Supporting Information

Colloidal Transition-Metal-Doped ZnO Quantum Dots

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Figure S1. 300K $\text{Co}^{2+} {}^4\text{A}_2 \rightarrow {}^4\text{T}_1(\text{P})$ ligand field (right panel) and ZnO bandgap (left panel) absorption spectra of colloidal $\text{Co}^{2+}:\text{ZnO}$ DMS-QDs in EtOH (a) as prepared and (b) after growth of a ZnO isocrystalline shell.

Figure S2. Representative high-resolution TEM image and selected area diffraction pattern of 4.0nm 4.3% $\text{Co}^{2+}:\text{ZnO}$.

(TEM data were collected at the EMSL, a national scientific user facility sponsored by DOE's Office of Biological and Environmental Research and located at Pacific Northwest National Laboratory, operated for DOE by Battelle.)

Figure S3. Representative powder x-ray diffraction data on (a) Co^{2+} :ZnO and (b) Ni^{2+} :ZnO DMS-QD samples obtained from clear EtOH colloidal solutions. The bars indicate the powder diffraction pattern of bulk ZnO (wurtzite structure). Particle sizes estimated from widths of nonconvoluted diffraction peaks using the Scherrer equation for these samples are 4.8 and 5.9nm, respectively.