Supplementary Information

Different Morphologies of Silica Synthesized by the Same Class of Chiral Organic Templates

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Materials and Methods

Materials

All reagents and solvents were chemical pure (CP) grade or analytical reagent (AR) grade and were used as received.

Measurements

Field emission scanning electron microscopy (FE-SEM) images were taken on a FEI Sirion200 electron microscope operating at 5 kV or 10 kV. The suspension of sample was dropped onto a slide and air-dried. Transmission electron micrographs (TEM) were recorded on a FEI Technai G2 20 electron microscope at 200 kV. The suspension was dropped onto a copper grid covered with a thin carbon film on a filter paper and air dried. Fluorescent emission spectra were collected on Shimadzu RF-5301 fluorophotometer at 298 K.

Typical synthetic procedure of micro / nano-silica

To the solution of D-**1** (0.02 mmol) and (*R,R*))-**2** (0.02 mmol) in THF (0.2 ml) at room temperature was rapidly added 2 ml deionized water (2 ml) to give a suspension. After the suspension was stirred for 4 h, 0.080 mL of solution of tetraethoxylsilane (0.134 mmol) and 3-aminopropyltrimethoxysilane (0.05mmol) in methanol (1.9 ml) was added over 10 min under stirring. The reaction mixture was then allowed to stand for 12 h at room temperature. The collected precipitates by centrifugation were refluxed in order with triethylamine (2×10 mL) and with THF (3×10 mL) for 2 h to remove the template molecules. White silica powders were obtained.

Measurement of the amount of Docetaxel adsorbed by the silica hollow spheres

To the solution of Docetaxel (20 mg) in THF (1 mL) was added silica hollow spheres (2 mg). After the mixture was stirred for 0.5 h, the silica hollow spheres were separated by centrifugation, and dried in air. By comparing UV spectra of supernatant and the standard curve of absorbance maximum with concentration of Docetaxel at

272 nm, the amount of Docetaxel adsorbed by the silica hollow spheres was measured.
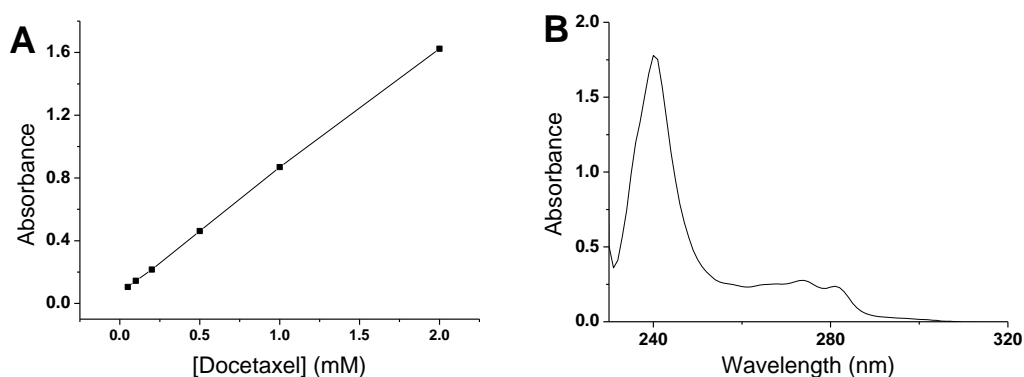
(**A**) Standard curve of absorbance maximum with concentration of Docetaxel at 272 nm in a mixed solvent of water and THF (v/v 1:9). (**B**) The UV spectra of the silica hollow nanospheres carrying Docetaxel.

Measurement of association constants of 1-2 complexes by fluorescence titration

A 2.0×10^{-4} M solution of D-**1** in a mixed of water and THF (volume ratio 10:1) was titrated with solution of (*R,R*)-**2** in THF. When (*R,R*)-**2** was added, the solution of D-**1** instantly becomed turmid. After kept standing for 2 h, the turbid solution was measured for fluorescence spectrum. Under the same conditions, the fluorescence spectra of D-**1** with concentration of (*S,S*)-**2** were measured. The association constants were calculated by nonlinearly curve fitting in Origin 7.5 using following equation (*Analytica Chimica Acta*. 1998, 360, 129):

$$F = F_0 + \frac{(F_{com} - F_0)K[G]}{1 + K[G]}$$

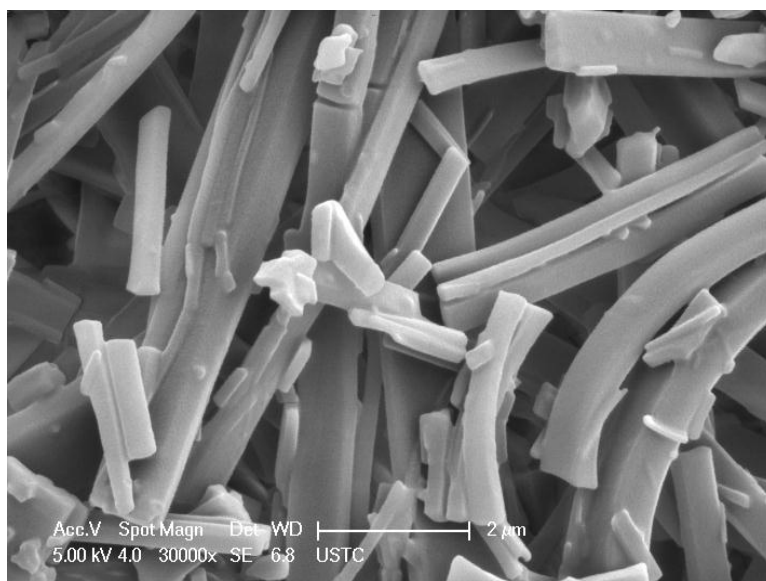F: fluorescence intensity of D-**1** after **2** was added;

F_0:   fluorescence intensity of D-**1** without addition of **2**;

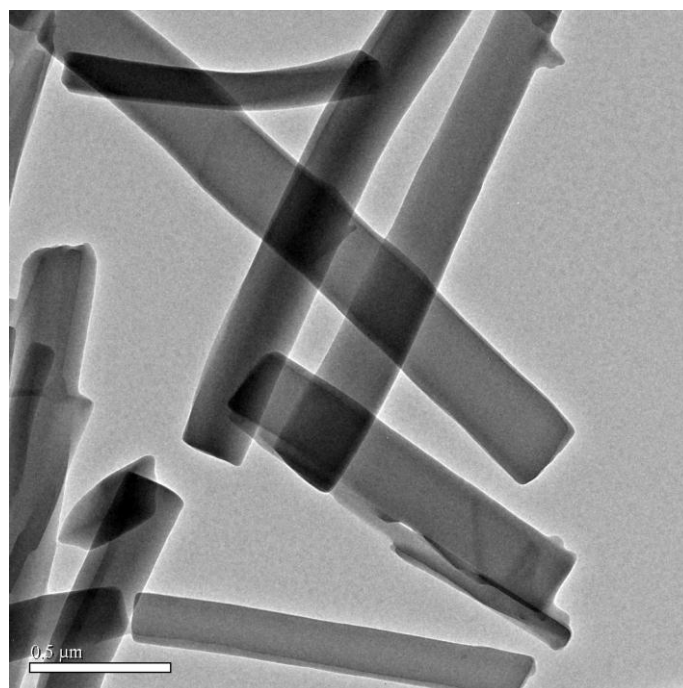F_{com}:   fluorescence intensity of D-**1** after the largest excess amount of **2** was added;

[G]:   molar concentration of (*R,R*)-**2** or (*S,S*)-**2** added during titration;
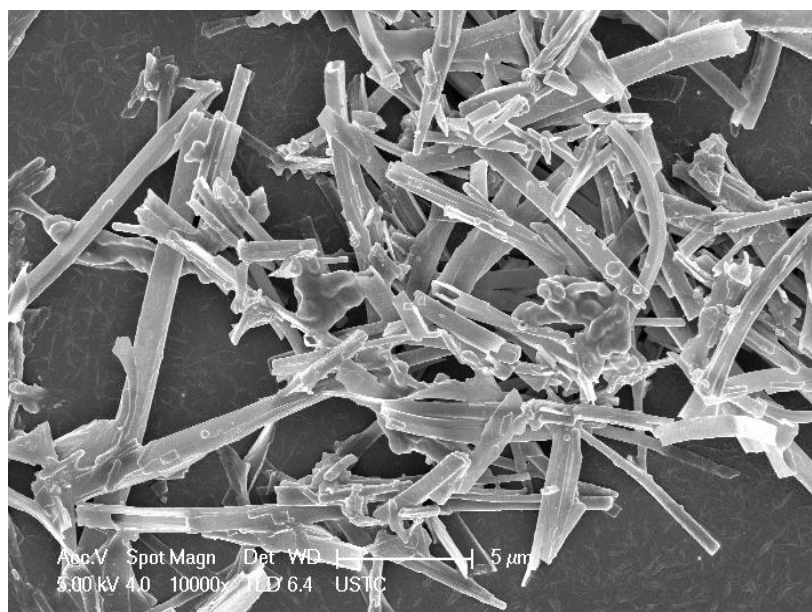
K: association constant.
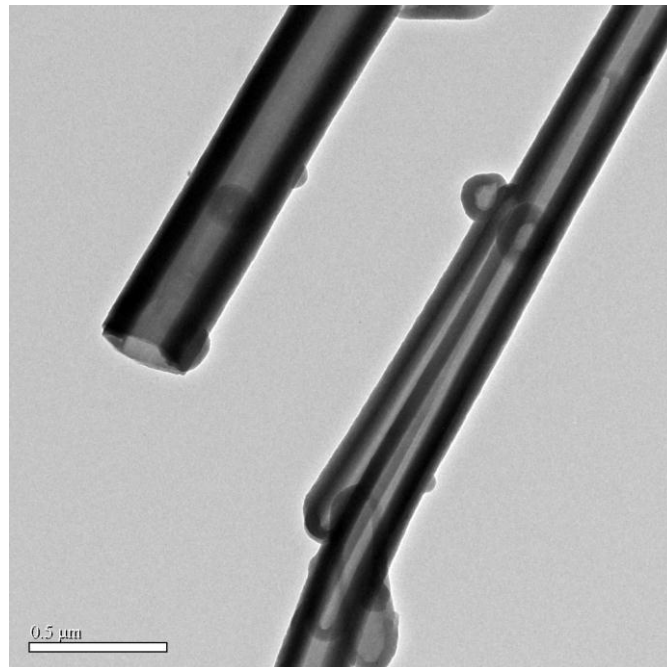
Supporting Figures

Figure S1. FE-SEM images of suspension of L-**1c**-(*R,R*)-**2** complex in a mixed solvent of water and THF (V/V 10:1).
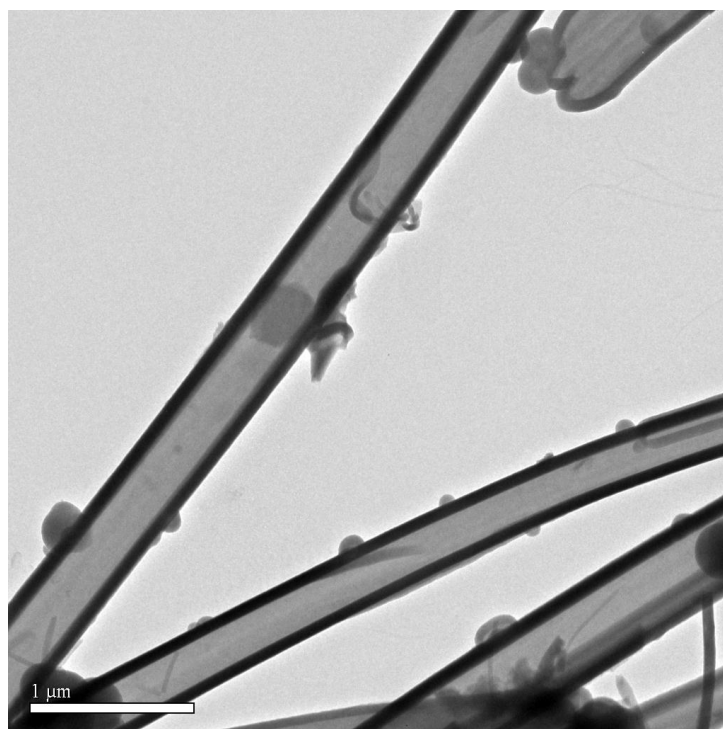

Figure S2. TEM images of suspension of L-**1c**-(*R,R*)-**2** complex in a mixed solvent of water and THF (V/V 10:1).
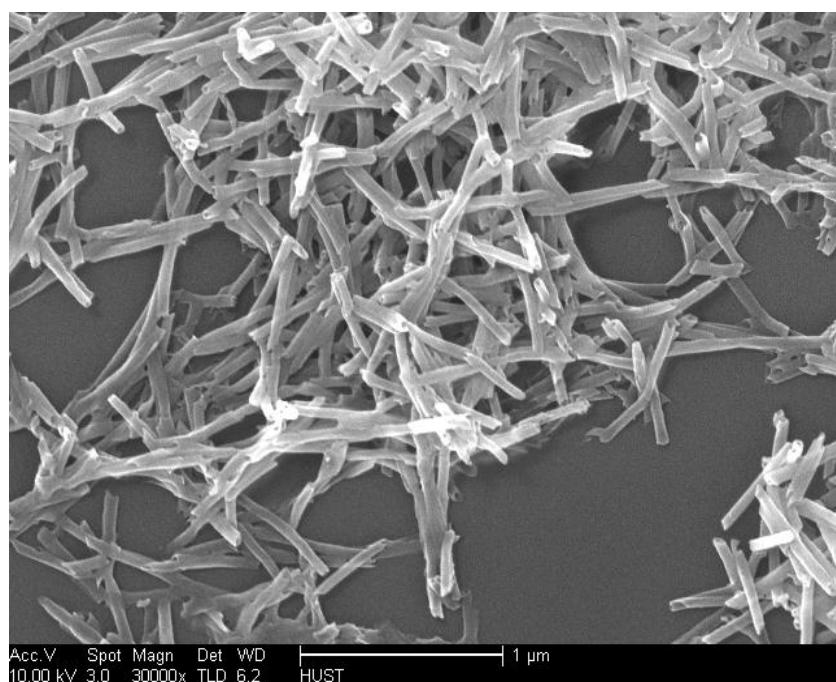
Figure S3. FE-SEM images of the silica square tubes from L-**1c**-(*R,R*)-**2** complex.

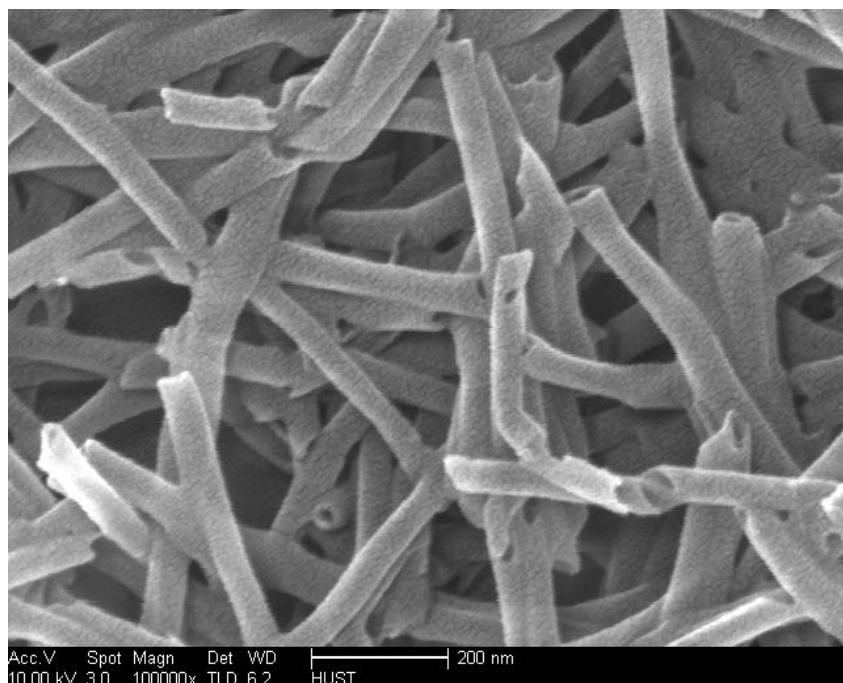**Figure S4**. TEM images of the silica square tubes from L-**1c**-(*R,R*)-**2** complex.

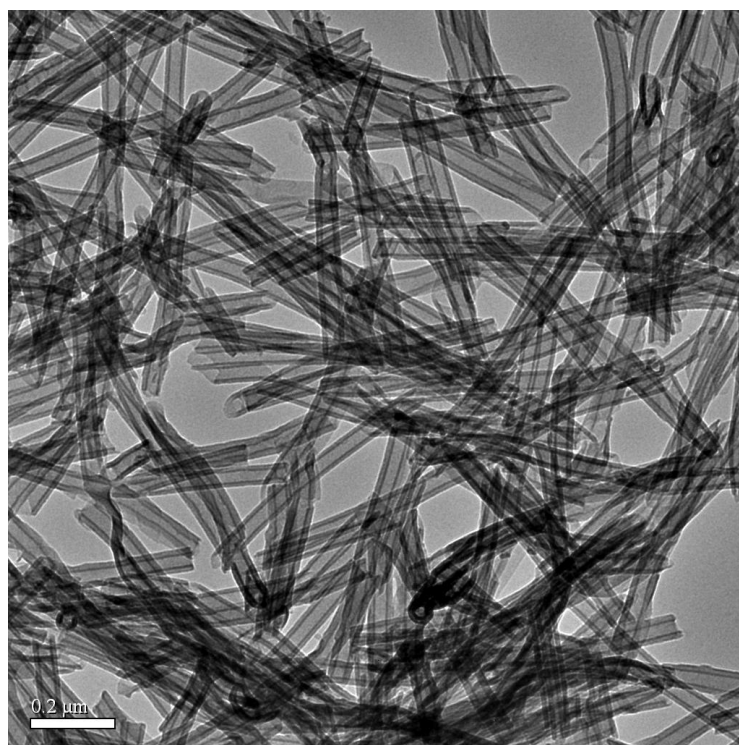**Figure S5**. TEM images of the silica square tubes from L-**1c**-(*R,R*)-**2** complex.

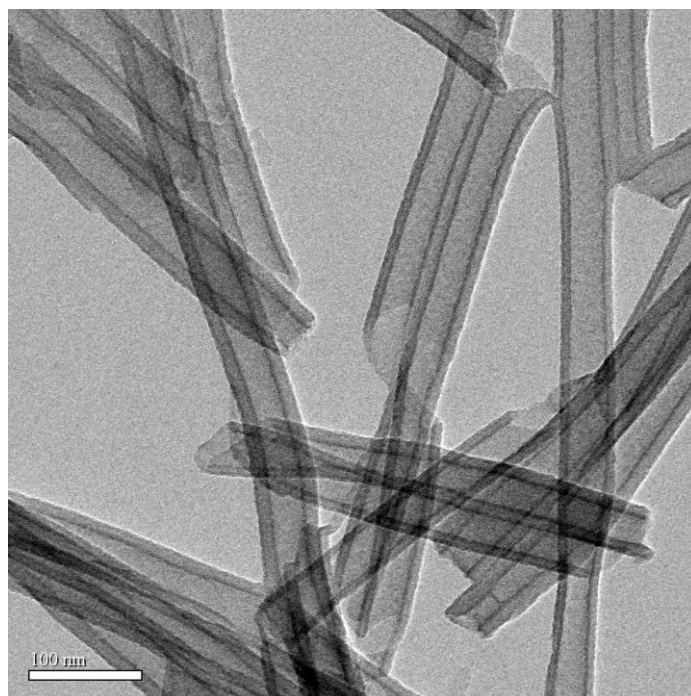**Figure S6**. FE-SEM images of the silica nanotubes from D-**1d**-(*R,R*)-**2** complex.
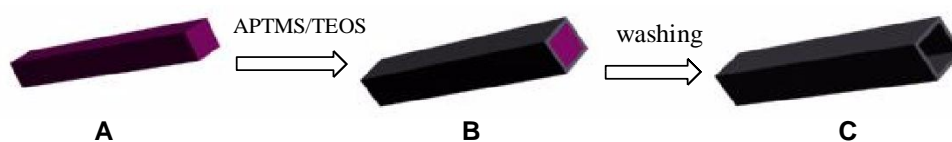
Figure S7. FE-SEM images of the silica nanotubes from D-**1d**-(*R,R*)-**2** complex.
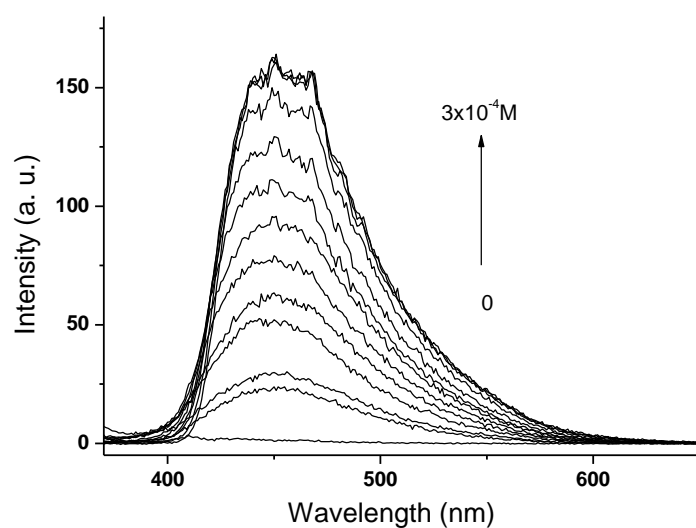

Figure S8. TEM images of the silica nanotubes from D-**1d**-(*R,R*)-**2** complex.

Figure S9. TEM images of the silica nanotubes from D-**1d**-(*R,R*)-**2** complex.

Fig. S10. Schematic illustration for the formation of square silica tube C on the surface of square rod aggregate A from D-**1c**-(*S,S*)-**2** or L-**1c**-(*R,R*)-**2** complex.
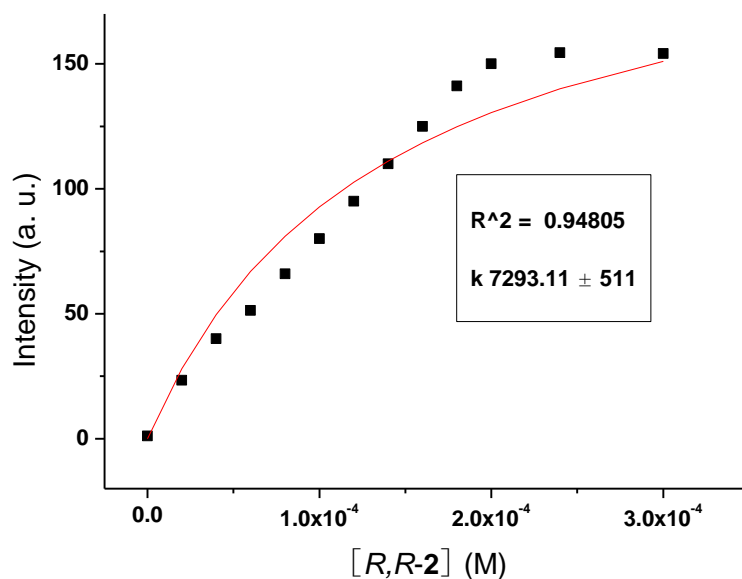
Figure S11. Fluorescence spectra of D-**1c** with concentration change of (*R,R*)-**2** in a mixed solvent of water and THF (volume ratio 10:1). The concentration range of (*R,R*)-**2** was from 0 to 3×10^{-4} M.
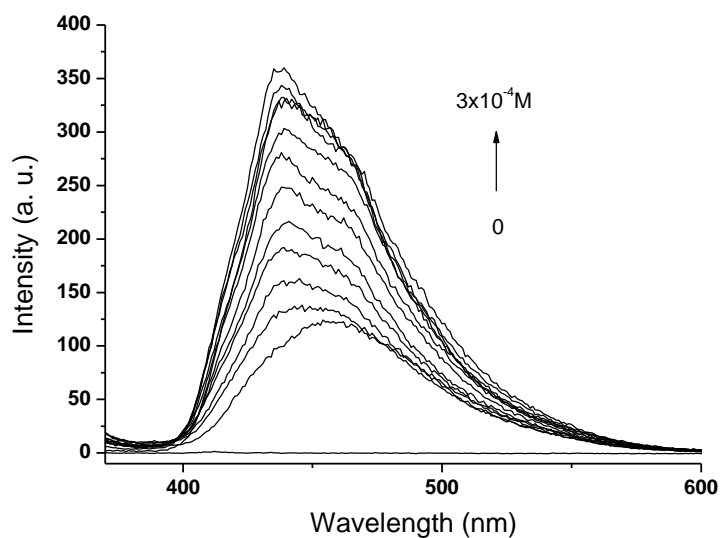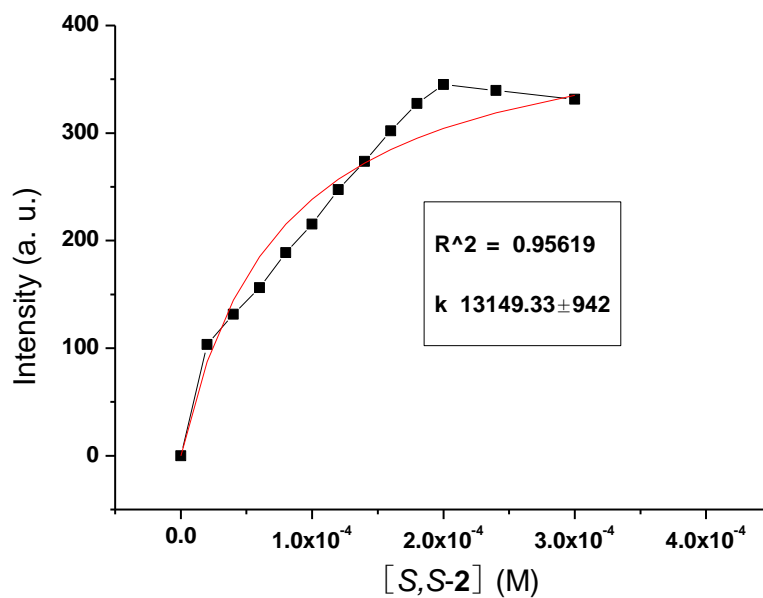

Figure S12. Fluorescence spectra of D-**1c** with concentration change of (*S,S*)-**2** in a mixed solvent of water and THF (volume ratio 10:1). The concentration range of (*S,S*)-**2** was from 0 to 3×10^{-4} M.

Figure S13. Fluorescence Intensity of D-**1c** with concentration change of (R,R)-**2** in a mixed solvent of water and THF (volume ratio 10:1). The red line was obtained by nonlinearly curve fitting in Origin 7.5.

Figure S14. Fluorescence Intensity of D-**1c** with concentration change of (S,S)-**2** in a mixed solvent of water and THF (volume ratio 10:1). The red line was obtained by nonlinearly curve fitting in Origin 7.5.