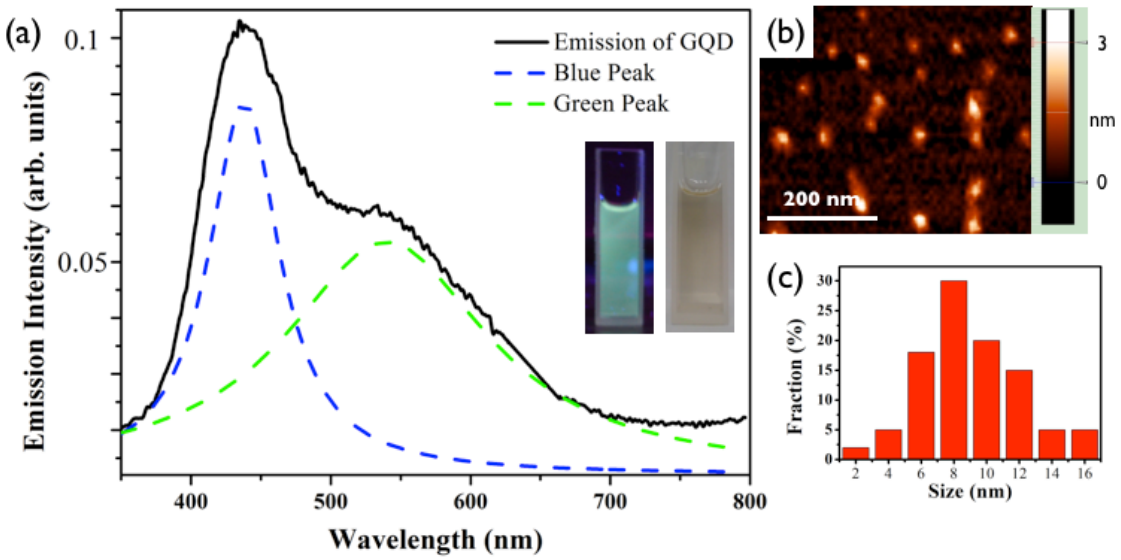


Figure S1. (a) Experimental photoluminescence of GQD under 380 nm excitation. PL spectrum is deconvoluted into blue-ray peak (blue dashed line) and green-ray peak (green dashed line). We consider the profile as initial quantum efficiency $\eta_0$. The insets show digital camera photos (left: under ultraviolet; right: under sunlight) of GQD. (b) The atomic force microscopy image of the dots deposited on freshly cleaved mica substrates, and (c) diameter distribution of the GQDs.

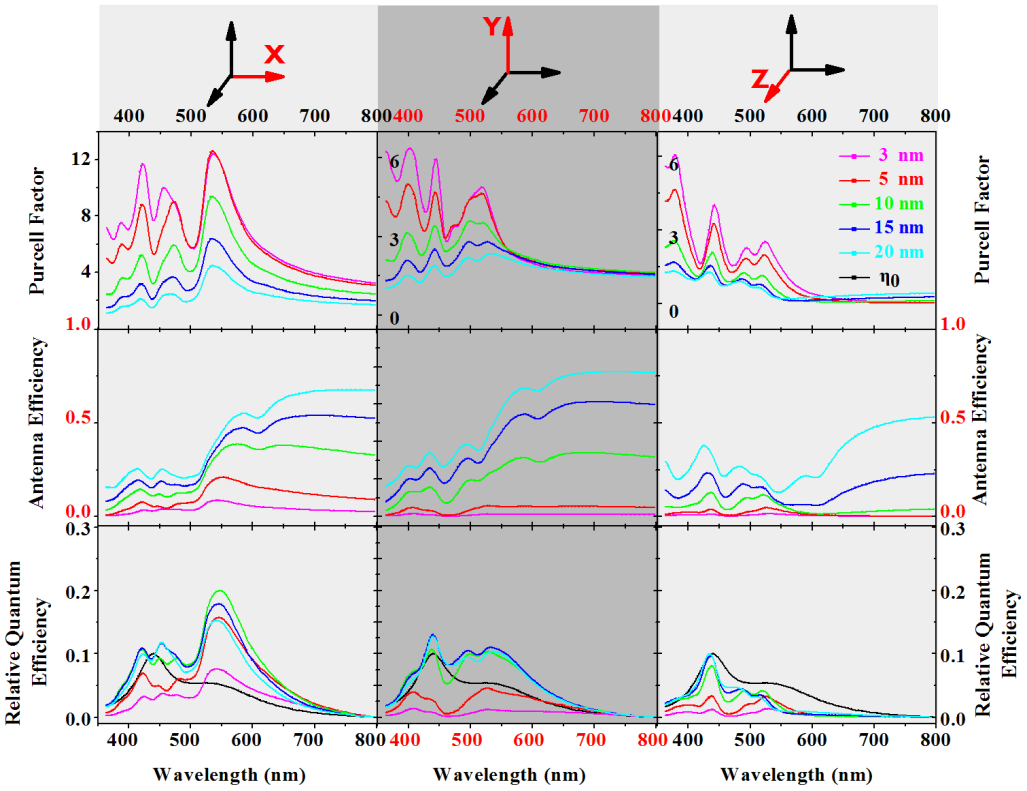


Figure S2. In the surface direction, wavelength evolution of Purcell factor F (the first row), antenna efficiency $\eta_a$ (the second row), and relative quantum efficiency $\eta$ (the third row). The GQD is coupled to a silver octahedron with different emitter–antenna separations of 3 nm, 5 nm, 10 nm, 15 nm, 20 nm. The individual quantum efficiency $\eta_0$ is plotted in black for comparison. The orientations of emitter are indicated by the red arrows in the panels.