

## Supporting Information

# Phonon Spectra of Strongly Luminescent Non-Stoichiometric Ag-In-S, Cu-In-S, and Hg-In-S Nanocrystals of Small Size

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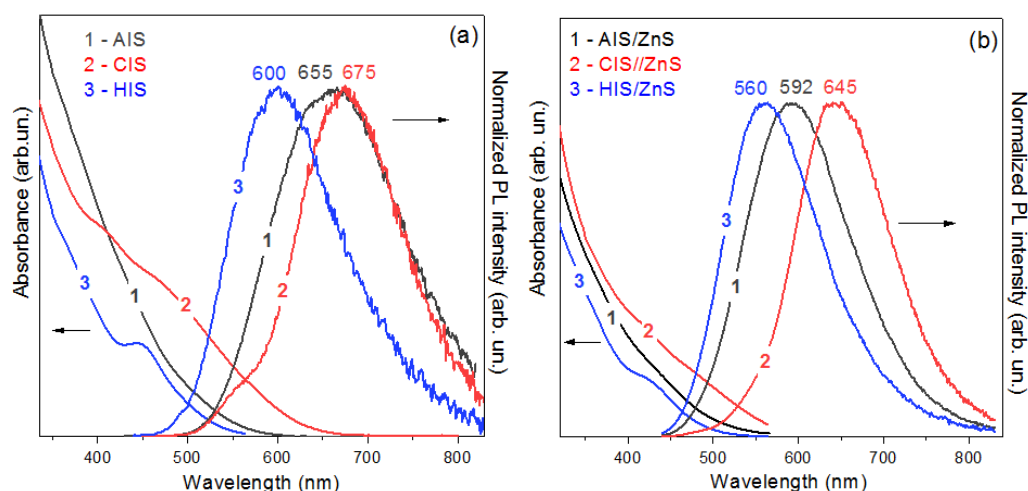


Figure S1. UV-vis and PL spectra of M-In-S core NCs (a) and M-In-S/ZnS core/shell NCs (b).

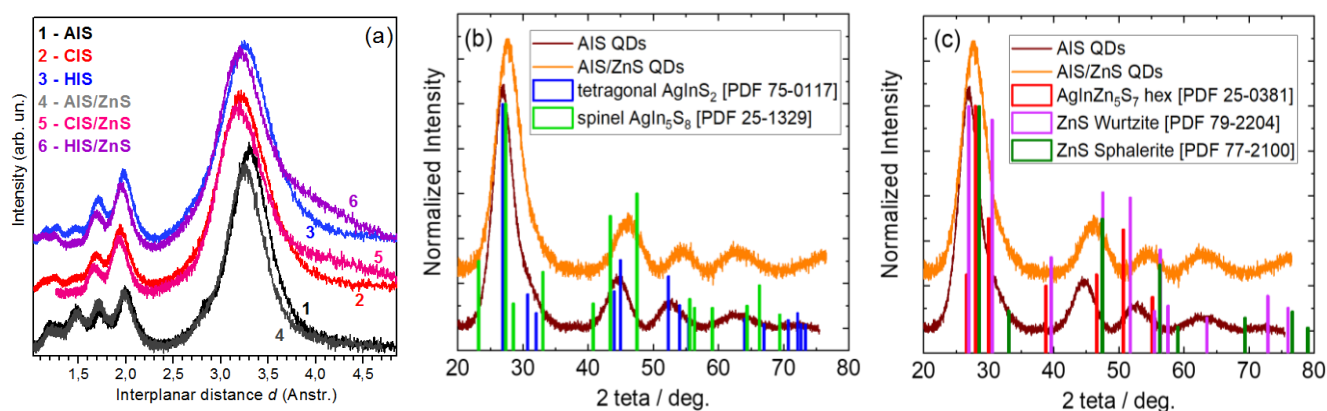


Figure S2. (a) Representative experimental XRD patterns of M-In-S NCs. (b) and (c) shows comparison of present Ag-In-S and Ag-In-S/ZnS NC patterns with relevant structures from the ICDD database.

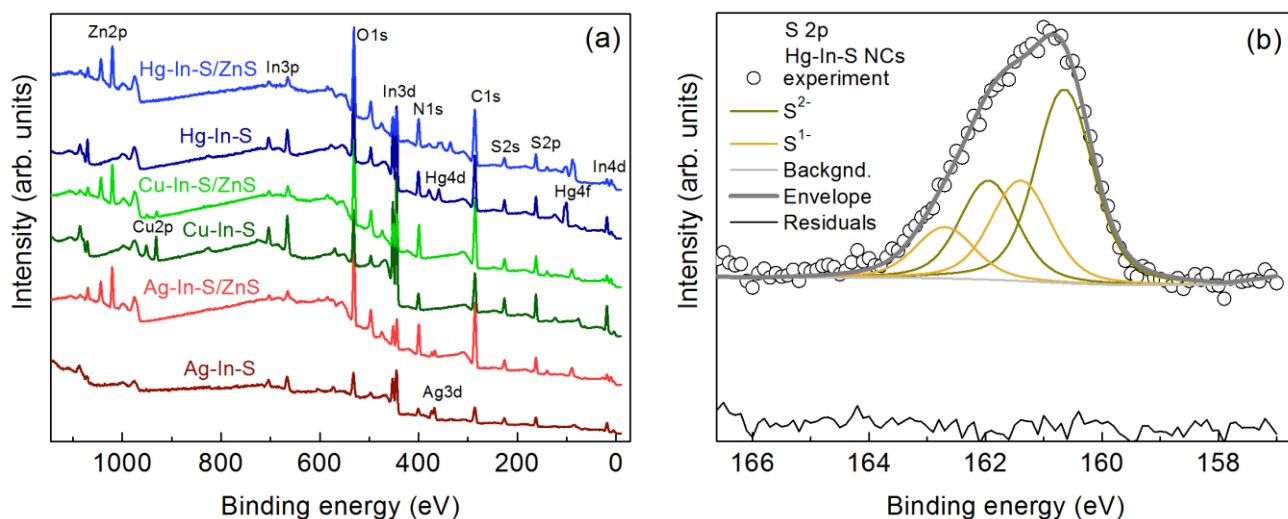


Figure S3. (a) Survey XPS spectra of the M-In-S and M-In-S/ZnS NCs. (b) Representative fit of the high-resolution XPS spectrum of Sulphur, revealing a S<sup>2-</sup>-component related with the inner part of the NC, and a surface-related S<sup>1-</sup>-component.

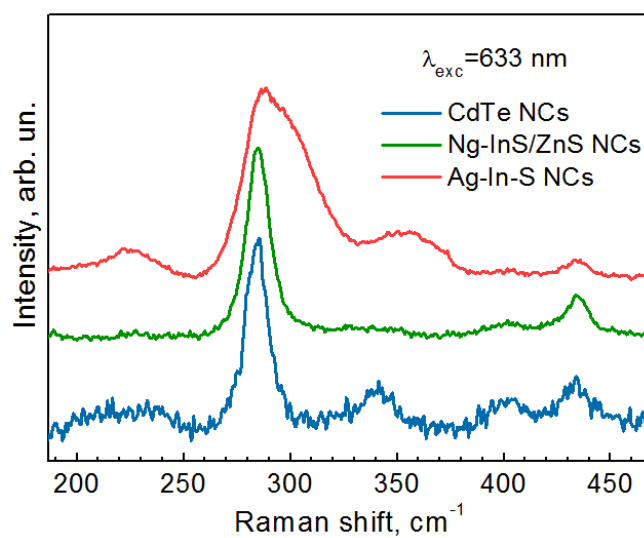


Figure S4. Raman spectra at  $\lambda_{\text{exc}} = 633 \text{ nm}$  of different compound NCs, for which PL was quenched by adding MV.