Supporting Information

for

Temperature dependence of photo- and electroluminescence of poly(*p*-phenylene vinylene) based polymers

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Table S1. Photoluminescence spectra peaks of SY-PPV determined by Gaussian fits.

T (K)	$S_{0,0}$ (nm)	$S_{0,1}$ (nm)	$S_{0,2}$ (nm)
290	537	580	615
270	539	581	612
230	541	583	622
200	542	583	624
180	544	586	635
150	547	589	638
130	547	589	635
100	550	593	635
77	550	593	636

Table S2. Photoluminescence spectra peaks of BEH-PPV determined by Gaussian fits.

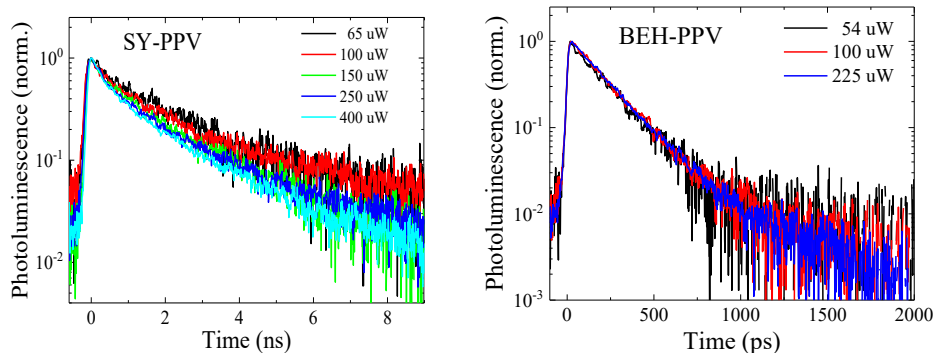| T (K)	$S_{0,0}$ (nm)	$S_{0,1}$ (nm)	$S_{0,2}$ (nm)
290	588	629	677
270	590	632	679
230	594	636	692
180	598	642	699
150	600	645	705
120	603	650	713
90	604	652	717
77	605	653	718

Figure S1. Room temperature time-resolved photoluminescence kinetics of SY-PPV (monitored at 550 nm) and BEH-PPV at (monitored at 600 nm) with varying photoexcitation power.
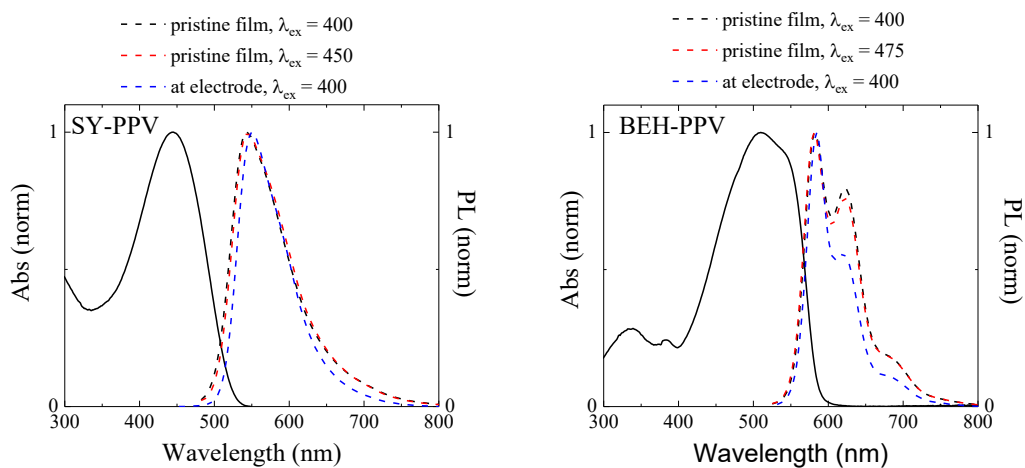

Figure S2. Steady-state absorption (solid) and photoluminescence (dashed) spectra of SY-PPV and BEH-PPV films on quartz. Photoluminescence of the pristine film measured at different excitation wavelengths (indicated in the legend) exhibit the same lineshape. Photoluminescence measured at the electrode (dashed blue) in the PLED stack indicate the light out-coupling effect due to the (partially) reflective electrodes.
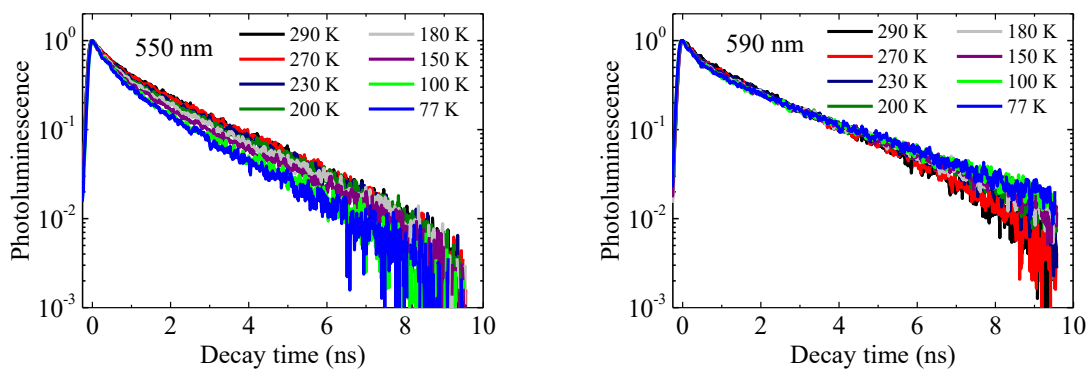
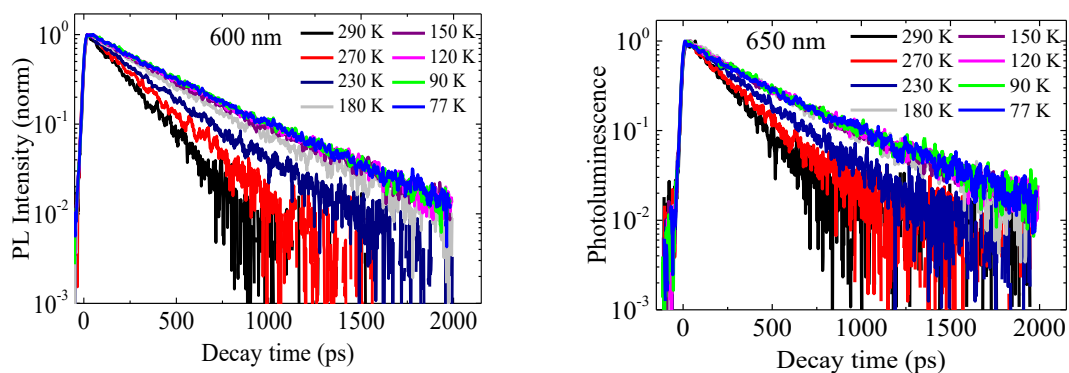Figure S3. Normalized PL decays in SY-PPV for a wide temperature-range.

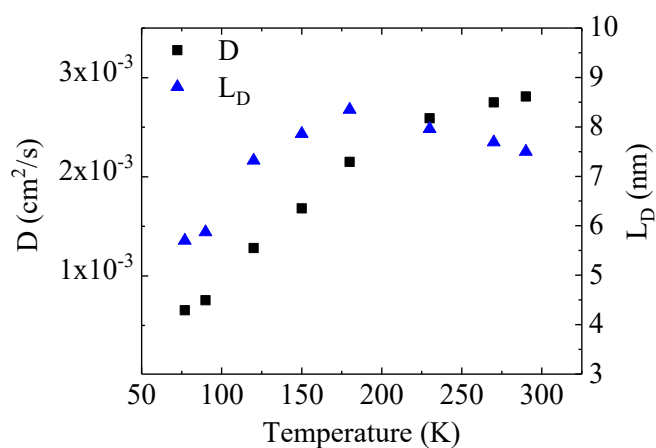Figure S4. Normalized PL decays in BEH-PPV for a wide temperature-range.

Figure S5. Temperature-dependence of exciton diffusion coefficient D (black squares) and diffusion length L_D (blue triangles) for BEH-PPV, determined from monoexponential fits to time-resolved fluorescence quenching experiments and Stern-Volmer equation.

Table S3: Temperature-dependent exciton diffusion coefficients and diffusion lengths for SY-PPV (left) and BEH-PPV (right).

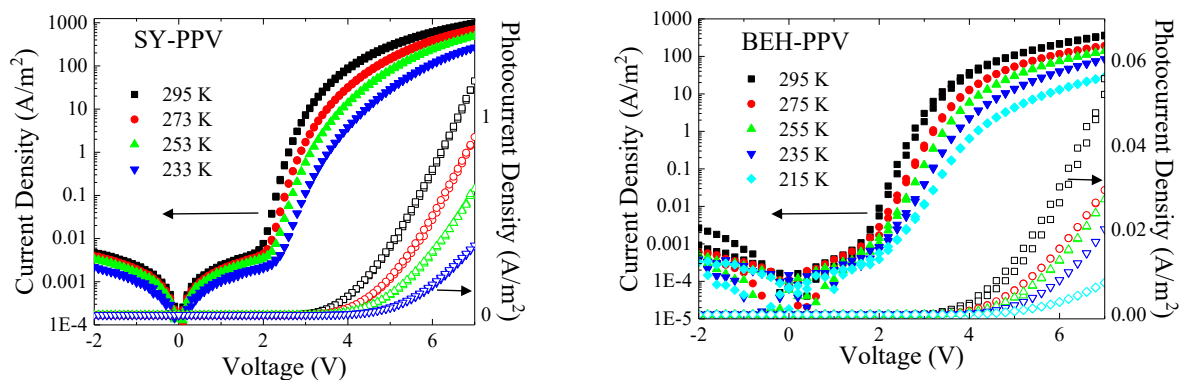| T (K)	D_{SY-PPV} (cm^2/s)	$L_{D,SY-PPV}$ (nm)	$D_{BEH-PPV}$ (cm^2/s)	$L_{D,BEH-PPV}$ (nm)
290	3.1×10^{-4}	7.7	2.9×10^{-3}	7.7
270	2.1×10^{-4}	6.5	3.1×10^{-3}	8.5
230	1.4×10^{-4}	5.4	3.0×10^{-3}	9.3
200	9.4×10^{-5}	4.5	*(not measured)*	
180	8.0×10^{-5}	4.2	2.5×10^{-3}	9.6
150	6.5×10^{-5}	3.8	2.2×10^{-3}	9.2
120	6.6×10^{-5}	3.9	2.0×10^{-3}	8.9
90	7.1×10^{-5}	4.0	8.3×10^{-4}	5.5
77	6.8×10^{-5}	4.0	6.8×10^{-4}	5.2

Figure S7. Temperature dependent current density and photocurrent density for SY-PPV and BEH-PPV PLEDs.
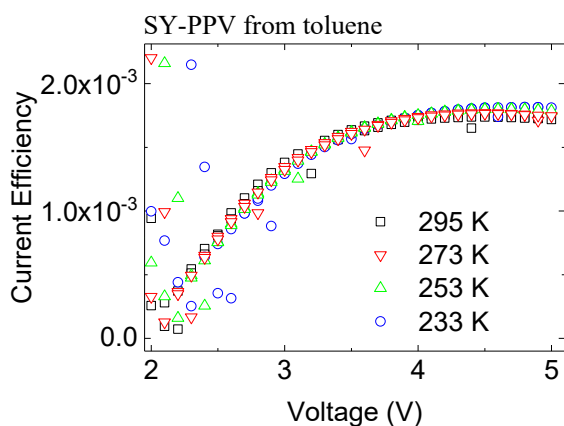

Figure S6. Current efficiency vs. voltage for SY-PPV PLED fabricated from toluene, measured at various temperatures.
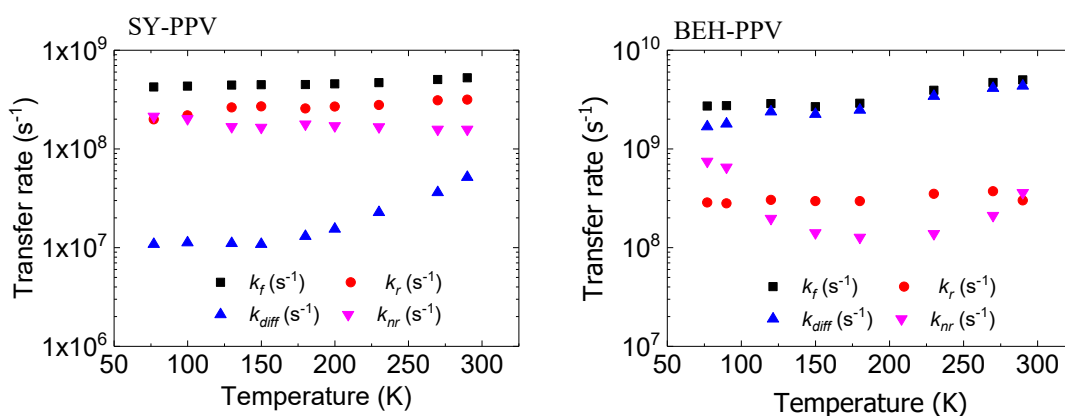

Figure S8. Exciton transfer rates in SY-PPV and BEH-PPV films. The exact values are summarized in Tables 3 and 4.