ESI

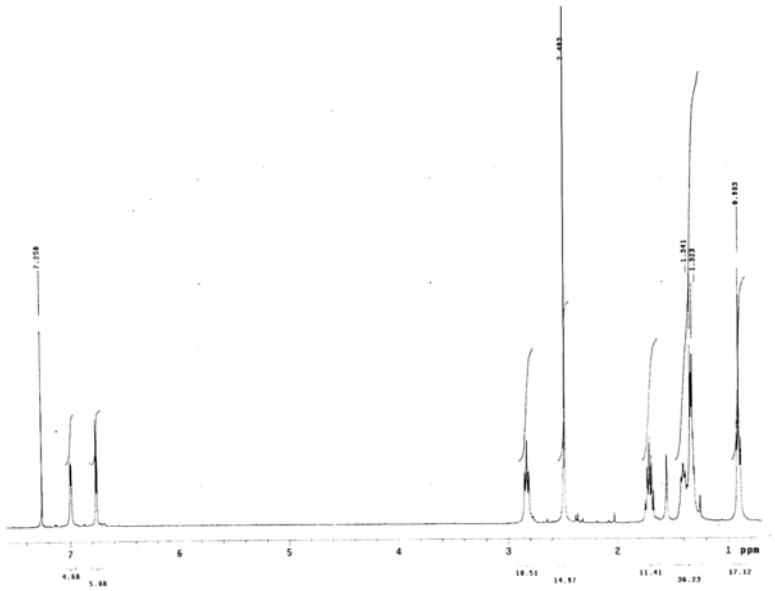
Table ESI-1. Transition temperatures and melting enthalpies of compounds investigated in this work (a: data taken from (8); s = shoulder). See also Scheme 2.

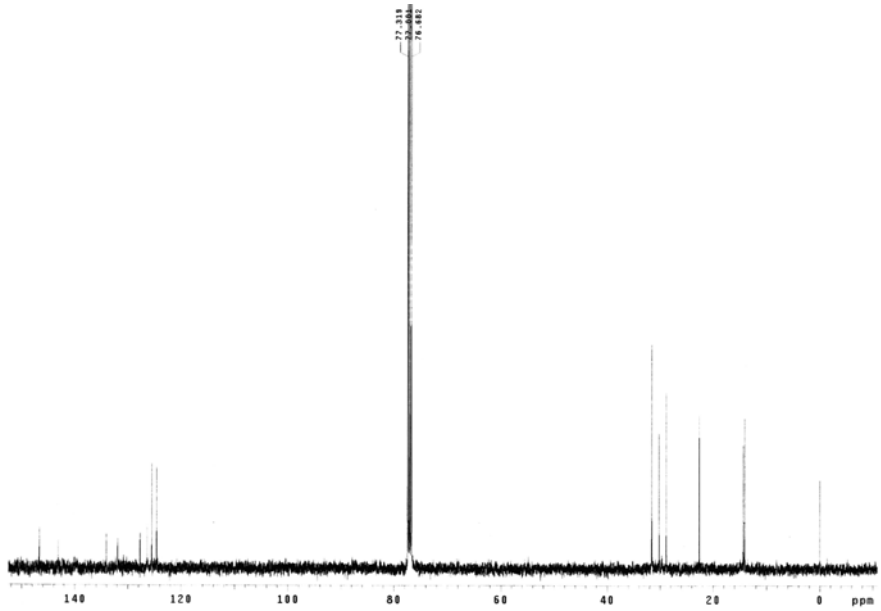
Compound	Transition temperature (°C) and melting enthalpy (in brackets, J/g)					
	Heating (2°C/min)			Cooling (-2°C/min)		
DTT5S	61 (21.0)	74 (94.7)	80 (s)	79 (s)	61 (125.0)	57 (15.4)
DTT5SO	76 (6.0)	106.(63.4)		73 (1.0)	63 (55.6)	
DTT5SO2	117 (47.3)			103 +101(48.8)		
DTT7S[a]	172 (58.2)	271 (s)		269 (s)	135 (29.7)	
DTT7SO	154 (2.6)	171 (15.5)	204 (s)	127 (15.1)		
DTT7SO2	200 (47.2)			166 (15.5)	157 (0.4)	

Figure ESI-1.

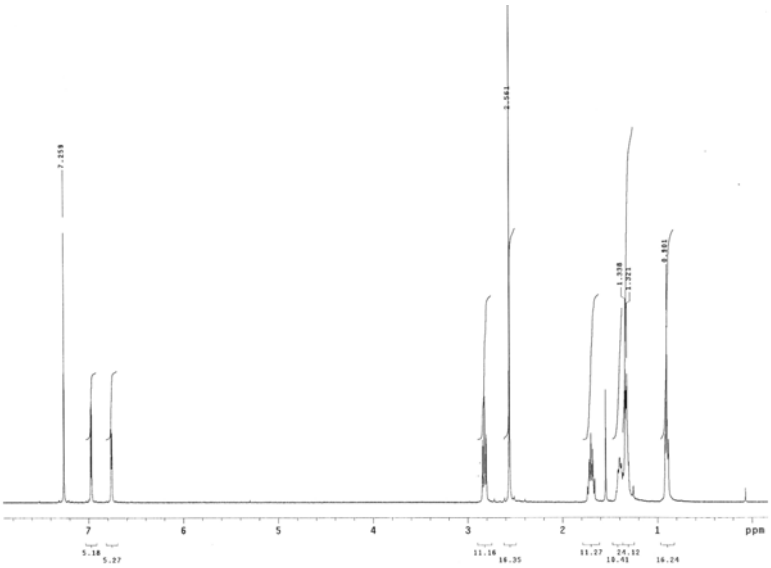
^{1}H - ^{13}C NMR spectra in $CDCl_3$ of the newly synthesized compounds (see also Scheme 2).

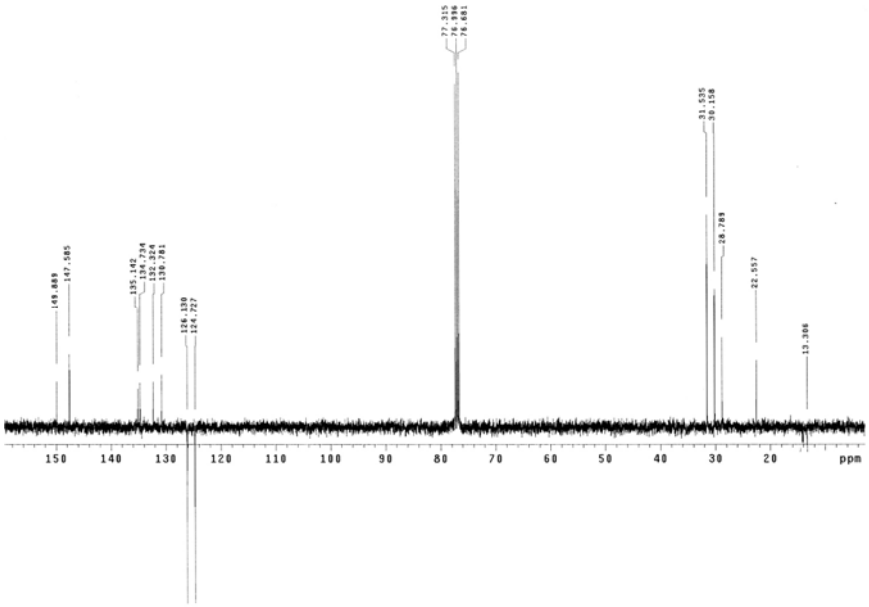
DTT5S



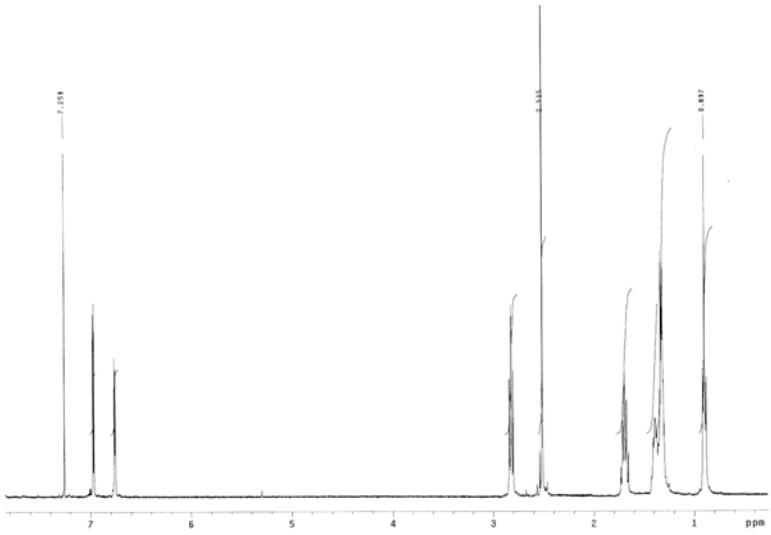


DTT5SO


7.259
2.561
1.338
1.322
0.881
7
6
5
4
3
2
1
ppm
5.18
5.27
11.16
16.35
11.27
24.32
10.41
16.24


77.315
77.036
76.756
76.681
31.535
30.158
28.783
22.557
13.386
149.889
147.585
135.140
134.734
132.324
130.781
126.130
124.727
150
140
130
120
110
100
90
80
70
60
50
40
30
20
ppm

DTT5SO2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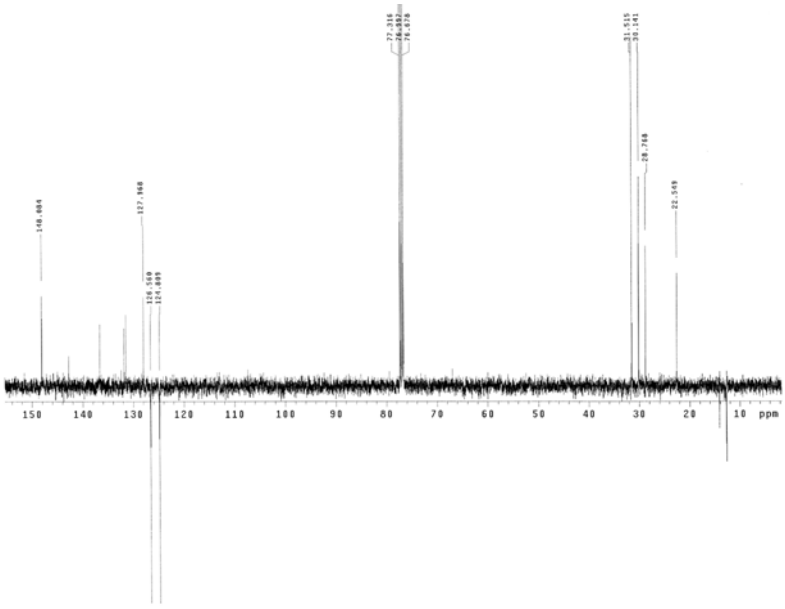
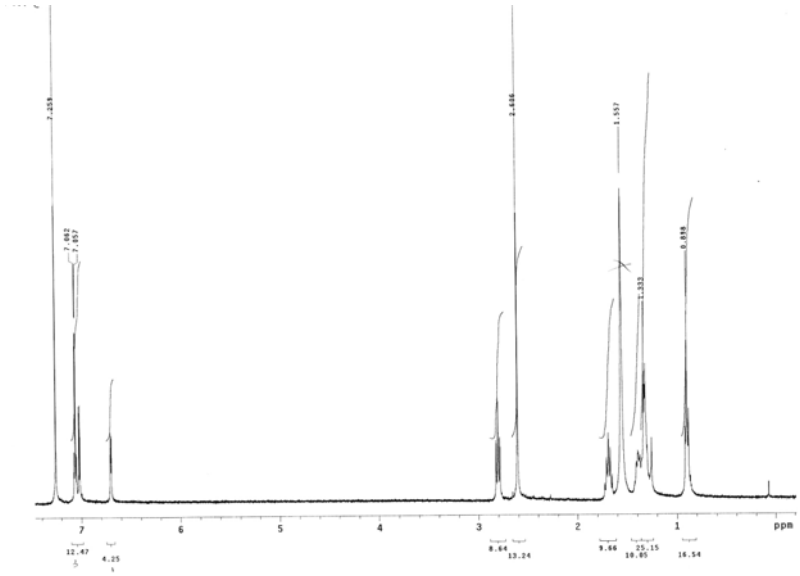
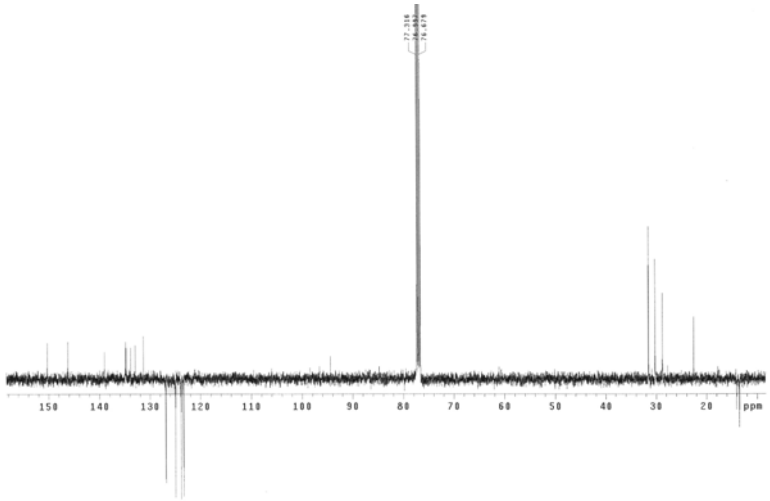
2.515
0.897
7
6
5
4
3
2
1
ppm


148.004
127.968
126.560
124.809
77.316
76.592
76.878
31.515
30.141
28.768
22.549
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
ppm

DTT7SO


7.259
7.082
7.057
2.486
1.557
1.333
0.858
7
6
5
4
3
2
1
ppm
12.47
4.25
8.44
13.24
9.66
25.15
10.85
16.54


77.358
76.679
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130
120
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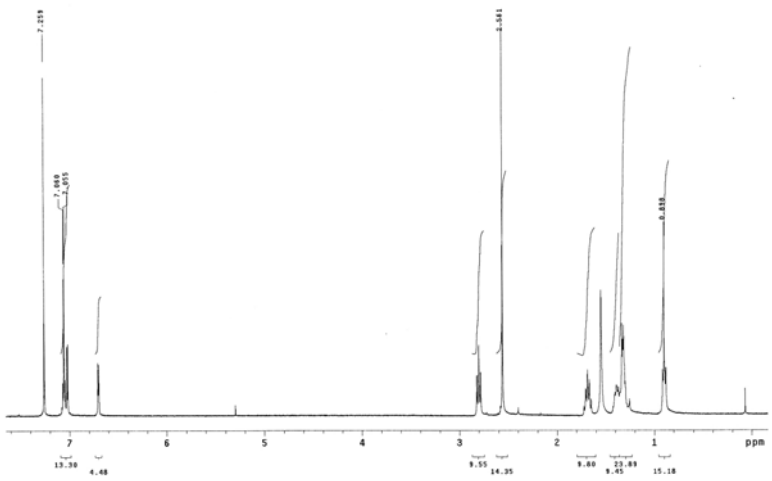
100
90
80
70
60
50
40
30
20
ppm

DTT7SO2


7.259
7.060
7.055
2.561
0.898
7
6
5
4
3
2
1
ppm
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4.48
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23.89
15.18

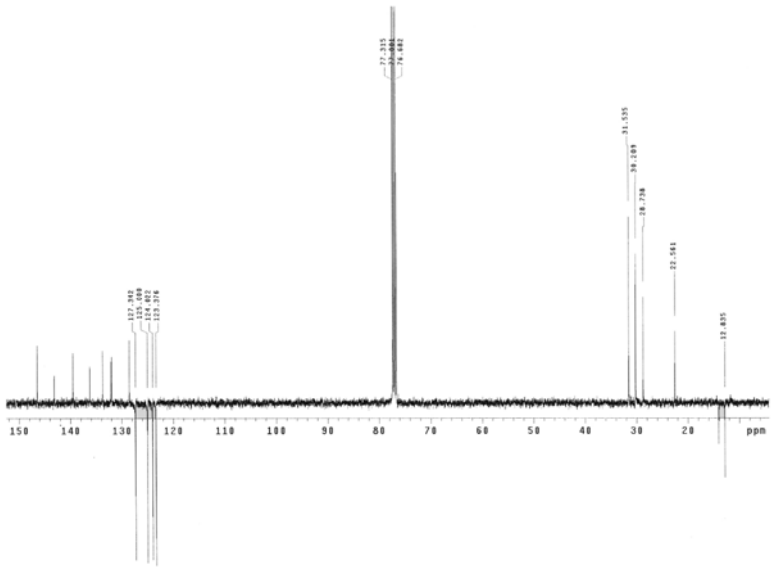
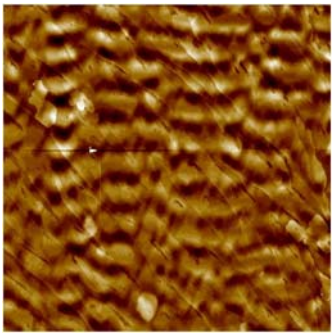
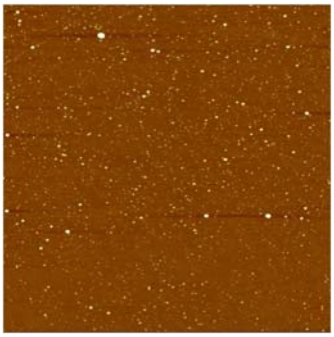

77.315
76.682
31.535
30.209
28.738
22.561
12.835
127.342
125.009
124.402
123.376
150
140
130
120
110
100
90
80
70
60
50
40
30
20
ppm

Figure ESI-2: AFM images of films of oxidized oligothiophenes, deposited on bare SiO_2 substrate surface. From a) to c): films spin coated from 4 mg·mL^{-1} chlorobenzene solutions; d) film thermally evaporated at 1Å/s (nominal thickness 30nm).

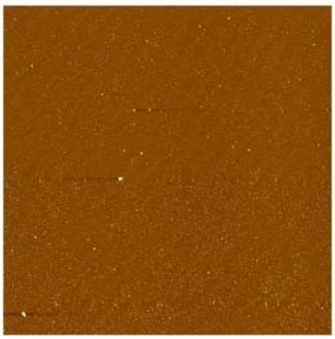
a) DTT5SO molecule: 20×20μm^2 (left), Height range: 0-35nm (rms 2.0nm).



b) DTT5SO2 molecule: 5×5μm^2, Height range: 0-40nm (rms 0.6nm).



c) DTT7SO2 molecule: 20×20μm^2, Height range: 0-35nm (rms 0.6nm).



c) DTT7SO2 molecule: 5×5μm^2, Height range: 0-35nm (rms 2.4nm).

Figure ESI-3.

CCDC-(741027), DTT5SO2 : single crystal structure and molecular packing

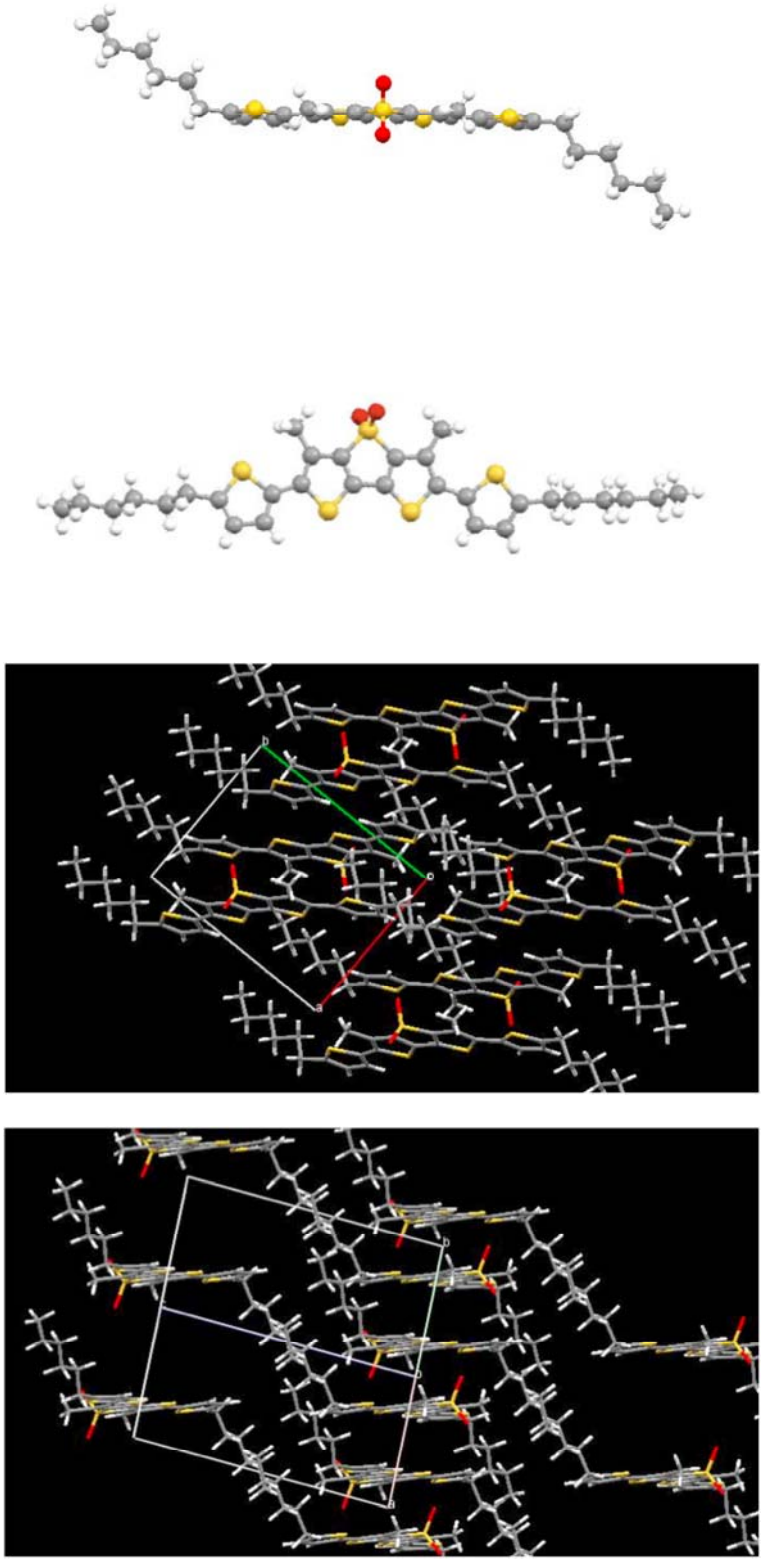
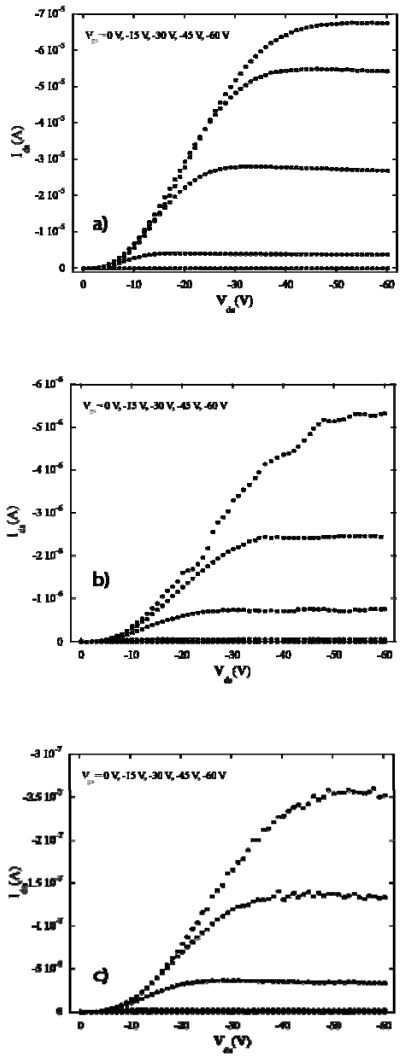


Figure ESI-4.

Output curves of a) DTT7SO2, b) DTT7SO, and c) DTT5SO films spin coated onto bare SiO_2 substrates from 4mg·mL^{-1} chlorobenzene solutions.