



Figure S1. Core formation ratio (CFR) of CdS NPs synthesized in the recombinant *Listeria Dps* (rLiDps) (solid line) and horse spleen apoferritin (HsAFr) (dashed line). The both of CFR were calculated by dividing the number of CdS NP-containing protein cavity by the number of all protein cavities in TEM images. CdS NPs in the HsAFr were synthesized by the optimized reaction solution including 0.3 mg/mL HsAFr, 40 mM ammonium acetate, 1 mM cadmium acetate, 75 mM ammonia water and 1 mM thioacetate (reference 17, 18). CdS NPs in the rLiDps were synthesized by the above solution except simply substituting 5 mM thioacetate and 0.3 mg/mL HsAFr for 1 mM thioacetate and 0.3 mg/mL rLiDps. Each pH of reactions was adjusted to 6.5 for HsAFr and to 8.5 for rLiDps.