Electronic Supplementary Information

Dibenzo[\(b,d\)]furan and Dibenzo[\(b,d\)]thiophene Molecular Dimers as Hole Blocking Materials for High-Efficiency and Long-Lived Blue Phosphorescent Organic Light-Emitting Diodes

Seokhoon Jang,\(^a\) Kyung Hyung Lee,\(^b\) Jun Yeob Lee,\(^*\)\(^b\) and Youngu Lee\(^*\)\(^a\)

\(^a\) Department of Energy Science & Engineering, DGIST, 333, Techno Jungang-daero, Hyeonpung-eup, Dalseong-gun, Daegu, 42988, Republic of Korea. E-mail: youngulee@dgist.ac.kr; Tel: +82-53-785-6414; Fax: +82-53-785-6409.

\(^b\) School of Chemical Engineering, Sungkyunkwan University, 2066, Seobu-ro, Jangan-gu, Suwon-si, Gyeonggi-do, 16419, Republic of Korea. E-mail: leej17@skku.edu.
Fig. S1 $^1$H NMR spectrum of compound 1’. 

Fig. S2 $^{13}$C NMR spectrum of compound 1’.

6-Bromo-2-indolthiophene (compound 1’). $^1$H NMR

6-Bromo-2-indolthiophene (compound 1’). $^{13}$C NMR
Fig. S3 $^1$H NMR spectrum of compound 2.

Fig. S4 $^1$H NMR spectrum of compound 3.
Fig. S5 $^{13}$C NMR spectrum of compound 3.

Fig. S6 $^1$H NMR spectrum of DBF-d-PO.
Fig. S7 $^1$H NMR spectrum of DBT-d-PO.

Fig. S8 $^1$H NMR spectrum of DBF-d-Py.
Fig. S9 $^{13}$C NMR spectrum of DBF-d-Py.

Fig. S10 $^1$H NMR spectrum of DBT-d-Py.
**Fig. S11** $^{13}$C NMR spectrum of DBT-d-Py.
Fig. S12 (a, b) DSC traces of DBF-d-PO and DBT-d-PO and (c, d) DTA traces of DBF-d-Py and DBT-d-Py.
Fig. S13 AFM topographic images of DBF-d-PO, DBT-d-PO, DBF-d-Py, and DBT-d-Py before thermal annealing treatment.
Fig. S14 AFM topographic images of DBF-d-PO, DBT-d-PO, DBF-d-Py, and DBT-d-Py after thermal annealing treatment (85 °C, 24 h).
Fig. S15 UV-vis absorption spectra of DBF-d-PO, DBT-d-PO, DBF-d-Py, and DBT-d-Py in film.
Fig. S16 Reduction traces of DBF-d-PO, DBT-d-PO, DBF-d-Py, and DBT-d-Py in CV.