**Supporting Information**

***S,N*-Heteroacene-Based Conjugated Microporous Polymers as Fluorescent Sensors and Effective Antimicrobial Carriers**

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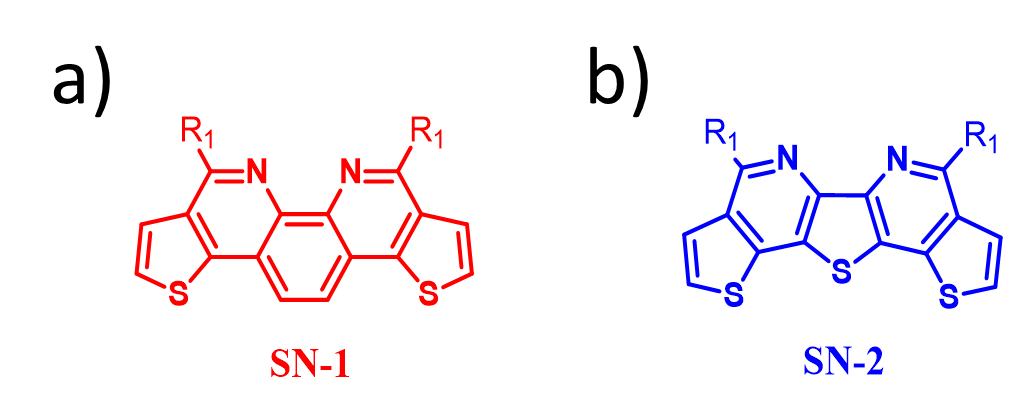
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**Materials.** *S,N*-Heteroacenes (**SN-1**, **SN-2**, **SN1-Br**, **SN2-Br**), tetrakis(4-ethynylphenyl)methane (**TPM**) and 3,8-dibromo-1,10-phenanthroline (**N-Br**) were prepared according to the previous literatures.[S1-S4] Unless otherwise noted, all starting materials and reagents were purchased from commercial available sources and used without further purification.

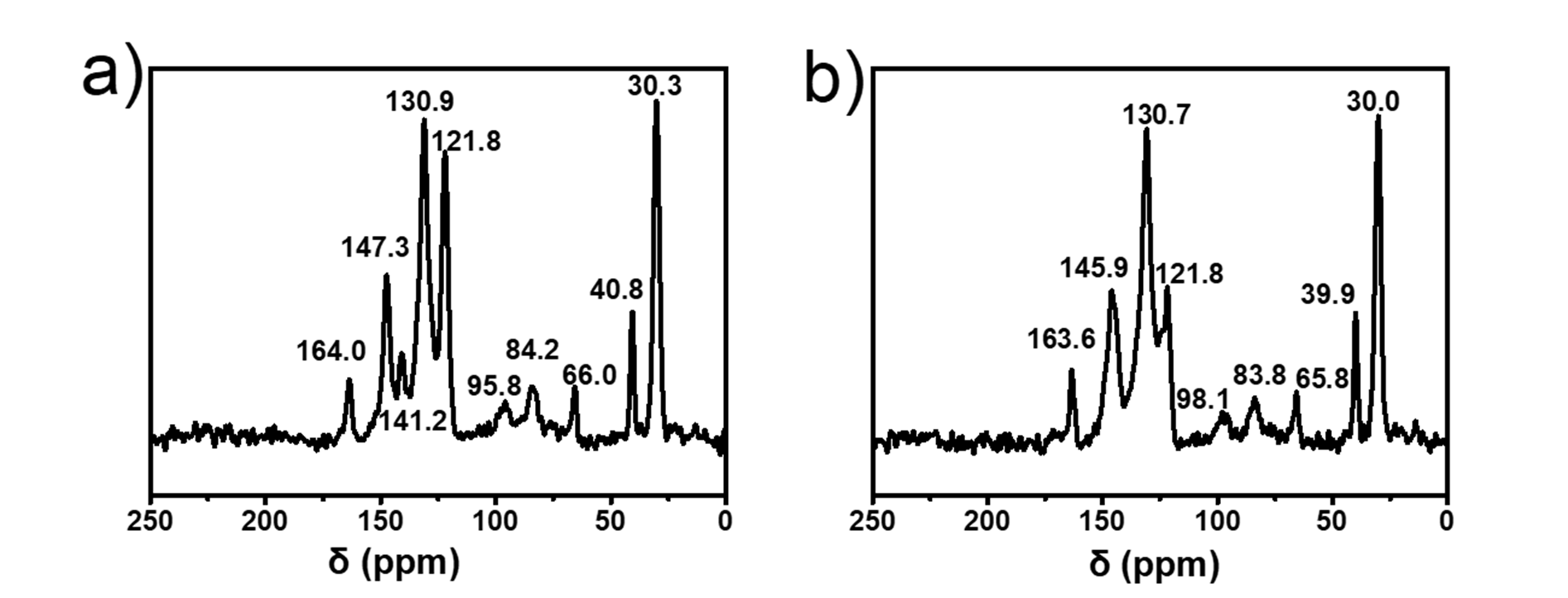
**Characterization Methods.** Liquid 1H NMR spectra were recorded in deuterated solvents on a Bruker AVANCE III-400 spectrometer. Fourier transform infrared (FT-IR) spectra were collected on a Bruker Alpha spectrometer. The UV-vis absorption and diffuse reflectance spectra were recorded on a PerkinElmer Lambda 750 spectrophotometer. Fluorescence spectra were measured by a Hitachi F-7000 fluorescence spectrophotometer. Solid-state 13C cross-polarization magic-angle spinning (CP/MAS) NMR experiments were performed on a VARIAN Infinityplus 300 NMR spectrometer. The thermogravimetric analysis (TGA) measurements were performed on a TA Instruments Q-50 under nitrogen atmosphere (20 ~ 800 oC, 10 oC/min). Powder X-ray diffraction (PXRD) experiment was acquired from 1.5 to 60° with 0.02o increment by a Rigaku SmartLab (9 kW) X-ray diffractometer. Field emission scanning electron microscopies (FE-SEM) were carried out using a Hitachi Limited model S-4800 microscope operating at an accelerating voltage of 3.0 kV. High resolution transmission electron microscopies (HR-TEM) were carried out using a JEOL model JEM-2100F microscope. Nitrogen sorption isotherms were measured at 77 K with a Bel Japan Inc. model BELSOPR-mini II analyzer. Elemental analyses were measured by Elementar model Vario EL CUBE. The Ag content in **SN-CMPs** was determined by ICP-MS techniques using Agilent 7700X ICP-MS model. X-ray photoelectron spectroscopy (XPS) was performed on a Perkin-Elmer PHI-1600 ESCA spectrometer using Al Kα as the excitation source.



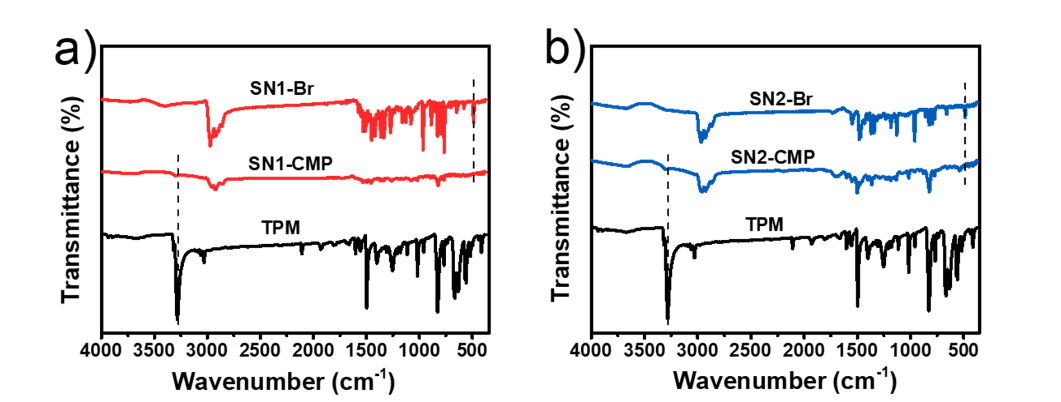
**Scheme S1.** Synthesis of CMPs.



**Figure S1.** The structures of *S,N*-heteroacenes (a) **SN-1** and (b) **SN-2** (R1 = *t*-Butyl).



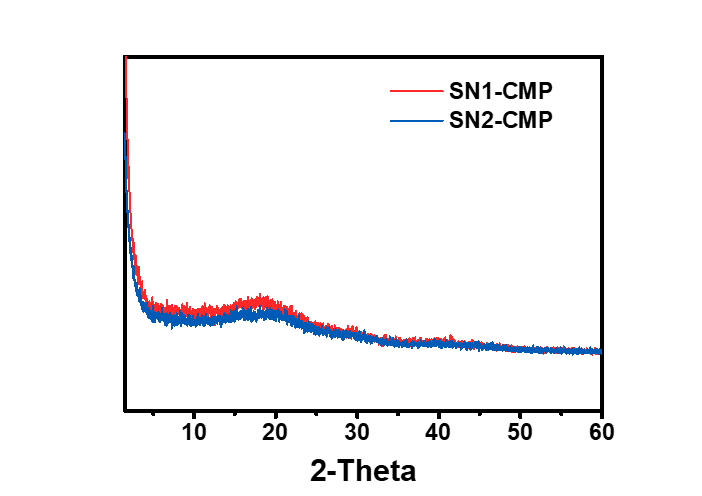
**Figure S2.** Solid-state 13C CP/MAS NMR spectra of the polymer networks of (a) **SN1-CMP** and (b) **SN2-CMP**.



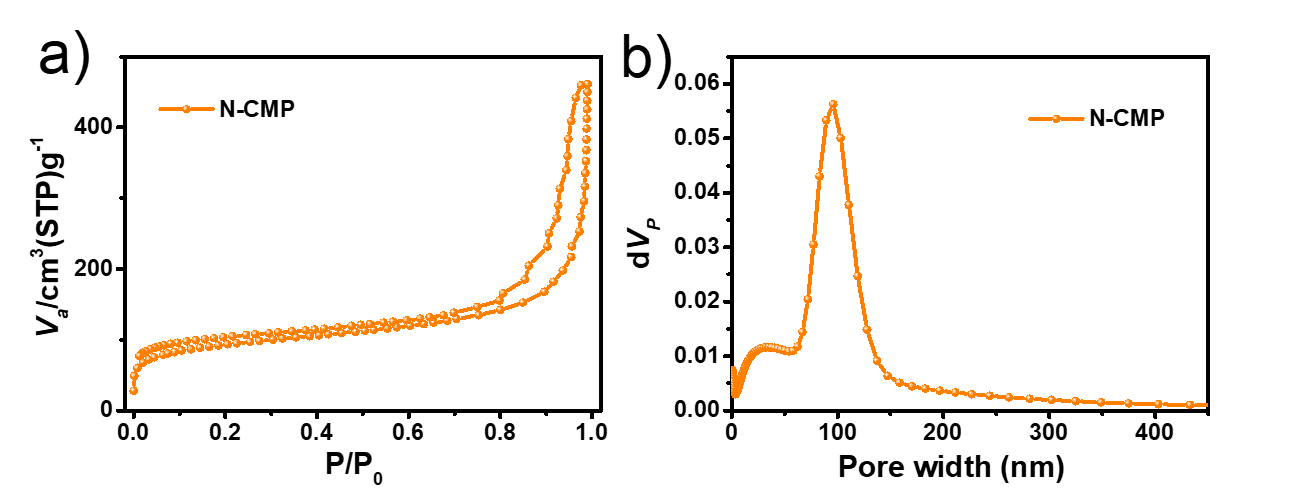
**Figure S3.** FT-IR spectra of (a) **SN1-CMP** and (b) **SN2-CMP** compared with their monomers.



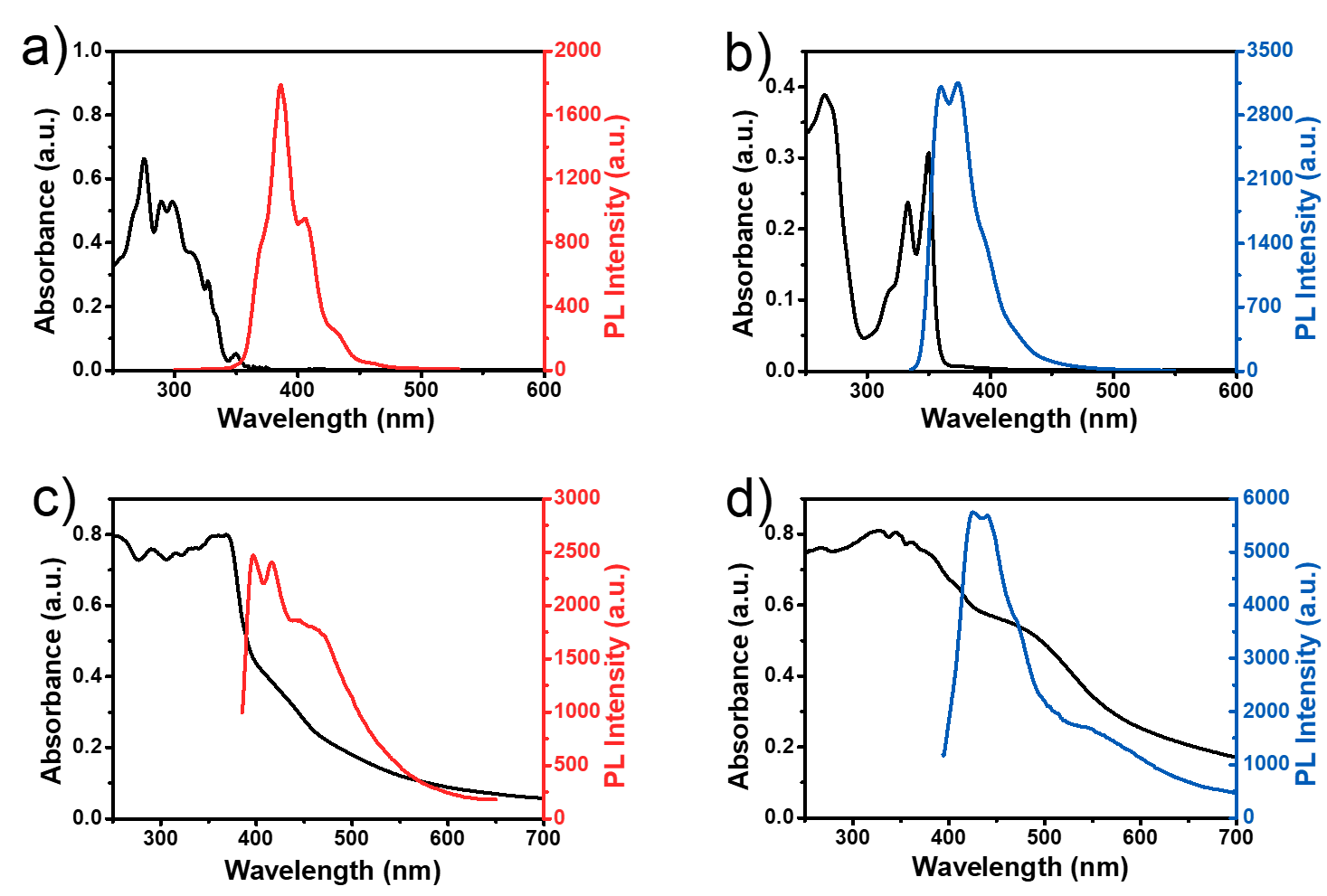
**Figure S4.** TGA curves of the polymer networks of **SN1-CMP** and **SN2-CMP**.



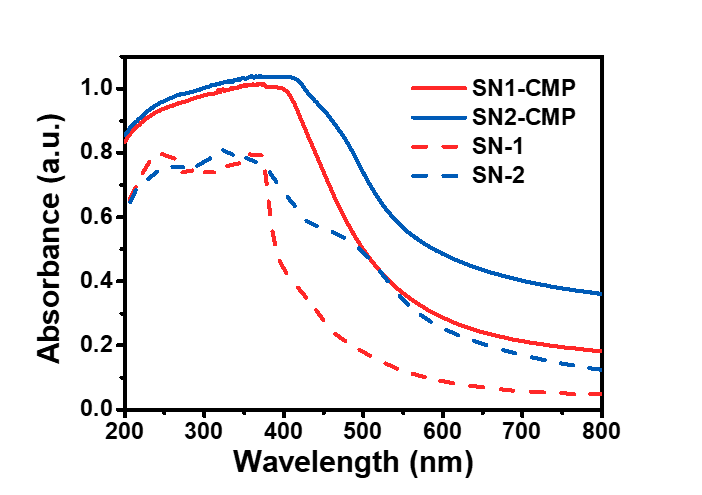
**Figure S5.** Powder X-ray diffraction patterns of **SN1-CMP** and **SN2-CMP**.



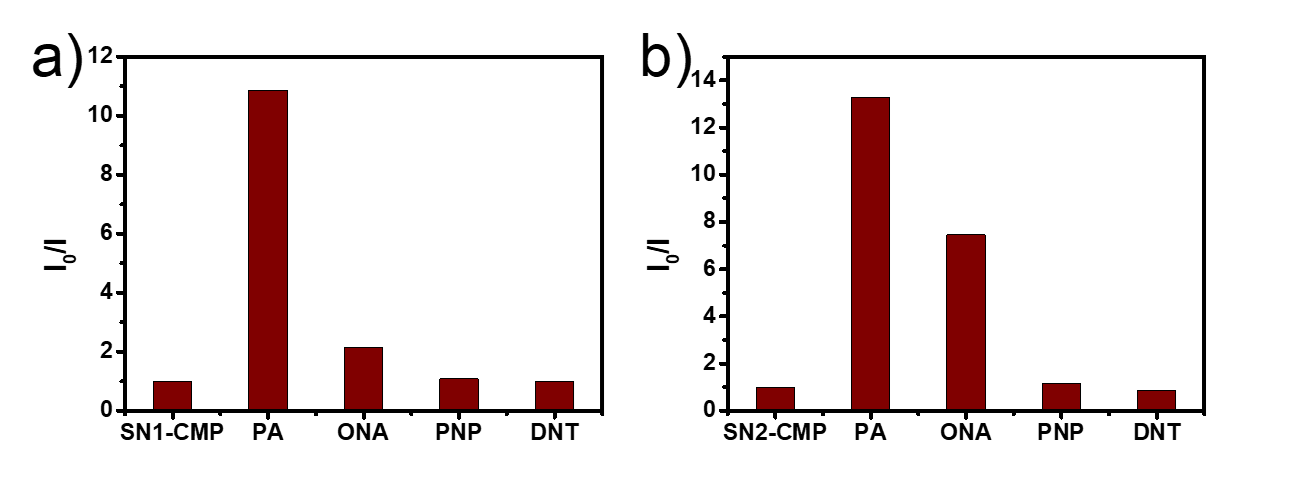
**Figure S6.** (a) Nitrogen sorption isotherm measured at 77 K and (b) pore size distribution profile of **N-CMP** calculated using the NLDFT method.



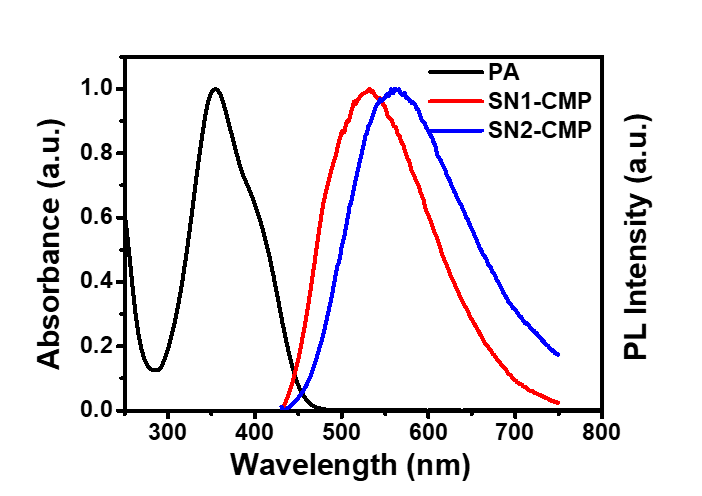
**Figure S7.** UV-vis absorption spectra and fluorescence spectra of (a) **SN-1** and (b) **SN-2** in chloroform solution (10−5 M). UV-vis diffuse reflectance spectra and fluorescence spectra of (c) **SN-1** and (d) **SN-2** in solid state.



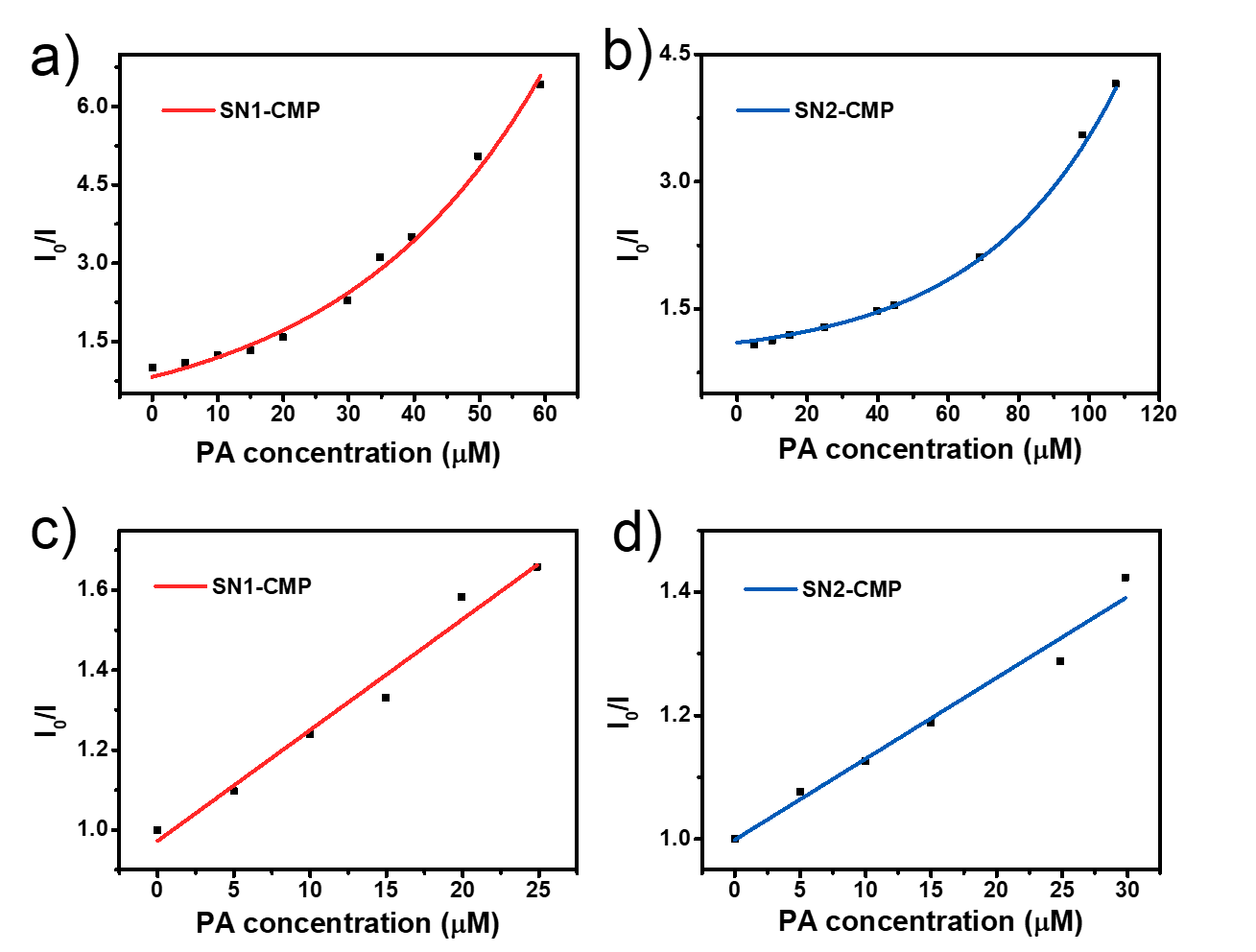
**Figure S8.** The UV-vis diffuse reflectance spectra of **SN-1**, **SN-2**, **SN1-CMP** and **SN2-CMP**.



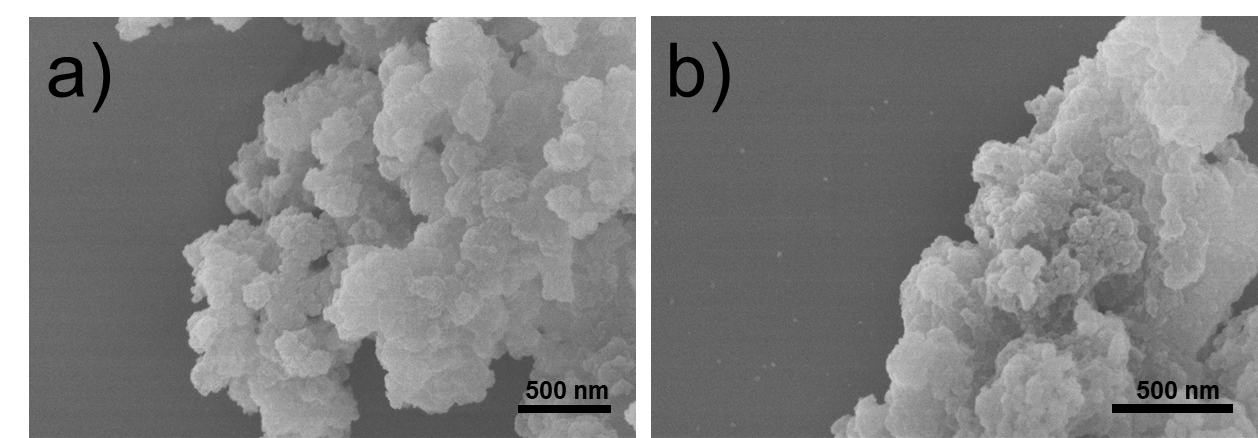
**Figure S9.** The fluorescence intensity changes of (a) **SN1-CMP** (0.05 mg/mL) and (b) **SN2-CMP** (0.05 mg/mL) in the presence of different nitroaromatics (a) 110 *μ*M (b) 238 *μ*M in methanol solution.



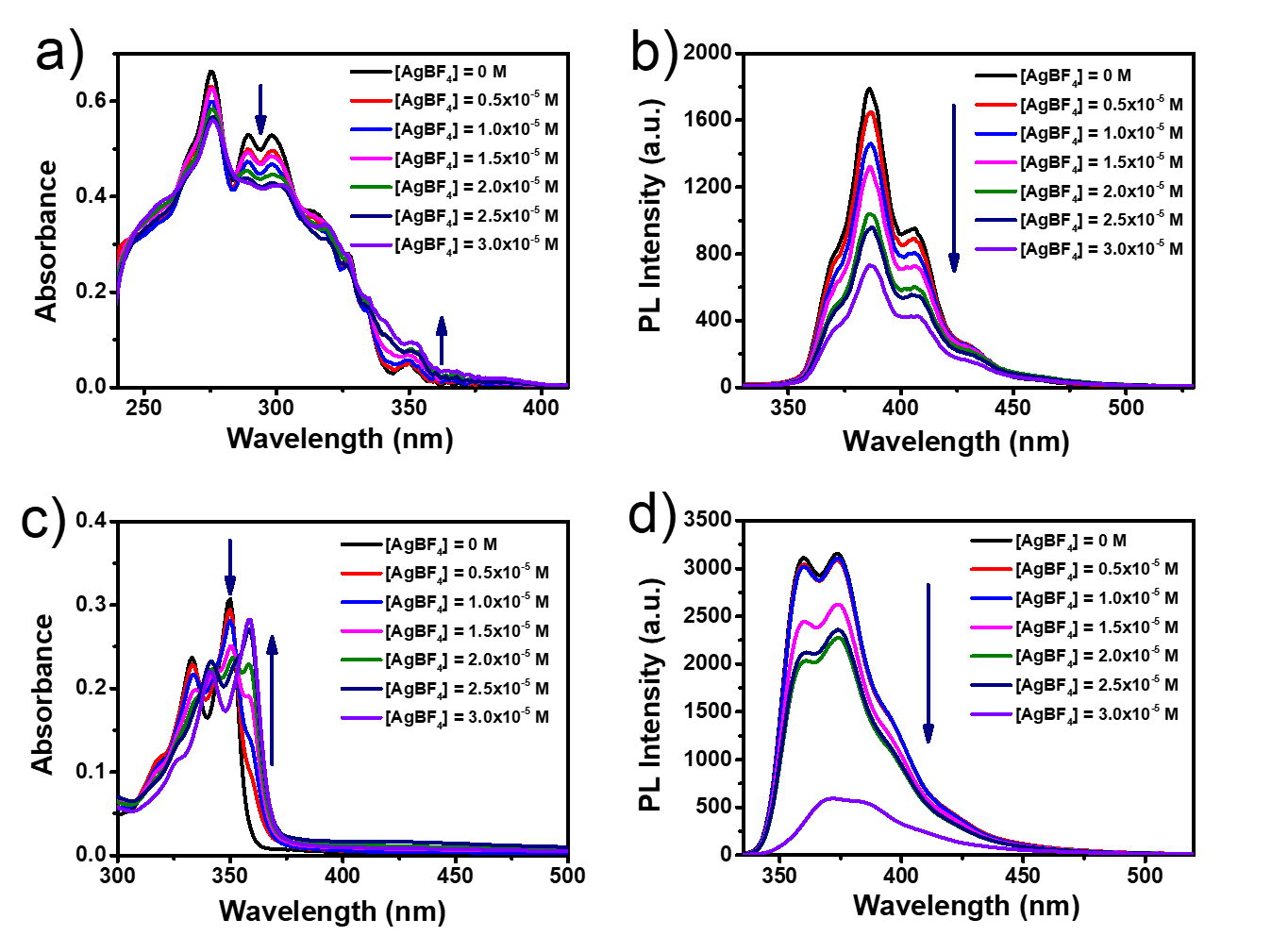
**Figure S10.** UV-vis spectrum of PA (5 x 10-5 M) and PL spectra of **SN1-CMP** (0.05 mg/mL) and **SN2-CMP** (0.05 mg/mL) in methanol solution.



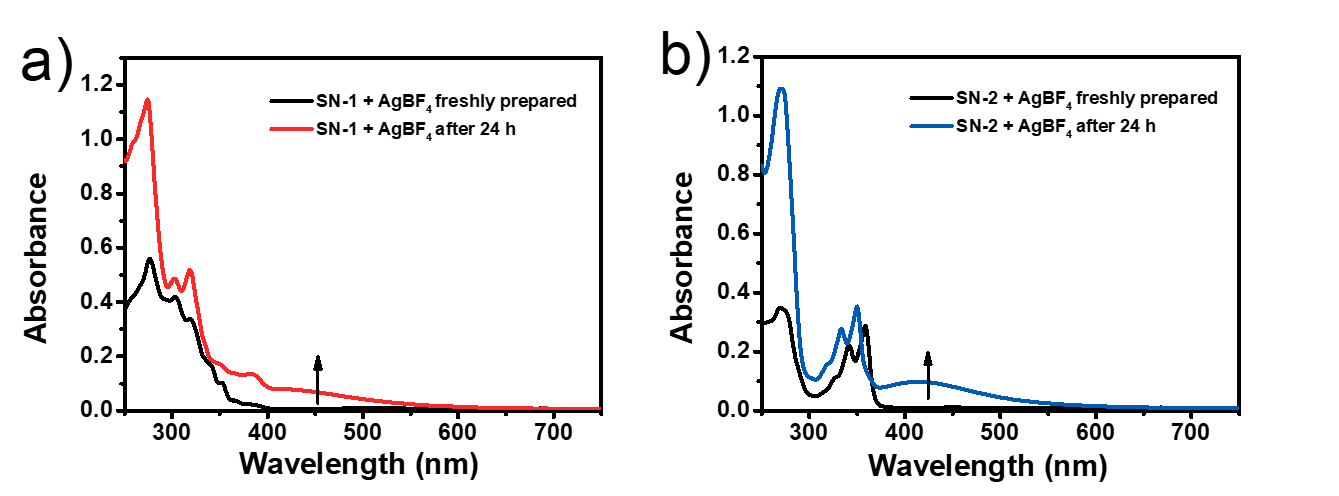
**Figure S11.** Stern-Volmer plots of I0/I versus [PA] for (a) **SN1-CMP** and (b) **SN2-CMP** in methanol at high concentration of PA. The linear Stern-Volmer plots of (c) **SN1-CMP** and (d) **SN2-CMP** upon titration with PA in methanol at low concentration of PA (concentration of **SN-CMPs**: 0.05 mg/mL; excitation wavelength: 401 nm for **SN1-CMP** and 411 nm for **SN2-CMP**).



**Figure S12.** FE-SEM images of polymer networks of (a) **Ag-SN1-CMP** and (b) **Ag-SN2-CMP**.



**Figure S13.** Changes in (a) (c) UV-vis absorption and (b) (d) PL spectra of **SN-1** and **SN-2** (10−5 M) in chloroform upon adding various concentrations of AgBF4 in methanol.



**Figure S14.** UV-vis absorption spectra of (a) **SN-1**, (b) **SN-2** (10−5 M) in chloroform with AgBF4 (2.5 x 10-5 M) in methanol. For the freshly prepared mixtures and samples analyzed after 24 h (protected from light at room temperature).

**References**

(S1) Wang, T.; Wang, H.; Li, G.; Li, M.; Bo, Z.; Chen, Y. Thiophene-Fused 1,10-Phenanthroline and Its Conjugated Polymers. *Macromolecules* **2016**, *49*, 4088-4094.

(S2) Guo, H. S.; Liu, M. F.; Han, Y.; Han, S.; Chen, Y. Synthesis and Characterization of S,N-Heteroacenes by Bischler-Napieralski Reaction. *Chin. J. Polym. Sci*. **2016**, *34*, 1319-1329.

(S3) Wang, X.; Lu, S. M.; Li, J.; Liu, Y.; Li, C. Conjugated Microporous Polymers with Chiral BINAP Ligand Built-in as Efficient Catalysts for Asymmetric Hydrogenation. *Catal. Sci. Technol*. **2015**, *5*, 2585-2589.

(S4) Yu, X. G.; Jin, X. L.; Tang, G. P.; Zhou, J.; Zhang, W.; Peng, D. H.; Hu, J. M.; Zhong, C. F. D–π–A Dye Sensitizers Made of Polymeric Metal Complexes Containing 1,10-Phenanthroline and Alkylfluorene or Alkoxybenzene: Synthesis, Characterization and Photovoltaic Performance for Dye-Sensitized Solar Cells. *Eur. J. Org. Chem*. **2013**, 5893-5901.