

Electronic Supplementary Information (ESI)

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

Kun Jia,^{*a,†} Xuefei Zhou,^{a,†} Lin Pan,^a Liting Yuan,^a Pan Wang,^a Chunhui Wu,^b Yumin
Huang^a and Xiaobo Liu^{*a}

^a High Temperature Resistant Polymer and Functional Composites Key Laboratory of Sichuan Province, School of Microelectronics and Solid-States Electronics, University of Electronic Science and Technology of China, Chengdu 610054, China.

^b Department of Biophysics, School of Life Science and Technology, University of Electronic Science and Technology of China, Chengdu 610054, China.

E-mail: jiakun@uestc.edu.cn, liuxb@uestc.edu.cn; Tel: +86-28-83207326

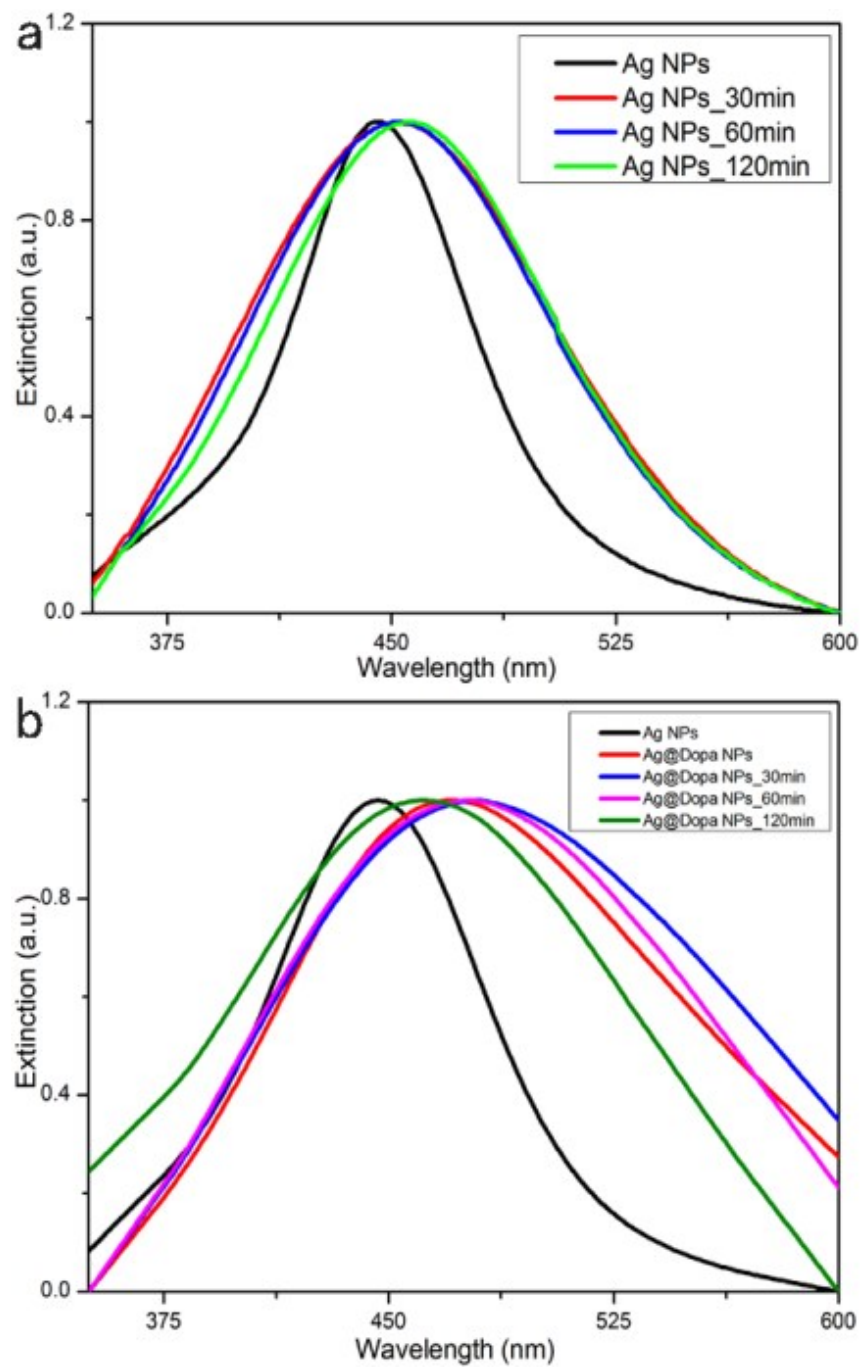


Fig. S1 The UV-Vis spectra of pristine Ag NPs (a) and dopamine modified Ag NPs (b) during reaction with PP-BPH for different time.

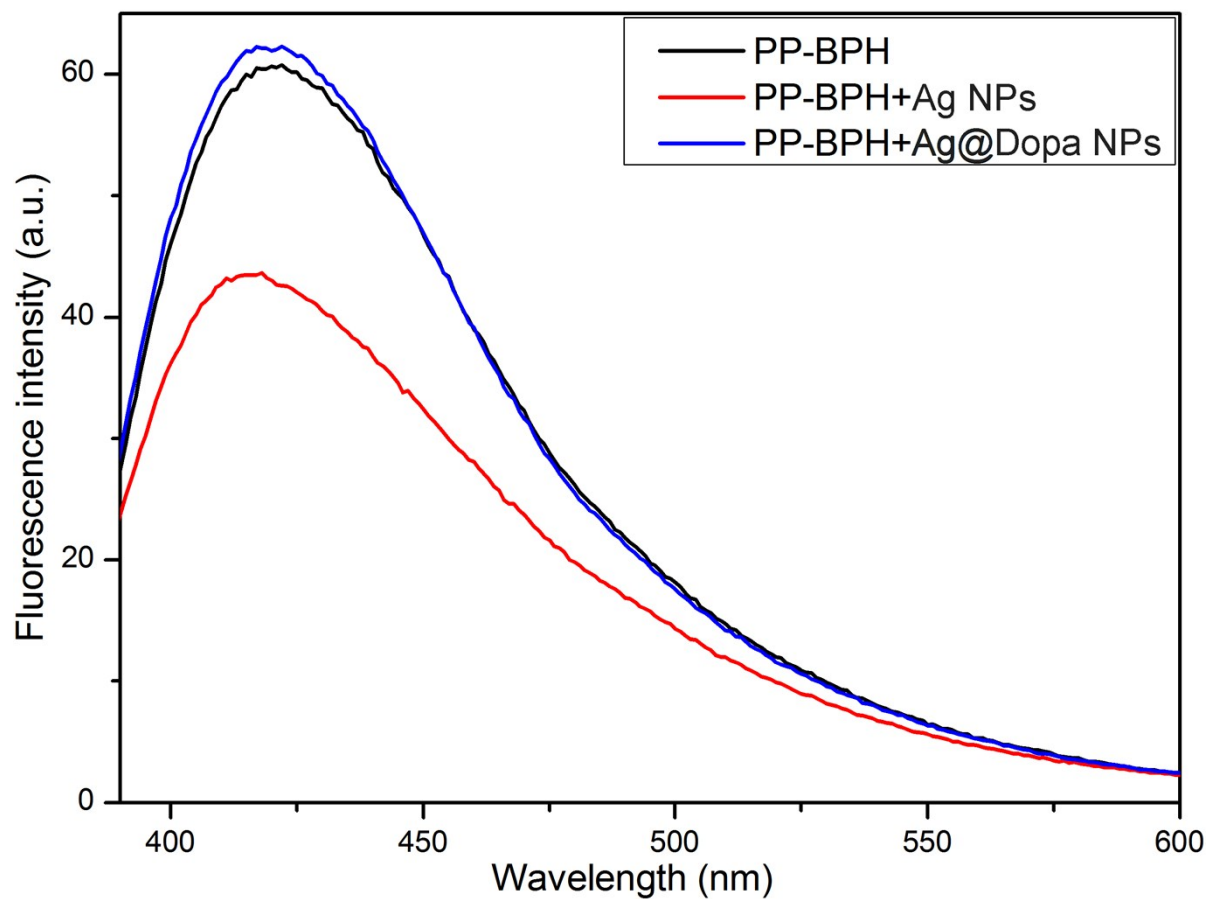


Fig. S2 The fluorescent emission spectra of PP-BPH solution and PP-BPH solution admixed with synthesized Ag NPs or dopamine modified Ag NPs.

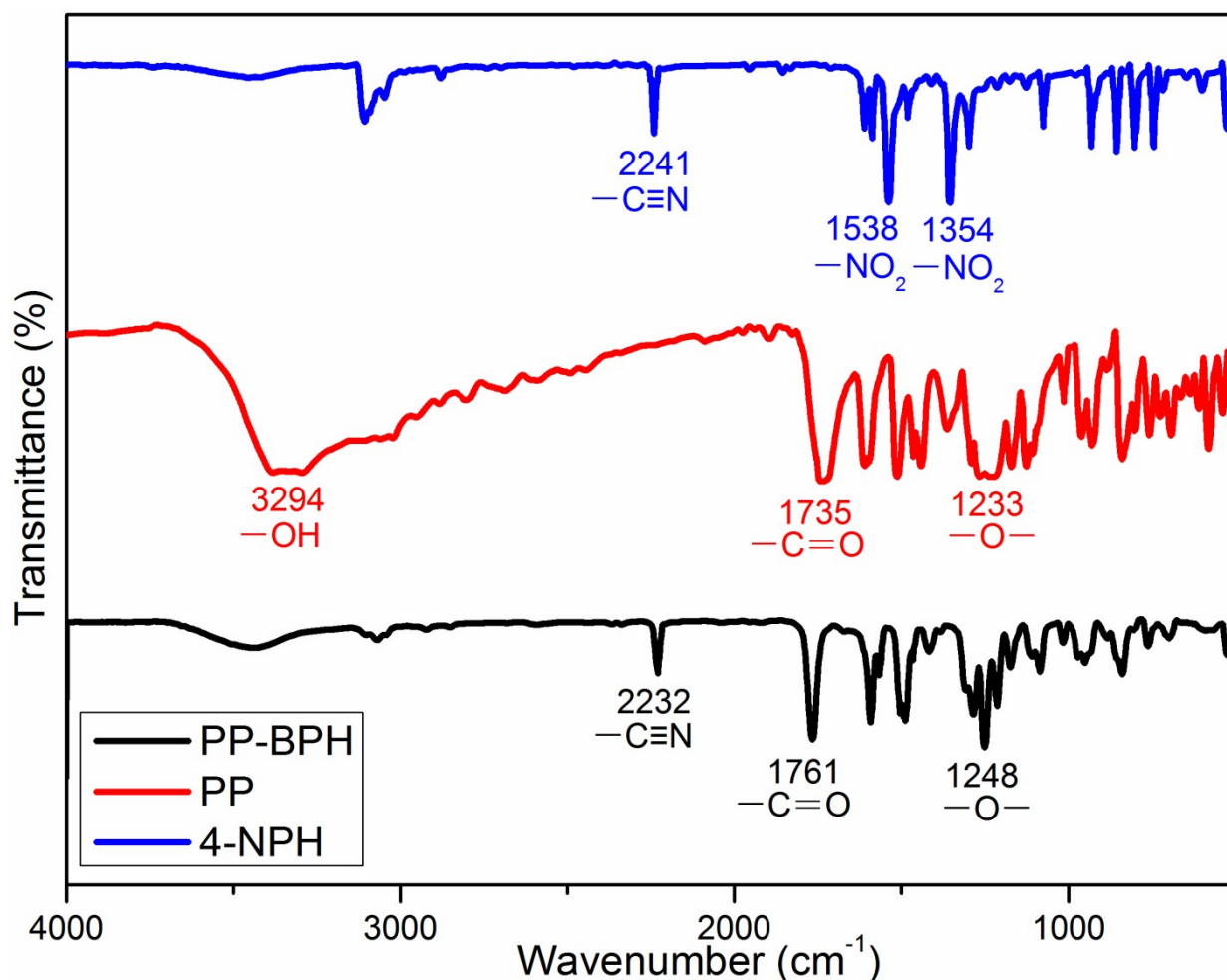


Fig. S3 FTIR spectra of 4-NPH (4-nitrophthalonitrile), PP (phenolphthalein) and synthesized PP-BPH dye.

According to Fig. S3, it is clear that the peak at 3294 cm⁻¹, corresponding to -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 -NO₂ from starting 4-NPH are absent in the FTIR spectra of PP-BPH product. Meanwhile, the stretch band of -CN (2241 cm⁻¹), aromatic ether -O- (1233 cm⁻¹) and ester -C=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.

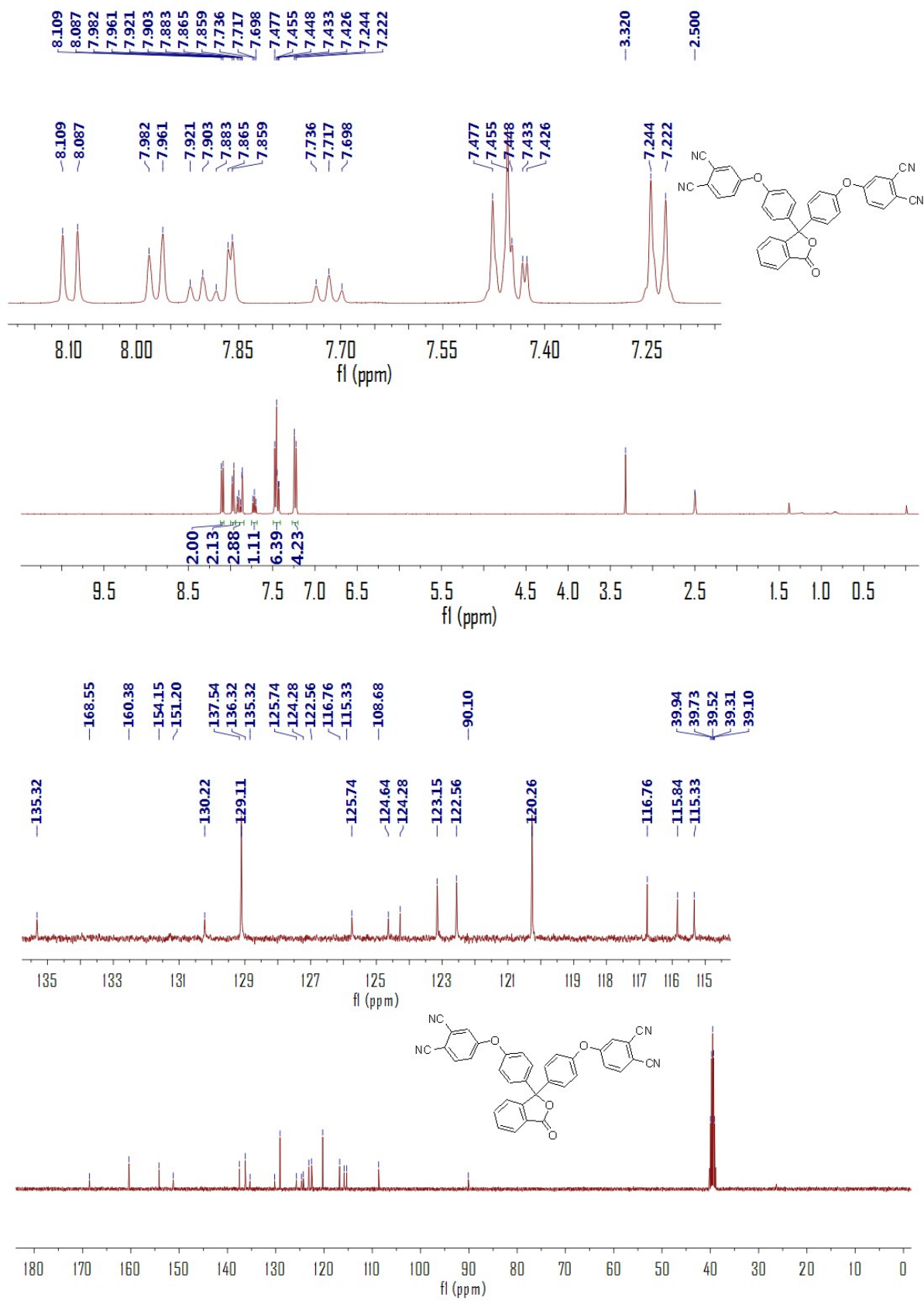


Fig. S4 ¹H NMR (top) and ¹³C NMR (down) spectra of synthesized PP-BPH dye.