Supporting Information

An Optical Ratiometric Temperature Sensor Based on Dopant-Dependent Thermal Equilibrium in Dual-Emitting Ag&Mn:ZnInS Quantum Dots

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Figure S1: Temporal revolution of UV-vis absorption of the Ag:ZnInS QDs.

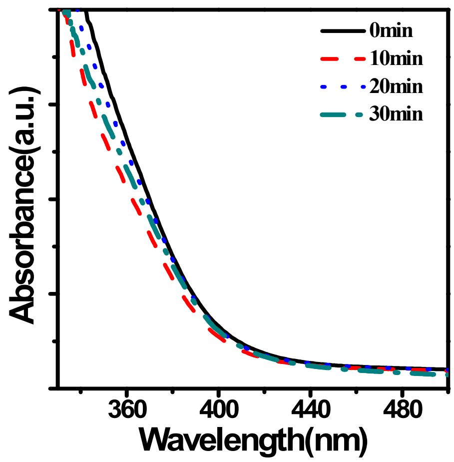

Figure S2: XPS of Ag&Mn:ZnInS QDs.

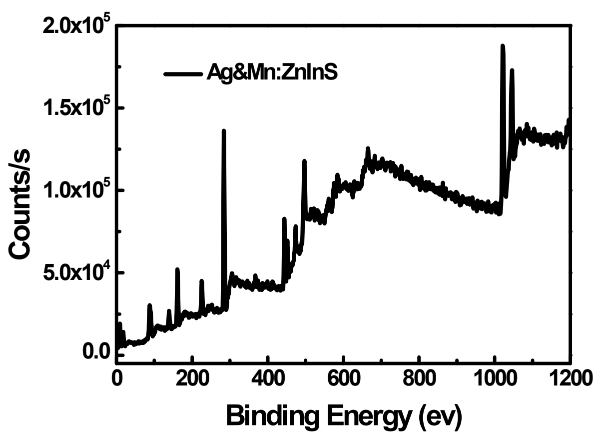

Figure S3: XPS results of Zn2p(a), In3d(b), S2p(c) and Ag3d(d) for Ag&Mn:ZnInS/ZnS QDs.

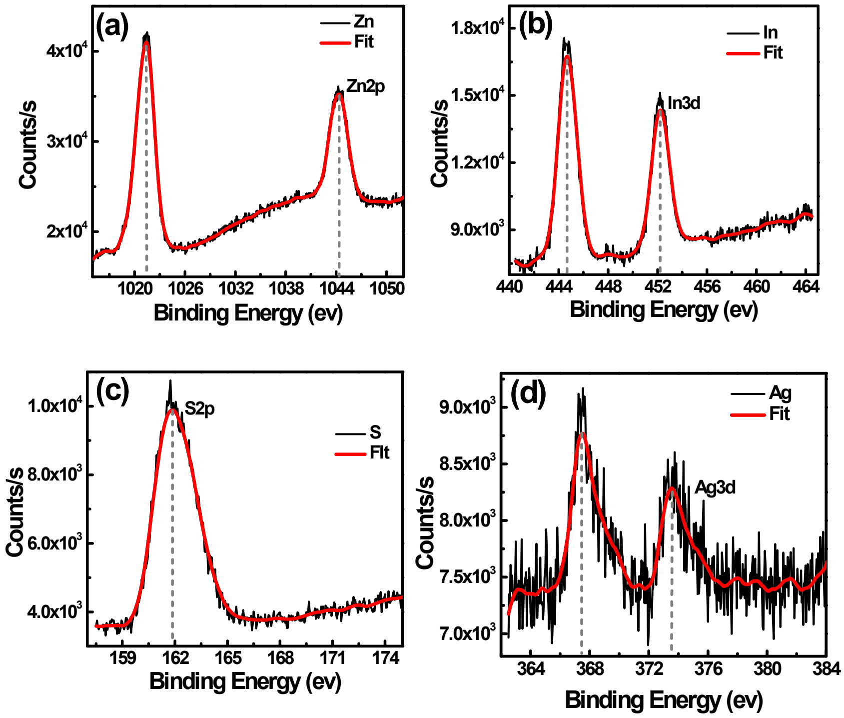

Figure S4: (a) UV-vis absorption and PL spectra of Ag&Mn:ZnInS QDs. (b) Calculation of optical band gaps from the UV-abs absorption spectra. (c) Energy level diagram of Ag&Mn:ZnInS QDs. The band gap of the Ag&Mn:ZnInS QDs is ~3.50ev (Figure S4b). Because the hole effective mass is larger than the electron, The band gap change is caused by the conduction band. According to the Table S1, the valence band can be considered as ~-0.90ev. The conduction band is ~2.60ev. The fixed Mn^{2+} ($^4T_1$) excited state is about 2.26ev.The energy gap between $^4T_1$ and $^6A_1$ is ~2.12ev

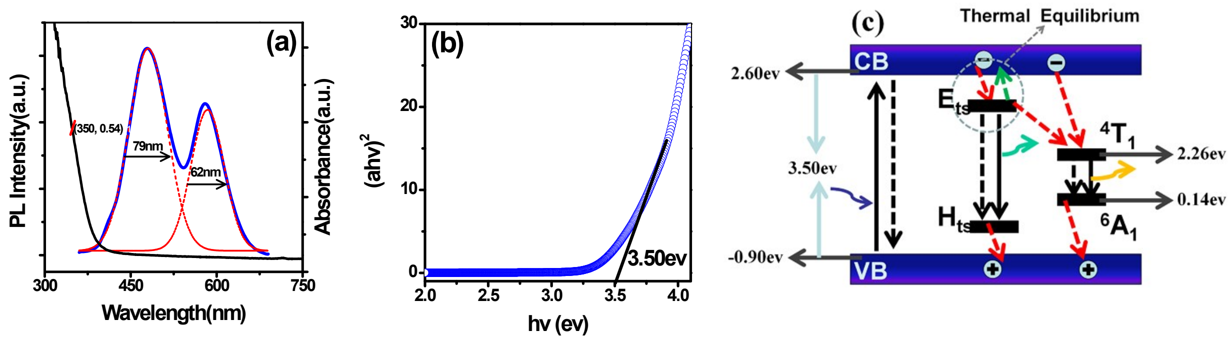

Table S1: The absolute energy positions of conduction and valence bands of ZnS and In_3S_2 bulk materials.

	Eg(eV)	EVB(VS.NHE)	ECB(VS.NHE)
ZnS	3.6eV	-1.04	2.56
In_2S_3	2eV	-0.8	1.2