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Supplementary Materials for

High-performance organic light-emitting diodes comprising ultrastable glass layers

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This PDF file includes:

- table S1. Overview of the device lifetimes at different substrate temperatures and luminance values.
- fig. S1. PL transients of G0.
- fig. S2. Normalized forward emission spectra of G0, R1, G1, and B1.
- fig. S3. Optoelectronic characterization of devices R1, G1, and B1.
- fig. S4. Exemplary lifetime and voltage characteristics over aging time for two OLEDs of the R1 series.
- fig. S5. Calorimetric trace of TPBi layers deposited at different temperatures.

table S1. Overview of the device lifetimes at different substrate temperatures and luminance values. Lifetimes are given in hours and are extracted from the fitted curves in Figure 3 of the manuscript. For a better overview, the nominal temperatures are given. Highest lifetimes LT_{70} for G0, G1, and R1 for different current densities are indicated in bold. They are all in the range of T_{sub} = 50-65 °C corresponding to 0.80-0.85 T_g.

		G0		**G1**		**R1**	
	L (cd/m^2)	1k	10k	1k	10k	1k	10k
T_{sub} (°C)							
30		14.8	0.35	59.0	0.70	10.2	0.11
50		**74.2**	**0.85**	-	-	-	-
60		59.2	0.83	-	-	-	-
65		-	-	**110.0**	**1.32**	**22.3**	**0.27**
70		47.6	0.80	-	-	-	-
80		25.8	0.59	-	-	-	-
90		20.8	0.45	-	-	-	-

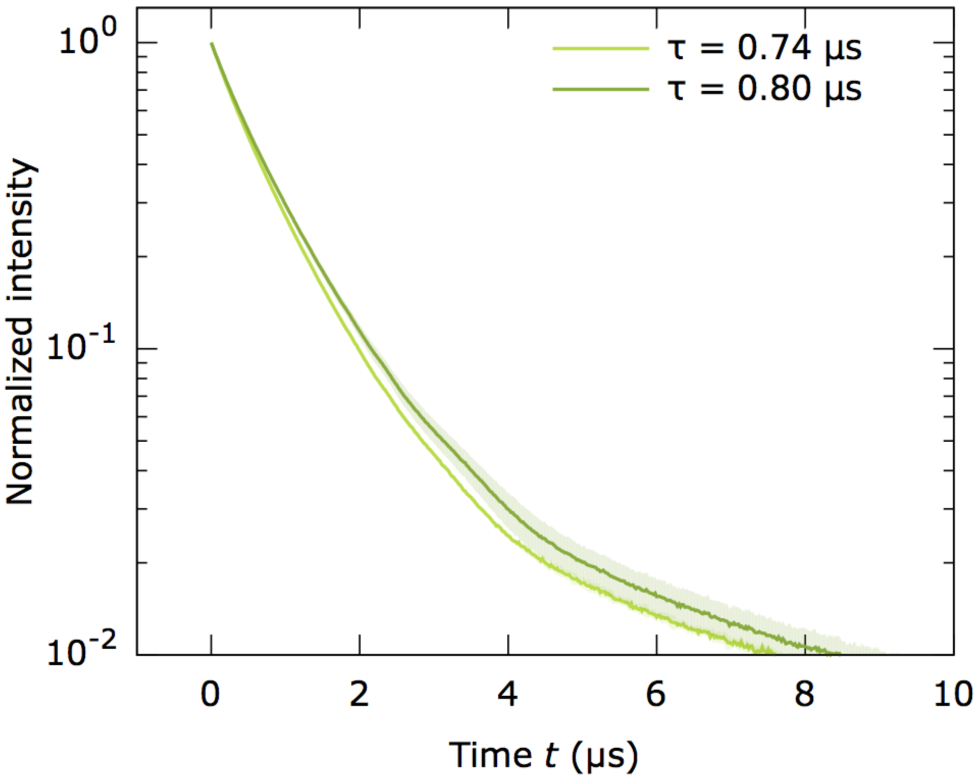

fig. S1. PL transients of G0. The PL decay time τ_{eff} is approximated as the time until the intensity dropped to 1/e and is determined for T_{sub} = 46 °C (light green) and T_{sub} = 69 °C (green). We find an enhancement of τ_{eff} of +8 %.

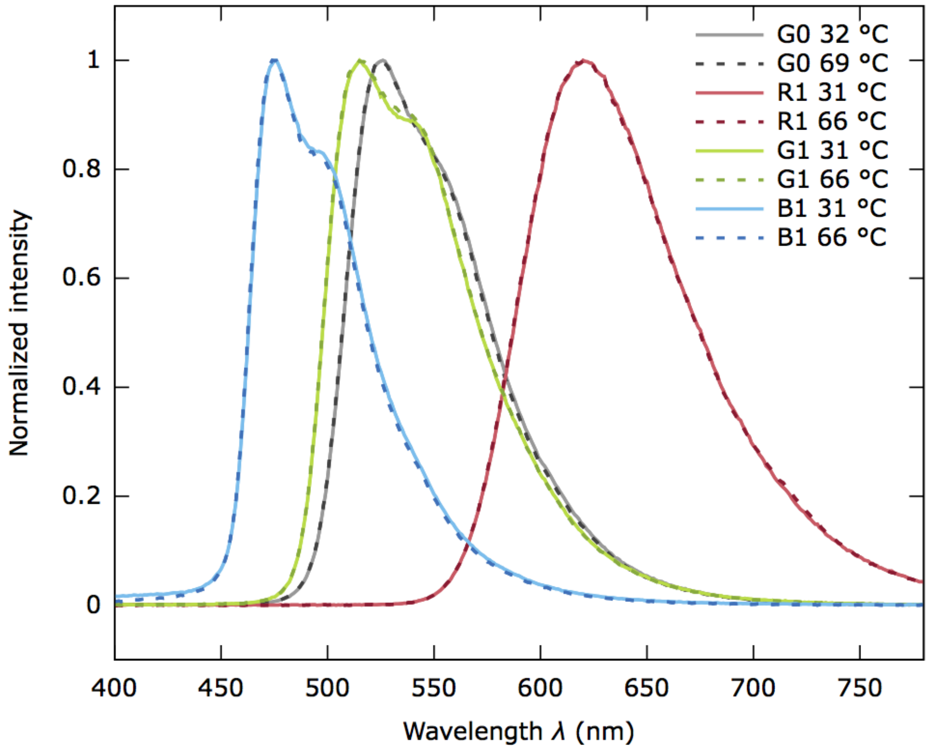

fig. S2. Normalized forward emission spectra of G0, R1, G1, and B1. The spectrum of each device is identical between room temperature and 0.85 T_g.

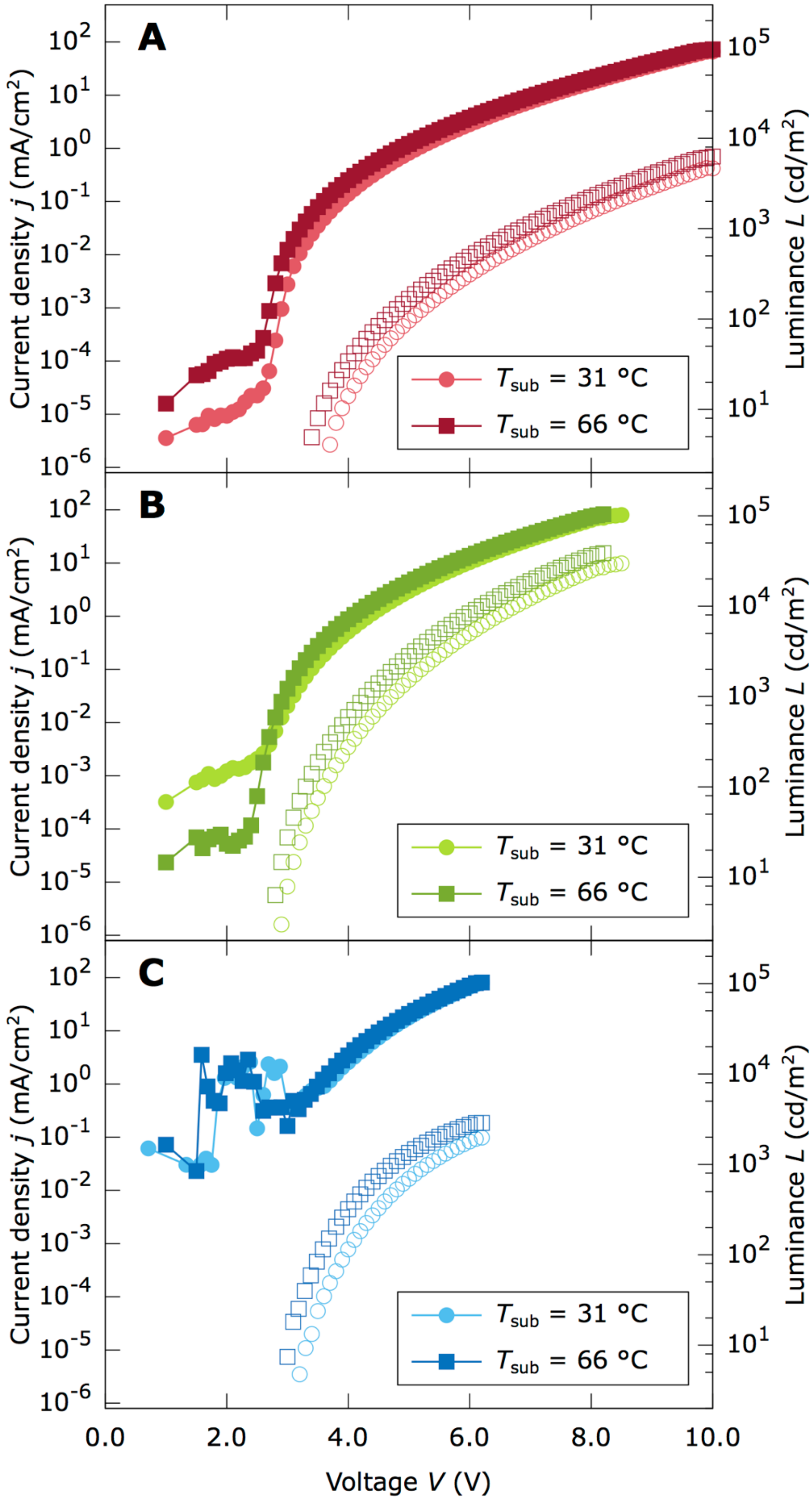

fig. S3. Optoelectronic characterization of devices R1, G1, and B1. The *j*-*V* and *L*-*V* characteristics of the OLED devices R1 (**A**), G1 (**B**) and B1 (**C**) are shown, which, apart from cavity adjusted HTL and ETL thicknesses, differ from the G0 devices in the emitter used. For each emitter two deposition temperatures were studied; room temperature (31 ºC) and 66 ºC.

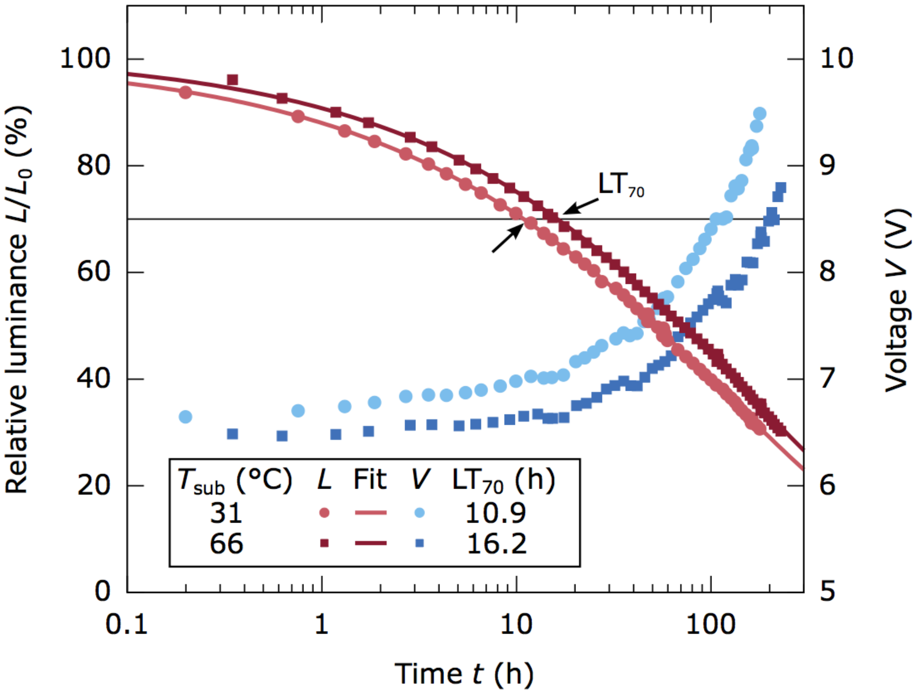

fig. S4. Exemplary lifetime and voltage characteristics over aging time for two OLEDs of the R1 series. A decreasing luminance and increasing voltage are observed for both devices evaporated at 31 °C and 66 °C, respectively. The devices are driven at a constant current density of j = 10 mA/cm^2. The LT_{70} is enhanced by 54 % for the 66 °C device.

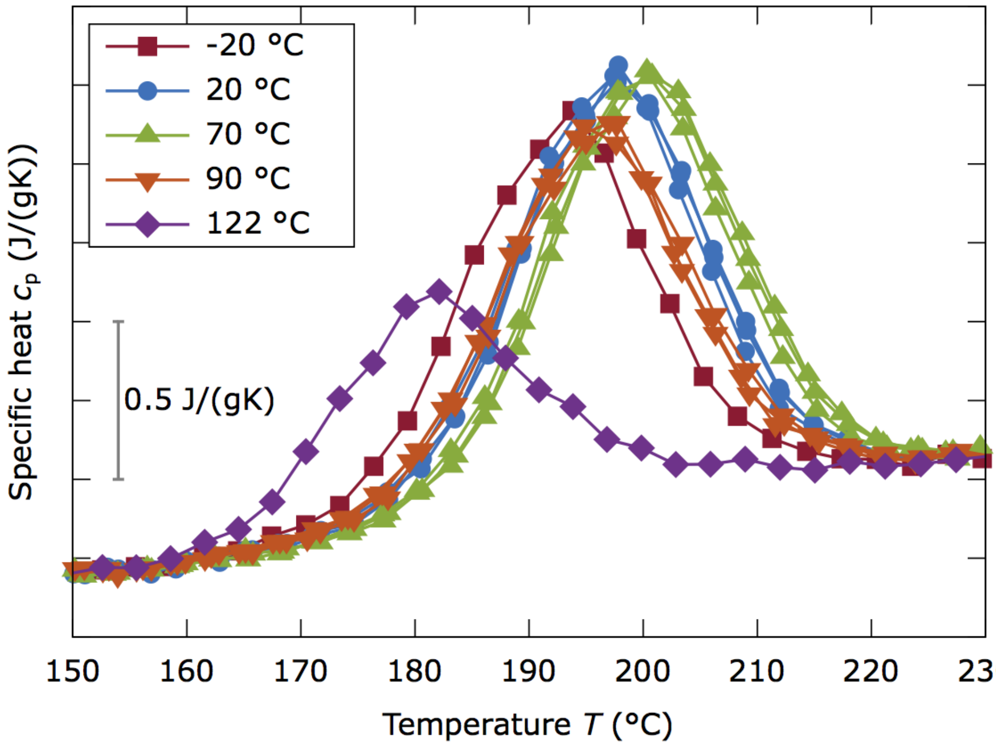

fig. S5. Calorimetric trace of TPBi layers deposited at different temperatures. Specific heat capacity trace during a heating scan of TPBi layers (thicknesses between 60 and 80 nm) deposited at different temperatures as indicated in the legend. Multiple curves for the same temperature represent different samples. The heat capacity is obtained using quasi-adiabatic fast-scanning nanocalorimetry which uses high heating rates. The shift of the onset temperature to higher temperatures compared to the standard TPBi's glass transition temperature of 122 °C is obtained because of a high heating rate of 35,000 K/s.