

Supporting information

Controlling Photoinduced Electron Transfer from PbS@CdS core@shell Quantum Dots to Metal Oxide Nanostructured Thin Films

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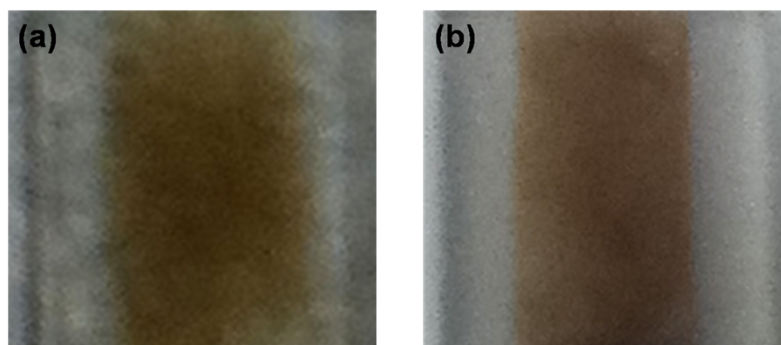


Figure S1. Photos of the core/shell QDs after loading to TiO₂ (a) and SnO₂ (b) film.

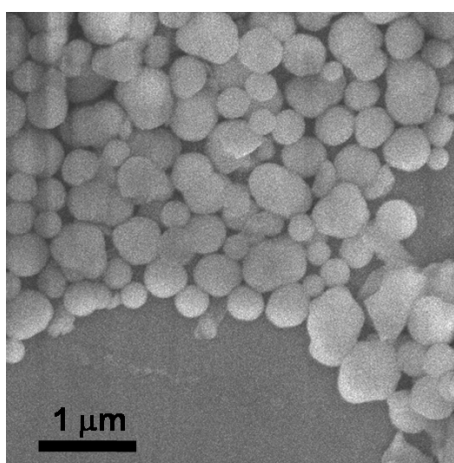


Figure S2. Representative TEM image of silica nanoparticles.

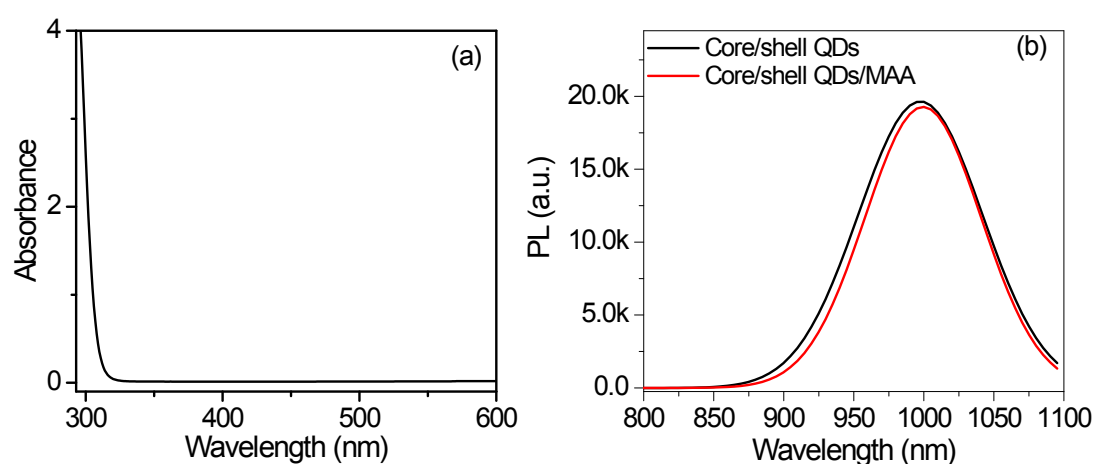


Figure S3 (a) Absorbance of MAA in which the absorption wavelength is lower than 350 nm. Thus the absorption band of MAA does not overlap with the PL band of QDs, which excludes the energy transfer between the QDs and ligands of MAA. (b) The PL spectra of QDs before and after adding the MAA. The molar ratio of QDs to MAA is around 2. The peak position and peak intensity do not show any significant change, indicating that the MAA does not quench QDs either by energy transfer or charge transfer.

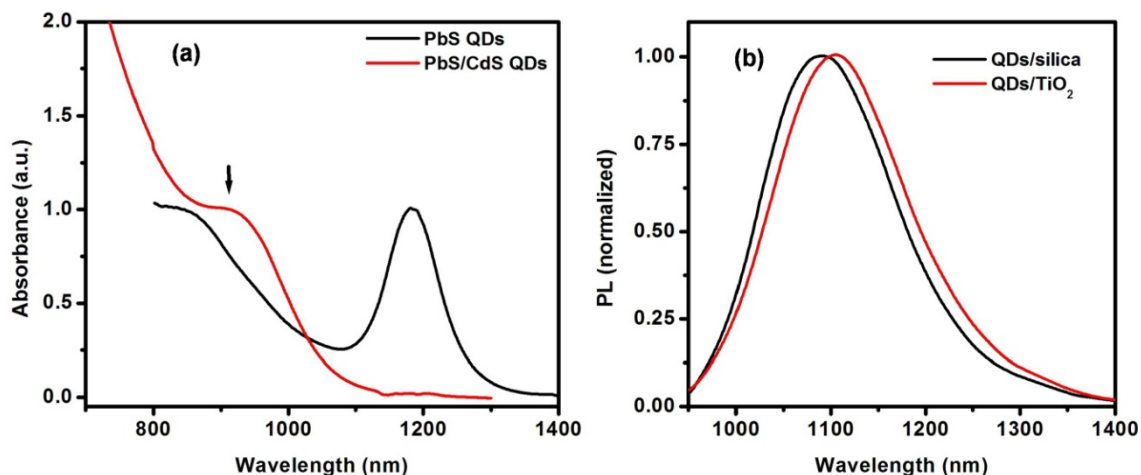


Figure S4. (a) Representative absorption spectra of starting PbS QDs before cation exchange and PbS/CdS QDs after cation exchange in solution. The black arrow indicates the exciton absorption peak which is blue shifted after cation exchange due to shrinking of the PbS core. (b) Representative PL spectra of PbS/CdS QDs/silica nanoparticles and PbS/CdS-TiO₂ composite. The PbS/CdS QDs have a core size of 3.0 nm and shell thickness of 0.6 nm.

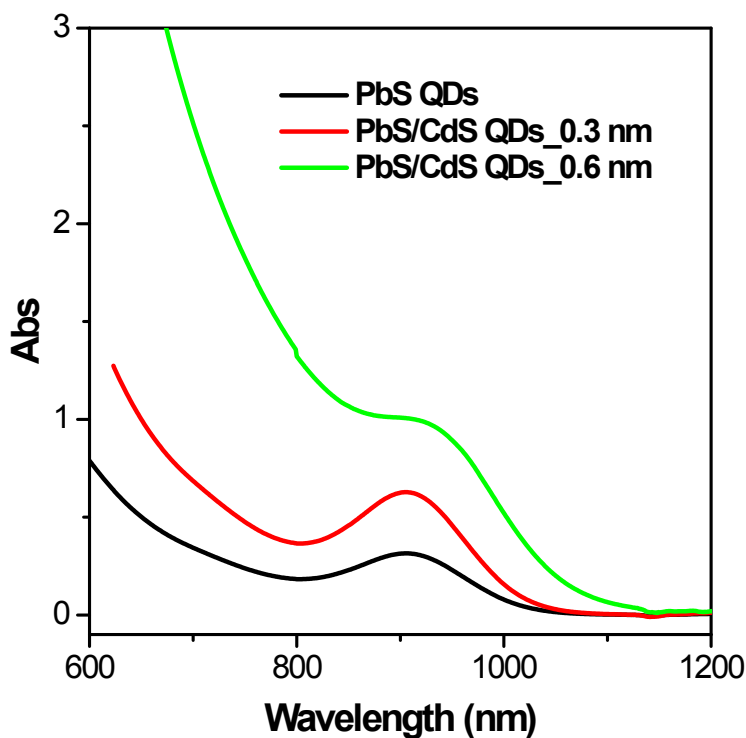


Figure S5. Absorption spectra of starting PbS QDs and PbS/CdS QDs with shell thickness of 0.3 nm and 0.6 nm. All the QDs show a similar absorption peak position of ~900 nm indicating the similar core size of ~3.0 nm QDs.