Supporting Information for:

Supramolecular-Chromophore-Sensitized Near-Infrared-to-Visible Photon Upconversion

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Figure S1. Transient absorption difference spectra of anthracene in (a) benzene and (b) MTHF following laser excitation at 355 nm at 1.2 mJ/pulse.

Figure S2. Low temperature emission spectra (77 K) of $\text{Pyr}_1\text{RuPZn}_2$ in MTHF, $\lambda_{\text{ex}} = 442$ nm.

Figure S3. Time-correlated single-photon counting fluorescence intensity decay of PDI in MTHF. Weighted residuals (green) are shown in the bottom plot.

Figure S4. Transient absorption difference spectra of 7.0 μM Pyr₁RuPZn₂ measured at several delay times in aerated MTHF, 1.0 mJ/pulse, $\lambda_{\text{ex}} = 700$ nm. The inset shows the single exponential fit to the 1100 nm transient with residuals presented in green.

Figure S5. (a) Transient absorption decay of 3.3 μM Pyr_1RuPZN_2 at 900 nm monitored as a function of increasing PDI concentration in deaerated MTHF ($\lambda_{ex} = 485$ nm at 0.5 mJ/pulse). (b) Stern-Volmer plot generated by the lifetime quenching of $^3Pyr_1RuPZN_2^*$ by PDI using the monoexponential fit of the decay shown in part (a).

Figure 6. Emission spectra of $\text{Pyr}_1\text{RuPZn}_2$ showing the generation of singlet oxygen in aerated MTHF upon 442 nm excitation.

Figure S7. (a) Delayed PDI (420 μM) fluorescence in deaerated MTHF upon selective excitation of $\text{Pyr}_1\text{RuPZN}_2$ (3.3 μM) at 780 nm. (b) Prompt steady state fluorescence of 420 μM PDI in MTHF, $\lambda_{\text{ex}} = 460$ nm. (c) Prompt fluorescence of an optically dilute solution of PDI in MTHF, $\lambda_{\text{ex}} = 460$ nm.

Figure S8. Exponential decay of the triplet excited-state absorption of anthracene in MTHF monitored at 420 nm upon 355 nm excitation at 1.2 mJ/pulse in the absence of PDI (black line) and the growth of the triplet absorption of PDI monitored at 560 nm following energy transfer (red line).

Figure S9. (a) Transient absorption difference spectrum of a mixture of Pyr₁RuPZn₂/PDI measured at several delay times in deaerated MTHF ($\lambda_{\text{ex}} = 600 \text{ nm}$ @ 1 mJ/pulse). The inset shows the single exponential fit to the 1100 nm transient with residuals presented in green.