

## Supplementary information

### The effect of aromatic diimide side groups on the $\pi$ -conjugated polymer properties

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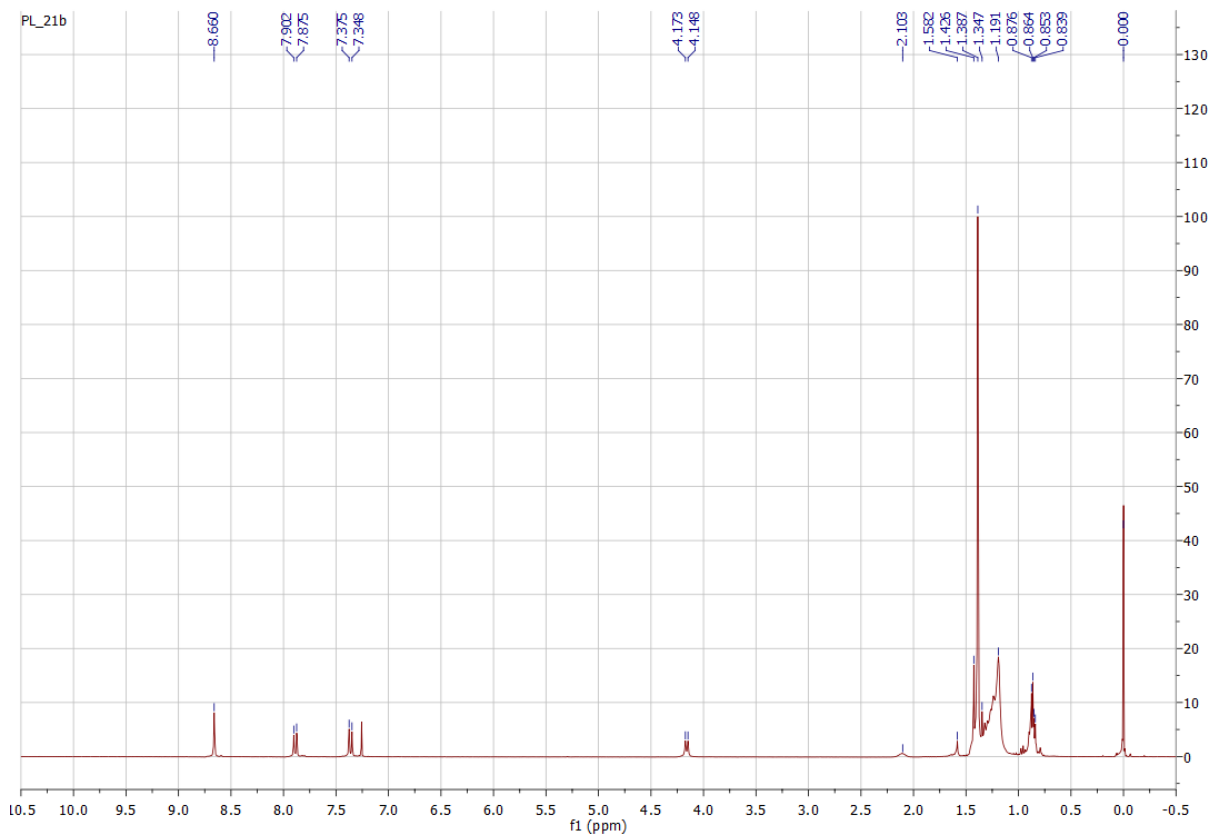
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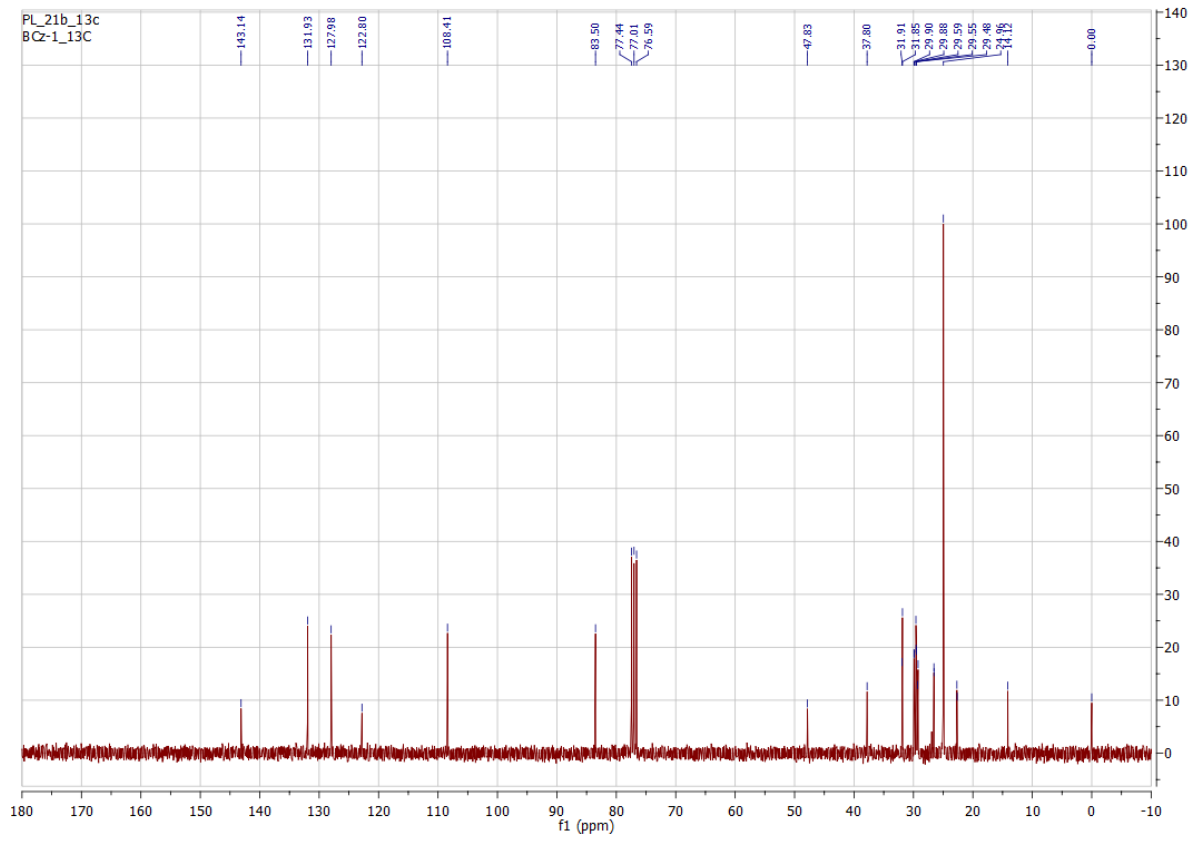
#### Contents

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2. DSC data	P. 6,7
3. SEC data	P. 8-11
4. AFM data	P. 12

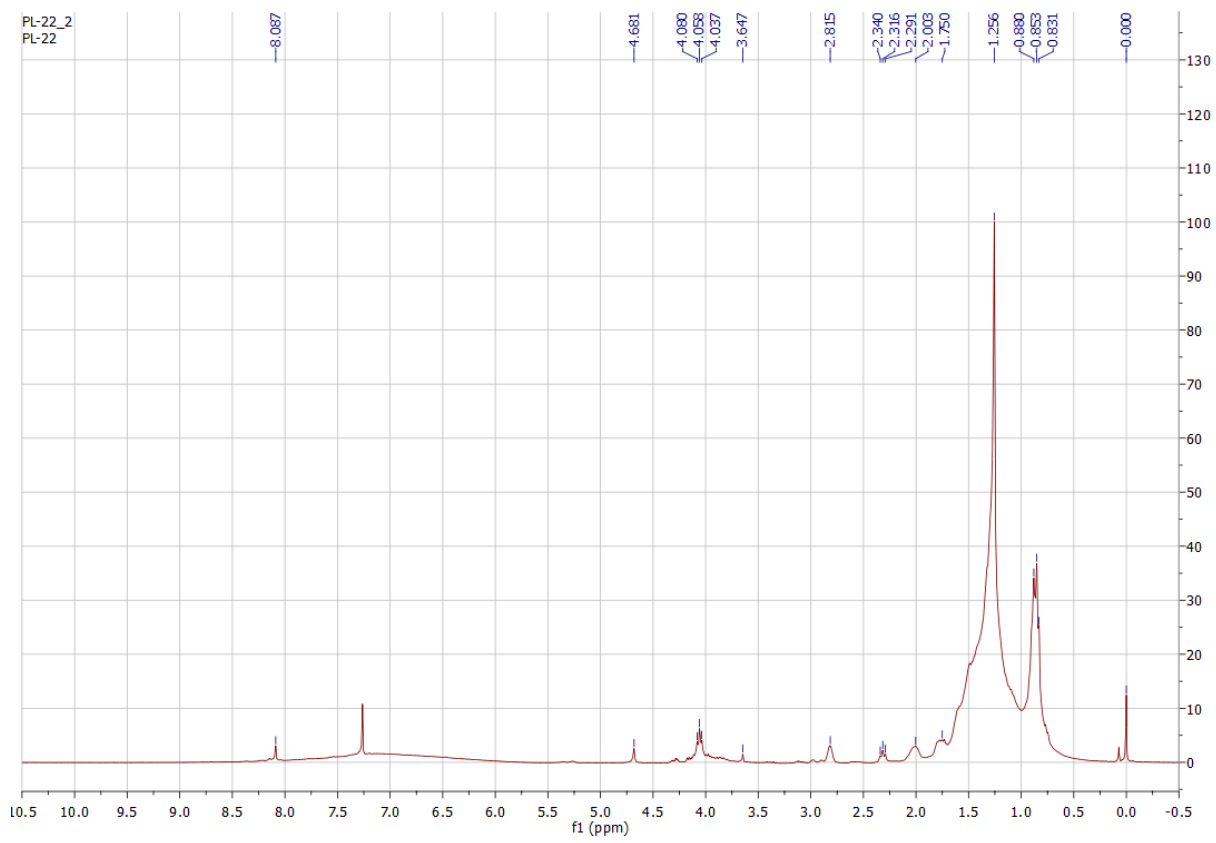
#### M1-<sup>1</sup>H NMR



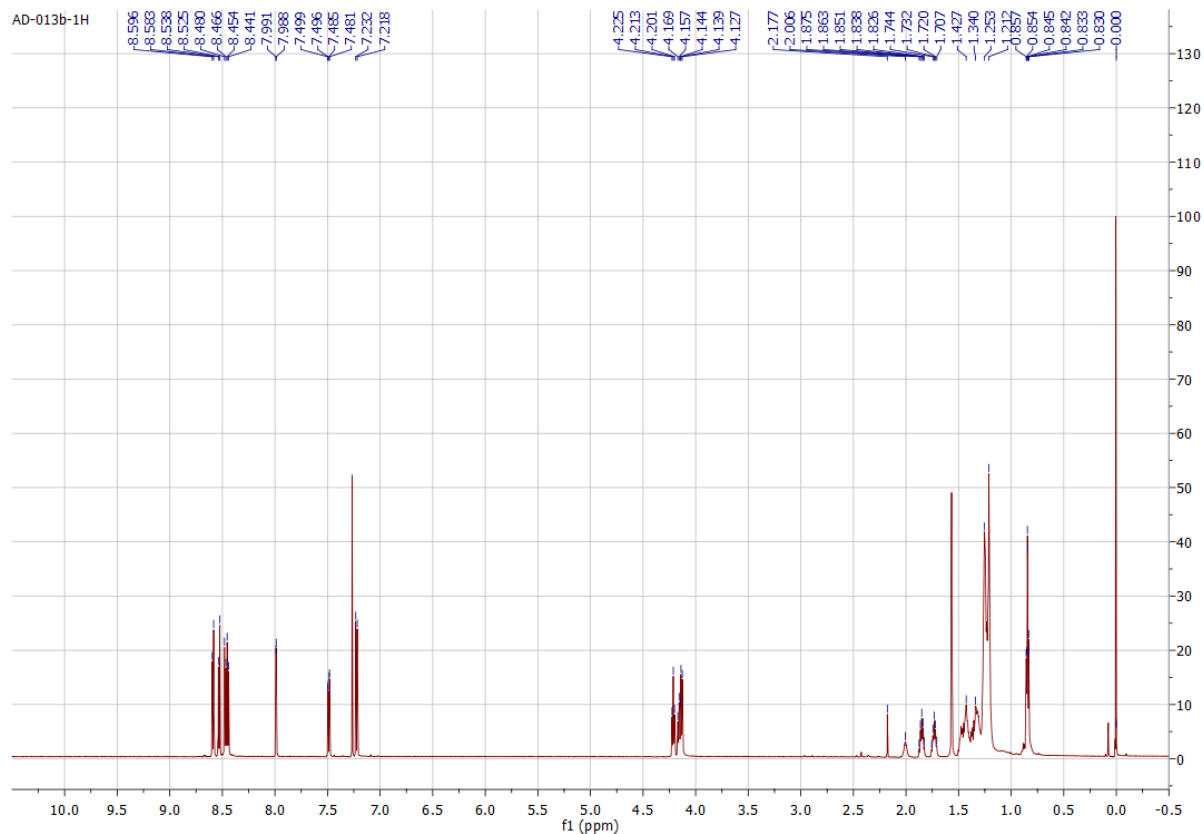
#### M1-<sup>13</sup>C NMR



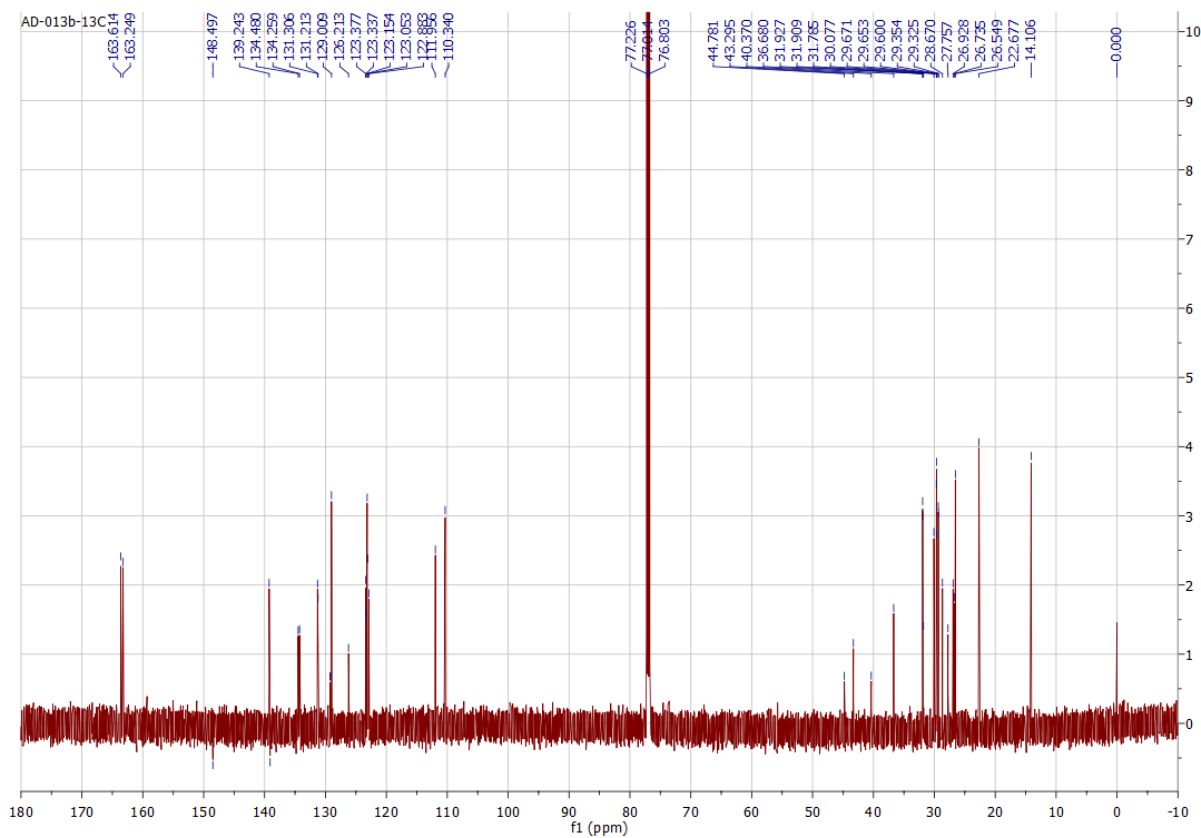
**PCTB-<sup>1</sup>H NMR**



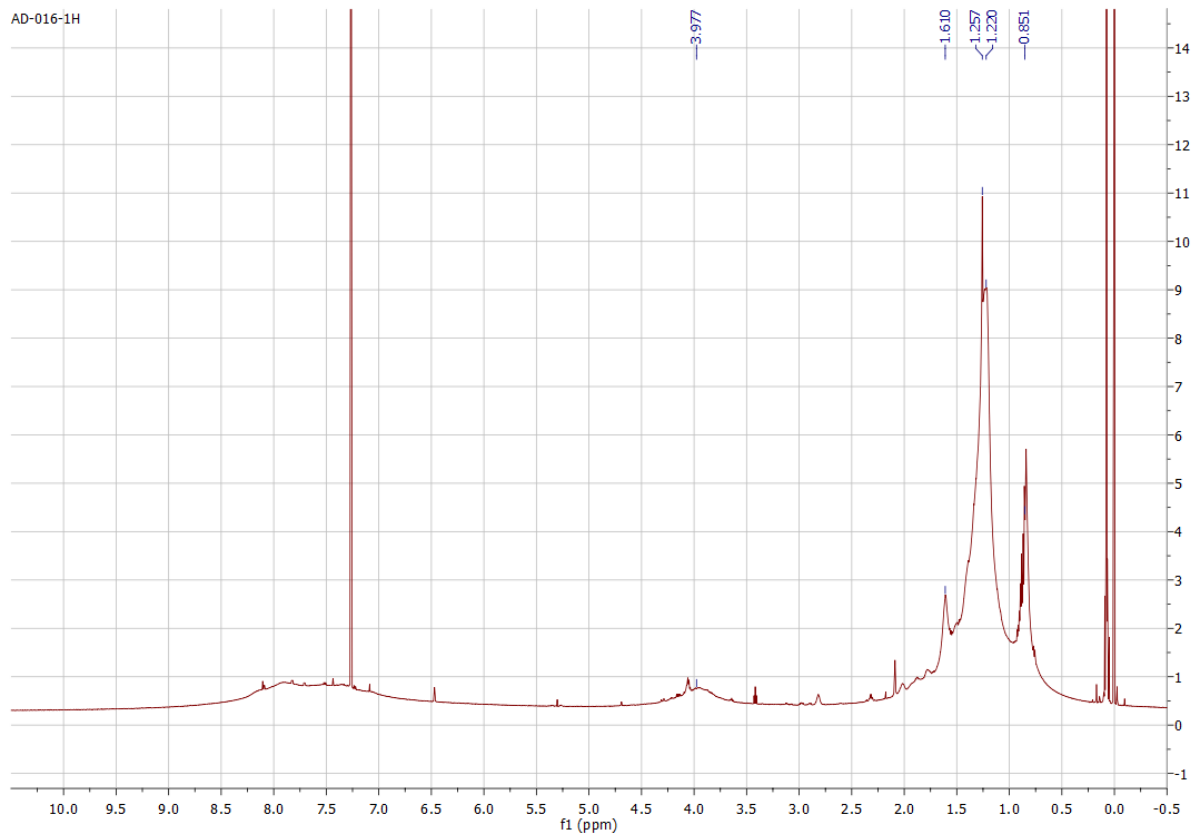
## M2-1H



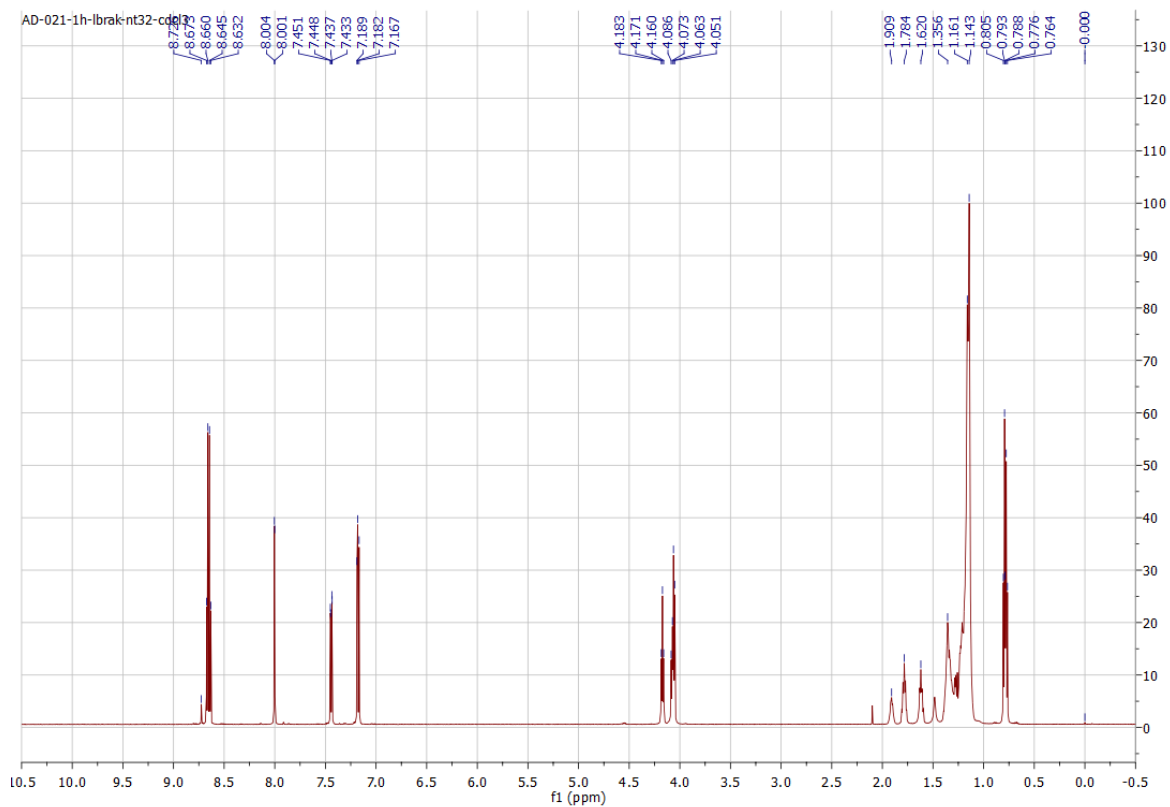
## M2-<sup>13</sup>C NMR



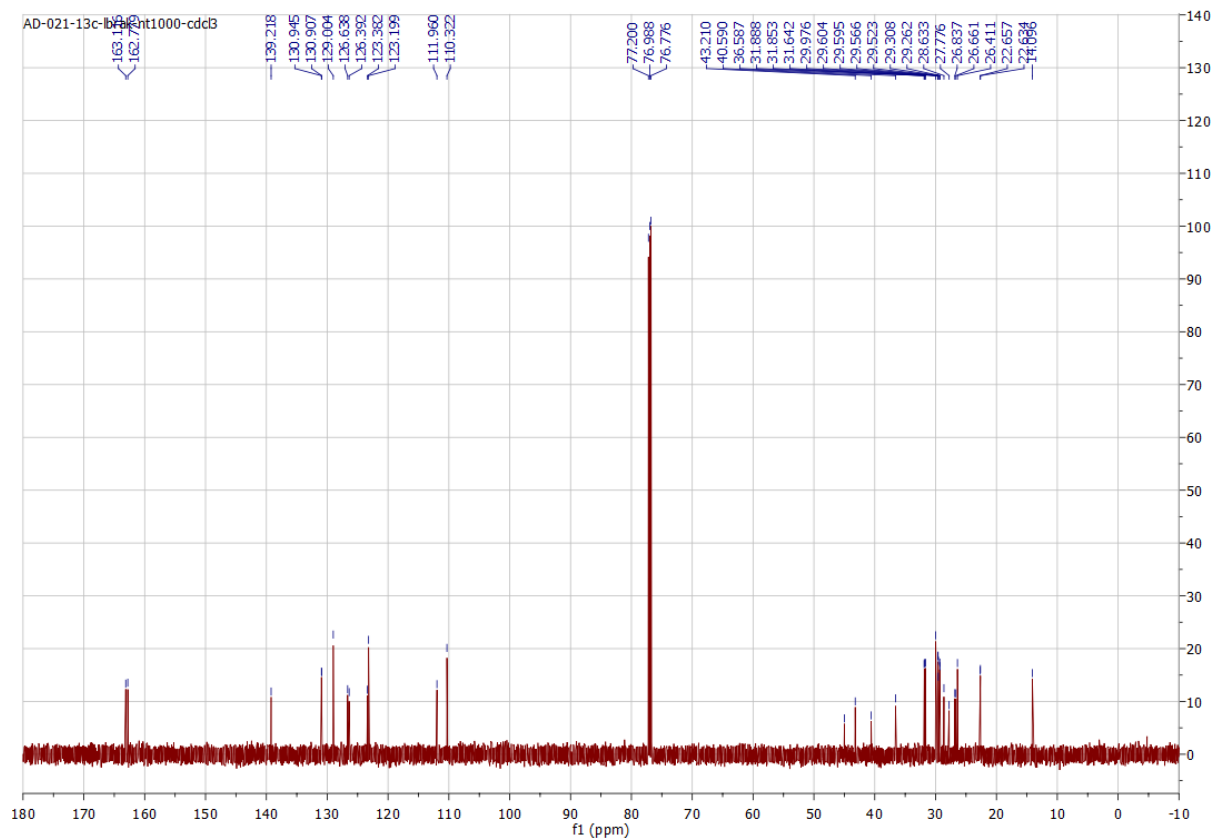
## PCTB-PDI-<sup>1</sup>H NMR



### M4-<sup>1</sup>H NMR



### M4-<sup>13</sup>C NMR



### PCTB-NDI-<sup>1</sup>H NMR

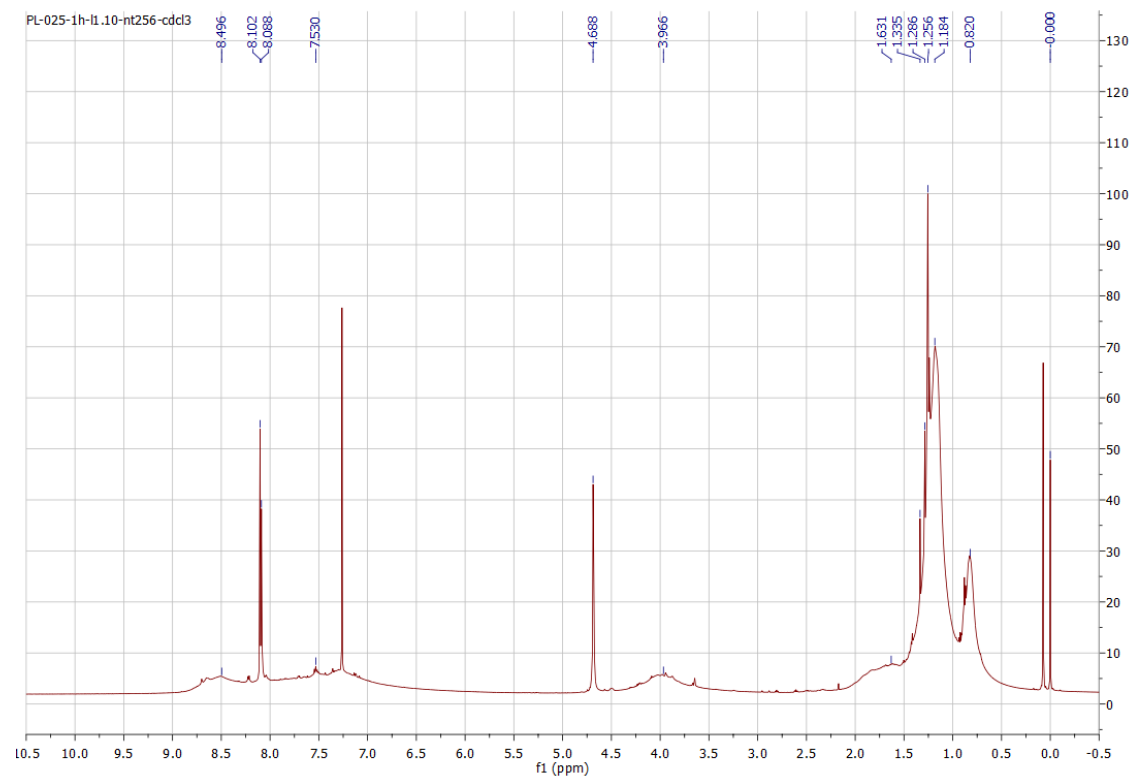
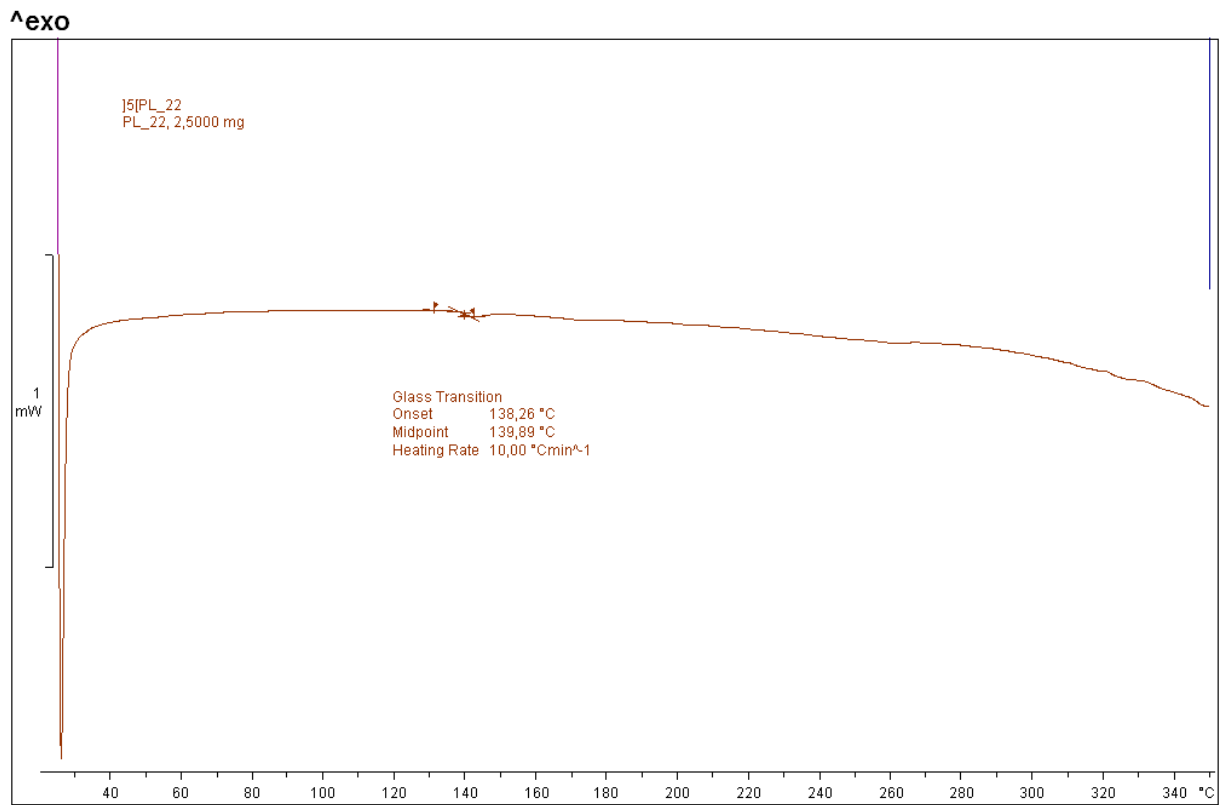


Fig. S1 <sup>1</sup>H NMR and <sup>13</sup>C NMR spectra



Lab: METTLER

STAR® SW 8.10

Fig. S2a DSC of PCTB



Lab: METTLER

STAR® SW 8.10

Fig. S2b DSC of PCTB-PDI

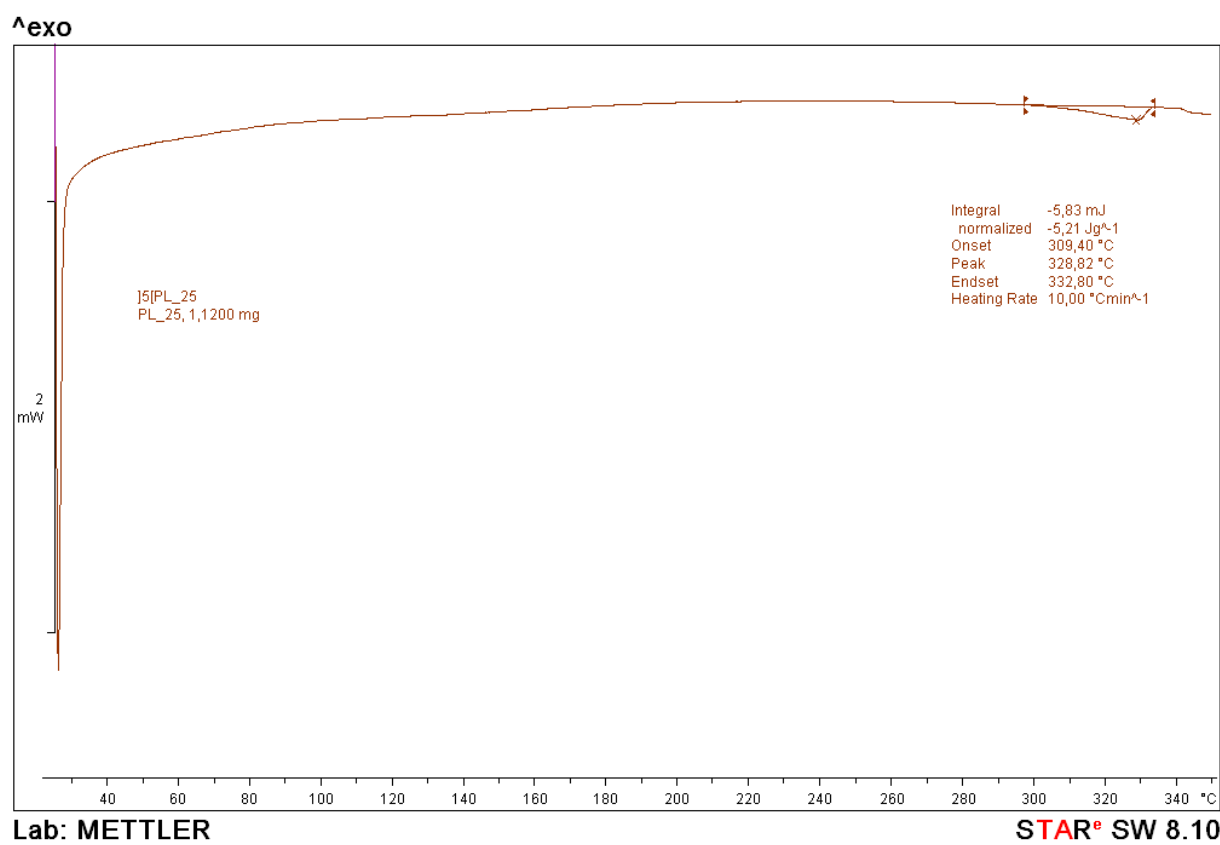
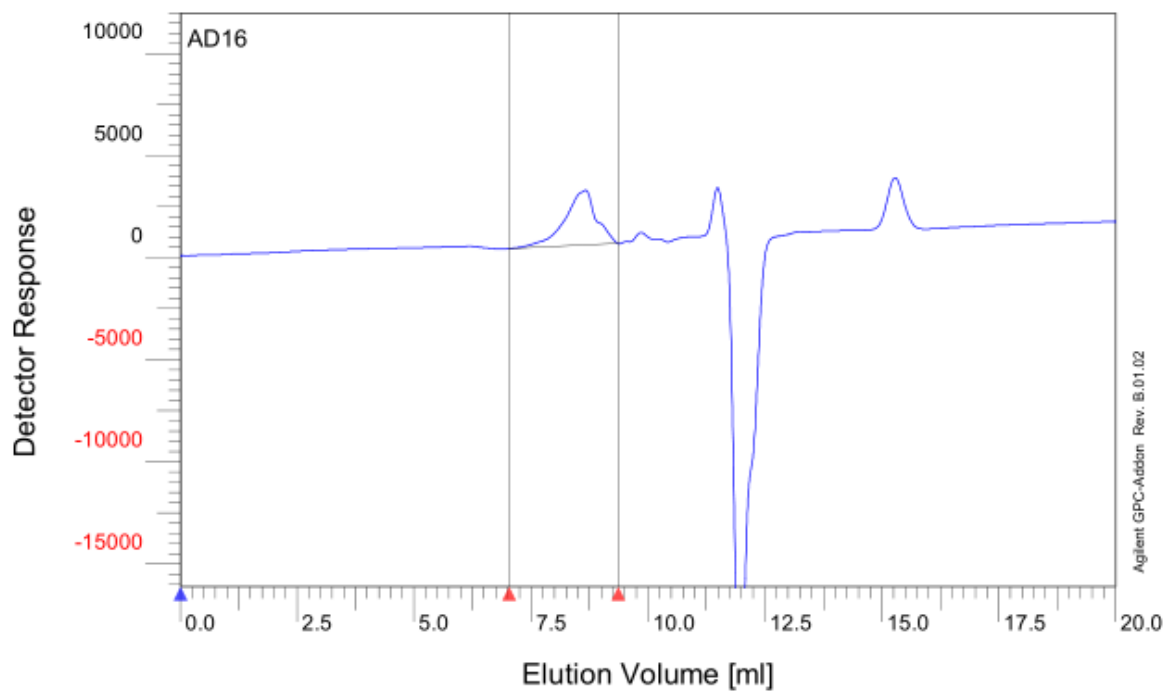


Fig. S2c DSC of PCTB-NDI

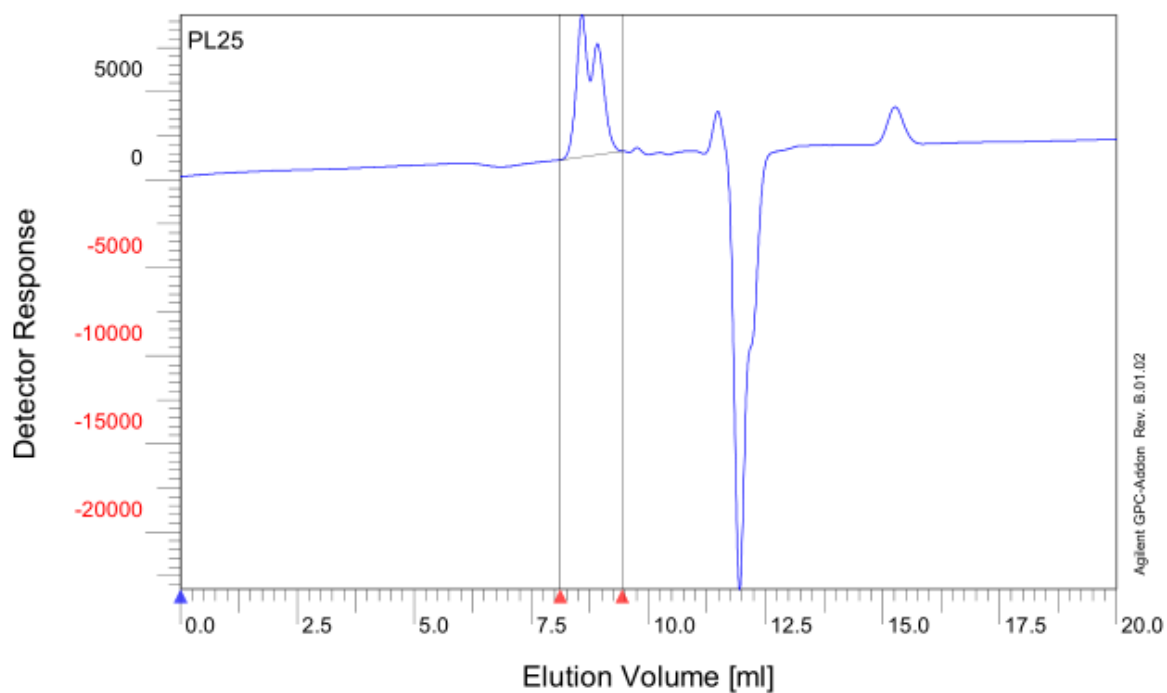


**RID1A**

<b>Mn</b>	2.9079e3	g/mol
<b>Mw</b>	4.3607e3	g/mol
<b>Mz</b>	7.8963e3	g/mol
<b>Mv</b>	0.000000	g/mol
<b>D</b>	1.4996e0	
<b>[n]</b>	0.000000	ml/g
<b>Vp</b>	8.6688e0	ml
<b>Mp</b>	2.6426e3	g/mol
<b>A</b>	2.0982e3	ml <sup>2</sup> /V
<b>10%</b>	1.6222e3	g/mol
<b>30%</b>	2.4719e3	g/mol
<b>50%</b>	3.2160e3	g/mol
<b>70%</b>	4.3774e3	g/mol
<b>90%</b>	7.9037e3	g/mol

Fig. S2d SEC of PCTB-PDI

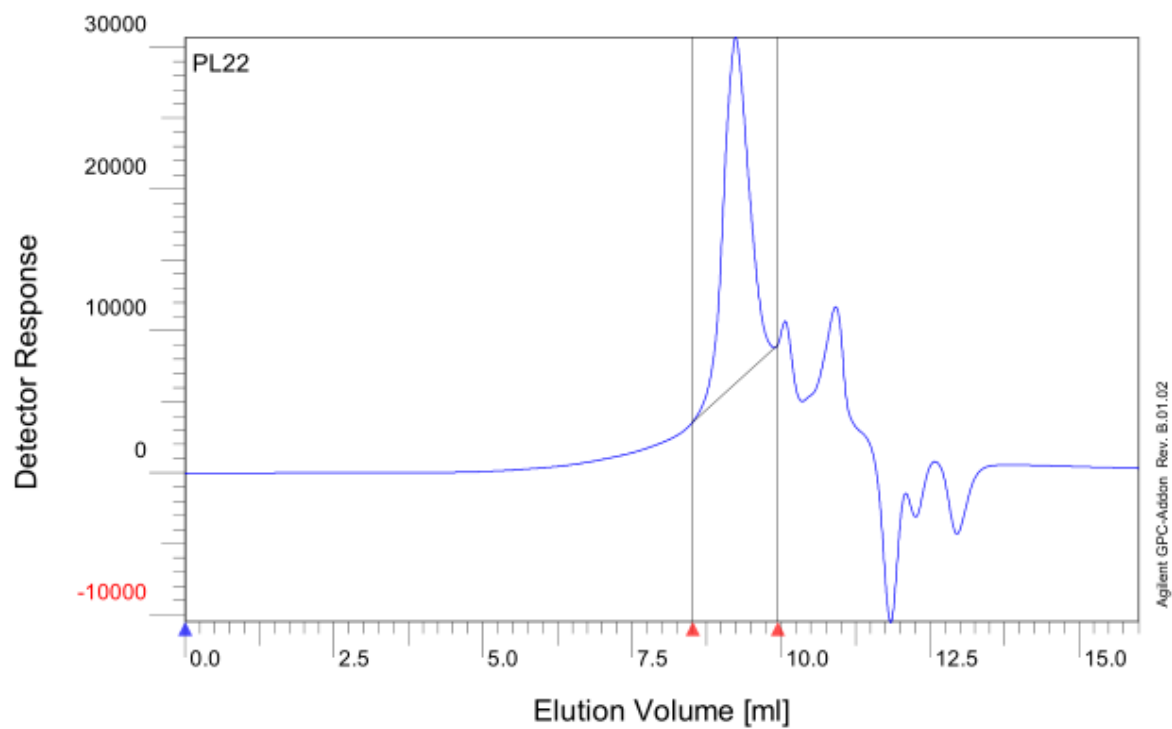




**RID1A**

<b>Mn</b> :	2.1633e3	g/mol
<b>Mw</b> :	2.4739e3	g/mol
<b>Mz</b> :	2.7861e3	g/mol
<b>Mv</b> :	0.000000	g/mol
<b>D</b> :	1.1436e0	
<b>[n]</b> :	0.000000	ml/g
<b>Vp</b> :	8.5823e0	ml
<b>Mp</b> :	3.0486e3	g/mol
<b>A</b> :	4.1484e3	ml*V
<b>10%</b>	1.4191e3	g/mol
<b>30%</b>	1.8275e3	g/mol
<b>50%</b>	2.4064e3	g/mol
<b>70%</b>	2.9892e3	g/mol
<b>90%</b>	3.6334e3	g/mol

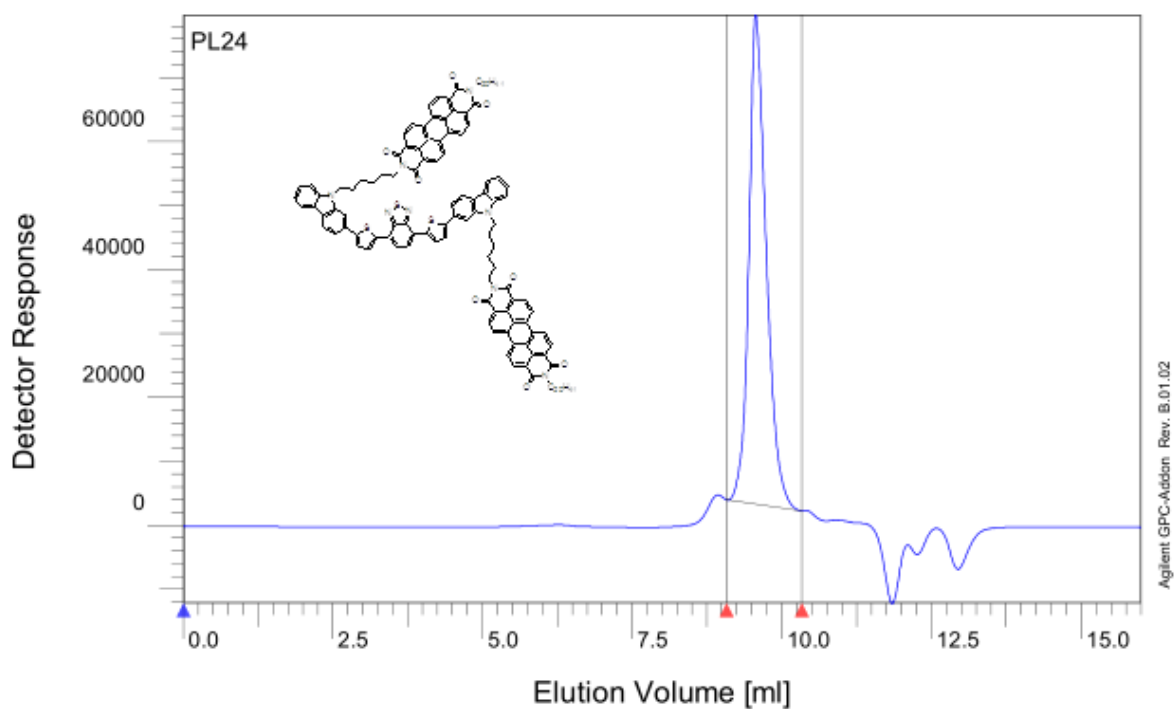
Fig. S3a SEC of PCTB-NDI



**RID1A**

<b>Mn</b> :	2.2086e3	g/mol
<b>Mw</b> :	2.5675e3	g/mol
<b>Mz</b> :	3.0168e3	g/mol
<b>Mv</b> :	0.000000	g/mol
<b>D</b> :	1.1625e0	
<b>[n]</b> :	0.000000	ml/g
<b>Vp</b> :	9.2333e0	ml
<b>Mp</b> :	2.4472e3	g/mol
<b>A</b> :	1.1939e4	ml*V
<b>10%</b>	1.4447e3	g/mol
<b>30%</b>	1.9304e3	g/mol
<b>50%</b>	2.3662e3	g/mol
<b>70%</b>	2.8965e3	g/mol
<b>90%</b>	3.8778e3	g/mol

Fig. S3a SEC of PCTB



**RID1A**

<b>Mn</b> :	1.1563e3	g/mol
<b>Mw</b> :	1.2624e3	g/mol
<b>Mz</b> :	1.3545e3	g/mol
<b>Mv</b> :	0.000000	g/mol
<b>D</b> :	1.0918e0	
<b>[n]</b> :	0.000000	ml/g
<b>Vp</b> :	9.5616e0	ml
<b>Mp</b> :	1.3456e3	g/mol
<b>A</b> :	2.5755e4	ml*V
<b>10%</b>	8.5004e2	g/mol
<b>30%</b>	1.0954e3	g/mol
<b>50%</b>	1.2571e3	g/mol
<b>70%</b>	1.4131e3	g/mol
<b>90%</b>	1.6667e3	g/mol

Fig. S3d SEC of reference oligomer

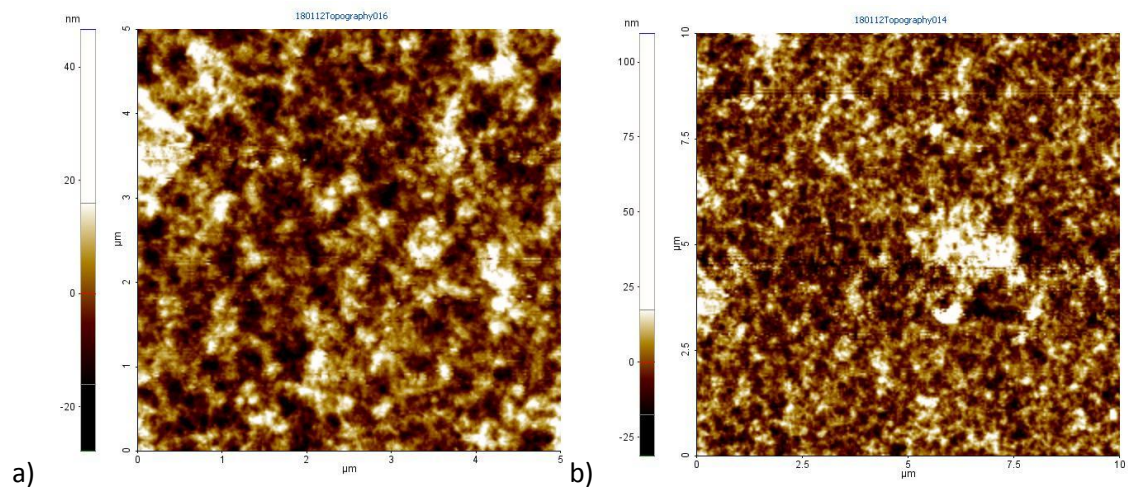


Fig. S4 AFM images of PCTB-PDI