Electronic Supplementary Material (ESI) for RSC Advances.

Supporting Information

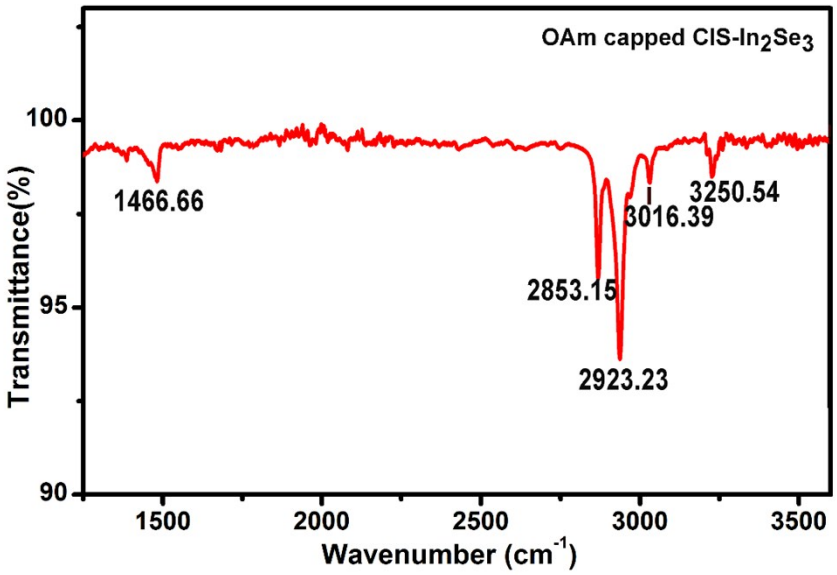

Fig. S1 FTIR spectrum of CIS-In_2Se_3 QDs.

The characteristic absorption peaks of OAm are observable in the spectrum. The peaks at 2923 and 2853 cm^{-1} corresponds to the asymmetric and symmetric stretching vibrations of methylene group and the peak at 3016 cm^{-1} is assigned to the C-H mode adjacent to the C=C bond. The band around 1466 cm^{-1} corresponds to methylene deformation. N-H vibrations at 3250 cm^{-1} and 1650 cm^{-1} are also observable though the NH_2 scissoring mode is feeble[1-3].

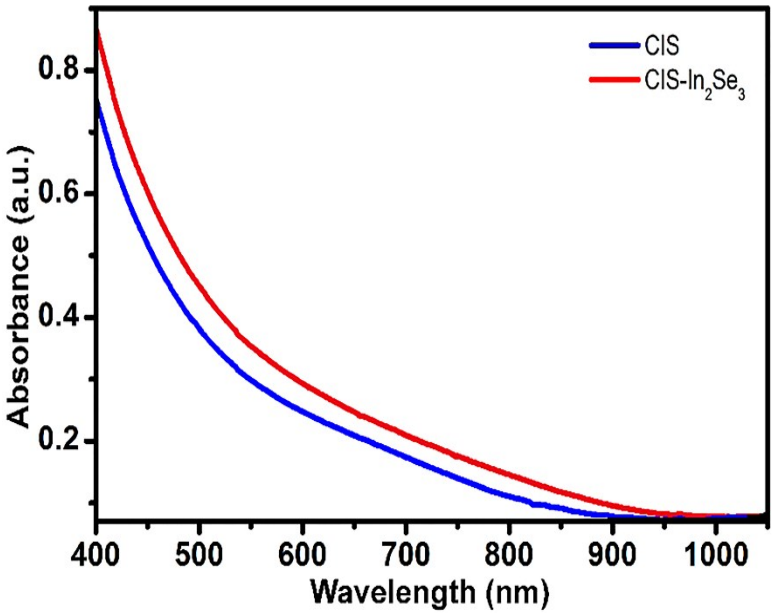

Fig. S2 Absorption spectra of CIS QD and CIS-In_2Se_3 QDs.

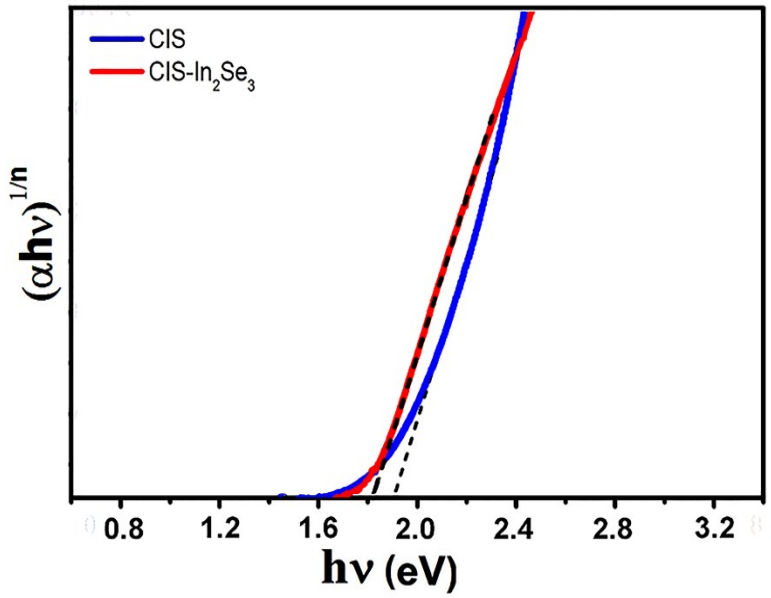

Fig. S3 Tauc plots for CIS QD and CIS-In_2Se_3 QDs. Term 'n' take values ½ and 2 for CIS (direct band gap) and CIS-In_2Se_3 (indirect band gap) respectively.

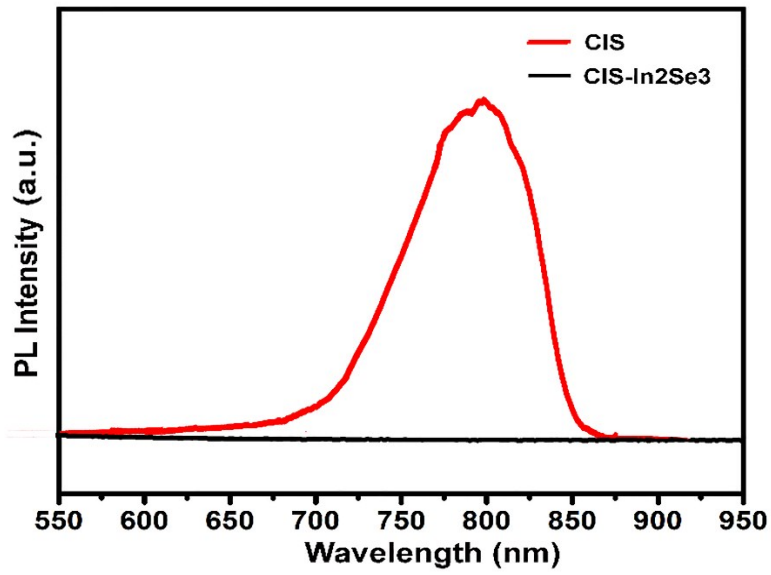

Fig. S4 Steady state emission spectra of CIS-In_2Se_3 QDs and CIS QDs.

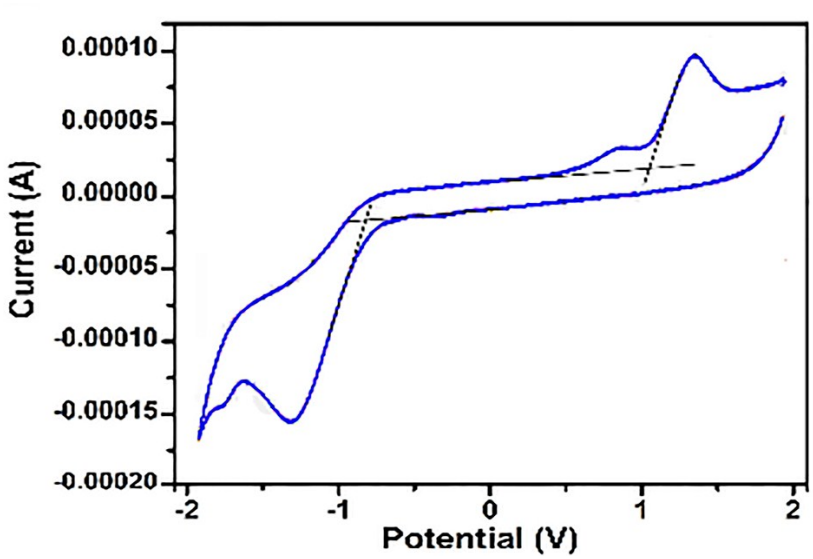

Fig. S5 Cyclic voltammograms of CIS QDs. Onset of oxidation peak at 1.09 eV, corresponds to a HOMO level of -5.79 eV and the reduction peak at -0.865, corresponds to a LUMO level of -3.835 eV.

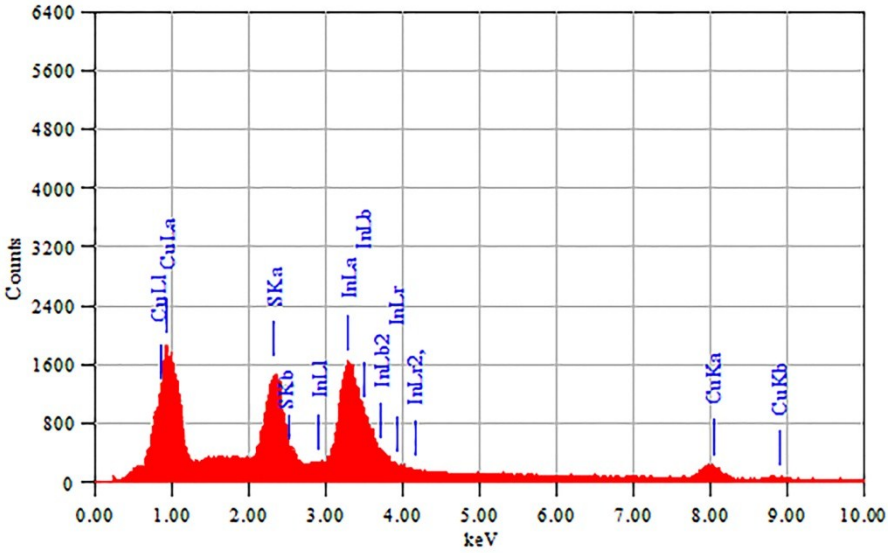

Fig. S6 EDAX spectrum of CIS QDs.

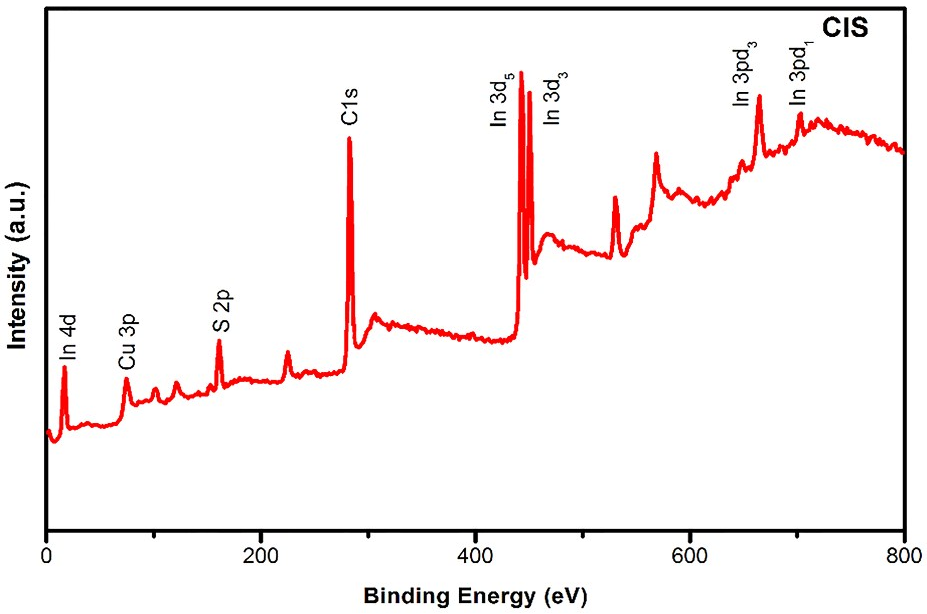

Fig. S7(a) XPS Spectrum of CIS QDs.

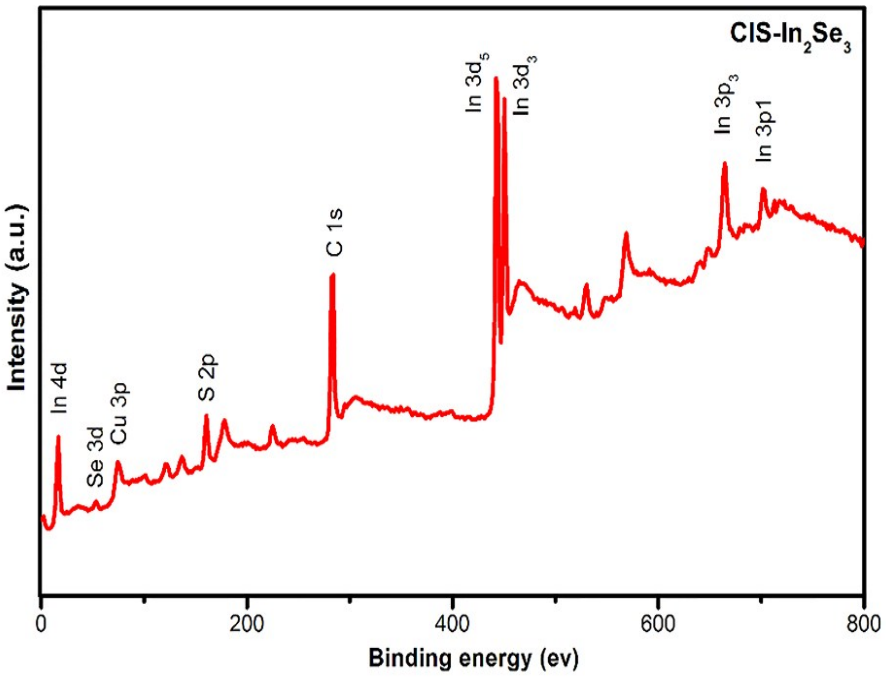

Fig. S7(b) XPS Spectrum of CIS-In_2Se_3 QDs.

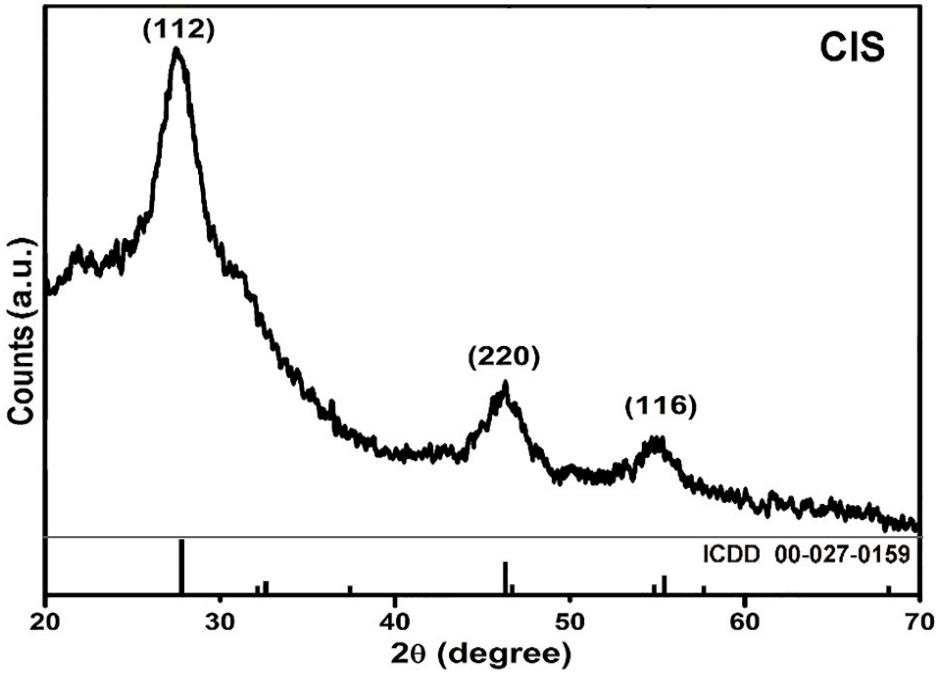

Fig. S8 XRD spectrum of CIS QDs.

References:

1. I. P. De Berti, M.V. Cagnoli, G. Pecchi, J.L. Alessandrini, S.J. Stewart, J.F. Bengoa, and S.G. Marchetti, *Nanotechnology*, 2013, **24**, 175601.

2. X. Zhai, X. Zhang, S. Chen, W. Yang, and Z. Gong, *Colloids and Surfaces A: Physicochem. Eng. Aspects,* 2012, **409**, 126-129.

3. J. Lauth, J. Marbach, A. Meyer, S. Dogan, C. Klinke, A. Kornowski, and H. Weller, *Advanced Functional Materials*, 2014, **24**, 1081-1088.