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Fullerene Acting as an Electron Donor in a Donor-Acceptor Dyad to Attain the Long-Lived Charge-Separated State by Complexation with Scandium Ion

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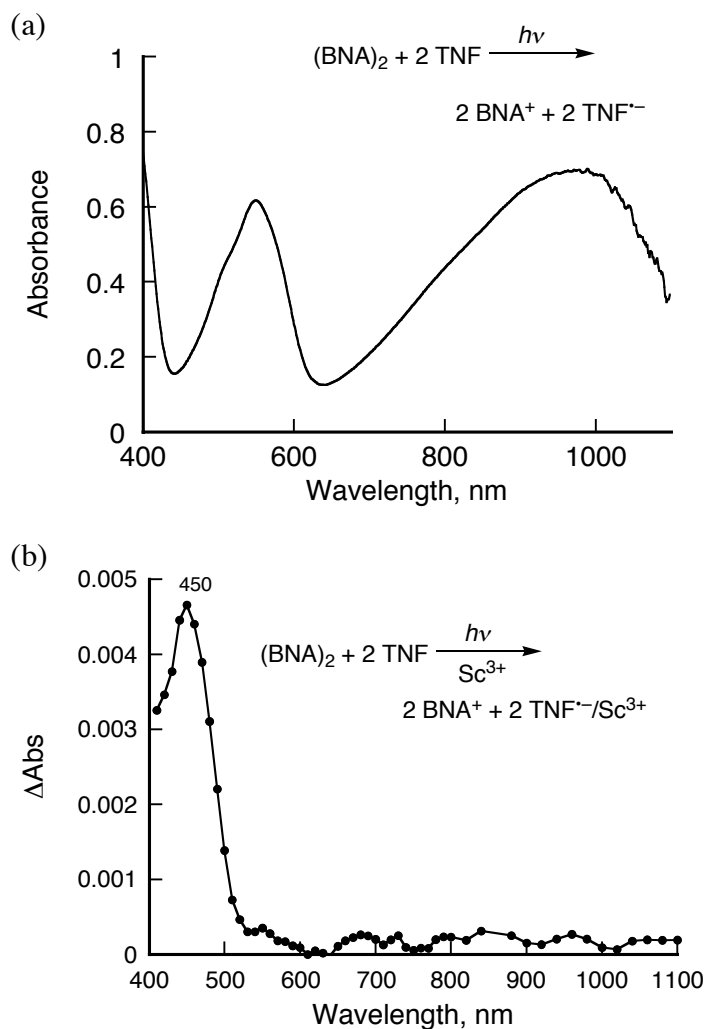


Fig. S1 (a) UV-vis-NIR spectrum of $\text{TNF}^{\bullet-}$ obtained by photoirradiation in deaerated PhCN containing of TNF ($1.4 \times 10^{-4} \text{ mol dm}^{-3}$), $(\text{BNA})_2$ ($7.0 \times 10^{-5} \text{ mol dm}^{-3}$). (b) Transient absorption spectrum of $\text{TNF}^{\bullet-}/\text{Sc}^{3+}$ obtained by laser flash photolysis in deaerated PhCN containing TNF ($7.0 \times 10^{-5} \text{ mol dm}^{-3}$), $(\text{BNA})_2$ ($5.0 \times 10^{-4} \text{ mol dm}^{-3}$) and $\text{Sc}(\text{OTf})_3$ ($3.0 \times 10^{-2} \text{ mol dm}^{-3}$) at 298 K at $5.0 \mu\text{s}$ after laser excitation (355 nm).

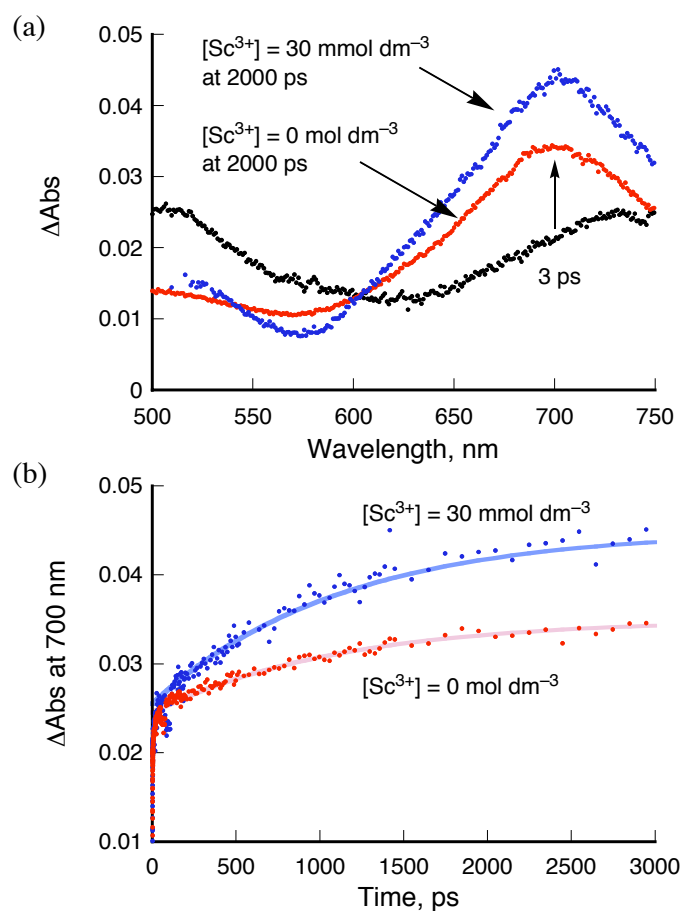


Fig. S2 (a) Transient absorption spectra of C_{60} -TNF (0.3 mmol dm^{-3}) obtained by femtosecond laser flash photolysis in deaerated PhCN in the absence and in the presence of $\text{Sc}(\text{OTf})_3$ (30 mmol dm^{-3}) taken at 3 and 3000 ps after laser excitation (380 nm) at 298 K. (b) Time profiles of transient absorption at 700 nm in the absence (red) and the presence of $\text{Sc}(\text{OTf})_3$ (30 mmol dm^{-3} , blue) with single-exponential fitted curves.

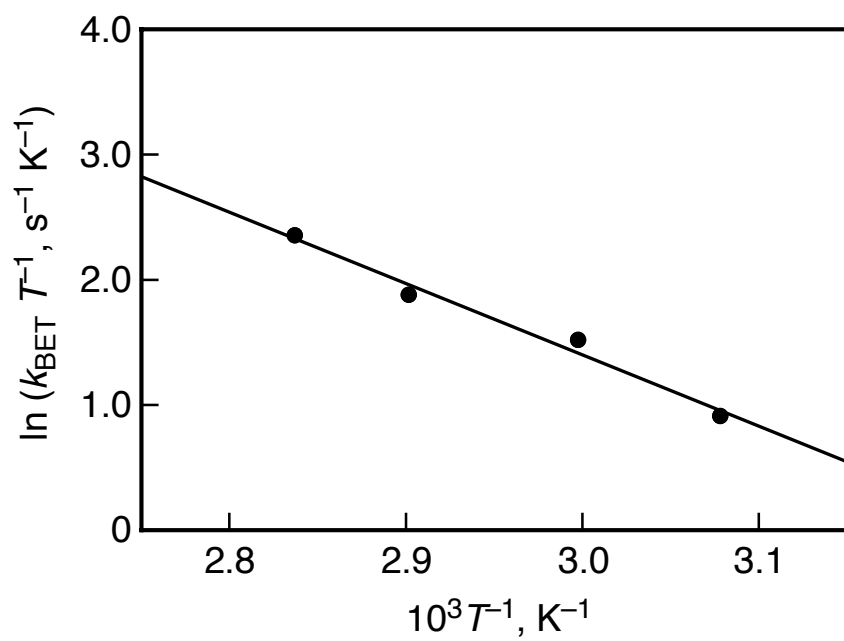


Fig. S3 Eyring plot for the intramolecular BET process of $\text{C}_{60}^{\bullet+}\text{-TNF}^{\bullet-}/\text{Sc}^{3+}$ in deaerated PhCN determined by laser flash photolysis.