Supporting Information for

How does a Supramolecular Polymeric Nanowire Form in Solution?

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1. Experimental Details

Dynamic light scattering experiments (DLS) were performed on a Brookhaven Instrument equipped with a BI-200SM goniometer. A solid-state laser (CNI Changchun GXL-III, 532 nm, 100 mW) operating at 532 nm was used as light source. Intensity autocorrelation functions $G^{(2)}(\tau)$ in the self-beating mode were measured using a BI-TurboCorr digital correlator. The electric field time correlation function $g^{(1)}(\tau)$ was obtained from the following equation:

$$G^{(2)}(\tau) = A\left[1 + \beta g^{(1)}(\tau)\right]^2$$

where $A$ is the measured baseline, $\beta$ is a coherence factor, and $\tau$ is the delay time. By a Laplace inversion program, CONTIN, we got $\Gamma$ distribution, which was transformed into diffusion coefficient distribution and further into the hydrodynamic radius distribution by $\Gamma=Dq^2$ and $D=k_B T/6\pi \eta R_h$, respectively, where $\Gamma$, $D$, $q$, $k_B$, $T$, $\eta$, $R_h$ were line width, diffusion coefficient, scattering vector, Boltzmann constant, absolute temperature, viscosity of the solvent, and hydrodynamic radius, respectively.

The **1-C12** was refluxed in THF for 10 min at a concentration of about $1 \times 10^{-4}$ mol/L (see the discussion part). The THF solution was then filtered through a filter (Millipore, 0.2 $\mu$m, PTFE) to remove dust, and put into the refractive bath on the DLS equipment to start DLS measurement immediately.

Scanning electron microscopy (SEM) images were obtained by a cold field emission scanning electron microscope (FESEM, Hitachi S-4800) operated at an accelerating voltage of 1.0 kV. All the samples were prepared by directly drop-casting the nanowires suspensions on a silicon wafer. Transmission electron microscopy (TEM) images were obtained by a transmission electron microscope (FEI Tecnai G2 S-TWIN20) operated at accelerating voltage of 200 kV. Samples were prepared by directly drop-cast the nanowires suspensions on a grid covered with a thin carbon support film. Polarized optical microscopy (POM) was operated with a Leica DMLS fluorescence optical microscope. Atomic force microscopy (AFM) studies were performed with a Nanoscope IIIa microscope (Digital Instruments). All experiments were carried out in tapping mode at ambient temperature. A silicon nitride cantilever
was used with a resonance frequency around 300 kHz. The samples were prepared by directly spin-cast the nanowires suspensions on mica substrate. X-ray diffraction (XRD) was recorded on a D/Max-RA high power rotating anode 12 kw X-ray diffractometer (Cu Kα). Molecular modeling was performed using ChemBio3D Ultra (version 11.0) software available from CambridgeSoft. Energy was minimized using the Merck Molecular Force Field 94 (MMFF94) (Convergence criteria: atomic root mean square force 0.001 kcal/mol).

2. Fig. S1-S3

**Fig. S1** Concentration-dependent UV-vis and PL spectra of 1-C12. No obvious change was observed in UV-vis spectra after increasing the concentration (blue line). After changing the methoxyl groups (red line) to hydroxyl groups, the absorption still kept almost unchanged. This means that the hydrogen-bonding process cannot affect the UV-vis spectra of the molecule. For PL spectra, only a small blue-shift was observed after changing the methoxyl groups (red line) to hydroxyl groups. Changing the concentration of the monomer only changes the PL intensities.
**Fig. S2** SEM images of the morphologies formed by (a, b) 1-TPP; (c, d) 1-BTTPA; (e, f) 1-BTMe; (g, h) 1-BTHex in THF at 0.5 mg/mL by using hexane (left column) or using DCM (right column) as the poor solvent.

**Fig. S3** Estimation of the size of (a) 1-TPP and (b) 1-BTTPA via molecular modeling. (molecular models were minimized using MMFF94 force field).