Supporting Information for:

Assembling Silicon Quantum Dots into Wires, Networks and Rods via Metal Ion Bridge†

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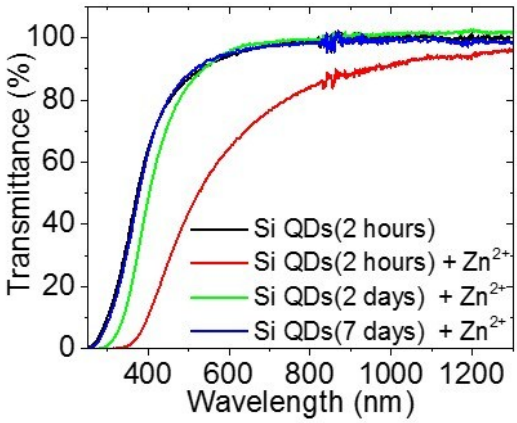

Fig. S1 Optical transmittance spectra of Si QDs/$Zn(NO_3)_2.6H_2O$ mixed solutions. Si QDs stored in methanol for 2 hours, 2 days and 7 days are used for the reaction. The Si QDs concentration and $[Zn^{2+}]$/[Si QD] are fixed to 50 μg/ml and 100, respectively.

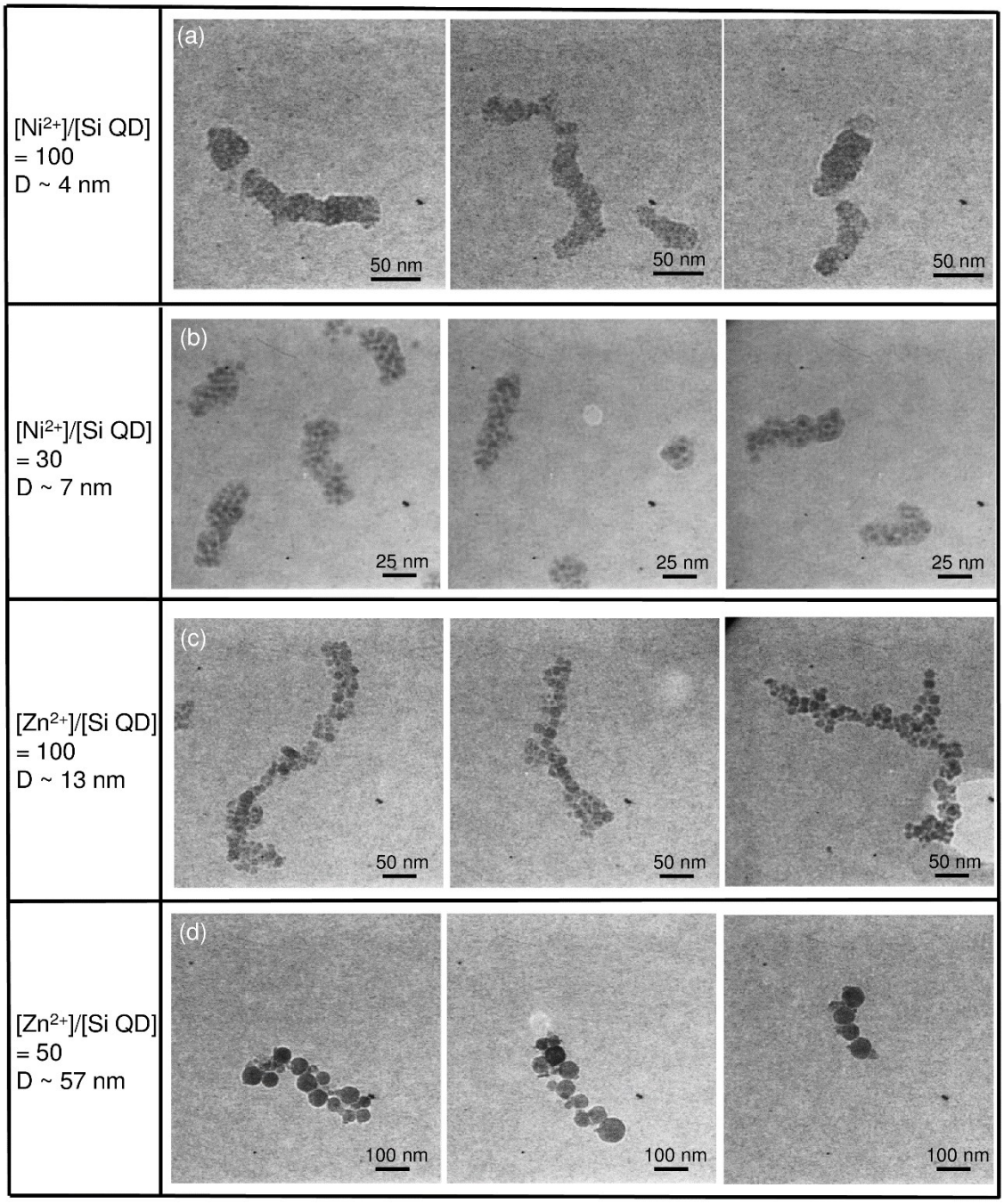

Fig. S2 TEM images of Si QDs assemblies produced by different size Si QDs. (a) D = 4.0 nm, $[Ni^{2+}]/[Si\ QD]$ = 100, C_{si} = 10 μg/ml, (b) D = 7.0 nm, $[Ni^{2+}]/[Si\ QD]$ = 30, C_{Si} = 100 μg/ml, (c) D = 13 nm, $[Zn^{2+}]/[SiQD]$ = 100, C_{Si} = 10 μg/ml, (d) D = 57 nm, $[Zn^{2+}]/[SiQD]$ = 50, C_{Si} = 10 μg/ml.

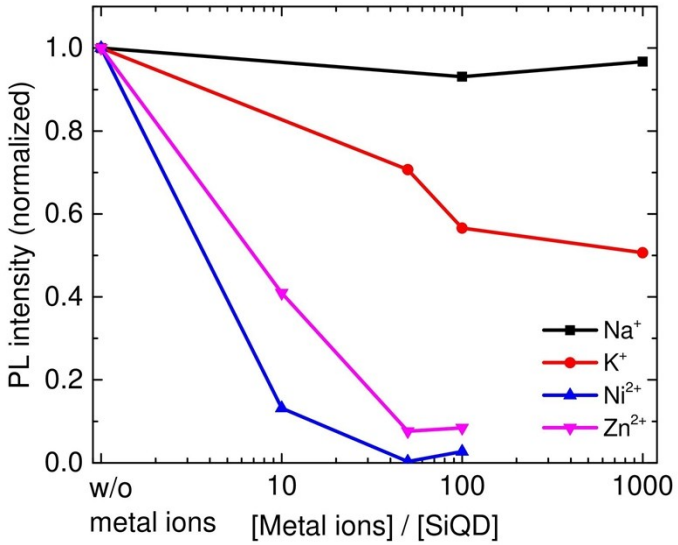

Fig. S3 PL intensity of solutions containing Si QDs (D = 7 nm, C_{Si} = 50 μg/ml) and metal salts, *i.e.*, Ni $(NO_3)_2{\cdot}6H_2O$, Zi $(NO_3)_2{\cdot}6H_2O$, KNO_3, and $NaNO_3$, as a function of the number ratio of metal ions and Si QDs ([Metal ions]/[Si QD]).

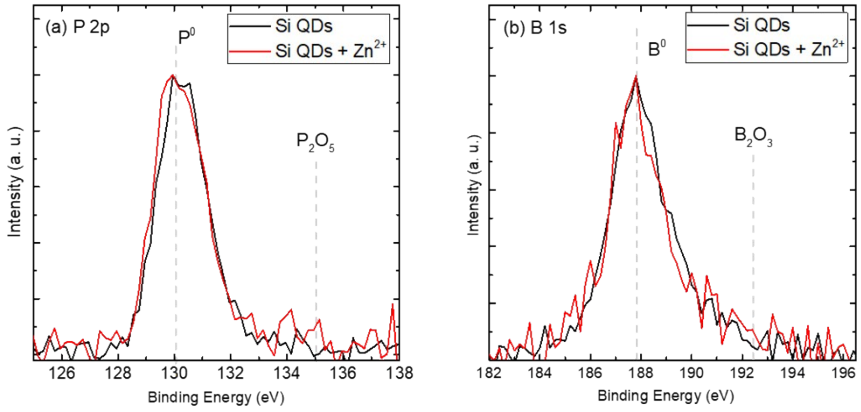

Fig. S4 (a) P 2p and (b) B 1s XPS spectra of Si QDs (black) and Si QDs assembly (red).

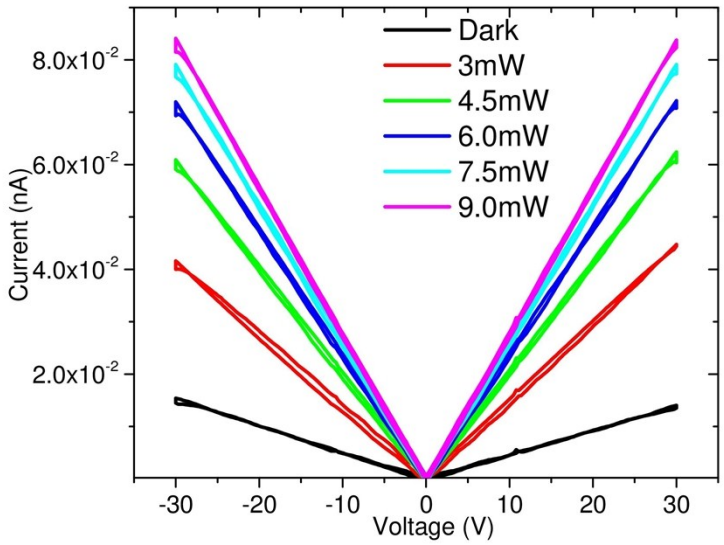

Fig. S5 I-V characteristics of a Si QDs solid produced without metal ions measured in vacuum at room temperature in dark and under light irradiation (λ = 405 nm). The irradiation power is changed from 3 to 9 mW.