Supplementary Information

Influences of Side Chain Length and Bifurcation Point on Crystalline Structure and Charge Transport of Diketopyrrolopyrrole-Quaterthiophene Copolymers (PDQTs)

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Contents

Additional data: 1H-NMR and 13C-NMR spectra, diagrams of thermal gravimetric analysis (TGA), differential scanning calorimetry (DSC), and cyclic voltammograms (CV).
Supplementary Information

$\text{C}_{10}\text{H}_{21}$

$\text{C}_{12}\text{H}_{25}$

$\text{N}$

$\text{O}$

$\text{S}$

$\text{O}$

$\text{C}_{12}\text{H}_{25}$

$\text{C}_{10}\text{H}_{21}$

$^1\text{H}-\text{NMR (CDCl}_3\text{, 300 MHz)}$

Figure S1 The $^1\text{H}$-NMR spectrum of DBT-26.
Supplementary Information

\[ \text{C}_{10}\text{H}_{21} \]
\[ \text{C}_{12}\text{H}_{25} \]
\[ \text{N} - \text{O} \]
\[ \text{S} \]
\[ \text{C}\]
\[ \text{N} - \text{O} \]
\[ \text{C}_{12}\text{H}_{25} \]
\[ \text{C}_{10}\text{H}_{21} \]

\[^{13}\text{C}-\text{NMR (CDCl}_3, 75 \text{ MHz)}\]

![C-NMR spectrum of DBT-26](image)

**Figure S2** The \(^{13}\text{C}-\text{NMR spectra of DBT-26.}**
Supplementary Information

$\text{C}_{10}\text{H}_{21}$

$\text{C}_{12}\text{H}_{25}$

$\text{N}$

$\text{O}$

Br

$\text{S}$

$\text{Br}$

$\text{C}_{12}\text{H}_{25}$

$\text{C}_{10}\text{H}_{21}$

$^1\text{H}-\text{NMR} (\text{CDCl}_3, 300 \text{ MHz})$

Figure S3 The $^1\text{H}-\text{NMR}$ spectrum of M-26.
Supplementary Information

$\text{C}_{10}\text{H}_{21}$
$\text{C}_{12}\text{H}_{25}$
Br
S
$\text{N}$
$\text{O}$
O
$\text{C}_{12}\text{H}_{25}$
$\text{C}_{10}\text{H}_{21}$

$^{13}\text{C}$-NMR (CDCl$_3$, 75 MHz)

Figure S4 The $^{13}\text{C}$-NMR spectrum of M-26.
Figure S5 Diagrams of thermal analysis of PDQT-20, PDQT-24 and PDQT-26. Top: TGA curves with a heating rate of 10 °C min\(^{-1}\) under N\(_2\). Bottom: DSC curves with a heating rate of 10 °C min\(^{-1}\) under nitrogen.
Figure S6 Cyclic voltammograms of PDQT-20, PDQT-24 and PDQT-26 thin films in 0.1 M tetrabutylammonium hexafluorophosphate in dry acetonitrile at a sweeping rate of 50 mV s\(^{-1}\) under nitrogen using ferrocene (Fc) as a standard.