Electronic Supplementary Information (ESI)

Plasmon Enhanced Fluorescence of Bisphthalonitrile-based Dye via Dopamine Mediated Interfacial Crosslinking Reaction on Silver Nanoparticles

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Fig. S1 The UV-Vis spectra of pristine Ag NPs (a) and dopamine modified Ag NPs (b) during reaction with PP-BPH for different time.
**Fig. S2** The fluorescent emission spectra of PP-BPH solution and PP-BPH solution admixed with synthesized Ag NPs or dopamine modified Ag NPs.
According to Fig. S3, it is clear that the peak at 3294 cm$^{-1}$, corresponding to $-\text{OH}$ group of phenolphthalein (PP), virtually disappeared in the FTIR spectra of PP-BPH product, the small peak near 3400 cm$^{-1}$ of PP-BPH should be attributed to the presence of trace quantity of water in the final product. In addition, the asymmetrical stretch band (1538 cm$^{-1}$) and symmetrical stretch band (1354 cm$^{-1}$) of $-\text{NO}_2$ from starting 4-NPH are absent in the FTIR spectra of PP-BPH product. Meanwhile, the stretch band of $-\text{CN}$ (2241 cm$^{-1}$), aromatic ether $-\text{O}$– (1233 cm$^{-1}$) and ester $-\text{C}=\text{O}$ (1735 cm$^{-1}$) from two starting compounds were all detected with slight wavenumber shift in the FTIR spectra of PP-BPH product. All these results indicate that the successful reaction between nitro group of 4-nitrophthalonitrile and hydroxyl groups of phenolphthalein.
Fig. S4: 1H NMR (top) and 13C NMR (down) spectra of synthesized PP-BPH dye.