

## Supporting information

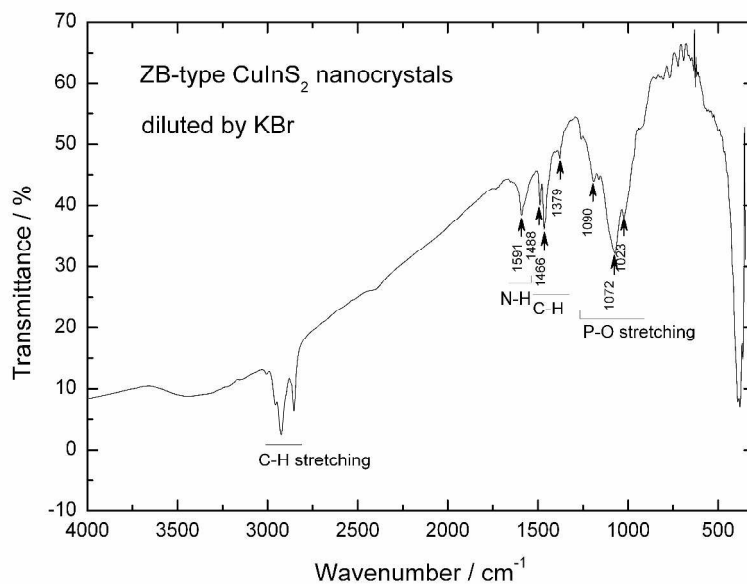


Figure S1 (a). IR transmission spectra of the ZB-type  $\text{CuInS}_2$  NCs.

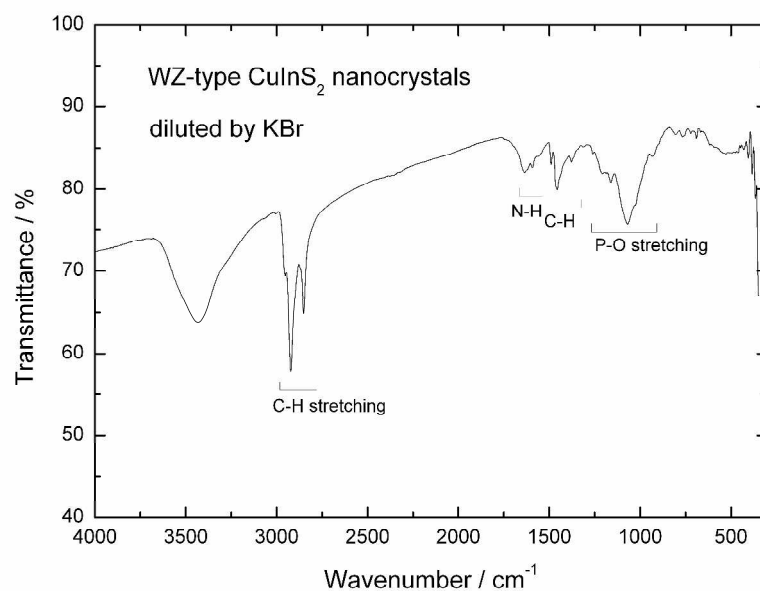


Figure S1 (b). IR transmission spectra of the WZ-type  $\text{CuInS}_2$  NCs.

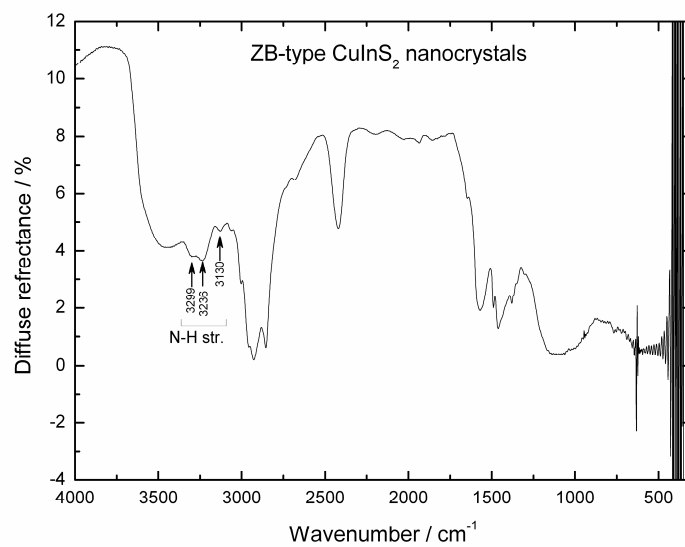


Figure S2 (a). IR diffuse reflectance spectra of the ZB-type CuInS<sub>2</sub> NCs

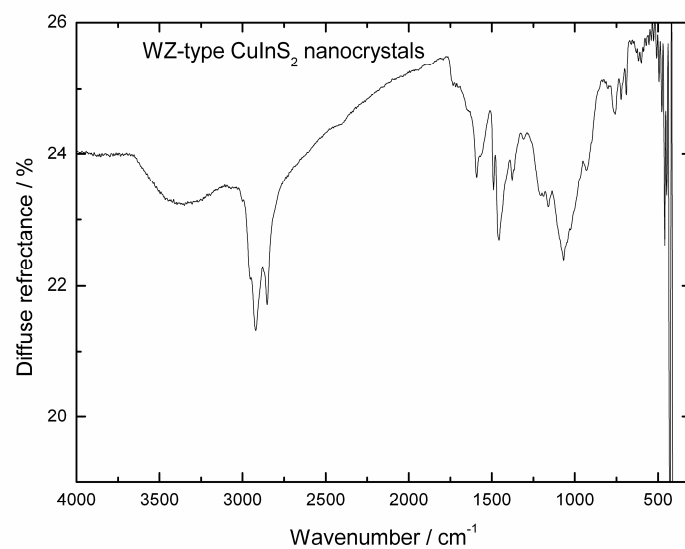


Figure S2 (b). IR diffuse reflectance spectra of the WZ-type CuInS<sub>2</sub> NCs

Table S1. Average particle size of ZB- and WZ-type CuInS<sub>2</sub> NCs calculated based on XRD as shown in Fig. 1.

surfactant	Reaction condition	phase	Diffraction, (hkl), used for calculations	Average size / nm
HDA	$t_{\text{pres}}=5$ min. $t_{\text{react}}=2$ min.	ZB phase	(111)	6.0
			(220)	6.3
			(311)	6.2
HDA	$t_{\text{pres}}=3$ h $t_{\text{react}}=10$ min.	WZ phase	(101)	6.3
			(102)	8.1
			(110)	8.0
			(103)	6.0
			(112)	6.6