

Supporting Information

Experimental Section

Chemicals.

1,3,5-triethynylbenzene and 1,4-diethynylbenzene were from TCI. Tetrakis(triphenylphosphine)palladium(0), 3, 3', 5, 5'-tetrabromo-2, 2'-bithiophene and copper(I) iodide were all purchased from J&K Chemical. All solid chemicals were used as received and all liquid chemicals were dried and redistilled. All starting chemicals and solvents used in this study had a purity of 97% or greater.

Synthesis of SCMPs.

In a typical procedure: 1, 3, 5-triethynylbenzene (300.4 mg, 2 mmol), 3, 3', 5, 5'-tetrabromo-2, 2'-bithiophene (963.7 mg, 2 mmol), copper(I) iodide (50 mg) and tetrakis-(triphenylphosphine)palladium(0) (150 mg) were added to a 50 mL three-necked round-bottom flask which equipped with a Teflon-coated magnetic stirrer. The flask was then degassed and backfilled with nitrogen for 20 min. After that, a mixture of toluene (5 mL) and triethylamine (5 mL) were added to the flask using an injector. Then the mixture was heated to 65 °C and stirred for 24 h under nitrogen atmosphere. After cooling to ambient temperature, the resulting mixture was filtered and washed with methylene dichloride, acetone, water and methanol for several times to remove unreacted monomers and catalyst residues. Then the polymer was further purification by Soxhlet extraction (methanol) for 72 h. The resulting product was dried at 50 °C for 12 h in vacuum and was named as SCMP-I. SCMP-II was synthesized using the same method as mentioned above. 3, 3', 5, 5'-tetrabromo-2, 2'-bithiophene (481.8 mg, 1 mmol) and 1, 4-diethynylbenzene (189.2 mg, 1.5 mmol), tetrakis(triphenylphosphine) palladium(0) (90 mg), copper(I) iodide (30 mg), toluene (5 mL) and Et₃N (5 mL) were used in this polymerization.

Adsorption of iodine

The solid iodine uptake was measured as follows. The SCMPs samples were exposed to nonradioactive iodine vapour in a sealed vessel at 350 K and ambient pressure for a certain time. Then, the system was cooled and weighted. The iodine uptake was calculated as

$$(m_2 - m_1)/m_1 * 100 \text{ wt\%}$$

where m_1 and m_2 are the mass of the SCMP sample before and after iodine uptake.

The solution of iodine-cyclohexane with concentration of 300 mg L⁻¹ and 500 mg L⁻¹ was obtained by diluting the accurately weighted iodine with cyclohexane. Then a weighed amount (5 mg) of SCMP-I were added to 5 mL of iodine-cyclohexane solution. After 72 h adsorption, the adsorbates were separated from solutions by filtering and the filtrates were analysed using UV/VIS spectrophotometer. The maximum absorbance

wavelength of iodine solution is 521 nm. The amount of iodine adsorbed per unit mass adsorbent (q_t ; mg g^{-1}) was calculated by using following equation.

$$q_t = (C_i - C_t) V / W$$

Where C_i is the initial concentration of iodine (mg L^{-1}), C_t is the concentration of iodine (mg L^{-1}) after 72 h adsorption, V is the volume of iodine solution (L), and W is the mass of CMPs (g).

Characterization

Scanning electron microscope (SEM) images were taken on a JSM-6701F cold field emission scanning microscopes. All samples were coated with a thin layer of Au before analysis. The specific surface area and porosity of all Polymers were measured by nitrogen adsorption and desorption at 77.3 K using a micromeritics ASAP 2020 apparatus. The polymer samples were degassed at 120 °C for 12h under vacuum before analysis. Fourier transform infrared spectroscopy (FT-IR) were measured from in the range of 4000-400 cm^{-1} using the pressed KBr discs on a Nicolet Nexus 670 FT-IR spectrometer. ^{13}C Cross polarization/Magic angle spinning Nuclear magnetic resonance (^{13}C CP/MAS NMR) experiment was carried out on a Bruker AVANCE III 400 MHz NMR spectrometer at a resonance frequency of 100.6 MHz. The thermal properties of SCMPs were measured by thermo gravimeter analyser (Perkin Elmer) from room temperature to 800 °C at a heating rate of 10 °C min^{-1} under nitrogen atmosphere.

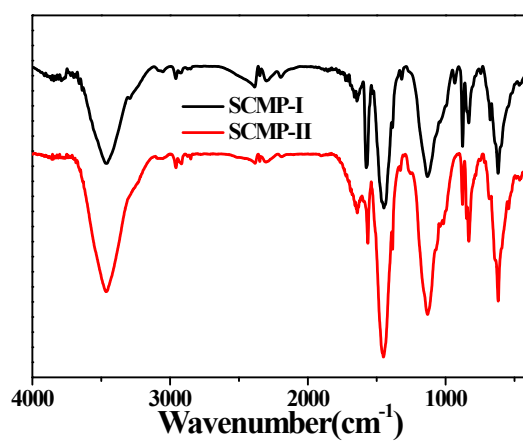


Fig. S1 FTIR spectra of the SCMP-I and SCMP-II.

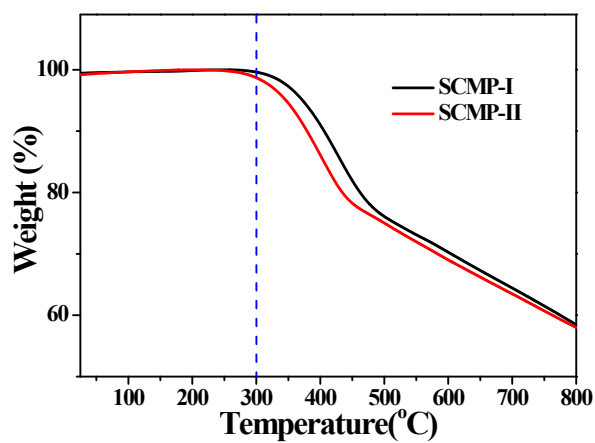


Fig. S2 TGA curves of SCMP-I and SCMP-II.

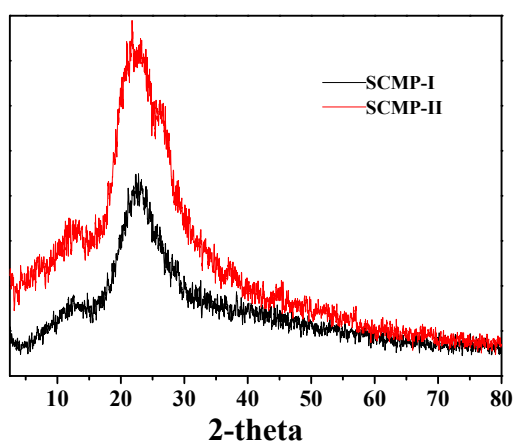


Fig. S3 XRD of SCMP-I and SCMP-II.

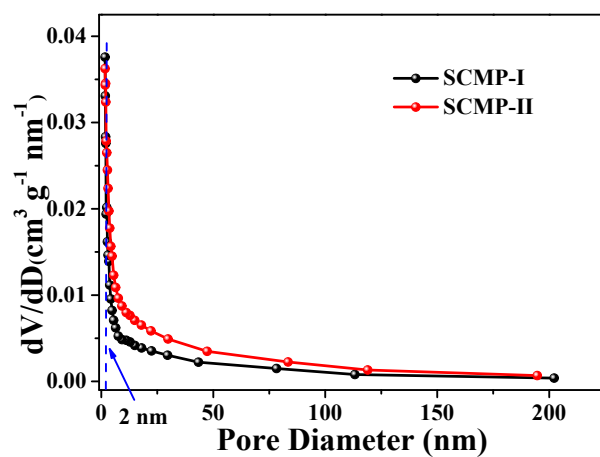


Fig. S4 PSD curves of SCMP-I and SCMP-II.

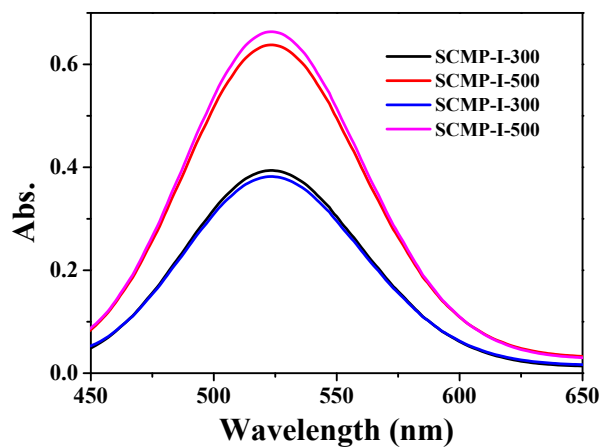


Fig. S5 UV/VIS absorption spectra of iodine-cyclohexane solution after absorption

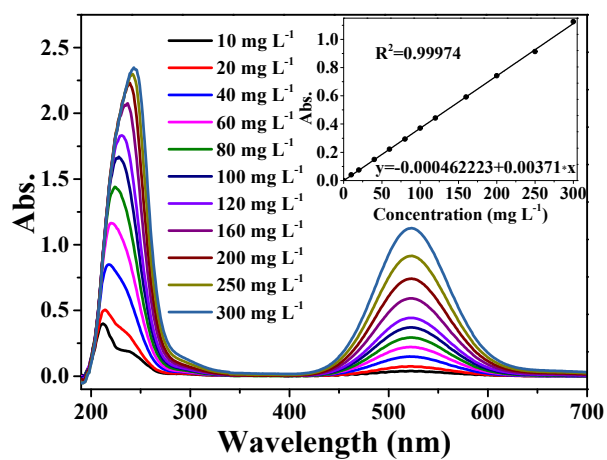


Fig. S6 Calibration curve of iodine-cyclohexane solution