Electronic supplementary information

4,4′-Di(pyren-1-yl)-1,1′-biphenyl as an efficient material for organic light-emitting diodes and thin-film transistors

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Fig. S1. TGA data of DBP.

Fig. S2. DSC data of DBP.
**Fig. S3.** Cyclic voltammogram of DBP.

**Fig. S4.** HOMO and LUMO energy levels of DBP obtained using DFT calculations.
Blue emitting OLED device data

Fig. S5. CIE coordinates of (a) device A, (b) device B, (c) device C, (d) device D, and (e) device E with a configuration of ITO/CuPc (10 nm)/NPD (60 nm)/EML (50 nm)/Balq (20 nm)/LiF (1 nm)/Al (100 nm).
Fig. S6. Blue-emitting EL devices with a configuration of ITO/CuPc (10 nm)/NPD (60 nm)/EML (50 nm)/Balq (20 nm)/LiF (1 nm)/Al (100 nm). (a) current density $J$ (mA cm$^{-2}$) vs. quantum efficiency (%), (b) current density $J$ (mA cm$^{-2}$) vs. power efficiency (lm W$^{-1}$), (c) current density $J$ (mA cm$^{-2}$) vs. luminance (cd m$^{-2}$), (d) voltage (V) vs. luminance (cd m$^{-2}$).
**Fig. S7.** Energy level diagram of OLEDs tested in the present study.

**Fig. S8.** UV and PL spectra of ADN and DBP in the solid film.
**Fig. S9.** Film PL spectra of the ADN doped with DBP at doping concentrations of 3%, 5%, 7%, 10%, and 100%.

**Fig. S10.** Film PL spectra of the DBP and Blue-emitting EL devices with the configuration: ITO/CuPc (10 nm)/NPD (60 nm)/EML (DBP = 50 nm)/Balq (20 nm)/LiF (1 nm)/Al (100 nm).