Electronic Supporting Information

Controlled Synthesis of Soluble Conjugated Polymeric Nanoparticles for Fluorescence Detection

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Synthetic Procedures for SCPNs:

SCPN1: Following the similar procedure as that for SCPN3. 1,3,5-Tris(4-iodophenyl)benzene (0.137 g, 0.2 mmol), p-phenylenediboronic acid (0.05 g, 0.3 mmol), TBAF (0.568 g, 1.8 mmol), Pd@SS-CNM (5 mg, 1.1 μmol of Pd), and DMF (2 mL) were used in this polymerization. The polymerization was conducted at 100 °C to generate the product (20 mg, 24.0%).

SCPN2: Tris(4-iodophenyl)amine (0.125 g, 0.2 mmol), p-phenylenediboronic acid (0.05 g, 0.3 mmol), TBAF (0.568 g, 1.8 mmol), Pd@SS-CNM (5 mg, 1.1 μmol of Pd), and DMF (2 mL) were used in this polymerization. The polymerization was conducted at 80 °C to generate the product (25 mg, 35.1%).

SCPN4: Tetra(4-bromophenyl)ethylene (0.067 g, 0.1 mmol), p-phenylenediboronic acid (0.03 g, 0.2 mmol), TBAF (0.284 g, 0.9 mmol), Pd@SS-CNM (5 mg, 1.1 μmol of Pd), and DMF (2 mL) were used in this polymerization. The polymerization was conducted at 120 °C to generate the product (23.3 mg, 47.1%).

SCPN5: 1,3,6,8-Tetrabromopyrene (0.097 g, 0.188 mmol), p-phenylenediboronic acid (0.06 g, 0.375 mmol), TBAF (0.534 g, 1.7 mmol), Pd@SS-CNM (5 mg, 1.1 μmol of Pd), and DMF (2 mL) were used in this polymerization. The polymerization was conducted at 120 °C to generate the product (28 mg, 42.6%).

SCPN6: 2,2',7,7'-Tetrabromo-9,9'-spirobifluorene (0.063 g, 0.1 mmol), 4,4'-biphenyldiboronic acid (0.05 g, 0.2 mmol), TBAF (0.284 g, 0.9 mmol), Pd@SS-CNM (5 mg, 1.1 μmol of Pd), and DMF (2 mL) were used in this polymerization. The polymerization was conducted at 120 °C to generate the product (20 mg, 32.4%).

SCPN7: Tetra(4-bromophenyl)ethylene (0.067 g, 0.1 mmol), 4,4'-biphenyldiboronic acid (0.05 g, 0.2 mmol), TBAF (0.284 g, 0.9 mmol), Pd@SS-CNM (5 mg, 1.1 μmol of Pd), and DMF (2 mL) were used in this polymerization. The polymerization was conducted at 120 °C to generate the product (26.0 mg, 40.2%).
Figure S1: TEM images of Pd@SS-CNMs nanoreactors

Figure S2: SCPNs in THF solutions

Figure S3: SCPNs in THF solutions under the irradiation of 365 nm light

Figure S4. $^1$H NMR spectrum of SCPN 3 in CDCl$_3$
Figure S5. $^{13}$C NMR spectrum of SCPN 3 in THF-d8

Figure S6. FT-IR spectra of SCPNs
Figure S7: Normalized size distributions of all the SCPNs in DMF obtained with DLS.

Figure S8: TEM image and size distribution histogram of SCPN4.

Figure S9: GPC spectra of SCPNs
Figure S10: Normalized UV-vis spectra and photoluminescence spectra of SCPN before and after surface modification. (black: SCPN 3; red: BA-SCPN 3)

Figure S11: Photostability of BA-SCPN 3 upon continuous irradiation with a laser light at 350 nm for 0-1000s

Figure S12: (a) ARS (b) ARS treated with BA-SCPN 3. (Inset) Images of the samples
Figure S13: FL spectra of BA-SCPN 4 quenched by various amount of glucose (ranged from 0 to 80 mM) in a pH 9.2 PBS buffer. (b) Plot of the relative intensity of FL ($F_0/F$) versus the glucose concentration measured at 330 nm. $F_0$ and $F$ are the FL intensity of SCPNs in the absence and presence of glucose, respectively.

Figure S14: Plot of the relative intensity of FL ($F_0/F$) versus the glucose concentration measured at 330 nm. $F_0$ and $F$ are the FL intensity of SCPN 3 in the absence and presence of glucose, respectively.

Figure S15: FL spectra of BA-SCPN 3 quenched by various amount of fructose (ranged from 0 to 80 mM) in a pH 9.2 PBS buffer.
Figure S16: Plot of the relative intensity of FL ($F_0/F$) versus the Fe$^{3+}$ concentration measured at 330 nm. $F_0$ and $F$ are the FL intensity of SCPN 3 in the absence and presence of Fe$^{3+}$, respectively.

Figure S17: Fluorescence spectra of BA-SCPN 3 (black), BA-SCPN 3+Fe$^{3+}$ (red), and BA-SCPN 3+Fe$^{3+}$+EDTA mixture (blue). The concentrations of Fe$^{3+}$ and EDTA are 0.8 mM and 1 mM, respectively.