

## Supporting Information for

### Noble Metal Nanochains Through Helical Self-assembly

*Jinbo Fei, Yue Cui, Anhe Wang, Pengli Zhu and Junbai Li\**

Beijing National Lab for Molecular Sciences, Key Lab of Colloid and Interface  
Science, the Center for Molecular Sciences, Institute of Chemistry,  
Chinese Academy of Sciences, Beijing 100190, China

E-mail: [jbli@iccas.ac.cn](mailto:jbli@iccas.ac.cn)

### Experimental Section

AgNO<sub>3</sub> was provided by the Beijing Analytical Instrument Factory and Congo red was used from Amresco Inc. They were used without deposition. Deionized water with a resistivity of 18 MΩ·cm was used. In a typical experiment, an aqueous solution of AgNO<sub>3</sub> (2.5 mM) was placed in a sonication vessel, and then mixed with the desired amount of Congo red. The solution was exposed to visible light for 48h. The products were collected after deposition and aging, and then washed with de-ionized water and ethanol. Ag nanoparticles were prepared through AgNO<sub>3</sub> reduction with the above concentration by using citrate acid.<sup>31</sup>

The morphologies of the products were characterized by SEM (Hitachi-4800) and TEM (JEOL JEM-1011). SAED pattern was recorded on a JEOL JEM-1011 transmission electron microscope operating at 200 kV. XRD analysis of the samples was carried out by using an X-ray diffractometer (Model D/MAX2500, Rigaku) with CuKα radiation. UV-vis absorption spectra of silver particles suspended in water were collected by a Hitachi U-3010 spectrophotometer.

Tapping mode AFM images were obtained at ambient conditions using a NanoScope III MultiMode AFM (Digital Instruments). Both height and phase images were recorded simultaneously using the retrace signal. Si tips with a resonance frequency of approximately 300 kHz and a spring constant of about 40 N m<sup>-1</sup> were used, and the scan rate was in the range 0.5-1.2 Hz.

Figure S1. The photo images of Congo-red (a) and AgNO<sub>3</sub>-Congo red mixture (b).



Figure S2. The Uv-vis spectra of the solution of (a) and (b) in Figure S1.

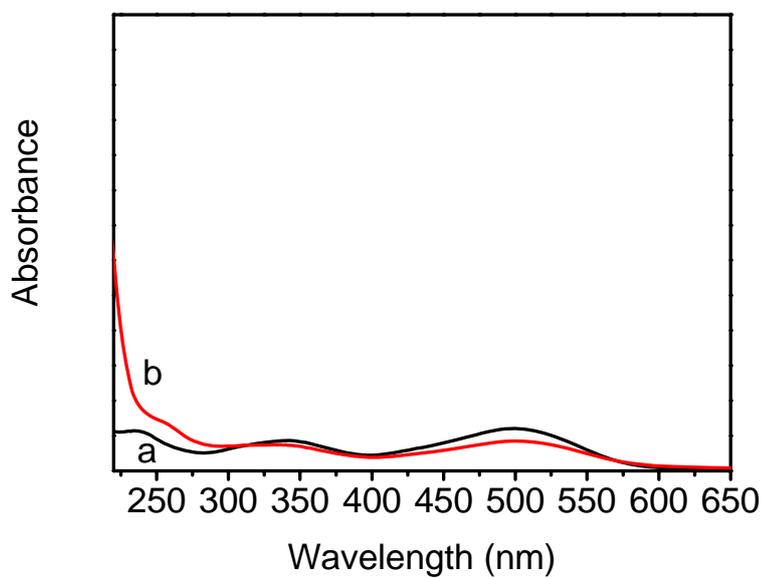
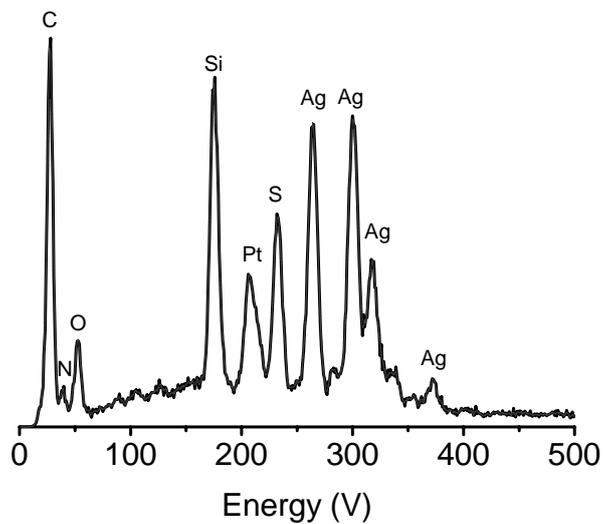


Figure S3. The EDX pattern of the helical precursor (Left) and the relevant atom ratios (Right)



<i>Element</i>	<i>Wt%</i>	<i>At%</i>
<i>CK</i>	41.20	67.02
<i>NK</i>	07.12	09.93
<i>OK</i>	10.58	12.92
<i>SK</i>	06.28	03.83
<i>AgL</i>	34.83	06.31
<i>Matrix</i>	Correction	ZAF