Supporting Information

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One-pot synthesis of Cubic ZnSe Entangling Nanowires and Hexagonal Se Nanorods

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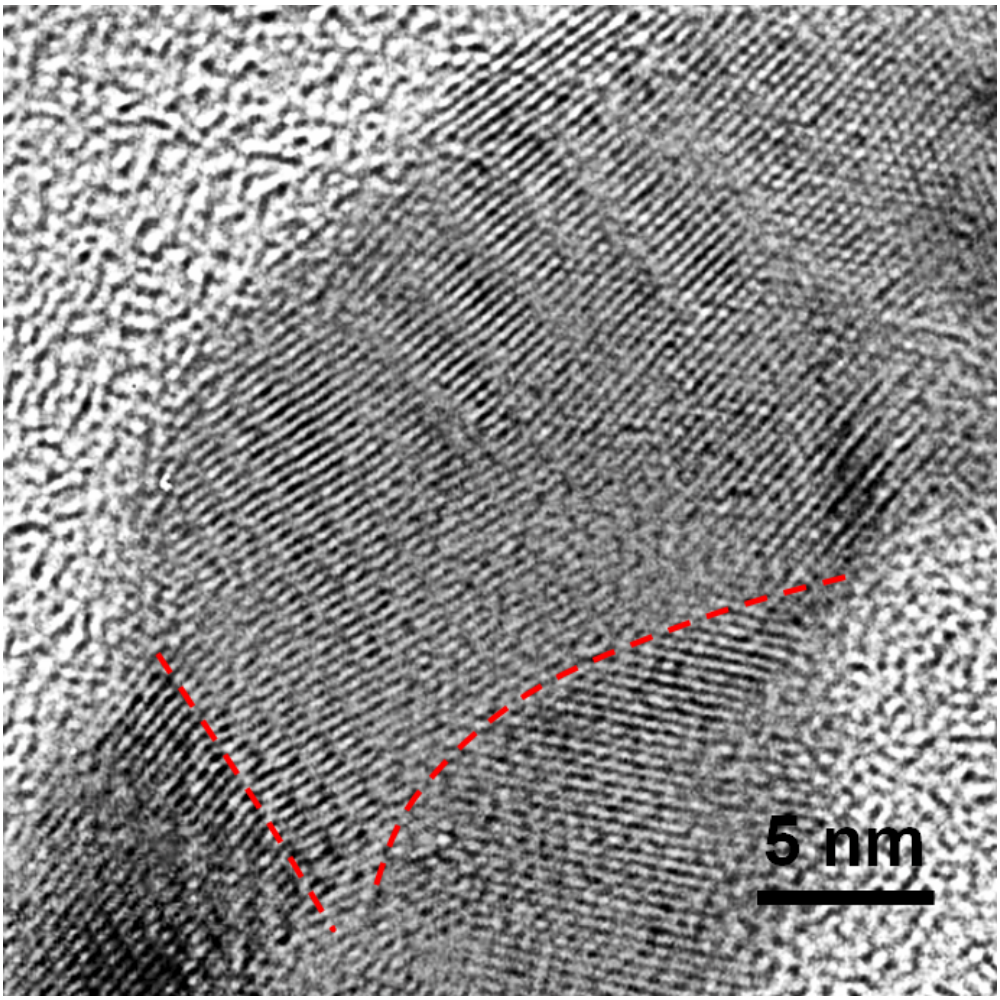
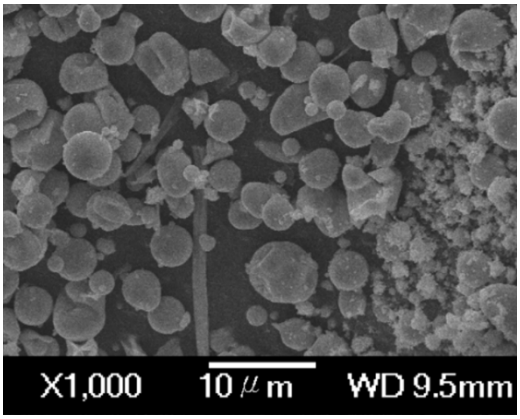
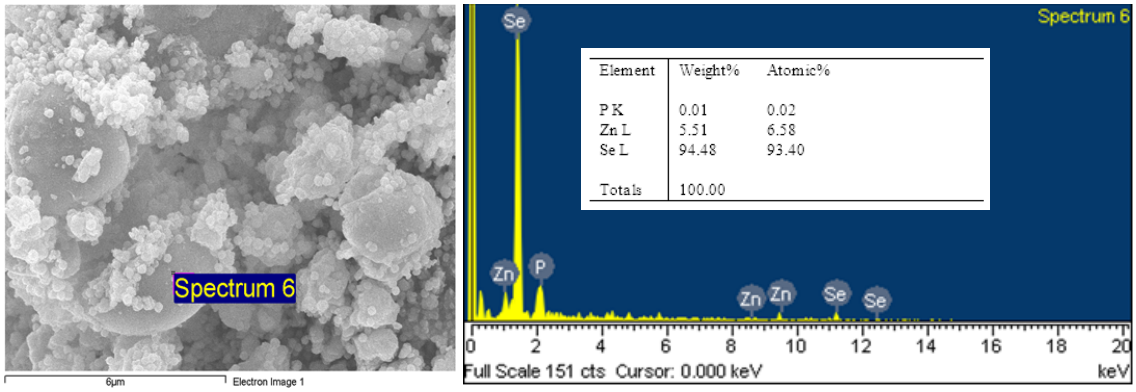


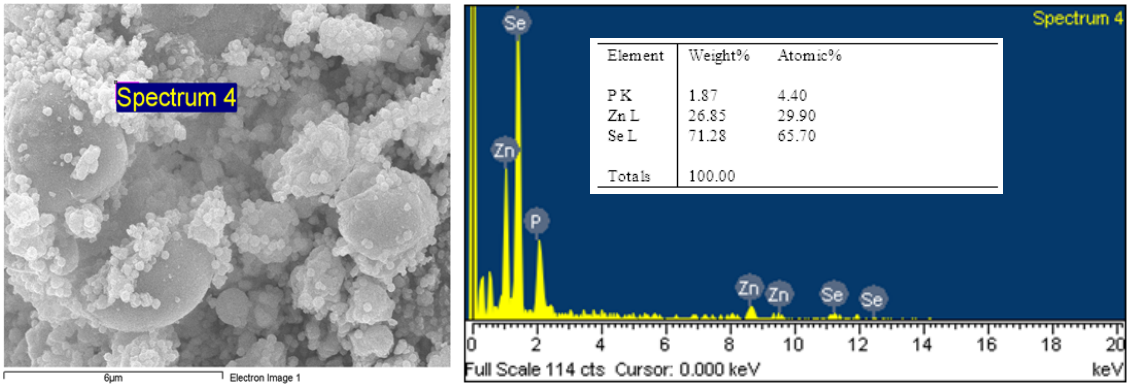
Fig. S1 Higher resolution TEM image of a ZnSe NW. The read dashed lines indicate the boundaries of crystals.



(a)



(b)



(c)

Fig. S2 (a) SEM image of products synthesized from TOPSe in a Zn-IA-TOPO mixture (280 °C). (b) and (c) EDS spectra and corresponding SEM images.

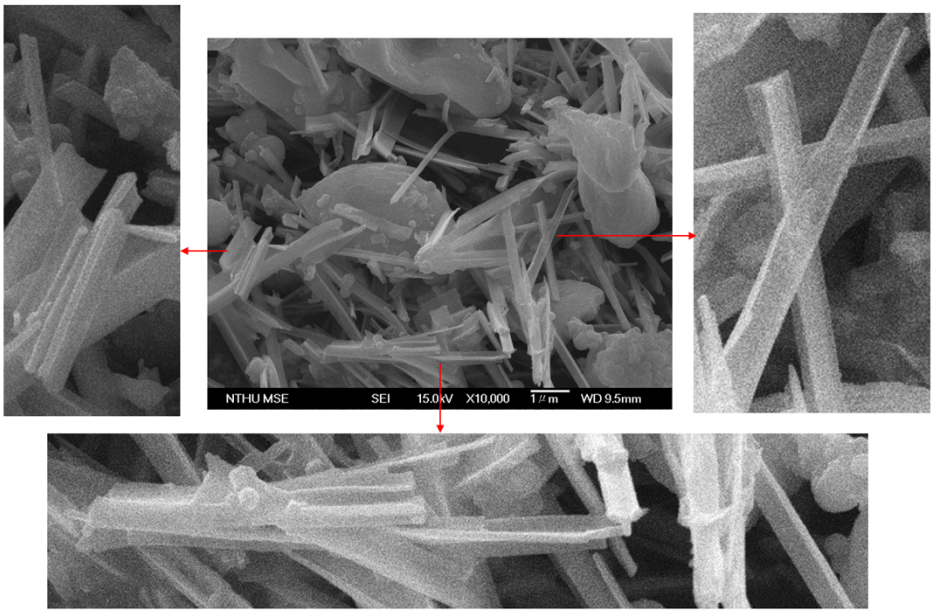


Fig. S3 Se NRs synthesized from TOPSe in the Zn-IA-TOPO mixture. The NRs appear to be long slabs. Some Se NRs look like semicircular tubes.

Syntheses of polyimide, polyimide/ZnSe nanoparticles and polyimide/ZnSe E-EWs nanocomposites

Details of synthesis of polyimide or polyimide nanocomposite in this study can be found in a published paper [1]. Briefly, polyimide (PI) was synthesized from pyromellitic dianhydride (PMDA) and 4,4-oxydianiline (ODA) using N,N-dimethylacetamide (DMAc) as a solvent. The poly(amic acid) (PAA) precursor was first obtained by mixing 1.1 g PMDA and 1.0 g ODA in 11.1 g of DMAC under nitrogen at room temperature. The apparent viscosity of the PAA was ~7000 cps at 30 °C. The PI/ZnSe NPs (or E-NWs) precursor was prepared by mixing ZnSe NPs (or E-NWs) and PAA (ZnSe = 3 phr) for 3 h in Ar, followed by curing wet PAA/ZnSe at 100◦C, 160◦C and 350◦C for 10, 20 and120 min, respectively in a circulation oven.

Synthesis of ZnSe nanoparticles

Synthesis of ZnSe NPs can be found in a published paper [2]. Briefly, TOPSe was first prepared by mixing 4 mmol Se powder and 9 mmol trioctylphosphine. ZnSe NPs QDs were produced by injecting TOPSe into a mixture of 4 mmol ZnO, 40 mmol stearic acid and 3.8 mmol trioctylphosphine oxide at 300 °C. The growth time was 10 min.

References

1. H. S. Chen, C. M. Chen, S. Y. Lee, *Mat. Chem. Phys.*, 2006, *96*, 244.
2. H. S. Chen, S. J. Wang, C. J. Lo, J. Y. Chi, *Appl. Phys. Lett.*, 2005, *86*, 131905.