

Supplementary Information

Experimental and Theoretical Investigation of the Distance Dependence of Localised Surface Plasmon Coupled Förster Resonance Energy Transfer

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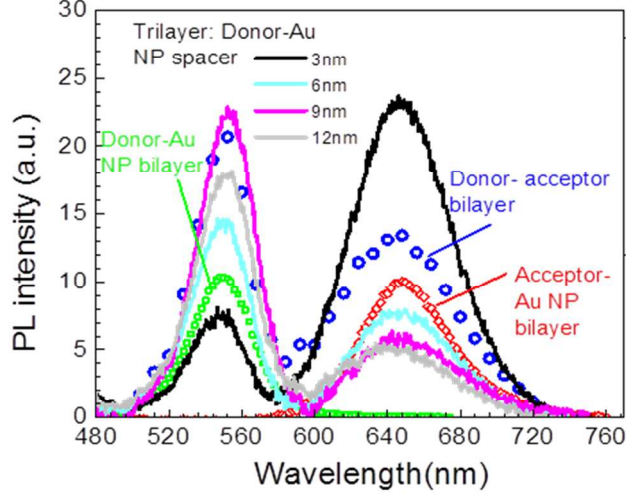


Figure S1: PL spectra of the donor-acceptor bilayer with a $t_{Don-Acc} = 21$ nm (blue open circle), donor-Au NP bilayer with a $t_{Don-Au} = 3$ nm (green open square) and the Au NP on acceptor bilayer with $t_{Acc-Au} = 12$ nm (red open diamond) which is subsequently capped with a PE spacer layer, $t_{Don-Au} = 3$ nm, and the donor QD monolayer to form the completed trilayer structure (black line). Spectra with varying donor-Au NP spacer are shown with a fixed acceptor-Au NP spacer layer thickness, $t_{Acc-Au} = 12$ nm. All samples have $c_{Don} = (2.8 \pm 0.2) \times 10^{17} m^{-2}$ and $c_{Acc} = (0.48 \pm 0.08) \times 10^{17} m^{-2}$, respectively. The Au NP concentration is $c_{Au} = (0.13 \pm 0.03) \times 10^{17} m^{-2}$.

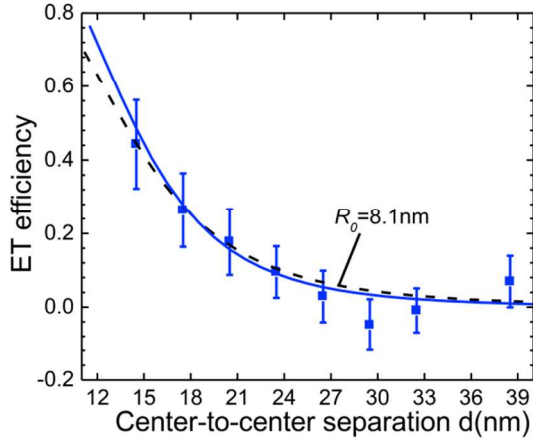


Figure S2: The LSP coupled energy transfer efficiency as a function of the center-to-center distance, d . The data was measured with a fixed donor-Au NP spacer thickness, $t_{Acc-Au} = 3$ nm, as presented in Figure 3 in the manuscript. The fit with the equation $E_{FRET} = \left[1 + \frac{2d^4}{c_{Acc}\pi R_0^6} \right]^{-1}$ agrees with the experimental data and the simulation within the error range on the power of d , $d^{-(4.0 \pm 0.4)}$, and the Förster radius, $R_0 = (8.1 \pm 0.7)$ nm.