

Supporting Information

Comonomer effect

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## 1. Material and Characterization:

All Chemicals were bought from commercial sources ACROS Organics, Alfa Aesar, Sigma-Aldrich or TCI. Solvents, deuterated solvents and starting materials were used without further purification. Monomers were purified by filtration through basic Aluminium oxide to remove present inhibitors.

### Methods:

$^1\text{H}$ - and  $^{13}\text{C}$ -NMR spectra were recorded with a Bruker AVIII 300 spectrometer at 400 MHz and 101 MHz respectively, using  $\text{DCM-}d_2$  and  $\text{DMSO-}d_6$  and are given in ppm against TMS. NMR Data were analysed using MestReNova 14.2.3. Polymers were analysed via gel permeation chromatography (GPC) using a PSS SECcurity<sup>2</sup> instrument with RI and UV detector at 270 nm wavelength using a PMMA standard in DMF. Fourier-transform infrared spectroscopy was performed using dry samples incorporated into potassium bromide pellets and measured with a Bruker Vertex 70. Bruker OPUS 7.8 software was used for Data analysis.

Light scattering measurements were performed using a ALV/CGS3 compact goniometer system with a He/Ne laser (632.8 nm). Measurements were performed at 20°C at 9 angles from 30° to 150° using a solution in DMF 2mg/ml and analysed with ALV5000 software

Fluorescence spectroscopy, including quantum yield, Stern Volmer Plot and excitation spectra were measured on a Duetta Fluorescence and Absorbance Spectrometer from Horiba using EzSpec as software for analysis and fluorescence peak integration. UV/Vis-absorption spectra were also measured on a Cary 60 UV–Vis/NIR spectrometer.

Fluorescence lifetime was measured on using a Pico Quant. PDL 800-D, Pico Quant. PH 300 with an LDH-P-C-375 and analysed using PicoHarp V 2.2.0.0 as well as FluoFit Pro. V4.4.0.1 over a time of 10 minutes with a degassed solution in DMF.

For cyclic voltammetry measurements a glassy carbon electrode as the working electrode, Hg/HgCl<sub>2</sub> electrode as the reference electrode, and a platinum wire as the counter electrode, were used. The measurements were performed on a Metrohm Autolab PGSTAT204 potentiostat/galvanostat using Nova 2.1 software. The measurements were performed by coating the working electrode with a polymer solution in the present of nafion perfluorinated resin solution in an ACN solution (NH<sub>4</sub>PCl<sub>6</sub> 5.wt %)

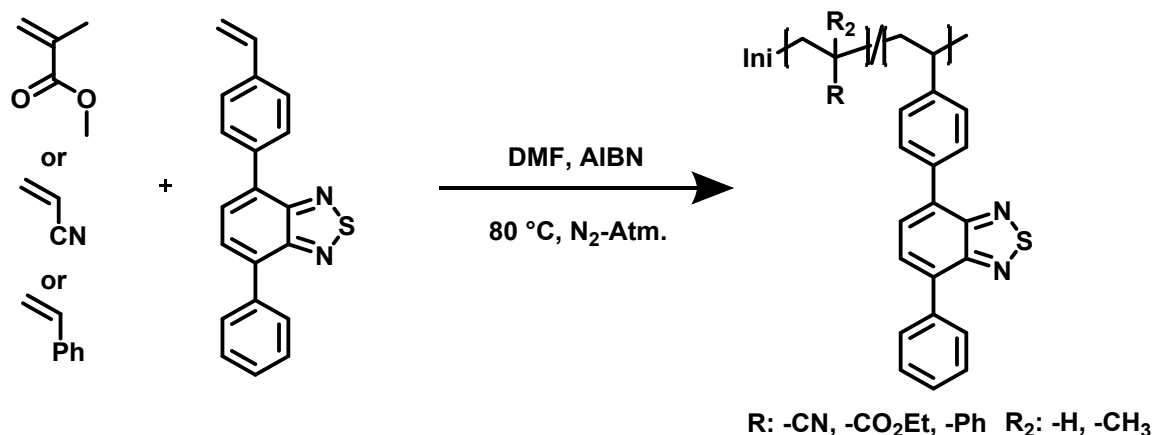
Gas chromatographic mass spectroscopy was performed on a Shimadzu GC-2010 plus combined with a QP2010 ultra mass spectrometer using a 7HG-G010-11 Phenomenex column and helium 5.0 as carrier. Methods were adjusted explicit for the required separation leading to three-used temperature curves.

DFT calculations were performed using Gaussian 16. The DFTs for the HOMO/LUMO levels were calculated for optimization of local minimum using method rb3lyp/6-31+g(d) Frontier molecular orbitals pictures were produced using Avogadro.

Photoreactor LEDs (Tru Components™ HighPower, 1.4 W per LED,  $\lambda=460\text{-}470$  nm power

## 2. Reactions

### 2.1 Polymer synthesis:

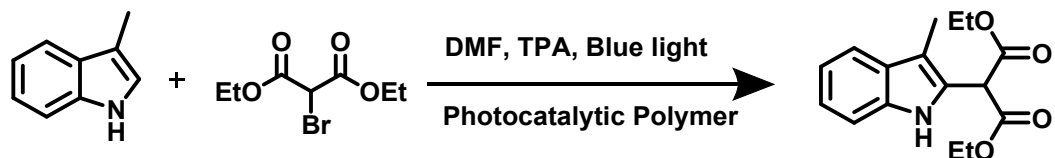


The monomer was first purified by basic aluminum oxide. In a dry flask methyl methacrylate or acrylonitrile (500 mg) was combined with 4-phenyl-7-(4-vinylphenyl)benzo[c][1,2,5]thiadiazole (5 wt%. 25 mg) and dissolved in dry DMF (1.5 mL). The solution was degassed by N<sub>2</sub> bubbling for 10 min. AIBN (1 wt.%) was dissolved in DMF (0.5 mL) and degassed by N<sub>2</sub> bubbling. The solutions were combined and heated under stirring at 80 °C overnight. The polymers were precipitated in diethyl ether and centrifuged for 10 min. (4000 rpm. 5 °C). The supernatant was discarded and the polymer taken up in DMF. The precipitation and centrifugation was repeated and the polymer purified via Soxhlet in diethyl ether for two days. The polymer was dried under vacuum and the concentration of incorporated photocatalyst is determined via a UV/Vis-calibration.

The monomer was first purified by basic aluminum oxide. In a dry flask methyl styrene (500 mg) was combined with 4-phenyl-7-(4-vinylphenyl)benzo[c][1,2,5]thiadiazole (5 wt%. 25 mg) and dissolved in dry DMF (1.0 mL). The solution was degassed by N<sub>2</sub> bubbling for 10 min. AIBN (2 wt.%) was dissolved in DMF (0.5 mL) and degassed by N<sub>2</sub> bubbling. The solutions were combined and heated under stirring at 80 °C overnight. The polymers were precipitated in methanol and centrifuged for 10 min. (4000 rpm. 5°C). The supernatant was discarded and the polymer taken up in DMF. The precipitation and centrifugation was repeated and the polymer purified via Soxhlet in methanol for two days, yielding a yellow powder for all samples. The polymer was dried under vacuum and the concentration of incorporated photocatalyst was determined via a UV/Vis-calibration.

## 2.2 Photocatalytic C-C coupling of 3-methylindol

### Diethyl 2-(3-methyl-1H-indol-2-yl)malonate



In a 2 ml flask equipped with a stir bar, 3-methyl indole (19.7 mg, 150  $\mu\text{mol}$ ), diethyl bromomalonate (71.7 mg, 300  $\mu\text{mol}$ ) and triphenylamine (73.6 mg, 300  $\mu\text{mol}$ ) and photocatalytic polymer (250 nmol photoactive unit) were dissolved in DMF (2 mL). The solution was degassed with Argon for 10 minutes and irradiated under blue light ( $\lambda=460\text{-}470\text{ nm}$ ). Samples (100  $\mu\text{L}$ ) were taken, diluted with DCM and directly measured via GCMS.

The reaction was purified via silica column chromatography DCM: PE 1:9  $\rightarrow$  EtAc: PE 8:2

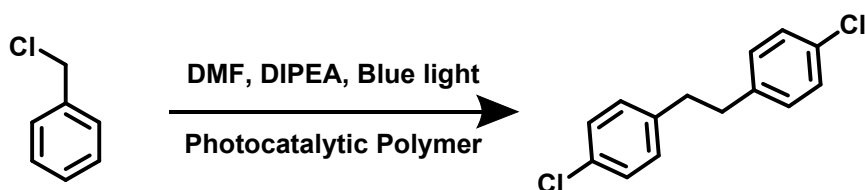
$^1\text{H}$  NMR (400 MHz,  $\text{CD}_2\text{Cl}_2$ )  $\delta$  8.93 (s, 1H), 7.54 (ddt,  $J = 7.9, 1.4, 0.8$  Hz, 1H), 7.36 (dt,  $J = 8.1, 0.9$  Hz, 1H), 7.18 (ddd,  $J = 8.2, 7.0, 1.2$  Hz, 1H), 7.09 (ddd,  $J = 8.0, 7.1, 1.1$  Hz, 1H), 5.00 (s, 1H), 4.35 – 4.10 (m, 4H), 2.30 (s, 3H), 1.29 (t,  $J = 7.1$  Hz, 6H).

$^{13}\text{C}$  NMR (101 MHz,  $\text{CD}_2\text{Cl}_2$ )  $\delta$  167.75, 136.19, 128.66, 125.22, 122.65, 119.55, 119.06, 111.34, 110.84, 62.71, 49.79, 14.21, 8.59.

GC/MS method: Splitless injection, Inject. Temp. 220  $^\circ\text{C}$ , Oven Temp: 60  $^\circ\text{C}$  hold 2 min., rate 70  $^\circ\text{C}/\text{min}$ . to 220  $^\circ\text{C}$  hold 4 min., rate 70  $^\circ\text{C}/\text{min}$ . to 280  $^\circ\text{C}$  hold 1 min. Pressure 92.4 kPa, total flow 36.5 ml/min.

## 2.3 Photocatalytic C-C coupling of 4-chlorobenzyl bromide

### 1,2-bis(4-chlorophenyl)ethane



In a 2 ml flask equipped with a stir bar, 4-chlorobenzyl bromide (20.5 mg, 100  $\mu$ mol) *N,N*-diisopropylethylamine (175  $\mu$ L, 1 mmol) and photocatalytic polymer (300 nmol photocatalytic moiety) were dissolved in DMF (2mL). The solution was degassed with Argon for 10 minutes and irradiated under blue light ( $\lambda=460-470$  nm). Samples (100  $\mu$ L) are taken, diluted with DCM and directly measured via GCMS.

The reaction was purified via silica column chromatography DCM: PE 0:10  $\rightarrow$  DCM: PE 1:9

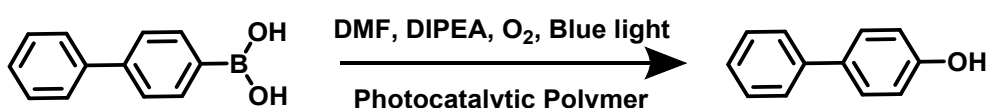
$^1\text{H}$  NMR (400 MHz,  $\text{CD}_2\text{Cl}_2$ )  $\delta$  7.28 – 7.20 (m, 1H), 7.12 – 7.04 (m, 1H), 2.87 (s, 1H).

$^{13}\text{C}$  NMR (101 MHz,  $\text{CD}_2\text{Cl}_2$ )  $\delta$  140.4, 131.9, 130.3, 128.7, 37.3.

GC/MS method: Split injection, Inject. Temp. 280  $^\circ\text{C}$ , Oven Temp: 60  $^\circ\text{C}$  hold 3 min., rate 20  $^\circ\text{C}/\text{min}$ . to 280  $^\circ\text{C}$  hold 1 min. Pressure 60 kPa,

## 2.4 Photocatalytic hydroxylation of 4-biphenylboronic acid

### 4-phenylphenol



In a 2 ml flask equipped with a stir bar, 4-biphenylboronic acid (19.8 mg, 100  $\mu$ mol) *N,N*-diisopropylethylamine (52  $\mu$ L, 300  $\mu$ mol) and photocatalytic polymer (100 nmol photoactive unit) were dissolved in DMF (2mL). Oxygen was bubbled through the solution for 5 minutes and irradiated under blue light ( $\lambda=460-470$  nm). Samples (100  $\mu$ L) were taken, diluted with DCM and directly measured via GCMS. The reaction was purified via silica column chromatography EtAc: PE 1:9  $\rightarrow$  EtAc: PE 1:0

The reaction was purified via silica column chromatography EtAc: PE 1:9  $\rightarrow$  EtAc: PE 1:0

$^1\text{H}$  NMR (400 MHz,  $\text{CD}_2\text{Cl}_2$ )  $\delta$  7.58 – 7.52 (m, 1H), 7.52 – 7.46 (m, 1H), 7.45 – 7.37 (m, 1H), 7.34 – 7.24 (m, 1H), 6.94 – 6.86 (m, 1H).

<sup>13</sup>C NMR (101 MHz, CH<sub>2</sub>Cl<sub>2</sub>) δ 155.70, 141.06, 134.18, 129.12, 128.67, 127.10, 126.97, 115.98.

GC/MS method: Splitless injection, Inject. Temp. 310 °C, Oven Temp: 50 °C, rate 25 °C/min. to 310 °C hold 1 min. Pressure 43.6 kPa,

**Table S1: Blank measurements under standard conditions mentioned in the respective method without sacrificing agent, light, catalyst or under oxygen.**

	Conversion		
	C-C coupling of 4-chlorobenzyl bromide	Hydroxylation of 4-biphenylboronic acid	C-C coupling of 3-methylindol
No DIPEA	0	0	n.d
No light	0	0	0
No catalyst	0	< 5	0
Oxygen	n.d	-	0

### Photocatalyst synthesis

4-phenyl-7-(4-vinylphenyl)benzo[c][1,2,5]thiadiazole was synthesized after a previously published synthesis route.<sup>1</sup>

<sup>1</sup>H NMR (400 MHz, DMSO-d<sub>6</sub>) δ 8.09 – 7.93 (m, 6H), 7.67 (d, *J* = 8.2 Hz, 2H), 7.57 (dd, *J* = 8.3, 6.7 Hz, 2H), 7.52 – 7.44 (m, 1H), 6.84 (dd, *J* = 17.6, 10.9 Hz, 1H), 5.96 (d, *J* = 17.7 Hz, 1H), 5.36 (d, *J* = 11.0 Hz, 1H).

### 3. UV/Vis-Spectra

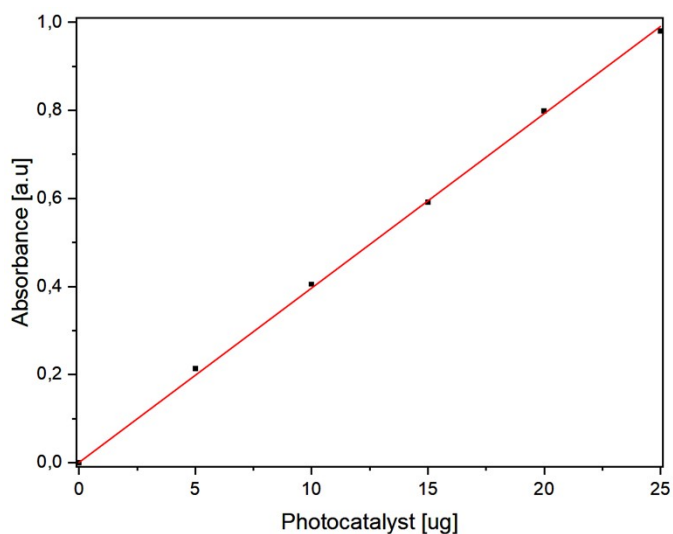
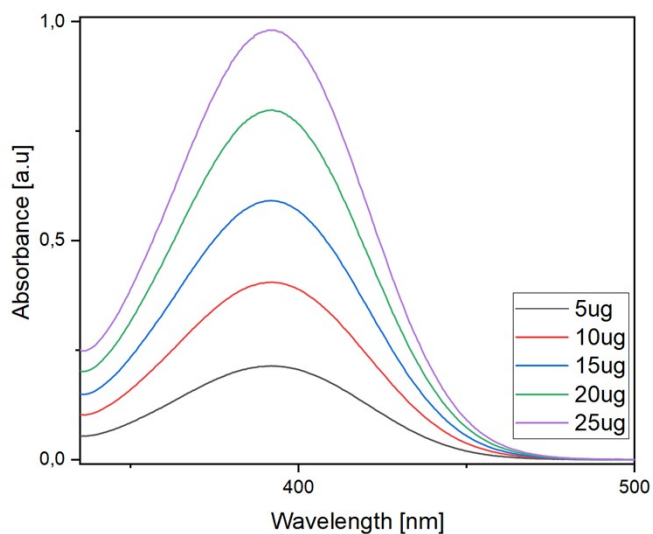


Figure S1: Linear fit of single photocatalytic moiety in DMF for calibration through UV/Vis-spectroscopy

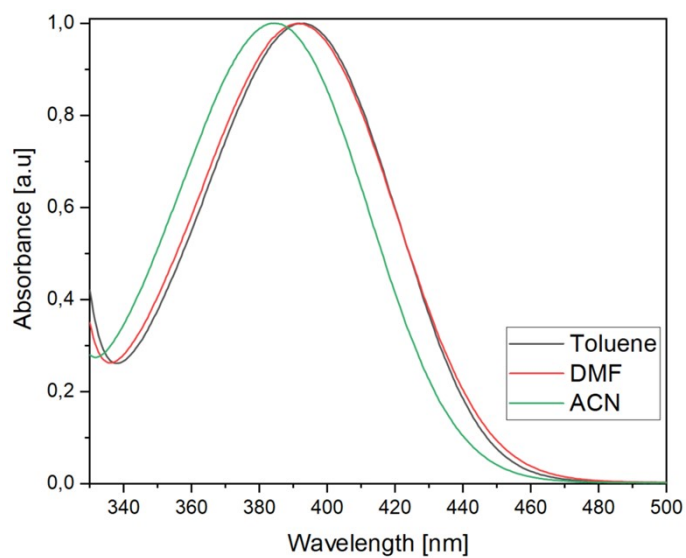
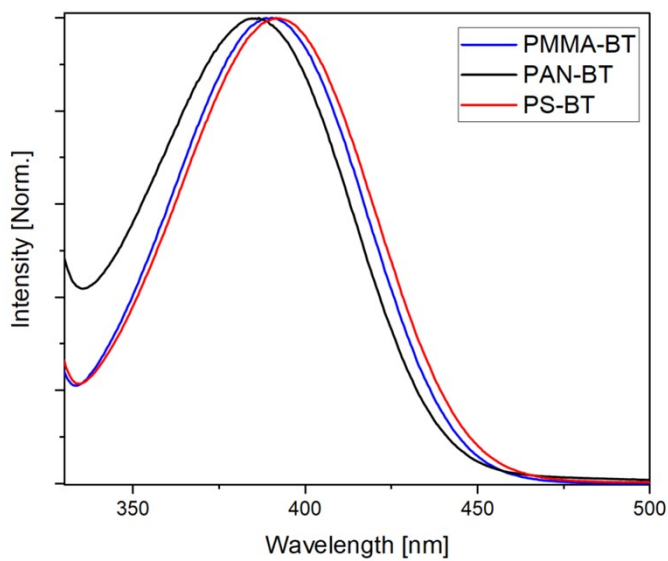


Figure S2: Absorbance spectra of PMMA-BT, PAN-BT and PS-BT in DMF indicating a change in absorbance depending on the comonomer (left). Absorbance spectra of pure photocatalyst in toluene, DMF and ACN displaying solvatochromism



## 4. Tauc-Plot

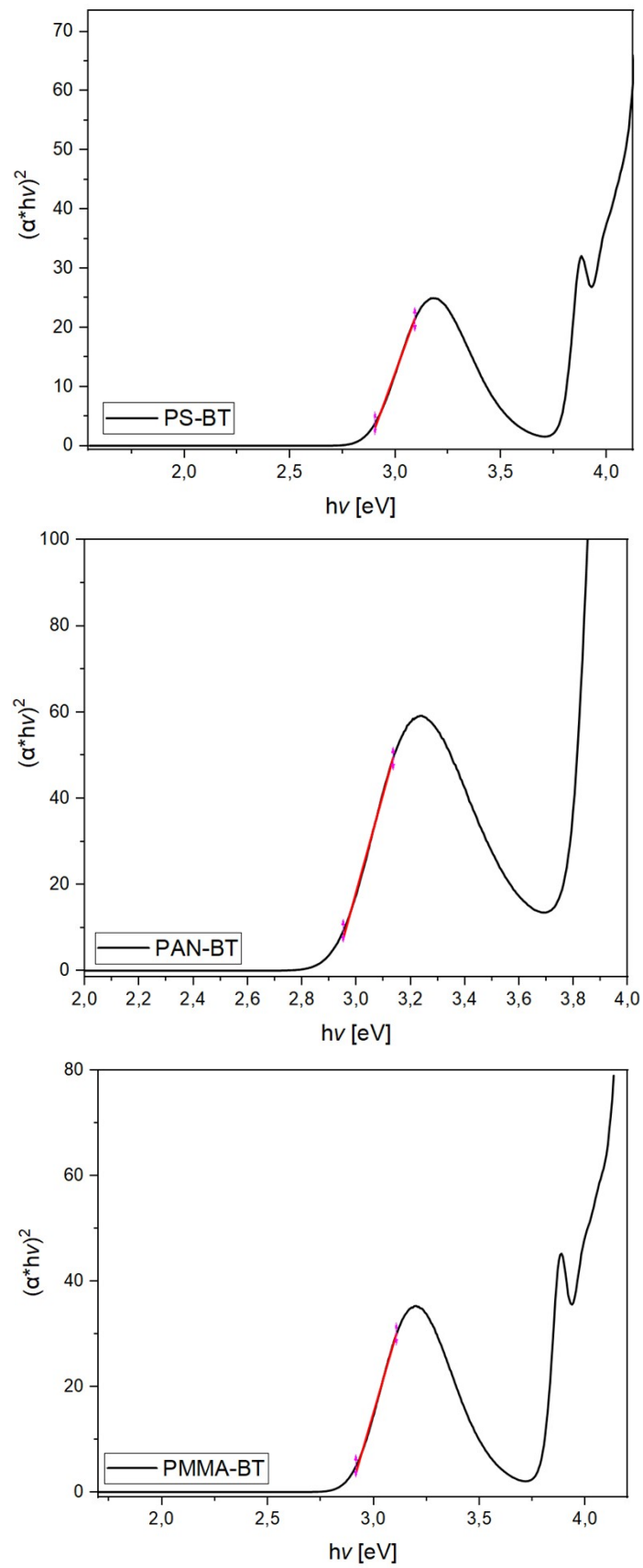


Figure S3: Tauc-Plot of PMMA-BT, Pan-BT and PS-BT using a model for a direct bandgap.

## 5. Fluorescence Spectra

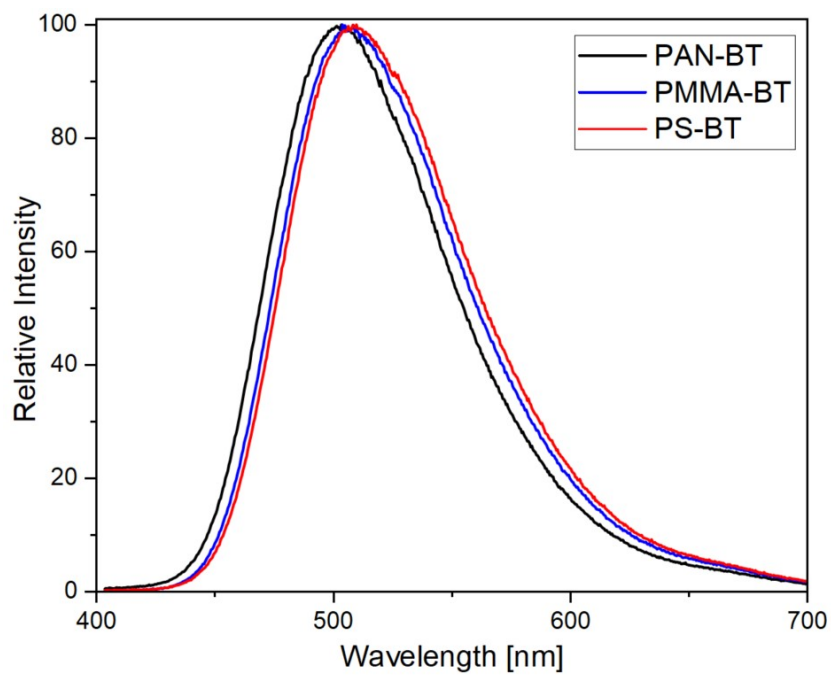


Figure S4: Fluorescence spectra of PAN-BT, PMMA-BT and PS-BT showing a blue shift in PAN-BT indicating the influence of the comonomer.

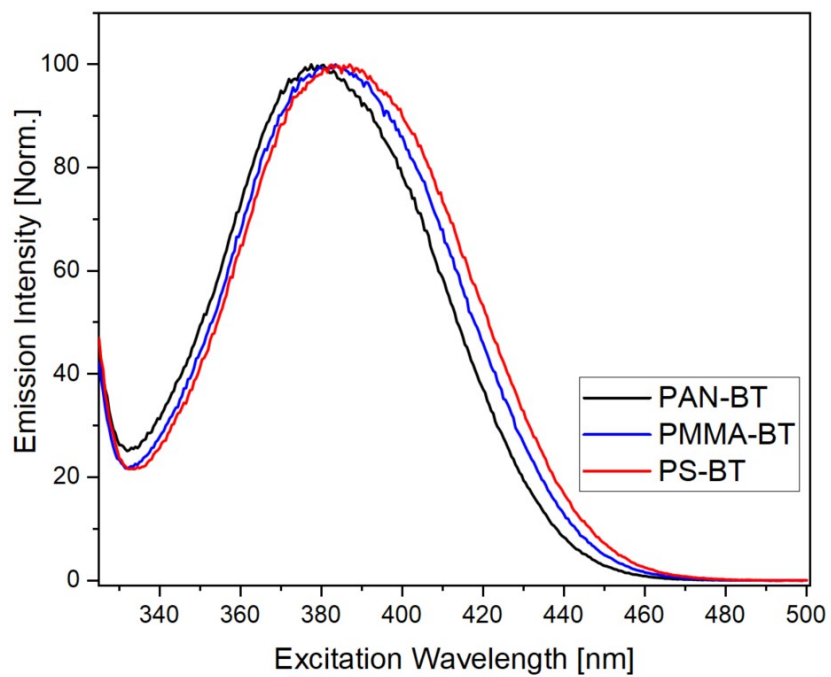


Figure S5: Excitation spectra of PAN-BT, PMMA-BT and PS-BT at 507 nm.

## 6. Quantum Yield

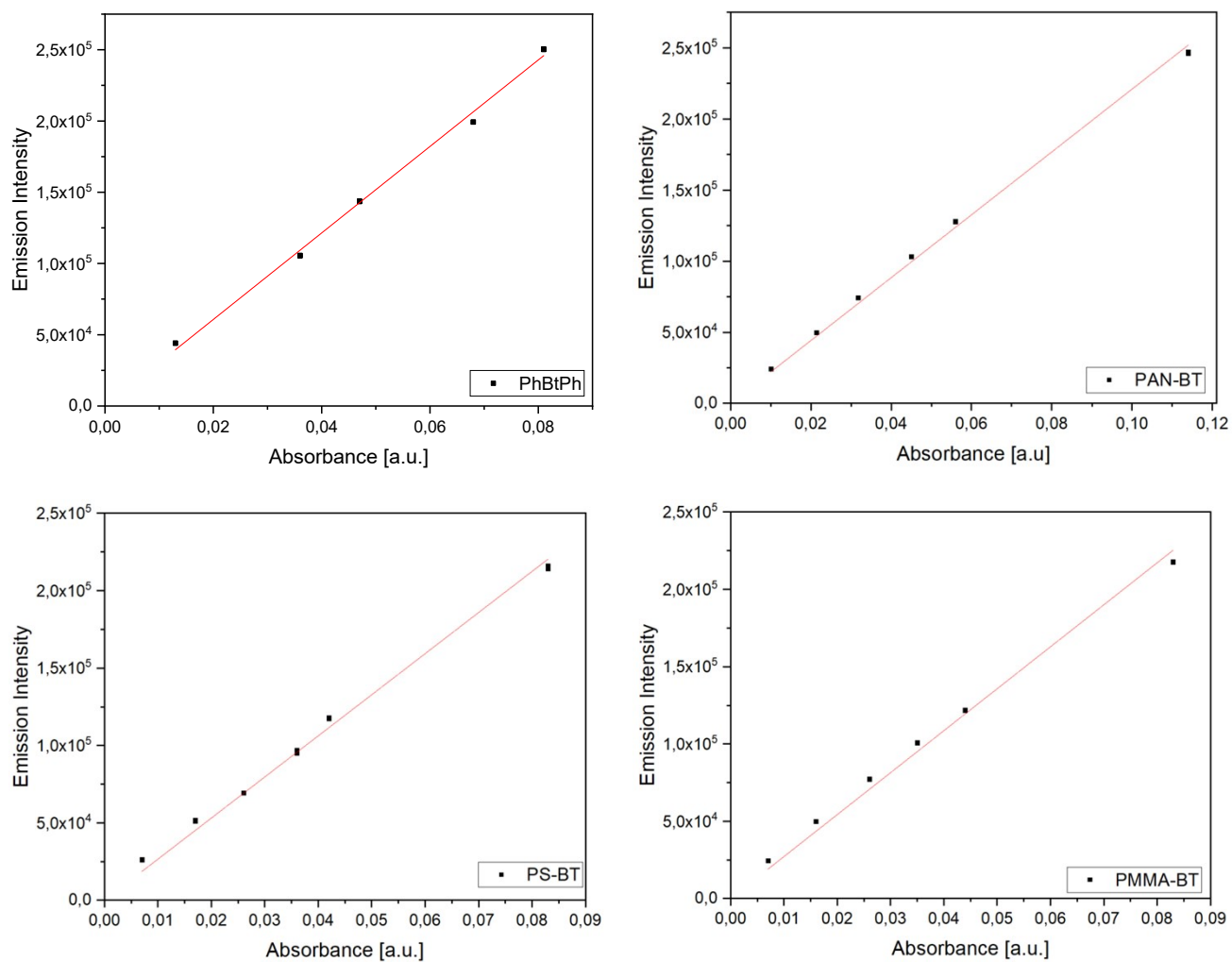
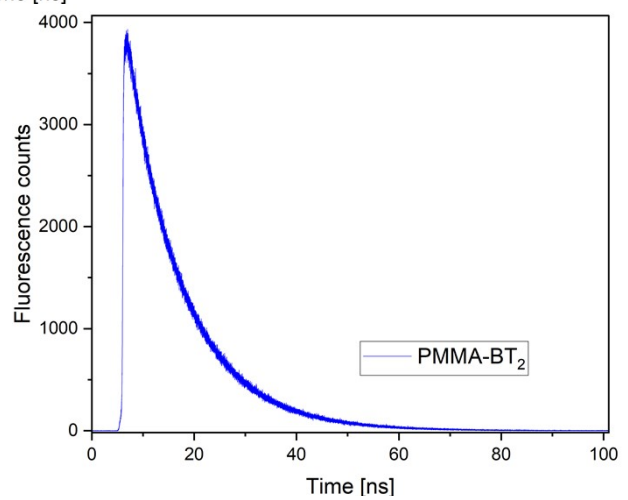
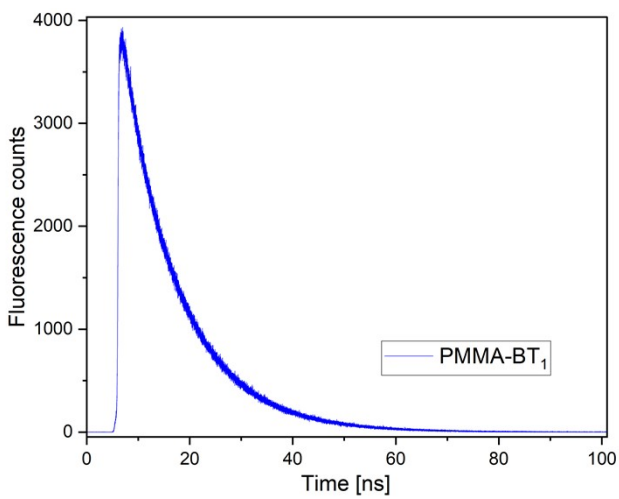
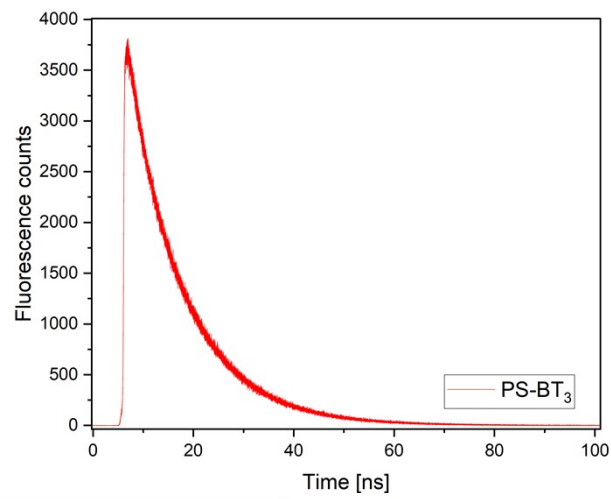
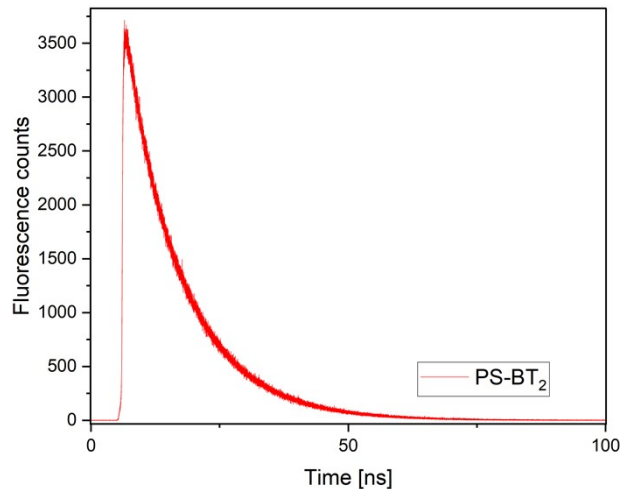
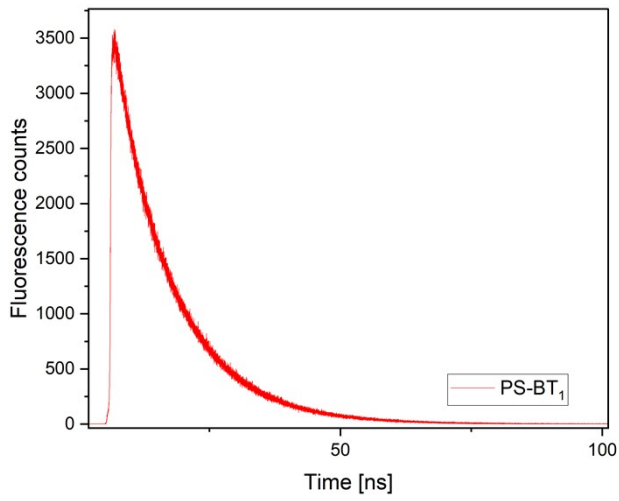


Figure S6: Quantum yield calculation of PAN-BT, PMMA-BT and PS-BT using 4,7-Diphenyl-2,1,3-benzothiadiazole at 366 nm in ACN as reference.

## 7. Fluorescence Lifetime



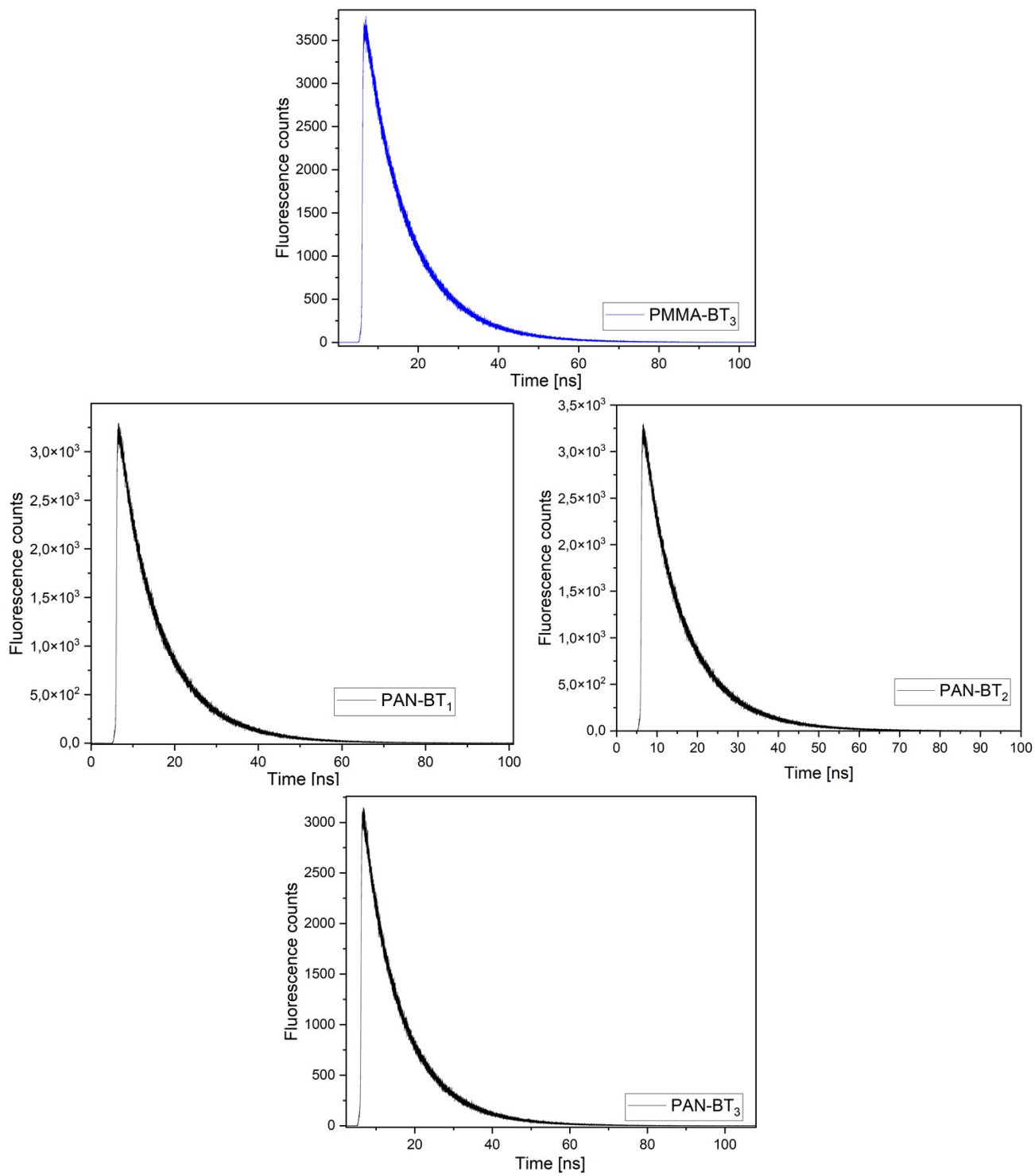


Figure S7: Fluorescence lifetime measurements of PAN-BT, PS-BT and PMMA-BT.

## 8. Stern-Volmer Plot

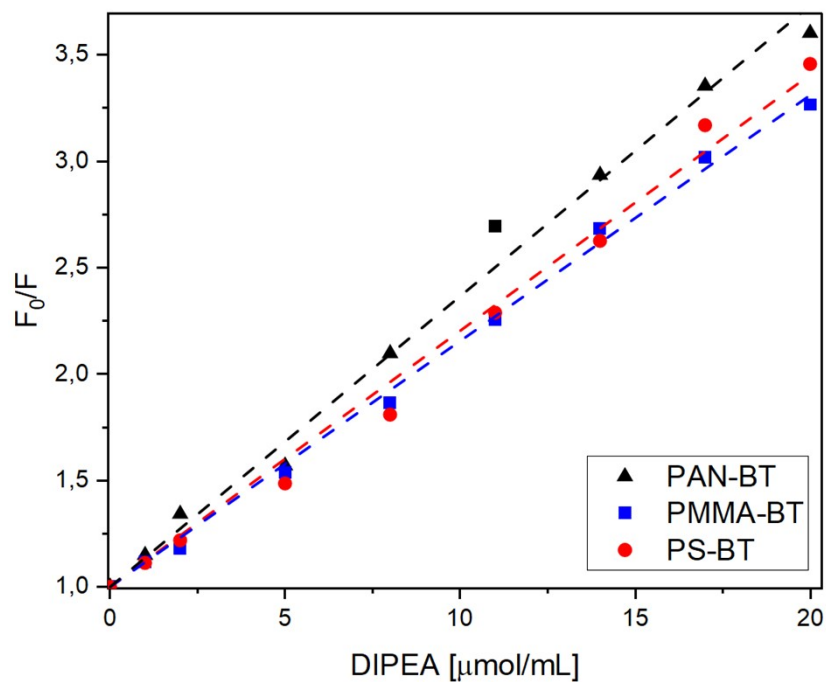


Figure S8: Stern-Volmer Plot of PAN-BT, PS-BT and PMMA-BT using DIPEA as quenching agent

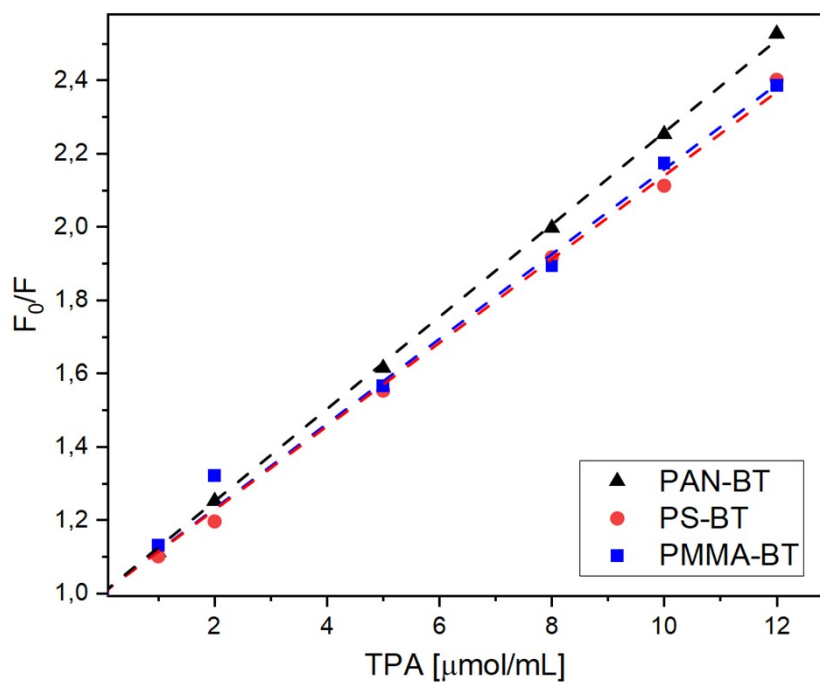


Figure S9: Stern-Volmer Plot of PAN-BT, PS-BT and PMMA-BT using TPA as quenching agent

## 9. Dynamic light scattering

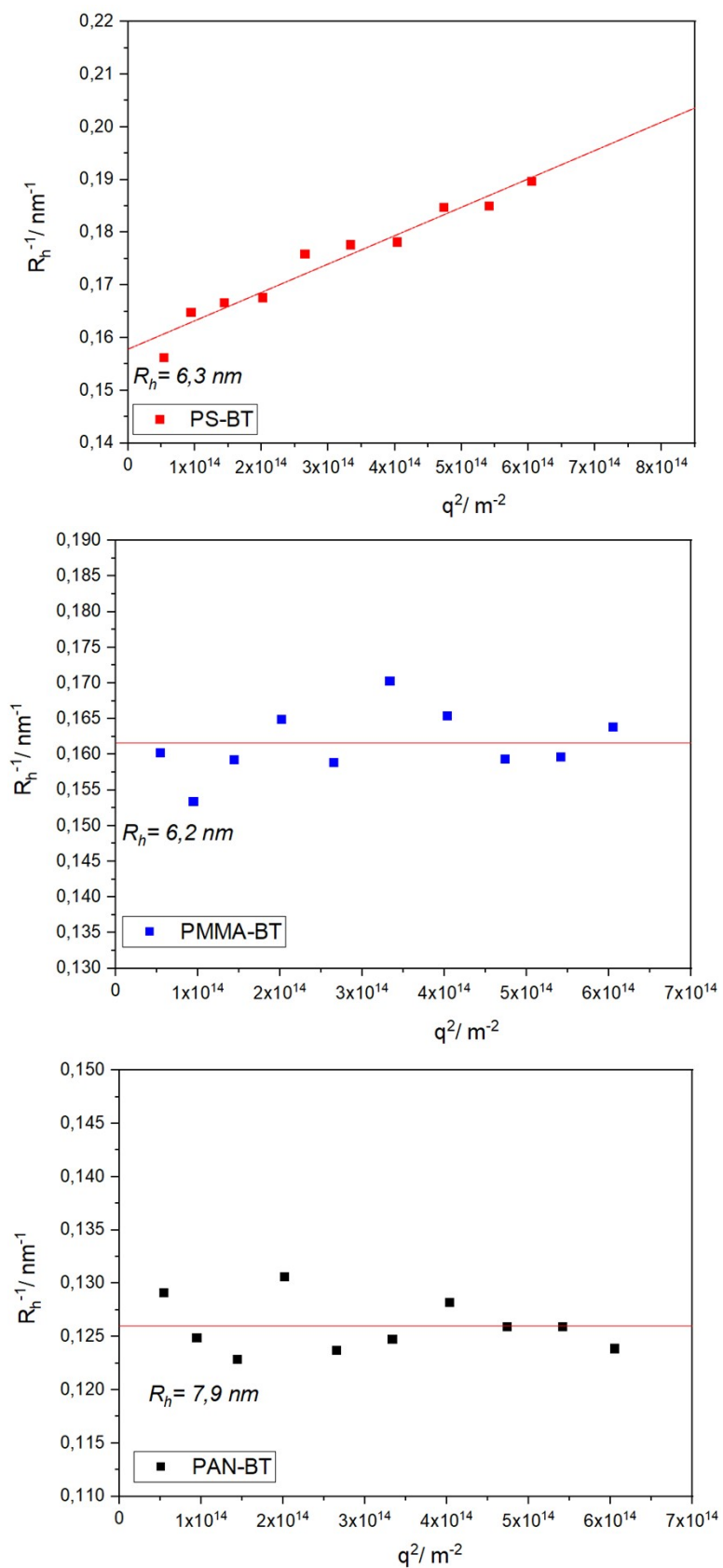


Figure S10: DLS measurements of PAN-BT, PS-BT and PMMA-BT and the calculated hydrodynamic radius.

## 10. FTIR-spectroscopy

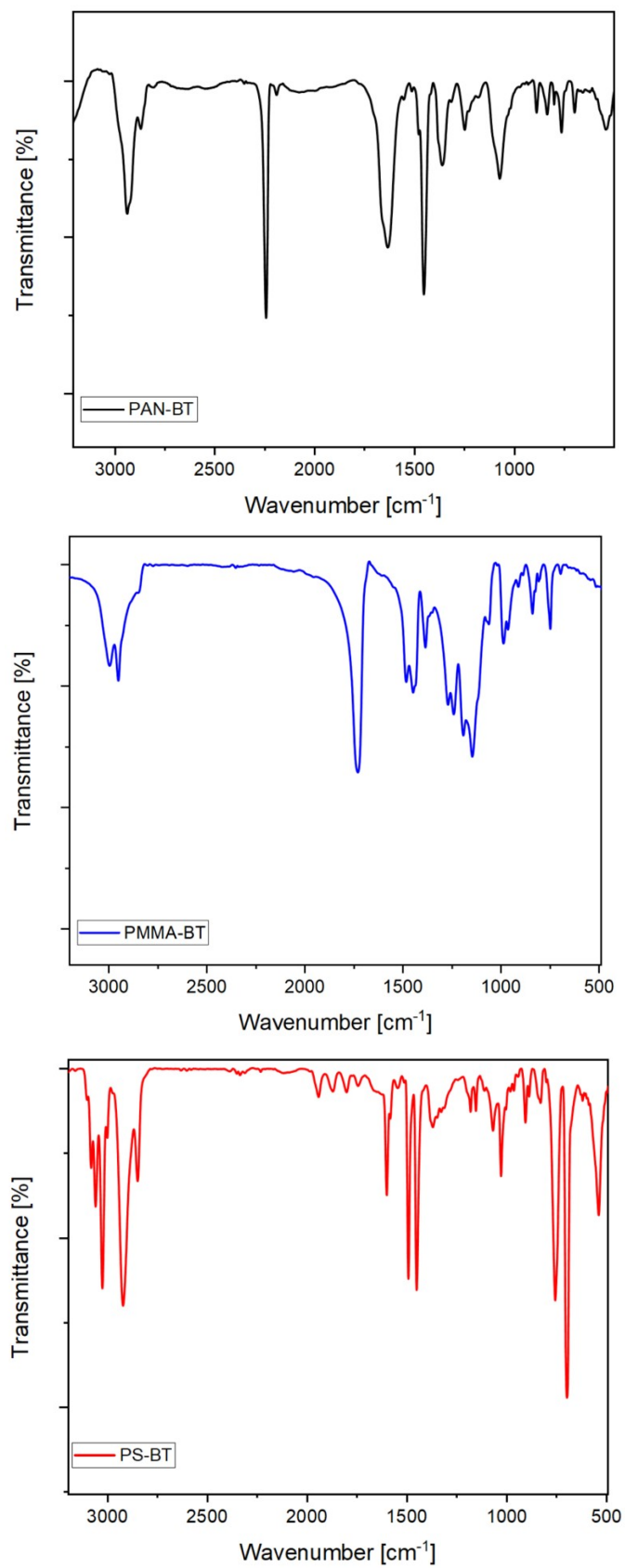


Figure S11: FTIR spectra of PAN-BT, PS-BT and PMMA-BT as dry powder in KBr pellets.



## 11. GPC

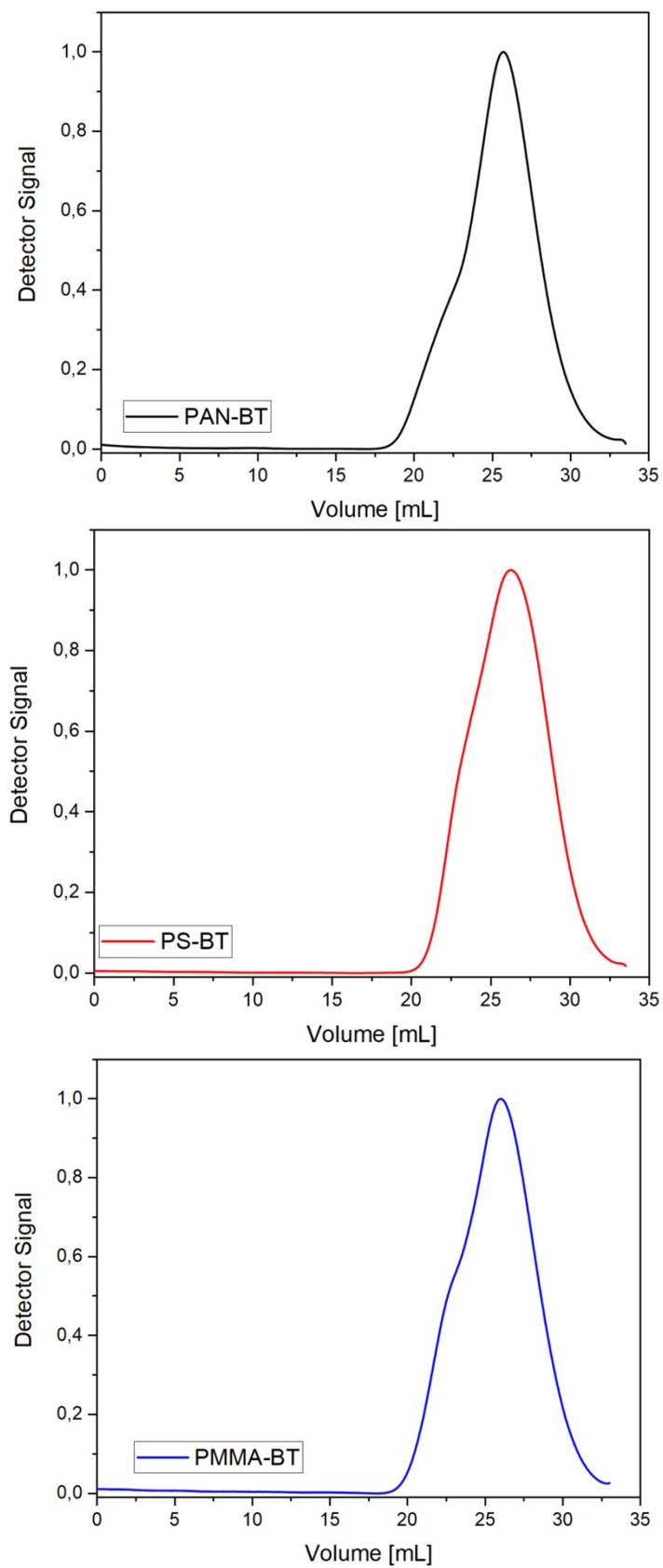


Figure S12: GPC of PAN-BT, PS-BT and PMMA-BT in DMF against a PMMA standard.

## 12. Cyclic Voltammetry

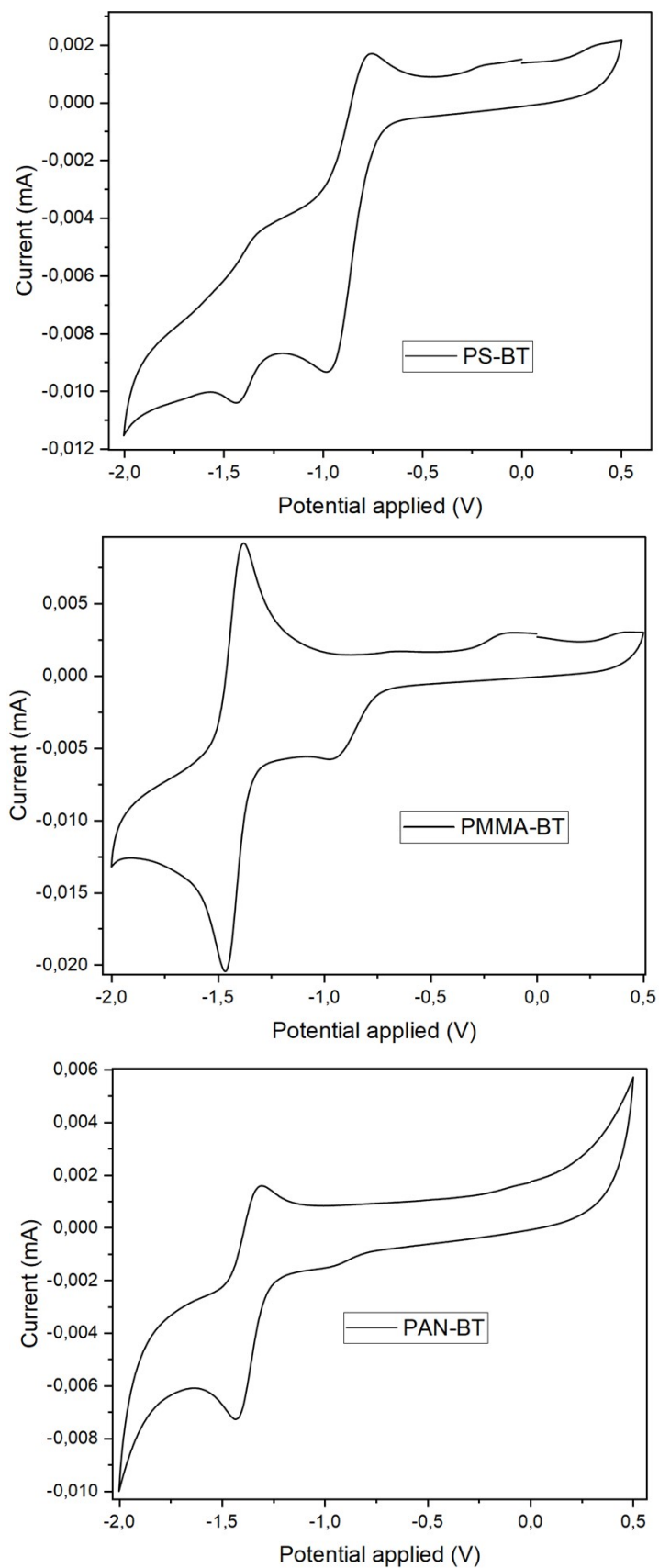
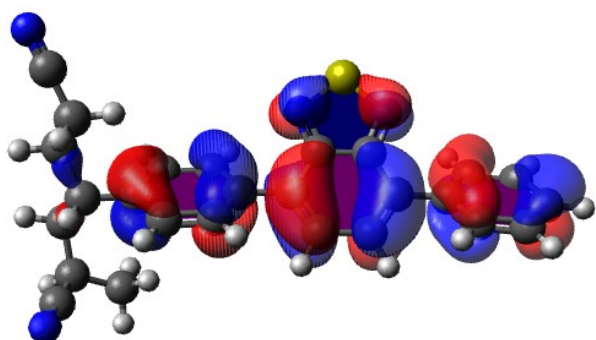
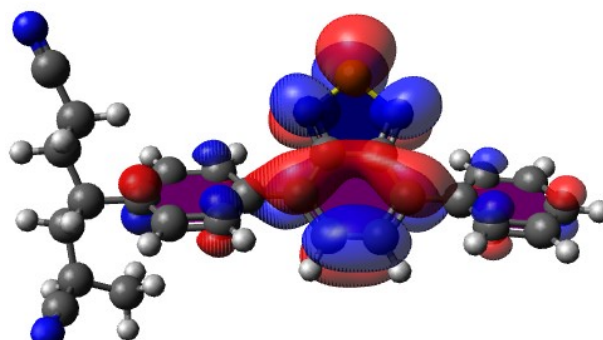


Figure S13: CV measurements of PAN-BT, PS-BT and PMMA-BT as membranes using Nafion in ACN ( $\text{NBu}_4\text{PF}_6$  5.0 wt%).

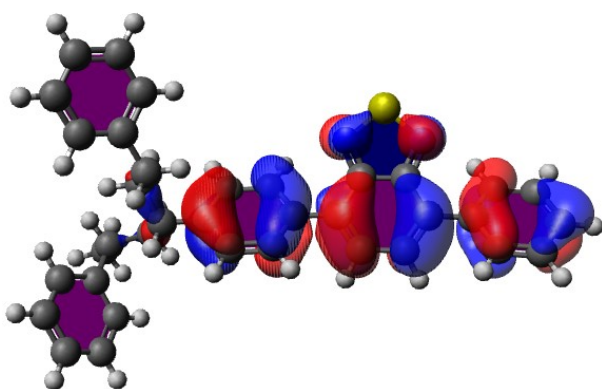
## 13. DFT



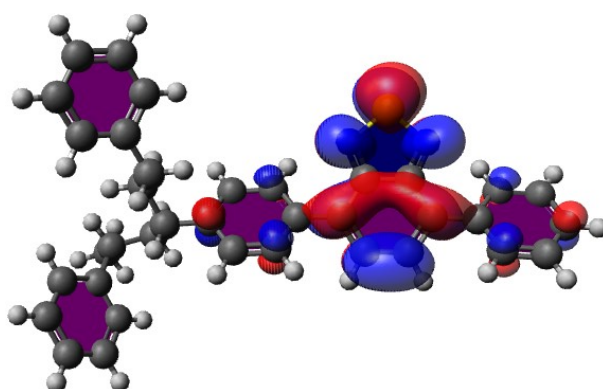
PAN-BT HOMO: 1.8 V vs SCE



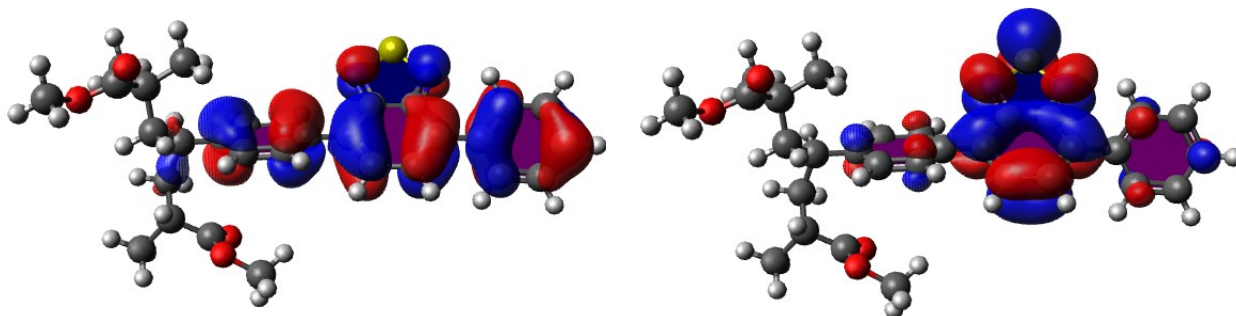
PAN-BT LUMO: -1.55 V vs SCE



PS-BT HOMO: 1.52 V vs SCE



PS-BT LUMO: -1.77 V vs SCE



PMMA-BT HOMO: 1.52 V vs SCE

PMMA-BT LUMO: -1.78 V vs SCE

**Figure S14: HOMO (left) and LUMO (right) of PAN-BT, PS-BT and PMMA-BT. Indicating electron density shift in excited state compared to ground state**

## 14. Cartesian coordinates

### PS-BT

C	-1.0272	-8.28253	-0.09701
C	0.24952	-7.7078	-0.03733
C	0.3901	-6.31361	-0.01905
C	-0.74616	-5.4942	-0.05786
C	-2.02289	-6.0689	-0.1158
C	-2.16349	-7.4631	-0.13386
H	-1.13452	-9.34702	-0.11226
H	1.11707	-8.33344	-0.00817
H	1.36488	-5.87476	0.02734
H	-2.89046	-5.44324	-0.14334
H	-3.13834	-7.90194	-0.17822
C	-0.59122	-3.96224	-0.04368
C	-1.73043	-3.11883	-0.08427
C	0.79125	-3.32098	0.02133
C	-1.63666	-1.69086	-0.0834
H	-2.70015	-3.56871	-0.1251
C	0.88958	-1.82007	0.02358
C	-0.39749	-1.00619	-0.03177
H	-2.5396	-1.11688	-0.11687
C	-0.35117	0.52705	-0.04439
C	0.88714	1.18716	0.0033
C	-1.54494	1.2617	-0.09002
C	0.92593	2.57582	-0.0193
H	1.79615	0.62776	0.0455
C	-1.49743	2.64752	-0.11342
H	-2.48807	0.76104	-0.11805
C	-0.27506	3.28798	-0.08176
H	1.86302	3.098	0.02929
S	3.16475	-2.72272	0.2883
N	1.97584	-3.93645	0.06683
N	2.14409	-1.36333	0.07466
C	-0.23323	4.81879	-0.09079
H	-0.28382	5.10934	0.91605
C	-1.41915	5.43338	-0.8778
H	-1.17903	6.49308	-0.92533
H	-1.50053	5.02908	-1.84965
C	1.05577	5.42159	-0.70225
H	0.89592	6.46116	-0.59705
H	1.21257	5.17664	-1.7517
C	-2.79504	5.3181	-0.18697
C	-3.96067	4.72083	-1.03347
H	-3.60909	4.52307	-1.97406
H	-4.35224	3.84309	-0.5652
H	-4.77589	5.50435	-1.09029
H	-2.39962	3.22795	-0.13557
C	2.33945	5.01264	0.06724
H	3.04486	5.80758	-0.00063
H	2.06828	4.84532	1.09512

### PAN-BT

C	-1.0272	-8.28253	-0.09701
C	0.24952	-7.7078	-0.03733
C	0.3901	-6.31361	-0.01905
C	-0.74616	-5.4942	-0.05786
C	-2.02289	-6.0689	-0.1158
C	-2.16349	-7.4631	-0.13386
H	-1.13452	-9.34702	-0.11226
H	1.11707	-8.33344	-0.00817
H	1.36488	-5.87476	0.02734
H	-2.89046	-5.44324	-0.14334
H	-3.13834	-7.90194	-0.17822
C	-0.59122	-3.96224	-0.04368
C	-1.73043	-3.11883	-0.08427
C	0.79125	-3.32098	0.02133
C	-1.63666	-1.69086	-0.0834
H	-2.70015	-3.56871	-0.1251
C	0.88958	-1.82007	0.02358
C	-0.39749	-1.00619	-0.03177
H	-2.5396	-1.11688	-0.11687
C	-0.35117	0.52705	-0.04439
C	0.88714	1.18716	0.0033
C	-1.54494	1.2617	-0.09002
C	0.92593	2.57582	-0.0193
H	1.79615	0.62776	0.0455
C	-1.49743	2.64752	-0.11342
H	-2.48807	0.76104	-0.11805
C	-0.27506	3.28798	-0.08176
H	1.86302	3.098	0.02929
S	3.16475	-2.72272	0.2883
N	1.97584	-3.93645	0.06683
N	2.14409	-1.36333	0.07466
C	-0.23323	4.81879	-0.09079
H	-0.28382	5.10934	0.91605
C	-1.41915	5.43338	-0.8778
H	-1.17903	6.49308	-0.92533
H	-1.50053	5.02908	-1.84965
C	1.05577	5.42159	-0.70225
H	0.89592	6.46116	-0.59705
H	1.21257	5.17664	-1.7517
C	-2.79504	5.3181	-0.18697
C	-3.96067	4.72083	-1.03347
H	-3.60909	4.52307	-1.97406
H	-4.35224	3.84309	-0.5652
H	-4.77589	5.50435	-1.09029
H	-2.39962	3.22795	-0.13557
C	2.33945	5.01264	0.06724
C	-2.75568	4.74802	1.30424
N	-2.72705	4.3331	2.38956

H	-3.08825	6.4056	-0.26347	H	3.04486	5.80758	-0.00063
C	-2.75708	4.76834	1.25106	C	3.03826	3.82162	-0.59915
C	-1.86649	5.30664	2.18033	N	3.57434	2.96091	-1.14733
C	-3.61311	3.73236	1.62456	H	2.06828	4.84532	1.09512
C	-1.83152	4.80855	3.4826	H	-3.08825	6.4056	-0.26347
H	-1.19121	6.12287	1.88535				
C	-3.57894	3.23467	2.92746				
H	-4.31522	3.3081	0.89233				
C	-2.68826	3.77247	3.85643				
H	-1.12913	5.23237	4.21494				
H	-4.25428	2.41811	3.22178				
H	-2.66055	3.37994	4.8833				
C	3.04132	3.8164	-0.60207				
C	3.88846	2.99746	0.14504				
C	2.83006	3.55155	-1.95513				
C	4.52468	1.91435	-0.46102				
H	4.05541	3.20699	1.21156				
C	3.46562	2.46756	-2.56129				
H	2.16227	4.19679	-2.54407				
C	4.31295	1.64906	-1.81454				
H	5.19291	1.26918	0.12765				
H	3.29854	2.25874	-3.62804				
H	4.81465	0.79497	-2.29216				

### **PMMA-BT**

C	-1.33724	-8.58821	-0.55482
C	-0.07169	-8.11859	-0.17826
C	0.15217	-6.74223	-0.03946
C	-0.88946	-5.8355	-0.27742
C	-2.15527	-6.30504	-0.65278
C	-2.37917	-7.68145	-0.79175
H	-1.50798	-9.63905	-0.66135
H	0.72373	-8.81088	0.00315
H	1.1184	-6.38353	0.24811
H	-2.95083	-5.61266	-0.83346
H	-3.34556	-8.03999	-1.07883
C	-0.64296	-4.32301	-0.12681
C	-1.68649	-3.39294	-0.36303
C	0.72912	-3.79441	0.27914
C	-1.50625	-1.97813	-0.23871
H	-2.64926	-3.76401	-0.64629
C	0.91877	-2.30694	0.40969
C	-0.26934	-1.39168	0.13059
H	-2.34003	-1.33625	-0.43287
C	-0.12817	0.13735	0.24712
C	1.10176	0.70155	0.61162
C	-1.2294	0.96453	-0.01153

C	1.23092	2.09296	0.71622
H	1.94235	0.06989	0.80989
C	-1.1002	2.35607	0.093
H	-2.16871	0.5337	-0.2889
C	0.13025	2.92033	0.45608
H	2.17005	2.52376	0.99454
S	3.01709	-3.3967	1.09807
N	1.83234	-4.50129	0.5397
N	2.15746	-1.95279	0.76336
C	0.2731	4.44956	0.56882
H	0.04031	4.75728	1.56668
C	-0.69556	5.12915	-0.41687
C	1.71973	4.85613	0.2307
H	1.8188	5.91877	0.30768
H	-1.94101	2.98773	-0.10449
C	2.05602	4.4118	-1.20493
H	1.38351	4.88309	-1.89091
H	2.39221	4.38459	0.91649
C	3.5025	4.81836	-1.54267
C	1.91398	2.88242	-1.31538
O	2.12959	2.15637	-0.31041
O	1.53715	2.28717	-2.55974
H	4.17492	4.34694	-0.85668
H	3.73605	4.50954	-2.54014
H	3.60157	5.88097	-1.46584
H	-0.46328	4.82086	-1.41487
H	-1.70028	4.84676	-0.181
C	-0.55268	6.65861	-0.30612
C	-0.88625	7.1035	1.13008
H	-1.89078	6.82109	1.36673
H	-0.21256	6.63243	1.81503
H	-0.78711	8.16619	1.2063
C	-1.52223	7.33684	-1.29167
O	-2.60676	6.77496	-1.59431
O	-1.19036	8.60495	-1.86307
C	0.8932	7.06504	-0.64624
H	1.56663	6.5939	0.03892
H	1.12528	6.75587	-1.64397
H	0.99231	8.12769	-0.56996
C	0.81563	1.07808	-2.3101
H	1.436	0.39906	-1.76322
H	-0.06223	1.29805	-1.73916
H	0.53324	0.63244	-3.24105
C	-2.39036	9.33396	-2.1342
H	-2.14232	10.28296	-2.56177
H	-2.99625	8.78067	-2.82106
H	-2.93046	9.48363	-1.22264

## 15. Calibration curve

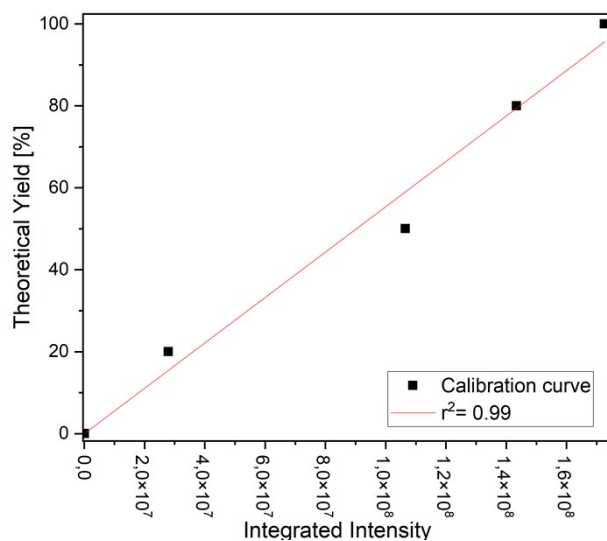


Figure S15: Calibration curve for the hydroxylation of 4-biphenylboronic acid based on isolated product and theoretical yield.

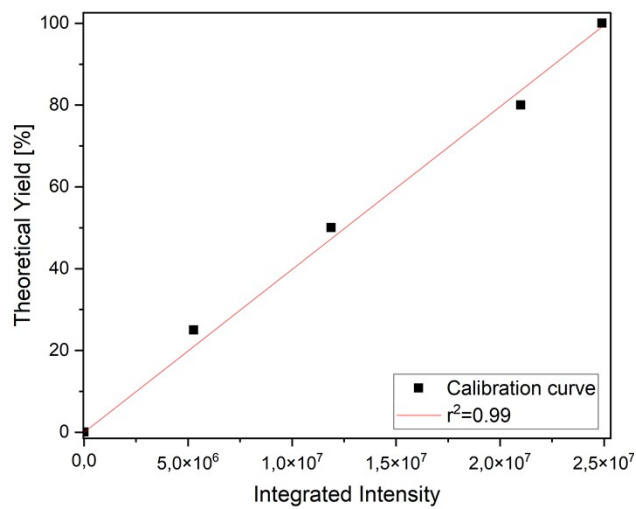


Figure S16: Calibration curve for the C-C coupling of 4-chlorobenzyl bromide based on isolated product and theoretical yield.



## 16 GCMS

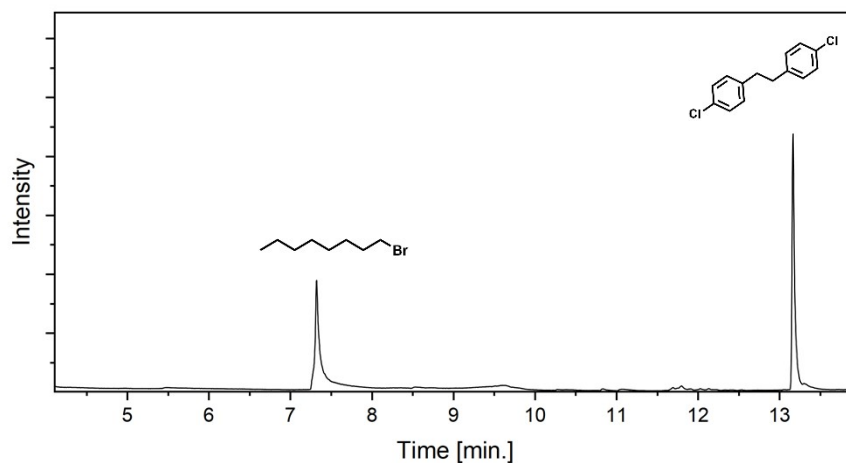


Figure S17: GCMS trail of 1,2-bis(4-chlorophenyl)ethane using 1-bromo-octane as standard

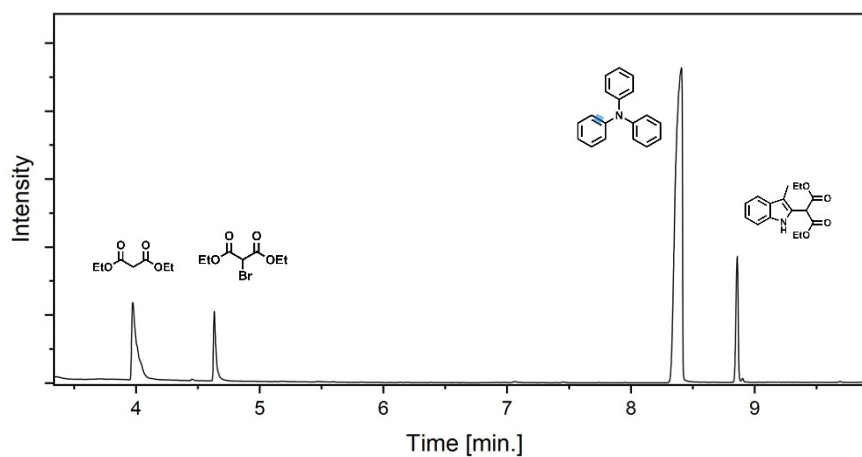


Figure S18: GCMS trail of Diethyl 2-(3-methyl-1H-indol-2-yl)malonate

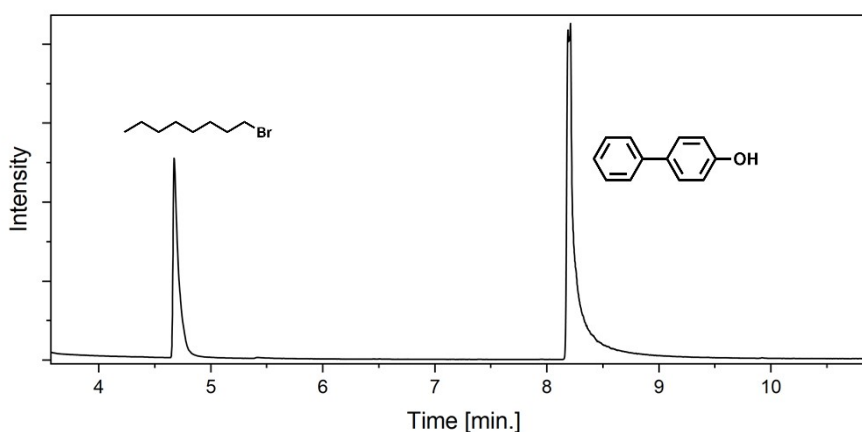


Figure S19: GCMS trail of 4-phenylphenol

# 17 NMR

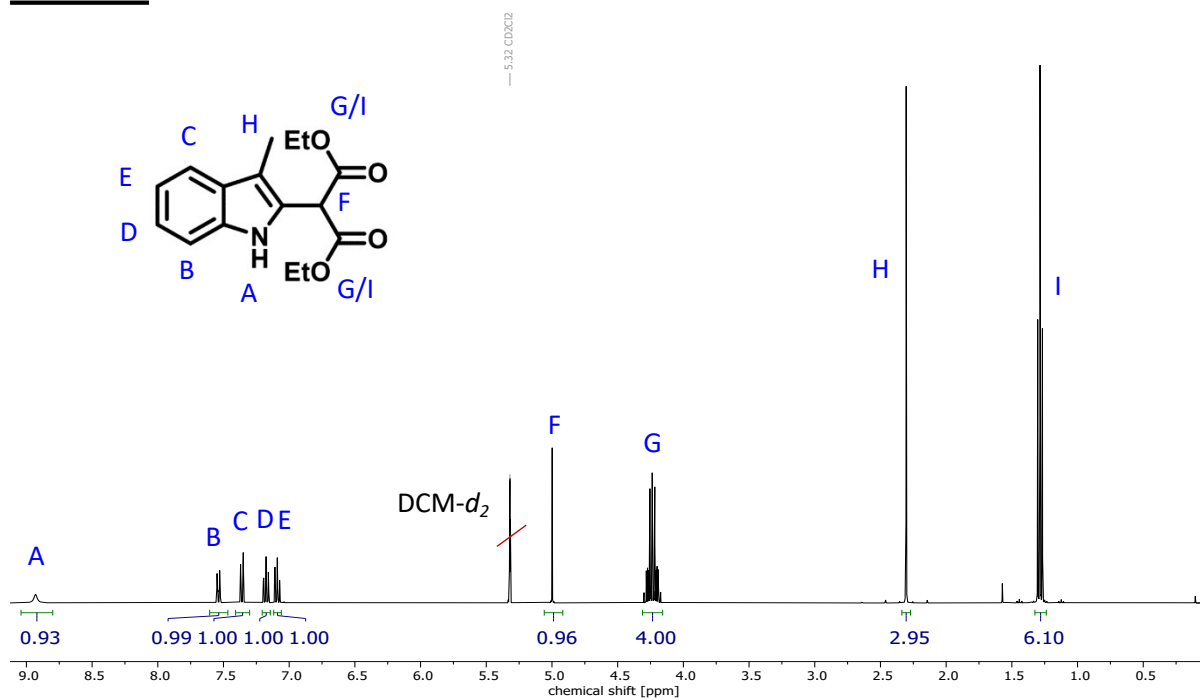


Figure S20:  $^1\text{H}$  NMR (400 MHz,  $\text{CD}_2\text{Cl}_2$ ) of Diethyl 2-(3-methyl-1H-indol-2-yl)malonate

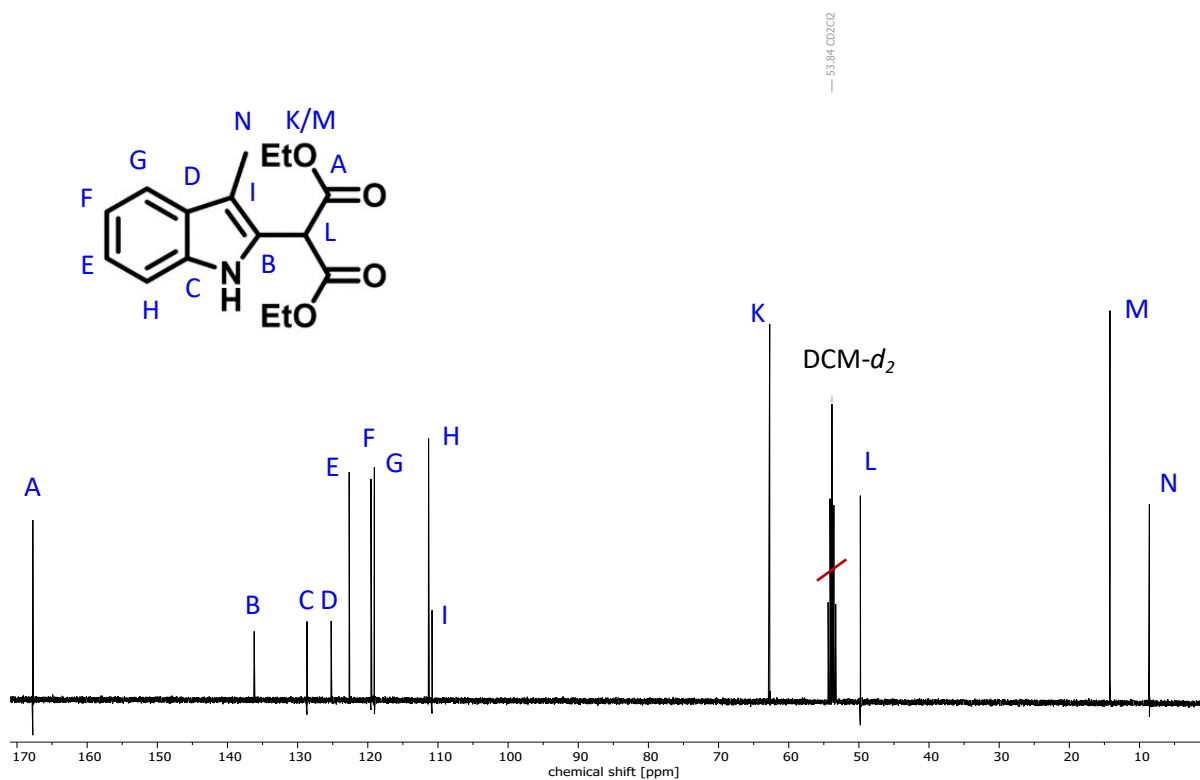


Figure S21:  $^{13}\text{C}$  NMR (101 MHz,  $\text{CD}_2\text{Cl}_2$ ) of Diethyl 2-(3-methyl-1H-indol-2-yl)malonate

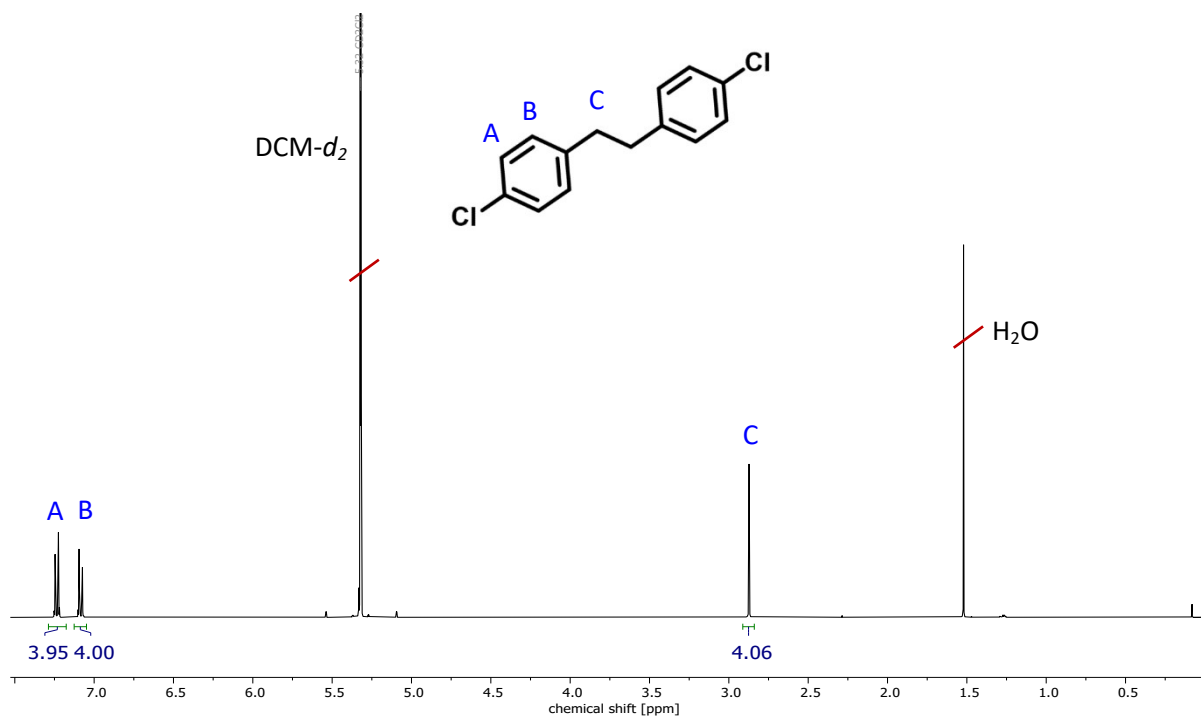


Figure S22:  $^1\text{H}$  NMR (400 MHz,  $\text{CD}_2\text{Cl}_2$ ) of 1,2-bis(4-chlorophenyl)ethane

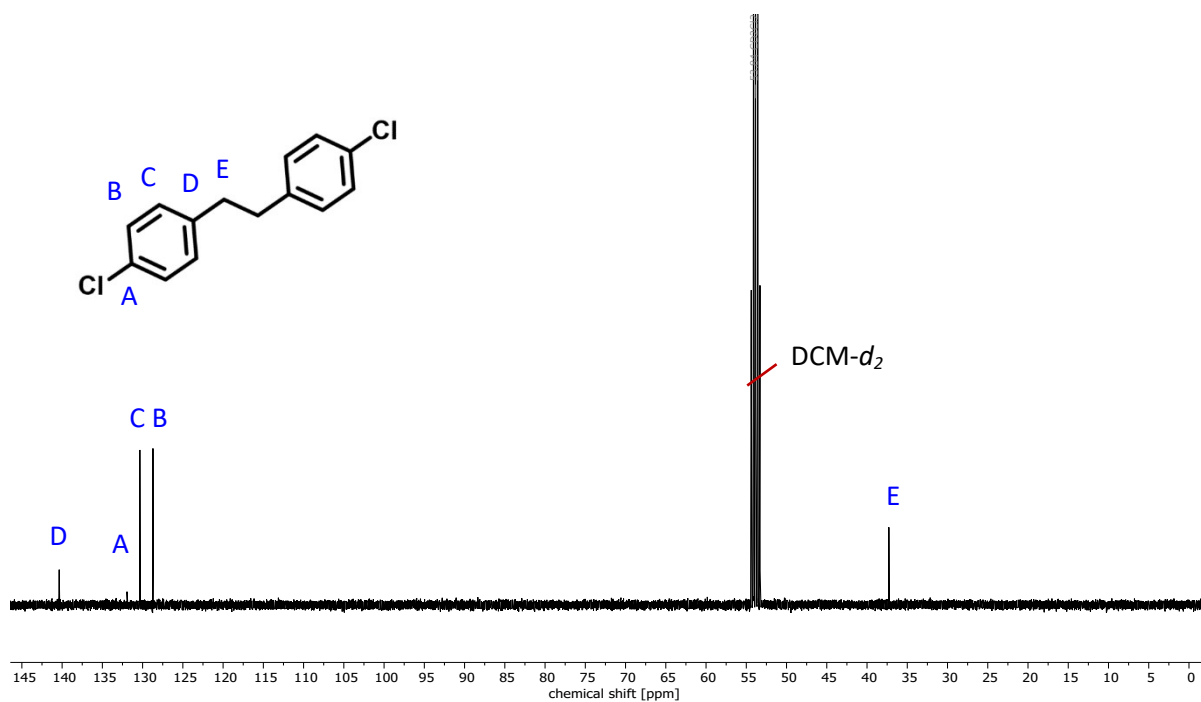


Figure S23:  $^{13}\text{C}$  NMR (101 MHz,  $\text{CD}_2\text{Cl}_2$ ) of 1,2-bis(4-chlorophenyl)ethane

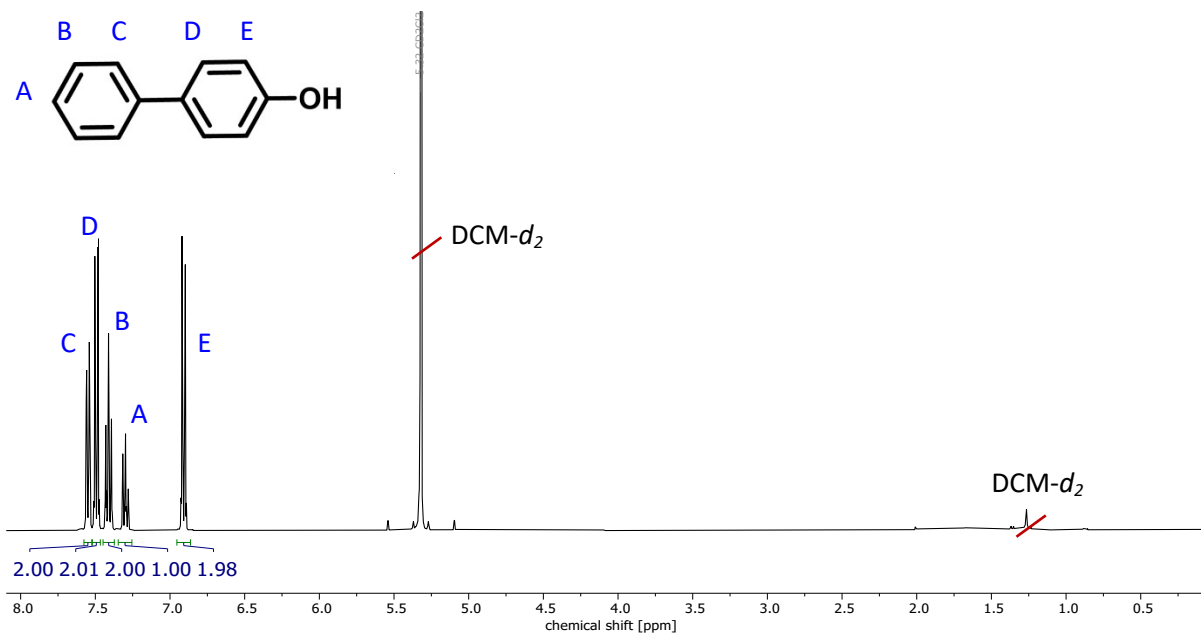


Figure S23:  $^1\text{H NMR}$  (400 MHz,  $\text{CD}_2\text{Cl}_2$ ) of 4-phenyl phenol

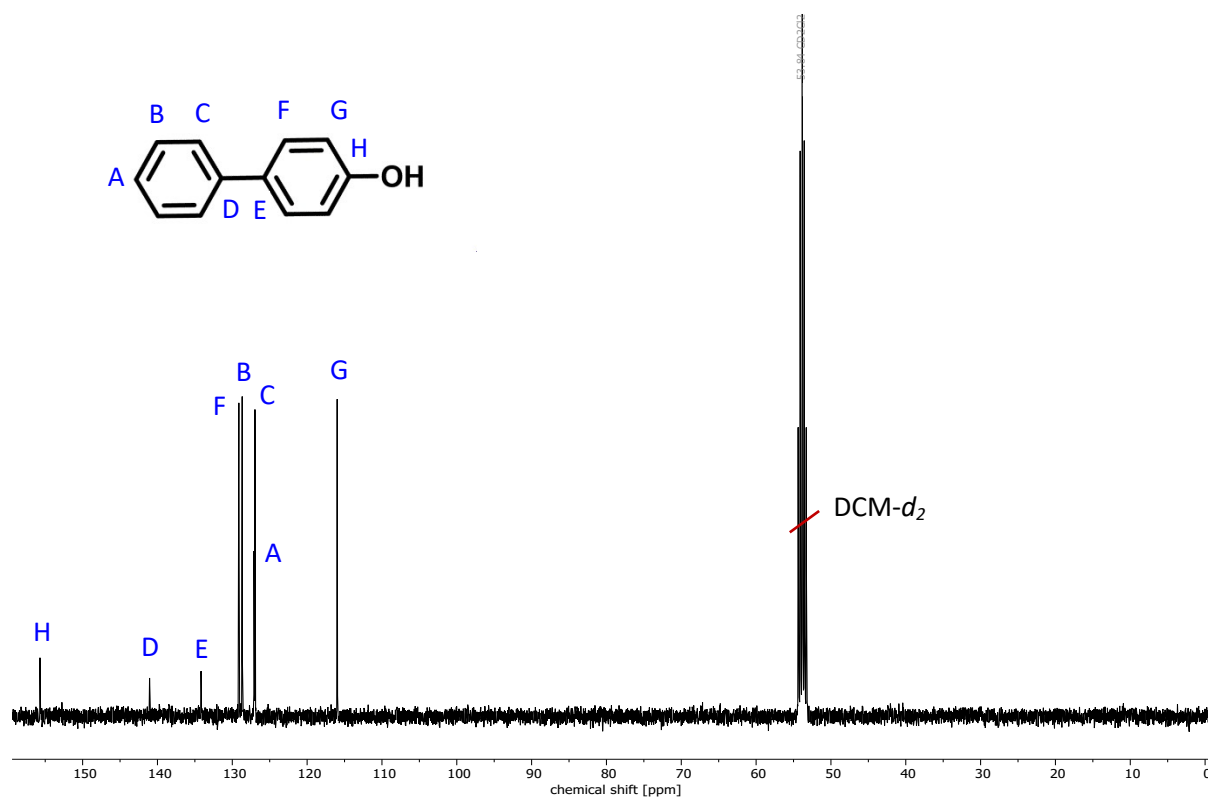


Figure S24:  $^{13}\text{C NMR}$  (400 MHz,  $\text{CD}_2\text{Cl}_2$ ) of 4-phenyl phenol

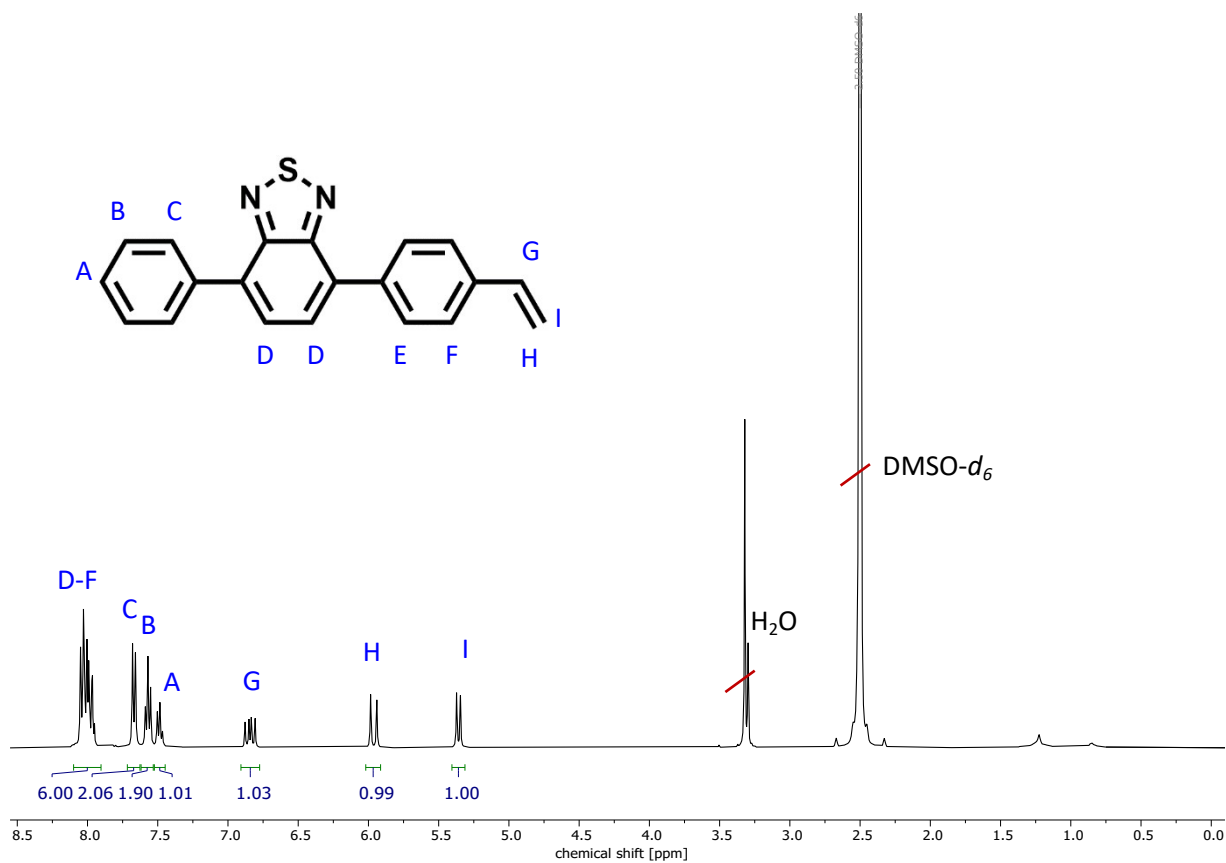


Figure S25: <sup>1</sup>H NMR (400 MHz, DMSO-*d*<sub>6</sub>) of 4-phenyl-7-(4-vinylphenyl)benzo[c][1,2,5]thiadiazole



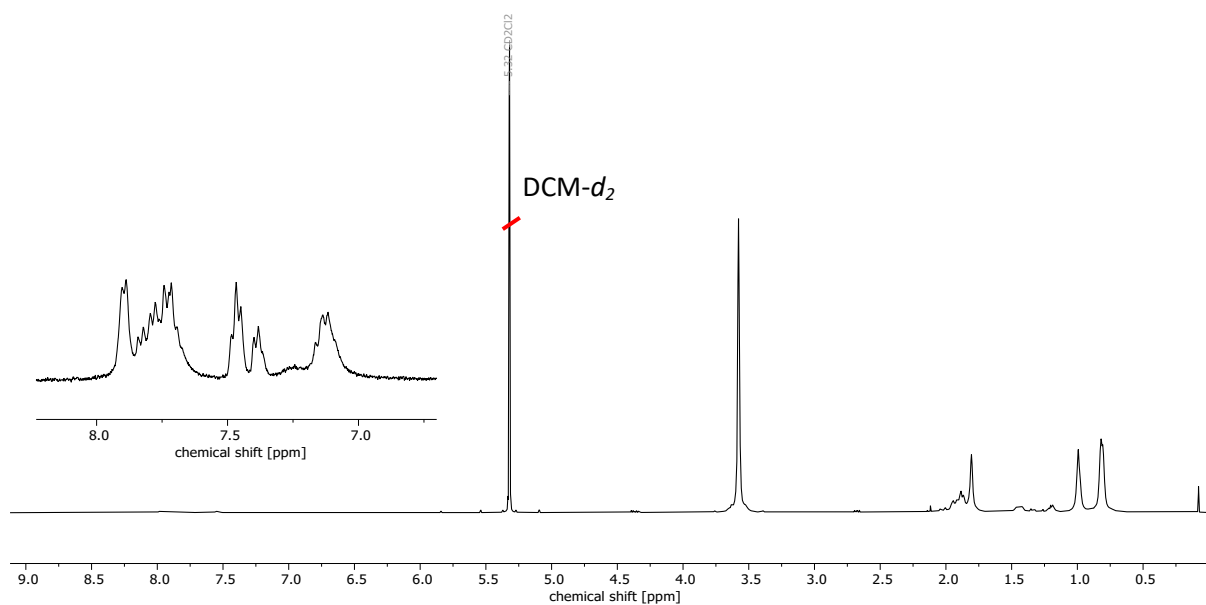


Figure S28:  $^1\text{H}$  NMR (400 MHz,  $\text{CD}_2\text{Cl}_2$ ) of PMMA-BT

1. Huber, N.; Li, R.; Ferguson, C. T. J.; Gehrig, D. W.; Ramanan, C.; Blom, P. W. M.; Landfester, K.; Zhang, K. A. I. A PMMA-based heterogeneous photocatalyst for visible light-promoted [4 + 2] cycloaddition. *Catal. Sci. Technol.* **2020**, *10*, 2092-2099.