

SUPPORTING INFORMATION

A General Synthesis of Cu-In-S Based Multicomponent Solid-Solution Nanocrystals with Tunable Band Gap, Size and Structure

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Table S1. Chemical composition of the NCs of ZnS, CuInS₂, CdS NCs, Zn_{2x}(CuIn)_{1-x}S₂, (CuIn)_{1-x}Cd_{2x}S₂ and (ZnS)_x(CuInS₂)_y(CdS)_z. Formulas^a were calculated by [Cu precursor]/[In precursor] ratio and Formula^b by EDS results.

Formula ^a	Zn%	Cu%	In%	Cd%	Formula ^b
Zn _{1.0} S _{1.0}	44.17	----	----	----	ZnS
Zn _{3.0} (CuIn) _{0.5} S _{4.0}	33.94	5.78	5.09	----	Zn _{3.2} Cu _{0.6} In _{0.5}
Zn _{2.0} (CuIn) _{1.0} S _{4.0}	22.39	10.62	9.97	----	Zn _{2.2} Cu _{1.1} In _{1.0}
Zn _{1.0} (CuIn) _{1.5} S _{4.0}	11.15	15.78	15.02	----	Zn _{1.1} Cu _{1.6} In _{1.5}
Cu _{1.0} In _{1.0} S _{2.0}	----	21.37	20.15	----	Cu _{1.1} In _{1.0}
(CuIn) _{1.5} Cd _{1.0} S _{4.0}	----	15.10	14.79	10.92	Cu _{1.4} In _{1.4} Cd _{1.0}
(CuIn) _{1.0} Cd _{2.0} S _{4.0}	----	10.81	9.96	20.87	Cu _{1.0} In _{1.0} Cd _{2.0}
(CuIn) _{0.5} Cd _{3.0} S _{4.0}	----	6.08	5.75	33.53	Cu _{0.6} In _{0.5} Cd _{3.0}
Cd _{1.0} S _{1.0}	----	----	----	46.31	CdS
(ZnS) _{1.0} (CuInS ₂) _{0.5} (CdS) _{2.0}	10.62	5.17	4.98	22.43	Zn _{0.9} Cu _{0.5} In _{0.4} Cd _{2.0}
(ZnS) _{1.0} (CuInS ₂) _{1.0} (CdS) _{1.0}	10.08	11.14	9.98	10.62	Zn _{0.9} Cu _{1.0} In _{0.9} Cd _{1.0}
(ZnS) _{2.0} (CuInS ₂) _{0.5} (CdS) _{1.0}	21.51	6.07	5.86	10.55	Zn _{2.0} Cu _{0.6} In _{0.5} Cd _{1.0}

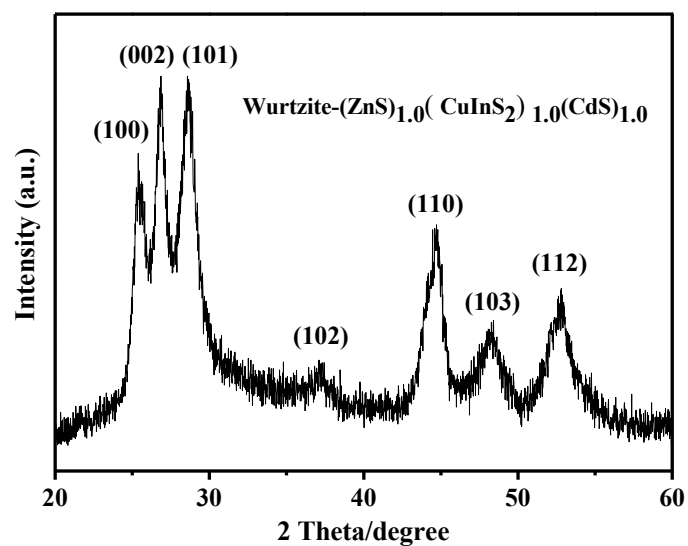


Figure S1. XRD patterns of $(\text{ZnS})_{1.0}(\text{CuInS}_2)_{1.0}(\text{CdS})_{1.0}$ NCs prepared using 1-dodecanethiol was used as the capping agent showing a wurtzite structure

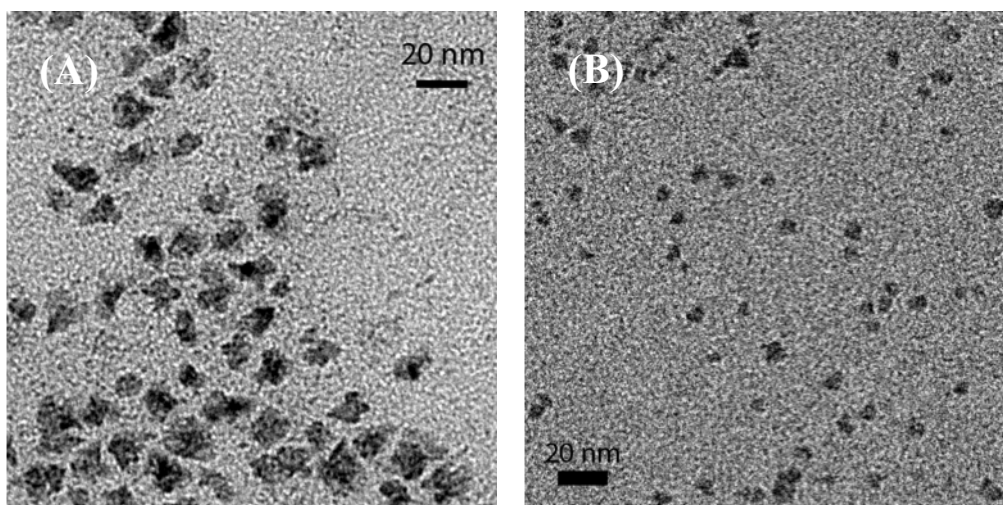


Figure S2. TEM images of $(\text{ZnS})_{1.0}(\text{CuInS}_2)_{1.0}(\text{CdS})_{1.0}$ NCs with (A) 0.05 mL and (B) 0.5 mL oleylamine as the activation agent

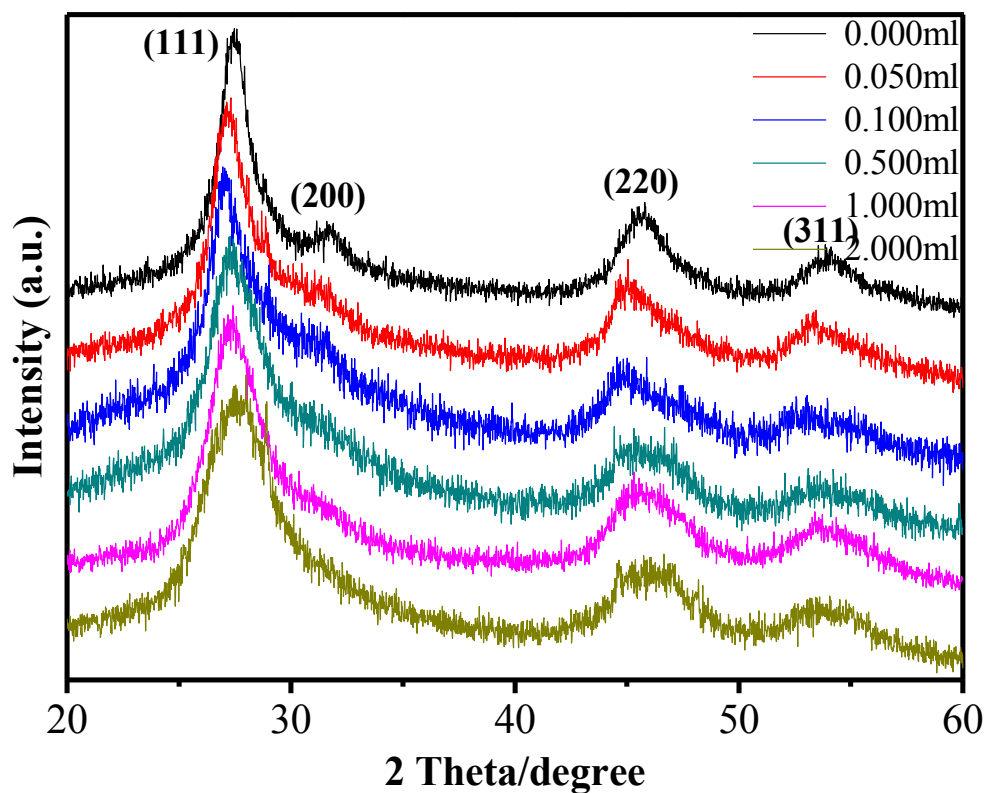


Figure S3. XRD patterns of (ZnS)_{1.0}(CuInS₂)_{1.0}(CdS)_{1.0} NCs synthesized with various oleic acid amounts (0.0 to 2.0 mL) and a fixed volume of oleylamine (1.0 mL)

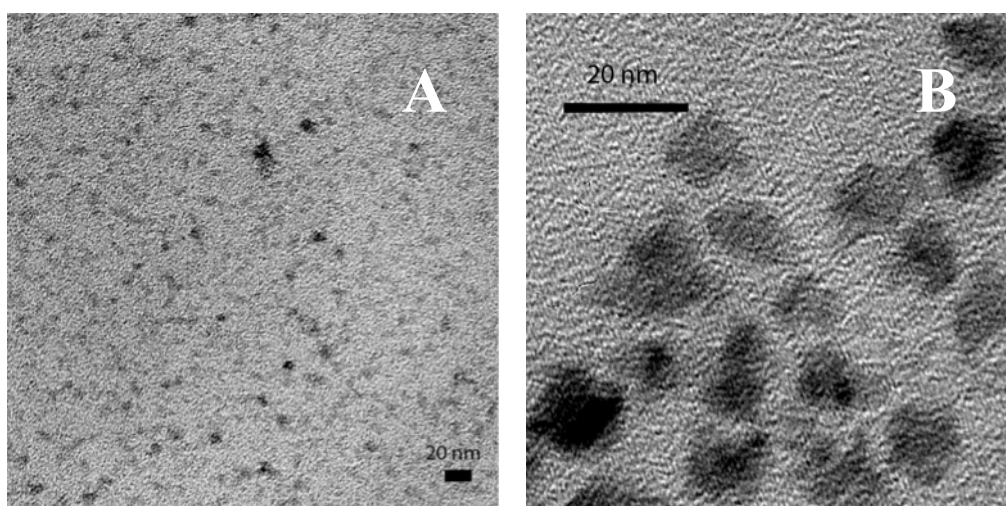


Figure S4. TEM images of (ZnS)_{1.0}(CuInS₂)_{1.0}(CdS)_{1.0} NCs synthesized at (A) 100°C and (B) 200°C with a fixed volume of oleylamine and oleic acid at 1.0 mL

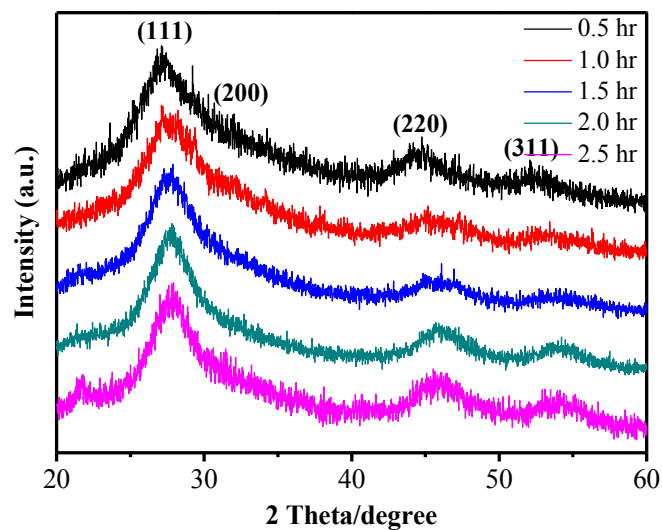


Figure S5. XRD patterns of $(\text{ZnS})_{1.0}(\text{CuInS}_2)_{1.0}(\text{CdS})_{1.0}$ NCs synthesized at various reaction time (0.5 to 2.5 hr) with a fixed amount of oleylamine and oleic acid at 1.0 mL

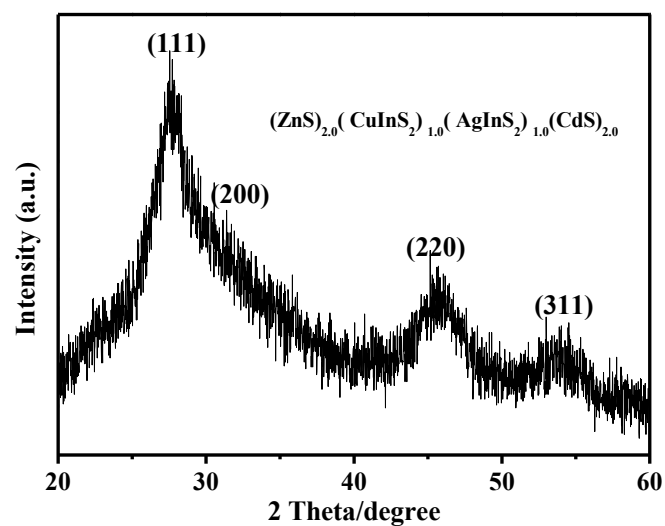


Figure S6. XRD patterns of $(\text{ZnS})_{2.0}(\text{CuInS}_2)_{1.0}(\text{AgInS}_2)_{1.0}(\text{CdS})_{1.0}$ NCs