Electronic Supplementary Material (ESI) for Physical Chemistry Chemical Physics

Differential Effects of β-Mercaptoethanol on CdSe/ZnS and InP/ZnS Quantum Dots

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On-Line Supporting Information

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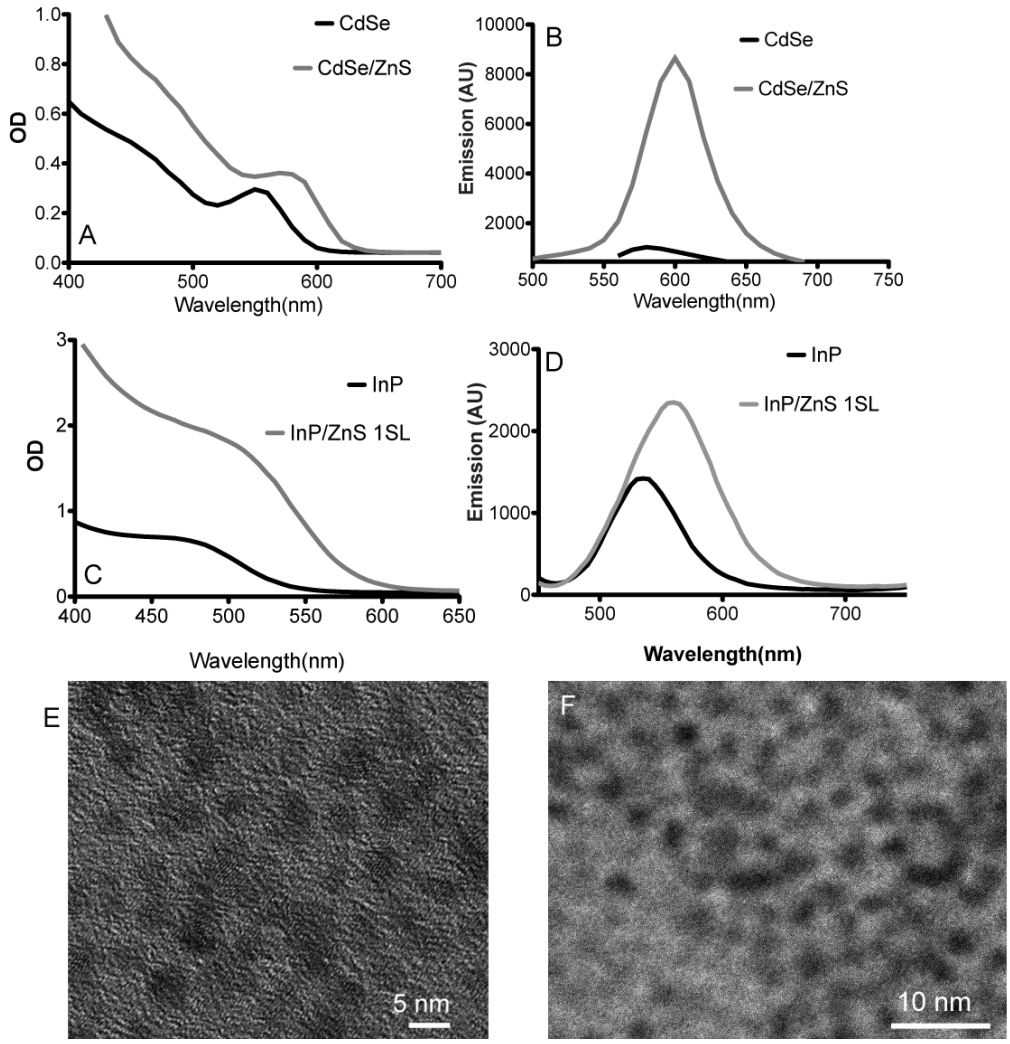

Figure S1. Characterization of QDs. (A) Absorbance and (B) Emission spectra of CdSe QDs before and after addition of ZnS shell. (C) Absorbance and (D) Emission spectra of InP QDs before and after addition of ZnS shell. (E) TEM image of CdSe/ZnS. (F) TEM image of InP/ZnS.

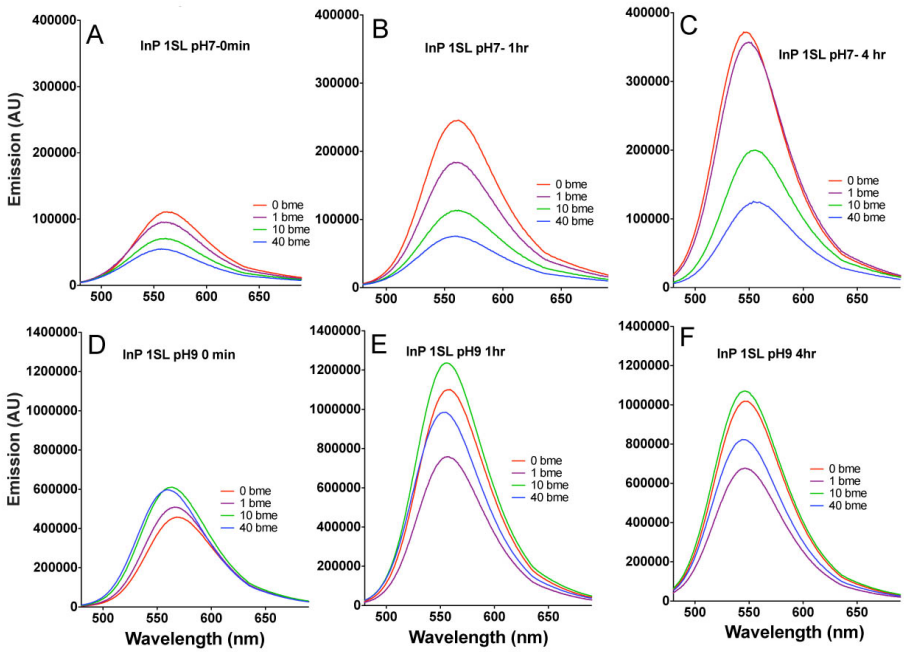

Figure S2. Steady-state emission spectra for single-shell InP/ZnS QDs with different BME concentrations at different times after BME addition. All samples were 100 nM in borate buffer. (A) At pH 7 immediately after BME addition. (B) At pH 7 after aging for 1 hr under room light and atmosphere. (C) At pH 7 after aging for 4 hr under room light and atmosphere. (D) At pH 9 immediately after BME addition. (E) At pH 9 after aging for 1 hr under room light and atmosphere. (F) At pH 9 after aging for 4 hr under room light and atmosphere.

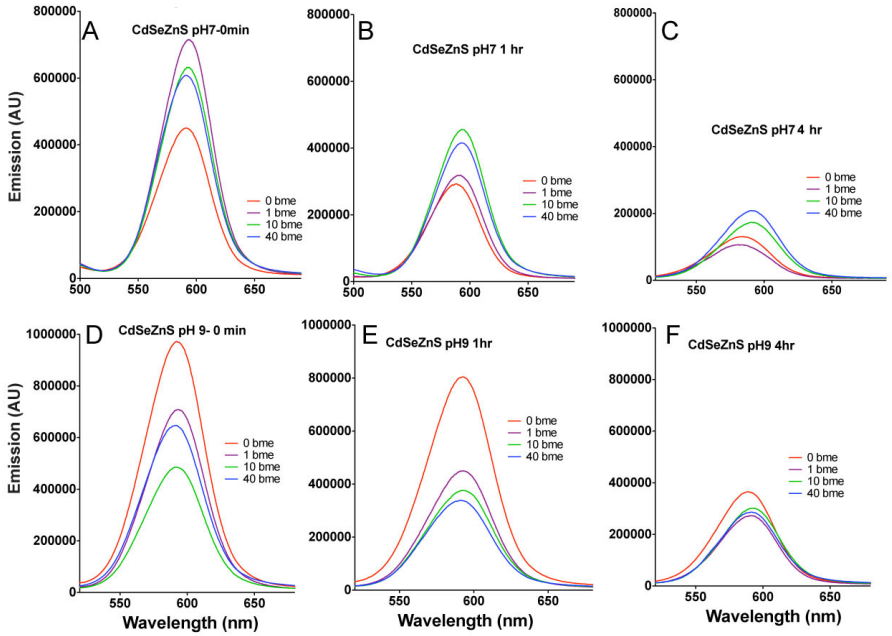

Figure S3. Steady-state emission spectra for CdSe/ZnS QDs with different BME concentrations at different times after BME addition. All samples were 100 nM in borate buffer. (A) At pH 7 immediately after BME addition. (B) At pH 7 after aging for 1 hr under room light and atmosphere. (C) At pH 7 after aging for 4 hr under room light and atmosphere. (D) At pH 9 immediately after BME addition. (E) At pH 9 after aging for 1 hr under room light and atmosphere. (F) At pH 9 after aging for 4 hr under room light and atmosphere.

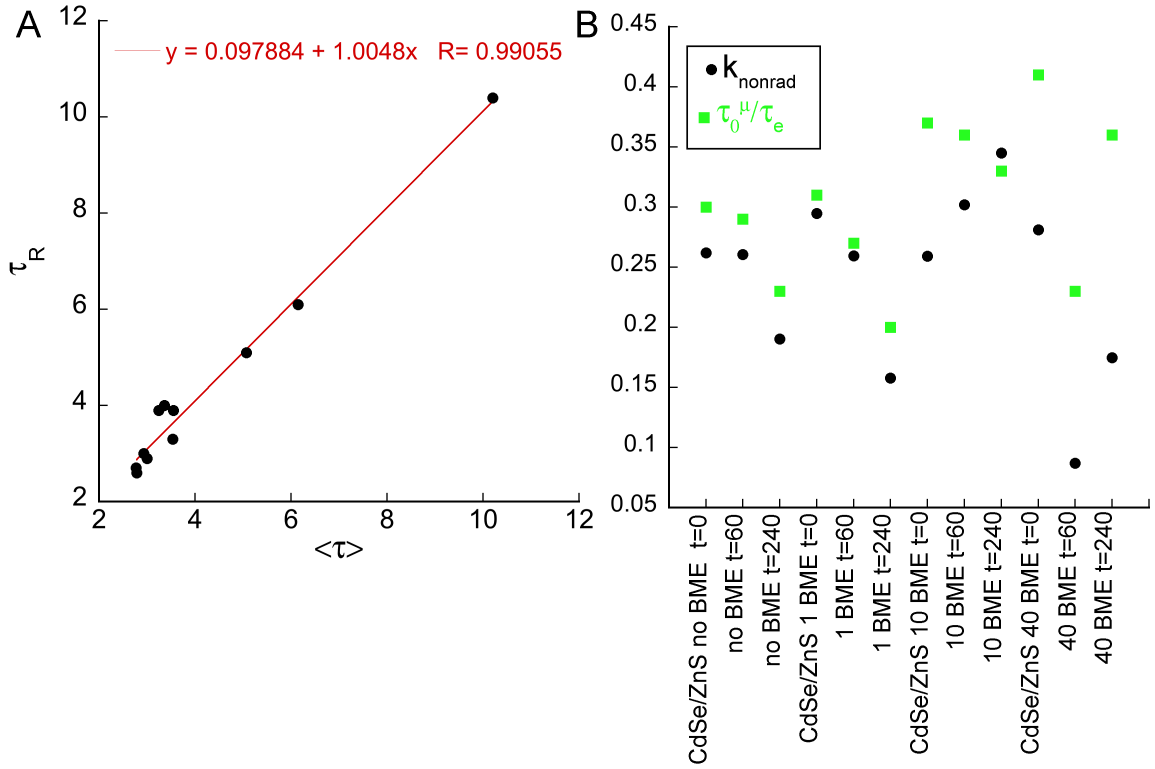

Figure S4. Physical meaning of fit parameters for CdSe/ZnS. (A) The model fit parameter τ_R vs. the mean lifetime $<\tau>$ calculated as the normalized area under the curve. (B) The model fit parameter τ_0^{μ}/τ_e alongside the value of k_{nonrad} calculated from measured quantum yields and mean lifetimes. Not excellent correspondence for 0 and 1 BME, poor correspondence for 10 and 40 BME.

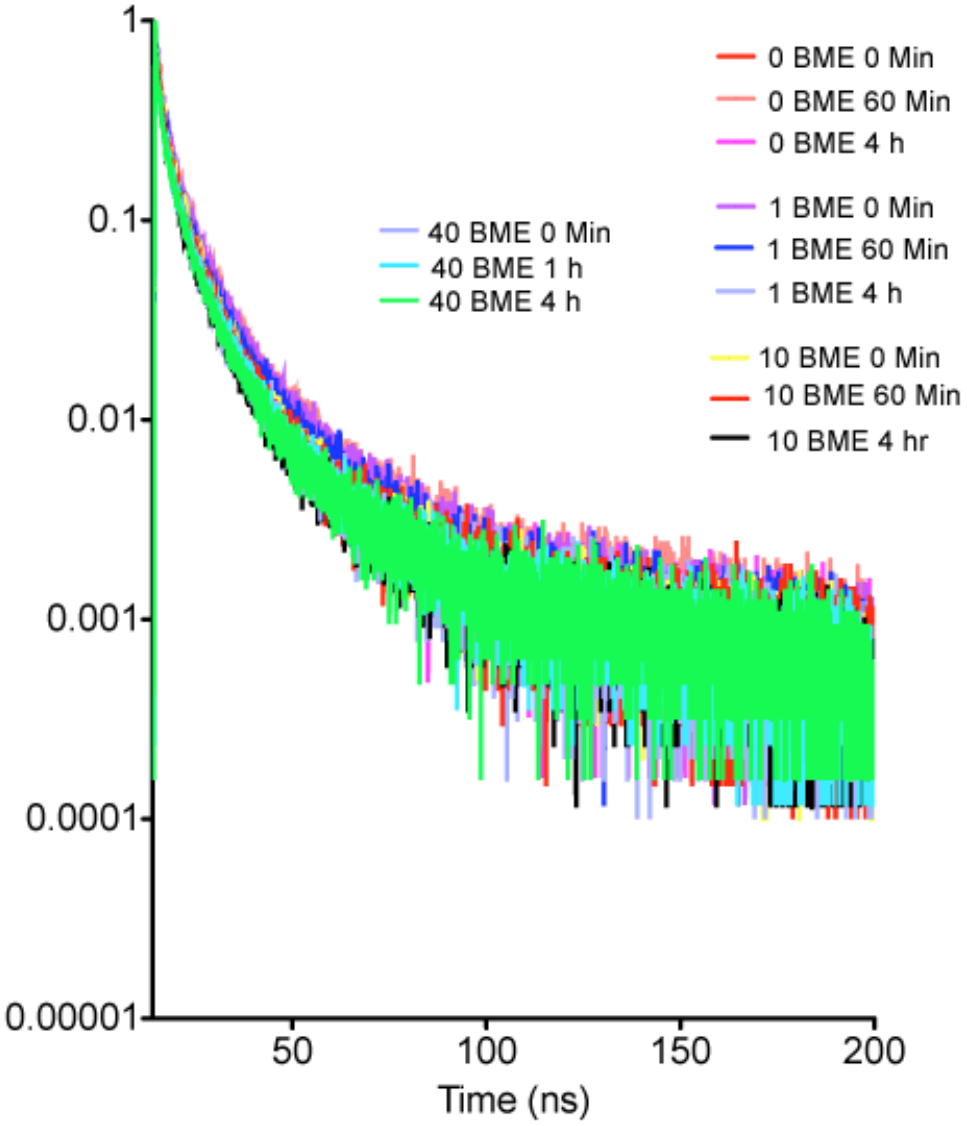

Figure S5. Lifetime traces of CdSe/ZnS QDs with different concentrations of BME at pH 9.

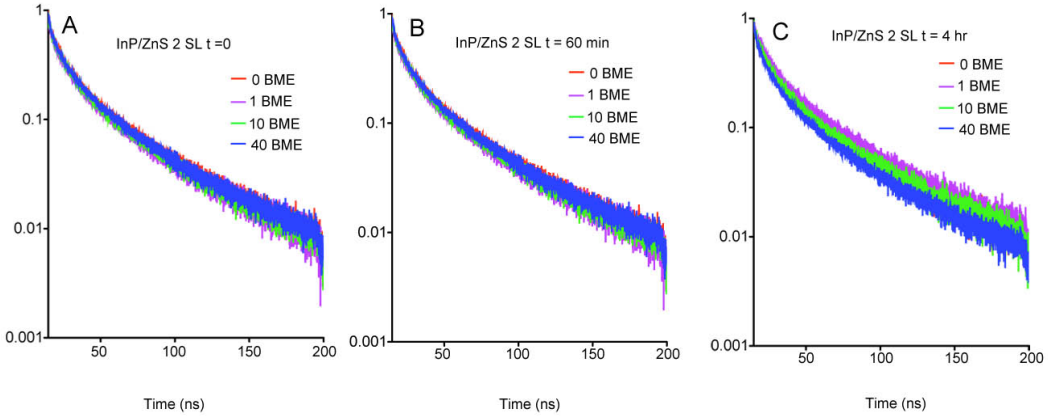

Figure S6. Lifetime traces of double-shelled InP with different BME concentrations at (A) Time 0, (B) 60 minutes after BME addition, and (C) 4 hr after BME addition.

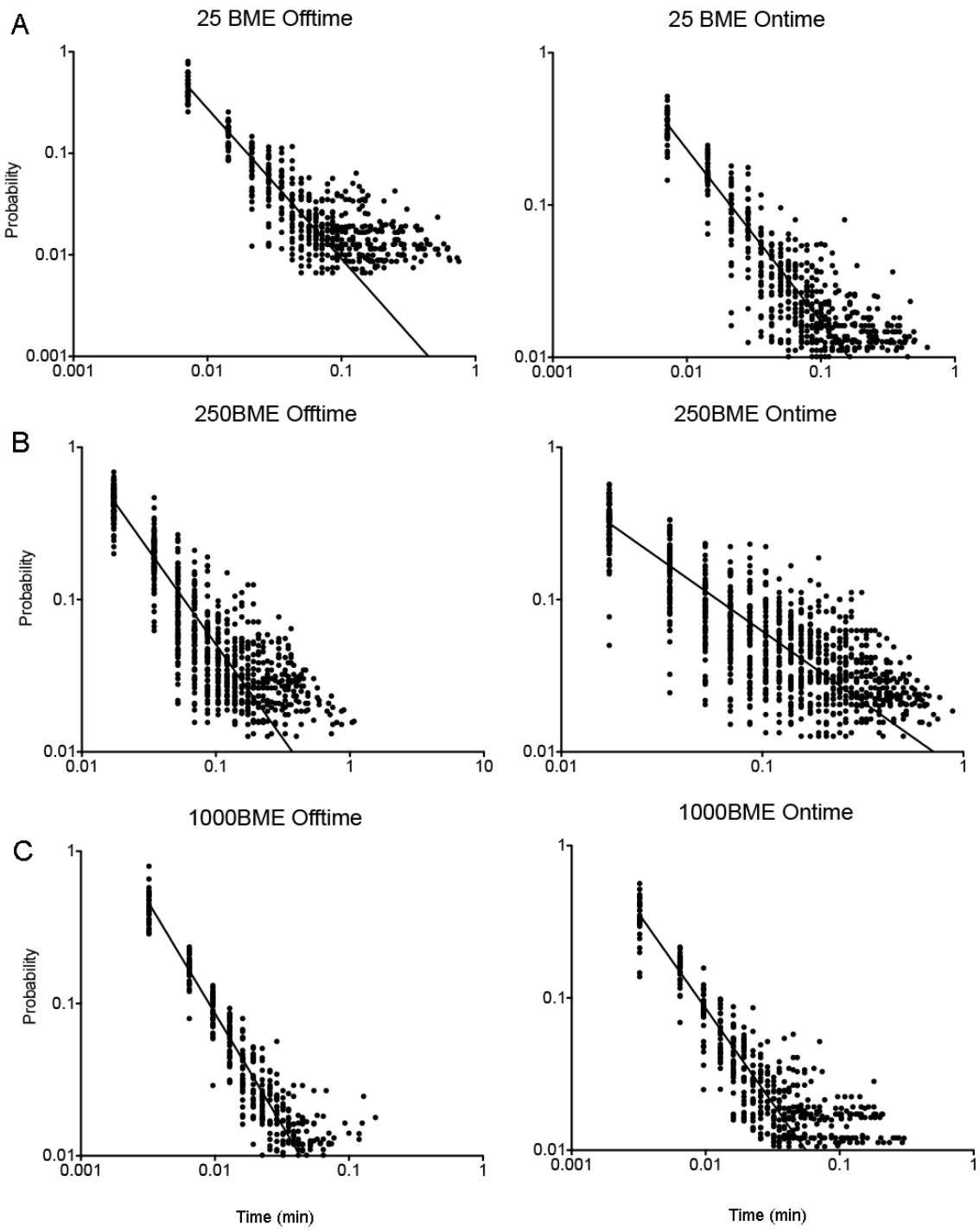

Figure S7. Unbinned off- and on-times for CdSe/ZnS QDs with different BME concentrations, showing power-law fits (exponents in Table 1). (A) 1 µL (25 µM) BME (10 QDs). (B)10 µL (250 µM) BME (14 QDs). (C) 40 µL (1000 µM) BME (10 QDs).