Synthesis of Siprodithienogermeoles with Triphenylamine Units as a Dopant-Free Hole-Transporting Material of Perovskite Solar Cells

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Supporting Information

Figure S1. 1H and 13C NMR spectra of sDTG-tpa in CDCl3.
Figure S2. 1H and 13C NMR spectra of sDTG-dmap in CDCl3.
Figure S3. 1H and 13C NMR spectra of sDTG-mop in CDCl3.
Figure S4. 1H and 13C NMR spectra of m1 in CDCl3.
Figure S5. 1H and 13C NMR spectra of m2 in acetone-d6 and CDCl3, respectively.
Figure S6. Cyclic voltammograms (CVs) of sDTG-tpa, sDTG-dmap, sDTG-mop, m1, and m2.
Figure S7. HOMO and LUMO profiles of sDTG-tpa, derived from DFT calculations at B3LYP/6-31G(d,p).
Figure S1. $^1$H (top) and $^{13}$C NMR spectra (bottom) of sDTG-tpa in CDCl$_3$. An asterisk in the expanded $^1$H NMR spectrum indicates an unidentified signal.
Figure S2. $^1$H (top) and $^{13}$C NMR spectra (bottom) of sDTG-dmap in CDCl$_3$. Asterisks in the expanded $^1$H NMR spectrum indicate unidentified signals.
Figure S3. $^1$H (top) and $^{13}$C NMR spectra (bottom) of sDTG-mop in CDCl$_3$. Asterisks in the expanded $^1$H NMR spectrum indicate unidentified signals.
Figure S4. $^1$H (top) and $^{13}$C NMR spectra (bottom) of m1 in CDCl$_3$. Asterisks in the expanded $^1$H NMR spectrum indicate unidentified signals.
Figure S5. $^1$H (top) and $^{13}$C NMR spectra (bottom) of m2 in acetone-d$_6$ and CDCl$_3$, respectively. Asterisks in the expanded $^1$H NMR spectrum indicate unidentified signals.
Figure S6. Cyclic voltammograms (CVs) of sDTG-tpa, sDTG-dmap, sDTG-mop, m1, and m2.
Figure S7. HOMO (left) and LUMO (right) profiles of sDTG-tpa, derived from DFT calculations at B3LYP/6-31G(d,p).