Supporting information for:

Electrostatic-Induced Synthesis of Tungsten Bronze Nanostructures with Excellent Photo-to-thermo Conversion Behavior

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NIR Heating Assay Procedure

In order to investigate the photothermal conversion property of the products, each kind of as-prepared nano-HTBs was weighed for appropriate amounts using a micro balance and transferred to plastic centrifuge tubes. Distilled water was added to the tubes to prepare nano-HTB dispersions with concentrations of 40, 60, 80, 100, 120 and 140 μg/mL. These tubes were placed in an ultrasonic waterbath with a constant temperature of 24 ^{o}C, and kept being sonicated to make sure that the HTB nanomaterials were finely dispersed in the suspensions. Aliquots (200 μL) of these dispersions were then transferred to vacant centrifuge tubes using a pipette. The tubes were fixed with their apertures upward and illuminated by continuous NIR laser at a wavelength of 808 nm (power density: 4 W cm^{-2}, spot size: 5 mm). The irradiation time was set as 30, 60, 90, 120, 150 or 180 s. Pre- and post-irradiation temperatures of the aliquots were measured using a handheld thermocouple thermometer (YC 811, Tenmars). For the blank run test, only distilled water was added to a plastic centrifuge tube, then it was treated and measured in the same way as the nano-HTB dispersions. A schematic diagram of the set-up is presented below.

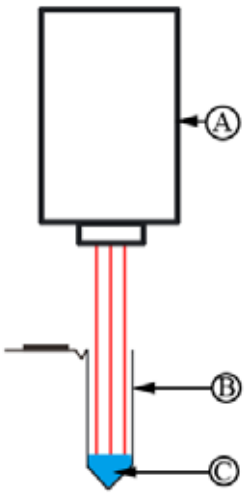

Diagram S1. A simple schematic illustration of the set-up for the NIR heating assay. The labelled components are as follows: A) NIR laser device, B) plastic centrifuge tube, C) nano-HTB dispersion.

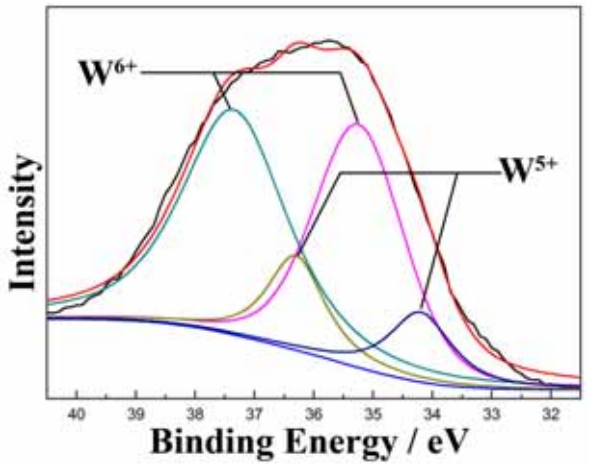

Fig. S1. W_{4f} core-level XPS spectrum of Na-HTB nanorods. The chemical formula of this HTB structure is calculated to be $Na_{0.196}WO_3$.

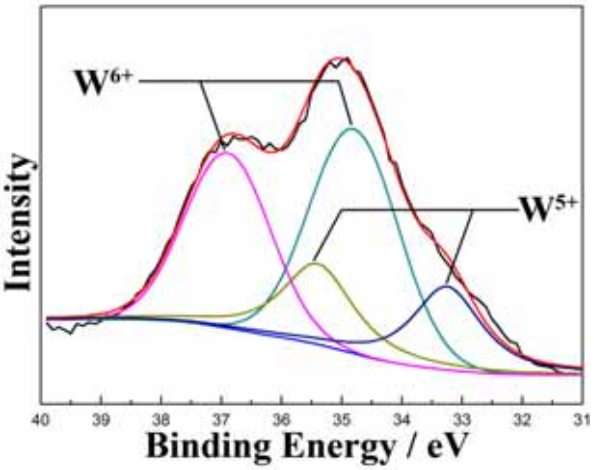

Fig. S2. W_{4f} core-level XPS spectrum of Cs-HTB nanowires. The chemical formula of this HTB structure is calculated to be $Cs_{0.313}WO_3$.

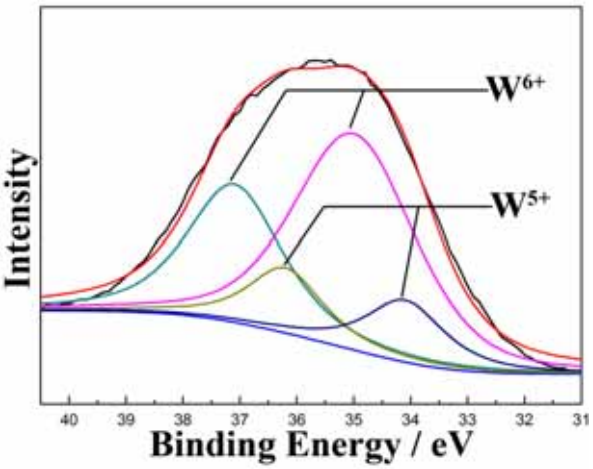

Fig. S3. W_{4f} core-level XPS spectrum of NH_4-HTB nanowires. The chemical formula of this HTB structure is calculated to be $(NH_4)_{0.33}WO_3$.

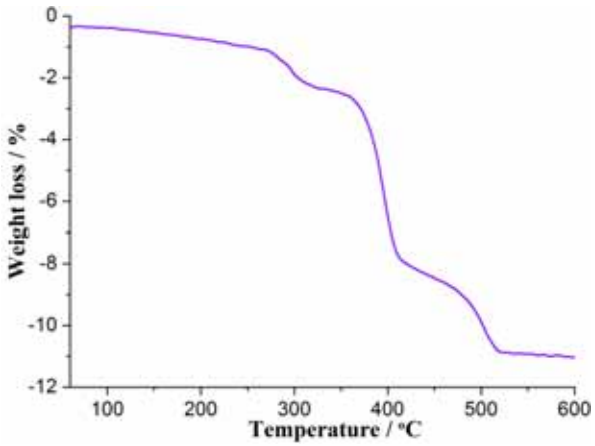

Fig. S4. Calibrated TG result of the product obtained after 2 h of hydrothermal reaction.

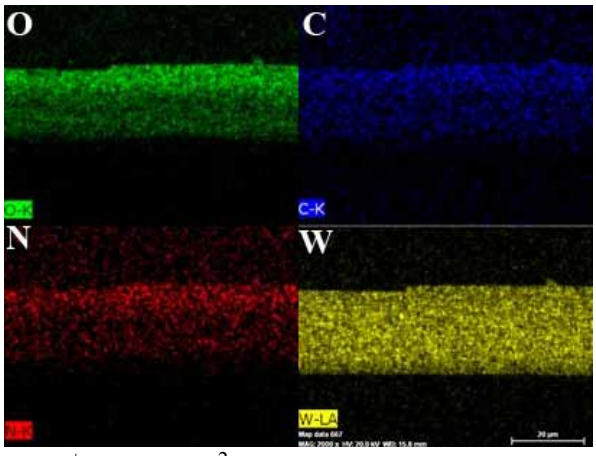

Fig. S5. EDX mapping results of $H^{+}EDA\text{-}WO_4^{2-}$ complexes obtained after 2 h of hydrothermal reaction.

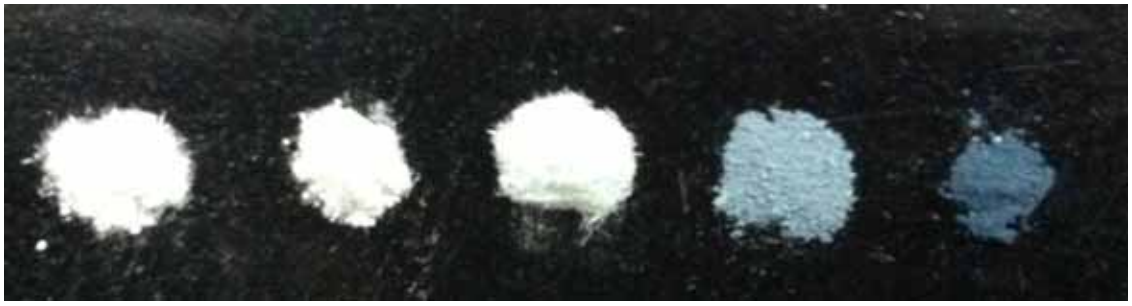

Fig. S6. The color transformation of products upon different reaction time. From left to right: 2, 7, 10, 12 and 18 h.