Supporting Information

InPZnS alloy quantum dot with tris(hexylthio)phosphine as a dual anionic precursor

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Figure S1. (a) $^1$H NMR of tris(hexylthio)phosphine
(b) $^{13}$C NMR of tris(hexylthio)phosphine
Figure S2. The FAB-Mass
(a) tris(hexylthio)phosphine.
(b) tris(hexylthio)phosphine(THTP) and diethylzinc complex.
(c) ethyldihexylthiophosphine.
Figure S3. (a) photoluminescence spectra of InPZnS alloy core ($\lambda=570$ nm). (b) XRD diagram of InPZnS alloy core (THTP, Et$_2$Zn used 0.24 mmol without ZnCl$_2$)
Figure S4. XRD diagram of THTP/Et2Zn ratio. As the diethylzinc amount increases, the XRD peak shifts toward ZnS.
Figure S5. TEM images of InPZnS alloy core using different zinc precursor (a) ZnCl₂ (b) ZnBr₂ (c) ZnI₂. (d) XRD diagram using different zinc precursor.
**Figure S6.** TEM images of InPZnS/ZnS using different zinc precursor (a) ZnCl2 (b) ZnBr2 (C) ZnI2.