

Supporting Information

Inkjet printed alloy-like cross-linked hole transport layer for high performance solution-processed green phosphorescent OLEDs

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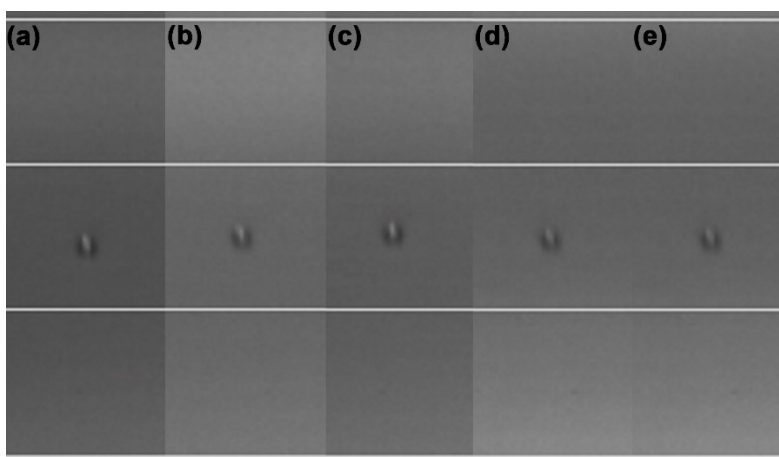


Fig. S1 Jetting behaviour of different inks (a) CYC ink, (b) CYC:DGME=9:1, (c) CYC:DGME=8:2, (d) CYC:DGME=7:3 and (e) CYC:DGME=6:4.

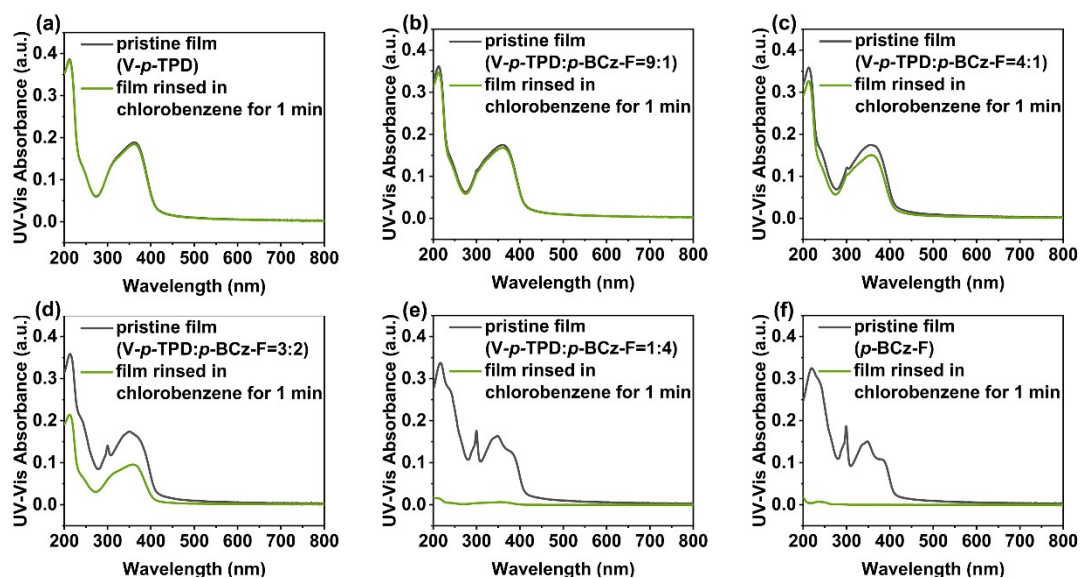


Fig. S2 UV-Vis absorption spectra of films cross-linked at 150 °C before/after 1 min chlorobenzene rinsing with varied material ratio of V-*p*-TPD/ *p*-BCz-F.

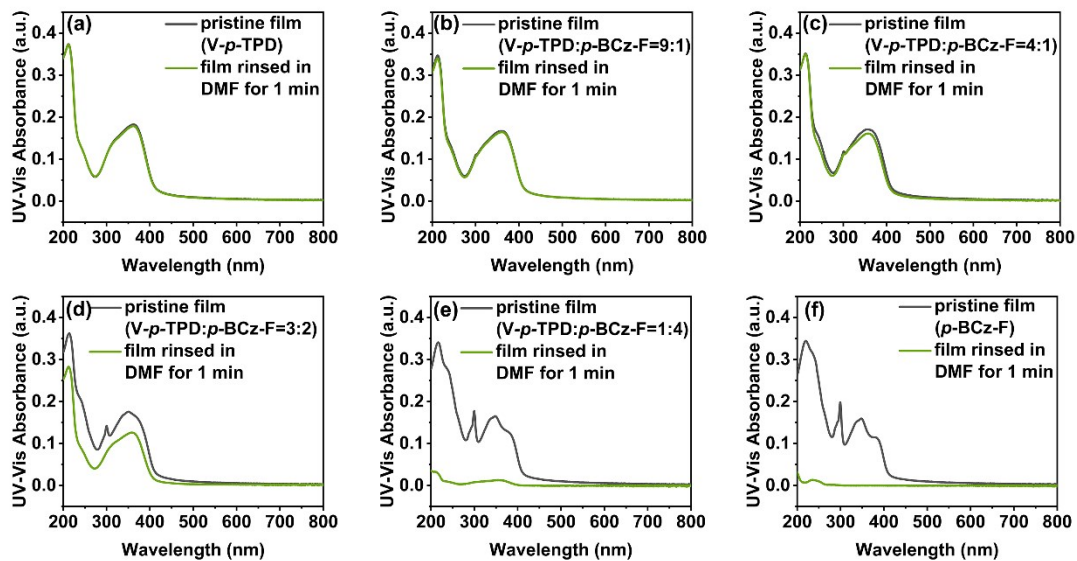


Fig. S3 UV-Vis absorption spectra of films cross-linked at 150 °C before/after 1 min DMF rinsing with varied material ratio of V-*p*-TPD/ *p*-BCz-F.

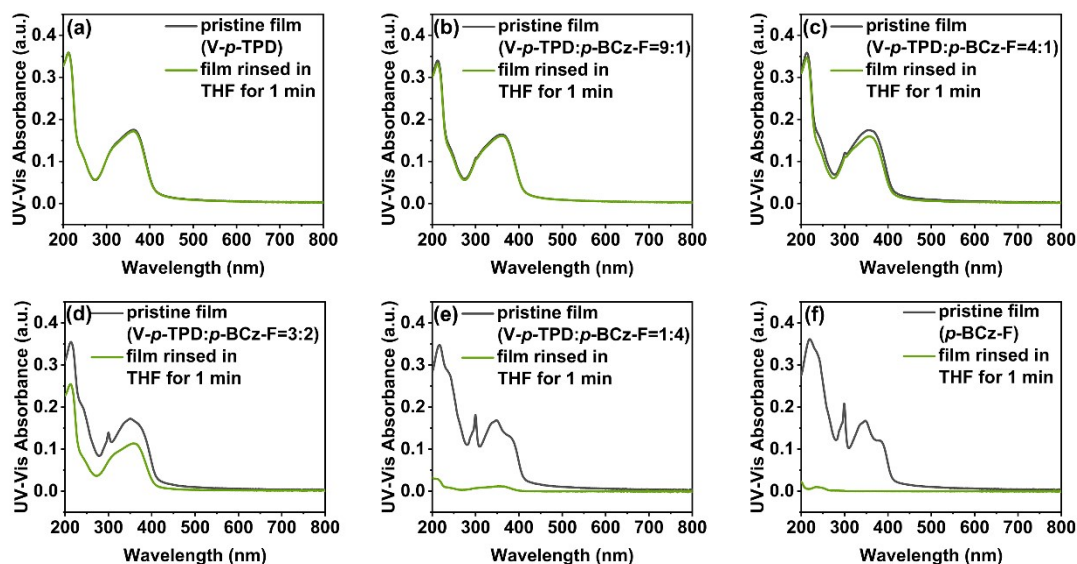


Fig. S4 UV-Vis absorption spectra of films cross-linked at 150 °C before/after 1 min THF rinsing with varied material ratio of V-*p*-TPD/ *p*-BCz-F.

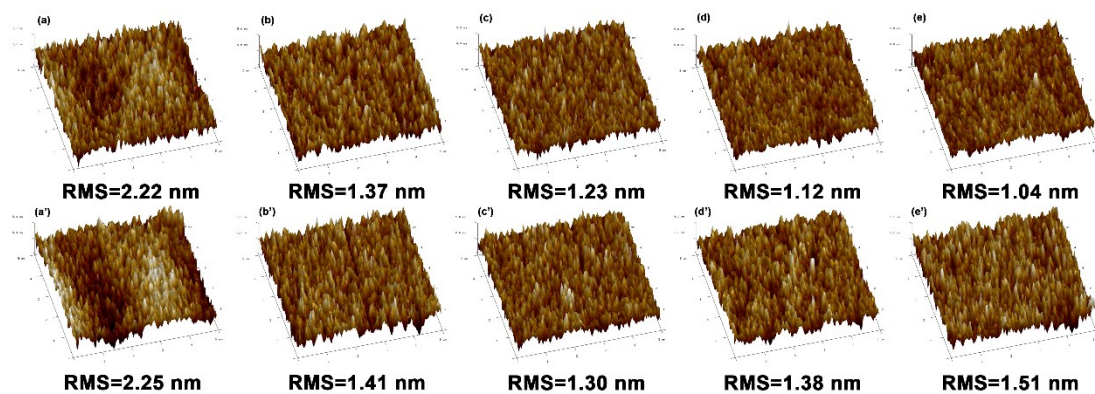


Fig. S5 AFM characterizations of inkjet printed films of (a) *V-p*-TPD, (b) *V-p*-TPD:*p*-BCz-F=9:1, (c) *V-p*-TPD:*p*-BCz-F=8:2, (d) *V-p*-TPD:*p*-BCz-F=7:3, (e) *V-p*-TPD:*p*-BCz-F=6:4 before toluene rinsing, and (a') *V-p*-TPD, (b') *V-p*-TPD:*p*-BCz-F=9:1, (c') *V-p*-TPD:*p*-BCz-F=8:2, (d') *V-p*-TPD:*p*-BCz-F=7:3, (e') *V-p*-TPD:*p*-BCz-F=6:4 after toluene rinsing.

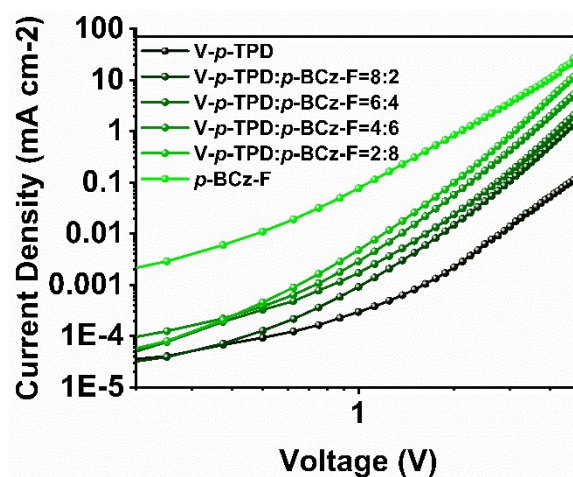


Fig. S6 *J-V* characteristics for HODs.

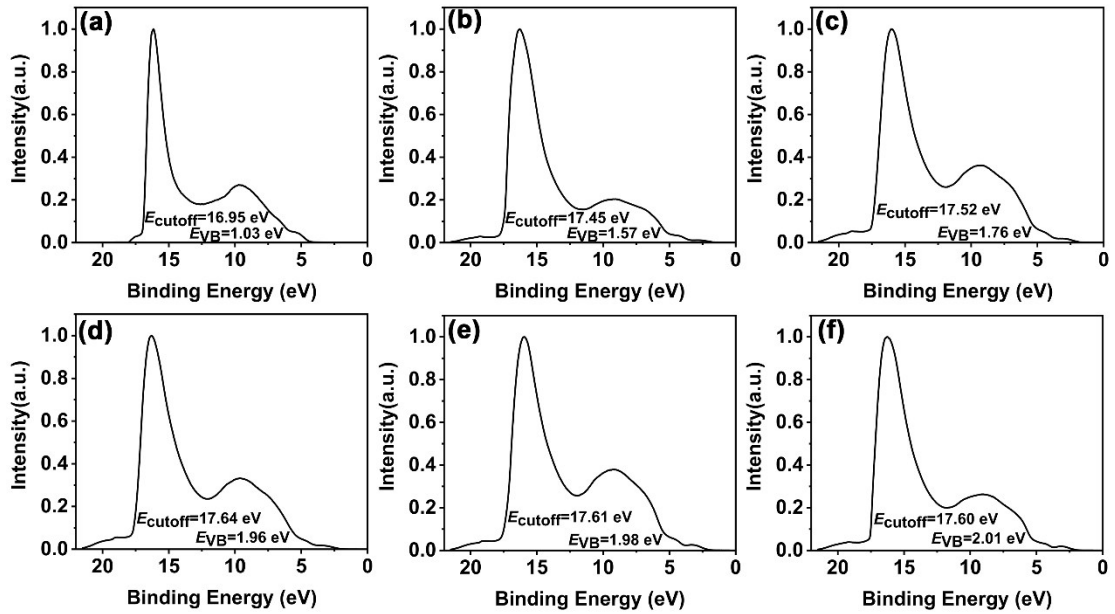


Fig. S7 UPS spectra of (a) *V-p*-TPD, (b) *V-p*-TPD:*p*-BCz-F=8:2, (c) *V-p*-TPD:*p*-BCz-F=6:4, (d) *V-p*-TPD:*p*-BCz-F=4:6, (e) *V-p*-TPD:*p*-BCz-F=2:8, (f) *p*-BCz-F.

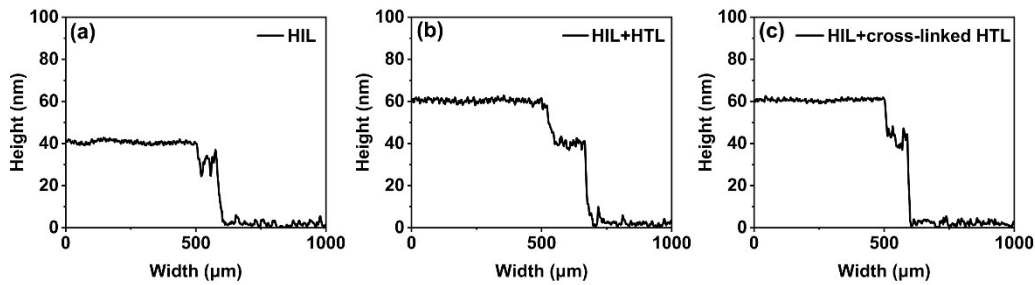


Fig. S8 Thickness measurement of HTL before and after cross-linking.

Table. S1 Summary of previously reported the inkjet-printed OLEDs and QLEDs performances.

| Year | L_{\max} (cd m^{-2}) | CE_{\max} (cd A^{-1}) | EQE_{\max} (%) | V_{on} (V) | DOI |
|------|--------------------------------------|---------------------------------------|---------------------|------------------------|-------------------------------|
| 2021 | 119796 | 55.47 | 15.44 | 3.18 | This work |
| 2021 | - | 25 | - | - | 10.1080/15980316.2020.1866090 |
| 2020 | 5778 | 9.8 | 3.0 | 3.5 | 10.1088/1361-6463/ab86e1 |
| 2020 | - | 28 | 9.45 | - | 10.1016/j.orgel.2020.105822 |
| 2020 | 3743 | - | 5.03 | 3.6 | 10.1016/j.optmat.2020.109755 |
| 2020 | 15320 | 17.5 | 6.3 | - | 10.1088/2058-8585/ab670c |
| 2020 | 4351 | 17.89 | - | 3.3 | 10.1039/d0tc00628a |
| 2019 | ~10000 | 3.6 | - | 2.6 | 10.1088/2058-8585/ab17a5 |
| 2019 | - | 29.0 | 9.0 | 3.5 | 10.1021/acsami.9b04675 |
| 2019 | 6900 | 18 | - | 4 | 10.1016/j.orgel.2019.07.011. |
| 2019 | 2314 | 23.0 | 6.7 | 4.0 | 10.1038/s41598-019-43359-4 |
| 2019 | - | 18.2 | 11.4 | 3.2 | 10.1002/sml.201900111 |
| 2019 | 13240 | 5.27 | - | 3.3 | 10.1142/S0217984919501495 |

| | | | | | |
|------|--------|------|------|------|-----------------------------|
| 2019 | 9669 | 15 | - | 3.33 | 10.1021/acsami.9b07238 |
| 2017 | - | 24 | - | - | 10.1016/j.orgel.2017.06.017 |
| 2017 | - | 0.64 | - | 5.6 | 10.1007/s11182-018-1352-3 |
| 2017 | 8850 | 1.12 | - | 3.8 | 10.1039/c7tc01632h |
| 2017 | >10000 | 3.5 | - | - | 10.1039/c7tc04084a |
| 2016 | - | 45 | 13.9 | - | 10.1007/s00339-016-9726-2 |
| 2016 | 3000 | 15.2 | 4.7 | 3.7 | 10.1002/chem.201603847 |
| 2015 | 17000 | 8.7 | 4.6 | 4.5 | 10.1039/c5nr03034j |
| 2015 | - | 20.4 | - | 3.5 | 10.1117/12.2186995 |
| 2012 | - | 40 | 11.7 | - | 10.1016/j.tsf.2012.07.084 |
