**Supporting Information**

**Synthesis and Characterization of Fluorene Derivatives as Organic Semiconductors for Organic Field-Effect Transistor.**

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**Table S1.** OTFT Device performance on the Various fabrication conditions of compound **4** including solvent, concentration, substrate, and substrate temperature. (µ: Carrier mobility, Ion/Ioff : Current on/off ratio, VT: Threshold voltage).a

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Solvent | Concentration (mg/mL) | Substrate Temperature (℃) b | Substrate | µhmax  µhavg (cm2/Vs) | VTavg(V) | Ion/Ioff |
| Chloroform | 1 | 37 (60 %) | SiO2 | - | | |
| PTS |
| PS-brush |
| 42 (70 %) | SiO2 | - | | |
| PTS |
| PS-brush |
| 50 (80 %) | SiO2 | - | | |
| PTS |
| PS-brush |
| 4 | 37 (60 %) | SiO2 | - | | |
| PTS |
| PS-brush |
| 42 (70 %) | SiO2 | - | | |
| PTS |
| PS-brush |
| 50 (80 %) | SiO2 | - | | |
| PTS |
| PS-brush |
| Toluene | 1 | 70 (60 %) | SiO2 | - | | |
| PTS |
| PS-brush |
| 80 (70 %) | SiO2 | - | | |
| PTS |
| PS-brush |
| 90 (80 %) | SiO2 | - | | |
| PTS |
| PS-brush |
| 4 | 70 (60 %) | SiO2 | 0.0005  (0.00039  ± 0.000097) | 54.1 ± 4.46 | (9.0 ± 5.2) ×103 |
| PTS | 0.0055  (0.0022  ± 0.0021) | 37.2 ± 3.47 | (9.1 ± 3.6) ×104 |
| PS-brush | 0.0006  (0.00047  ± 0.000078) | 47.5 ± 8.35 | (3.7 ± 1.1)  ×104 |
| 80 (70 %) | SiO2 | - | | |
| PTS |
| PS-brush |
| 90 (80 %) | SiO2 | - | | |
| PTS |
| PS-brush |

a All devices were measured in vacuum and the device characteristics were calculated using 6 different measurements. b ratio to boiling point in chloroform and toluene.



**Figure S1** AFM topographic images of drop-casted films of compound **1** (A)**, 2** (B), and **3** (C). Scale bars indicate 5 µm.



**Figure S2**. Reliability for OTFT Device performance fabricated on SiO2(A), PTS(B), and PS-brush(C) of compound **4**.