

Supporting Information for

Thiophene-*S,S*-dioxidized indophenines as high performance n-type organic semiconductors for thin film transistors

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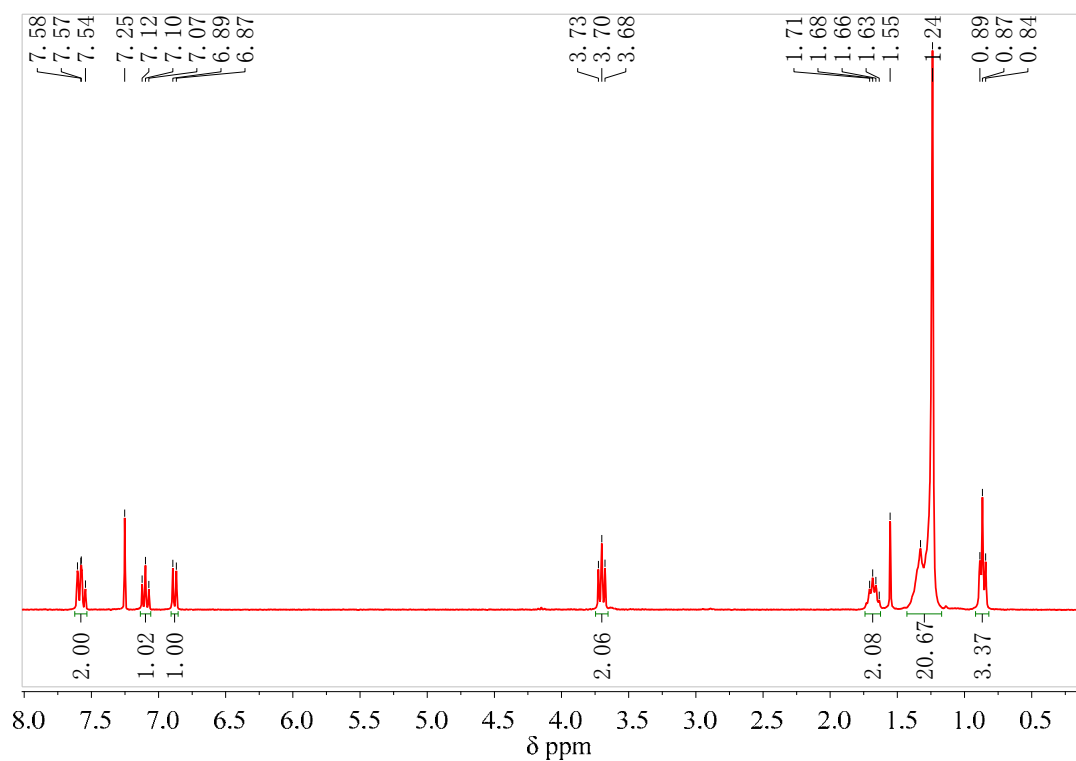


Figure S1. ¹H NMR spectrum of **2a** measured in CDCl₃.

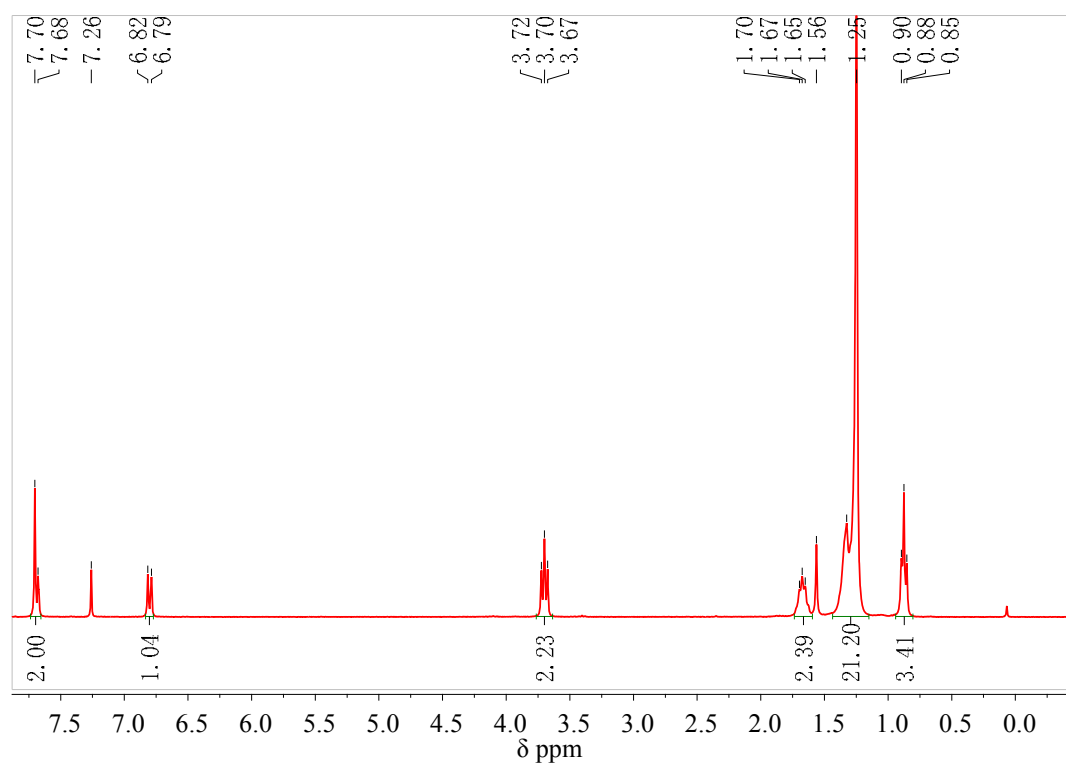


Figure S2. ¹H NMR spectrum of **2b** measured in CDCl₃.

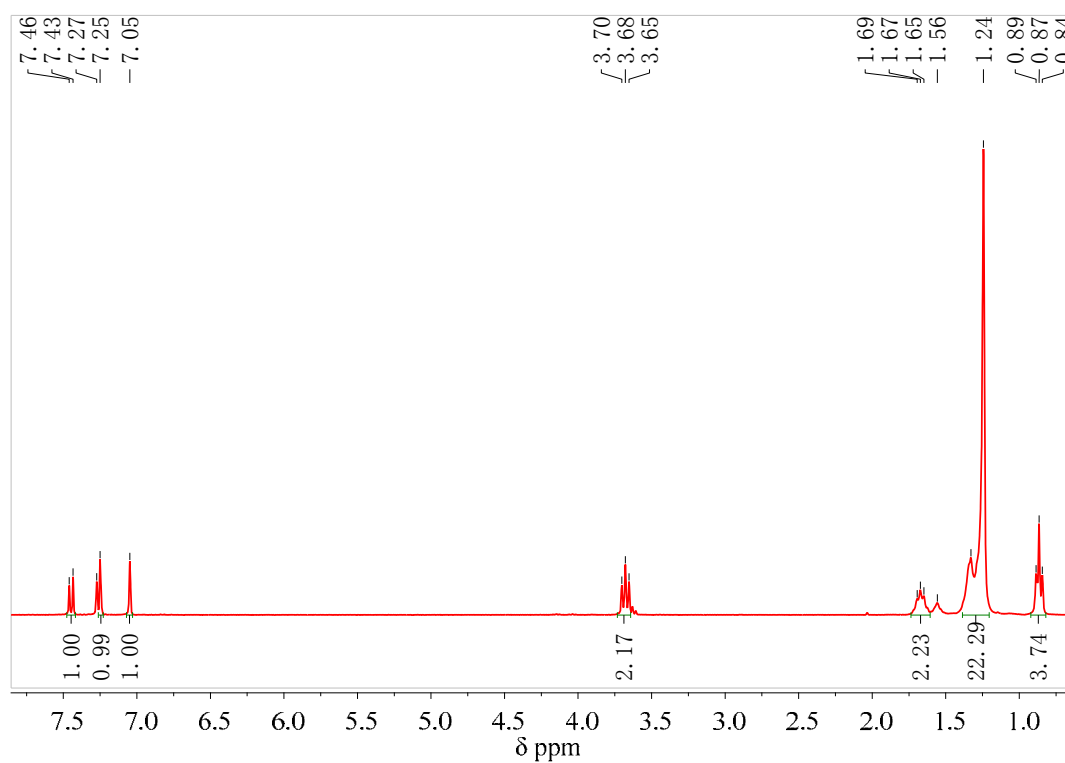


Figure S3. ¹H NMR spectrum of **2c** measured in CDCl₃.

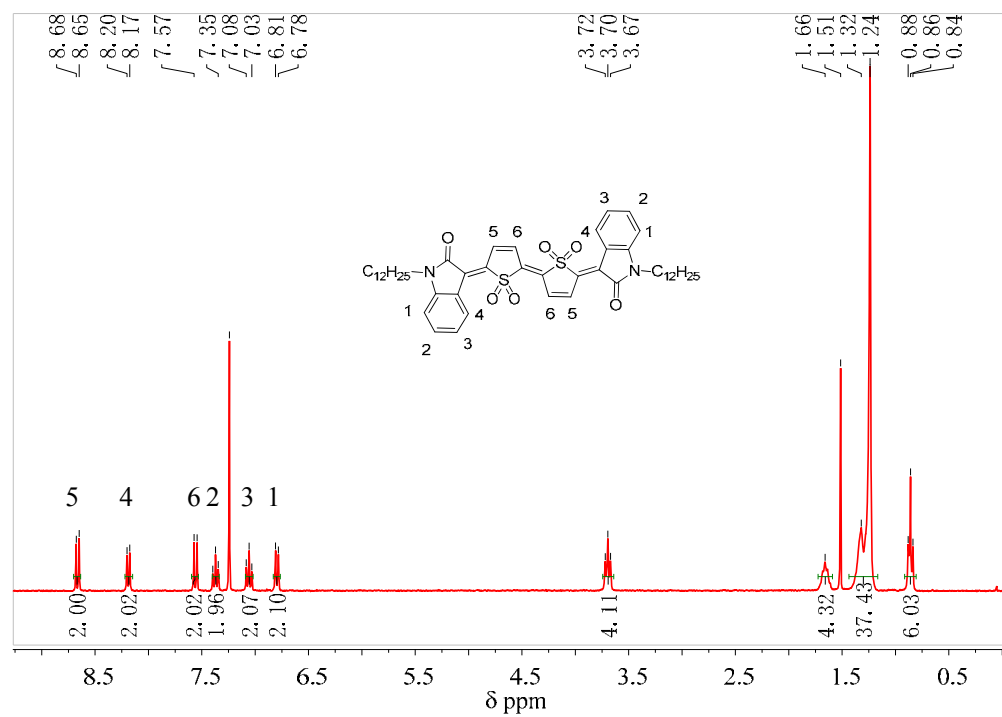


Figure S4. ¹H NMR spectrum of **4a-S1** measured in CDCl₃.

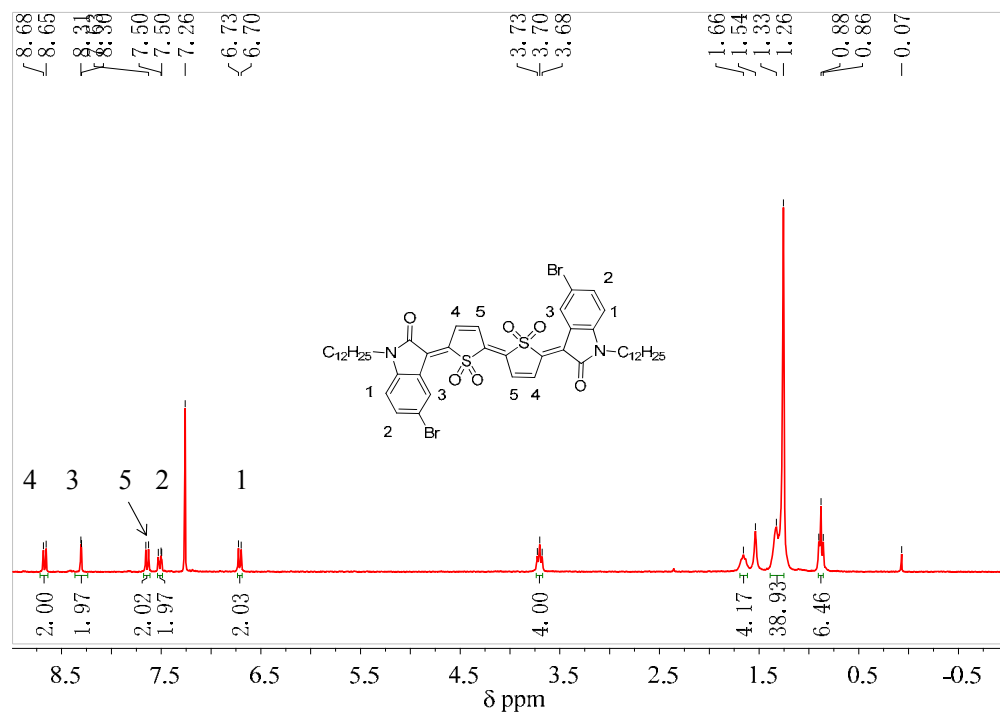


Figure S5. ^1H NMR spectrum of **4b-S1** measured in CDCl_3 .

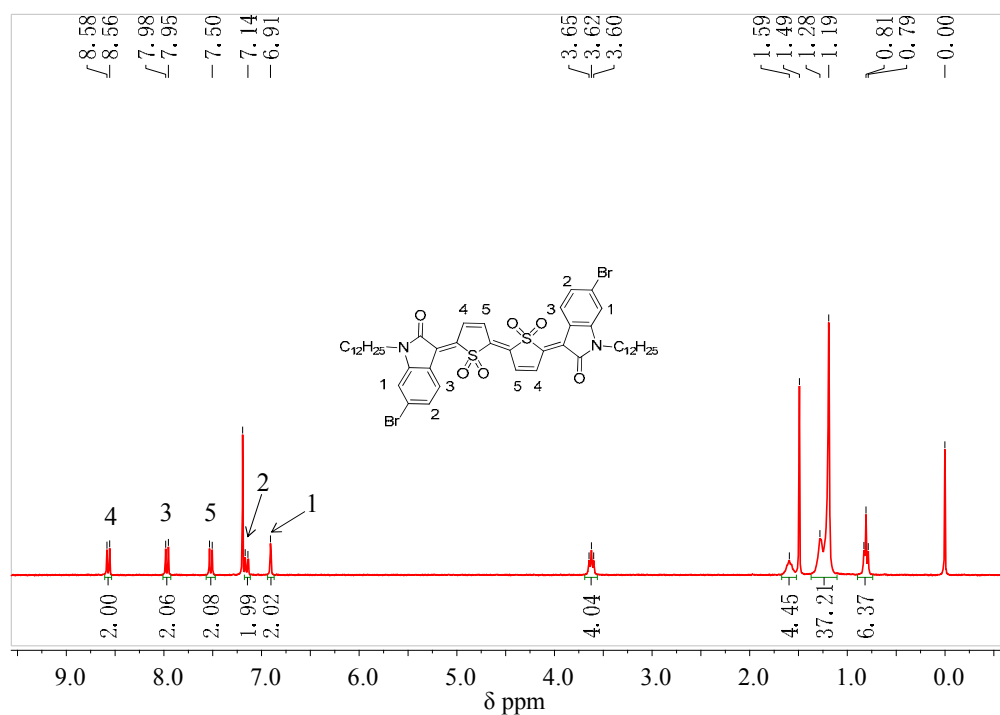


Figure S6. ^1H NMR spectrum of **4c-S1** measured in CDCl_3 .

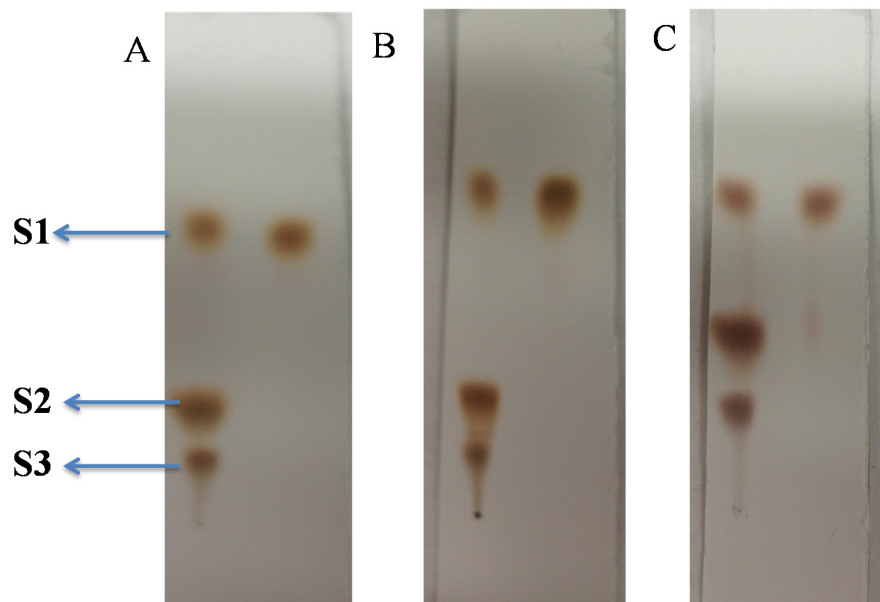


Figure S7. Thin layer chromatography (TLC) analysis of **4a** (A), **4b** (B) and **4c** (C) before (left: three spots) and after (right: one spot) heat treatment in refluxing toluene.

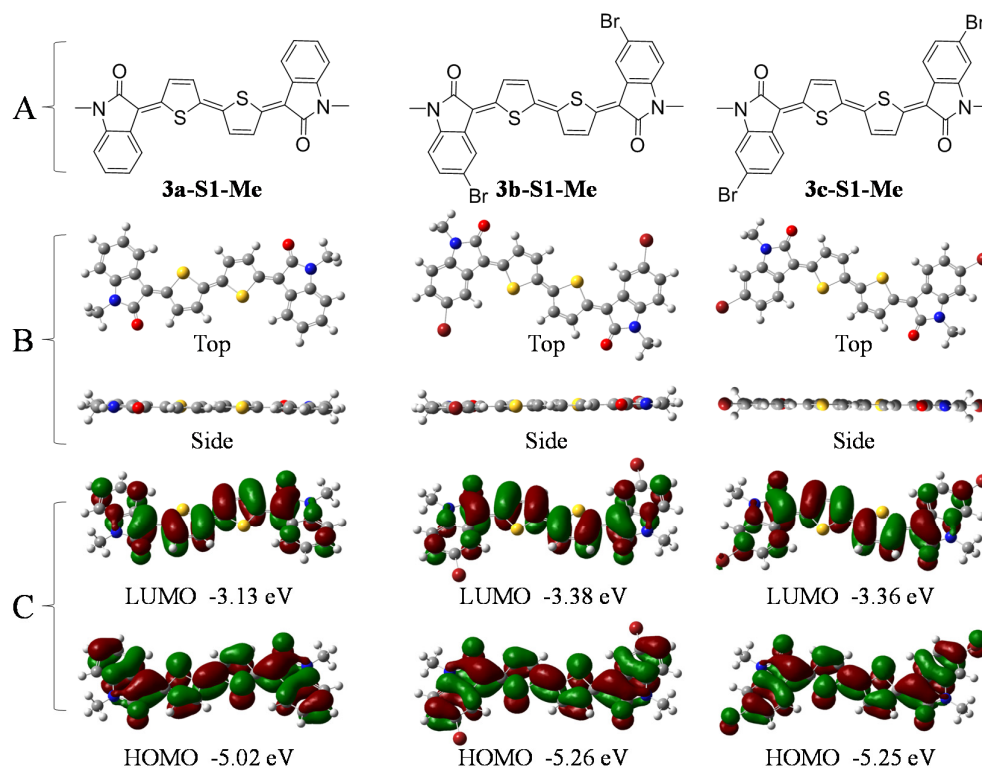


Figure S8. Chemical structures (A) and the DFT calculation results: optimized molecular geometries (B) and electron density distributions (C) for the indophenine model compounds **3a-S1-Me**, **3b-S1-Me** and **3c-S1-Me**.

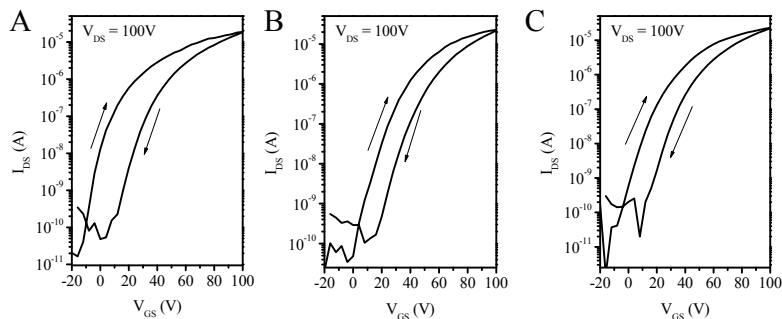


Figure S9. The transfer curves of the OTFT devices based on the non-annealed **4a-S1** (A), **4b-S1** (B) and **4c-S1** (C) thin films with forward and reverse sweep gate voltages (V_{GS}).

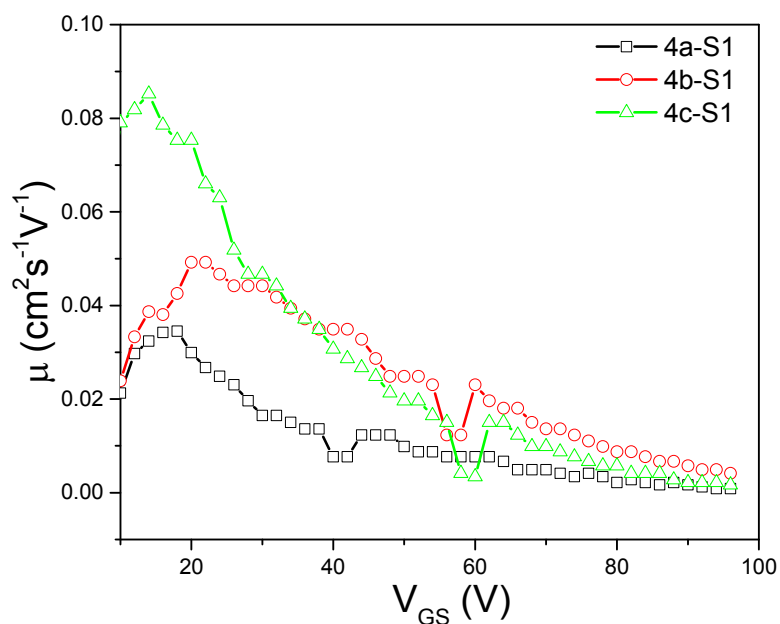


Figure S10. Mobility values of OTFT devices extracted in the saturation regimes as a function of gate bias ($V_{DS} = 100$ V). The output and transfer curves of these devices are shown in Figure 6 in the main text.

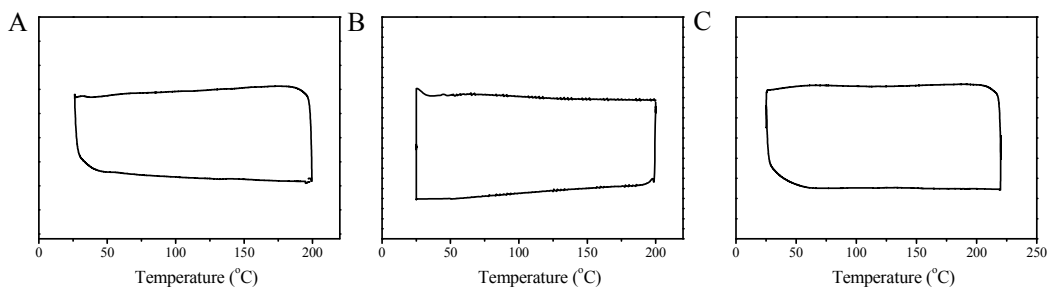


Figure S11. Differential scanning calorimetry (DSC) curves of **4a-S1**, **4b-S1** and **4c-S1** in the first heating/cooling scan at a scan rate of 10 $^{\circ}\text{C min}^{-1}$ under nitrogen.