Electronic Supplementary Information

Sulfur-source-dependent phase-selective preparation of $Cu_3NiInSnS_6$ nanocrystals and their optical and magnetic properties

Qinghuan Bian, Huanxi Liao, Changcun Tang, Kunjiao Li, Jiabao Wan, Yanhe Xiao, Baochang Cheng and Shuijin Lei*

School of Physics and Materials Science, Nanchang University, Nanchang, Jiangxi 330031, P R. China

* To whom correspondence should be addressed. E-mail: shjlei@ncu.edu.cn

Table S1 The calculated grain sizes of the wurtzite and zinc blende $Cu_3NiInSnS_6$ samples prepared under different conditions according to the Scherrer formula.

sample	wurtzite $Cu_3NiInSnS_6$				zinc blende $Cu_3NiInSnS_6$		
sulfur source	DDT				S		
ligand	DDT	OLA	OA	OA+OLA	OLA	OA	OA+OLA
grain size	5.7 nm	5.3 nm	5.1 nm	4.9 nm	10.0 nm	9.7 nm	9.8 nm

Table S2 The atomic percent and atomic ratio of the prepared wurtzite and zinc blende structure $Cu_3NiInSnS_6$ nanocrystals according to the XPS results.

element	wurtzite $Cu_3NiInSnS_6$	zinc blende $Cu_3NiInSnS_6$
Cu	25.06%	24.87%
Ni	7.78%	8.08%
In	7.69%	8.04%
Sn	7.63%	7.95%
S	51.84%	51.06%
atomic ratio	3:0.93:0.92:0.91:6.2	3:0.97:0.96:0.95:6.11

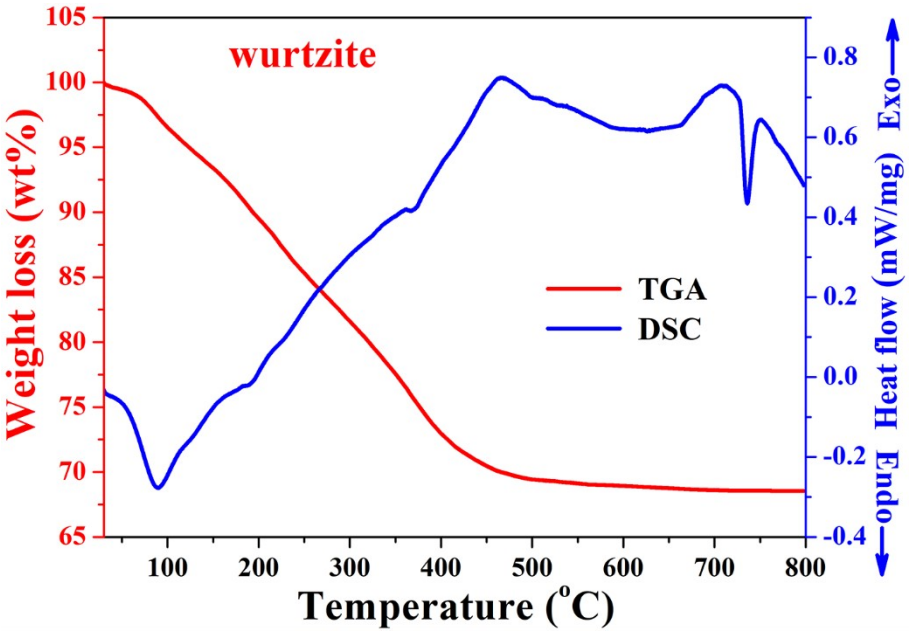

Fig. S1 TGA and DSC curves of the as-prepared wurtzite $Cu_3NiInSnS_6$ sample using DDT as the sulfur source and the mixture of OA and OLA as the ligands.

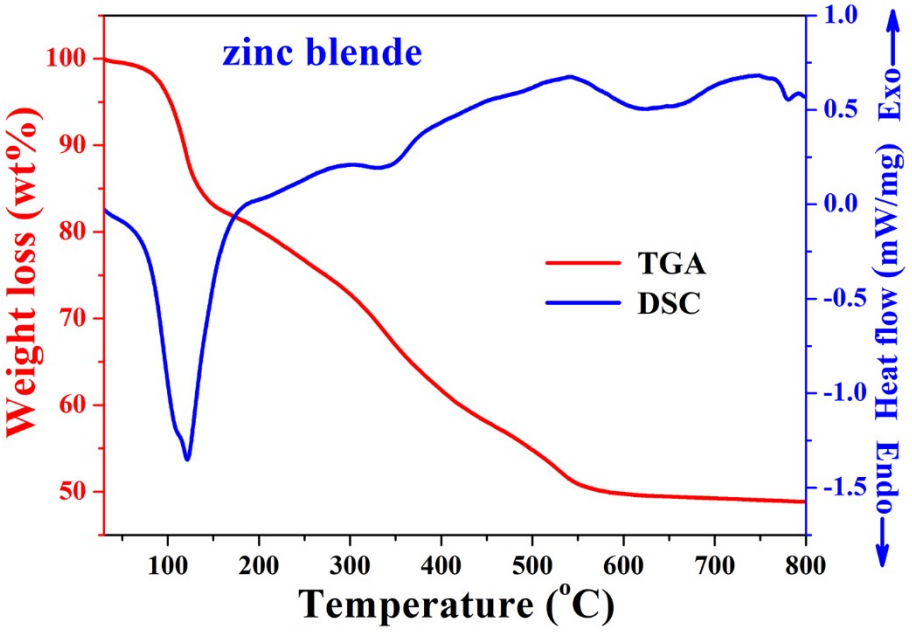

Fig. S2 TGA and DSC curves of the as-prepared zinc blende $Cu_3NiInSnS_6$ sample using elemental S as the sulfur source and the mixture of OA and OLA as the ligands.

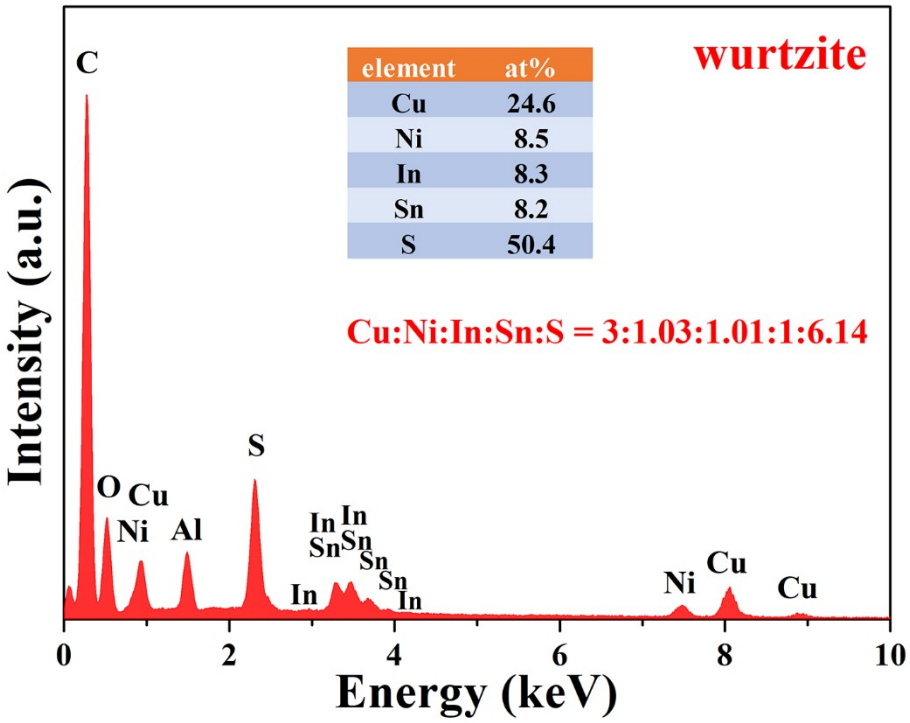

Fig. S3 EDS spectrum of the as-prepared wurtzite $Cu_3NiInSnS_6$ sample using DDT as the sulfur source and the mixture of OA and OLA as the ligands.

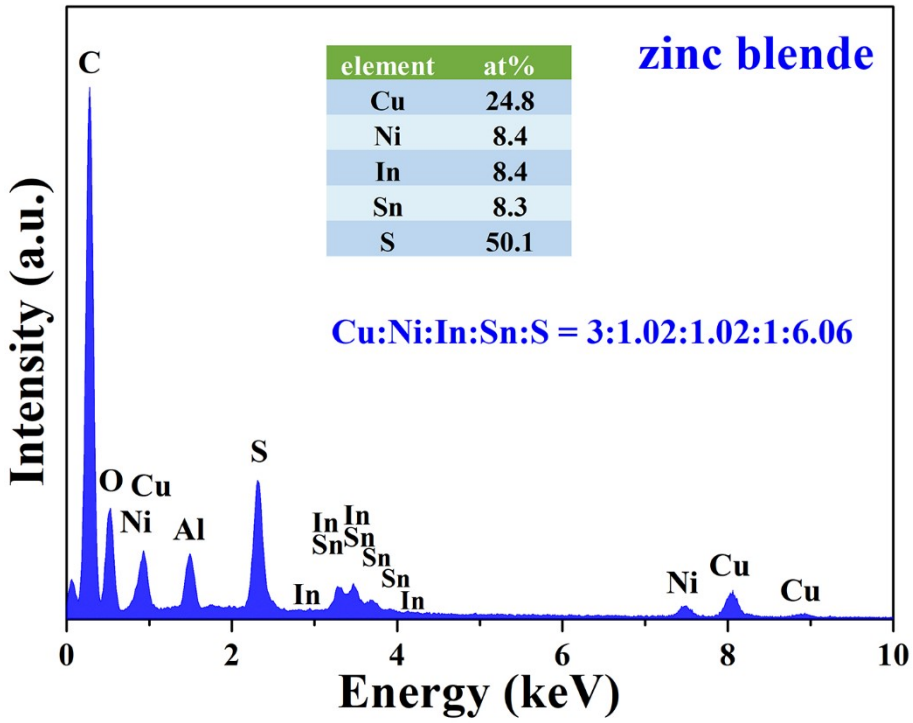

Fig. S4 EDS spectrum of the as-prepared zinc blende $Cu_3NiInSnS_6$ sample using elemental S as the sulfur source and the mixture of OA and OLA as the ligands.