Electronic Supplementary Material (ESI) for Polymer Chemistry.

Supporting Information
Alkaline Stability of Pendant C2-Protected Poly(imidazolium)s

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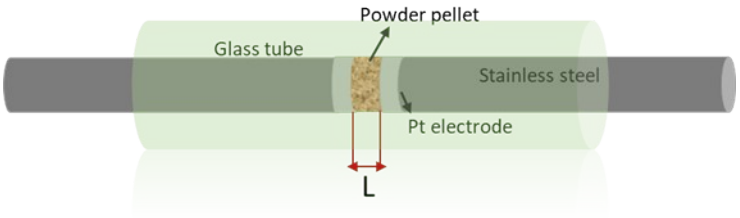


Figure S1: Polymer powder ion conductivity measurement setup.

NMR Data

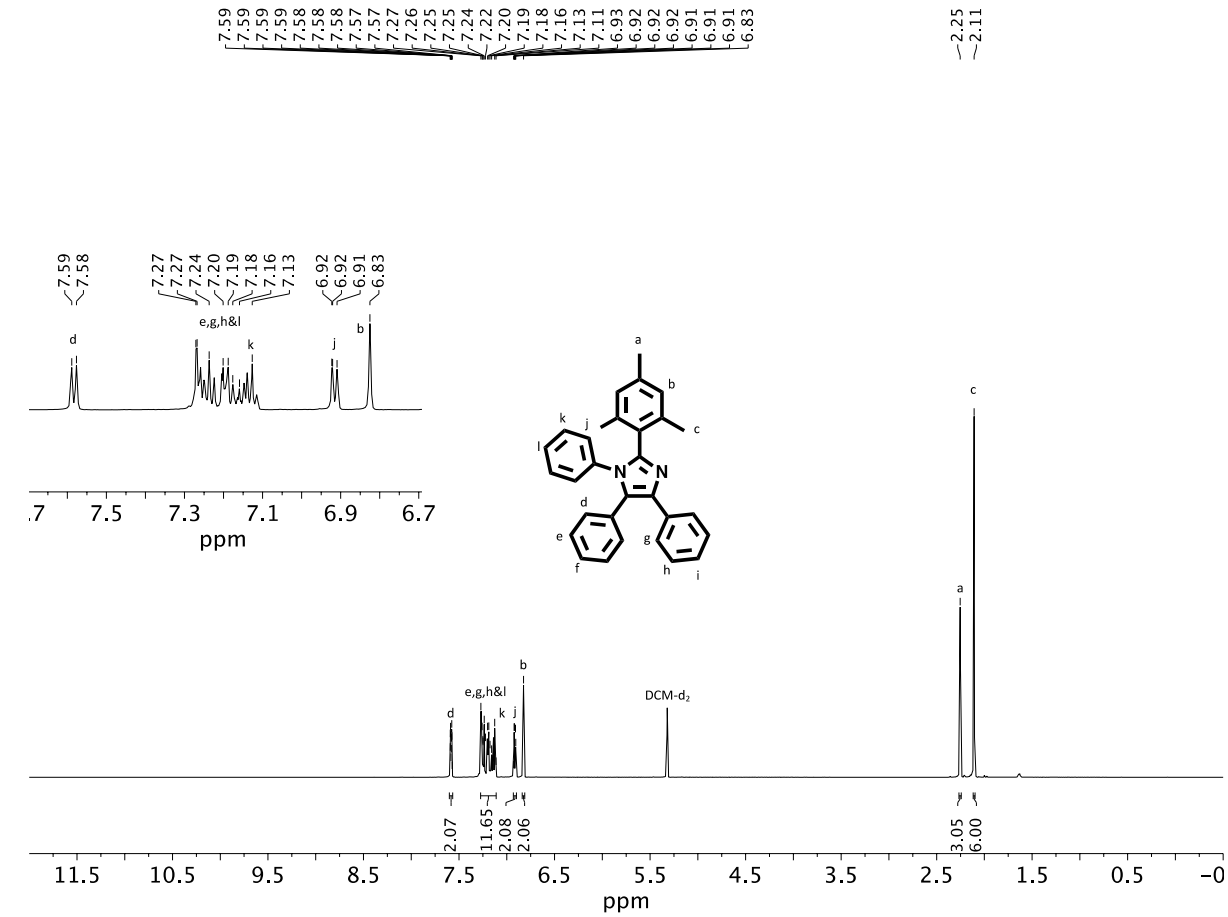


Figure S2: [1]H NMR of compound 5a.

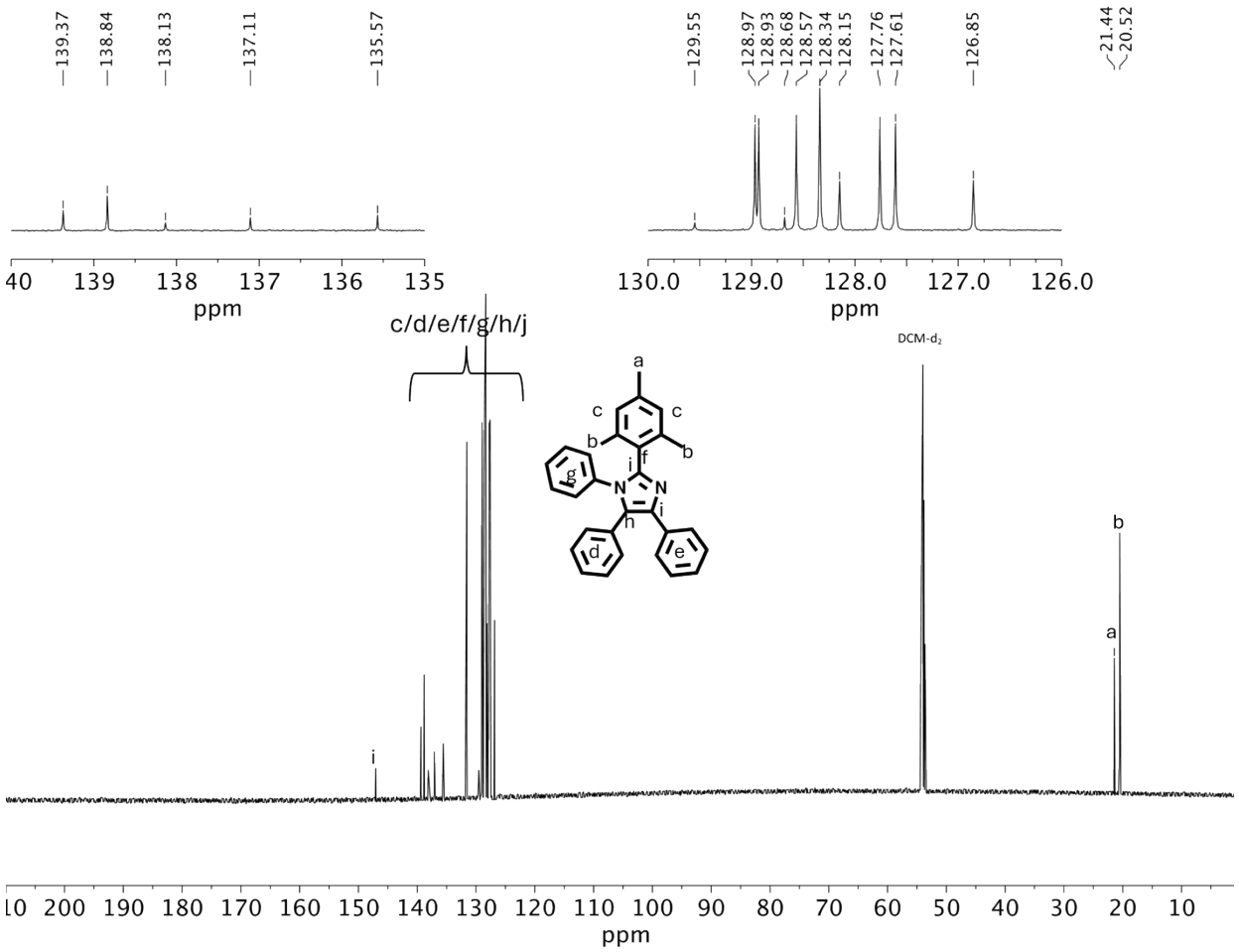
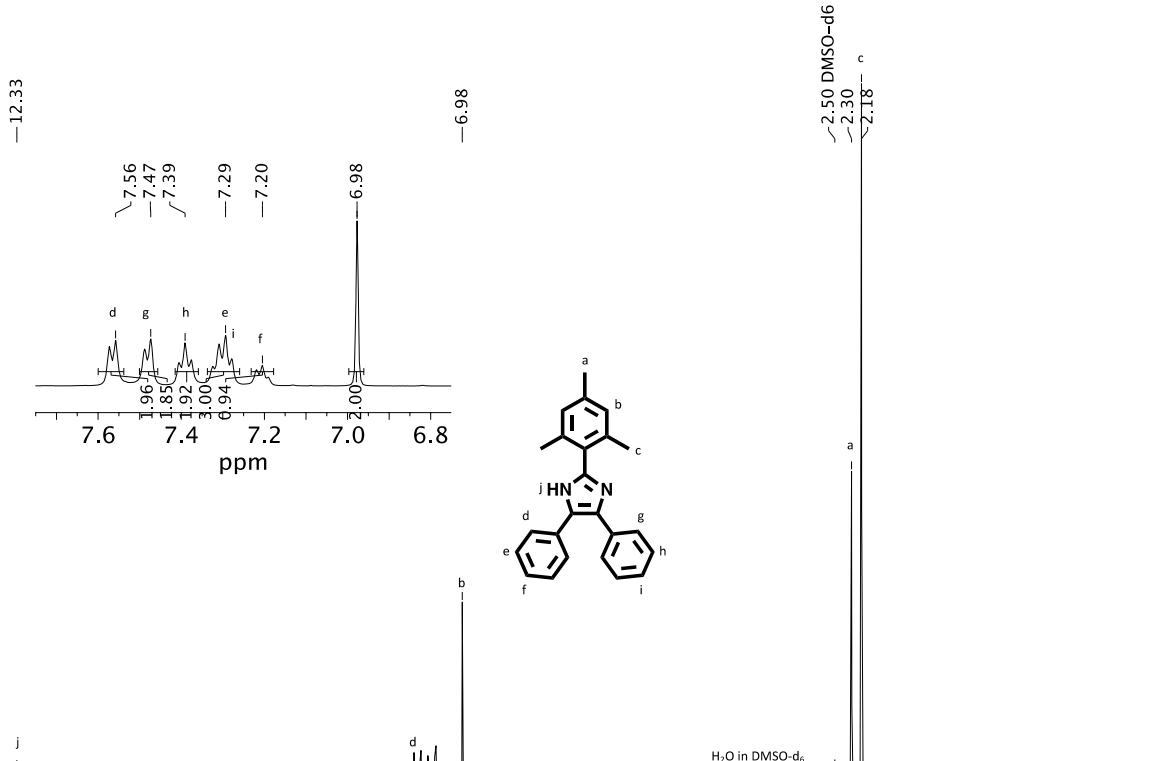


Figure S3: ^{13}C NMR of compound 5a.



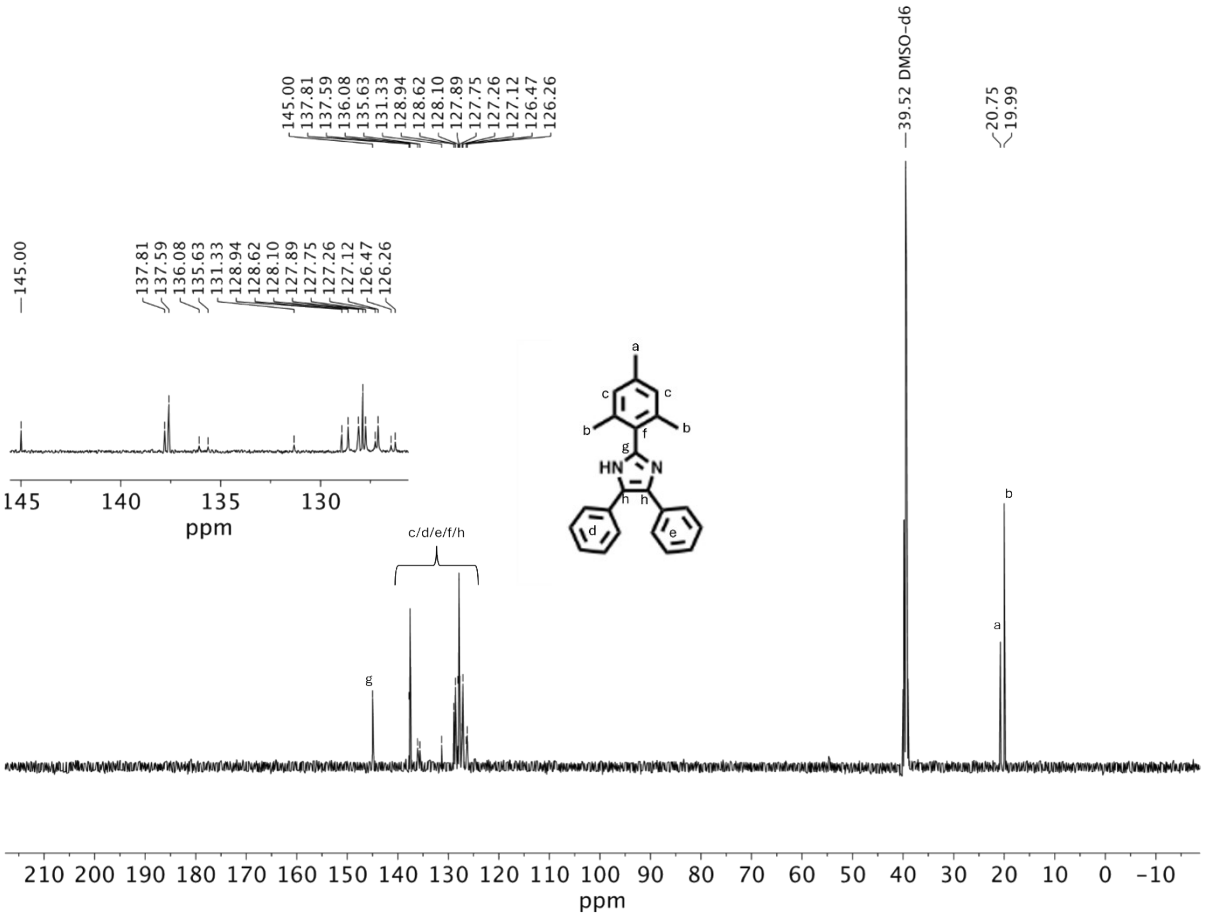
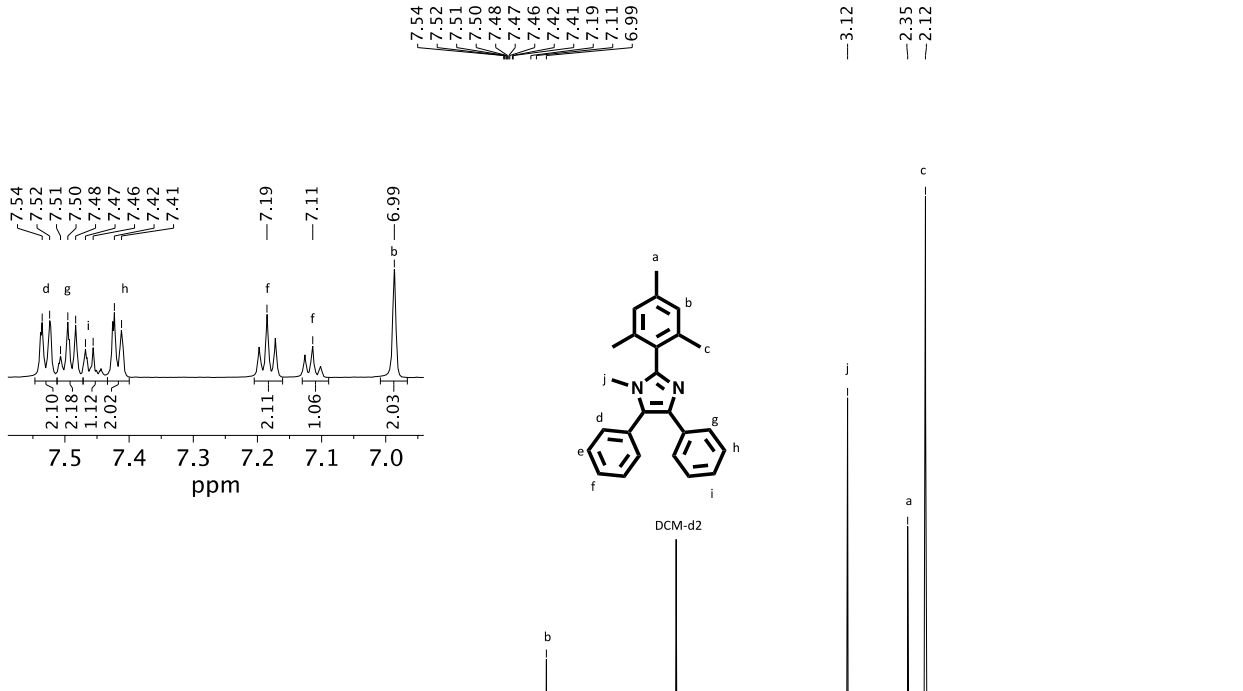


Figure S5: [13]C NMR of compound 5b.



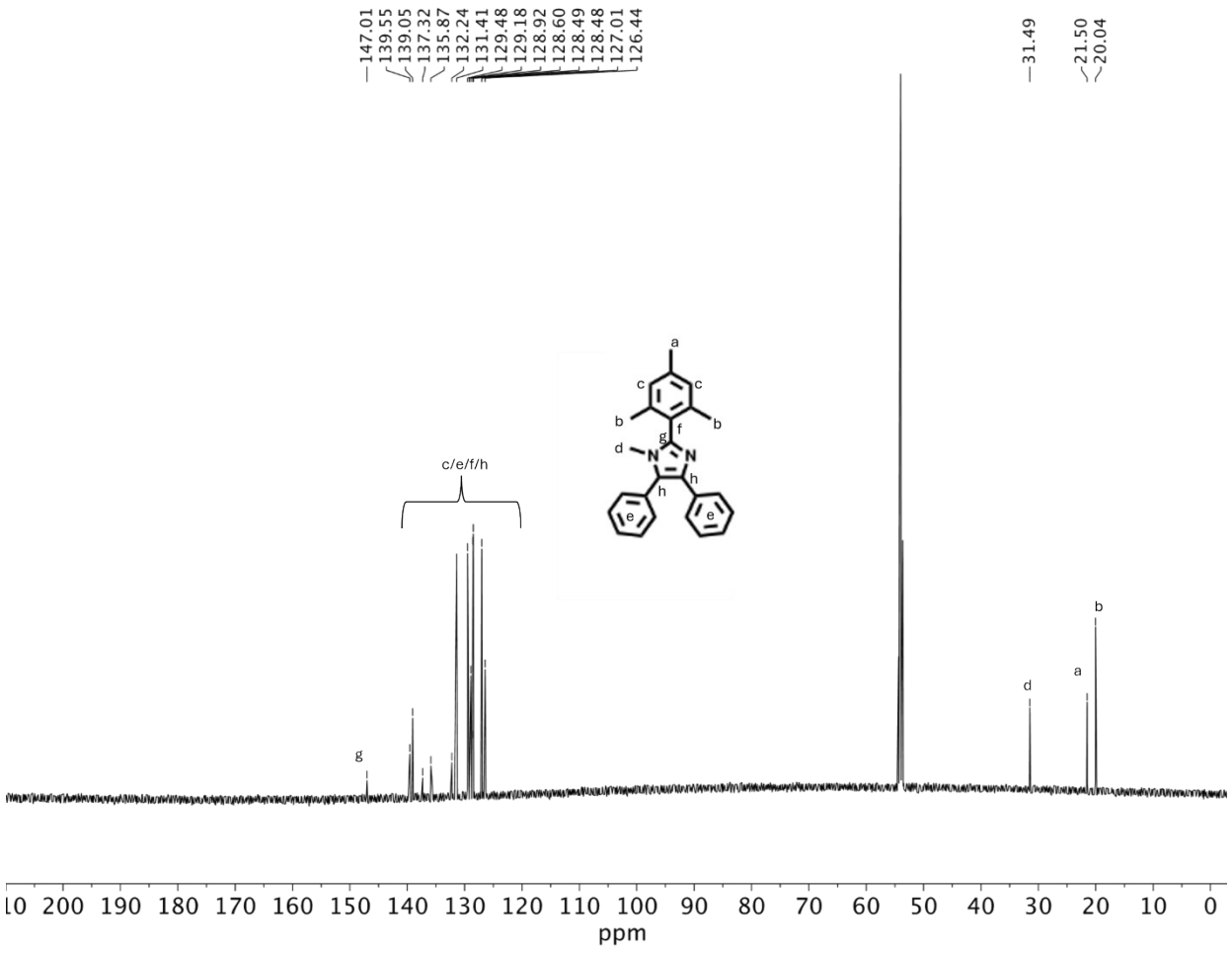
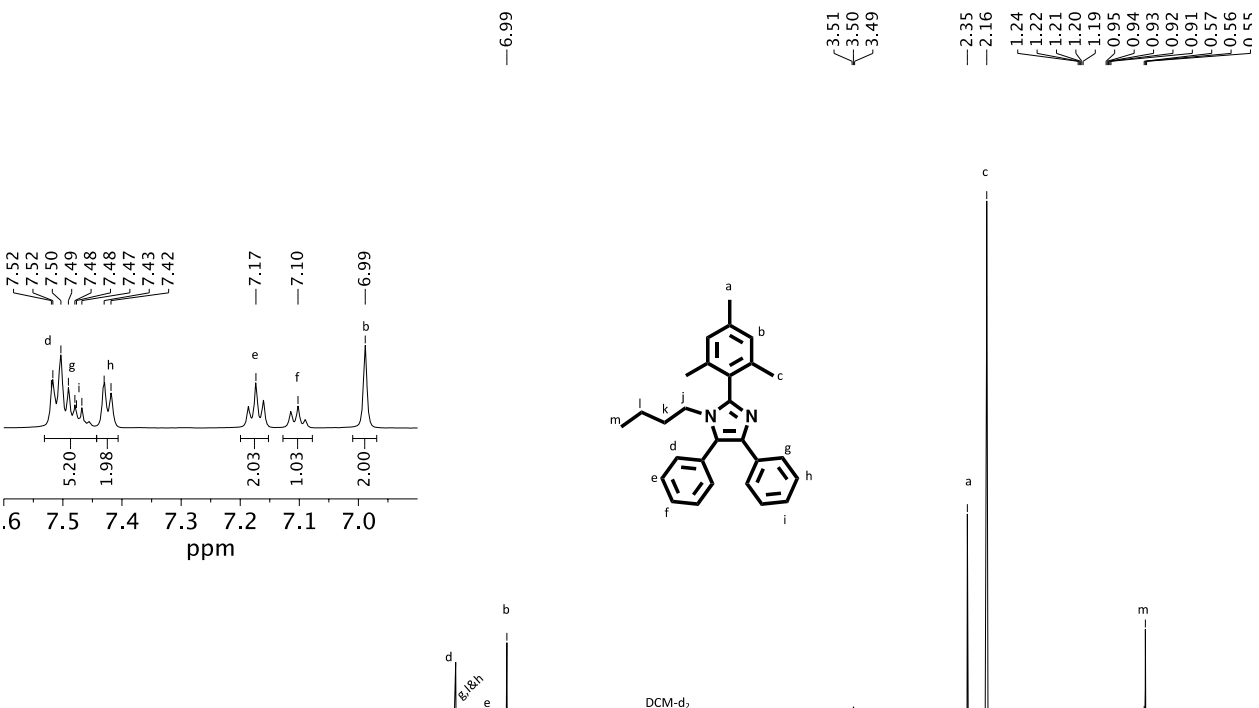


Figure S7: ^{13}C NMR of compound 6b



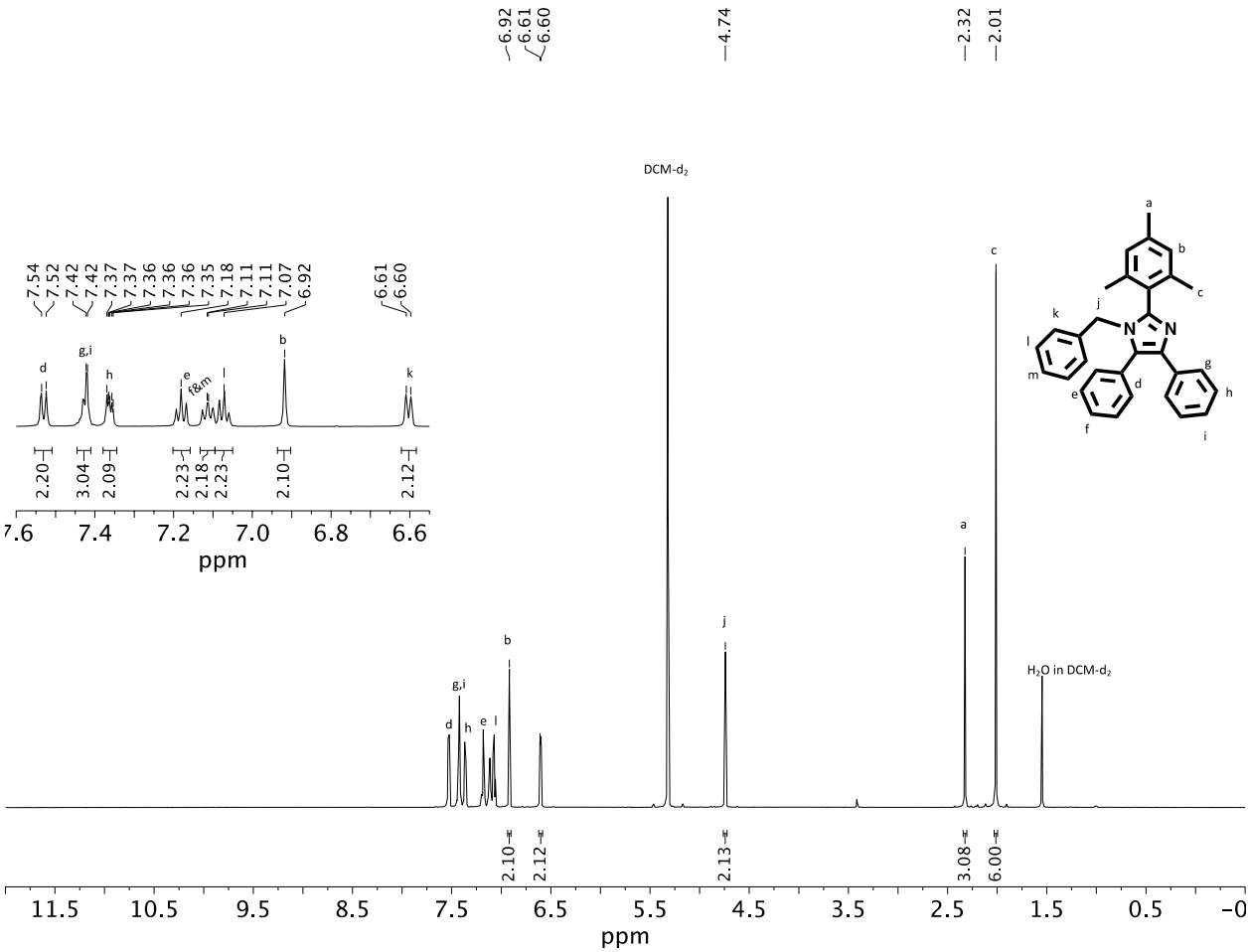


Figure S9: [1]H NMR of compound 6d.

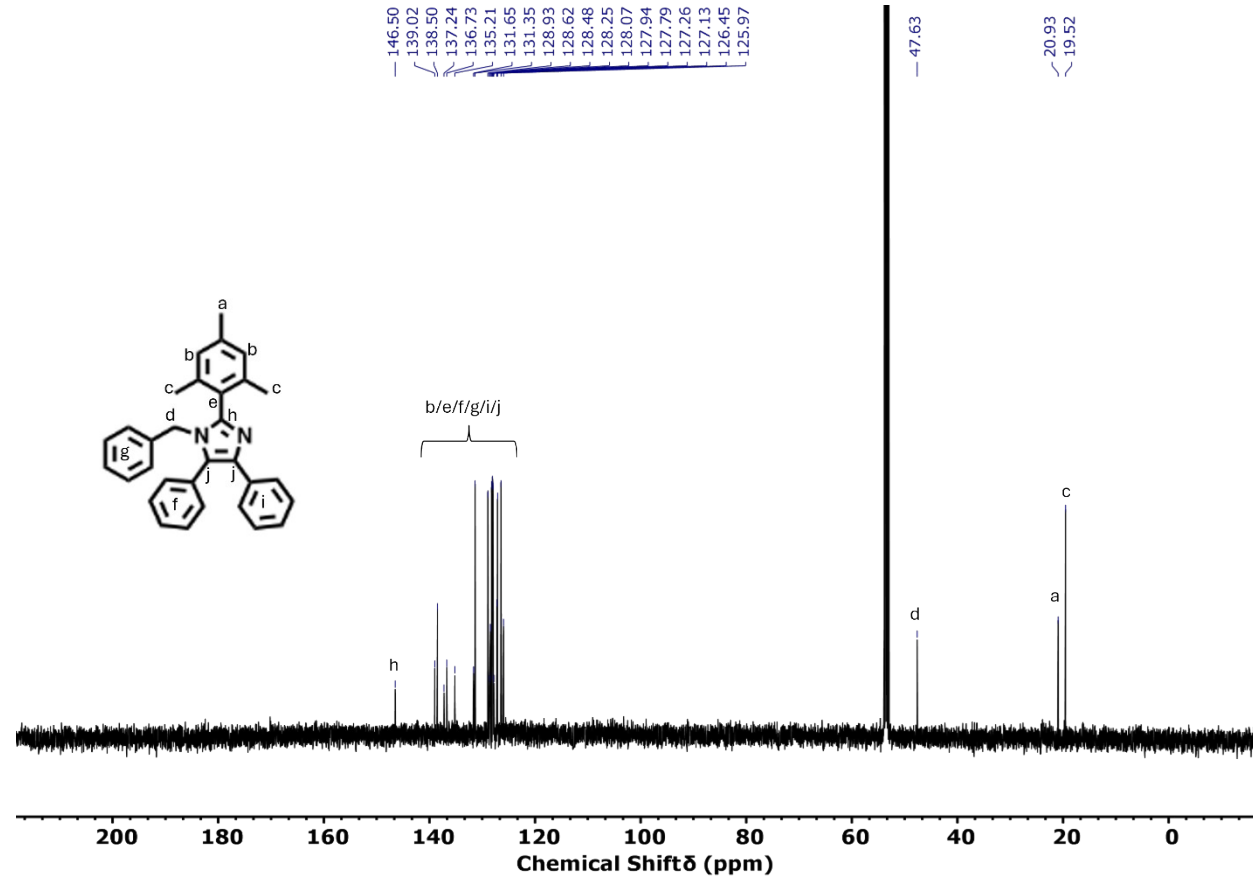
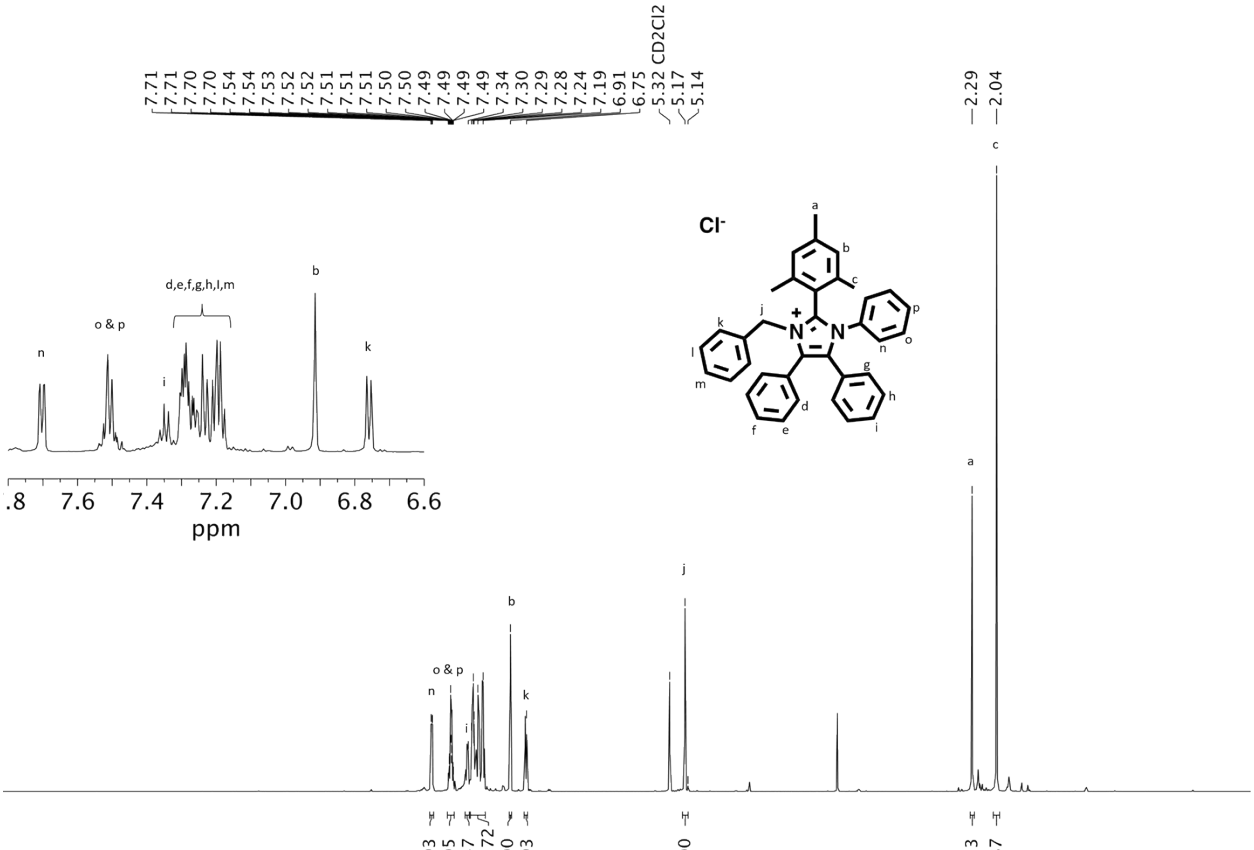


Figure S10: ^{13}C NMR of compound 6d.



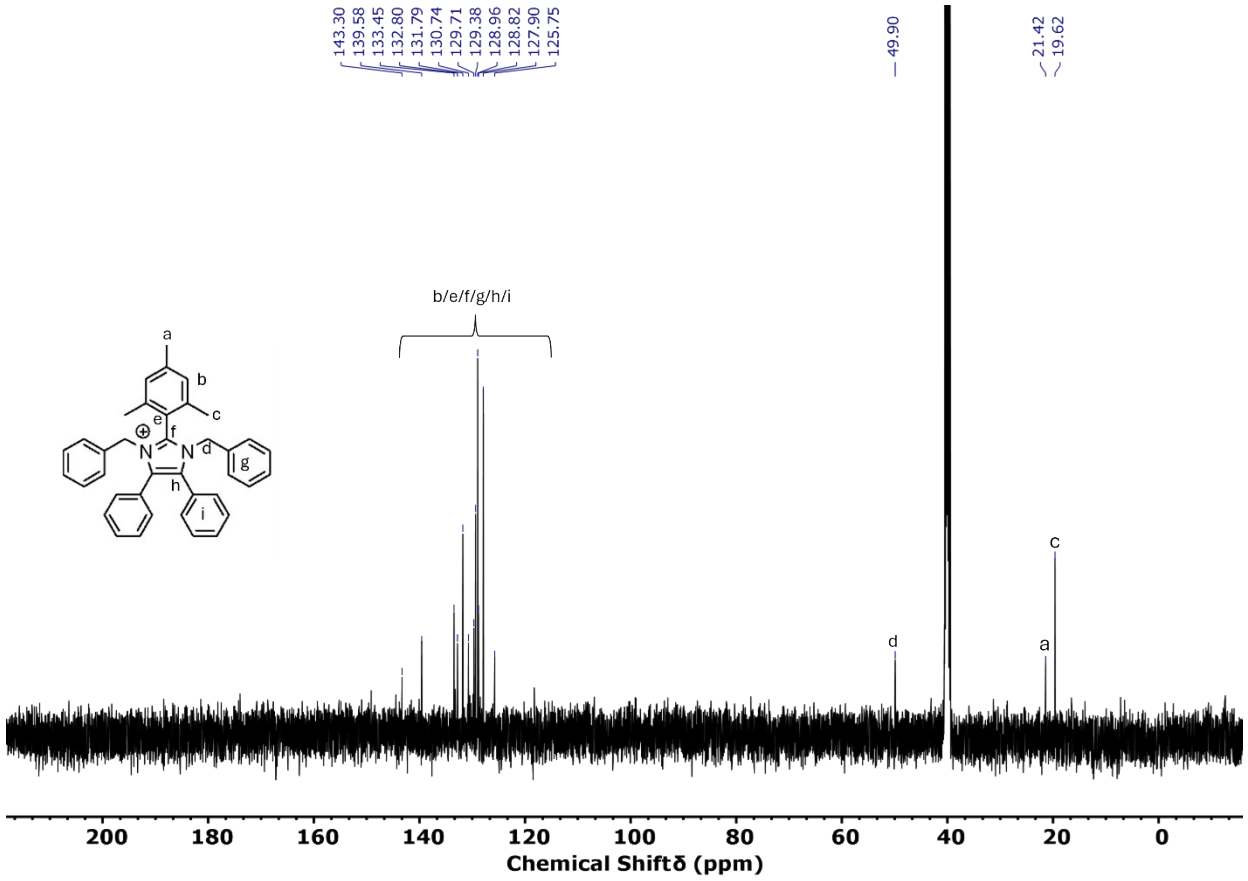
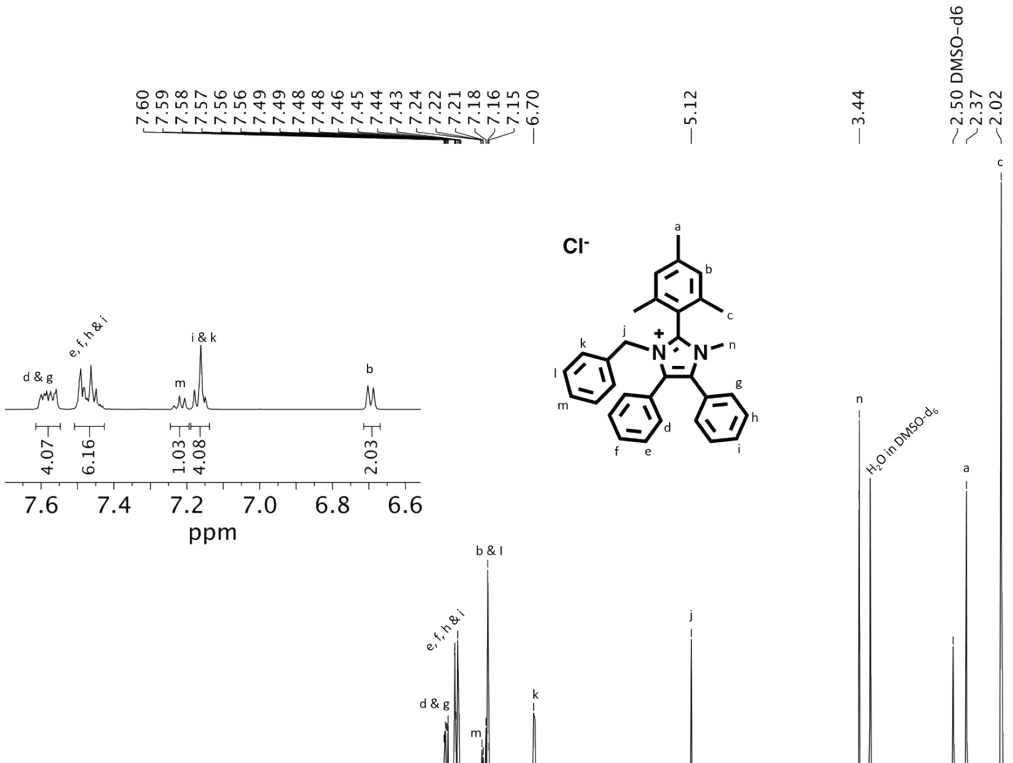


Figure S12: ^{13}C NMR of compound 7a.



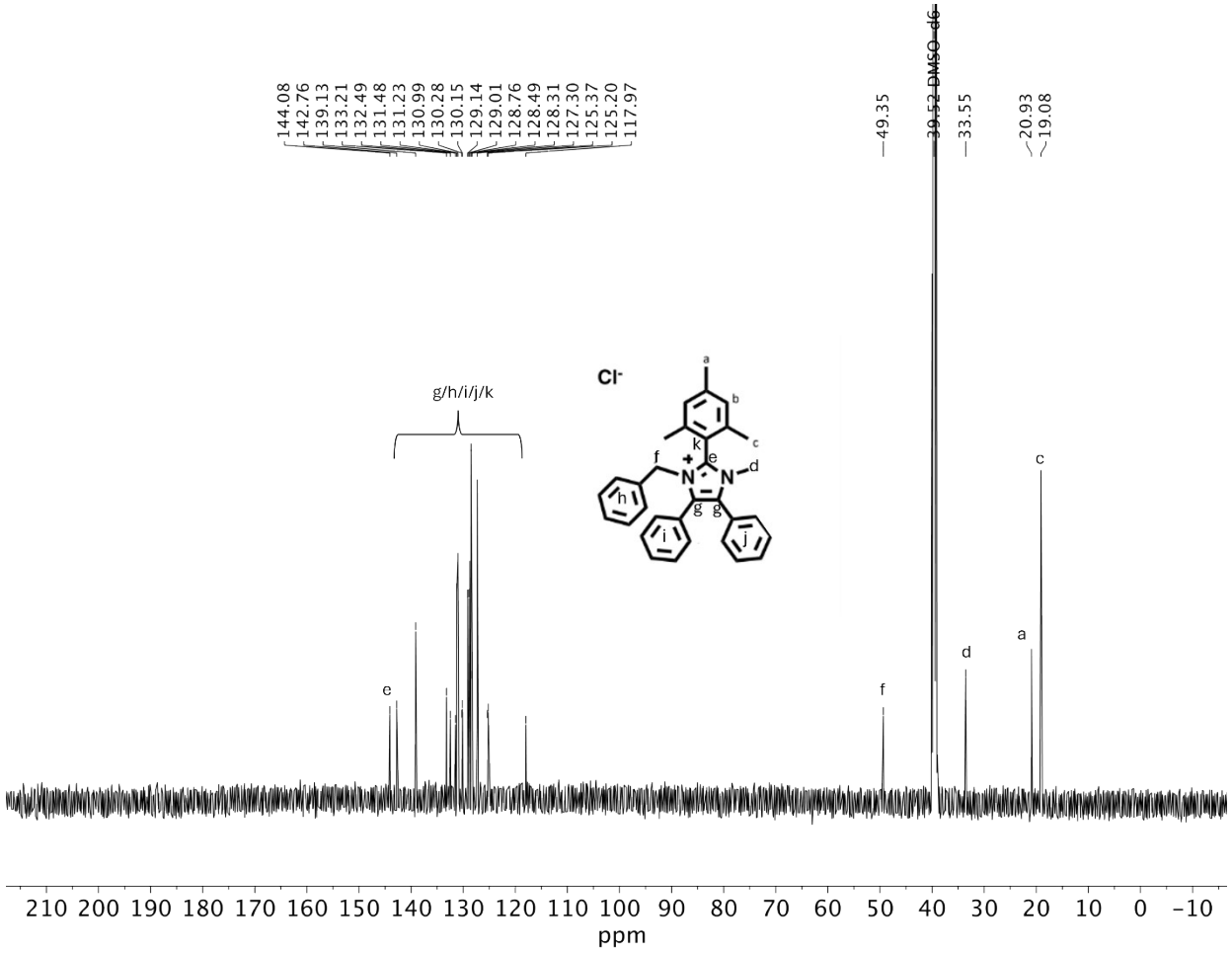
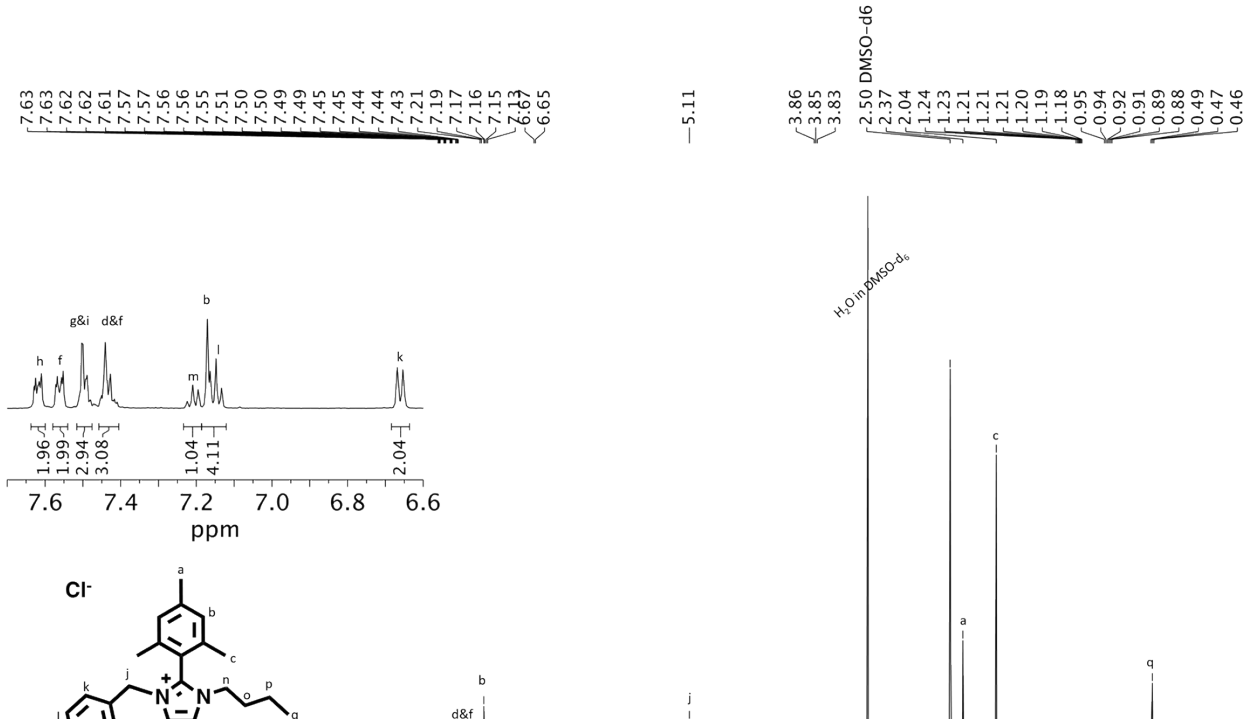


Figure S14: [13]C NMR of compound 7b.



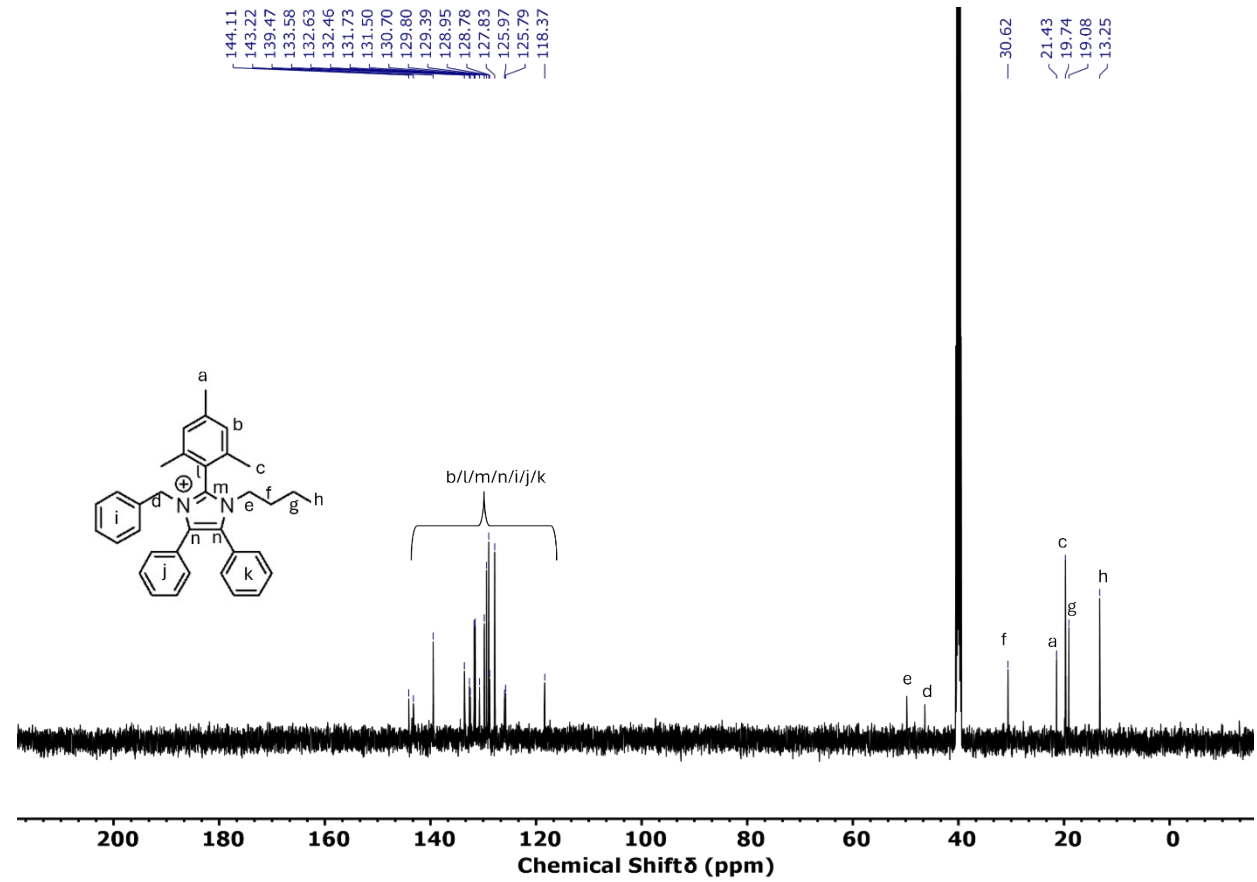


Figure S16: ^{13}C NMR of compound 7c.

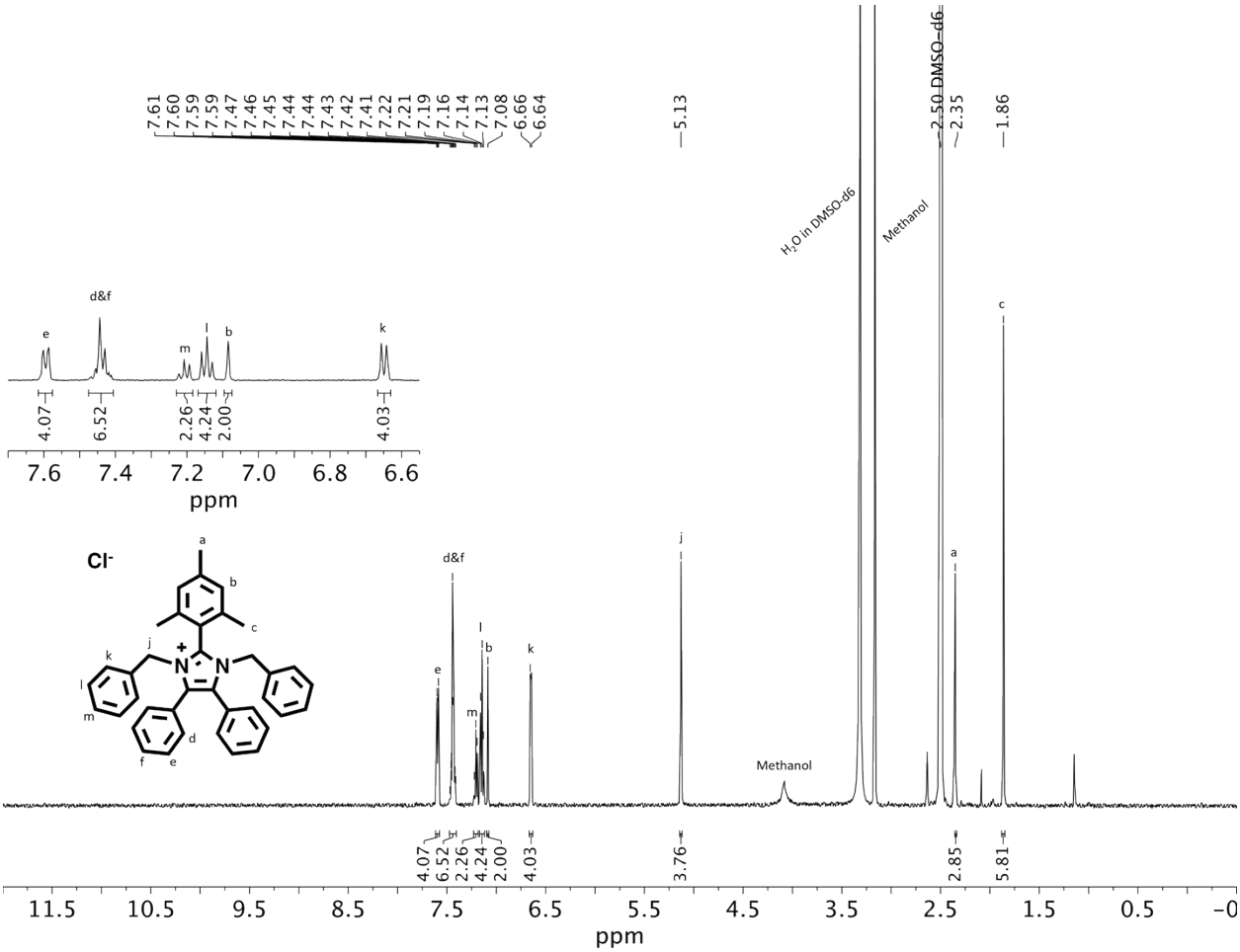


Figure S17: [1]H NMR of compound 7d.

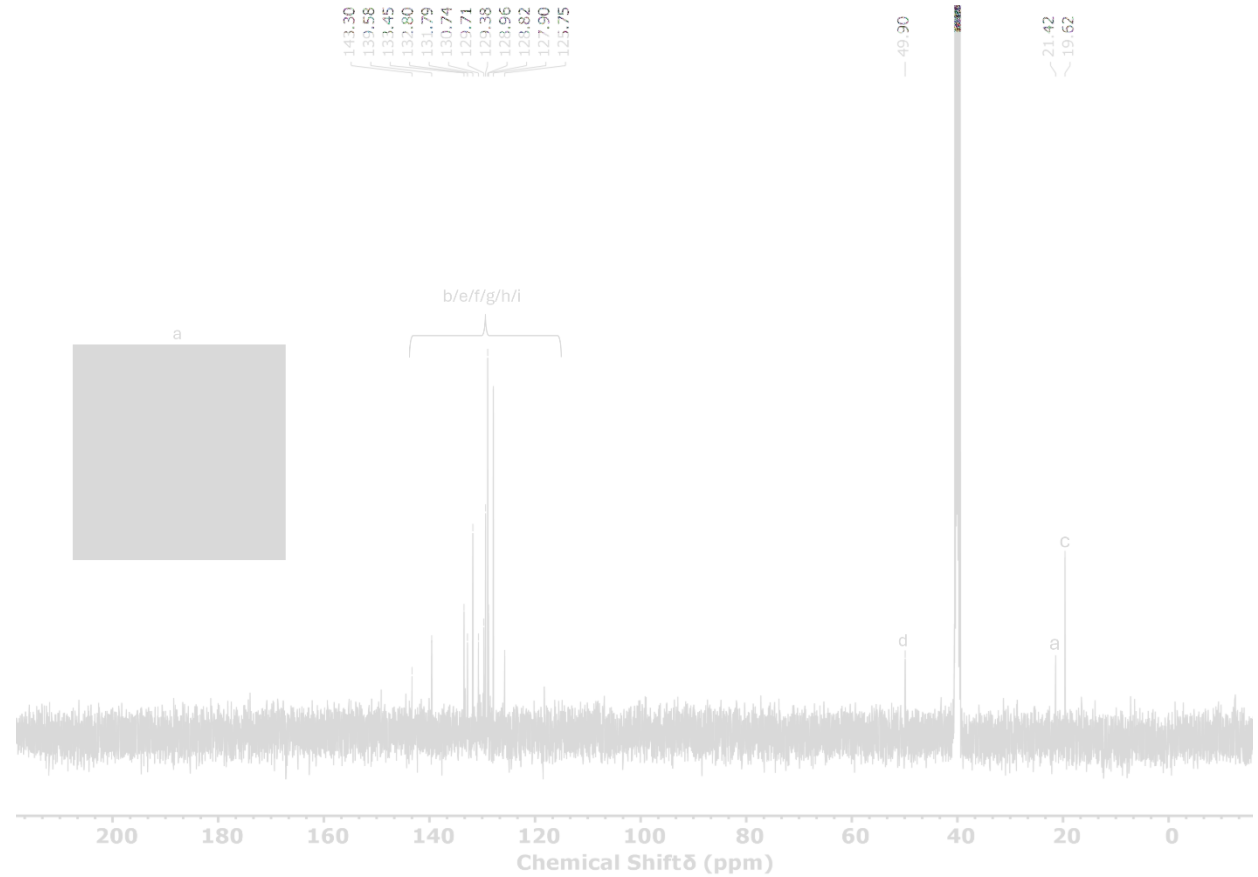


Figure S18: [13]C NMR of compound 7d.

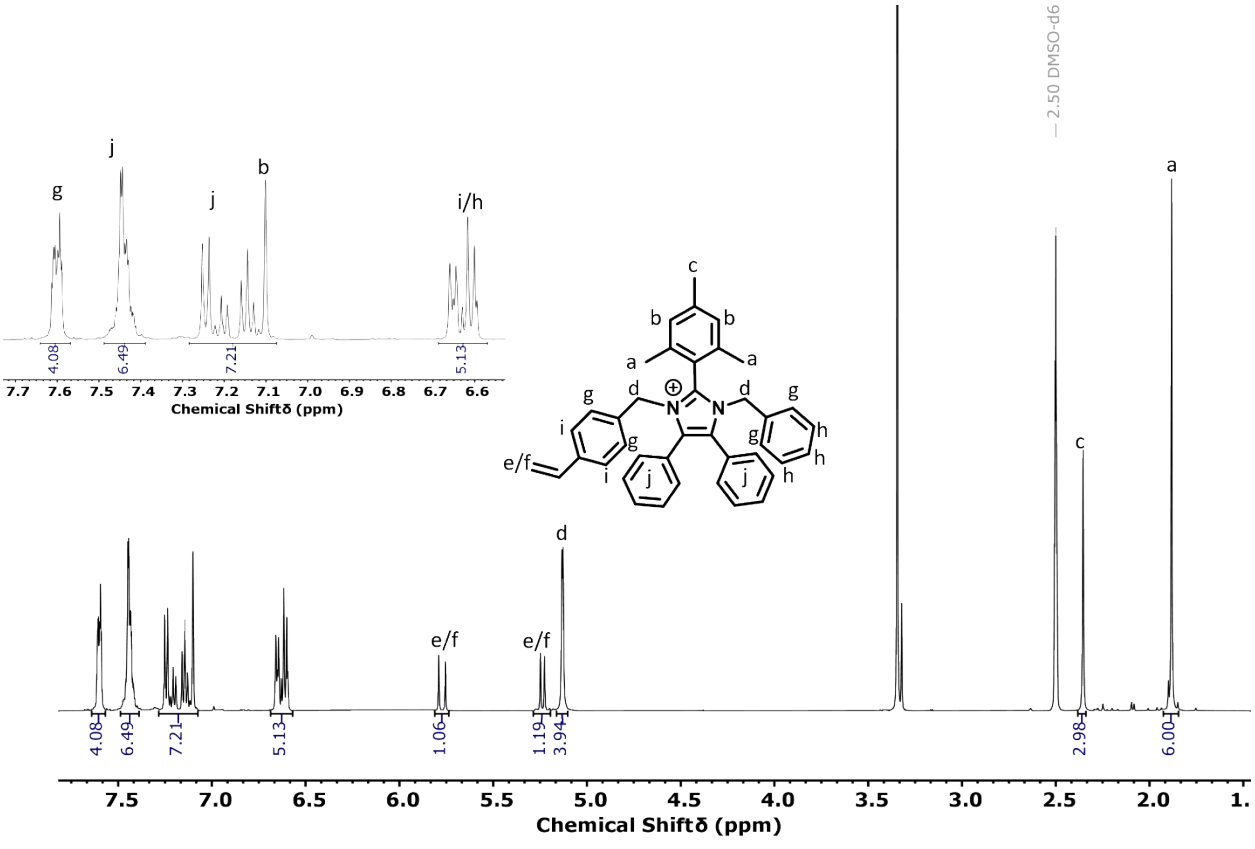


Figure S19: [1]H NMR of compound 8d

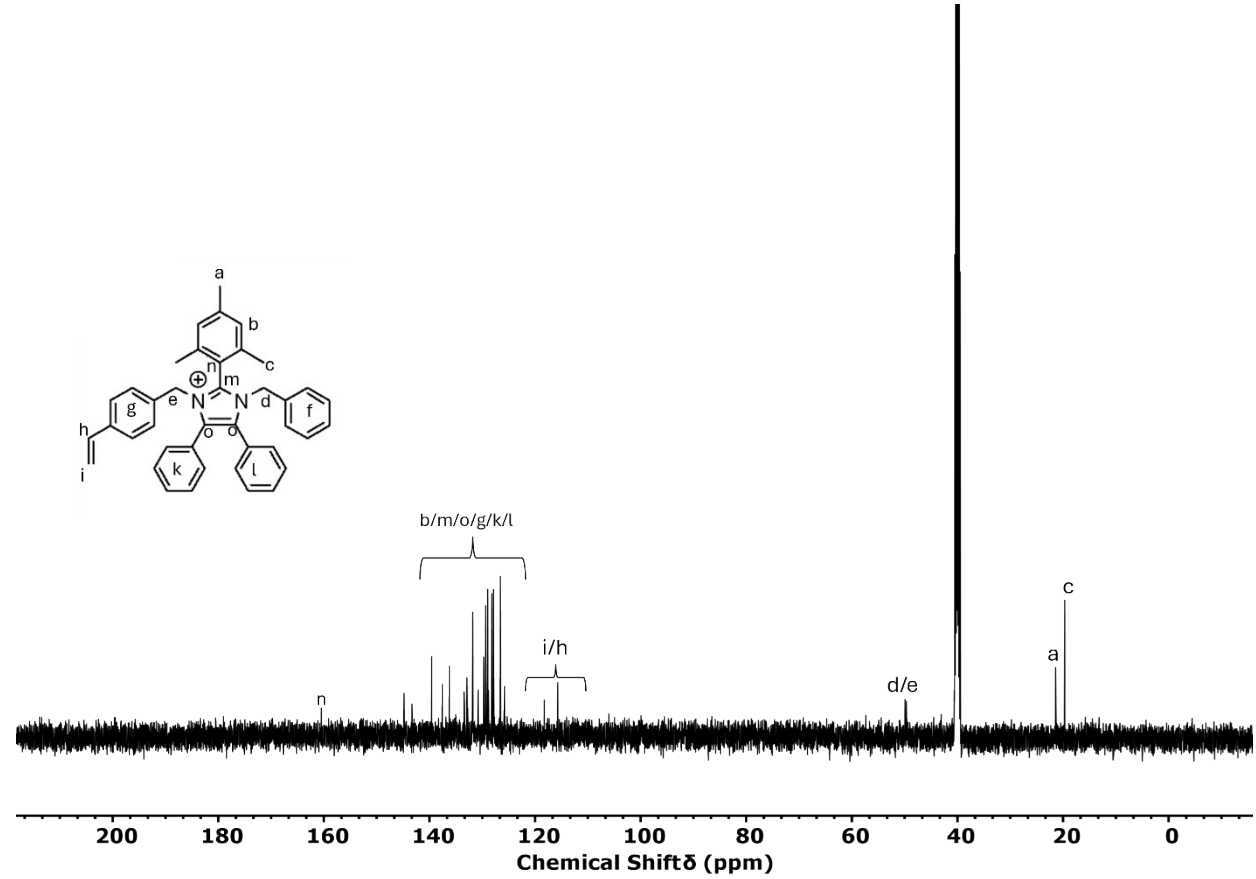
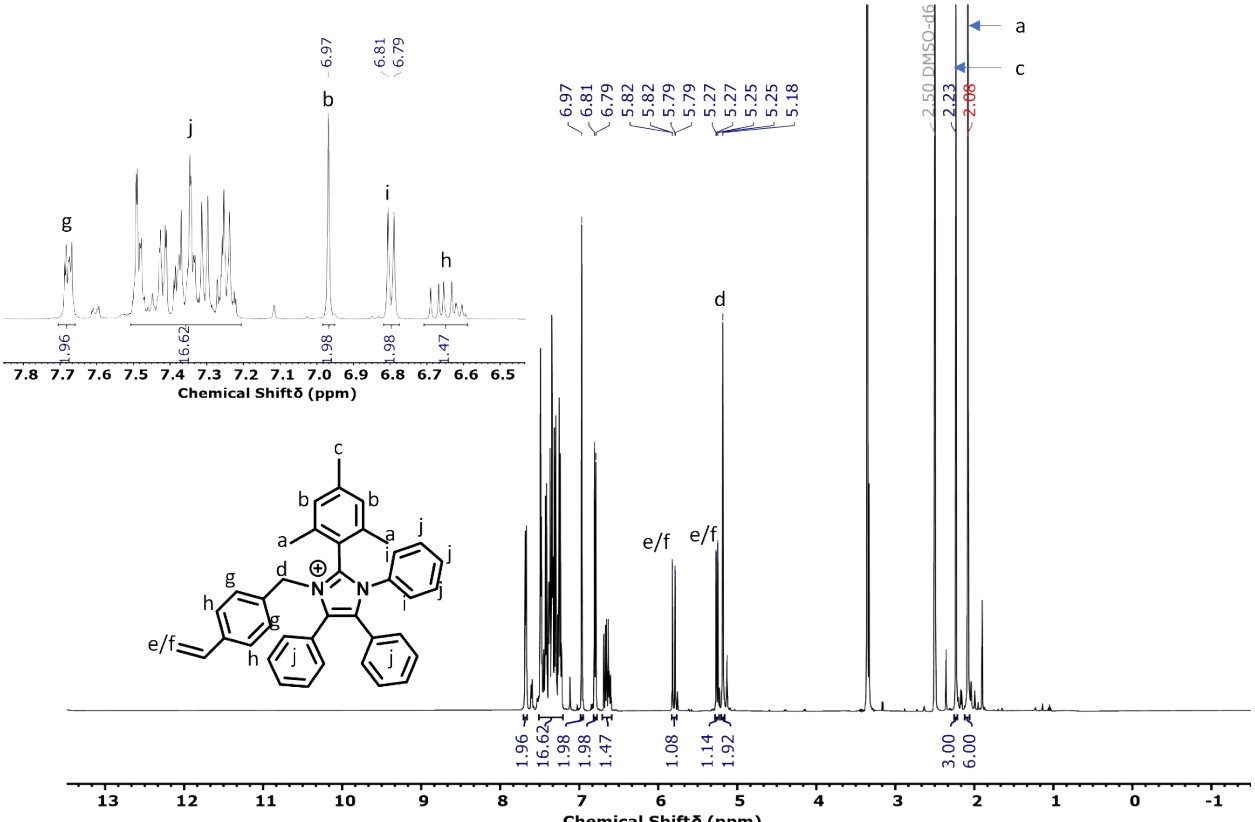


Figure S20: ^{13}C NMR of compound 8d



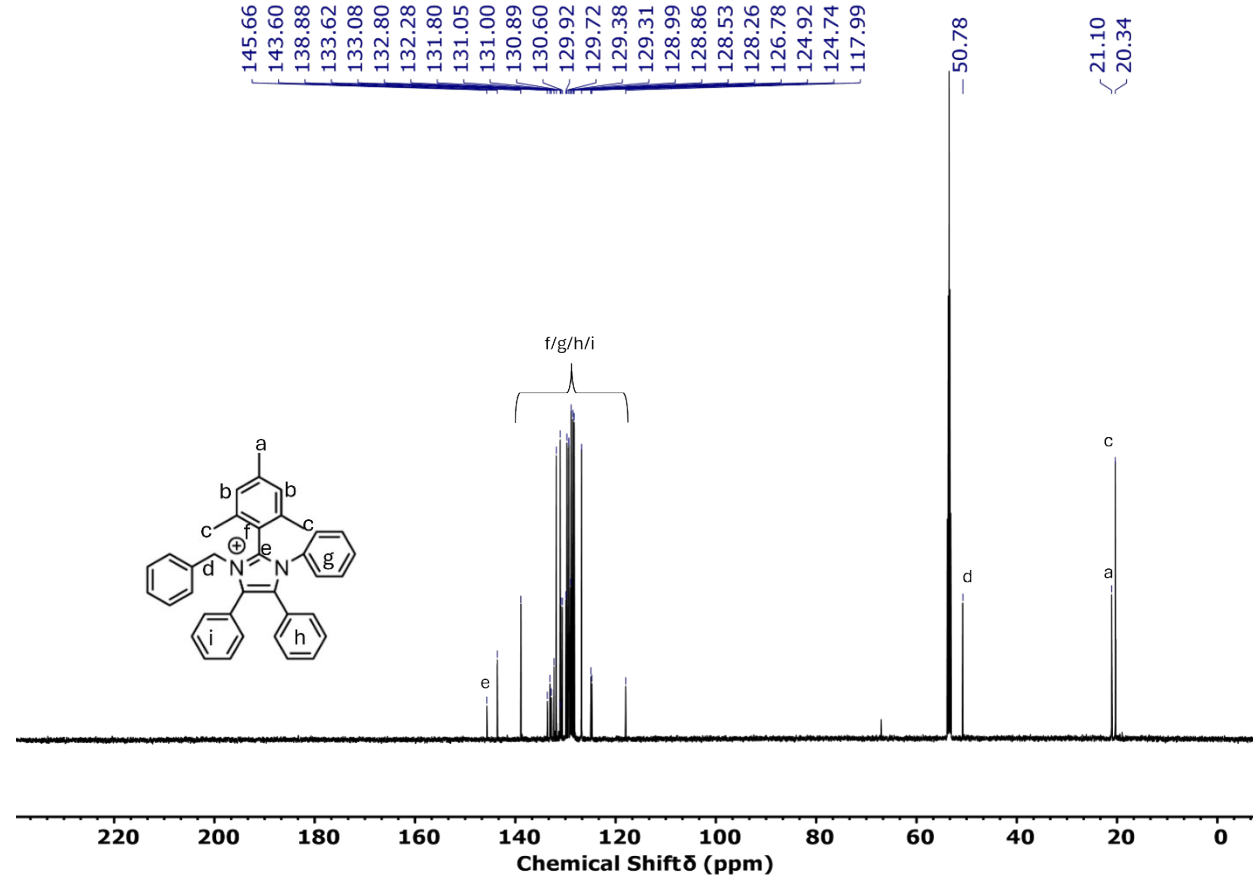
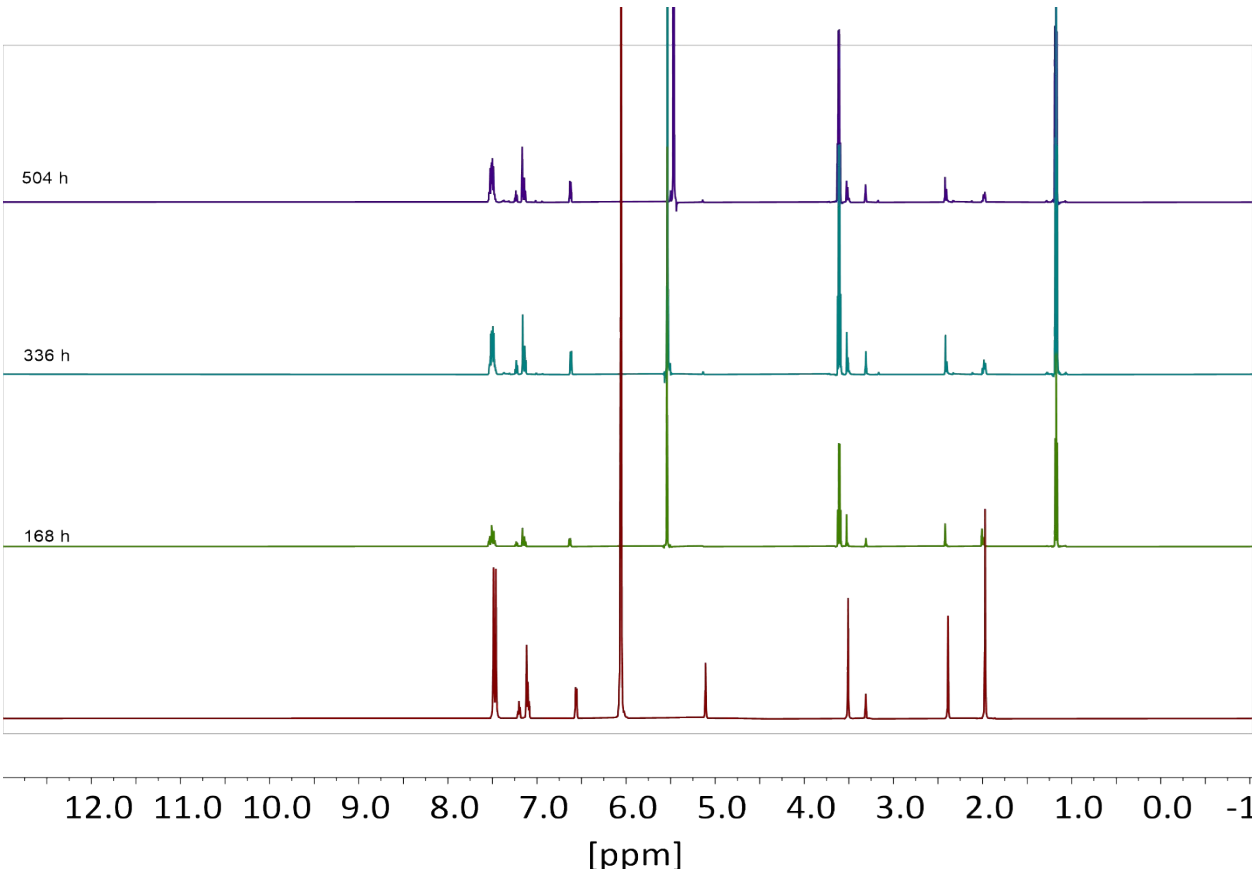


Figure S22: ^{13}C NMR of compound 8a.



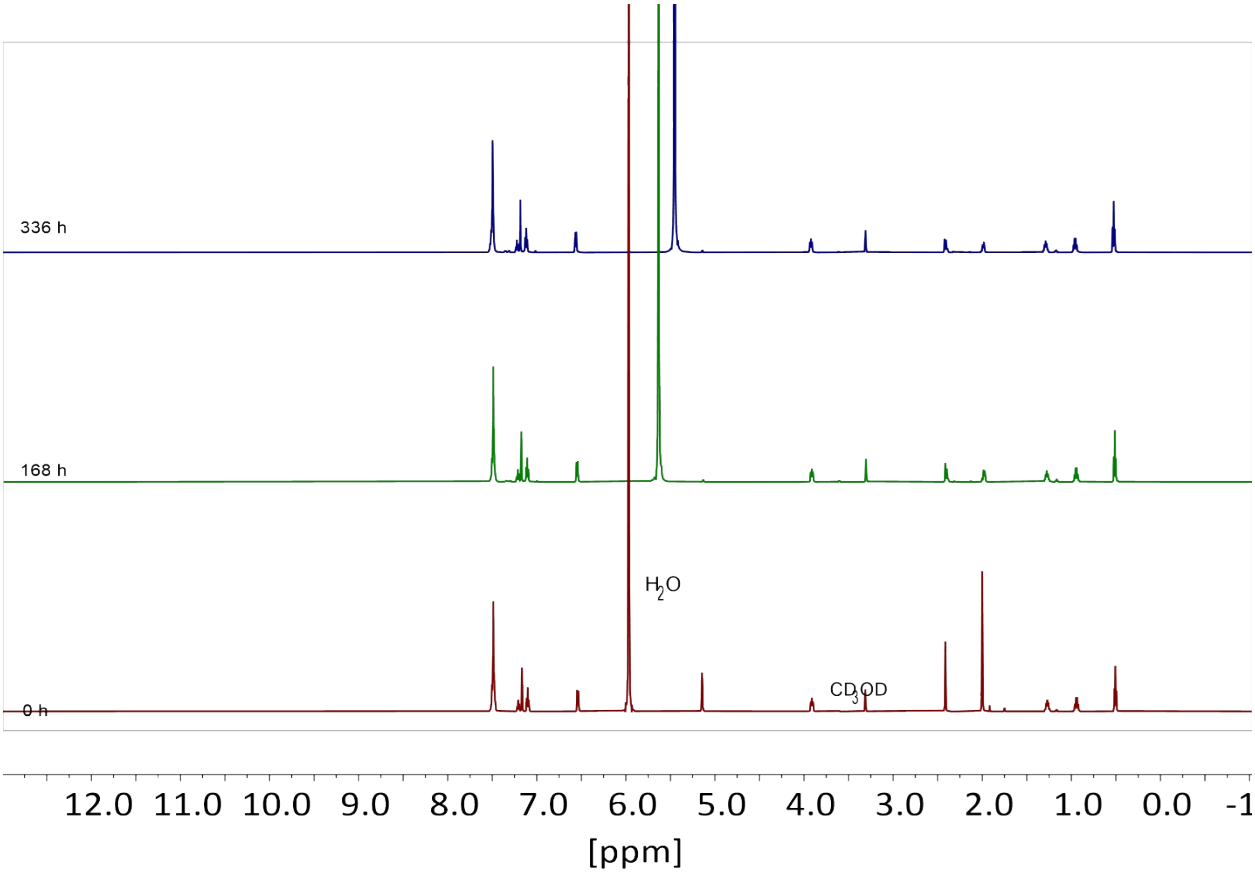
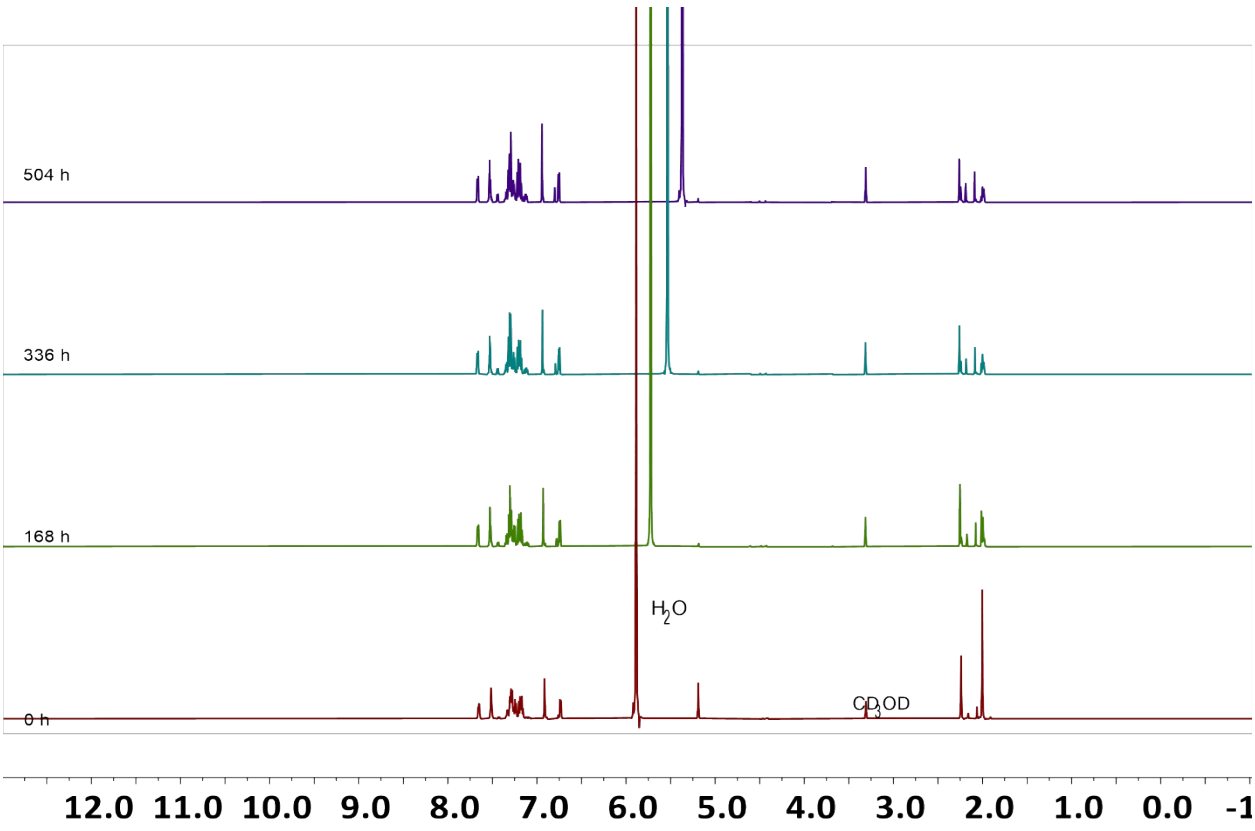


Figure S24: Degradation test of compound 7c.



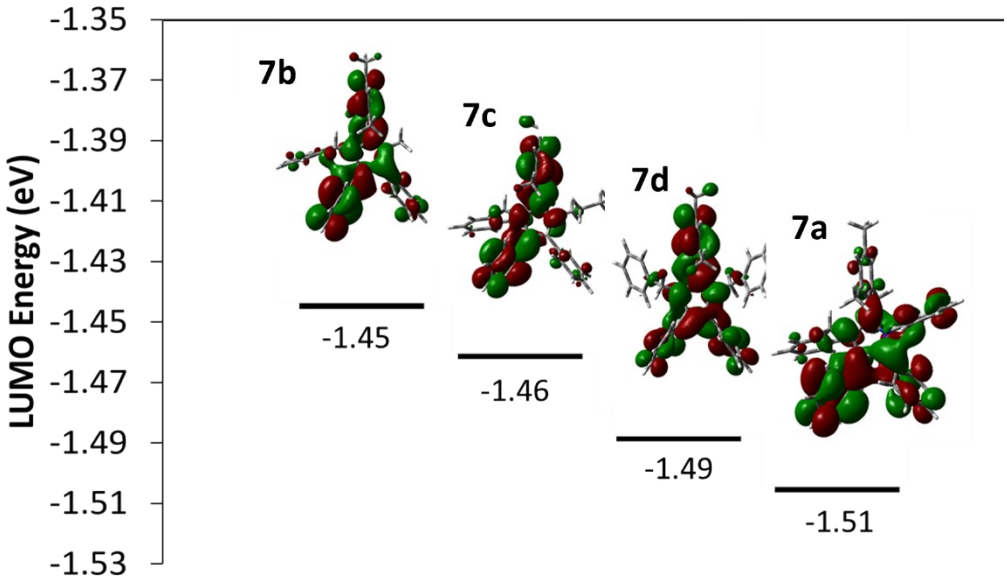


Figure S26: *Lowest Unoccupied Molecular Orbital (LUMO) DFT calculated isosurfaces and energies.*

Table S1: Cartesian coordinates in Å for Reagent 7a

Atom	X	Y	Z
C	-0.46192	1.38889	-0.0494
C	-1.24652	0.31095	-0.37995
N	-0.39976	-0.7972	-0.45321
C	0.8695	-0.419	-0.19617
C	2.07841	-1.27132	-0.27501
C	2.70628	-1.42833	-1.53733
C	2.59627	-1.90223	0.87374
C	3.85178	-2.21736	-1.61424
C	3.75386	-2.67944	0.74008
C	-2.70314	0.25658	-0.6248
C	-3.59992	0.56332	0.40991
C	-3.20151	-0.06643	-1.8971
C	-4.97452	0.53721	0.17686
H	-3.21717	0.81355	1.39454
C	-4.5777	-0.09638	-2.12368
H	-2.51495	-0.27686	-2.71237
C	-5.46561	0.20401	-1.08798
H	-5.66136	0.77342	0.98431
H	-4.95439	-0.34598	-3.11124
H	-6.53674	0.18214	-1.26699
C	-0.84263	2.79779	0.16166

C	-1.59123	3.47049	-0.81752
C	-0.48892	3.47275	1.34162
C	-1.97681	4.79587	-0.61914
C	-0.87404	4.79897	1.53282
C	-1.61778	5.46321	0.55419
H	-2.55265	5.3077	-1.38463
H	-0.59747	5.31088	2.44986
C	4.39463	-2.85063	-0.48688
C	-0.80854	-2.18097	-0.78003
H	-1.1933	-2.18327	-1.80184
H	0.11352	-2.76712	-0.77782
H	4.33845	-2.3398	-2.57891
H	4.15937	-3.16349	1.62533
H	-1.91694	6.49629	0.70619
H	0.07633	2.95825	2.11218
H	-1.86259	2.95613	-1.73391
C	2.171	-0.75388	-2.78003
H	1.11729	-0.99446	-2.96195
H	2.24613	0.33772	-2.70961
H	2.7385	-1.06663	-3.66019
C	1.94498	-1.80644	2.23498
H	1.22374	-0.98852	2.30934
H	1.41215	-2.73516	2.47296
H	2.69916	-1.66053	3.01497
C	5.6379	-3.69758	-0.61009
H	5.96717	-4.07011	0.36403
H	5.4607	-4.56222	-1.26133
H	6.46171	-3.12648	-1.054
C	-1.83049	-2.77948	0.16871
C	-1.74873	-2.61078	1.55621
C	-2.8493	-3.58057	-0.36075
C	-2.67212	-3.23133	2.39887
H	-0.97175	-1.98672	1.98615
C	-3.76694	-4.21013	0.48228
H	-2.92771	-3.71203	-1.43695
C	-3.68206	-4.03533	1.86483
H	-2.59996	-3.0868	3.47312
H	-4.55232	-4.82813	0.05641
H	-4.39959	-4.51874	2.52174
C	2.02819	1.73239	0.23532
C	2.75736	1.66192	1.42194
C	2.40387	2.59399	-0.79761
C	3.89308	2.46018	1.56802
H	2.43872	1.00534	2.22323

C	3.53807	3.39025	-0.63792
H	1.81549	2.64413	-1.70797
C	4.28413	3.32184	0.54119
H	4.46628	2.40922	2.48844
H	3.83671	4.06137	-1.43712
H	5.16713	3.94229	0.6608
N	0.84932	0.91101	0.05716

Table S2: Cartesian coordinates in Å for Reagent 7b

Atom	X	Y	Z
C	-0.97047	-1.45332	-0.03213
C	-1.03895	-0.14789	0.370278
N	0.379296	-1.76092	-0.16959
N	0.272556	0.314429	0.453891
C	1.12048	-0.68189	0.130849
C	2.595753	-0.63001	0.167682
C	3.243328	-0.71554	1.421484
C	3.336466	-0.52865	-1.02069
C	4.630894	-0.6811	1.451874
C	4.72991	-0.49848	-0.9326
C	-2.22834	0.668401	0.679993
C	-3.16615	0.944974	-0.31926
C	-2.45074	1.141862	1.977112
C	-4.30397	1.687915	-0.02635
H	-2.99943	0.583871	-1.32407
C	-3.58739	1.888666	2.26529
H	-1.74713	0.911919	2.765216
C	-4.51519	2.163609	1.264664
H	-5.02194	1.897834	-0.80682
H	-3.75113	2.247611	3.271716
H	-5.3994	2.74328	1.490556
C	-2.05467	-2.42658	-0.25606
C	-2.92334	-2.7531	0.790301
C	-2.24041	-3.0198	-1.5094
C	-3.95908	-3.65759	0.585321
C	-3.27483	-3.92654	-1.70925
C	-4.13569	-4.24706	-0.66309
H	-4.62382	-3.90399	1.401408
H	-3.41174	-4.37595	-2.68278

C	5.394233	-0.56816	0.286188
C	0.686909	1.685633	0.802695
H	0.331386	1.903251	1.805896
C	0.918422	-3.07982	-0.51354
H	0.339695	-3.84035	-7.7E-05
H	1.952089	-3.12679	-0.19129
H	0.86408	-3.24171	-1.58646
H	1.77374	1.668738	0.838503
H	5.132658	-0.75534	2.408252
H	5.305132	-0.42085	-1.84642
H	-4.94077	-4.95118	-0.82075
H	-1.58832	-2.76171	-2.33215
H	-2.78267	-2.30342	1.76284
C	2.467232	-0.85494	2.708421
H	1.952064	0.070326	2.972436
H	1.712586	-1.63952	2.647019
H	3.1369	-1.0992	3.529706
C	2.697123	-0.4313	-2.3843
H	1.639343	-0.68269	-2.38035
H	2.794756	0.58133	-2.77928
H	3.195696	-1.09884	-3.08619
C	6.898182	-0.53	0.360308
H	7.344413	-0.49871	-0.63163
H	7.236979	0.348239	0.91259
H	7.285933	-1.40587	0.882359
C	0.212332	2.754054	-0.16096
C	0.242666	2.573222	-1.54372
C	-0.20181	3.983474	0.351965
C	-0.13734	3.603214	-2.39796
H	0.555151	1.628046	-1.96397
C	-0.57413	5.017704	-0.50143
H	-0.23634	4.134023	1.422931
C	-0.54429	4.829663	-1.87973
H	-0.11338	3.447078	-3.46763
H	-0.8937	5.964511	-0.08849
H	-0.83891	5.629688	-2.54463

Table S3: Cartesian coordinates in Å for Reagent 7c.

Atom	X	Y	Z
C	0.532664	1.35322	-0.16199
C	1.176249	0.25768	0.342105
N	0.223283	-0.75318	0.447195
C	-0.973	-0.28523	0.039539

C	-2.25486	-1.02081	0.056121
C	-2.92278	-1.19594	1.286315
C	-2.80848	-1.51251	-1.14137
C	-4.14341	-1.86407	1.288813
C	-4.03464	-2.17197	-1.0816
C	2.591112	0.107839	0.732887
C	3.602406	0.256501	-0.22069
C	2.938231	-0.14391	2.064312
C	4.937641	0.149159	0.150922
H	3.341926	0.448642	-1.25167
C	4.274487	-0.25591	2.431485
H	2.167325	-0.23239	2.817389
C	5.276317	-0.11037	1.475939
H	5.711632	0.264168	-0.595
H	4.531568	-0.44764	3.463815
H	6.31518	-0.19541	1.762983
C	1.076096	2.690886	-0.47058
C	1.574666	3.495746	0.558237
C	1.126251	3.156451	-1.78878
C	2.109837	4.747043	0.273094
C	1.657691	4.410117	-2.06944
C	2.149382	5.207553	-1.03972
H	2.491568	5.361642	1.076292
H	1.694437	4.758932	-3.09194
C	-4.71551	-2.36229	0.118567
C	0.478584	-2.13761	0.878552
H	0.868279	-2.1113	1.892277
H	-0.49289	-2.62495	0.915243
H	-4.66586	-1.98829	2.228724
H	-4.46861	-2.54291	-2.00122
H	2.563683	6.181522	-1.26008
H	0.766499	2.533369	-2.59592
H	1.538181	3.142714	1.5791
C	-2.34947	-0.69256	2.588769
H	-1.58601	-1.37191	2.973484
H	-1.88764	0.288715	2.48948
H	-3.1285	-0.62173	3.344445
C	-2.11215	-1.38521	-2.47451
H	-1.52739	-0.47231	-2.56652
H	-1.43252	-2.22473	-2.63219
H	-2.83817	-1.40028	-3.28489
C	-6.0282	-3.09995	0.156365
H	-6.53733	-3.05323	-0.8048
H	-5.86891	-4.15424	0.393783

H	-6.68938	-2.69183	0.919817
C	1.417018	-2.91978	-0.01882
C	1.455171	-2.74262	-1.4009
C	2.222326	-3.90119	0.560596
C	2.28363	-3.53411	-2.19085
H	0.848354	-1.98198	-1.87062
C	3.044794	-4.69873	-0.22852
H	2.208698	-4.04233	1.633432
C	3.078187	-4.51685	-1.60807
H	2.306222	-3.38155	-3.26106
H	3.663524	-5.45435	0.23548
H	3.721341	-5.13136	-2.22257
C	-1.88479	1.903401	-0.76104
H	-1.50367	2.495853	-1.5878
H	-2.68958	1.282389	-1.14199
N	-0.80117	0.99385	-0.3374
C	-2.38741	2.803676	0.366866
H	-2.75896	2.185089	1.185873
H	-1.55828	3.393021	0.761741
C	-3.49986	3.736204	-0.12025
H	-3.12479	4.344909	-0.94679
H	-4.32079	3.138785	-0.52472
C	-4.02799	4.647979	0.988027
H	-3.23455	5.282429	1.386514
H	-4.82006	5.298365	0.616495
H	-4.4355	4.065001	1.815722

Table S4: Cartesian coordinates in Å for Reagent 7d.

Atom	X	Y	Z
C	0.519417	1.530799	0.348801
C	-0.66204	1.47603	-0.34095
N	-0.94891	0.124917	-0.53946
C	0.031004	-0.62565	-0.00231
C	0.101489	-2.10008	-0.00568
C	0.518238	-2.77248	-1.17155
C	-0.25389	-2.8138	1.154957
C	0.566192	-4.16307	-1.1497
C	-0.17848	-4.20382	1.124115
C	-1.51015	2.58749	-0.81324
C	-2.07151	3.480333	0.104614
C	-1.73424	2.786106	-2.18044
C	-2.85043	4.543574	-0.33632
H	-1.89618	3.342413	1.16236

C	-2.51767	3.847296	-2.61745
H	-1.27934	2.12367	-2.90496
C	-3.07873	4.726316	-1.69619
H	-3.27959	5.227263	0.382484
H	-2.68159	3.992582	-3.67587
H	-3.68646	5.552425	-2.03729
C	1.257063	2.715632	0.828103
C	1.729527	3.66409	-0.08401
C	1.461777	2.926194	2.196564
C	2.402915	4.794439	0.363749
C	2.139839	4.054962	2.640376
C	2.613348	4.989641	1.724766
H	2.763992	5.520762	-0.35065
H	2.289593	4.208624	3.699719
C	0.227623	-4.89854	-0.01404
C	-2.18929	-0.42214	-1.14511
H	-2.58546	0.365687	-1.77838
H	-1.89835	-1.24972	-1.78486
H	0.883381	-4.68599	-2.04275
H	-0.4566	-4.75872	2.010718
H	3.139064	5.868147	2.071158
H	1.072994	2.218545	2.916825
H	1.567653	3.51669	-1.14262
C	0.93519	-2.02906	-2.4173
H	0.142686	-1.3866	-2.80477
H	1.803278	-1.39601	-2.22891
H	1.201157	-2.7274	-3.20711
C	-0.74078	-2.11921	2.403512
H	-1.66168	-1.56554	2.216048
H	-0.94511	-2.84385	3.187962
H	-0.01026	-1.41083	2.797903
C	0.320523	-6.40147	-0.01275
H	-0.33629	-6.84116	0.735719
H	0.059626	-6.81662	-0.98528
H	1.339019	-6.72365	0.215112
C	-3.22838	-0.88081	-0.14477
C	-3.61872	-2.21908	-0.12132
C	-3.84613	0.022666	0.723473
C	-4.60542	-2.65251	0.759159
H	-3.15157	-2.92743	-0.79274
C	-4.82528	-0.41144	1.608895
H	-3.57577	1.069594	0.701438
C	-5.20679	-1.75039	1.628874
H	-4.90272	-3.6918	0.763324

H	-5.2999	0.296532	2.27393
H	-5.97398	-2.08489	2.312983
C	2.222033	-0.21693	1.141572
H	2.012246	-1.07228	1.776567
C	3.299228	-0.56802	0.137967
C	3.825184	0.395167	-0.72651
C	3.817441	-1.86201	0.107521
C	4.840425	0.062245	-1.61511
H	3.454721	1.410858	-0.69905
C	4.840172	-2.19357	-0.7761
C	5.349899	-1.2333	-1.64208
H	5.243138	0.81605	-2.27719
H	5.236933	-3.19907	-0.78567
H	6.144798	-1.48862	-2.32867
H	3.422277	-2.61533	0.77621
H	2.541548	0.601533	1.779287
N	0.934579	0.212281	0.53944