Electronic Supplementary Material (ESI) for RSC Advances.

Supporting Information

Synthesis and photoluminescence modulating of polypyrrole fluorescent nano-spheres/dots

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Cellular toxicity test and cellular imaging In toxicity test, cells in the exponential growth phase were washed by PBS twice. After digesting by 0.25% trypsin solution for 2 min, cells were suspended by PBS and washed twice. Then whole culture medium was added and cells suspension was transferred to 96-well plate with 200 μL in each well. In control group, 20 μL PBS was added to each well. In experimental group, 20 μL nanodots solution in different concentrations was added to each well. Cells were then cultured at 37 °C under 5% CO_2 in standard incubator for 12 hours, 24 hours, respectively. Then combined EB/AO staining was executed for cell state examination. 10 μL EB/AO (100 μg mL^{-1}) was added to each well. The resulting fluorescence images of the cells were monitored by the Leica DMIRE2 microscope fluorescence analyzing system. Cell viability data was captured by Image-Pro Plus (IPP) program. Hela cells were cultured and propagated in a cover-glass-bottom dish in DMEM cell culture medium (Gibco) with 10% fetal bovine serum and 100 mg L^{-1} penicillin and 100 mg L^{-1} streptomycin at 37 °C under 5% CO_2 in standard incubator. After 12 hours incubation, fresh culture medium with 5% nanodots (The final concentration is about 100 μg mL^{-1}) was added to the cell culture dishes. Then, the cells were washed with PBS for three times to remove the excess nanodots. Immediately after the incubation and washing steps, the images observation were taken by a confocal laser scanning microscope. The confocal analysis was performed on a ZEISS LSM710 laser scan confocal microscope at an excitation wavelength of 405 nm and emission length of 450 nm.

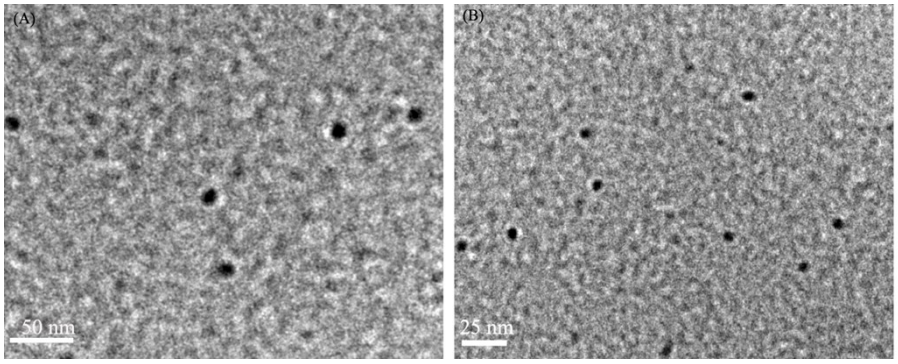

Figure S1. PPy nanospheres using THF as solvents.

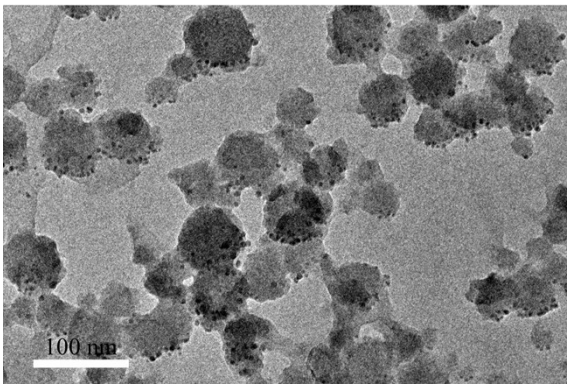

Figure S2. Bigger size PPy nanospheres [a]

[a] The supernatant liquors containing PPy nanospheres was placed for several days at static states, the bigger size of PPy nanospheres was gained.

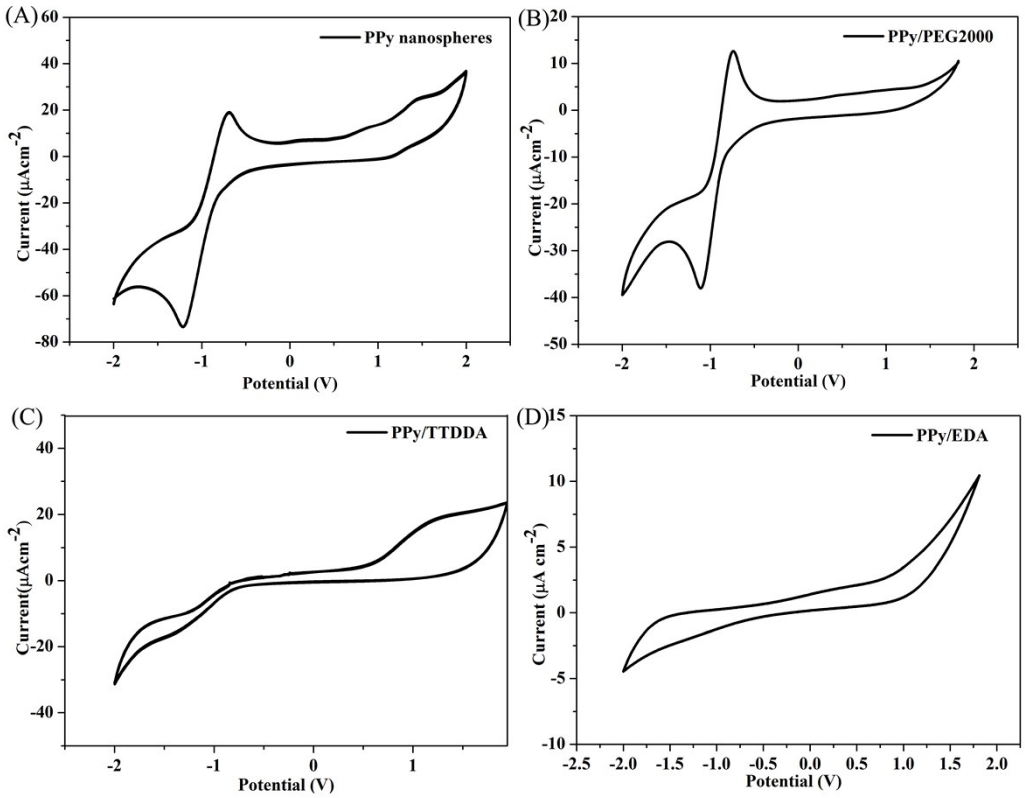

Figure S3. CV curve on platinum electrode. (A) PPy nanospheres, (B) PPy/PEG2000, (C) PPy /TTDDA, (D) PPy/EDA.

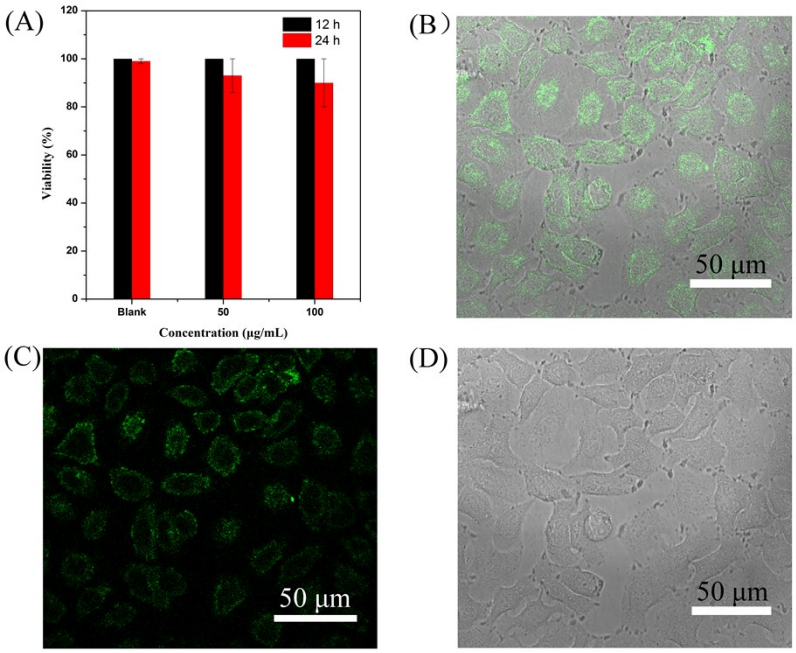

Figure S4. Cellular toxicity and cellular imaging of PPy/PEG2000 fluorescent nanodots. (A) E□ect of PPy/PEG2000 fluorescent nanodots on HL-60 cell viability. (B-D) Washed cells imaged under bright field, confocal photoluminescent, overlap of corresponding bright field image and fluorescence image.

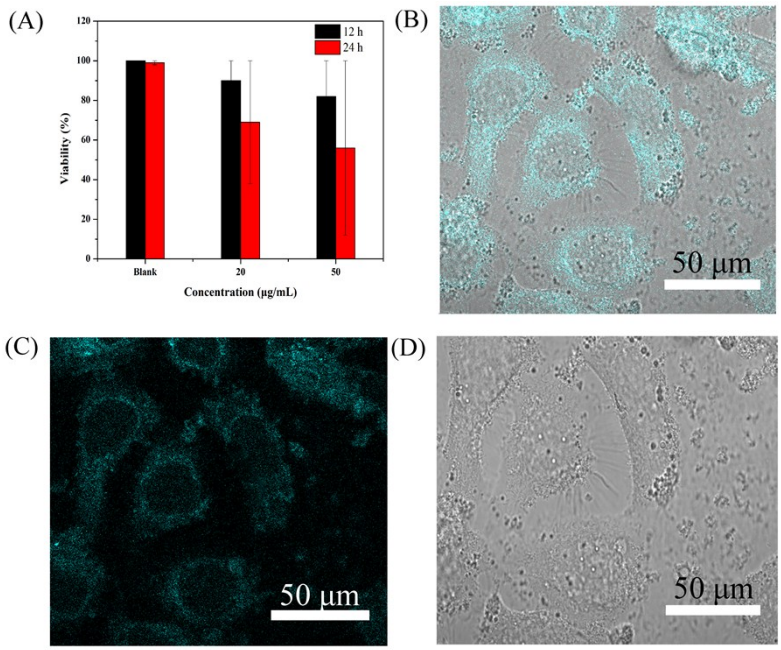

Figure S5. Cellular toxicity and cellular imaging of PPy/EDA fluorescent nanospheres. (A) E□ect of PPy/EDA fluorescent nanospheres on HL-60 cell viability. (B-D) Washed cells imaged under bright field, confocal photoluminescent, overlap of corresponding bright field image and fluorescence image.

Figure S6. Symbols written on paper by using PPy/EDA nanodots fluorescence ink (A) Under natural light, (B) Under UV 365 nm lamp and (C) 2 months latter under UV365 nm lamp.