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Measurement of the separation dependence of the resonant energy transfer between CdSe nanocrystallite quantum dots FARBOD SHAFIEI, RICARDO S. DECCA, Indiana University-Purdue University Indianapolis — An apparatus has been built to study the separation dependence of the interaction between small and large resonant groups of CdSe/ZnS nanocrystallite quantum dots (NQDs). A near-field scanning optical microscope (NSOM) is used to bring a group of mono-disperse 6 nm dots close (near-field range) to an 8 nm group of dots which are deposited on a solid immersion lens. Combination of spectral and positional filtering allows us to measure the interaction between small numbers of NQDs, with the ultimate goal of identifying the interaction between individual dots. Quenching of the small NQDs photoluminescence signal yields the transition probability between these two groups of NQDs which is obtained to be $(4.5 \times 10^{-47}$ $m^6)/R^6$, matching the theoretical calculation. Förster radius as a signature of energy transfer efficiency is extracted from experimental data to be 17 nm. Separation between two groups of the NQDs was increasing up to 40nm during the experiment.

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