Electronic Supplementary Material (ESI) for Journal of Materials Chemistry C.

Electronic Supplementary Information

Facile Synthesis of Composition-Gradient $Cd_{1-x}Zn_xS$ Quantum Dots by Cation Exchange for Controlled Optical Properties

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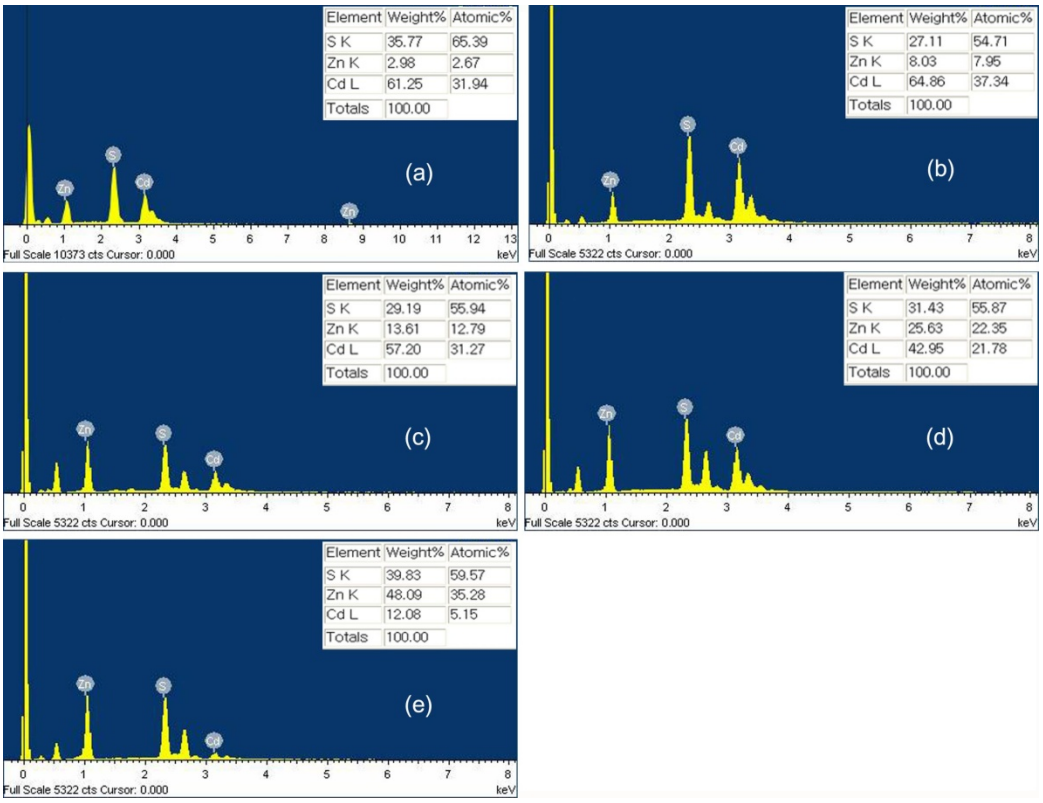

Fig. S1 EDX spectra of (a) G–$Cd_{0.92}Zn_{0.08}S$, (b) G–$Cd_{0.82}Zn_{0.18}S$, (c) G–$Cd_{0.71}Zn_{0.29}S$, (d) G–$Cd_{0.49}Zn_{0.51}S$, and (e) G–$Cd_{0.13}Zn_{0.87}S$.

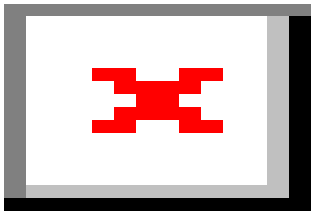

Fig. S2 Variation of observed distances between adjacent (111) planes of G–$Cd_{1-x}Zn_xS$ as a function of x; the standard distances between the (111) planes of cubic zinc-blende ZnS and CdS are indicated with crosses.

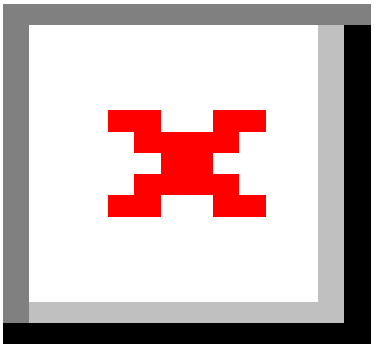

Fig. S3 Maximum-normalized PL spectra of as-prepared G–$Cd_{1-x}Zn_xS$ QDs dispersed in water, where x is indicated inside. The samples were excited at 355 nm, and the inset shows the λ_{max} of QDs versus x.

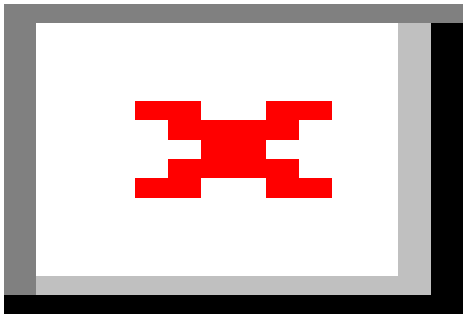

Fig. S4 HRTEM images of (a) CdS, (b) G–$Cd_{0.71}Zn_{0.29}S$, (c) C–$Cd_{0.68}Zn_{0.32}S$, and (d) A–$Cd_{0.74}Zn_{0.26}S$.

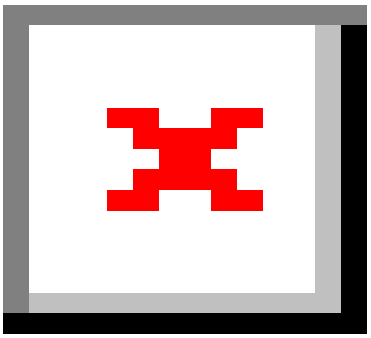

Fig. S5 PL spectra of various indicated $Cd_{1-x}Zn_xS$ QDs dispersed in water. The samples were excited at 355 nm. Note that the Cd^{2+} concentration of the colloidal solution of G–$Cd_{0.71}Zn_{0.29}S$ QDs has been calibrated to 5.0 mM as those of the other colloidal solutions.

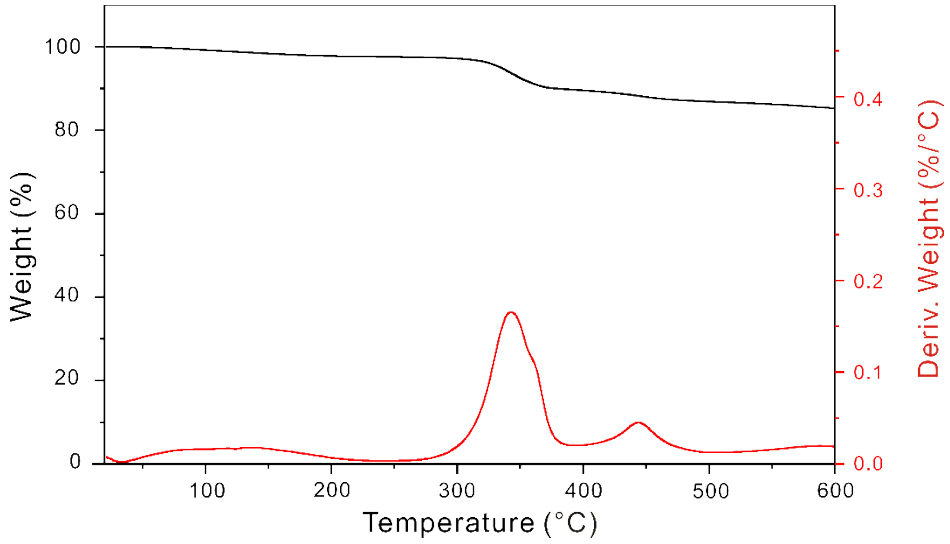

Fig. S6 TGA(black) and DTA(red) curves of G–$Cd_{0.71}Zn_{0.29}S$ QDs.