Variation of Excited-State Dynamics in Trifluoromethyl Functionalized C$_{60}$ Fullerenes

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Fig. S1 Gaussian deconvolution fitting for ground-state electronic absorption spectra of a) C60/4-1 and b) C60/10-1 measured in toluene. The FWHM noted in the figure shows the FWHM results for the lowest-energy absorption peak.
Fig. S2 Photoluminescence excitation spectra of C60/4-1 and C60/6-2 in toluene. (a,c) Photoluminescence excitation spectra of C60/4-1 and C60/6-2 (blue, right y-axis), monitored at the emission wavelengths noted, are overlaid with electronic absorption spectra (black, left y-axis). (b,d) Photoluminescence excitation spectra of C60/4-1 and C60/6-2 in toluene monitored at the multiple emission wavelengths are normalized.
Fig. S3 Representative femtosecond pump/probe transient absorption spectra of a) PC_{61}BM and b) bis-PC_{61}BM in toluene obtained at the time delays noted. Experimental conditions: λ_{ex} = 400 nm, pulse energy = 300 nJ/pulse, room temperature.
Fig. S4 Representative femtosecond pump-probe transient absorption spectra of C60/10-1 in toluene, obtained at the time delays noted. Experimental conditions: $\lambda_{ex} = 400$ nm, pulse energy = 450 nJ/pulse, room temperature.
Fig. S5 Exponential fitting results of the transient decay signals for a) C60/4-1, b) C60/6-2, c) C60/10-1. Experimental conditions: \( \lambda_{\text{pr}} = \) a) 902 nm, b) 935 nm, and c) 1001 nm; \( \lambda_{\text{ex}} = \) a,b) 400 nm and c) 550 nm, pulse energy = 300 nJ/pulse, room temperature.
Fig. S6 Single-exponential fitting results of the transient signal rise for a) C60/4-1 and b) C60/6-2 using the method described earlier to determine the rise time constant of the T1→Tn transition (see the earlier section for the method). Experimental conditions: λex = 400 nm, pulse energy = 300 nJ/pulse, room temperature.
Fig. S7 Comparative femtosecond pump-probe transient absorption spectrum (solid black) of C60/10-1 in toluene obtained at the time delay noted. Inversed electronic absorption spectrum (dashed blue) of C60/10-1 in toluene is displayed for comparison. Experimental conditions: $\lambda_{ex} = 400$ nm, pulse energy $= 300$ nJ/pulse, room temperature.
Fig. S8 Exponential fitting results of the transient decay signals for a) C60/4-1 and b) C60/6-2, dispersed in a polystyrene matrix. Experimental conditions: λ_{pr} = a) 901 nm and b) 941 nm; λ_{ex} = 400 nm, pulse energy = 500 nJ/pulse, room temperature.