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Supplementary Information

A fullerene alloy based photovoltaic blend with a glass transition above 200 °C

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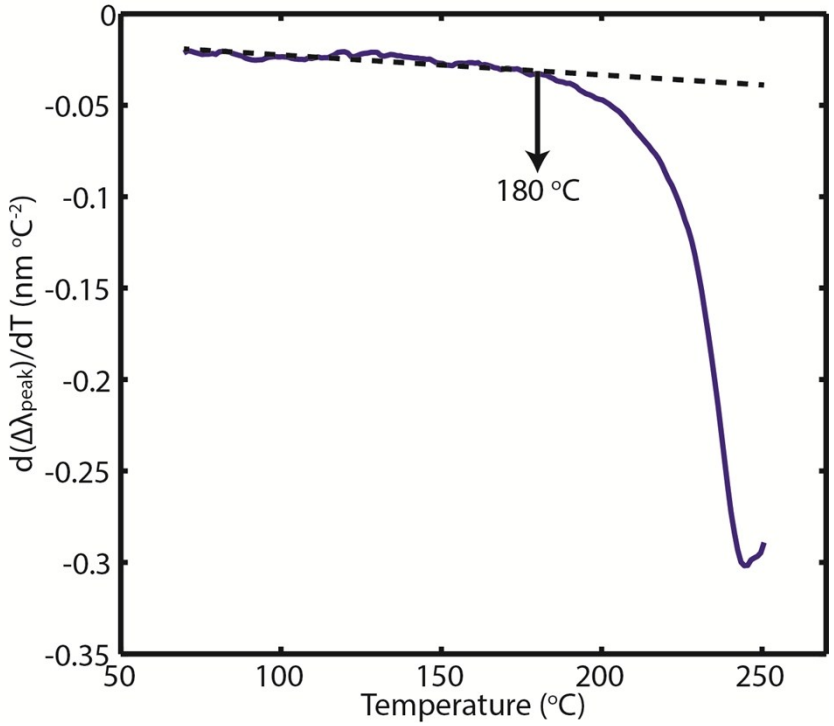

Fig. S1 Rate by which the peak wavelength $^{\Delta\lambda_{peak}}$ of the plasmonic resonance changes with temperature, $^{d(\Delta\lambda_{peak})/dT}$, i.e. the slope. The onset of the glass transition temperature ^{T_g} is defined as the first point where the value of $^{d(\Delta\lambda_{peak})/dT}$ deviates from the initial linear region.

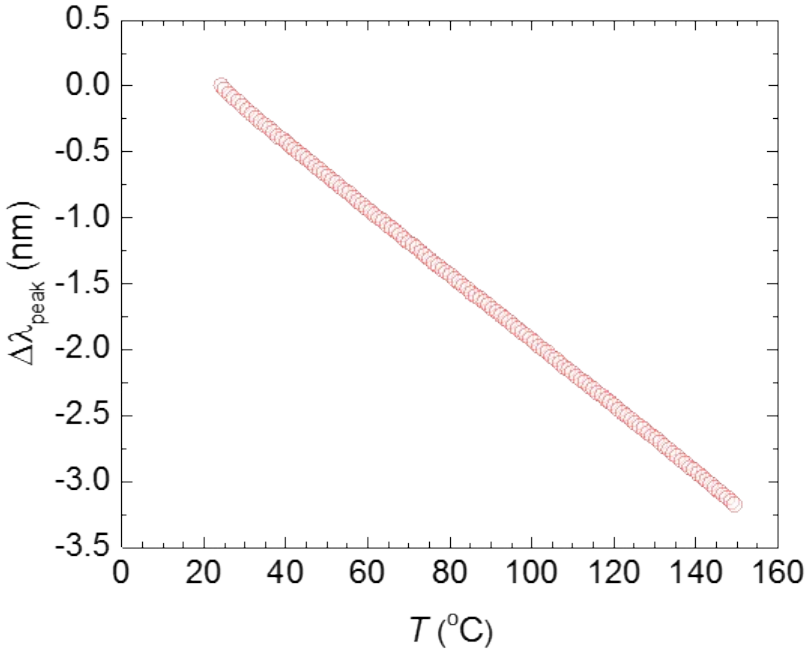

Fig. S2 Plasmonic nanospectroscopy second heating scan of neat PTB7.

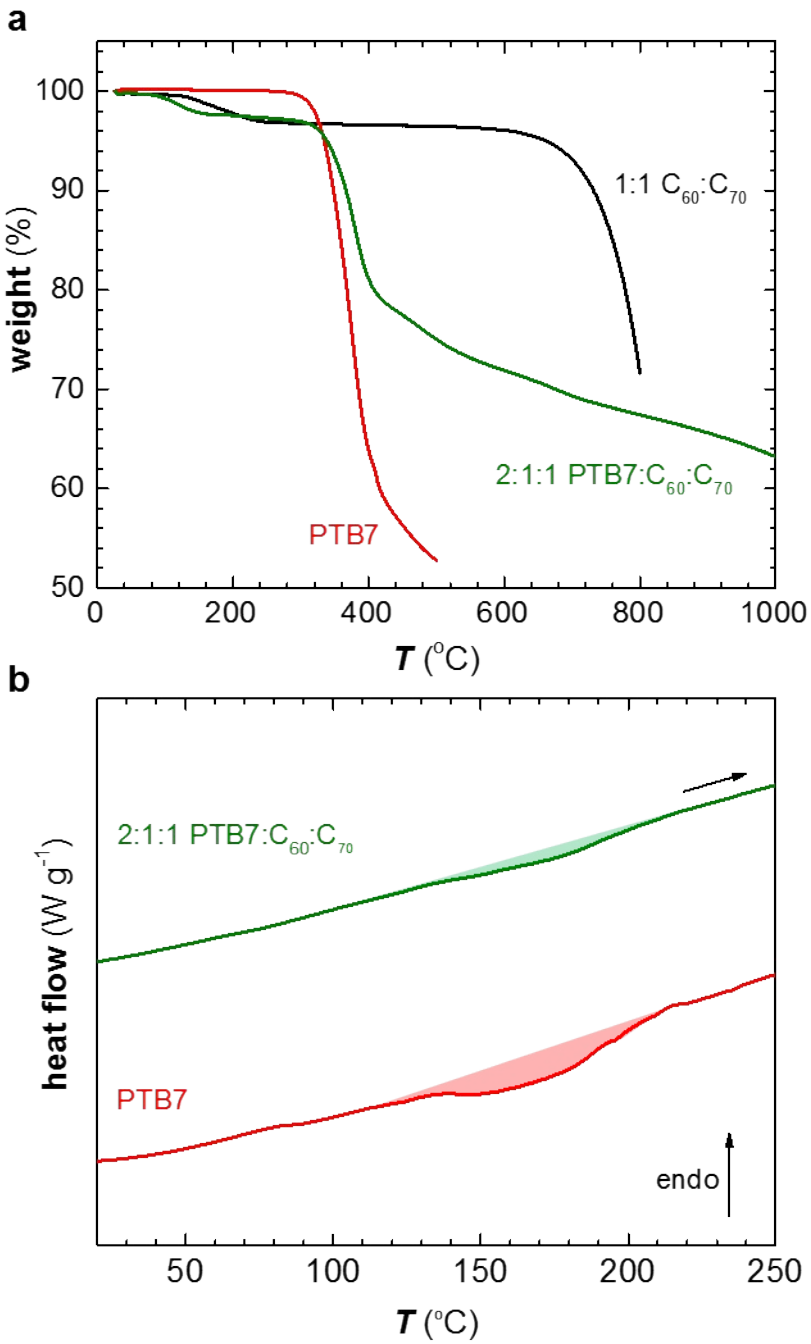

Fig. S3 (**a**) TGA scans of PTB7, 1:1 C_{60}: C_{70} and 2:1:1 PTB7:$C_{60}C_{70}$, (**b**) DSC second heating thermograms of PTB7 and 2:1:1 PTB7:C_{60}: C_{70} (heating rate 20 °C min^{-1}). The TGA measurement of 2:1:1 PTB7:C_{60}:C_{70} was performed on material that was drop-cast from *o*-DCB and dried under vacuum for two days.

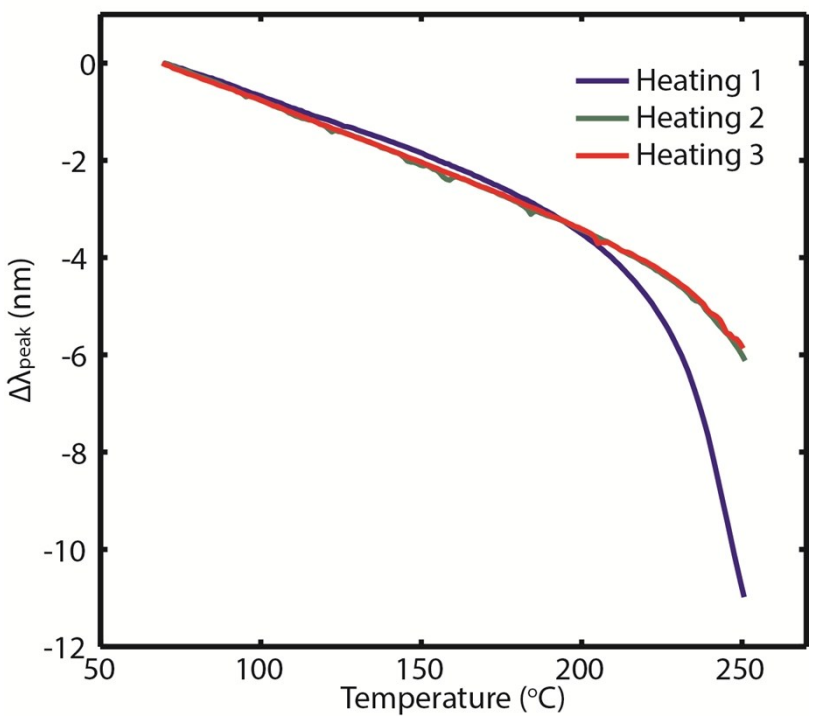

Fig. S4 The peak wavelength $\Delta\lambda_{peak}$ of the plasmonic resonance recorded during the first, second and third heating scans of the same 2:1:1 PTB7:C_{60}:C_{70} film, using a heating rate of 5 °C min^{-1} and a natural cooling rate within a temperature interval of 60 to 250 °C.

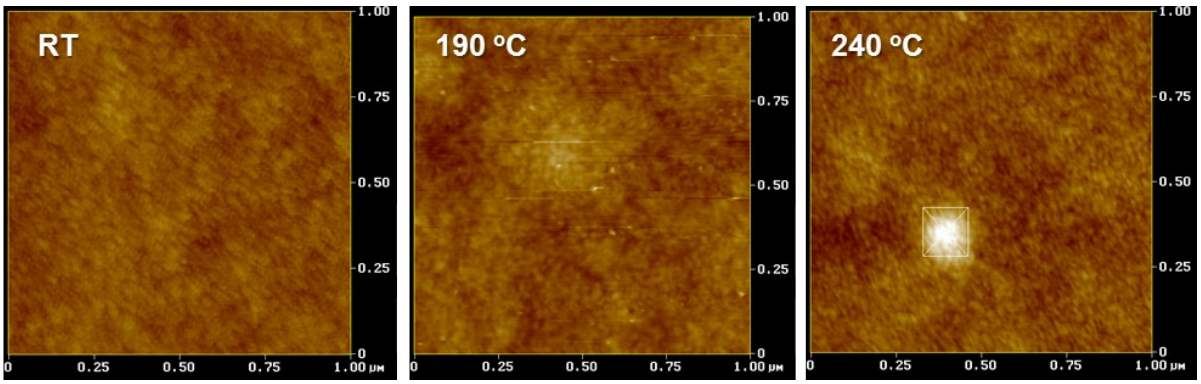

Fig. S5 AFM topography images of 2:1:1 PTB7:C_{60}:C_{70} thin films: as spin-coated (left), after annealing for 10 min at 190 °C (centre), and 240 °C (right). AFM images were recorded between crystallites. The surface roughness R_{rms} was 0.4 nm, 0.5 nm and 0.5 nm, respectively.

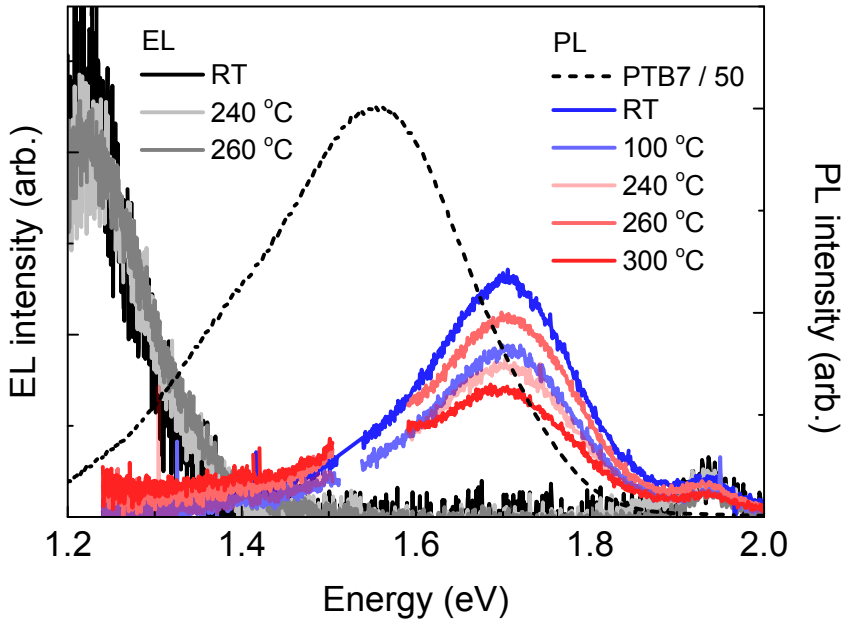

Fig. S6 (a) Electroluminescence (EL) and photoluminescence (PL) spectra of reference PTB7 and 2:1:1 PTB7:C_{60}:C_{70} after annealing at temperatures ranging from RT to 300 °C for 10 min.

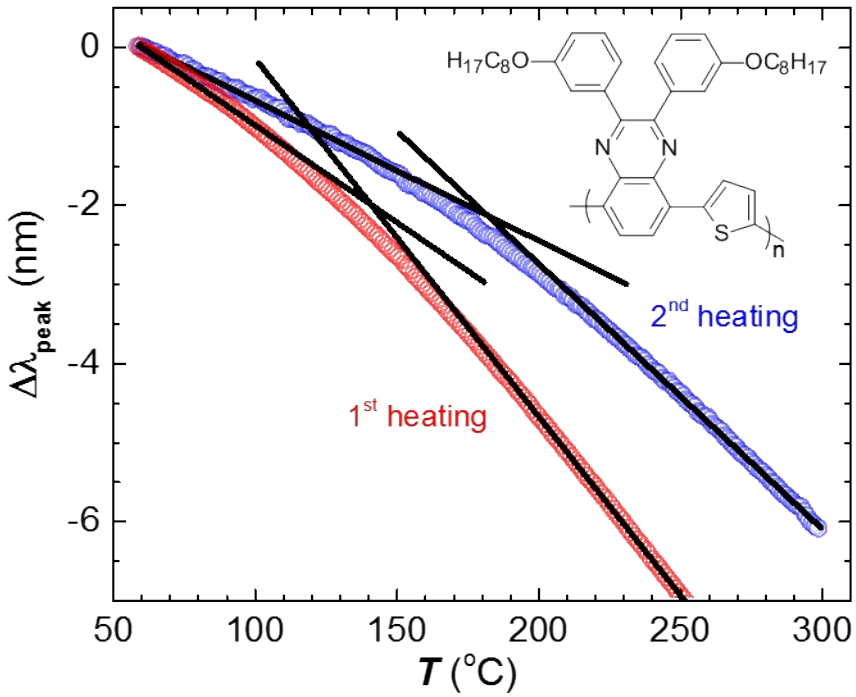

Fig. S7 Plasmonic nanospectroscopy first (red) and second heating scan (blue) of 2:1:1 TQ1:C_{60}:C_{70}. The intersection of the straight line fits (black) indicate a thermal transition, which we interpret as the glass transition temperature T_g ~ 141 °C and 182 °C, respectively (inset: chemical structure of TQ1).