# Supporting Information

## Intense Pulse Light Induced Crystallization of Liquid-Crystalline Polymer Semiconductor for Efficient Production of Flexible Thin-Film Transistors

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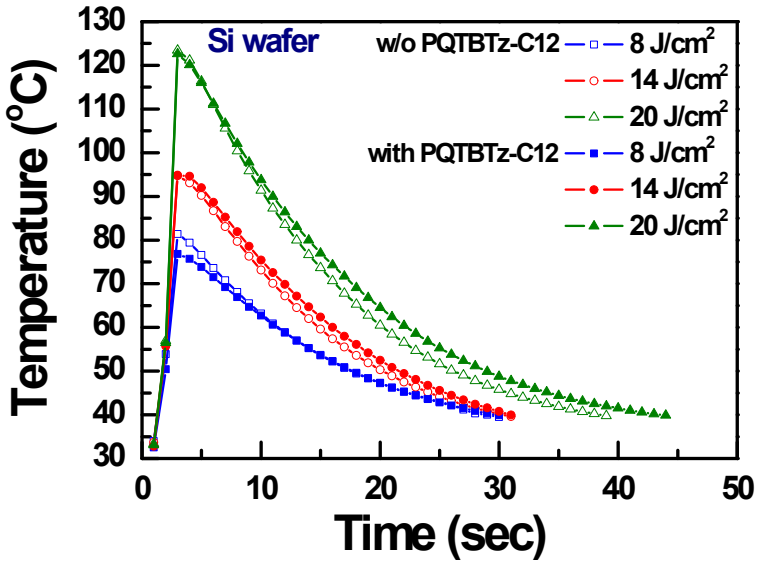



***Figure S1***. Surface temperature of the samples prepared on Si wafer during the IPWL treatment.

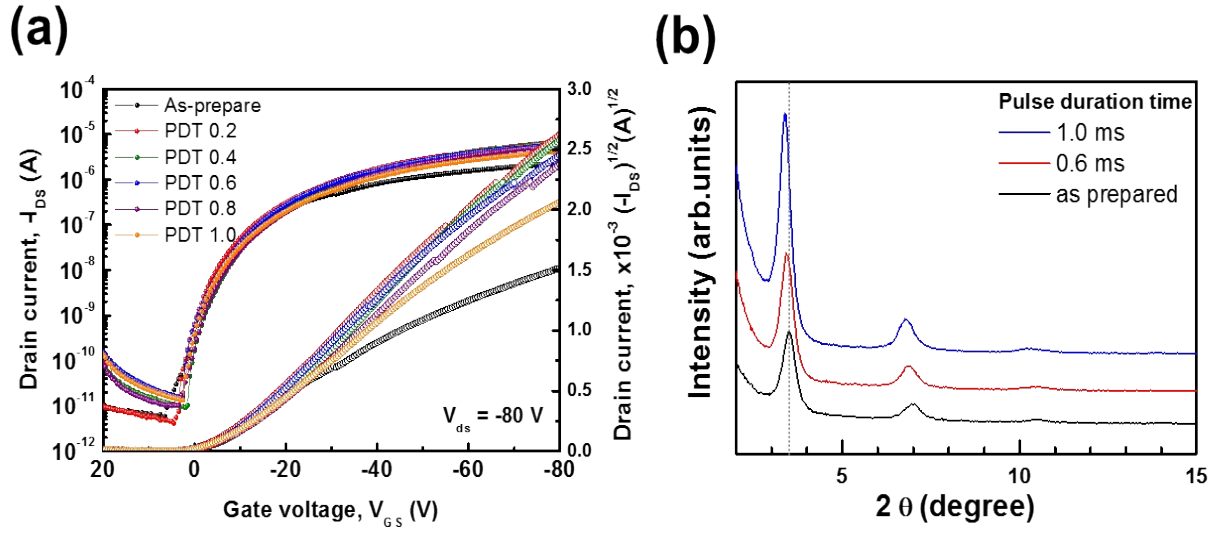



***Figure S2.*** (a) Transfer characteristics of the device based on the PQTBTz-C12 thin film treated by IPWL with various pulse duration time (PDT). (b) Out-of-plane mode grazing incidence XRD spectra of PQTBTz-C12 thin film treated by IPWL with various pulse duration time (PDT).

***Table S1.*** Summary of the electrical parameters for the devices based on PQTBTz-C12 thin film treated by IPWL with various pulse duration time (PDT).

| Condition | | FE. Mobility @$V_{DS}$=-80 V [x$10^{-3}$ $cm^2$/Vs] | $I_{on}/I_{off}$ ratio |
|---|---|---|---|
| As-prepared | | 6.90 | $10^5$ |
| IPWL Pulse duration time (PDT) | 0.2 ms | 22.8 | $10^6$ |
| | 0.4 ms | 14.4 | $10^5$ |
| | 0.6 ms | 13.9 | $10^5$ |
| | 0.8 ms | 11.8 | $10^5$ |
| | 1.0 ms | 8.83 | $10^5$ |

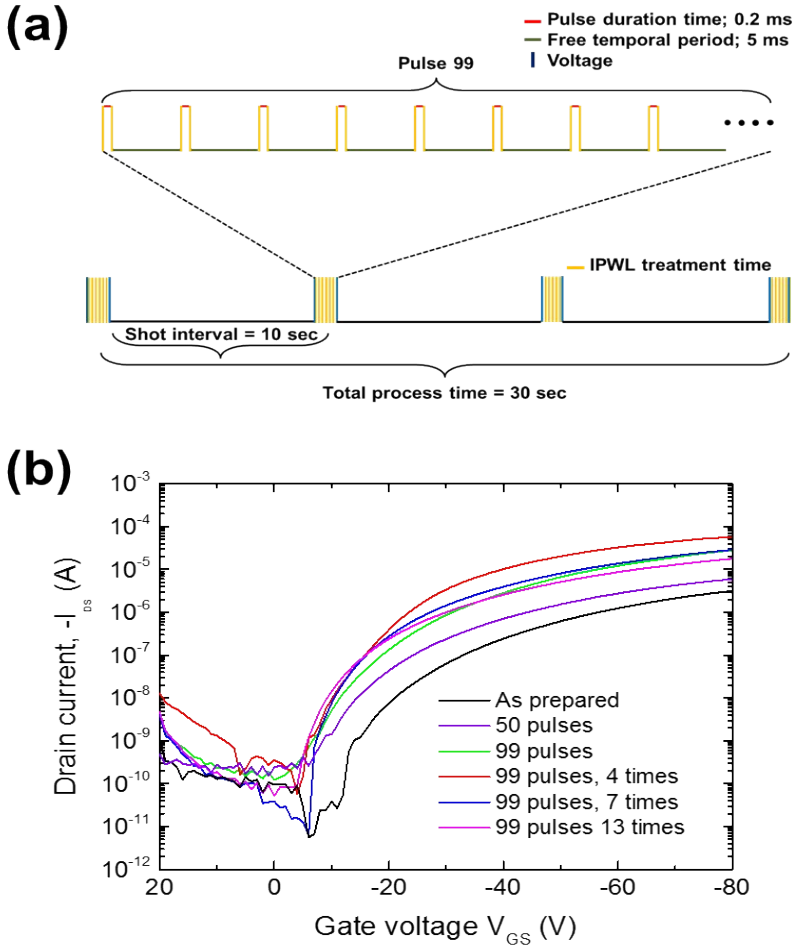



***Figure S3.*** (a) Schematic for the pulse conditions of repeated IPWL irradiation. (b) Transfer characteristics of the device based on the PQTBTz-C12 thin film with difference number of pulses and repeated IPWL irradiations.

***Table S1.*** Summary of the electrical parameters for the devices based on PQTBTz-C12 thin film treated by IPWL with various number of pulses and repeated irradiation times.

| Condition | | FE. Mobility @$V_{DS}$=-80 V [x$10^{-3}$ $cm^2$/Vs] | $I_{on}/I_{off}$ ratio |
|---|---|---|---|
| As-prepared | | 24.9 | $10^4$ |
| 50 pulses | | 43.4 | $10^4$ |
| 99 pulses | | 48.8 | $10^4$ |
| Repeat times of 99 pulses irradiation (Total process time) | 4 (30 s) | 63.2 | $10^5$ |
| | 7 (60 s) | 35.6 | $10^5$ |
| | 13 (120 s) | 20.6 | $10^5$ |

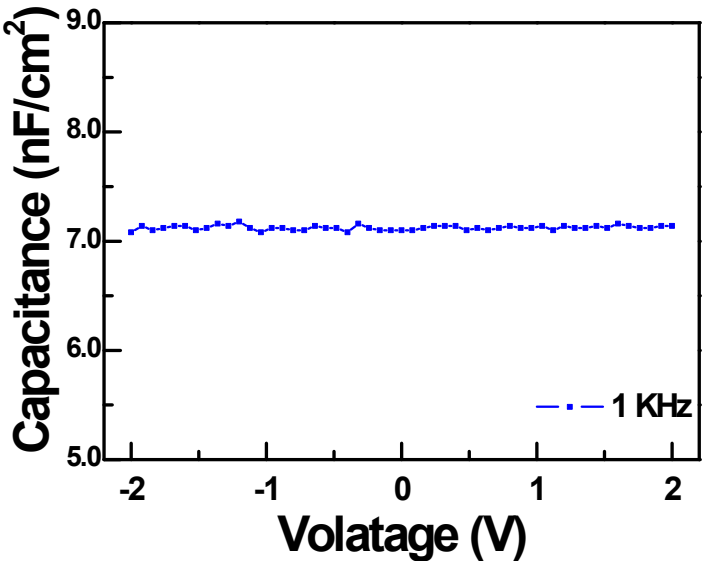
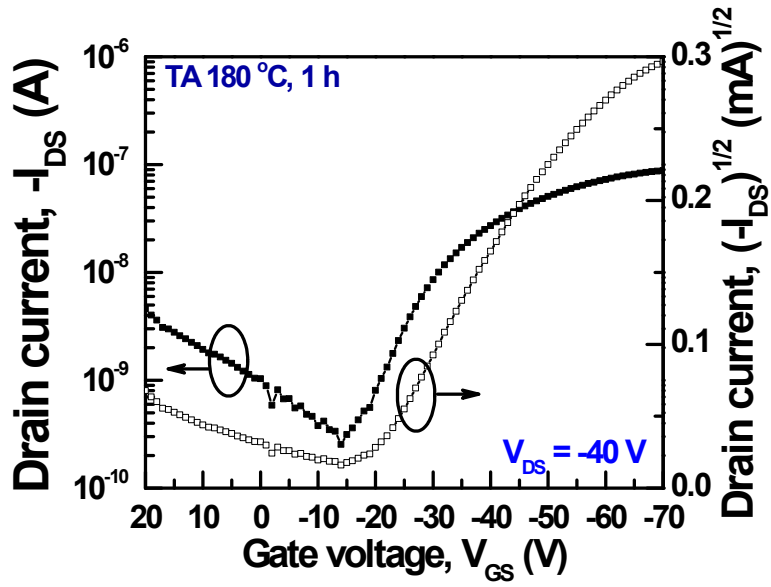



***Figure S4***. The plot of capacitance as a function of the applied voltage for the cross-linked PVP films. Measurement was carried out at 1 kHz.




| Condition | FE Mobility [$cm^2/Vs$] | $I_{on}/I_{off}$ ratio | Threshold Voltage [V] |
|---|---|---|---|
| 180 °C, 1 hr | $8.71 \times 10^{-4}$ | ~$10^2$ | -18 |

***Figure S5***. Transfer characteristic of a flexible PQTBTz-C12 transistor treated with TA at 180 °C for 1 hr.

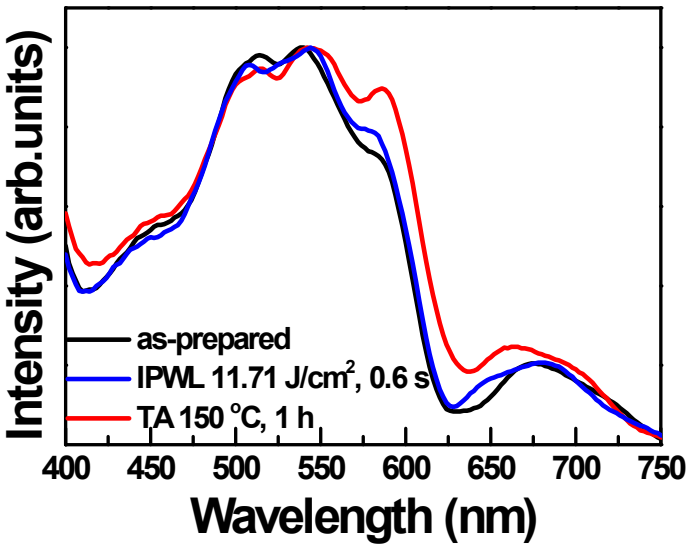



***Figure S6***. UV-vis absorption of as-prepared, IPWL and TA treated PQTBTz-C12 films deposited on PES substrate.