Supplementary Information for

Utilization of “thiol-ene” photo cross-linkable hole-transporting polymer for solution-processed multilayer organic light-emitting diode

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Fig. S1. $^1$H-NMR spectrum of compound 2.
Fig. S2. $^1$H-NMR spectrum of compound 3.
Fig. S3. $^1$H-NMR spectrum of compound 4.
Fig. S4. $^1$H-NMR spectrum of compound 5.
Fig. S5. $^1$H-NMR spectrum of compound 6.
Fig. S6. $^{13}$C-NMR spectrum of compound 4.
Fig. S7. $^{13}$C-NMR spectrum of compound 6.
**Fig. S8.** TGA thermogram of Allyl-TFB.
Fig. S9. DSC thermogram of Allyl-TFB.
**Fig. S10.** UV-Vis. absorption spectra of photo cross-linked Allyl-TFB films before and after solvent rinsing with different UV irradiation times.

(a) UV irradiation for 5 sec.  
(b) UV irradiation for 10 sec.  
(c) UV irradiation for 60 sec.  
(d) UV irradiation for 120 sec.  
(e) UV irradiation for 240 sec.
**Fig. S11.** Atomic force microscopic images of photo cross-linked HTL films with different UV irradiation times.

(a) UV irradiation for 30 sec.

![Atomic force microscopic image](image)

(b) UV irradiation for 180 sec.

![Atomic force microscopic image](image)
Fig. S12. Atmospheric photoelectron spectroscopy (Riken AC-2) measurement results of photo cross-linked HTL films with different UV irradiation times.

(a) UV irradiation for 30 sec.

(b) UV irradiation for 180 sec.
Fig. S13. Current density(J)-electric field(F) characteristics of hole-only devices of photo cross-linked HTL films with different UV irradiation times. [ITO / PEDOT:PSS / cross-linked Allyl-TFB / Au].