Electronic Supplementary Information

Fast Synthesis of Double-Directional Tellurium Submicron Needles by Microwave-Assisted Solution Method

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Experimental section
All the reagents were of analytical grade (Shanghai Chemical reagents Co.) and were used without further purification. All experiments were conducted under air atmosphere. In a typical experimental process, 0.443 g of Na₂TeO₃ and 0.3 g of PVP (M_w ≈ 10000) were added into 45 mL formamide under constant stirring. The obtained resulting solution was transferred into a 50-mL round-bottomed flask and subsequently heated to 200 °C and held at this temperature for 12 min by microwave heating. The microwave oven used was a focused multi-mode microwave synthesis system (Sineo MAS-II, Shanghai, China), which was equipped with a water cooled condenser outside the microwave cavity and in-situ magnetic stirring system. After microwave heating, the obtained dark blue products were collected, centrifuged and washed with distilled water and absolute ethanol several times, then dried under vacuum at 60 °C for 1 h.

The phase purity of the as-prepared products was determined by X-ray diffraction (XRD Rigaku-D/ MAX-2550PC) using monochromated Cu-Ka radiation. The morphology and the microstructures of the samples were observed with field emission scanning electron microscopy (FESEM, FEI Quanta 200F), transmission electron microscopy (TEM, FEI Tecnai G2 S-Twin), high-resolution TEM (HRTEM) and selected area electron diffraction (SAED).
Fig. S1 XRD patterns of samples prepared via microwave-assisted solution method at 200 °C for 12 min using different concentrations of PVP: a) 0 g/L, b) 2.2 g/L, c) 6.6 g/L.
Fig. S2 FESEM images of samples synthesized via microwave-assisted solution method at 200 °C for 12 min using different surfactants: a) SDBS, b) CTAB, c) EDTA