Supporting Information

Bidirectional Photoinduced Energy Transfer in Nanoassemblies of Quantum Dots and Luminescent Metal Complexes

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*Spectral overlap between CdTe and **3***

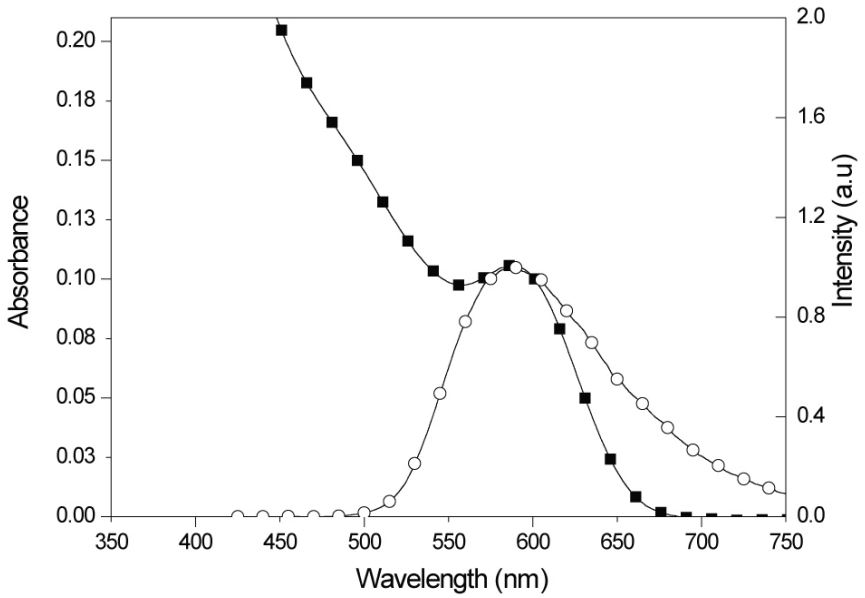

Fig S1. Spectral overlap between **3** (donor-○-) emission and CdTe (acceptor -■-) absorption.

*Calculation of CdTe-sensitized emission and quenching of **3** within the CdTe-**3** assembly*

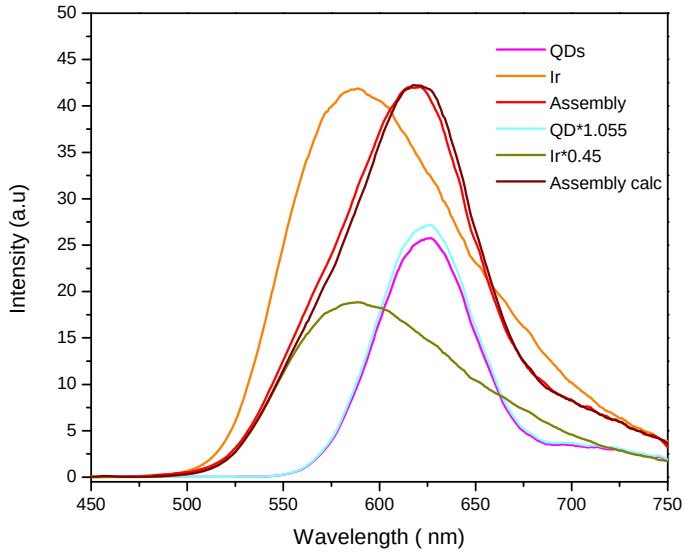

Fig. S2. Experimental emission spectra of CdTe (*A*), **3** (*B*), and CdTe-**3** (*C*). Calculated components (CdTe, *D* / **3**, *E*) of the CdTe-**3** experimental emission spectrum (*C*), where $D = A \times 1.055$, and $E = B \times 0.45$. Calculated emission spectrum of CdTe-**3** (*F*) obtained as $F = A \times 1.055 + B \times 0.45$. All experimental emission spectra were measured under the same settings and conditions, exciting at 385 nm. The calculated emission components *D* and *E* where used for the energy transfer analysis, as described in the main manuscript.

Control experiment with CdTe and ***3'***

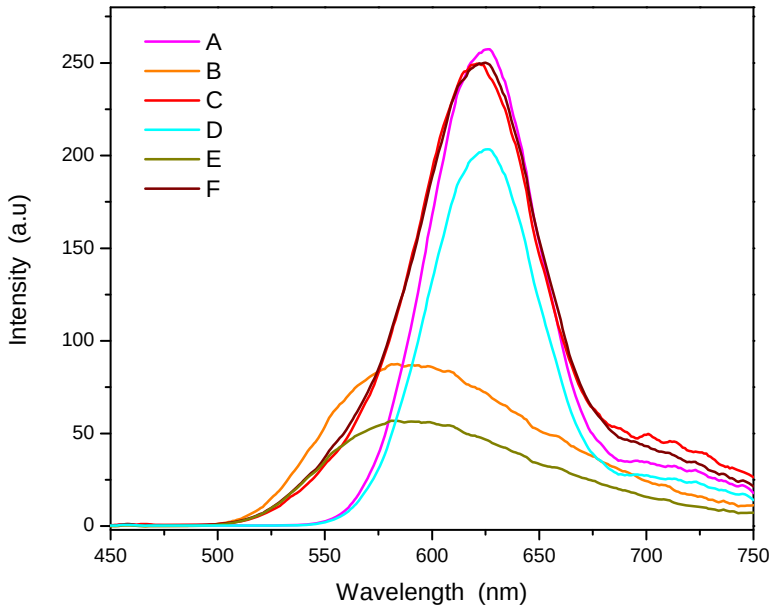

Fig. S3. Experimental emission spectra of CdTe (*A*), **3'** (*B*), and CdTe/**3'**) (*C*). Calculated components (CdTe, *D* / **3'**, *E*) of the CdTe/**3'** experimental emission spectrum (*C*), where $D = A \times 0.79$, and $E = B \times 0.65$. Calculated emission spectrum of CdTe/**3'** (*F*) obtained as $F = A \times 0.79 + B \times 0.65$. All experimental emission spectra were measured under the same settings and conditions, exciting at 385 nm. The calculated emission components *D* and *E* where used for the energy transfer analysis, as described in the main manuscript.

Spectral overlap between CdSe/ZnS and ***6***

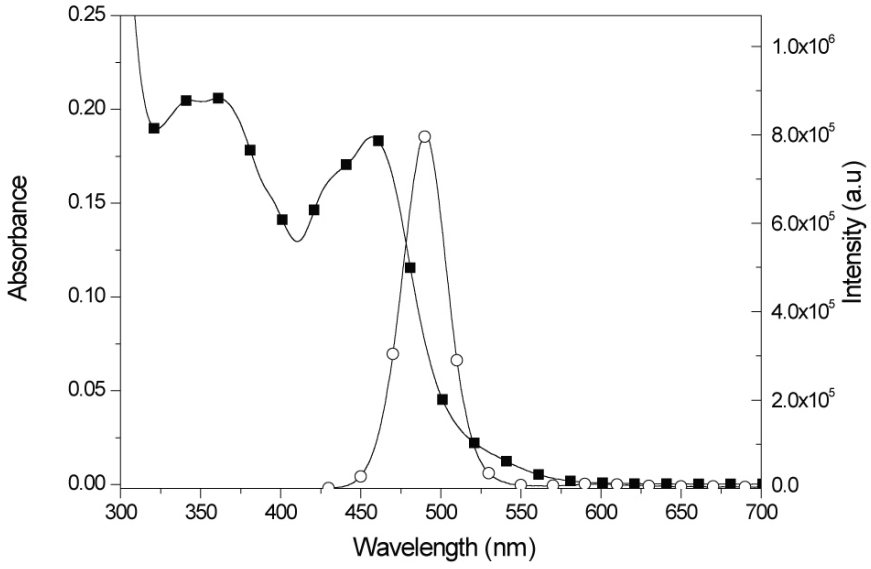

Fig S4. Spectral overlap between CdSe/ZnS (donor) emission and **6** (acceptor) absorption.

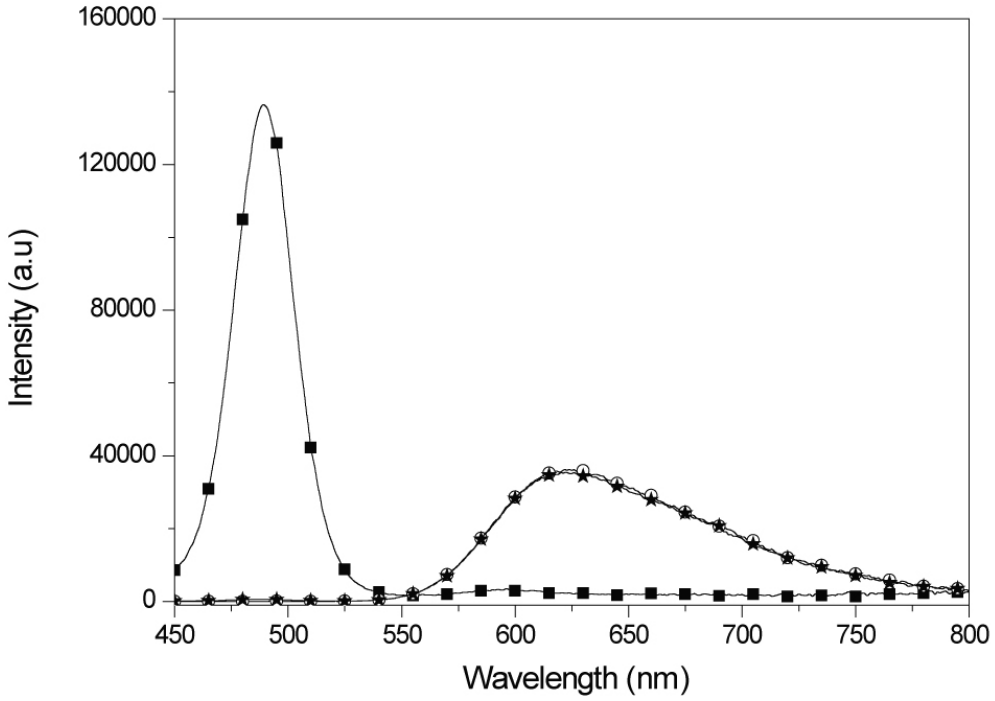

Fig S5. Emission spectra of CdSe/ZnS (-▪-), **6'** (-*-) and CdSe/ZnS/ **6'** mixture (-◦-) in 1:1 (*v*/*v*) toluene-methanol, λ_{em} = 431 nm.

Estimation of the donor-acceptor separation

The energy transfer efficiency can be expressed in terms of Förster radius, R_0, and the donor acceptor separation, r, as

$$E = \frac{R_0^6}{R_0^6 + r^6}$$

The dependence of E on r/R_0 can be plotted as a sigmoidal curve shown in Fig. S6.

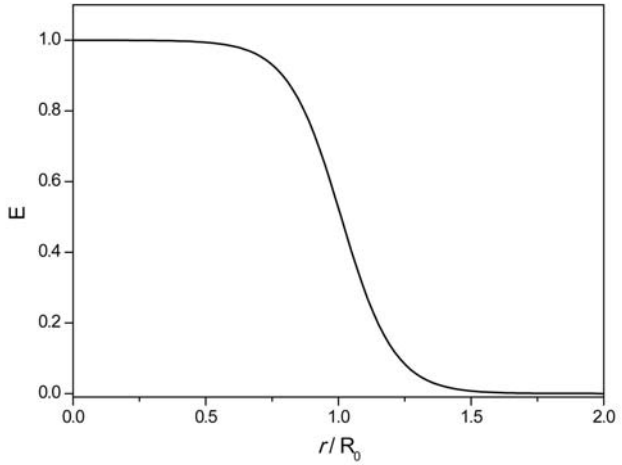

Fig. S6. Dependence of energy transfer efficiency, E, on distance. R_0 denotes the Förster radius.