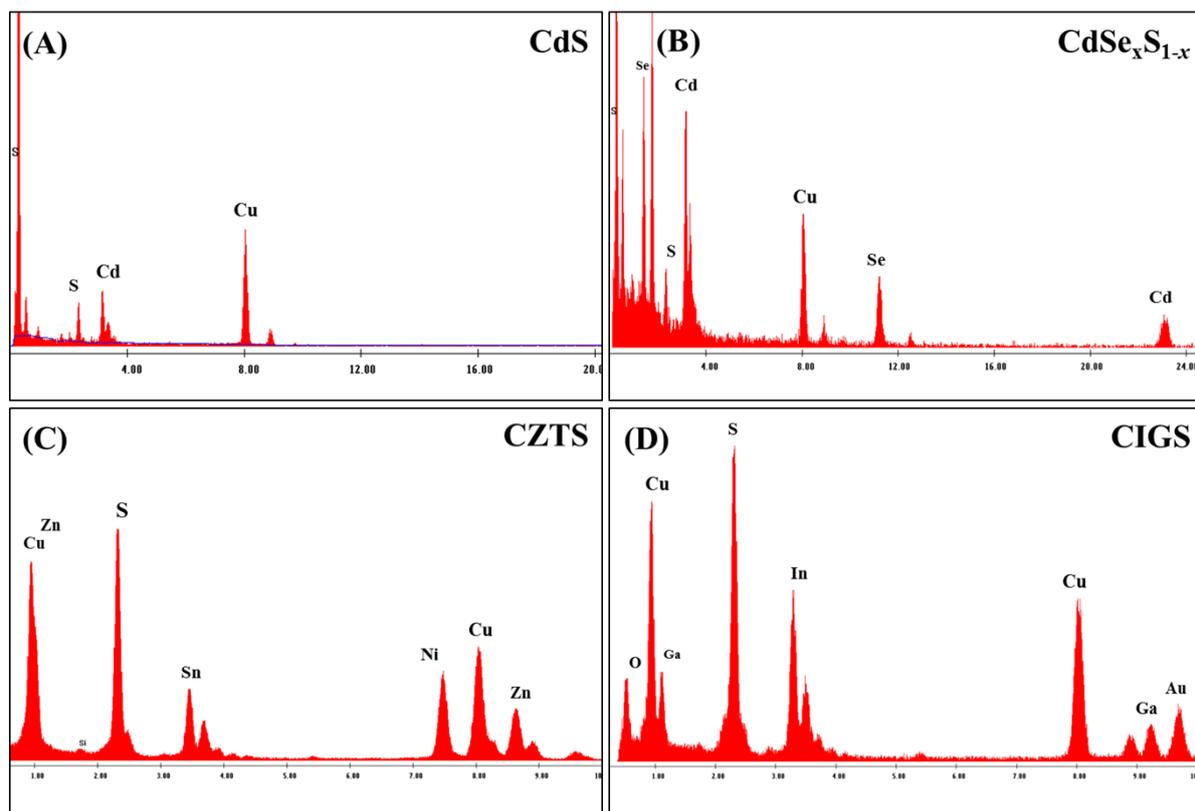


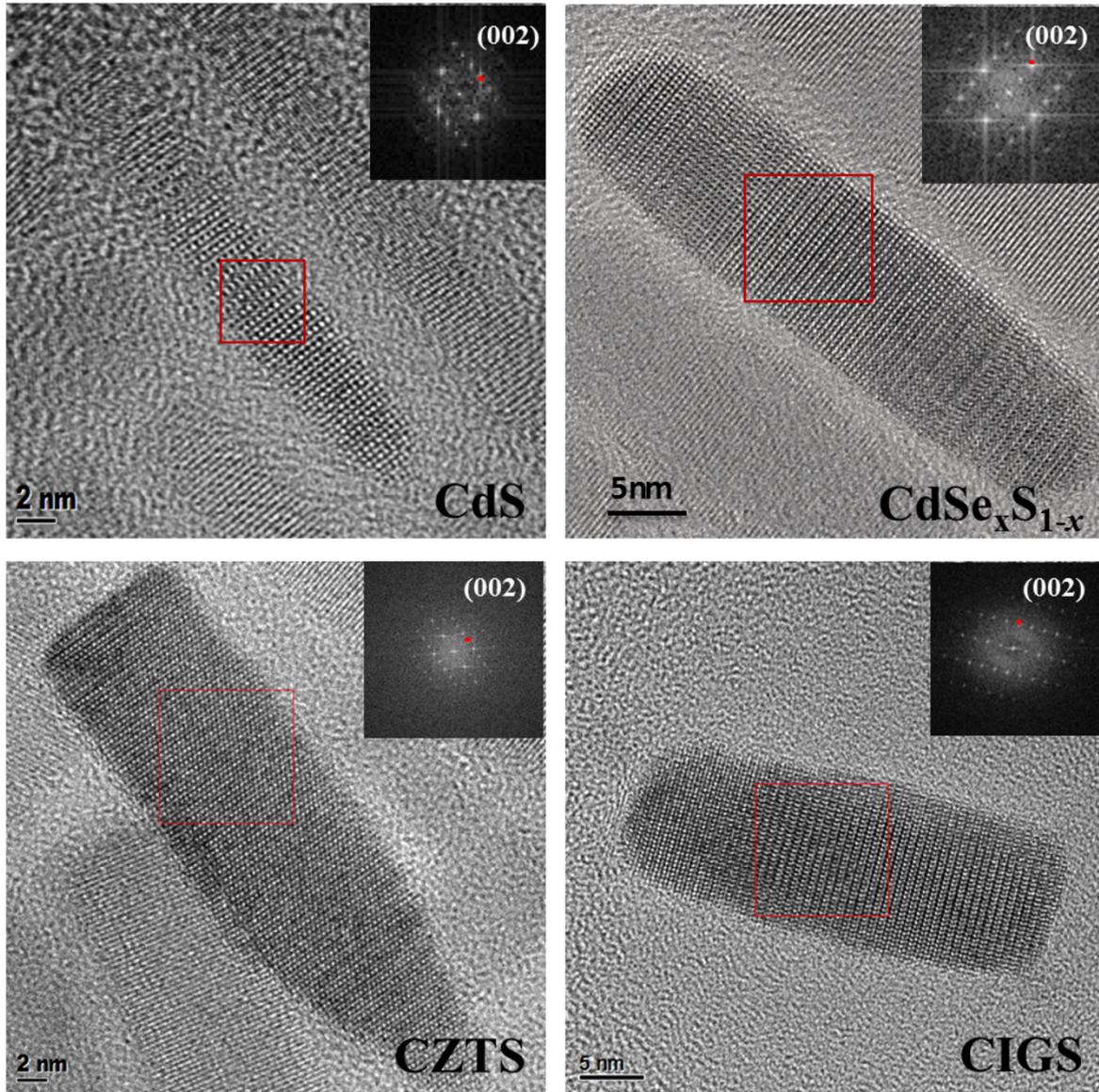
# Assembly of Binary Ternary and Quaternary Nanorods: From Local to Device Scale Ordering Influenced by Surface Charge

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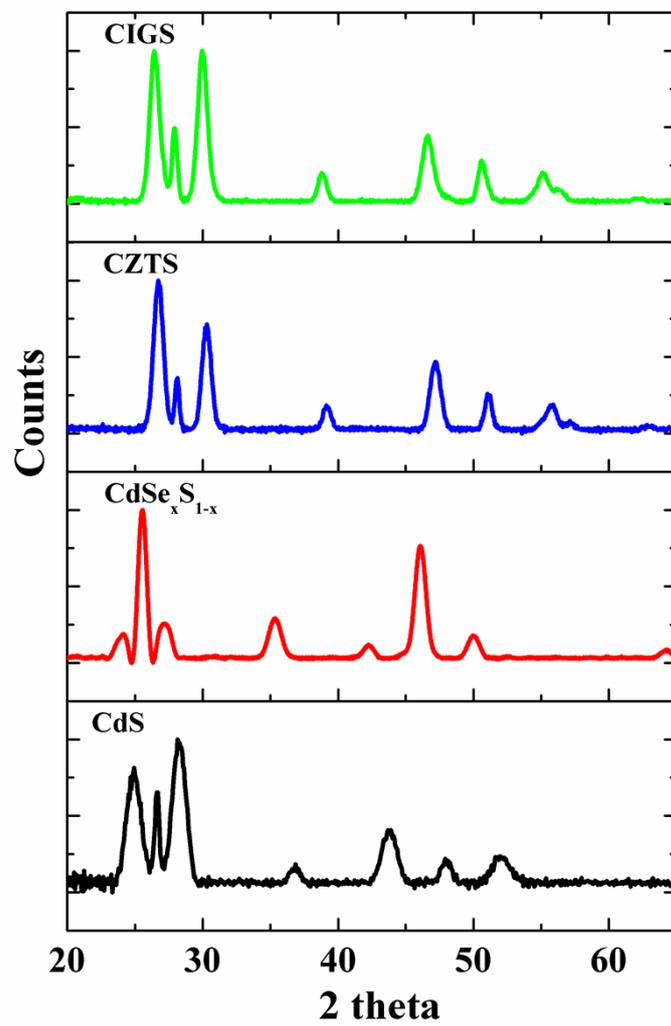
## Supporting Information



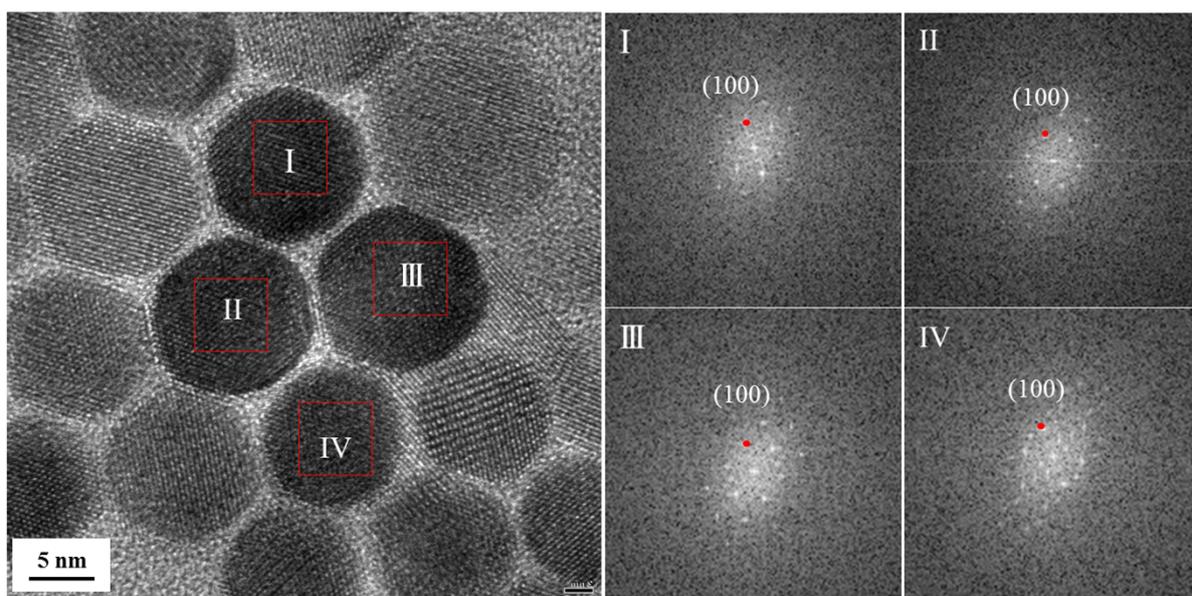
**Figure S1.** Energy-dispersive X-ray spectroscopy (EDX) of four types of nanorods.



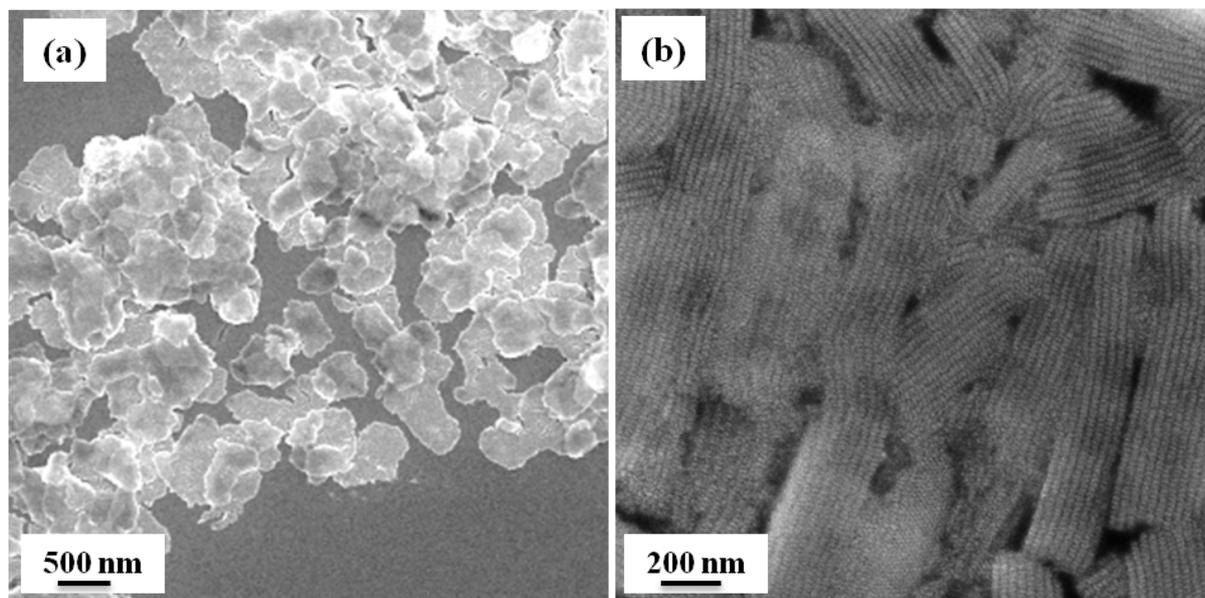
**Figure S2.** HRTEM of four types of nanorods with corresponding Fast Fourier transform (FFT) and the  $d$ -spacing of (002) planes.



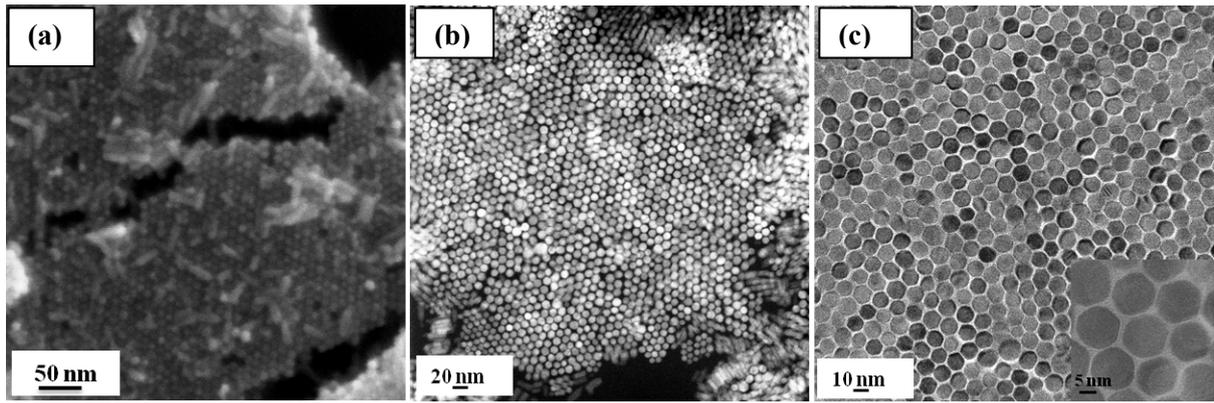
**Figure S3.** XRD spectra of as-synthesised CdS, CdSe<sub>x</sub>S<sub>1-x</sub>, CZTS and CIGS nanorods.



**Figure S4.** High resolution TEM image of assembled CZTS nanorods with their corresponding fast Fourier transform (FFT)



**Figure S5.** (a) SEM image of 2D assembly of CdS nanorods, (b) 1D assembly of CdS nanorods.



**Figure S6.** (a) SEM image of self-assembled CZTS nanorods in a vial (b) DF-STEM image of self-assembled CZTS nanorods, (c) HR-TEM of top view of assembled CZTS nanorods.