Supporting Information

Luminescence Studies for Energy Transfer of Lead Sulfide QD Films

Joanna S. Wang,^{1*} Bruno Ullrich,¹ Anirban Das,² Chien. M. Wai,² Gail J. Brown,¹ Chandriker K. Dass,^{3,4} Joshua R. Hendrickson³

¹Air Force Research Laboratory, Materials and Manufacturing Directorate, WPAFB, Ohio 45433-7707, USA ²Department of Chemistry, University of Idaho, Renfrew Hall, Moscow, ID 83844, USA

³Air Force Research Laboratory, Sensors Directorate, WPAFB, Ohio 45433-7707, USA

⁴Wyle Laboratories, Beavercreek, Ohio 45431, USA

*Corresponding author. E-mail: joanna.wang.ctr@us.af.mil Telephone: +1-937-255-8692. Fax: + 1-937-255 -4913.



Figure S1. XRD of PbS quantum dots.



Figure S2. Transient lifetime measurement for a mixture of 2 different sized PbS QD film (3.1 nm and 4.8 nm) at wavelength 1150 nm with bi-exponential fit (solid line), with the decay time of 56 ns. The bi-exponential fit suggests that the decay probably involves two modes, a faster FRET (56 ns) and a normal radiative emission (182 ns).



Figure S3. Transient life time measurement for a mixture of 2 different sized PbS QD films (3.1 nm and 4.8 nm) at wavelength 1350 nm with mono-exponential fit (solid line). The decay time is 199 ns.



Figure S4. Temporally resolved photoluminescence of the mixed QD film at different wavelengths of 1150 nm and 1350 nm between 0 and 3 μ s (a) and between 0 and 0.8 μ s (b) showing the evidence of FRET, through a fast quenching of small dots and delay emission of large dots.