Supporting Information:

Formation of ZnTe Nanowires by Oriented Attachment

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Materials and Methods:

Materials:

Zinc oxide (ZnO), myristic acid, tellurium, and trioctylphosphine (TOP) were purchased from Aldrich. Hexadecylamine (95%) and phenyl ether were purchased from Alfa Aesar. All chemicals were used as received. All solvents (hexane, toluene and acetone) were used without any further purification.

*Typical synthesis procedures***:**

Preparation of Te-TOP solution

0.75 M stock solution of trioctylphosphine tellurium (TOPTe) was prepared in advance. Typically, this was prepared by mixing 4.785 g of Te powder with 50 mL of TOP under argon, and then heating the mixture to 250^{o}C for 4 to 5 hours until the tellurium was completely dissolved. The resulting transparent yellow solution was cooled to room temperature and kept under argon for subsequent use in the synthesis.

Synthesis of ZnTe nanowires:

2 mmol of zinc oxide, 1.4 g of myristic acid, and 3 g of hexadecylamine were dissolved in 5 mL of phenyl ether. The reaction mixture was heated to 250^{o}C for 15 to 20 minutes under an argon flow. After that, 2 mL of 0.75 M TOPTe solution was injected under stirring into the hot (250^{o}C) reaction mixture. After 5 to 8 minutes, aliquots from the reaction were removed by syringe and were injected into a large volume of chloroform at room temperature, thereby quenching any further growth of the NCs. The NCs were separated from the chloroform solution by centrifugation. The precipitated NCs have moderate colloidal stability in chloroform, hexane, and toluene.

Characterization methods:

(i) Transmission Electron Microscopy (TEM): Transmission Electron Microscopy (TEM) images were obtained using a JEOL model JEM-100CX microscope with an acceleration voltage of 80 kV. The specimens were prepared by drop-coating the sample dispersion onto an amorphous carbon coated 300 mesh copper grid, which was placed on filter paper to absorb excess solvent.

(ii) Transmission Electron Microscopy (TEM) images were obtained using a JEOL model JEM 2010 microscope at an acceleration voltage of 200 kV, or using the Philips CM300 microscope at the National Center for Electron Microscopy.

(iii) X-ray Diffraction (XRD): X-ray powder diffraction patterns were recorded using a Siemens D500 diffractometer, with Cu Kα radiation. A concentrated nanocrystal dispersion was drop cast onto a quartz plate for measurement.

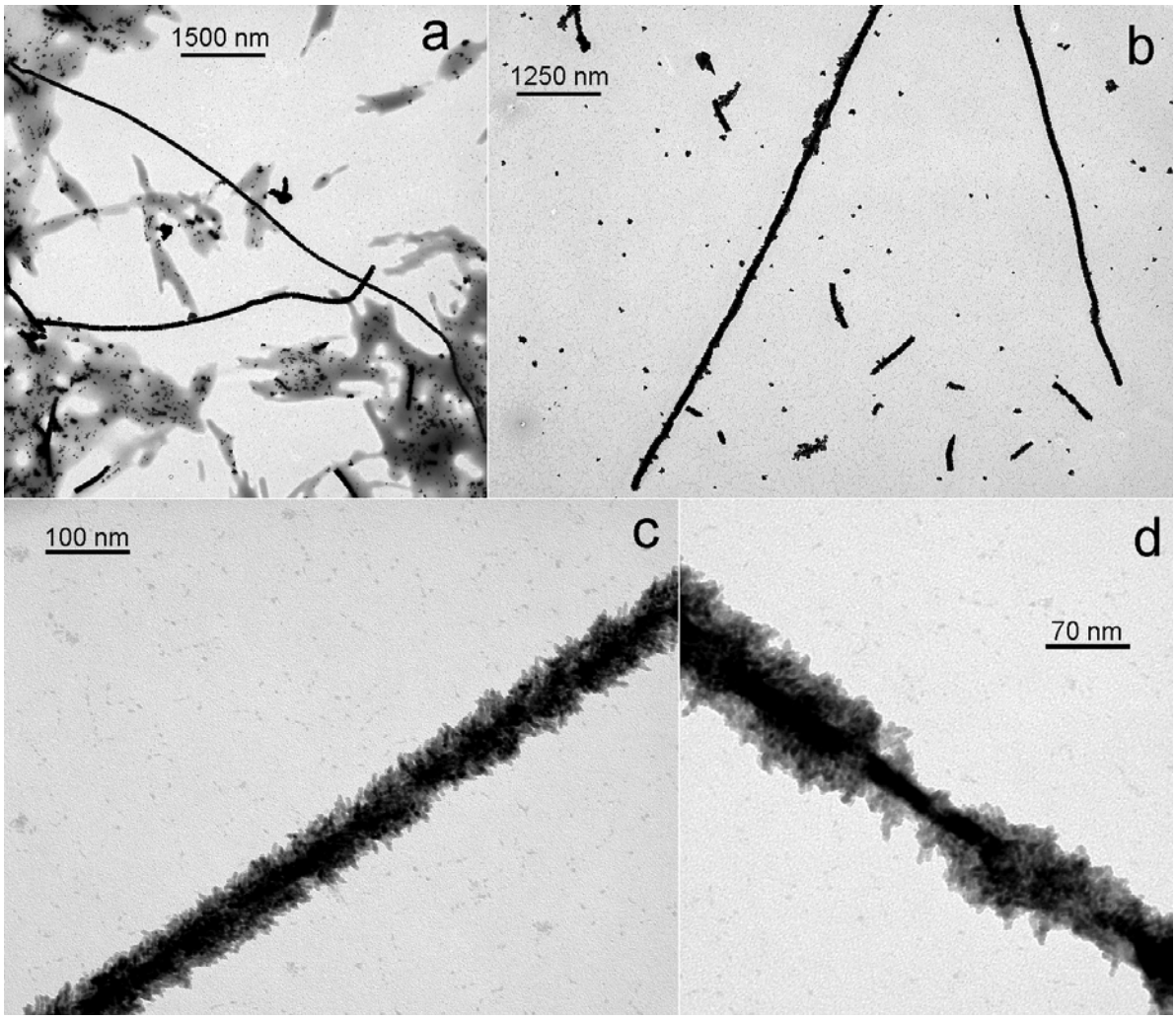

Figure S1. Additional TEM images of brush-like ZnTe NWs like those shown in Fig. 1.

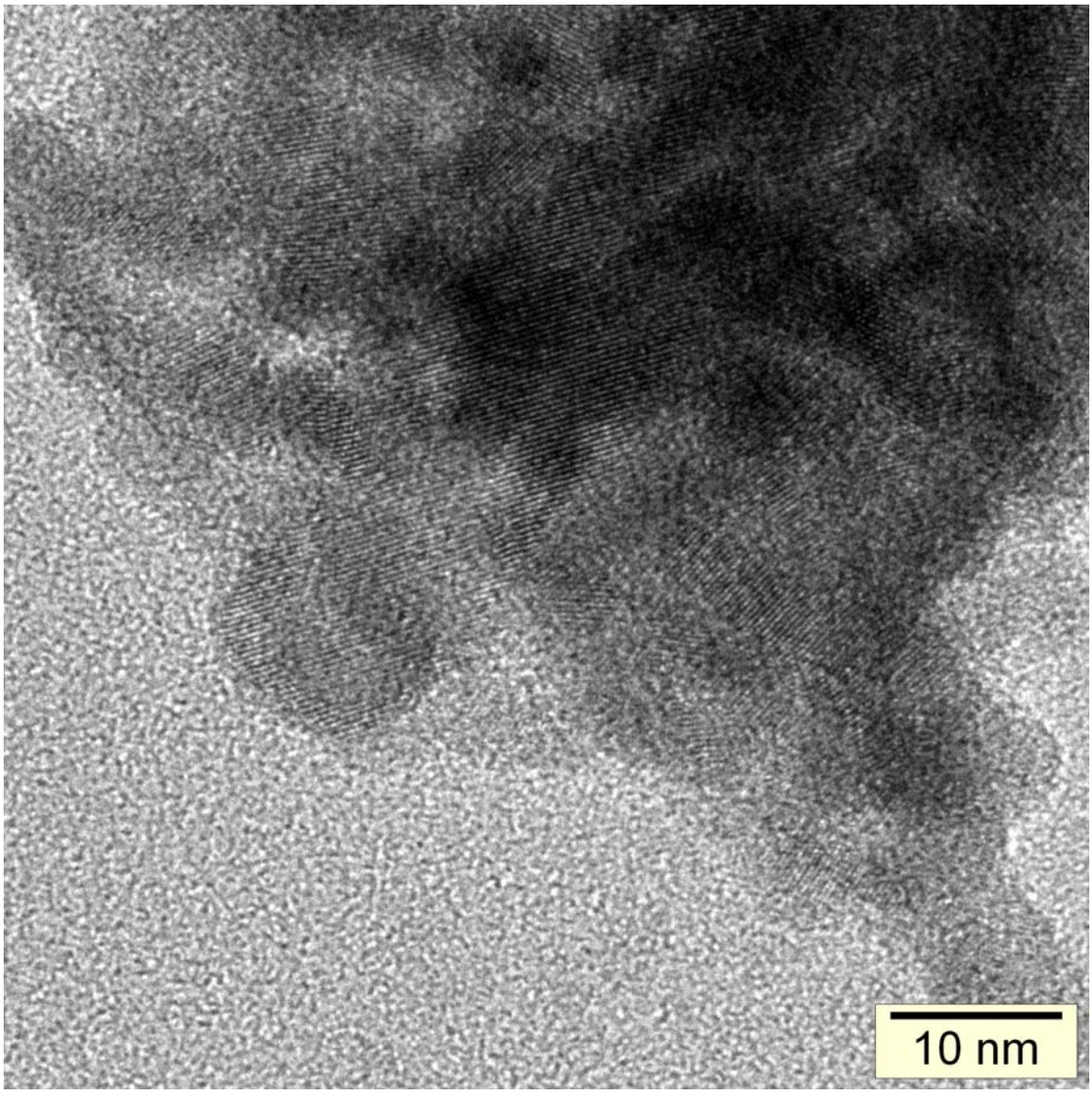

Figure S2. HRTEM image of irregular ZnTe NPs.

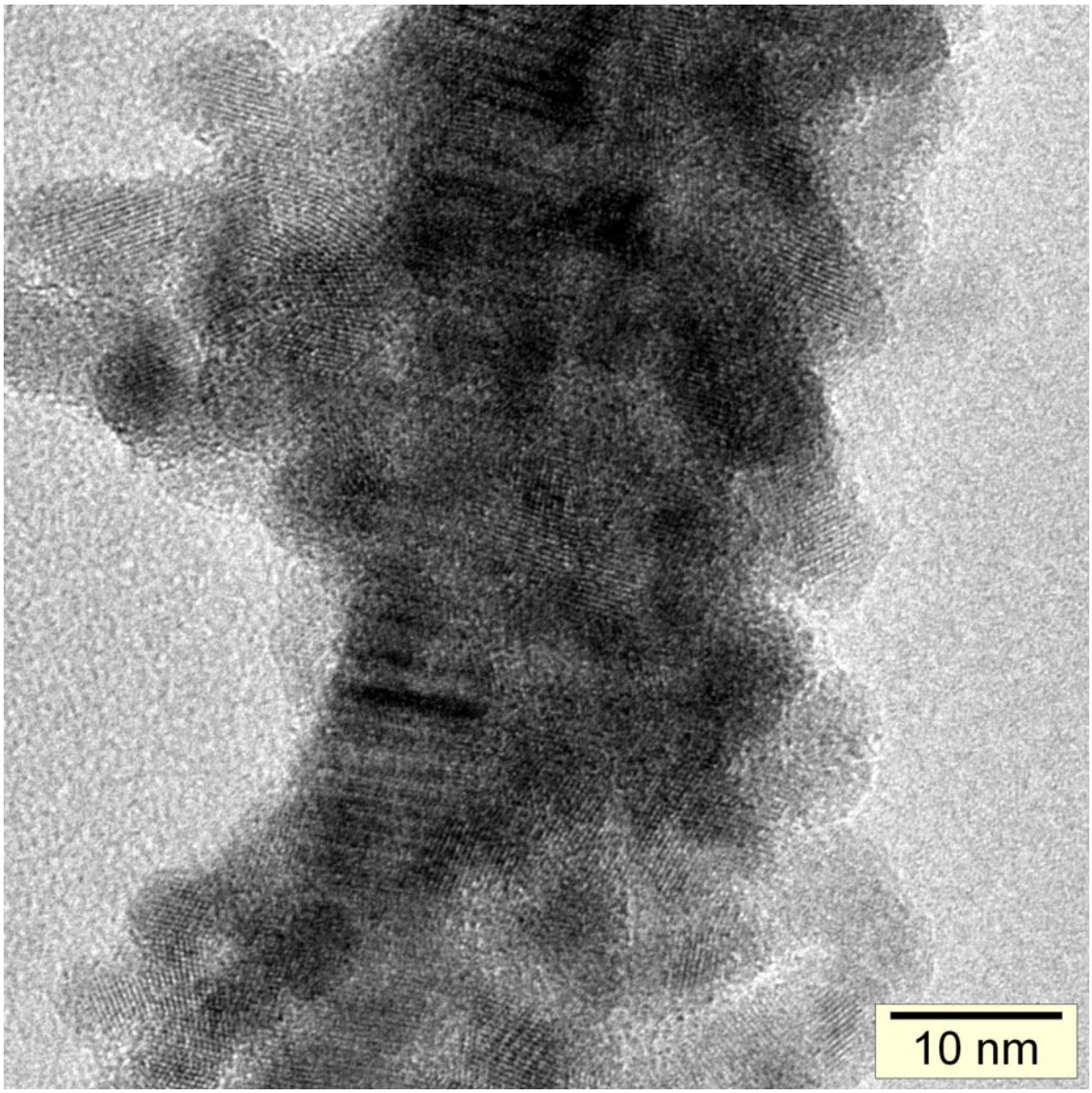

Figure S3. HRTEM image of brush-like ZnTe NWs.