Supporting materials for

## Organic Field-Effect Transistors Utilising Solution Deposited Oligothiophene Based Swivel Cruciforms

Achmad Zen,<sup>a</sup> Patrick Pingel,<sup>a</sup> Frank Jaiser,<sup>a</sup> Dieter Neher,<sup>\*,a</sup> Jörg Grenzer,<sup>b</sup> Wei Zhuang,<sup>c</sup> Jürgen P. Rabe,<sup>c</sup> Askin Bilge,<sup>d</sup> Frank Galbrecht,<sup>d</sup> Benjamin Nehls,<sup>d</sup> Tony Farrell,<sup>\*,d</sup> Ullrich Scherf, <sup>\*,d</sup> Ruben D. Abellon,<sup>e</sup> Ferdinand C. Grozema,<sup>e</sup> and Laurens D.A. Siebbeles<sup>e</sup>

<sup>a</sup> Institute of Physics, University of Potsdam, Am Neuen Palais 10, D-14469 Potsdam, Germany

- <sup>b</sup> Institute of Ion Beam Physics and Materials Research, Bautzner Landstrasse 128, D-01328 Dresden, Germany
- <sup>c</sup> Department of Physics, Humboldt University of Berlin, Newton-Str.15, D-12489 Berlin, Germany
- <sup>d</sup> Macromolecular Chemistry, University of Wuppertal, Gauss-Str.20, D-42097 Wuppertal, Germany
- <sup>e</sup> Interfaculty Reactor Institute, Delft University of Technology, Mekelweg 15, 2629 JB Delft, The Netherlands

<sup>\*</sup>To whom correspondence should be addressed.

E-mails: <u>neher@uni-potsdam.de</u>; <u>scherf@uni-wuppertal.de</u>; farrell@ge.com



Figure S1: <sup>1</sup>H NMR spectra of HTP (above) and DHBTP-SC in C<sub>2</sub>D<sub>2</sub>Cl<sub>4</sub>.



**Figure S2:** AFM images  $(5 \times 5 \ \mu m^2)$  of oligomer DHBTP-SC that has been treated as the following: (a)-(b) Height and phase images of the as prepared sample, (c)-(d) Height and phase images of the sample annealed for 30 minutes, (e)-(f) Height and phase images of the sample annealed for 90 minutes, (g)-(h) Height and phase images of the sample annealed for 120 minutes. Annealing was performed at 120 °C inside a N<sub>2</sub>-filled glove box, followed by slow cooling to room temperature with a cooling rate of 1.3 K/min.



Figure S3: AFM images (5×5  $\mu$ m<sup>2</sup>) of oligomer DHPT-SC, treated as in Figure S2.



**Figure S4**:  ${}^{1}$ H- ${}^{1}$ H COSYLR of **HTP** in C<sub>2</sub>D<sub>2</sub>Cl<sub>4</sub>.



Figure S5: <sup>1</sup>H-<sup>1</sup>H COSY of DHBTP-SC in C<sub>2</sub>D<sub>2</sub>Cl<sub>4</sub>.



**Figure S6**: <sup>1</sup>H-<sup>1</sup>H COSYLR of **DHBTP-SC** in C<sub>2</sub>D<sub>2</sub>Cl<sub>4</sub>.



Figure S7: <sup>13</sup>C NMR spectra of DHBTP-SC in C<sub>2</sub>D<sub>2</sub>Cl<sub>4</sub>.



**Figure S8**: <sup>13</sup>C NMR spectrum of the aromatic region of **DHBTP-SC** in  $C_2D_2Cl_4$ .



**Figure S9**: <sup>13</sup>C NMR spectrum of the alkyl region of **DHBTP-SC** in C<sub>2</sub>D<sub>2</sub>Cl<sub>4</sub>.