

Supporting Information for:

**Synthesis of Chromium(II) Complexes with Chelating Bis(alkoxide) Ligand
and Their Reactions with Organoazides and Diazoalkanes**

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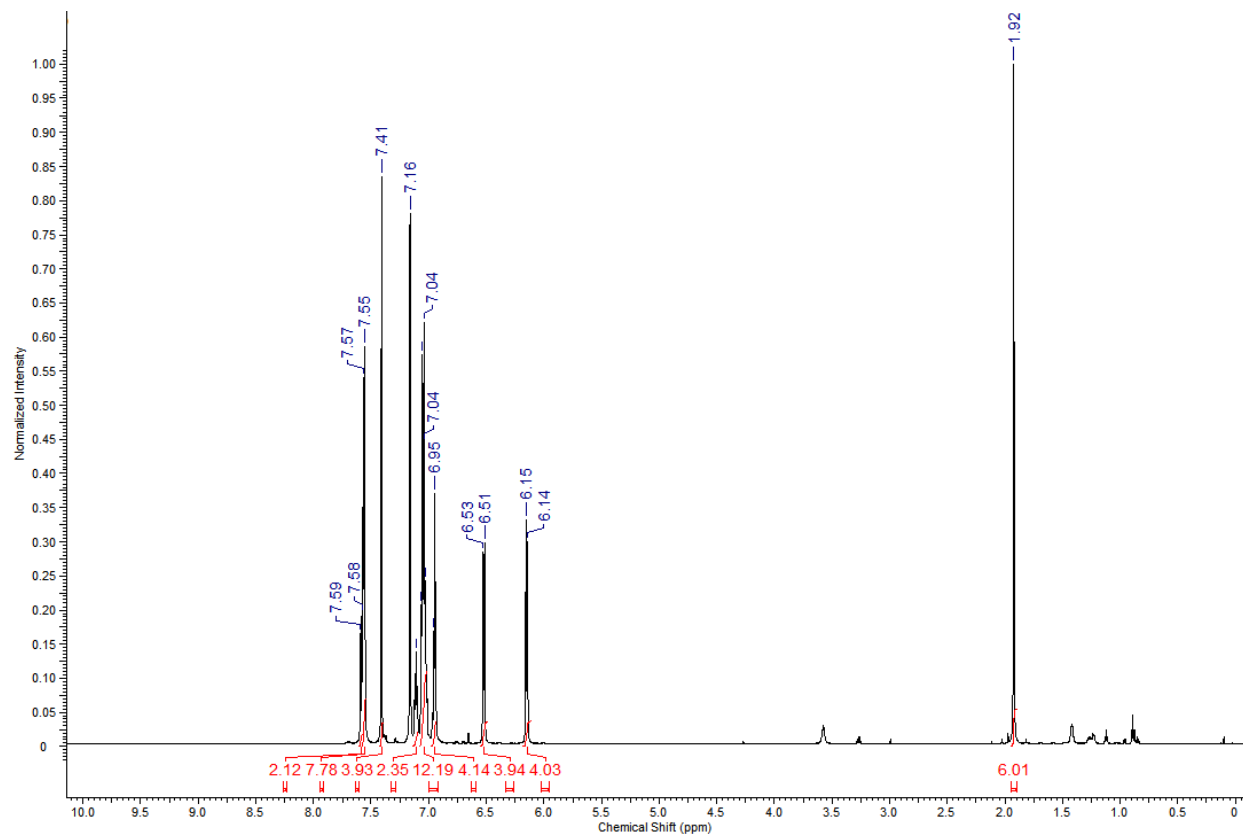


Figure S1. ^1H NMR of $\text{Cr}[\text{OO}]^{\text{Ph}}(\text{N}(4\text{-CH}_3\text{Ph}))_2$ (3).

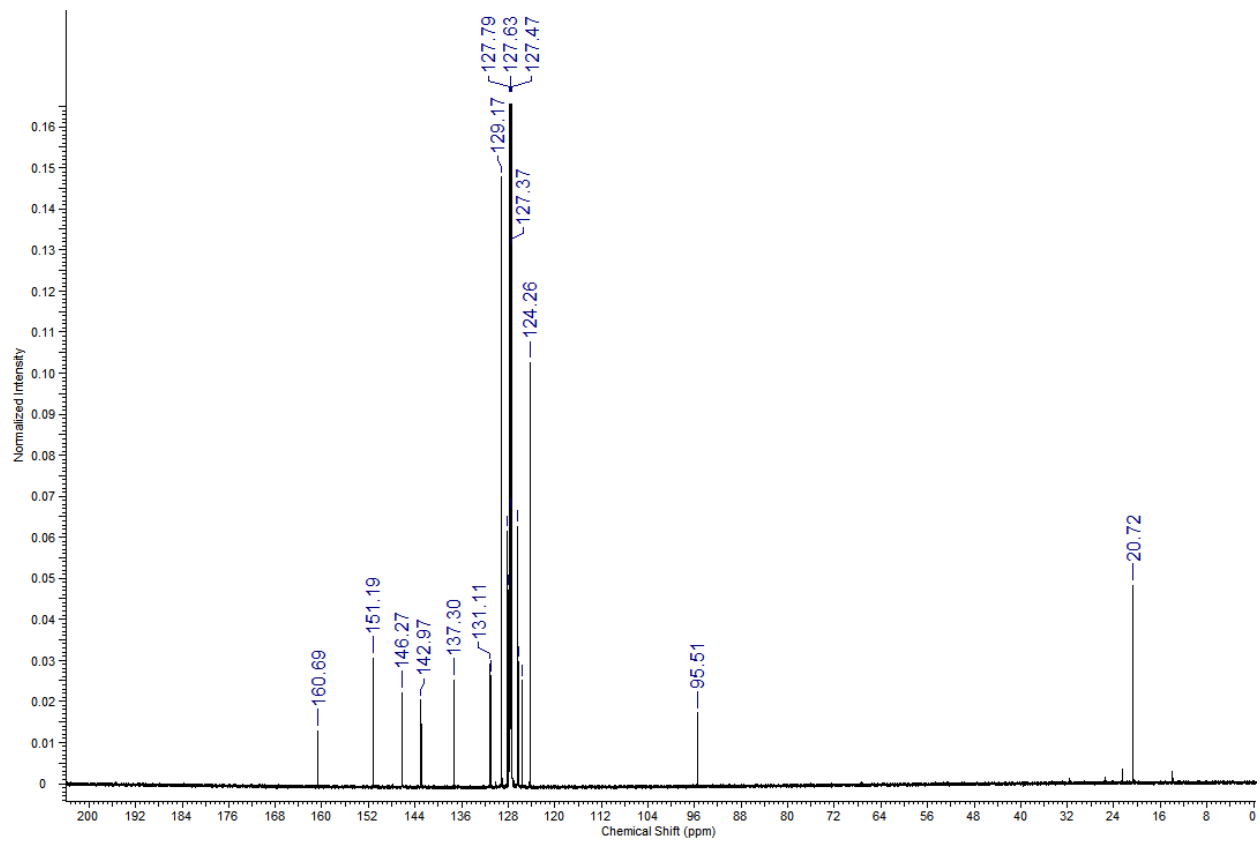


Figure S2. ^{13}C NMR $\text{Cr}[\text{OO}]^{\text{Ph}}(\text{N}(4\text{-CH}_3\text{Ph}))_2$ (**3**).

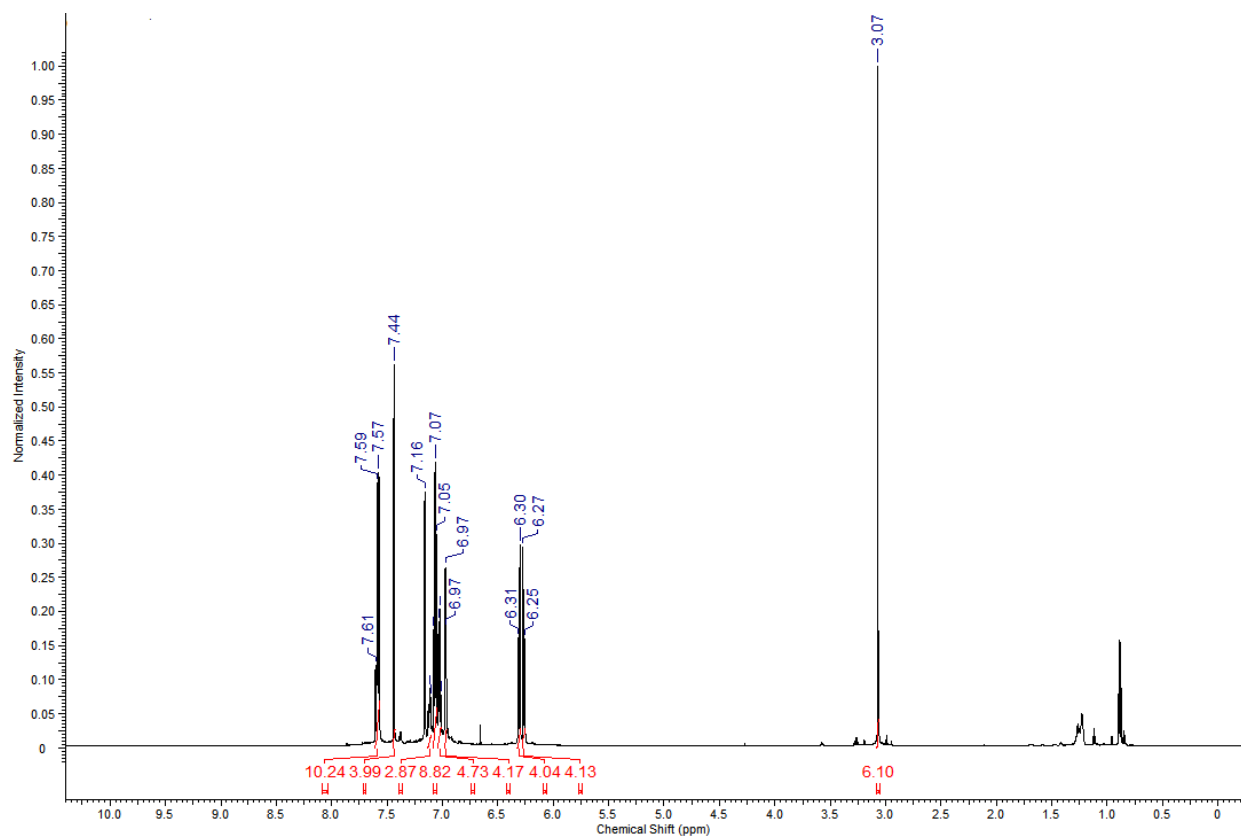


Figure S3. ^1H NMR of $\text{Cr}[\text{OO}]^{\text{Ph}}(\text{N}(4\text{-CH}_3\text{OPh}))_2$ (**4**).

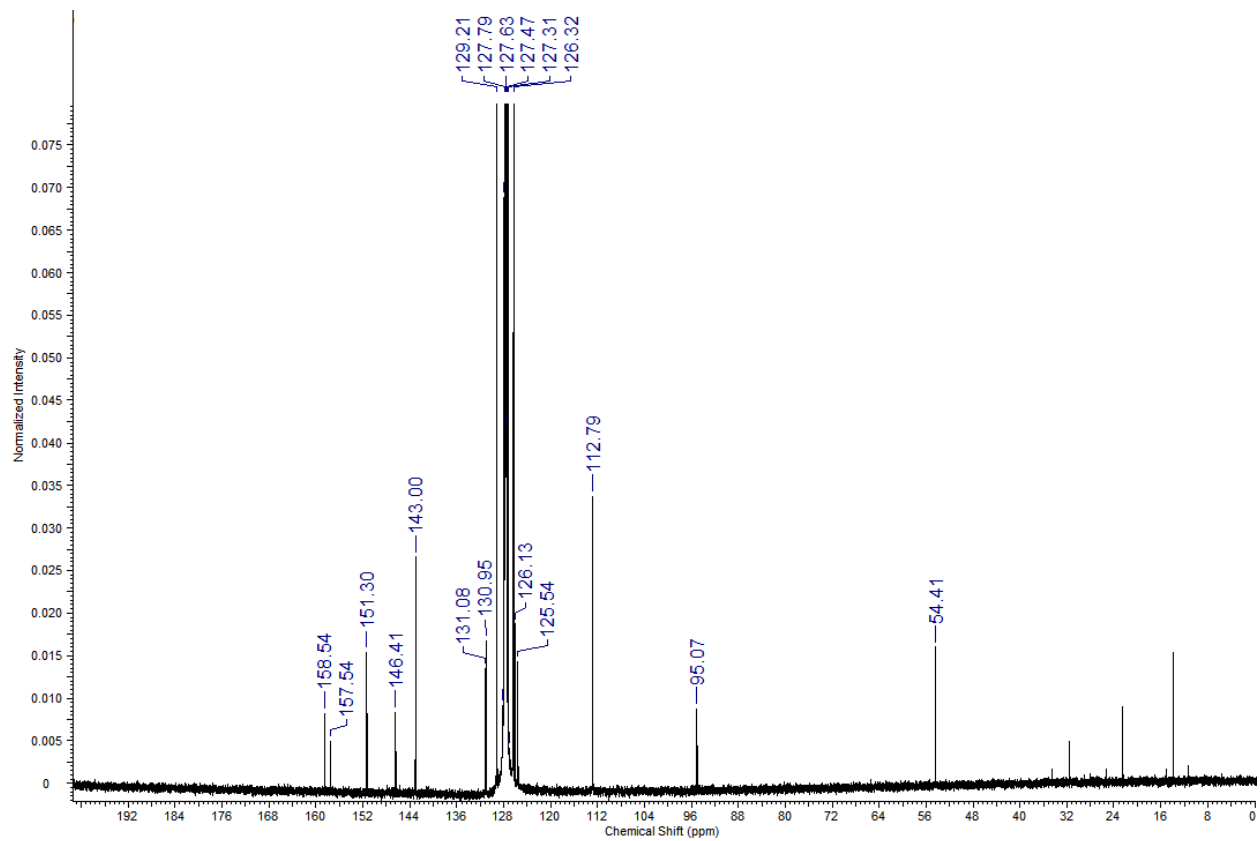


Figure S4. ^{13}C NMR of $\text{Cr}[\text{OO}]^{\text{Ph}}(\text{N}(4\text{-CH}_3\text{OPh}))_2$ (4).

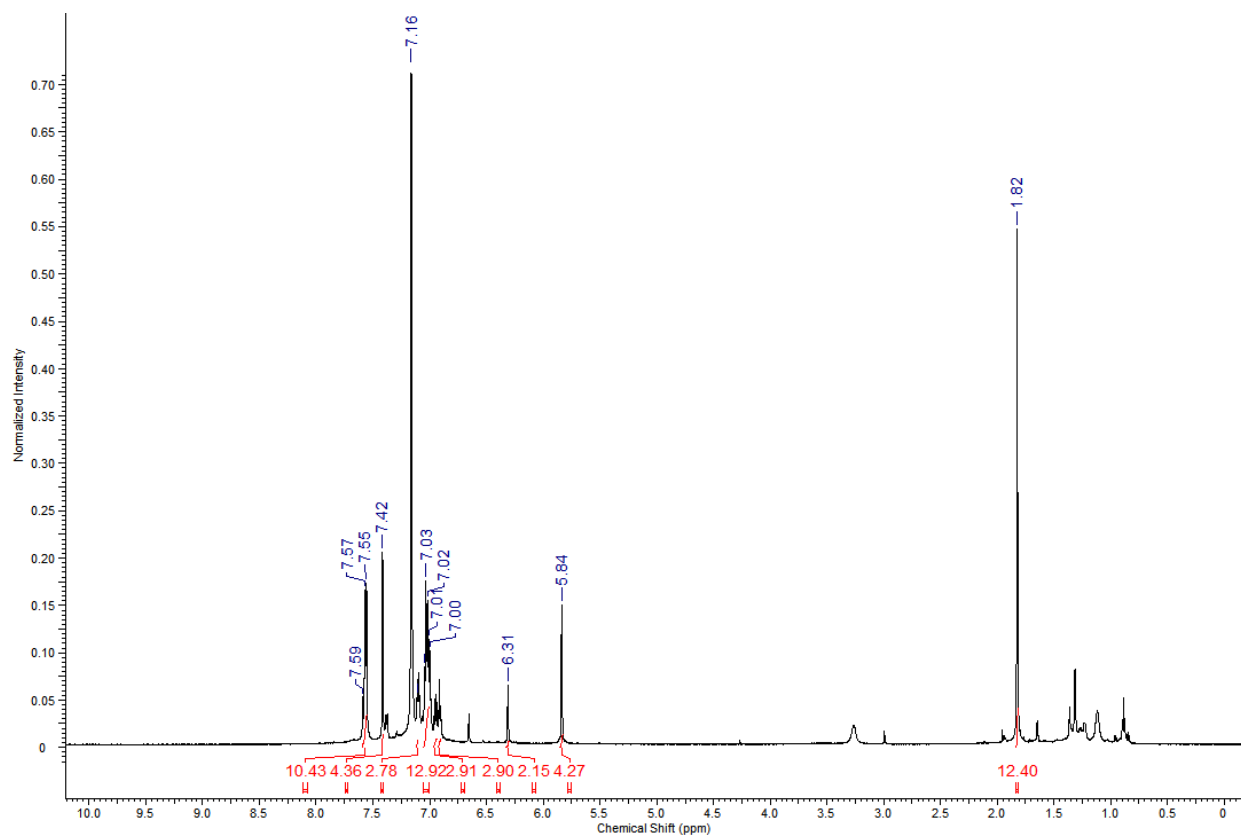


Figure S5. ^1H NMR of $\text{Cr}[\text{OO}]^{\text{Ph}}(\text{N}(3,5\text{-}(\text{CH}_3)_2\text{Ph}))_2$ (5).

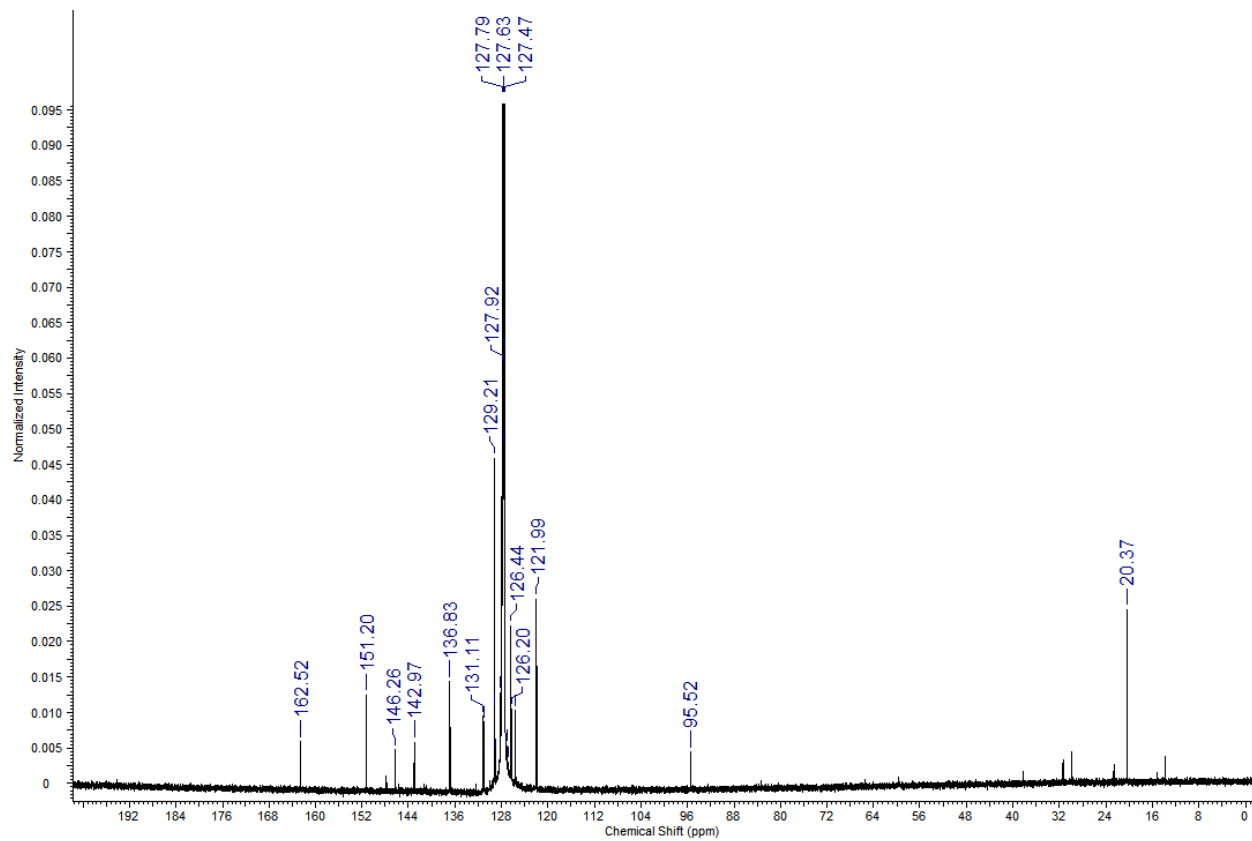


Figure S6. ^{13}C NMR of $\text{Cr}[\text{OO}]^{\text{Ph}}(\text{N}(3,5\text{-}(\text{CH}_3)_2\text{Ph}))_2$ (**5**).

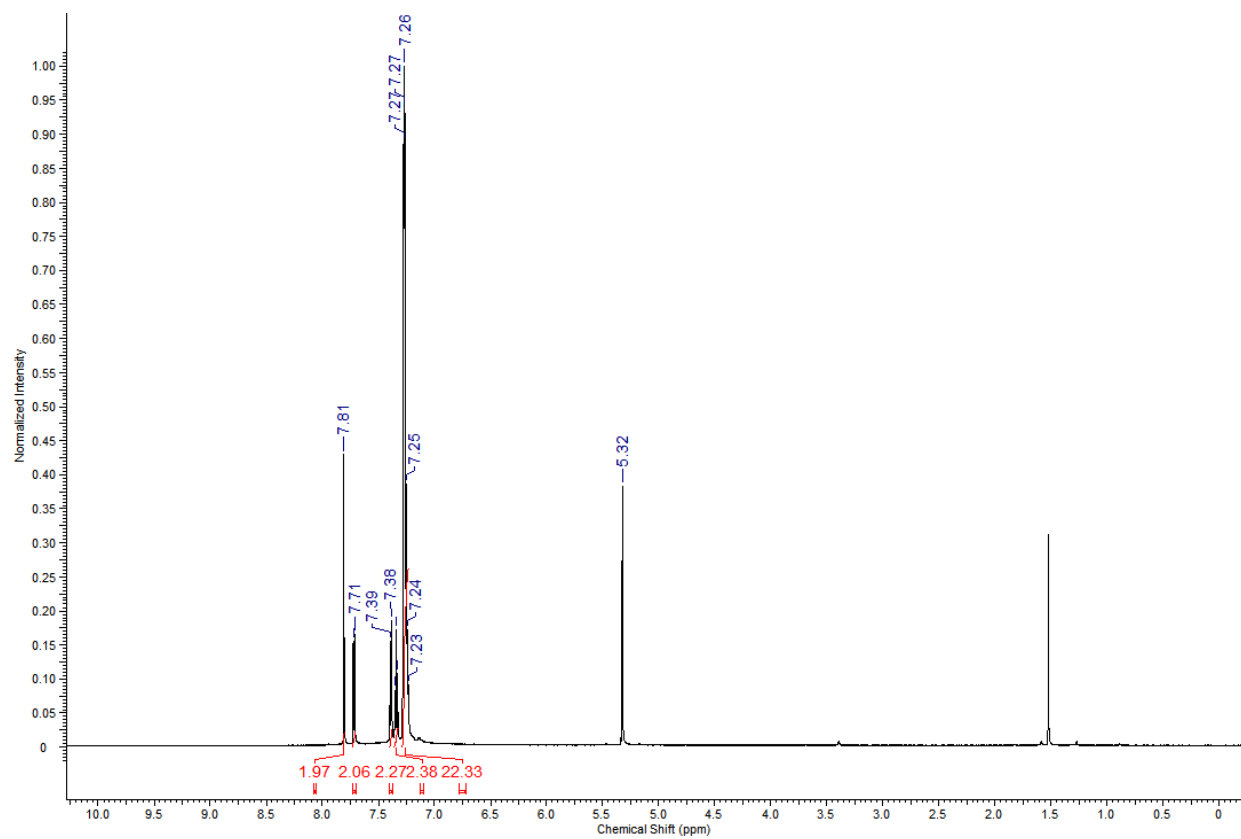


Figure S7. ^1H NMR of 6,6,12,12-tetraphenyl-6,12-dihydroindeno[1,2-b]fluorine (7).

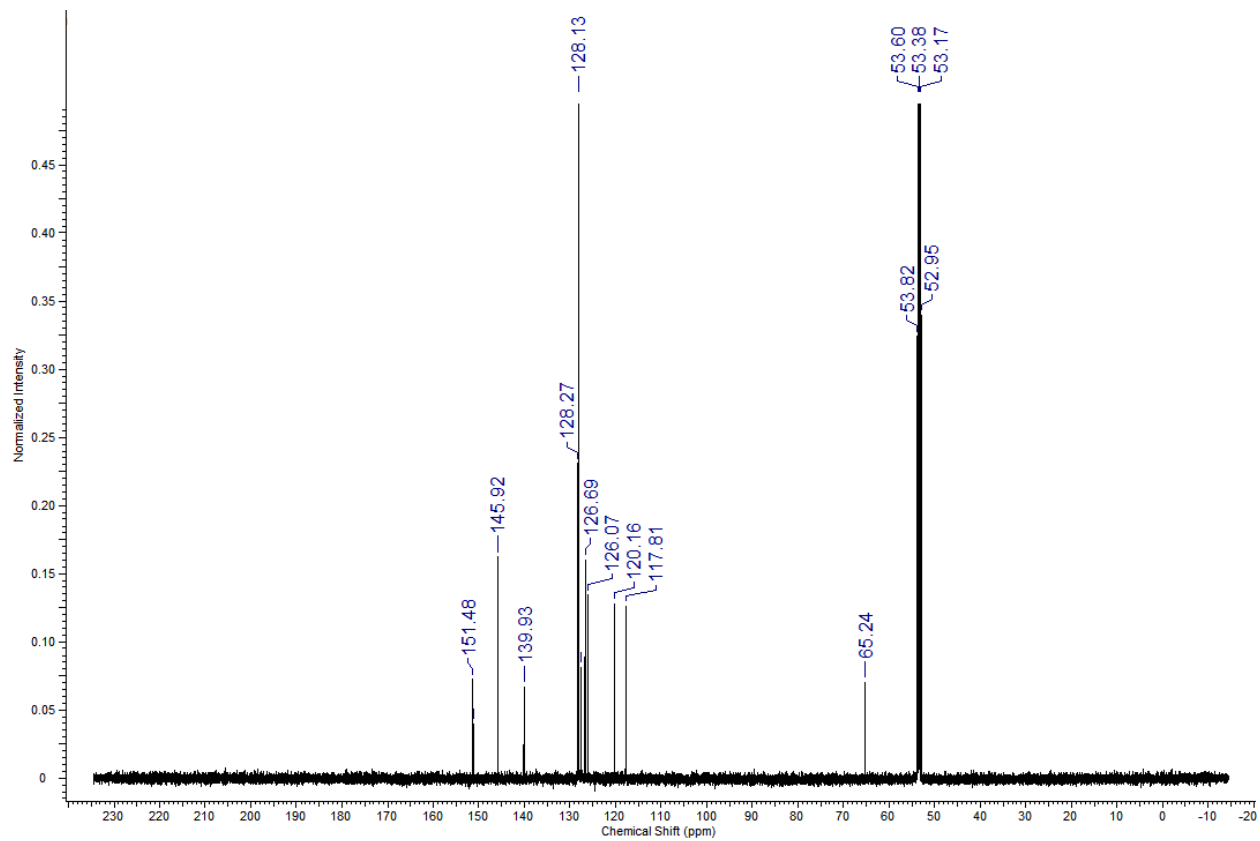


Figure S8. ^{13}C NMR of 6,6,12,12-tetraphenyl-6,12-dihydroindeno[1,2-b]fluorene (**7**).

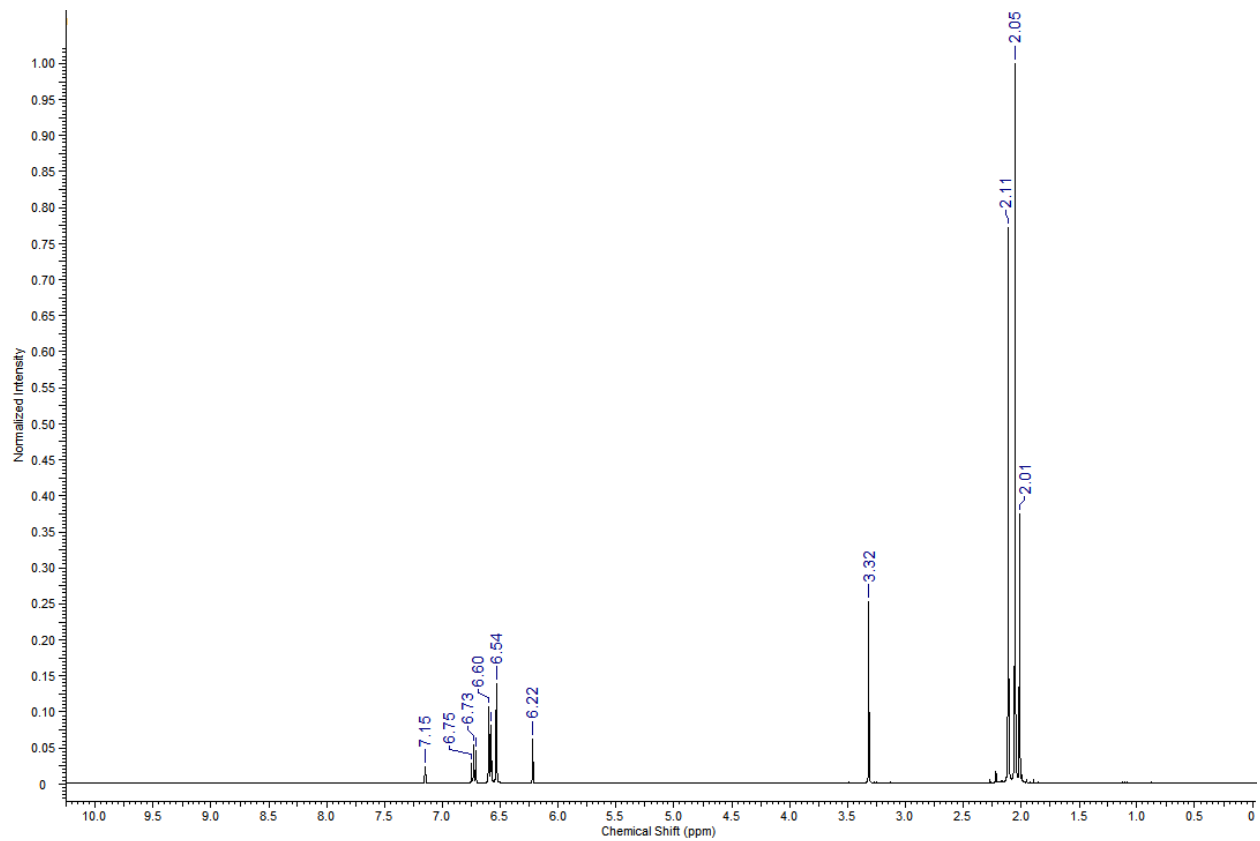


Figure S9. ¹H NMR of mesityl azide and xylol isocyanide prior to the addition of the catalyst (the resonances at 3.32 and 6.22 ppm belong to the internal standard TMB).

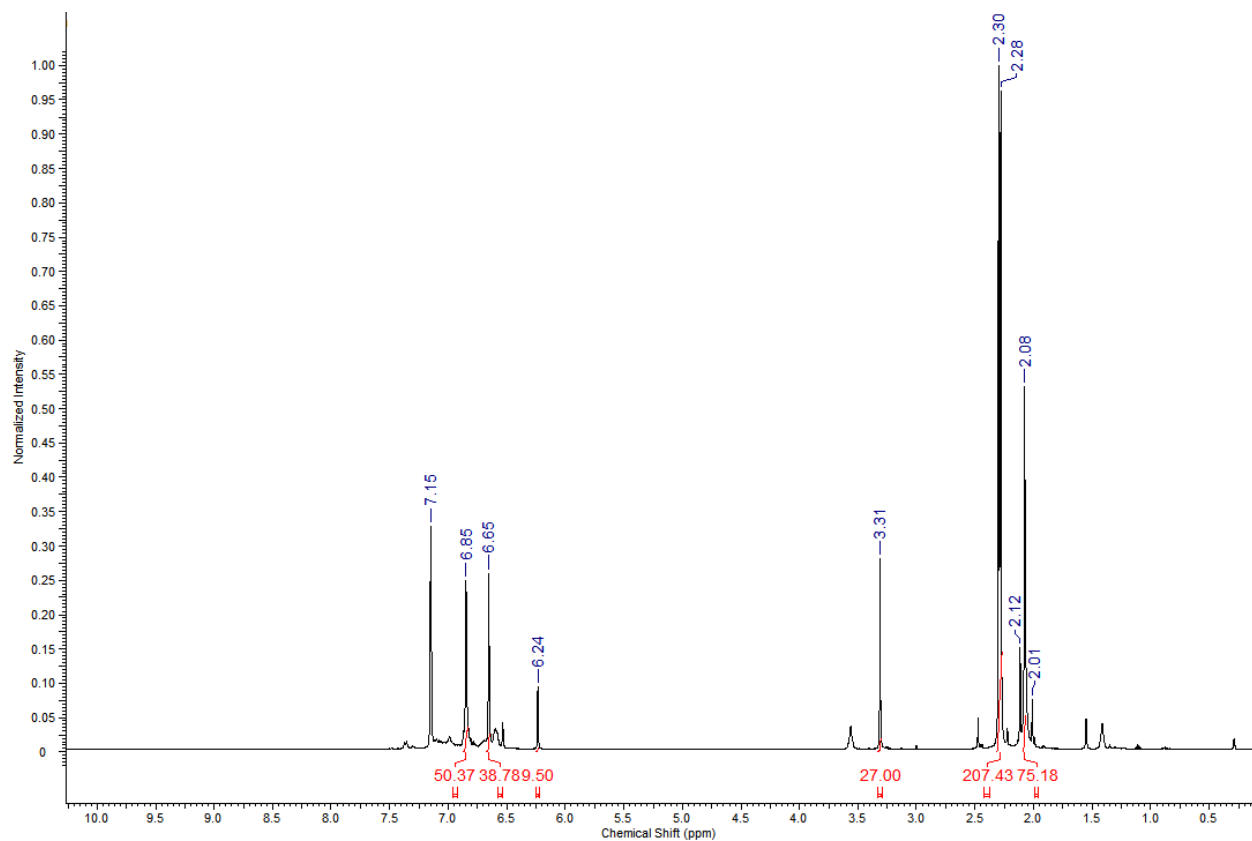


Figure S10. ¹H NMR of the catalytic reaction between mesityl azide, xyllyl isocyanide, and **2**, demonstrating formation of respective carbodiimide.

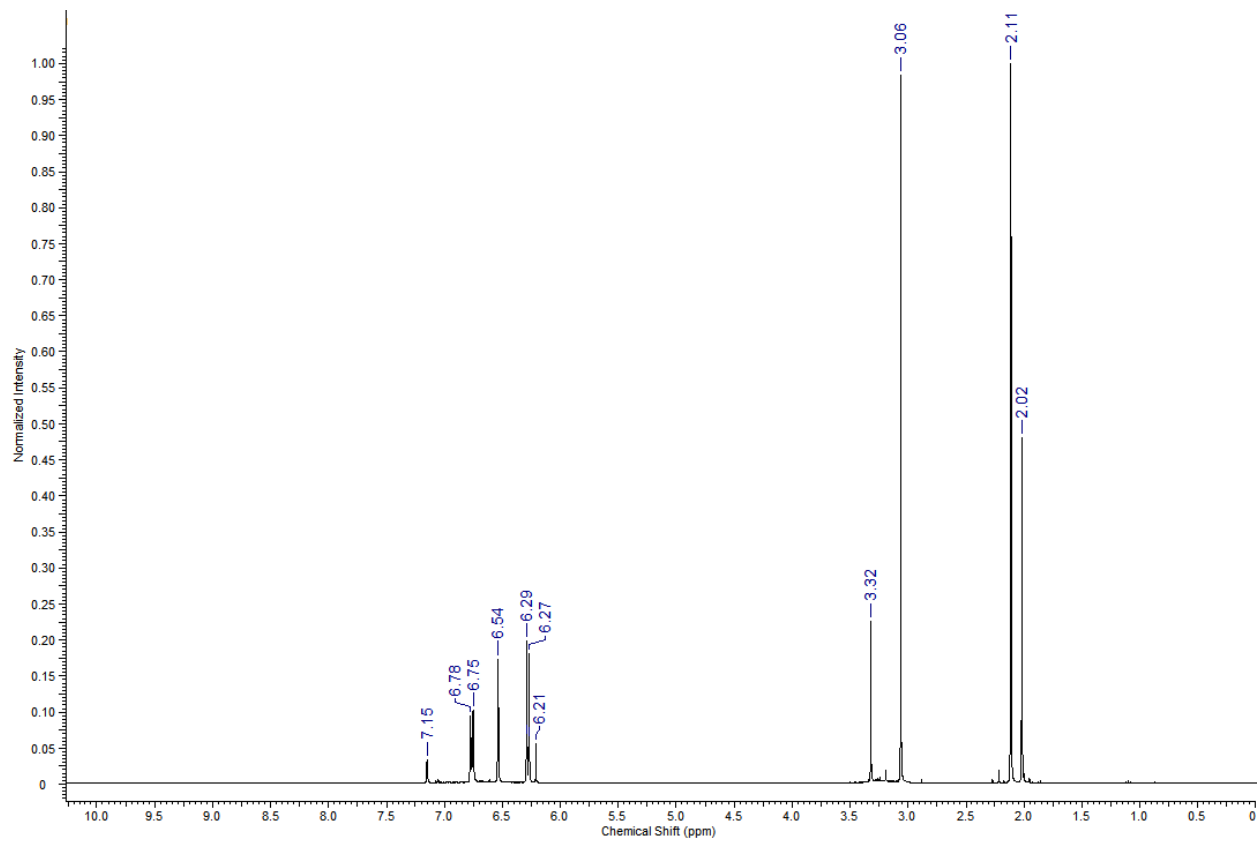


Figure S11. ^1H NMR of mesityl azide and 4-methoxyphenyl isocyanide prior to the addition of the catalyst (the resonances at 3.32 and 6.21 belong to the internal standard TMB).

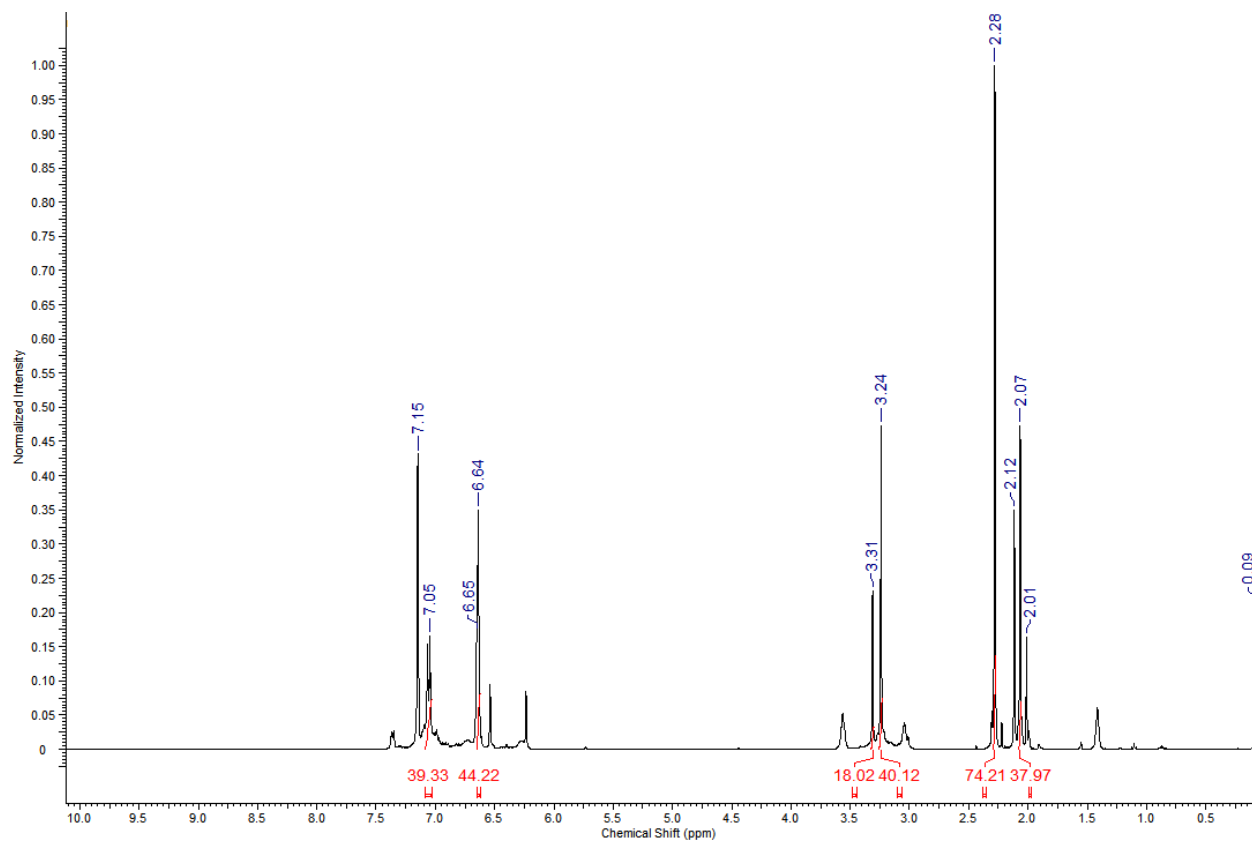


Figure S12. ¹H NMR of the catalytic reaction between mesityl azide, 4-methoxyphenyl isocyanide, and **2**, demonstrating formation of respective carbodiimide (see experimental for the reaction conditions).

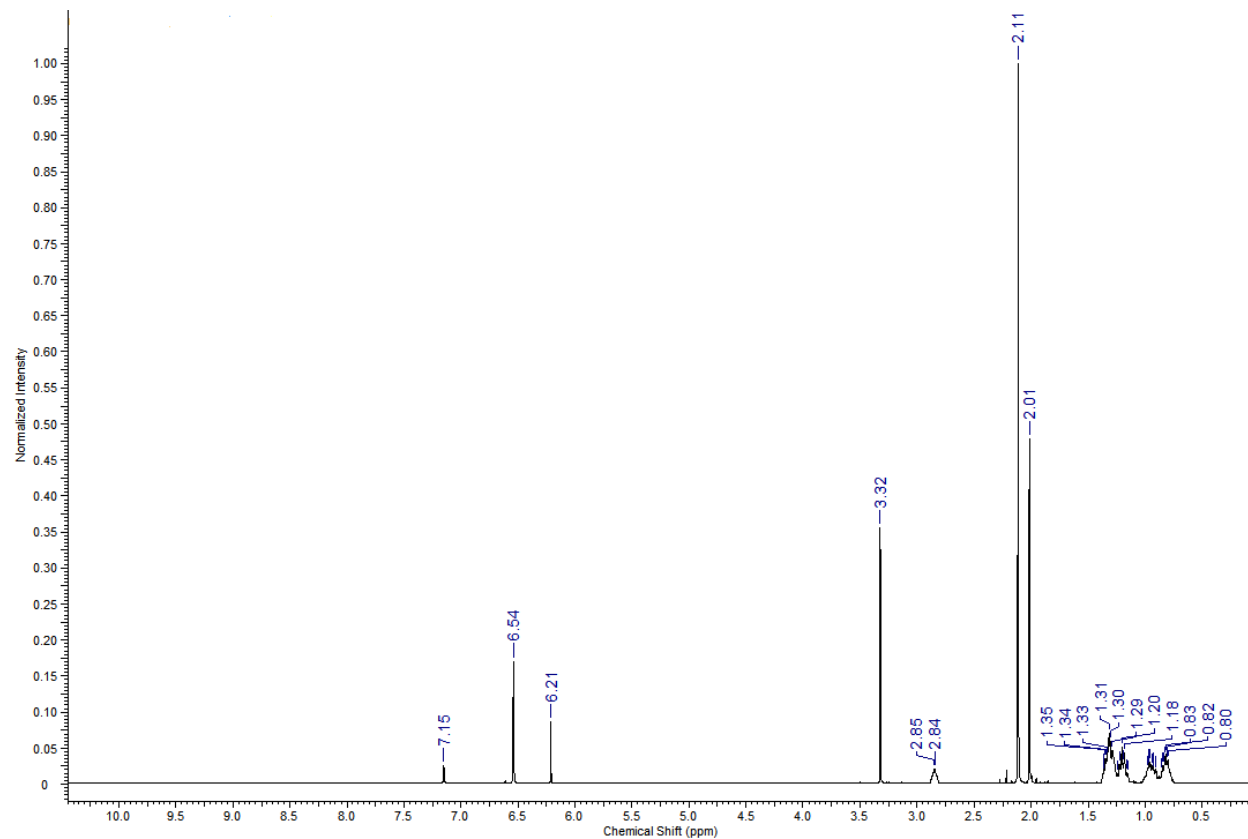


Figure S13. ^1H NMR of mesityl azide and cyclohexyl isocyanide prior to the addition of the catalyst (the resonances at 3.32 and 6.21 belong to the internal standard TMB).

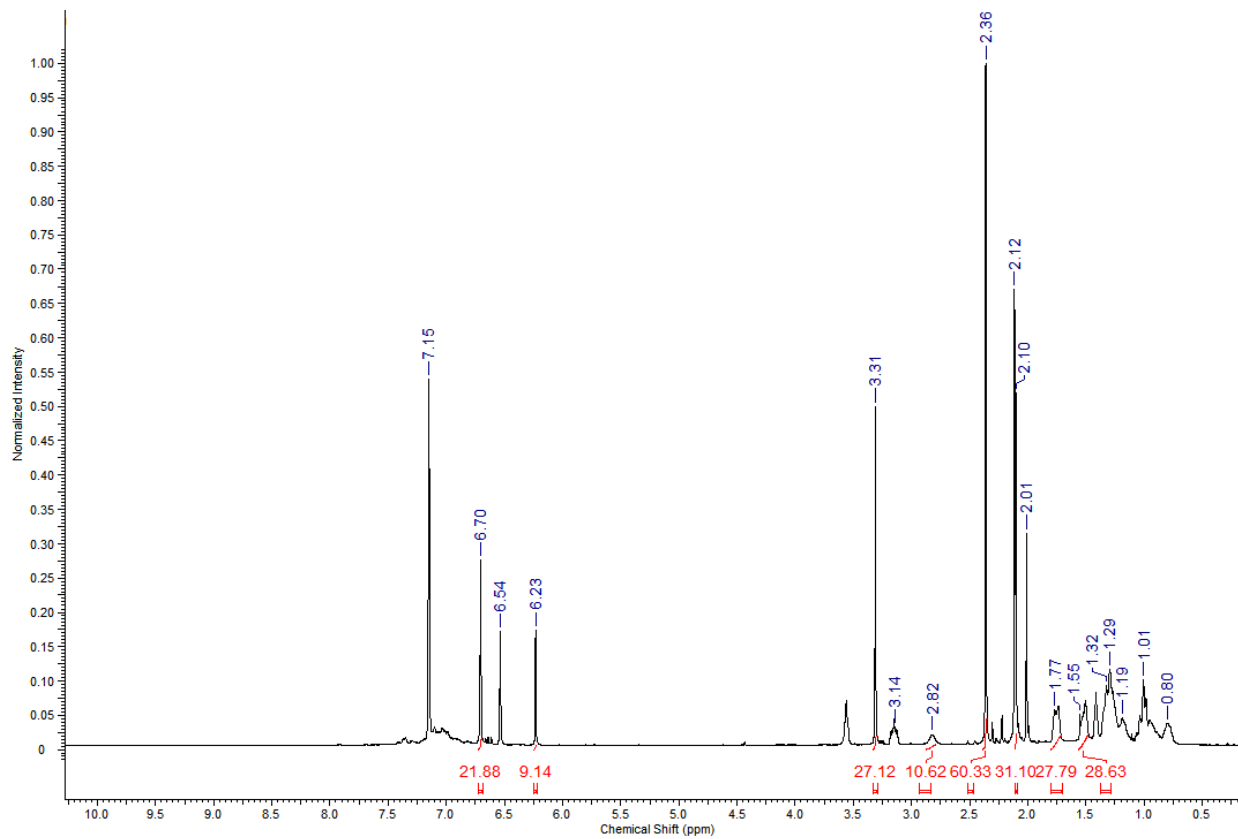


Figure S14. ^1H NMR of the reaction between mesityl azide, cyclohexyl isocyanide, and **2**, demonstrating formation of respective carbodiimide.

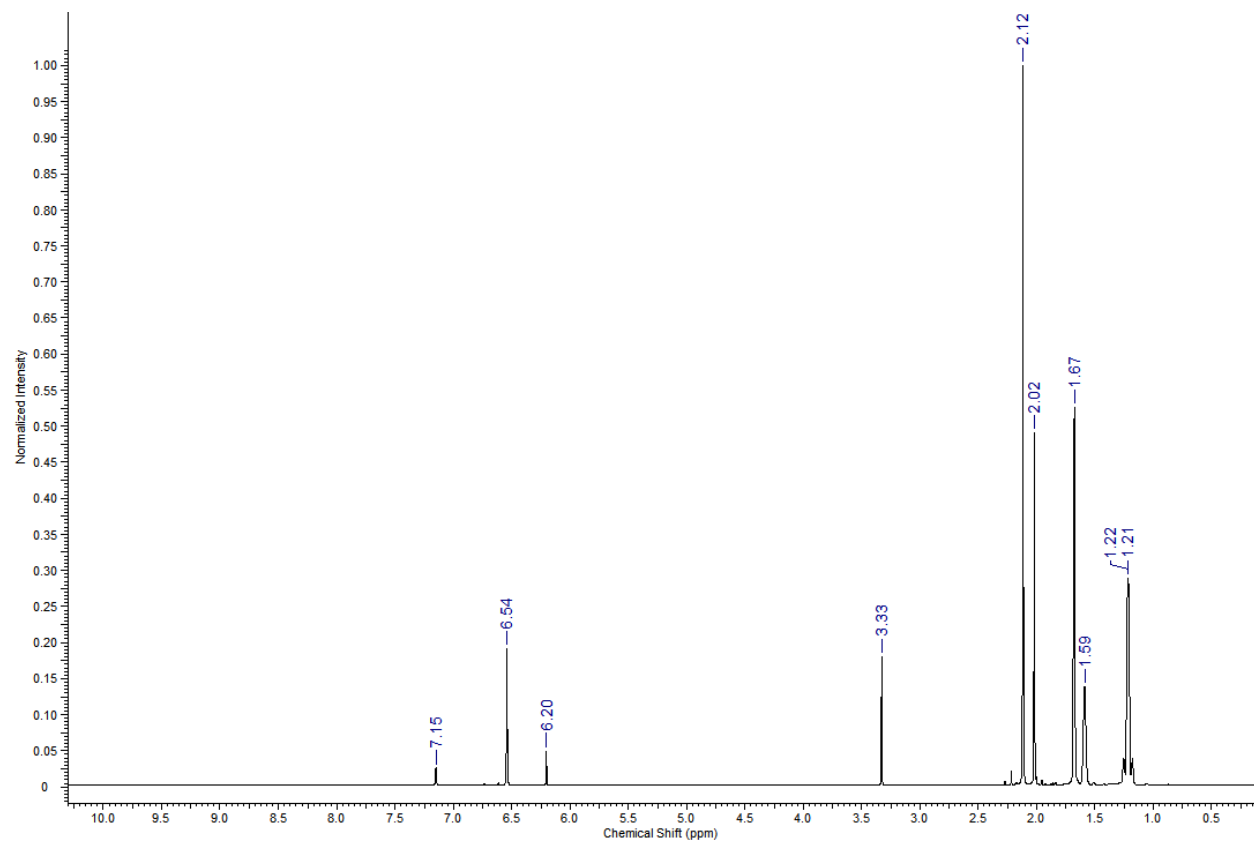


Figure S15. ¹H NMR of mesityl azide and 1-adamantyl isocyanide prior to the addition of the catalyst (the resonances at 3.33 and 6.20 belong to the internal standard TMB).

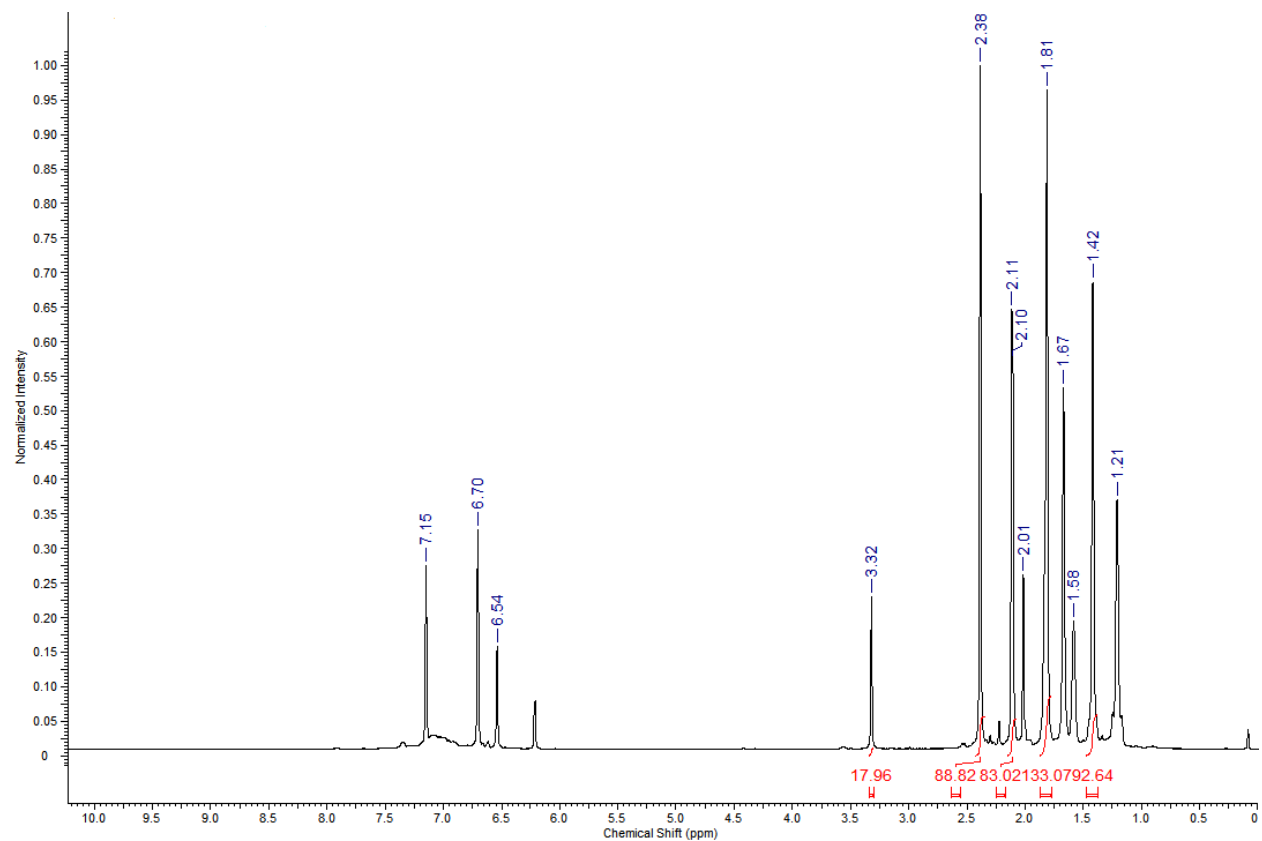


Figure S16. ¹H NMR of the reaction between mesityl azide, 1-adamantyl isocyanide, and **2**, showing formation of respective carbodiimide (carbodiimide peak at 2.10 ppm overlaps with unreacted mesityl azide peak at 2.11 ppm).

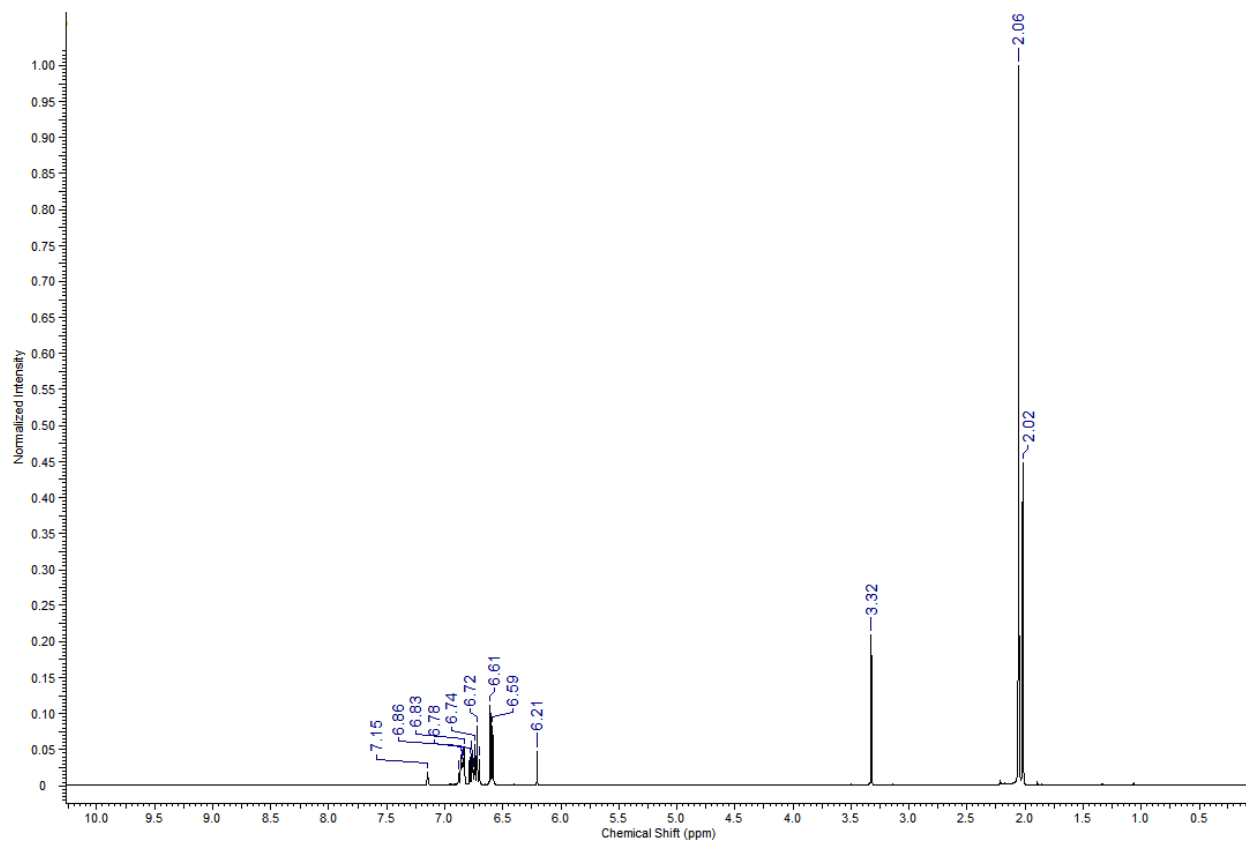


Figure S17. ¹H NMR of o-tolyl azide and xylyl isocyanide prior to the addition of the catalyst (the resonances at 3.32 and 6.21 belong to the internal standard TMB).

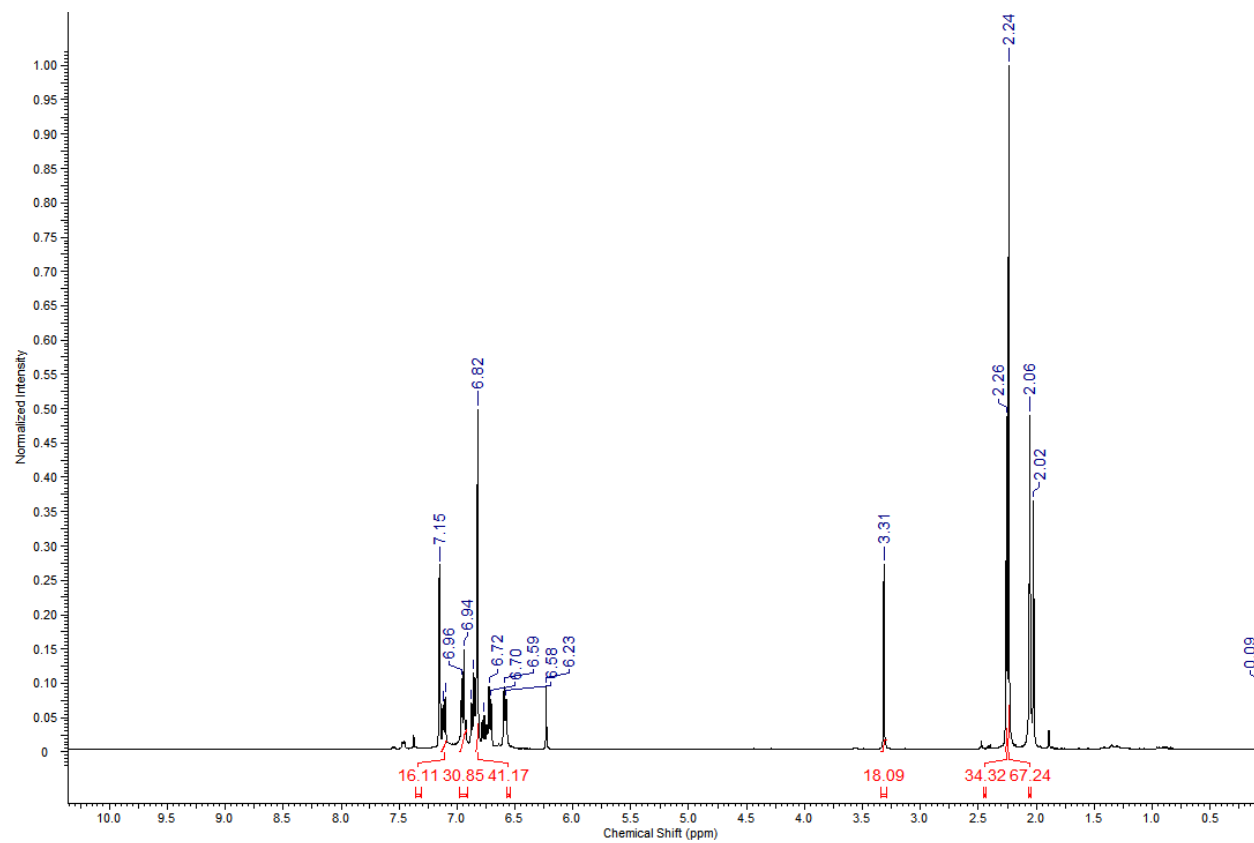


Figure S18. ¹H NMR of the reaction between o-tolyl azide, xyllyl isocyanide, and **2**, showing formation of respective carbodiimide.

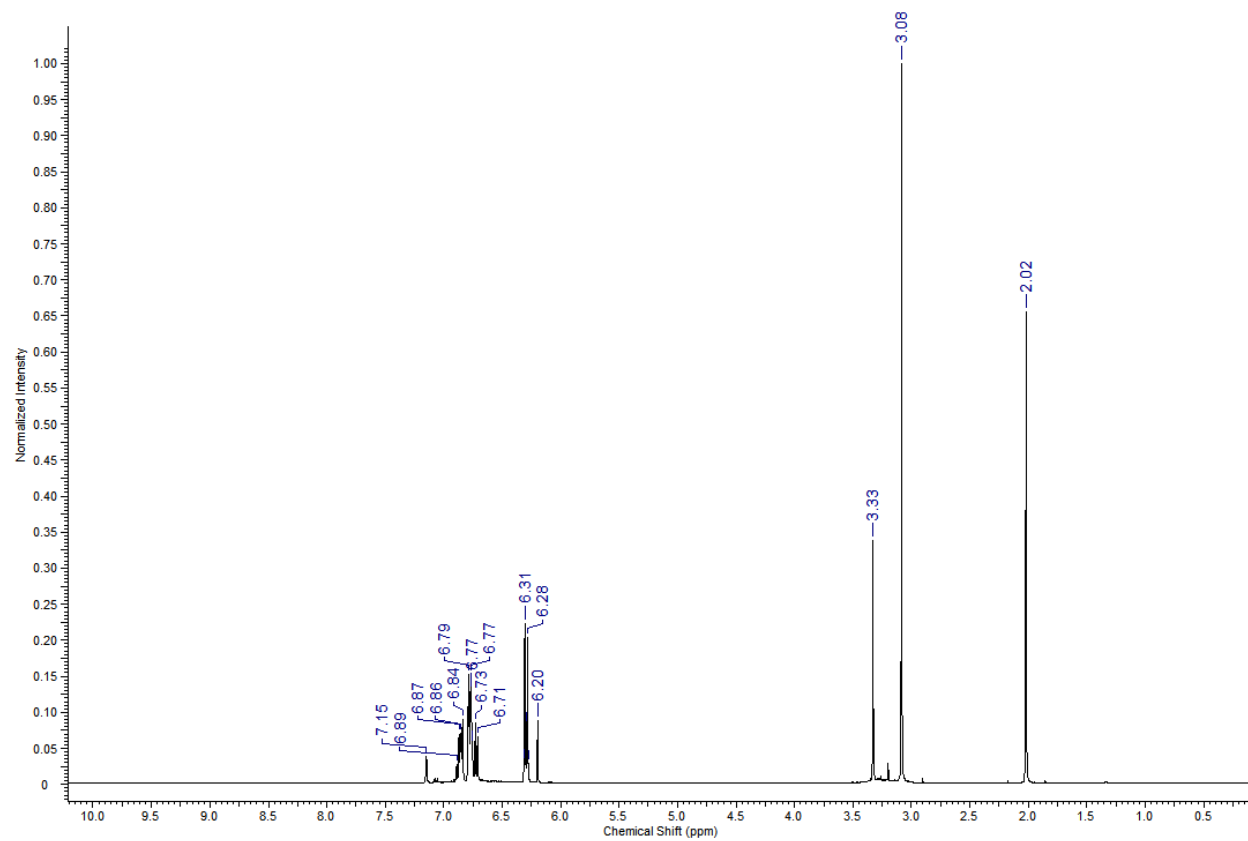


Figure S19. ¹H NMR of o-tolyl azide and 4-methoxyphenyl isocyanide prior to the addition of the catalyst (the resonances at 3.33 and 6.20 belong to the internal standard TMB).

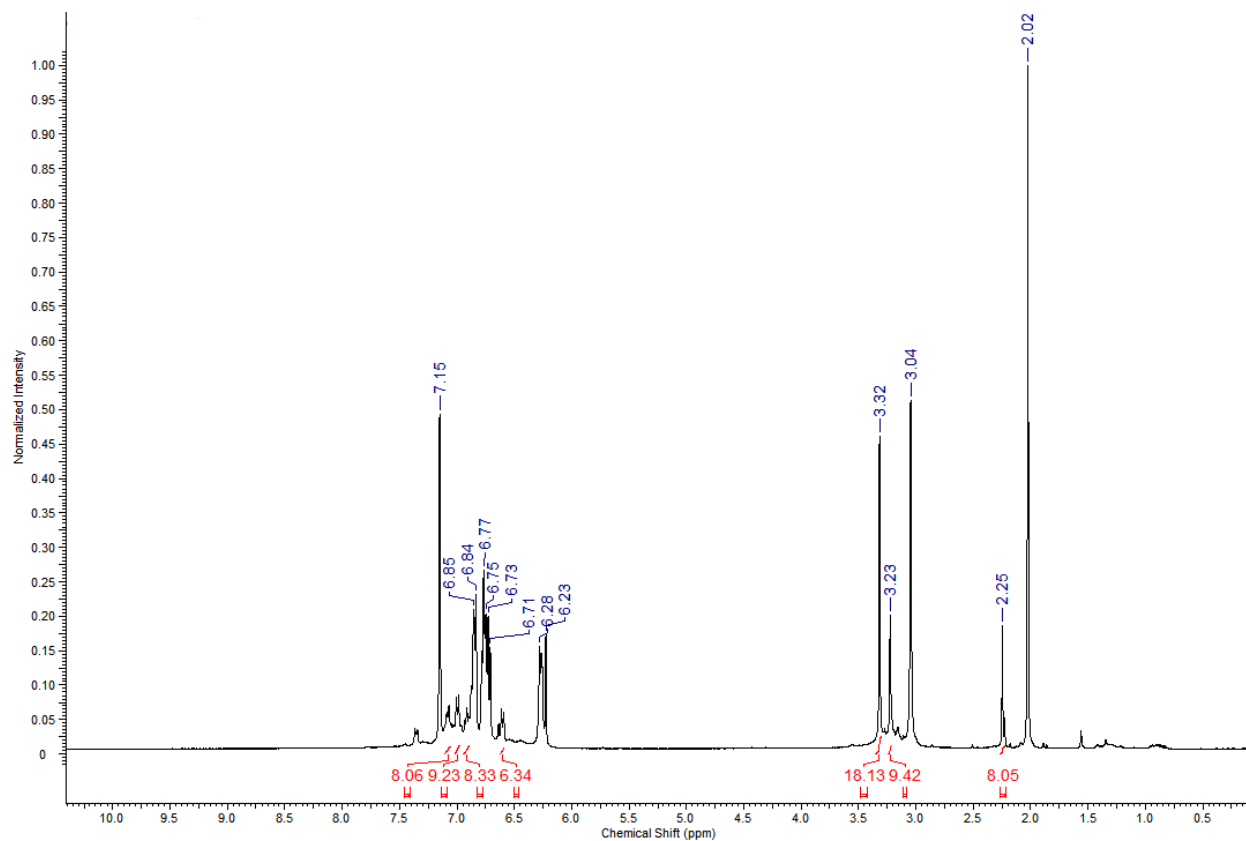


Figure S20. ¹H NMR of the reaction between o-tolyl azide, 4-methoxyphenyl isocyanide, and 2, demonstrating formation of respective carbodiimide.

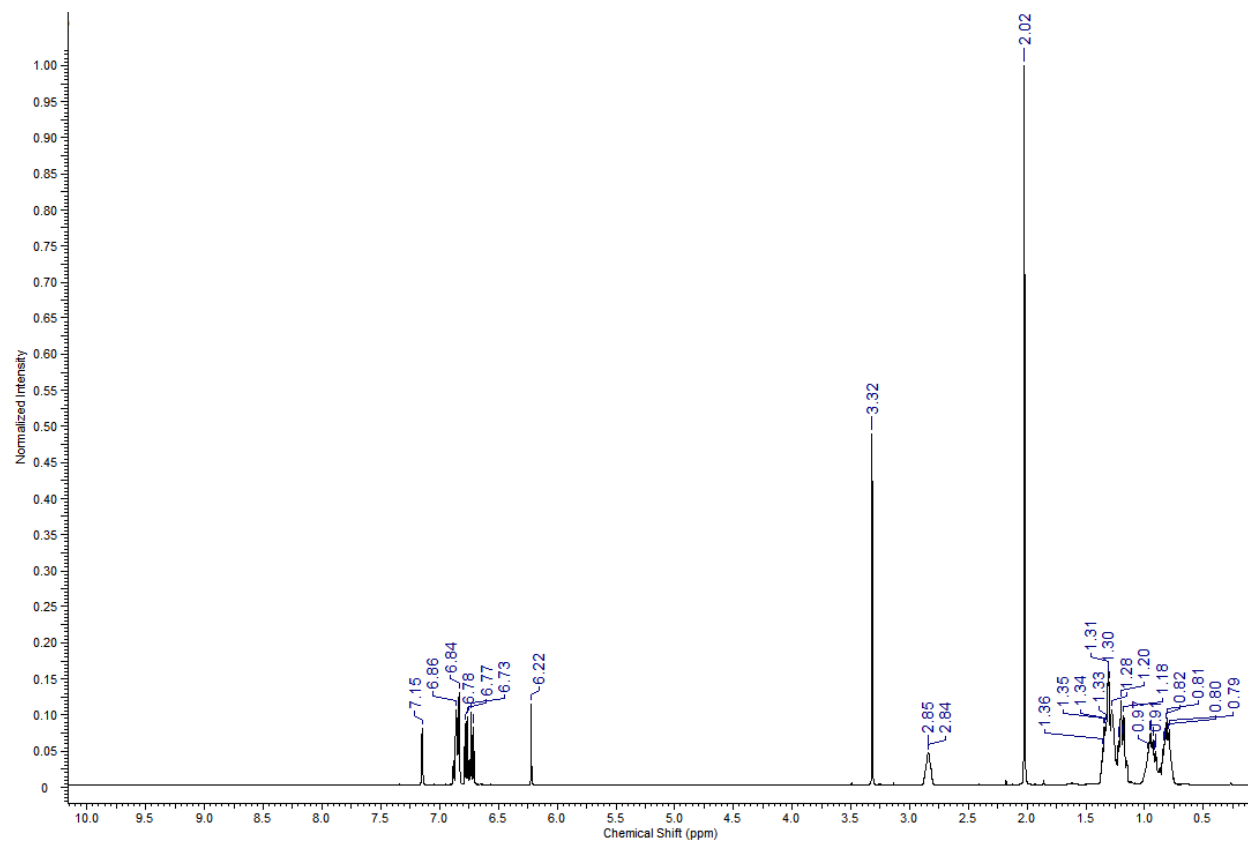


Figure S21. ¹H NMR of o-tolyl azide and cyclohexyl isocyanide prior to the addition of the catalyst (the resonances at 3.32 and 6.22 belong to the internal standard TMB).

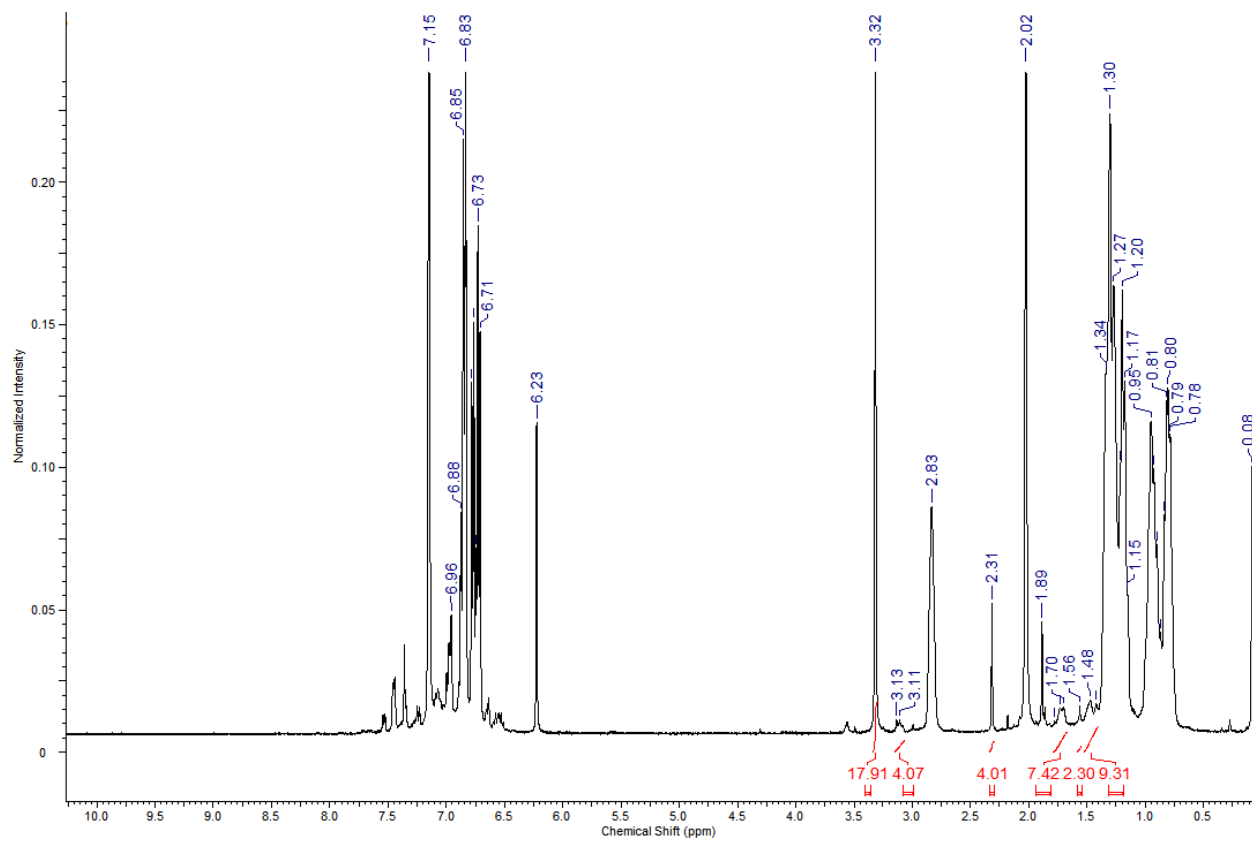


Figure S22. ¹H NMR of the reaction between o-tolyl azide, cyclohexyl isocyanide, and **2**, showing formation of respective carbodiimide.

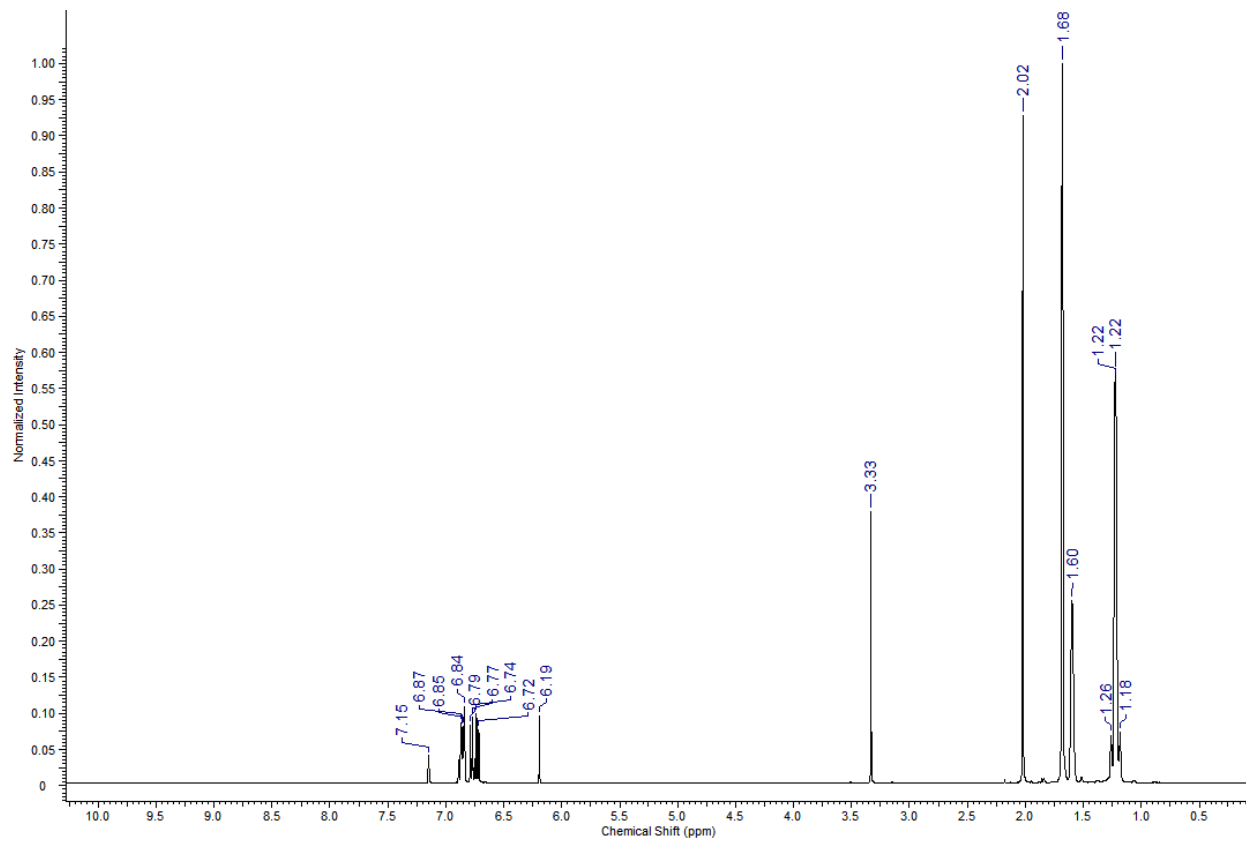


Figure S23. ¹H NMR of o-tolyl azide and adamantyl isocyanide prior to the addition of the catalyst (the resonances at 3.33 and 6.19 belong to the internal standard TMB).

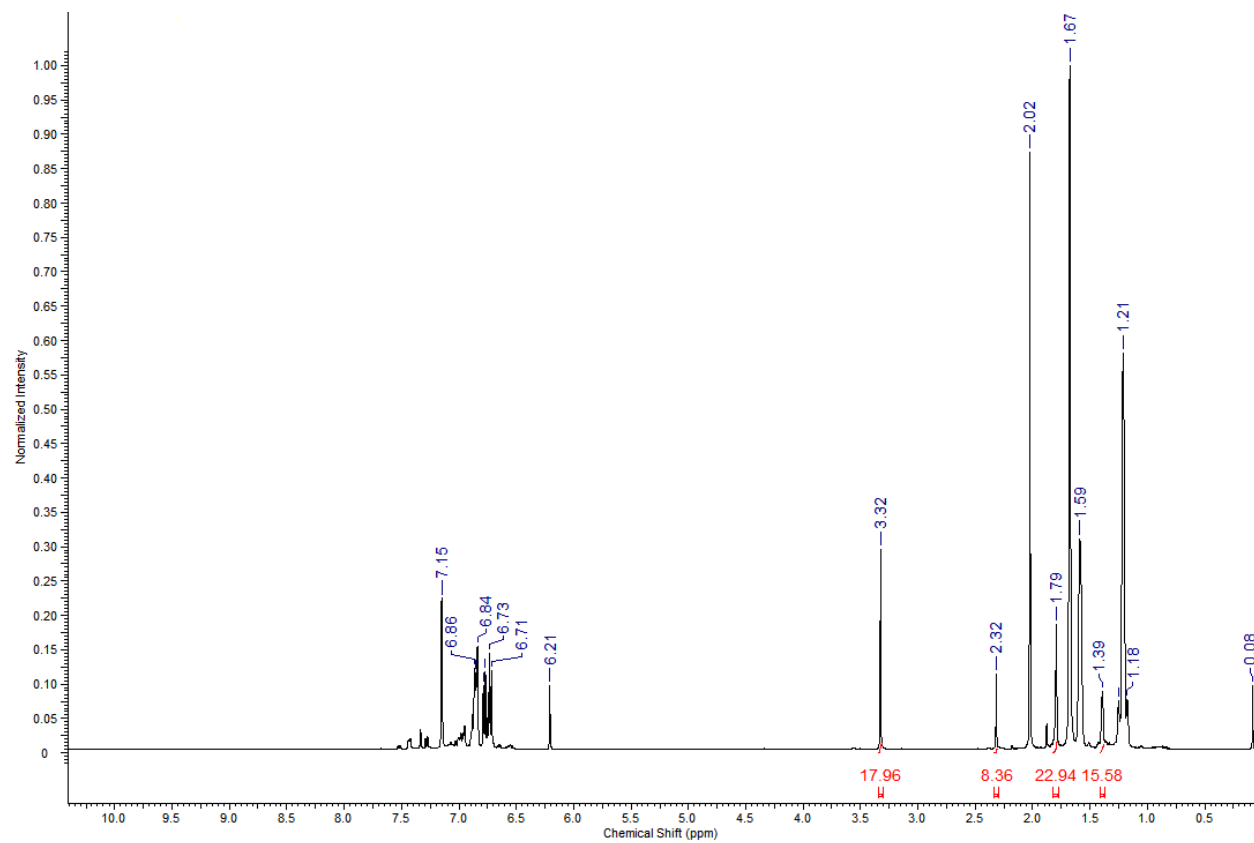


Figure S24. ¹H NMR of the reaction between o-tolyl azide, adamantyl isocyanide, and **2**, showing formation of respective carbodiimide.

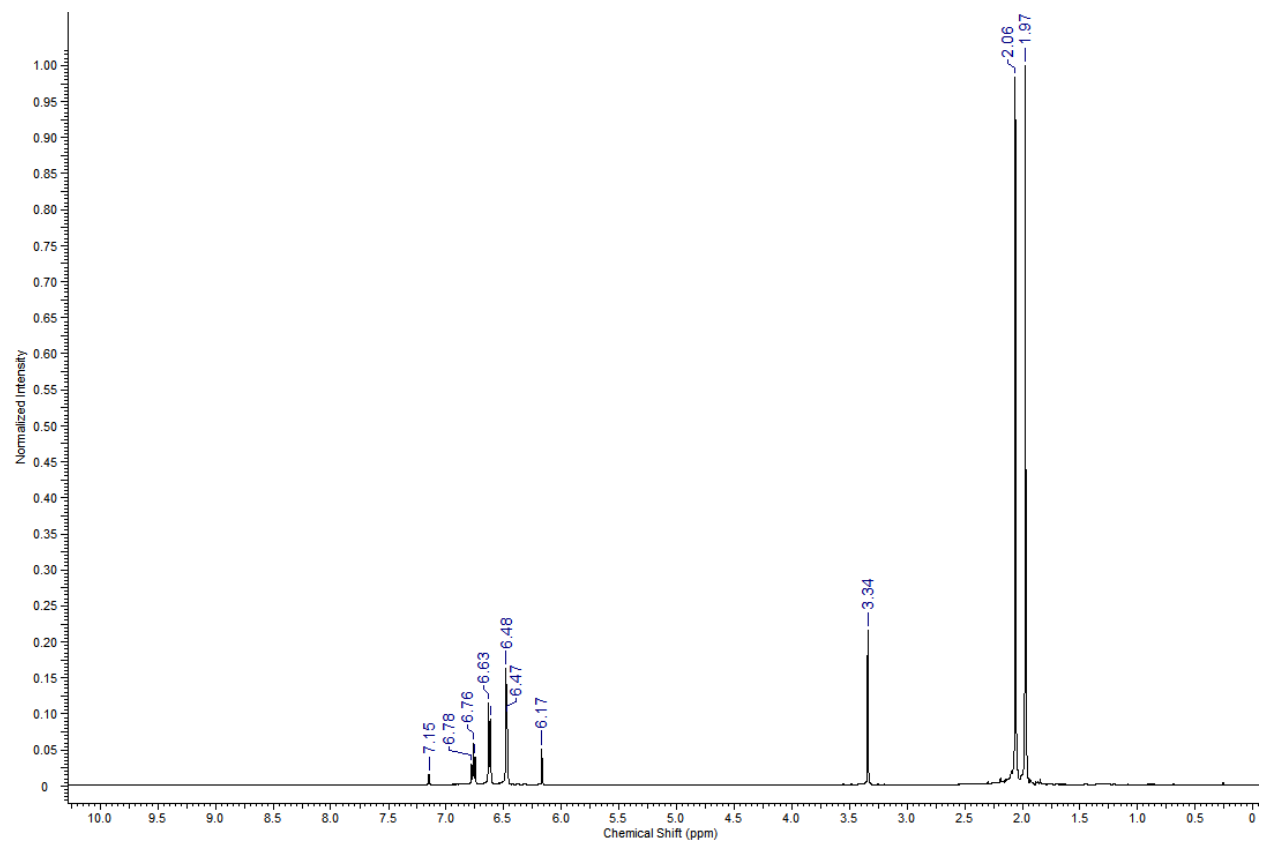


Figure S25. ¹H NMR of 3,5-dimethylphenyl azide and xylyl isocyanide prior to the addition of the catalyst (the resonances at 3.34 and 6.2217 belong to the internal standard TMB).

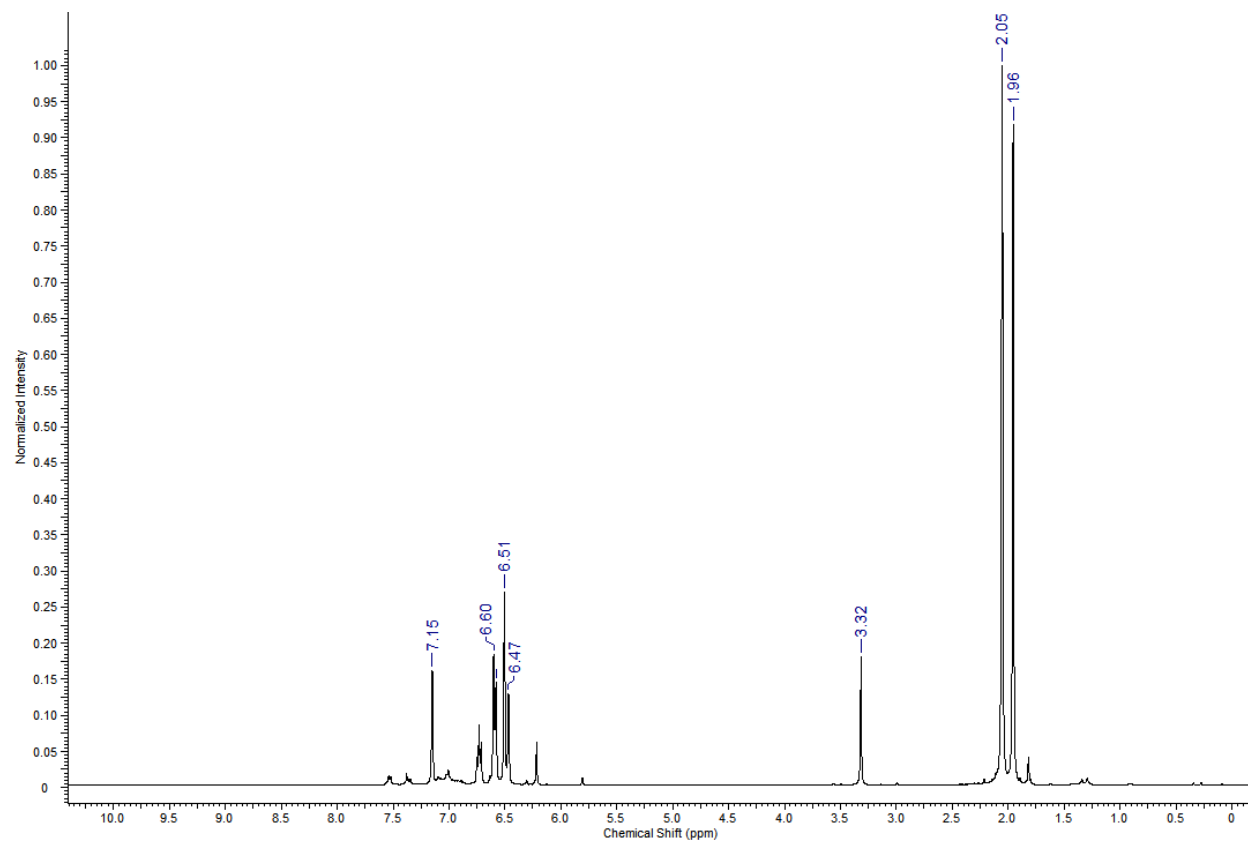


Figure S26. ¹H NMR of the reaction mixture of 3,5-dimethylphenyl azide, xylol isocyanide, and **2** (see experimental for the reaction conditions), showing no formation of respective carbodiimide.

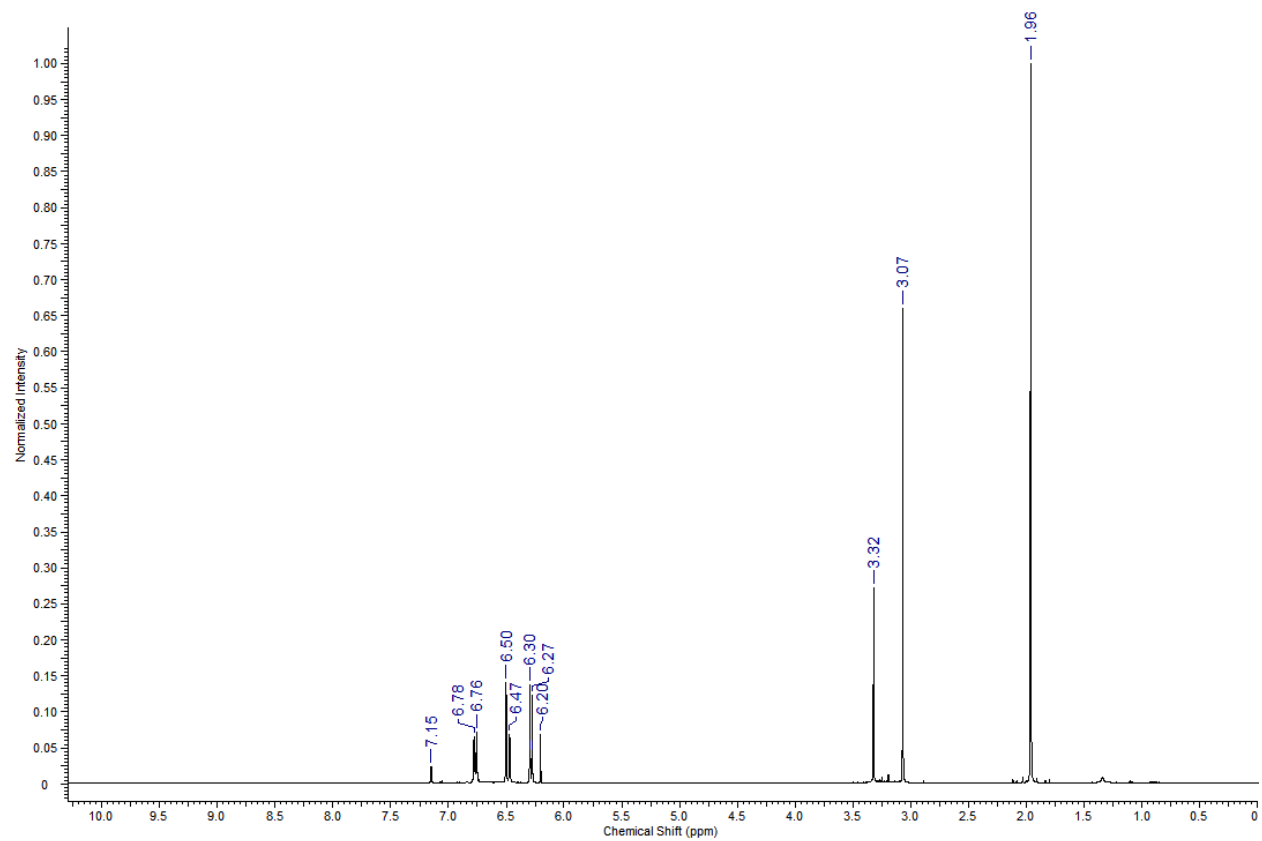


Figure S27. ¹H NMR of 3,5-dimethylphenyl azide and 4-methoxyphenyl isocyanide prior to the addition of the catalyst (the resonances at 3.32 and 6.20 belong to the internal standard TMB).

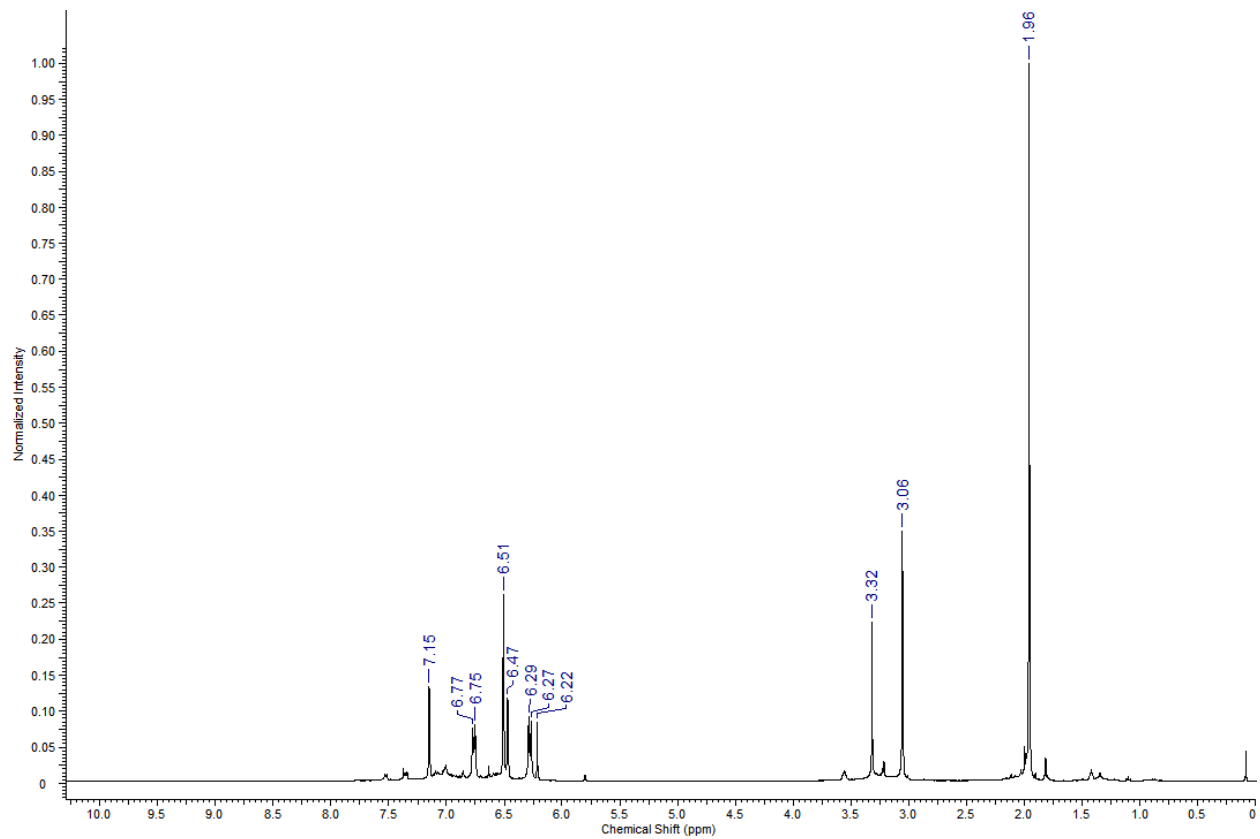


Figure S28. ¹H NMR of the reaction mixture containing 3,5-dimethyl phenyl azide, 4-methoxyphenyl isocyanide, and **2**, showing no formation of respective carbodiimide.

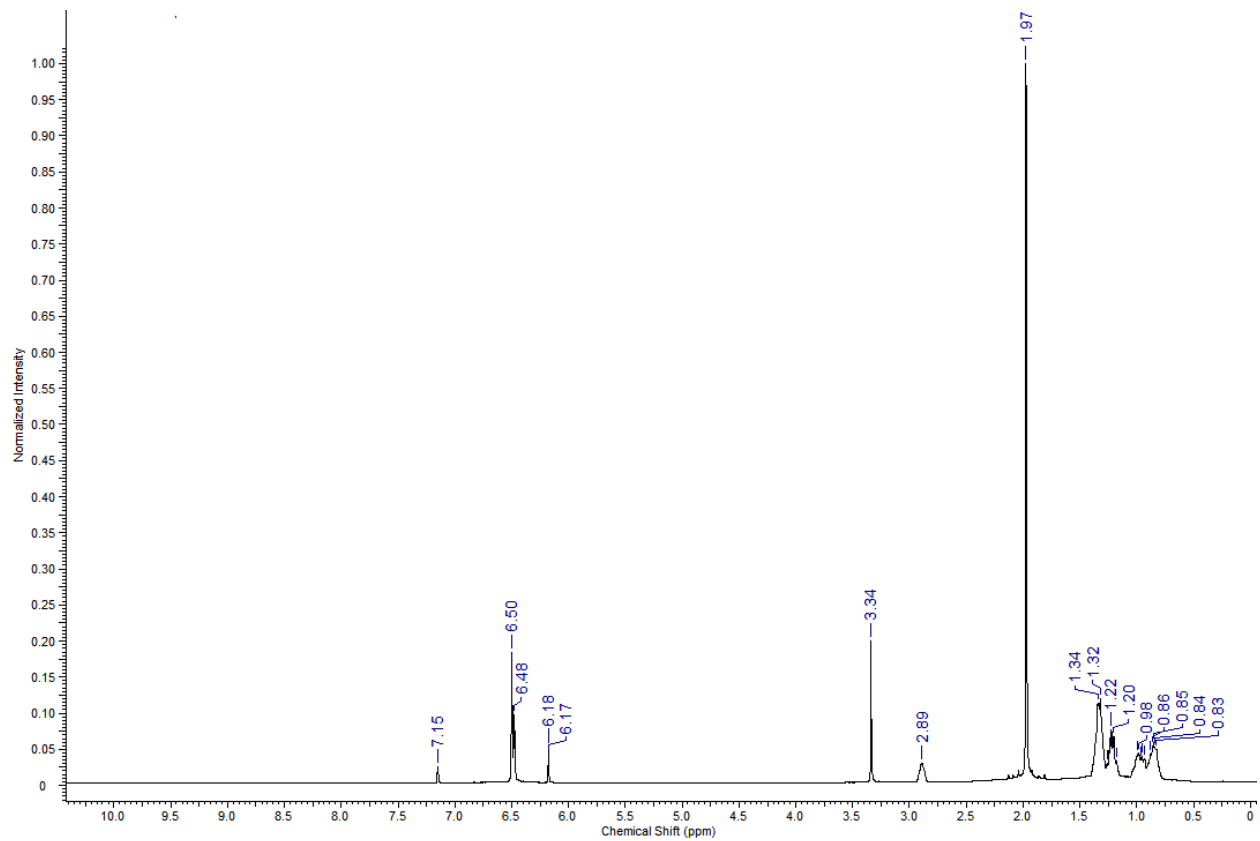


Figure S29. ¹H NMR of 3,5-dimethylphenyl azide and cyclohexyl isocyanide prior to the addition of the catalyst (the resonances at 3.34 and 6.18 belong to the internal standard TMB).

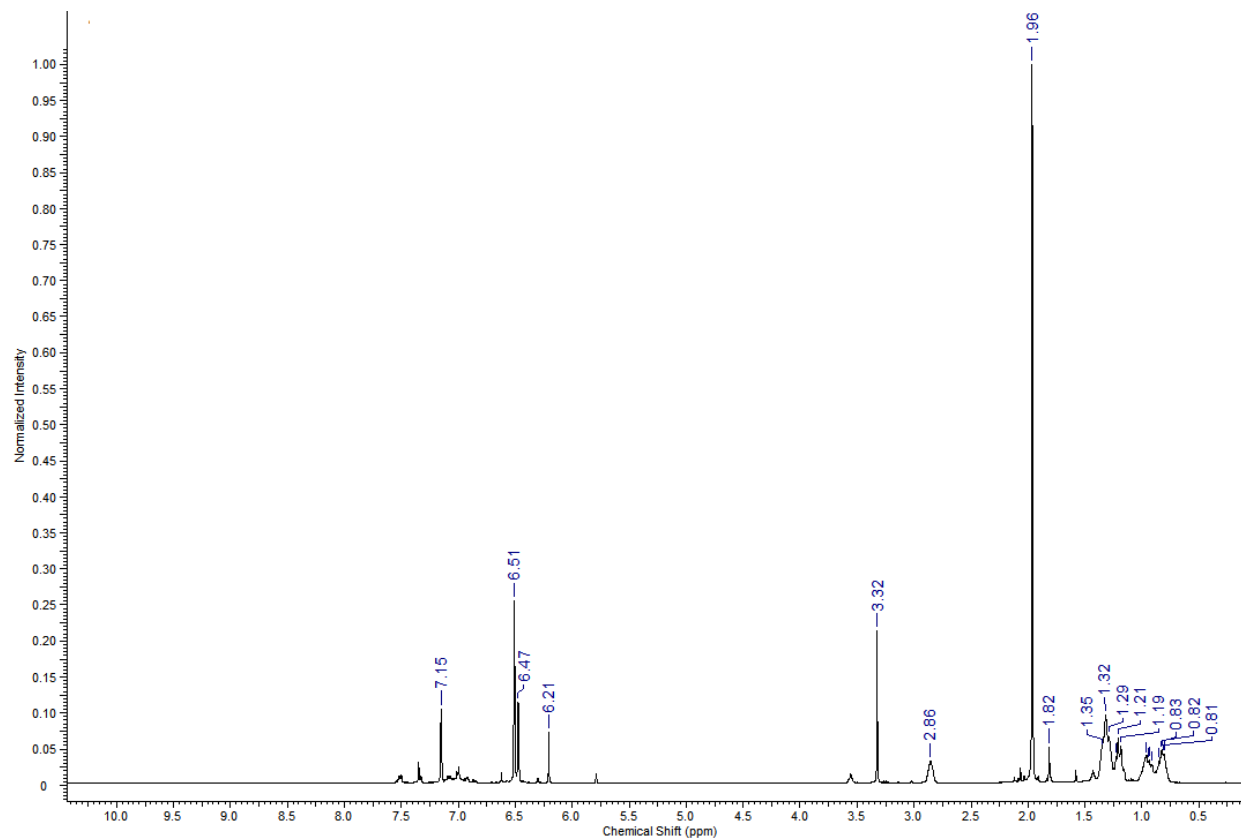


Figure S30. ¹H NMR of the reaction mixture containing 3,5-dimethylphenyl azide, cyclohexyl isocyanide, and **2**, showing no formation of respective carbodiimide (see experimental for the reaction details).

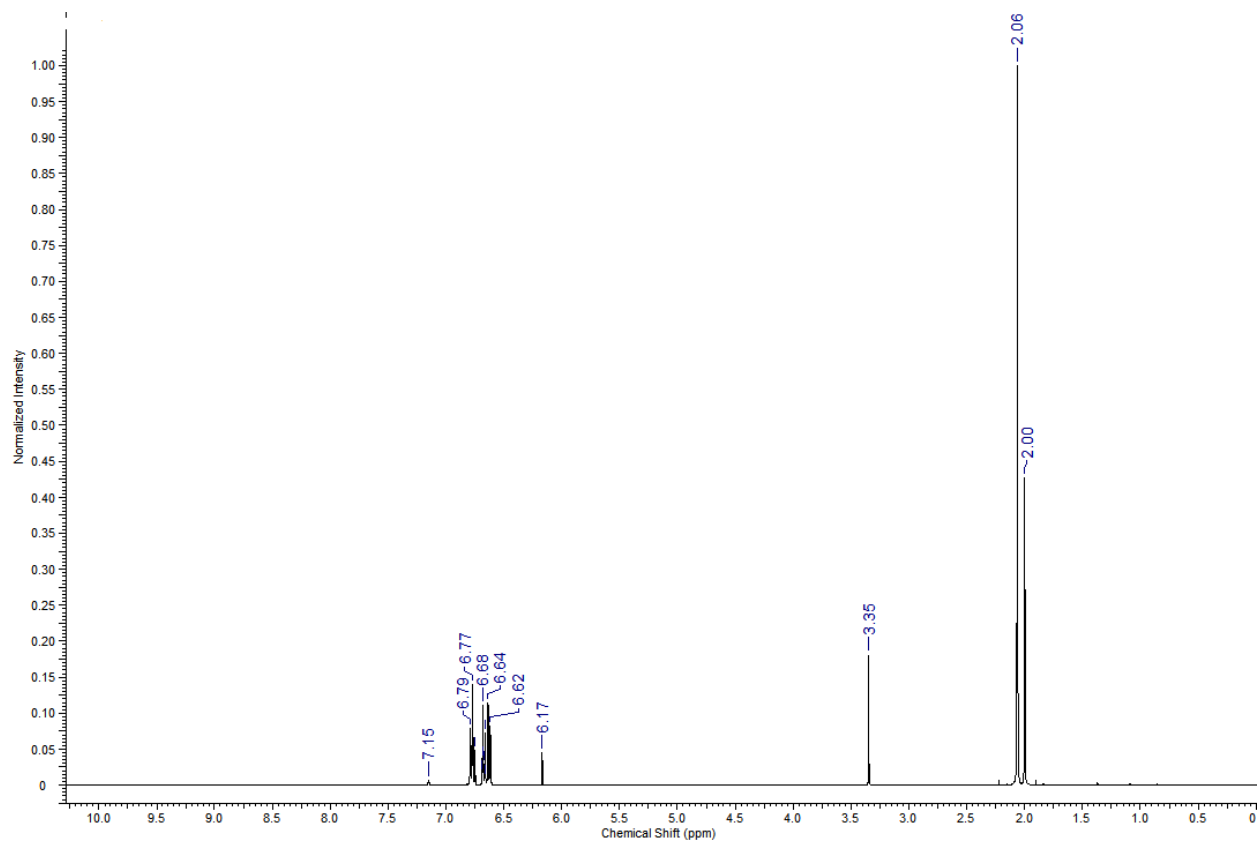


Figure S31. ¹H NMR of p-tolyl azide and 2,6-dimethylphenyl isocyanide prior to the addition of the catalyst (the resonances at 3.35 and 6.17 belong to the internal standard TMB).

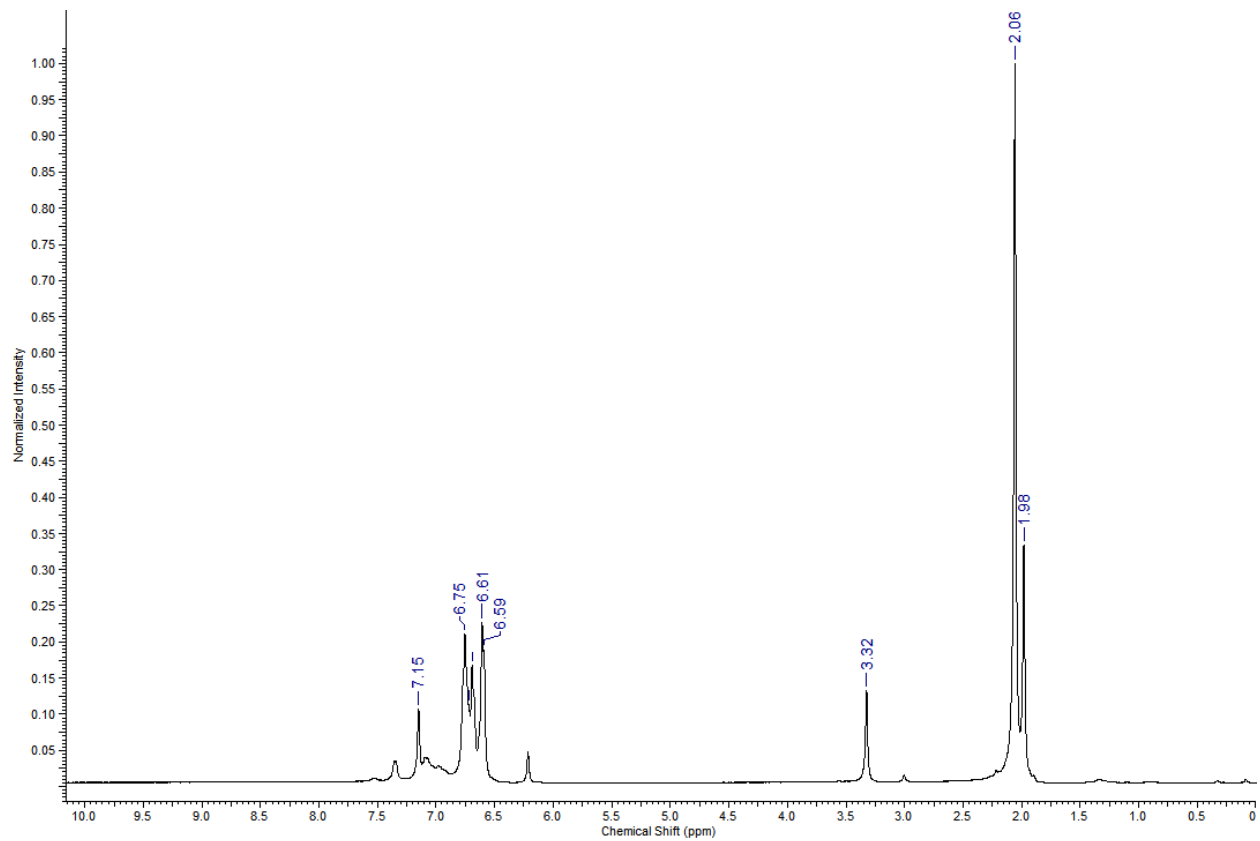


Figure S32. ¹H NMR of the reaction mixture containing p-tolyl azide, 2,6-dimethylphenyl isocyanide, and **2**, showing no formation of respective carbodiimide.

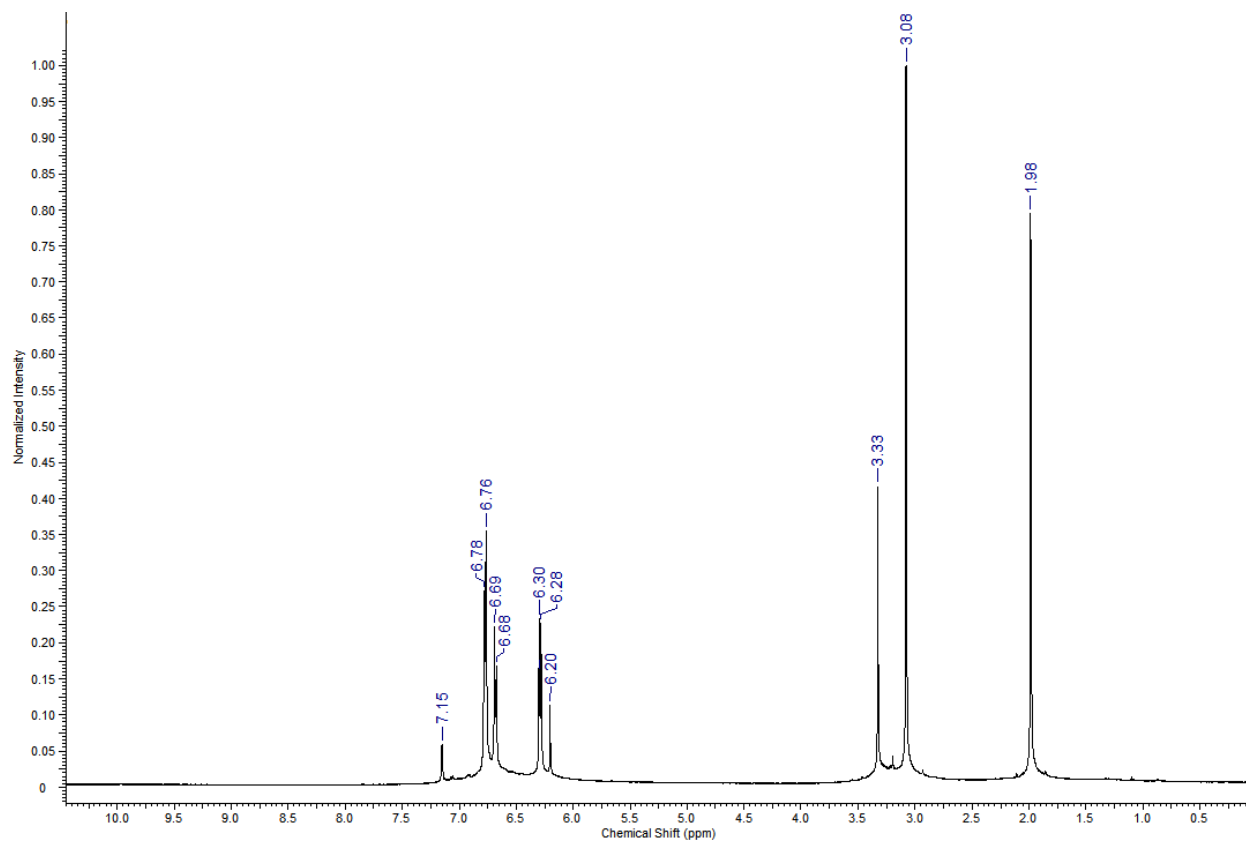


Figure S33. ¹H NMR of p-tolyl azide and 4-methoxyphenyl isocyanide prior to the addition of the catalyst (the resonances at 3.33 and 6.20 belong to the internal standard TMB).

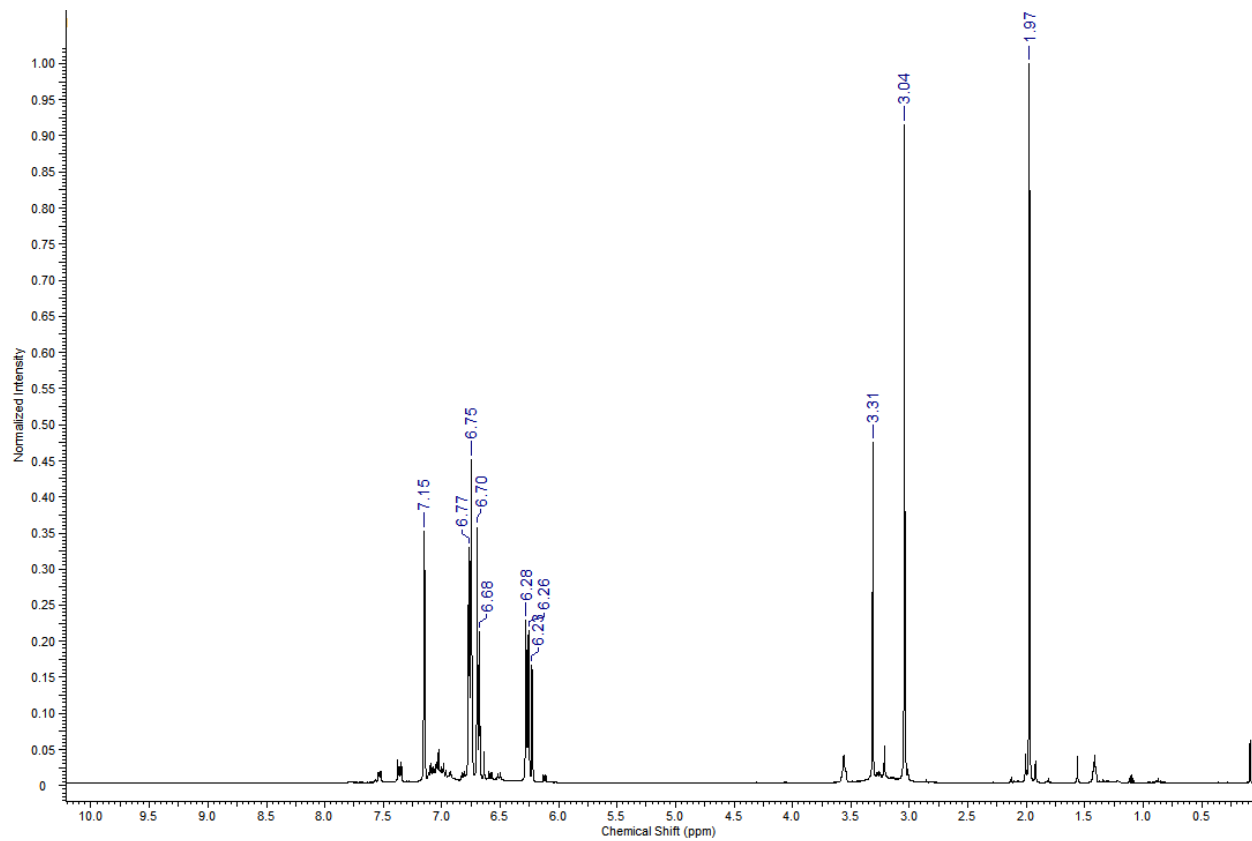


Figure S34. ¹H NMR of the reaction mixture containing p-tolyl azide, 4-methoxyphenyl isocyanide, and **2**, showing no formation of respective carbodiimide.

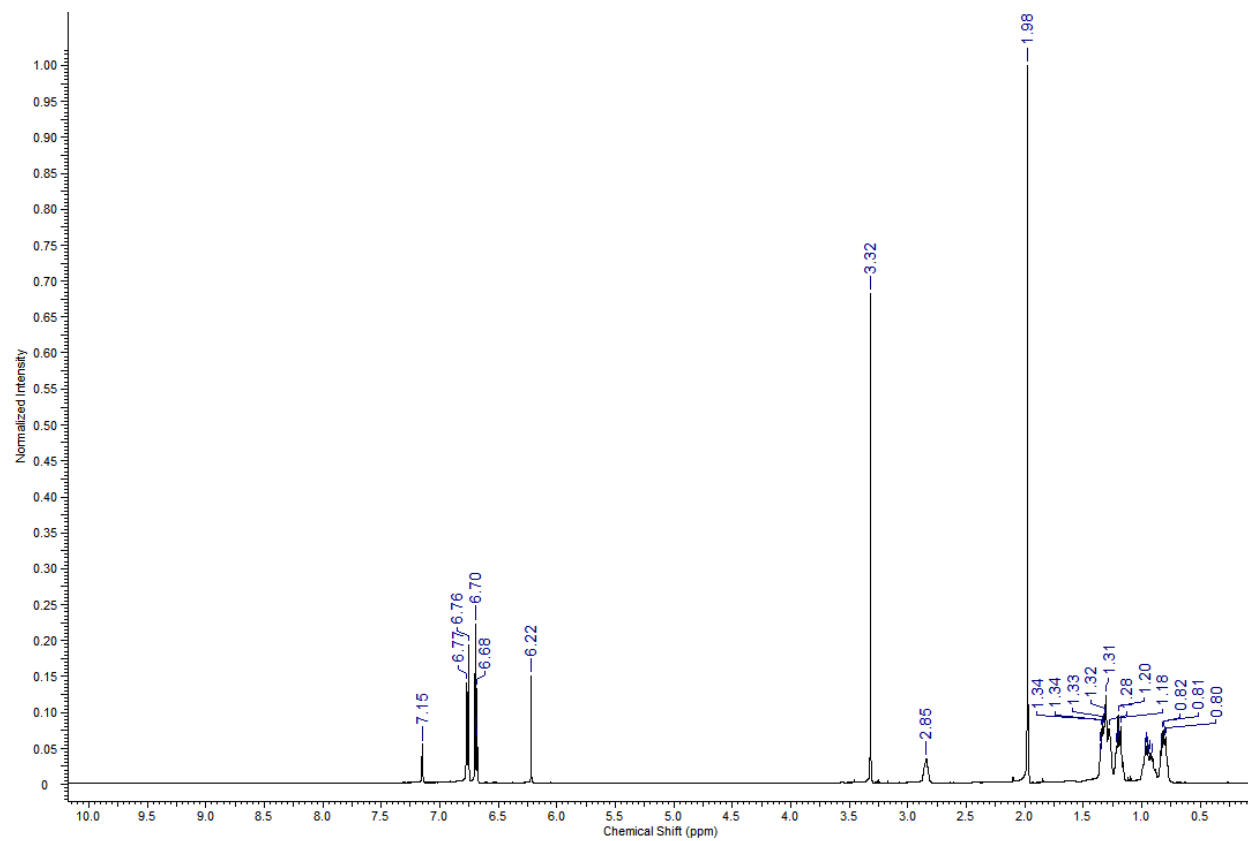


Figure S35. ¹H NMR of p-tolyl azide and cyclohexyl isocyanide prior to the addition of the catalyst (the resonances at 3.32 and 6.22 belong to the internal standard TMB).

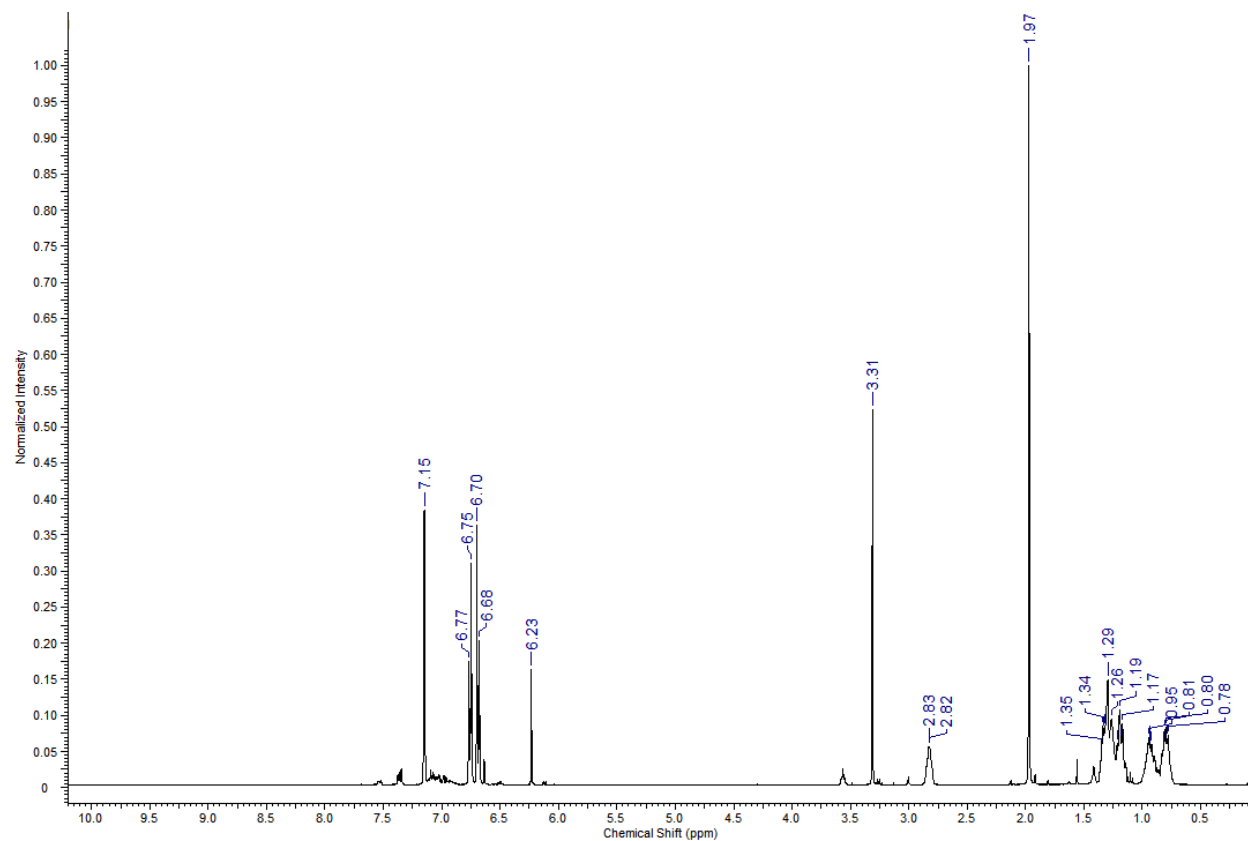


Figure S36. ¹H NMR of the reaction mixture containing p-tolyl azide, cyclohexyl isocyanide, and **2**, showing no formation of respective carbodiimide.

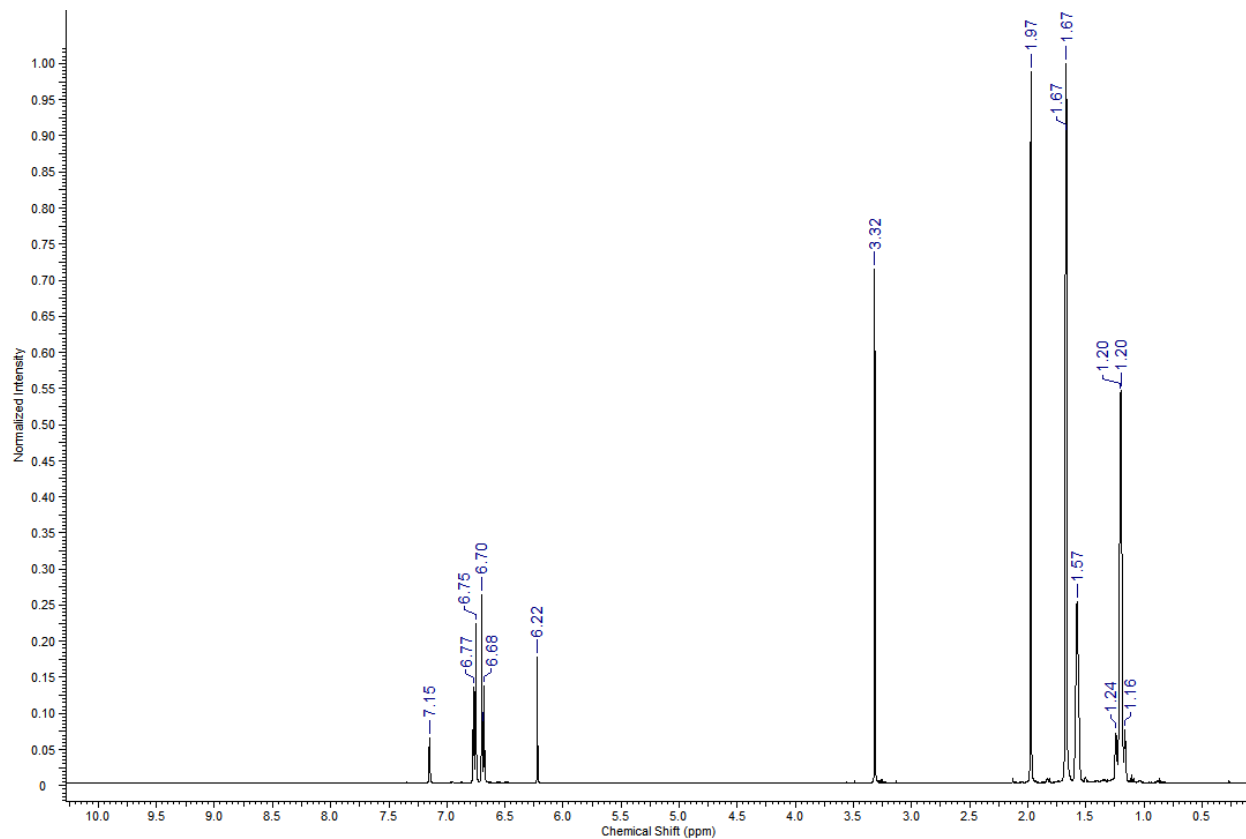


Figure S37. ^1H NMR of p-tolyl azide and adamantyl isocyanide prior to the addition of the catalyst (the resonances at 3.32 and 6.22 ppm belong to the internal standard TMB).

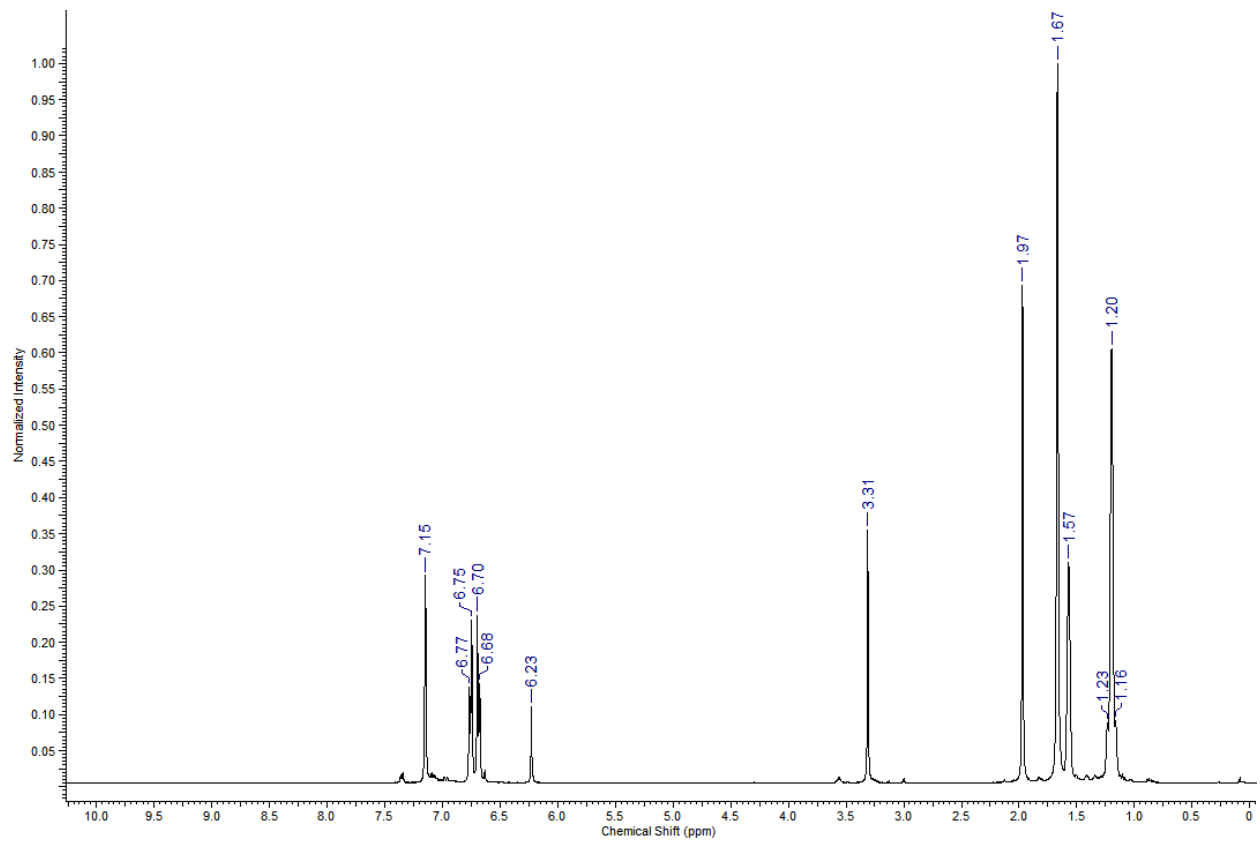


Figure S38. ¹H NMR of the reaction mixture containing p-tolyl azide, adamantyl isocyanide and **2**, showing no formation of respective carbodiimide.

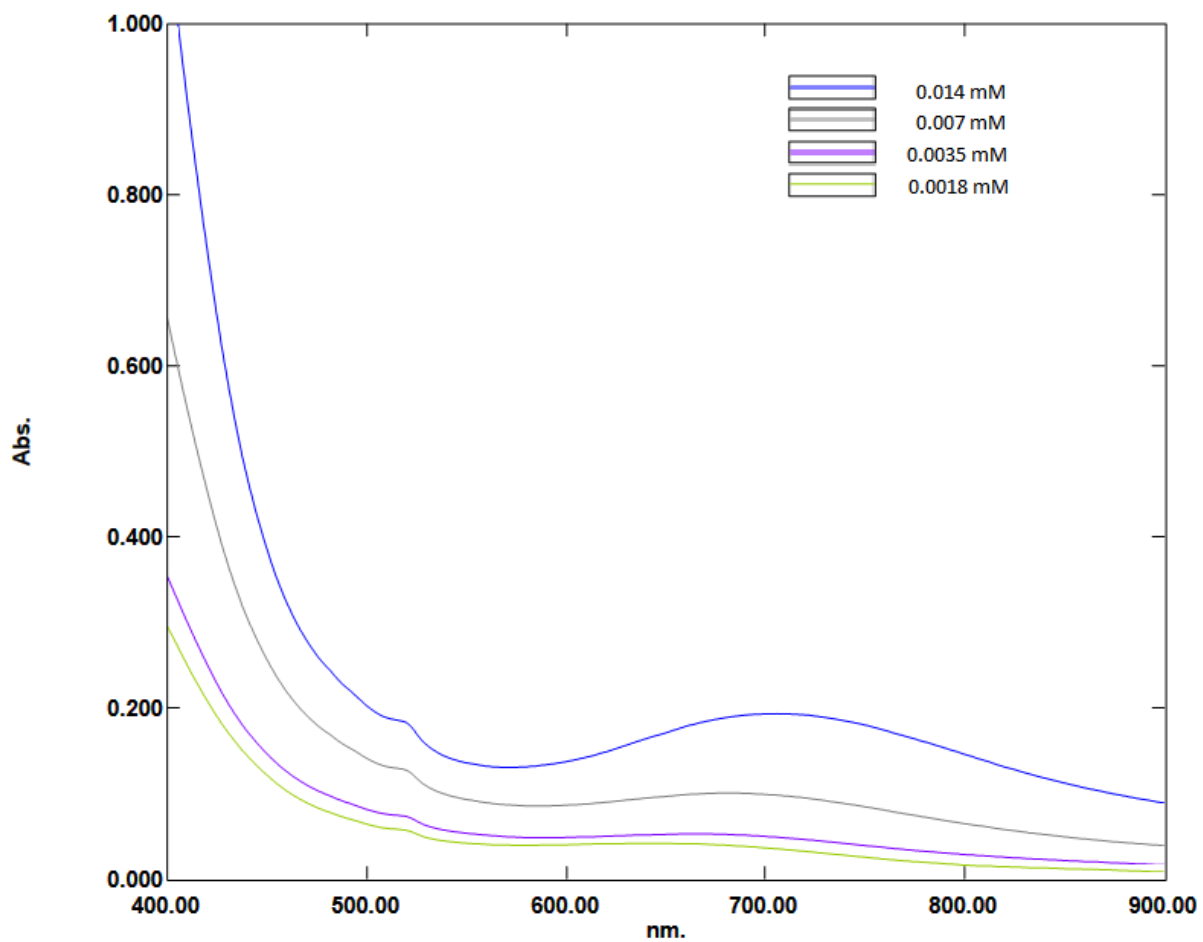


Figure S39. UV-Vis spectrum of $\text{Cr}_2([\text{OO}]^{\text{Ph}})_2$

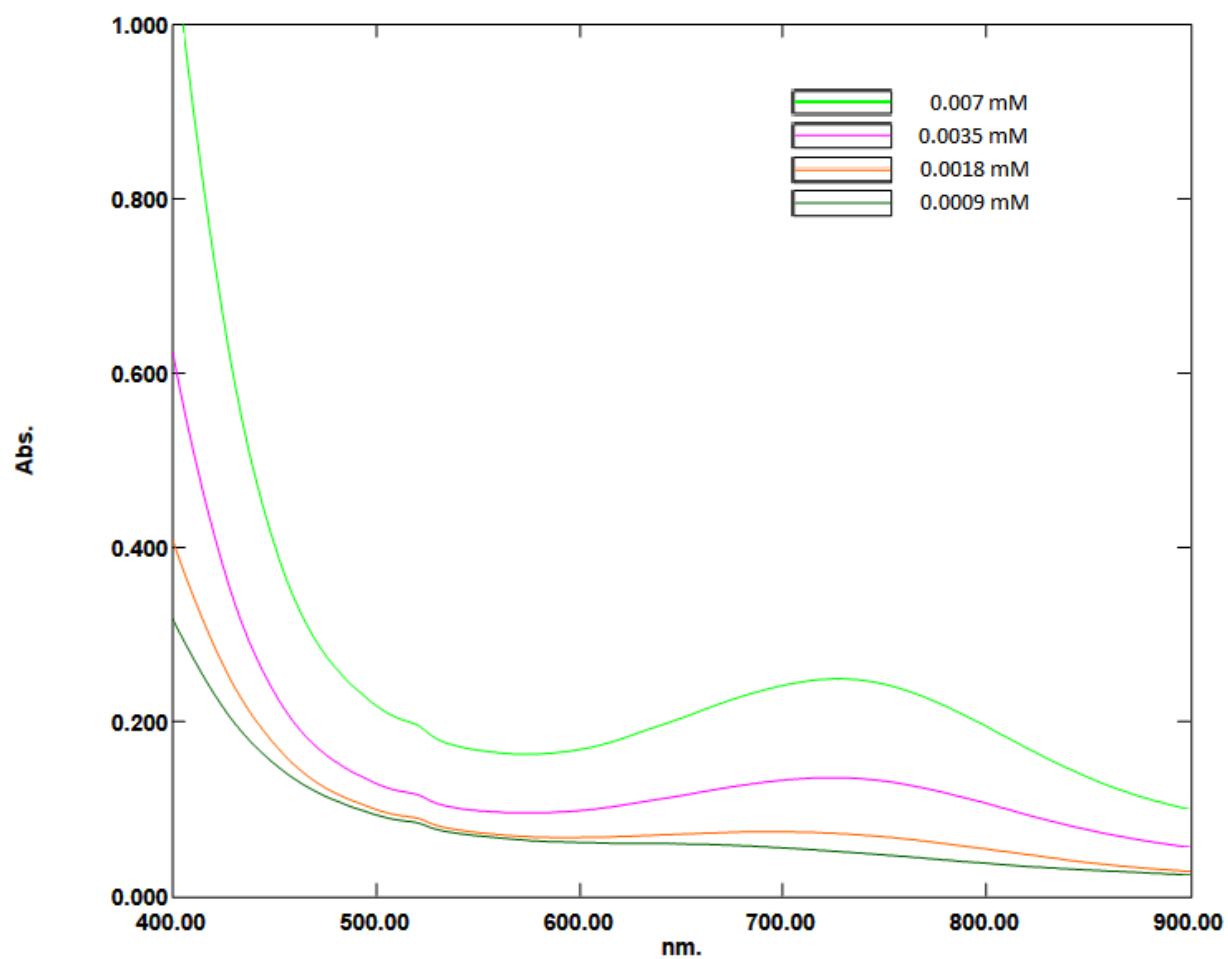


Figure S40. UV-Vis spectrum of $\text{Cr}[\text{OO}]^{\text{Ph}}(\text{THF})_2$

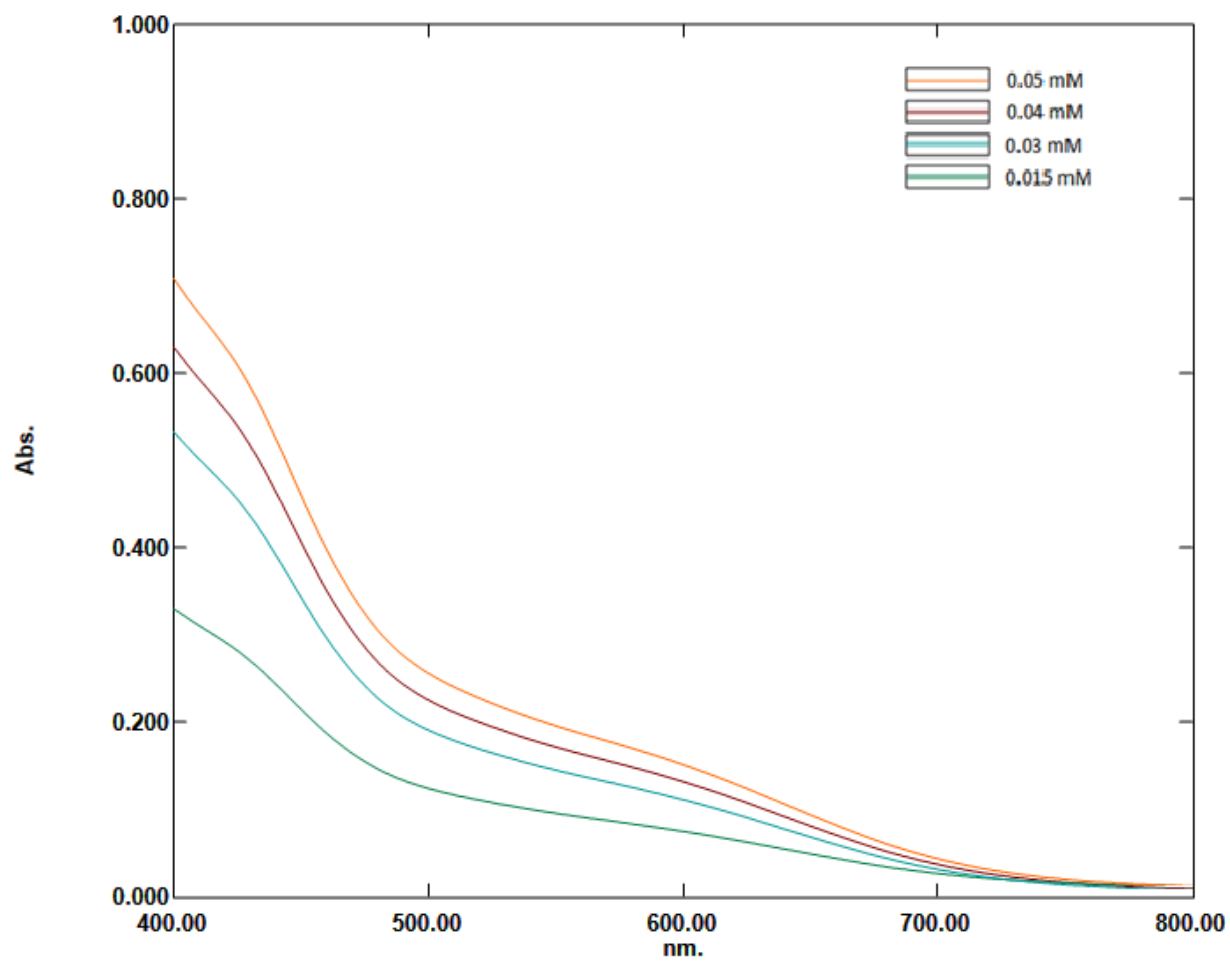


Figure S41. UV-Vis spectrum of $\text{Cr}[\text{OO}]^{\text{Ph}}(\text{N}(4\text{-CH}_3\text{Ph}))_2$.

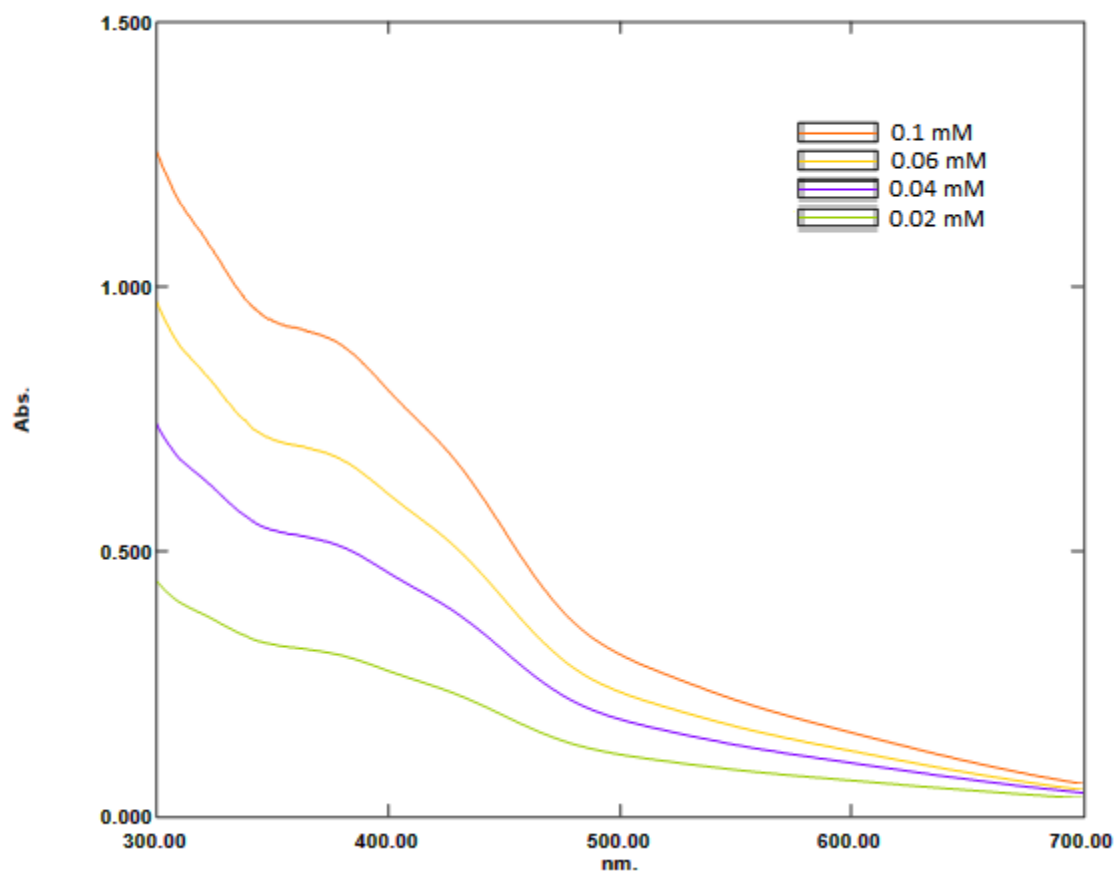


Figure S42. UV-Vis spectrum of $\text{Cr}[\text{OO}]^{\text{Ph}}(\text{N}(4\text{-CH}_3\text{OPh}))_2$.

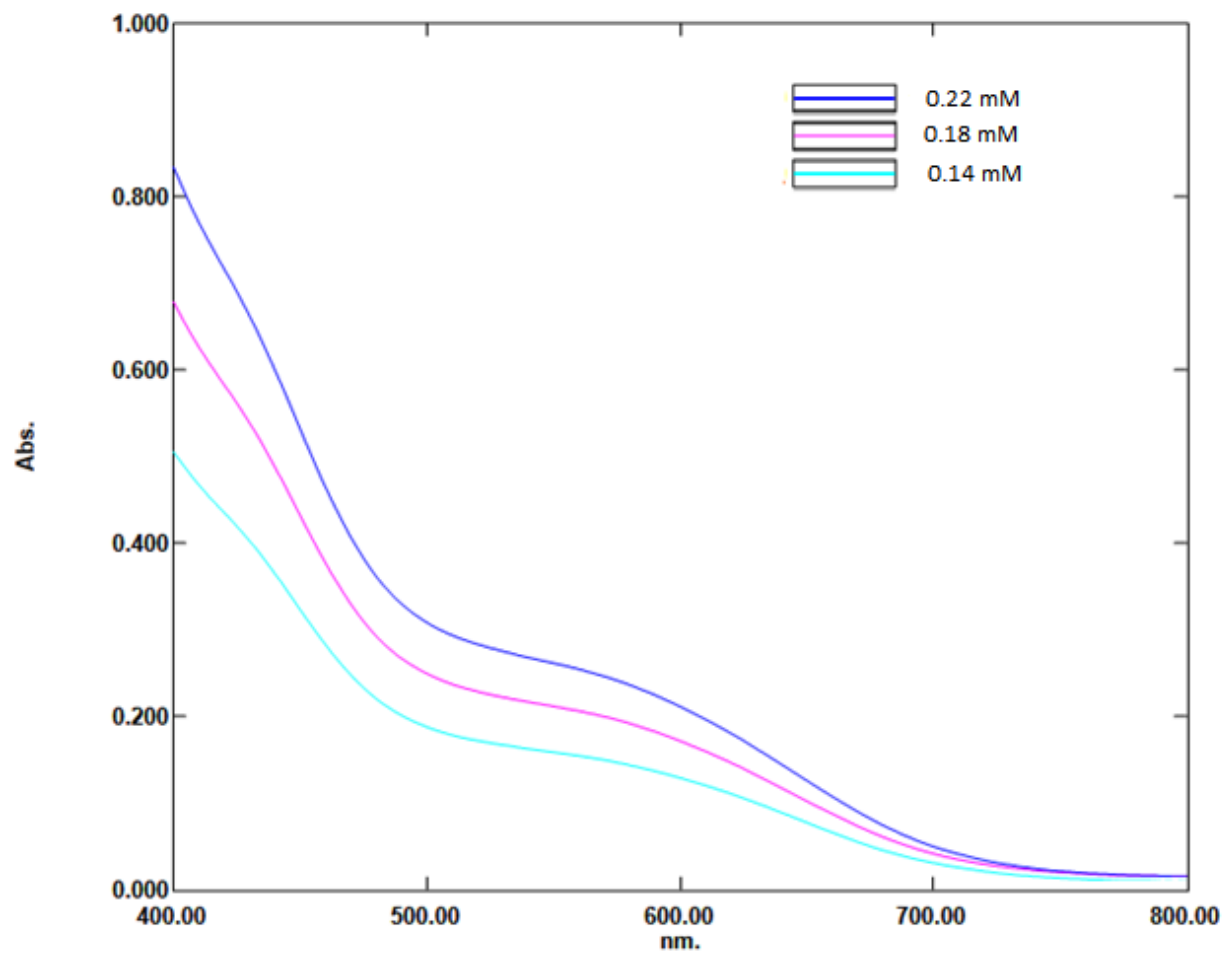


Figure S43. UV-Vis spectrum of $\text{Cr}[\text{OO}]^{\text{Ph}}(\text{N}(3,5\text{-}(\text{CH}_3)_2\text{Ph}))_2$.

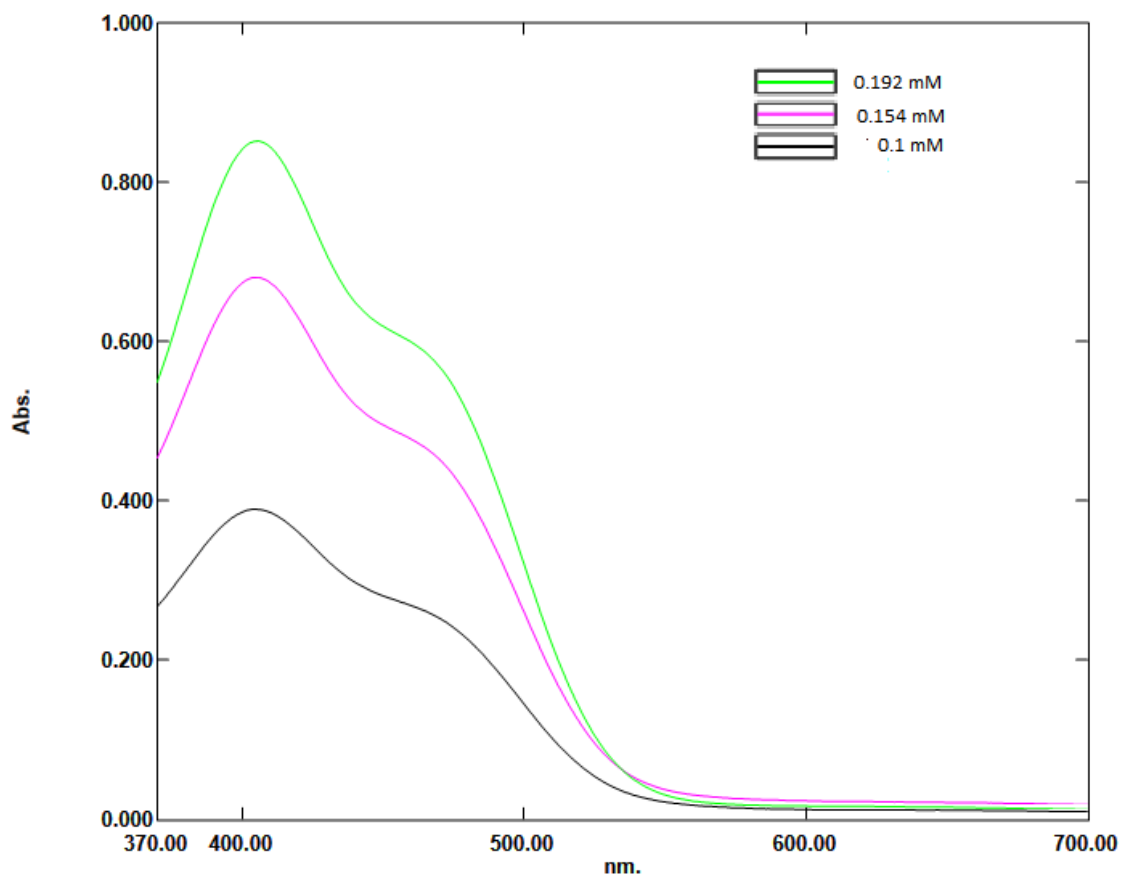


Figure S44. UV-Vis spectrum of $\text{Cr}(\text{OO})^{\text{Ph}}(\text{CN}(2,6\text{-Me}_2\text{C}_6\text{H}_3))_4$. λ_{max} (ϵ_{M}) : 405 (5050) and 466 (3500)

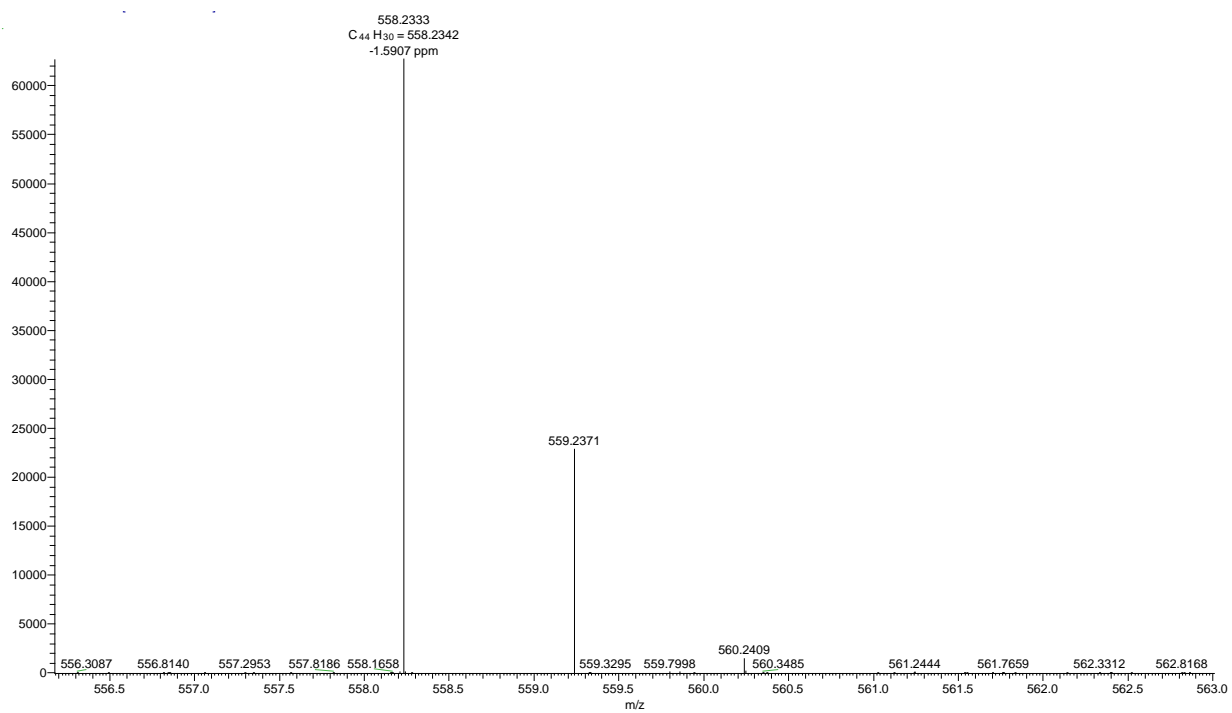


Figure S45. HRMS of 6,6,12,12-tetraphenyl-6,12-dihydroindeno[1,2-b]fluorine.

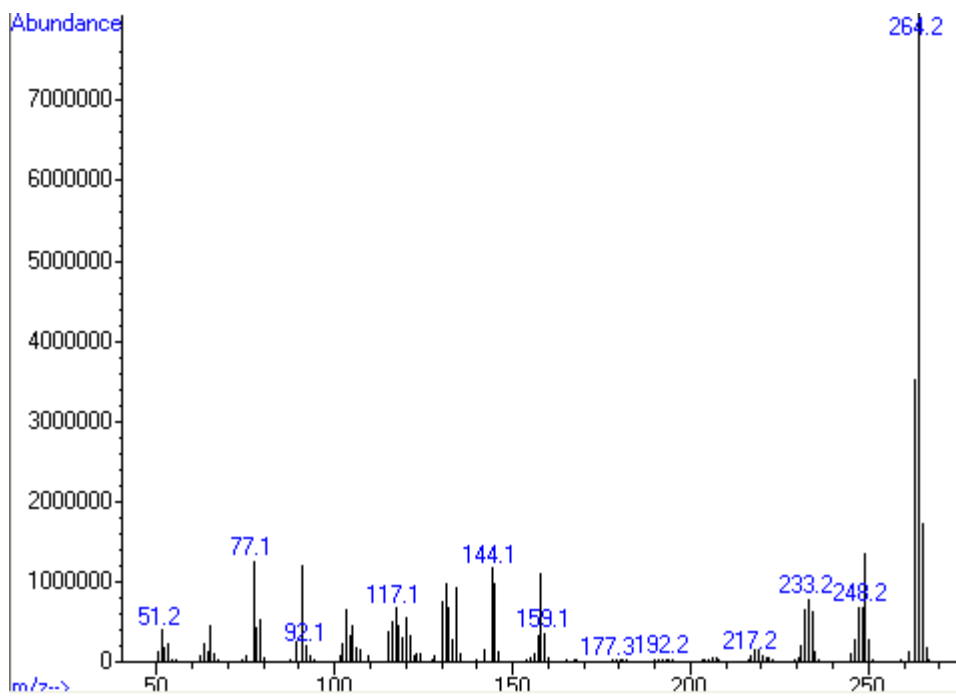
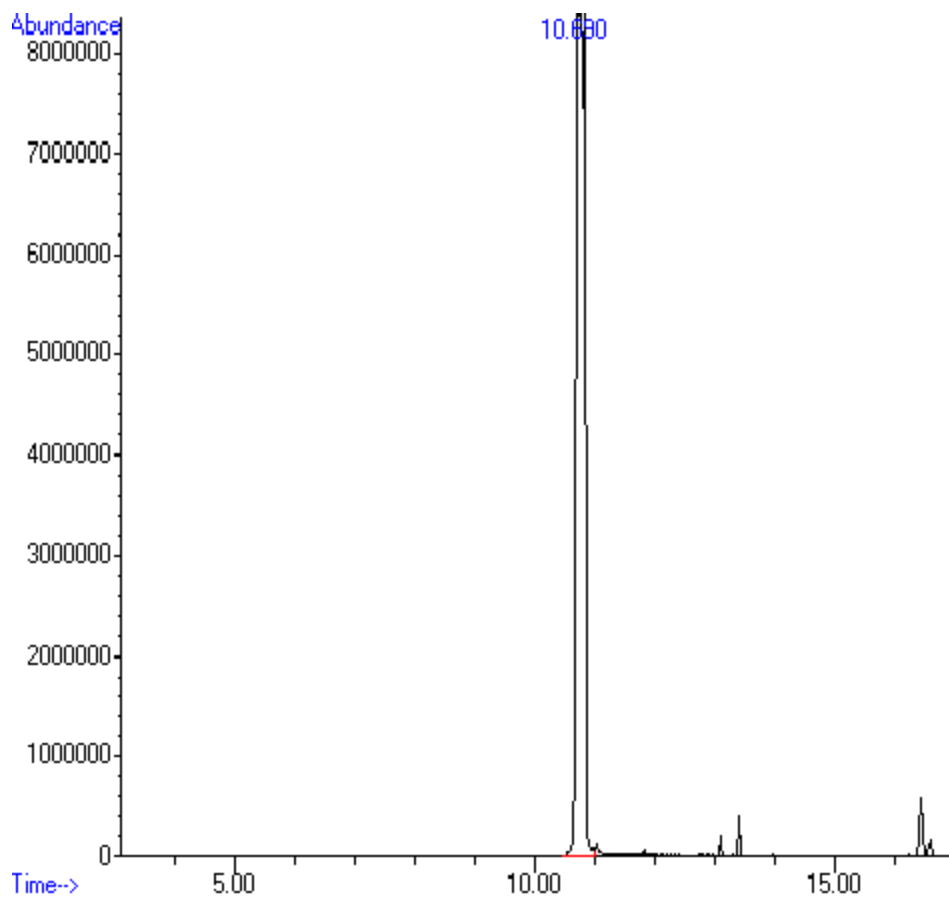


Figure S46. GC-MS of MesPhN=C=N(2,6-Me₂C₆H₃).

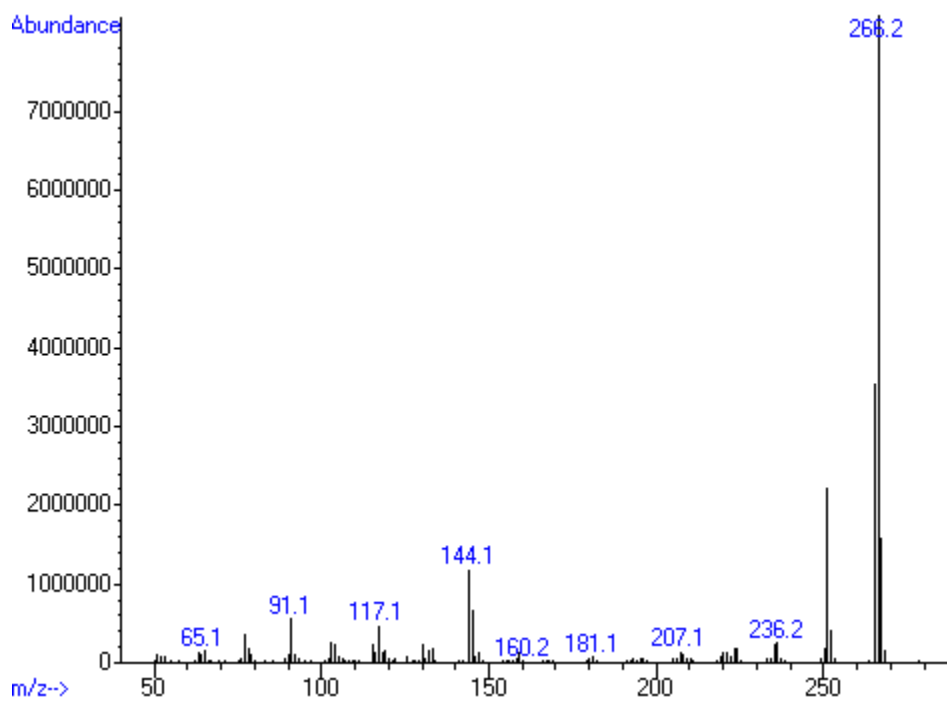
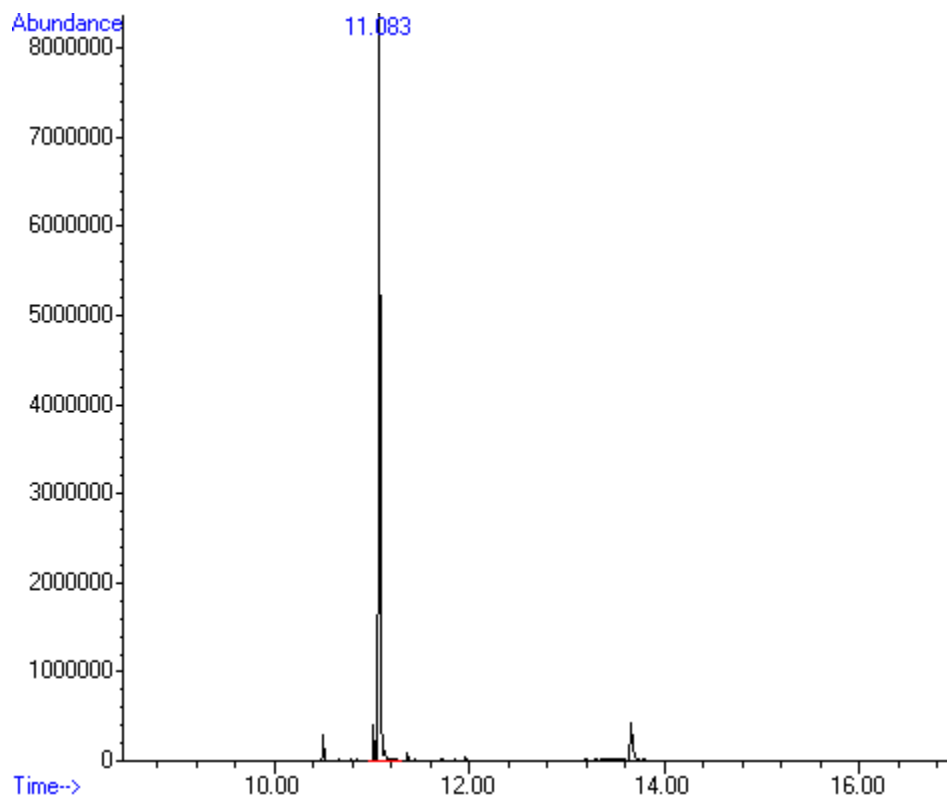


Figure S47. GC-MS of MesPhN=C=N(4-OMe₃C₆H₄).

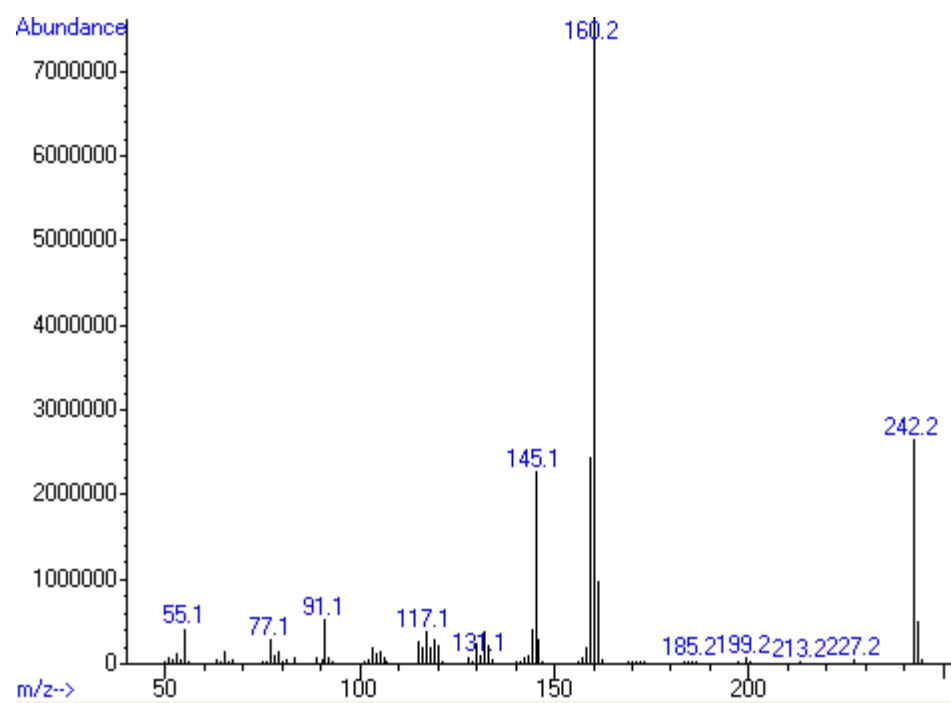
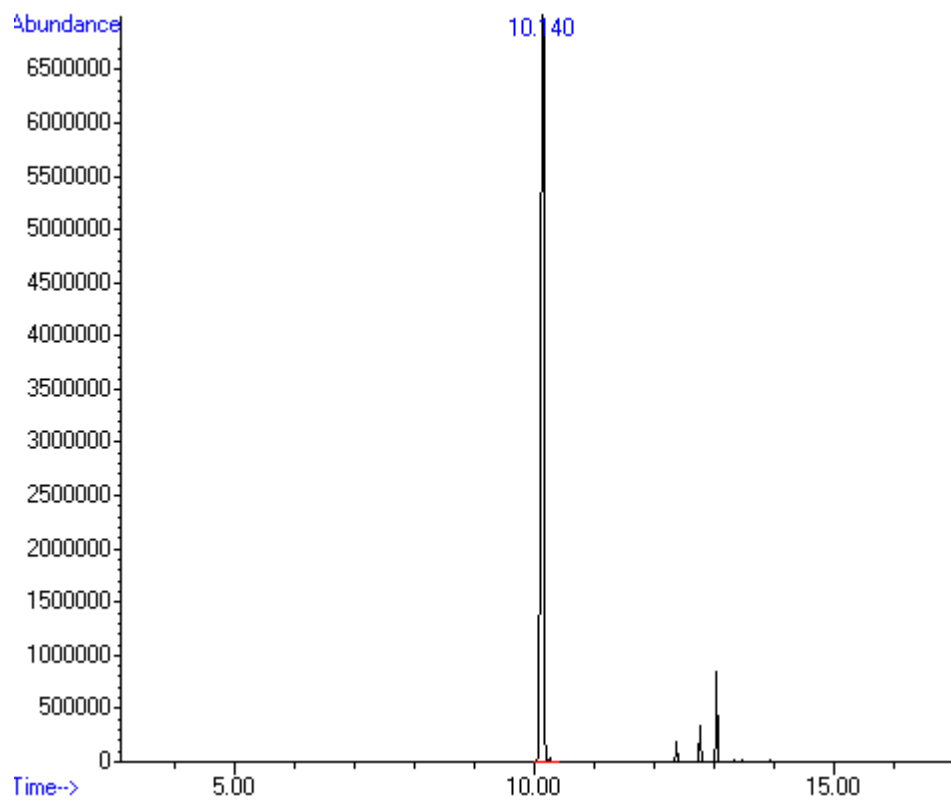


Figure S48. GC-MS of MesPhN=C=NCy.

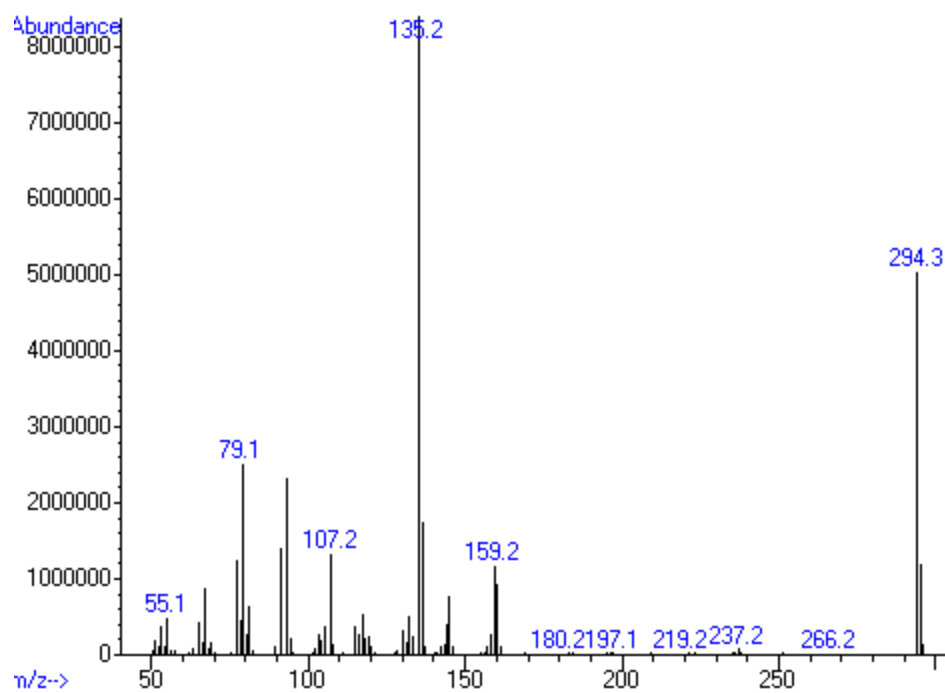
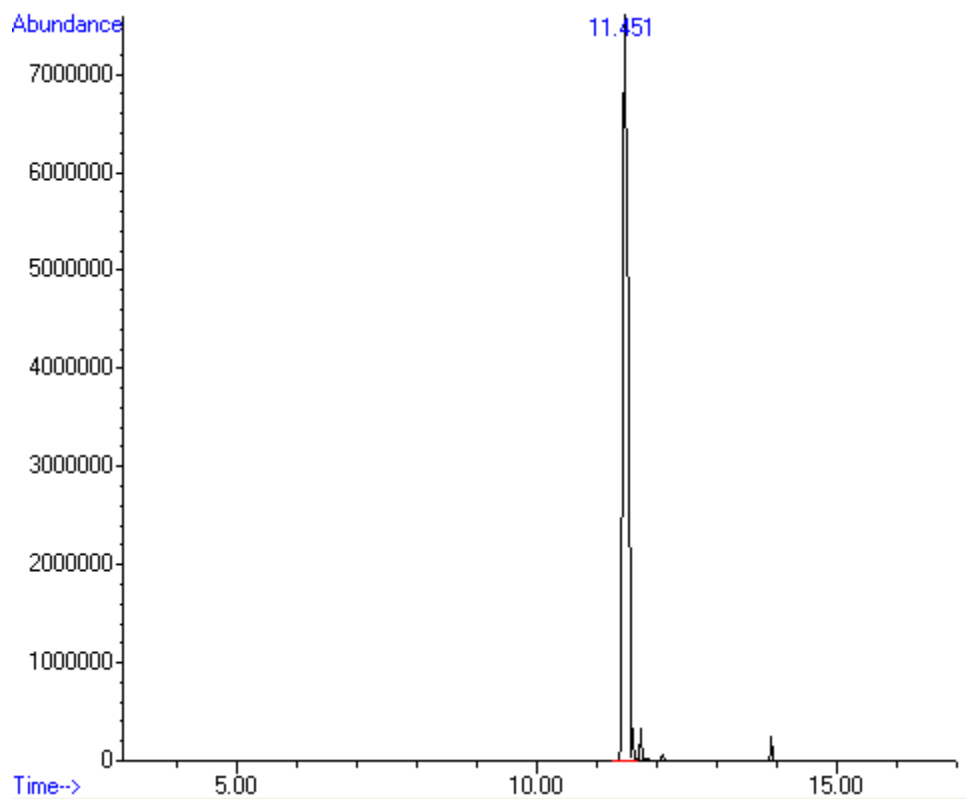


Figure S49. GC-MS of MesPhN=C=NAd.

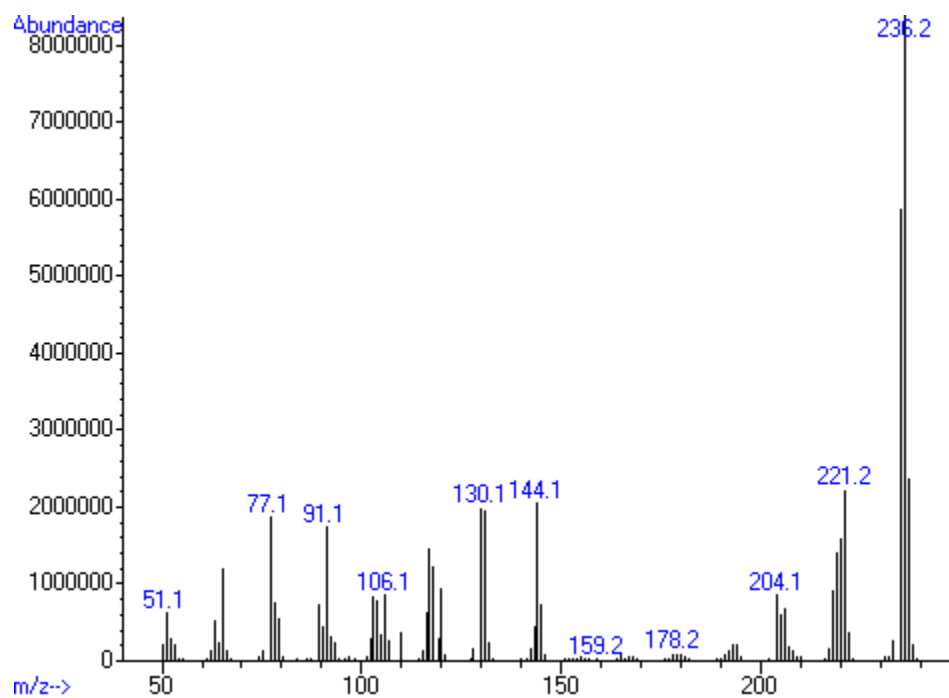
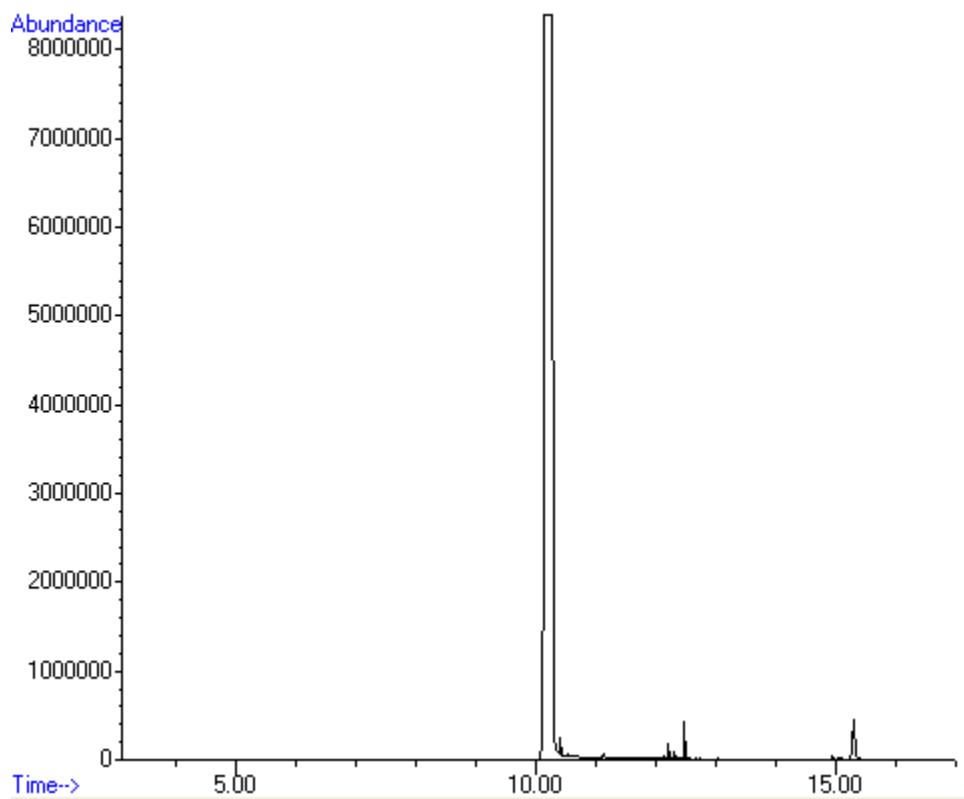


Figure S50. GC-MS of (2-MeC₆H₄)N=C=N(2,6-Me₂C₆H₃).

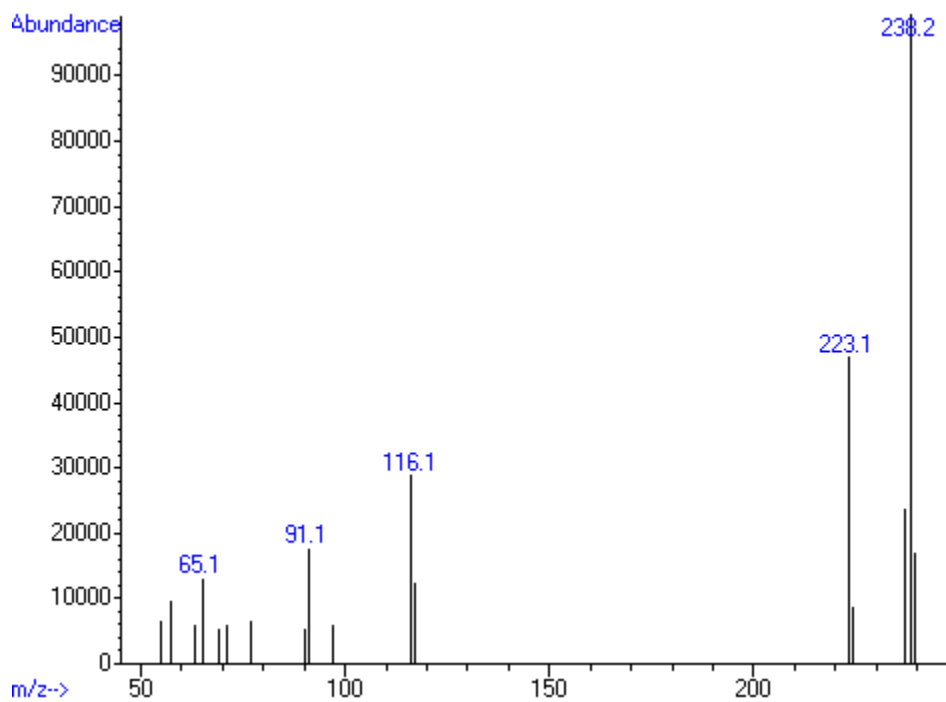
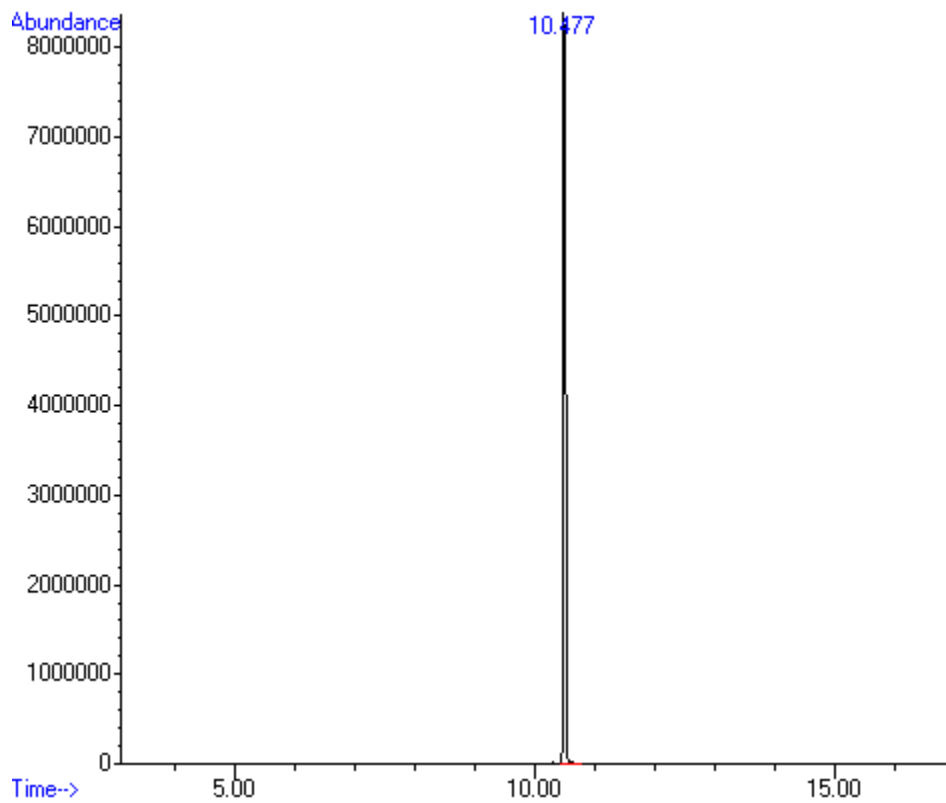


Figure S51. GC-MS of (2-MeC₆H₄)N=C=N(4-OMe₃C₆H₄).

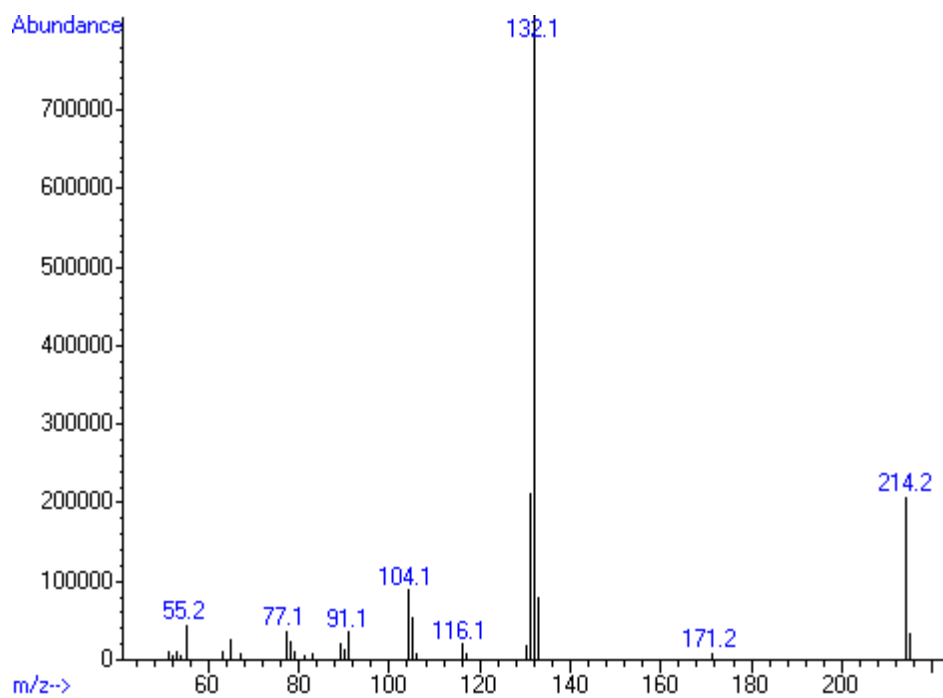
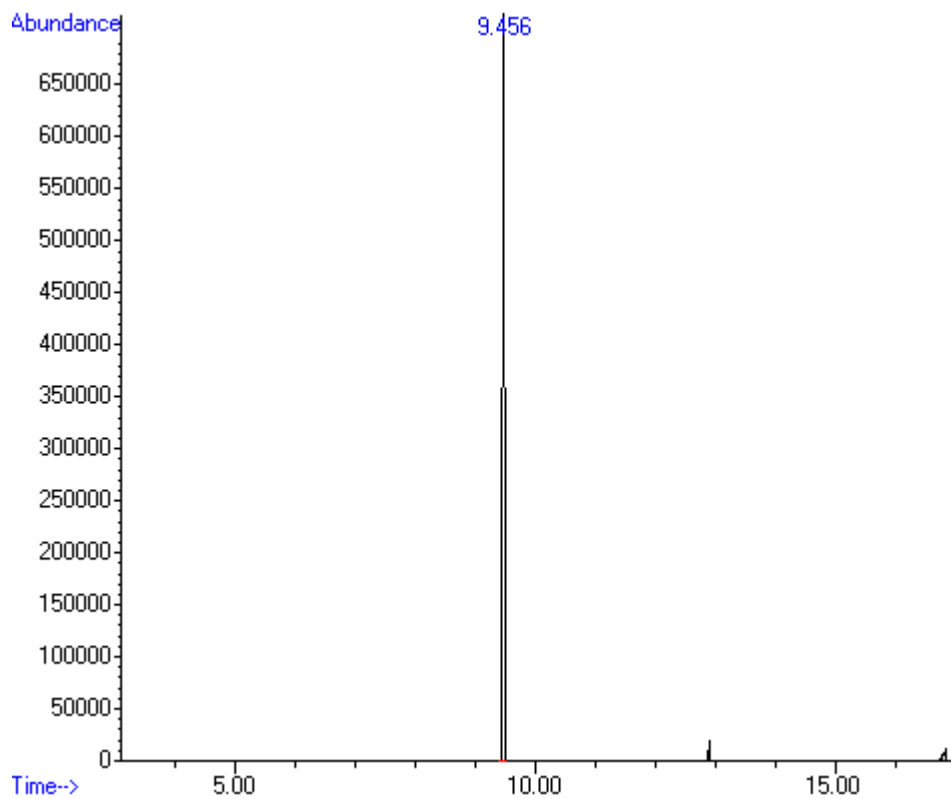


Figure S52. GC-MS of (2-MeC₆H₄)N=C=NCy.

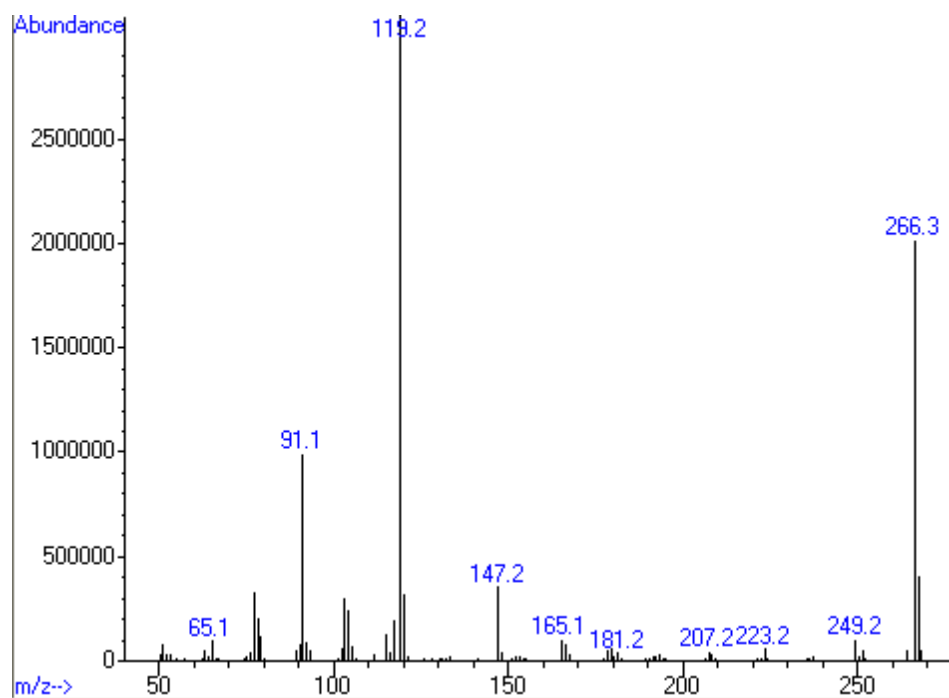
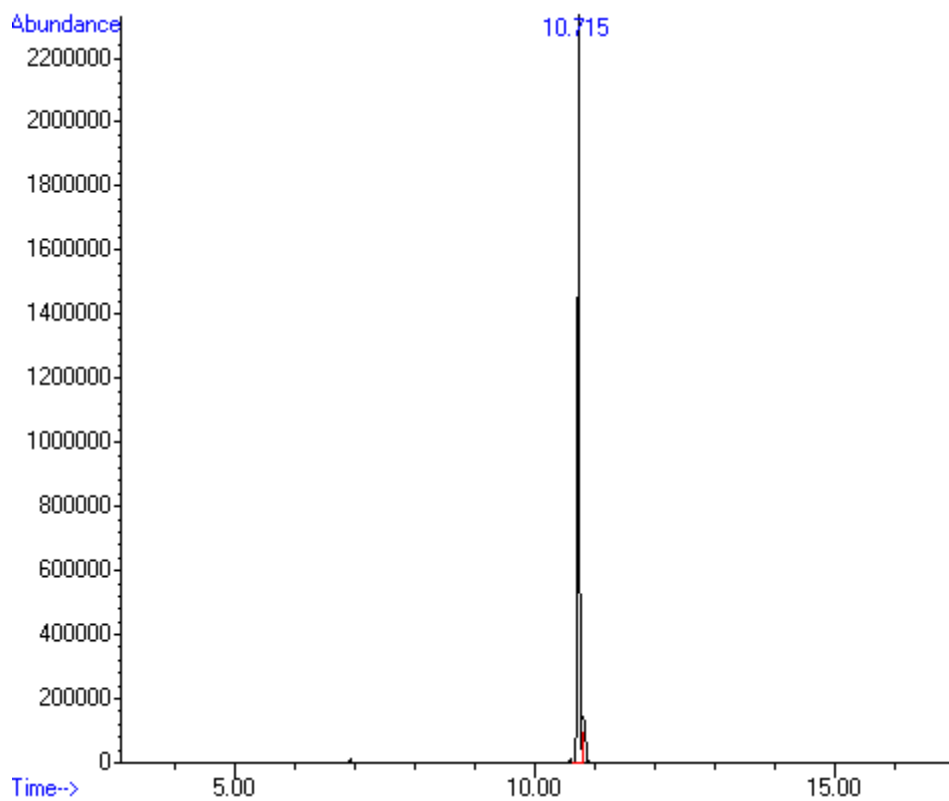


Figure S53. GC-MS of (2-MeC₆H₄)N=C=NAd.

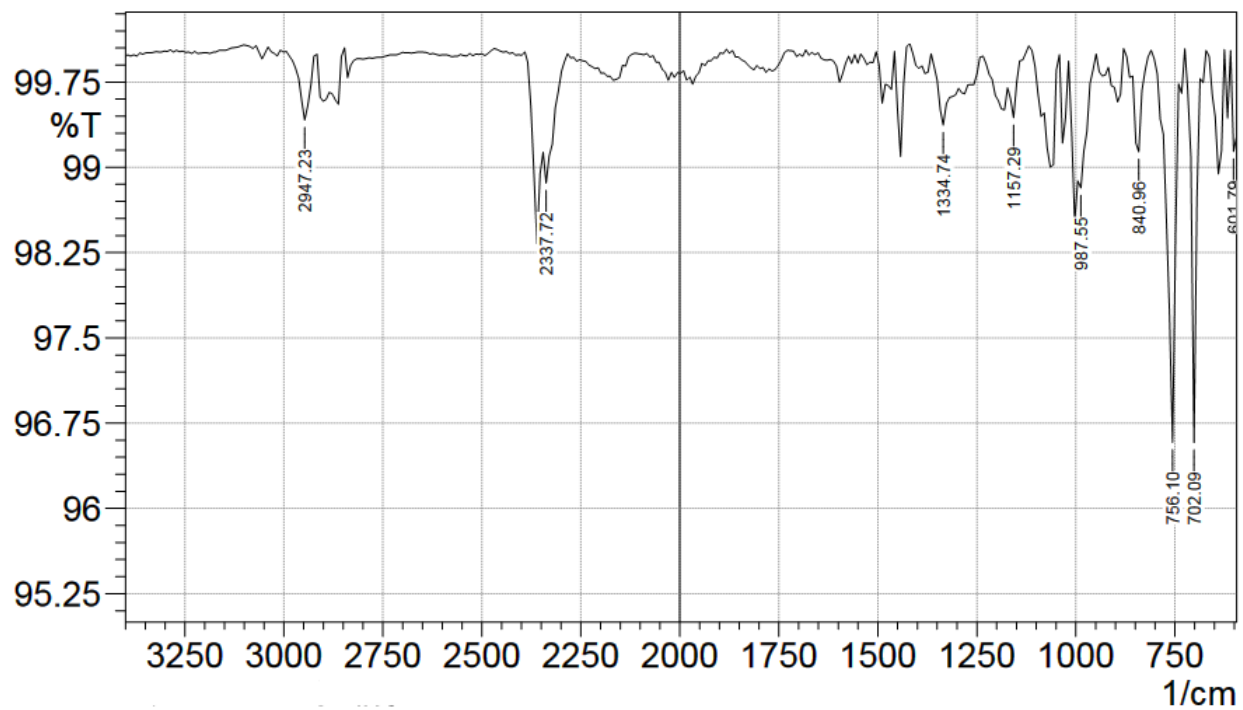


Figure S54. IR spectra of $\text{Cr}_2([\text{OO}]^{\text{Ph}})_2$

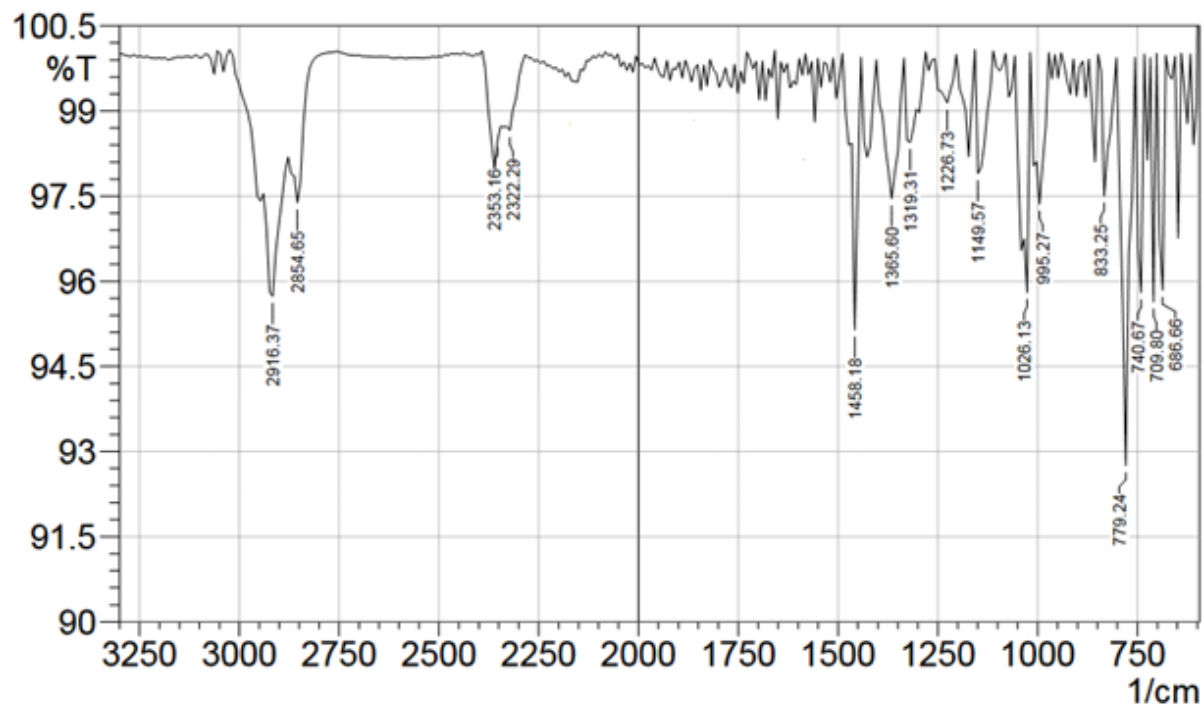


Figure S55. IR spectra of $\text{Cr}[\text{OO}]^{\text{Ph}}(\text{THF})_2$

6. Computational data

Cartesian coordinates of all optimized structures are provided in the accompanying xyz file.

Table S1. Comparison of metal-ligand bond lengths (Å) in the optimized structures of **1** vs. the crystallographically determined parameters. O1/O2 correspond to the alkoxide arms, O3/O4 to the THFs, and C1/C2 to the bridging phenyl group (see Figure 1 in paper).

	Cr-O1	Cr-O2	Cr-O3	Cr-O4	Cr-C1	Cr-C2
1	1.924	1.935	2.156	2.277	2.49	
1_O	1.915	1.928	2.203	2.281	2.475	2.525
1_T	1.858	1.857	2.586	2.230	2.116	2.127
1_S	1.885	1.889	2.364	2.120	2.173	2.183

Table S2. Comparison of the Mayer bond orders in **1_Q**, **1_T**, and quintet Fe[OO]^{Ph}(THF)₂.

	M-O1	M-O2	M-O3	M-O4	M-C1	M-C2
1_O	0.69	0.67	0.31	0.25	0.25	0.23
1_T	0.64	0.87	0.17	0.29	0.65	0.64
Fe_O	0.63	0.63	0.22	0.25	0.09	0.06

Figure S1. Spin density isosurface (iso = 0.002 au) plots for **1_Q** (left) and **1_T** (right). The transparent blue and white surfaces correspond to alpha and beta spin, respectively.

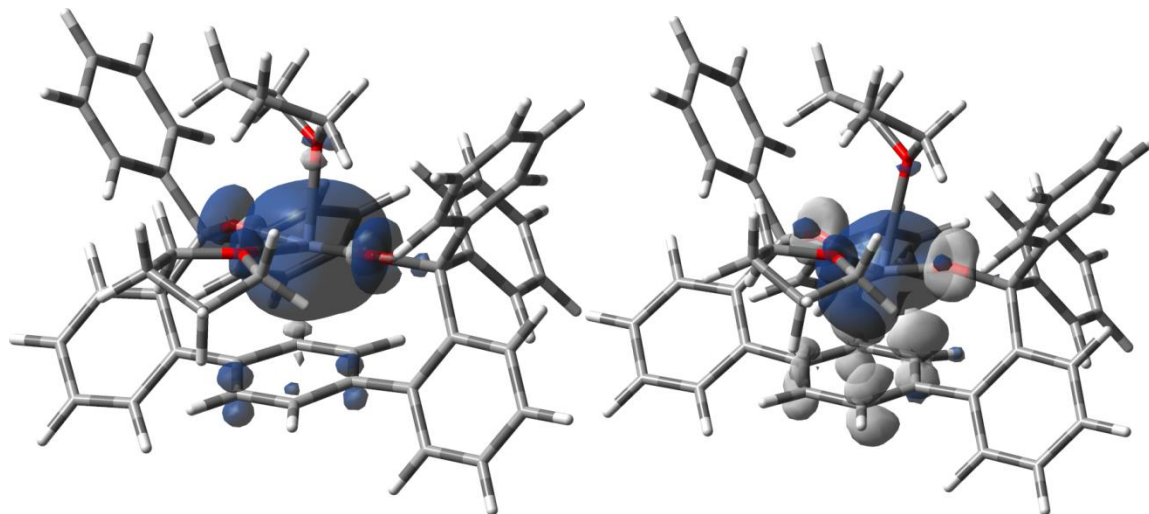


Table S3. Comparison of metal-ligand bond lengths (Å) and angles (°) in the optimized structures of **6** vs. the crystallographically determined parameters. See Figure 3 in paper for atom labels.

	Cr-O1	Cr-O2	Cr-N1	Cr-N2	N1-N3	N2-N4	Cr-N1-N3	Cr-N2-N4
6	1.807	1.777	1.645	1.716	1.305	1.301	159.8	131.2
6_Q	1.774	1.757	1.861	1.923	1.220	1.231	133.6	123.3
6_T	1.760	1.751	1.683	1.815	1.239	1.231	160.8	133.8
6_S	1.776	1.773	1.640	1.699	1.273	1.277	159.7	139.3

Table S4. Summary of thermodynamics of various spin states of **1** and **6**. All energies are listed in hartrees.

	E(SCF)	H(gas)	G(gas)
1_S	-3354.455635	-3353.563256	-3353.698116
1_T	-3354.466550	-3353.574521	-3353.712175
1_Q	-3354.496495	-3353.603870	-3353.743635
6_S	-4110.956897	-4109.893549	-4110.059202
6_T	-4110.928821	-4109.867629	-4110.034745
6_Q	-4110.897778	-4109.836275	-4110.004595

Table S5. Harmonic frequencies (cm^{-1}) for all optimized species. A small imaginary frequency for **6_T** was ignored since the singlet was much lower in electronic and free energy.

1_S				817.6852	822.1459	829.1955
	14.5936	25.8106	28.8729	830.6271	832.0776	834.5851
	33.5653	40.1415	42.3876	846.3516	848.7627	861.8378
	49.1897	52.6772	55.6878	862.6278	873.0425	876.9317
	60.5028	62.3817	63.3694	884.9655	888.0035	894.1181
	66.3415	68.1072	75.0269	898.4446	899.8252	900.5601
	81.1583	86.9660	89.9743	904.0650	908.4834	915.4527
	96.8582	105.8751	110.5301	918.1341	922.1563	928.7000
	111.4030	114.8848	118.8141	932.3131	933.6774	934.7125
	126.8668	127.2522	133.3310	936.9684	945.8053	946.2744
	141.1662	149.4872	173.5217	957.7049	958.7012	960.5254
	176.3917	193.0275	194.4532	970.9700	973.7923	974.2023
	197.1574	207.6308	220.0240	978.2960	979.1889	979.7710
	225.2397	236.1277	243.1269	981.4061	984.8342	986.6856
	247.8920	255.7526	259.3627	988.1170	988.2225	989.5884
	266.2055	269.4169	277.7600	990.2756	1009.3358	1015.3475
	287.3274	288.7996	305.2978	1024.7148	1025.4233	1026.7542
	308.3608	321.5534	335.2767	1027.8978	1029.0712	1032.4026
	340.3276	349.1947	357.7086	1037.2264	1039.6457	1042.5718
	388.4205	401.6809	402.1598	1053.1463	1055.8291	1070.4295
	406.3975	412.2624	414.4868	1071.1241	1074.1349	1075.5185
	424.0214	447.7754	451.1894	1078.9029	1092.5008	1096.5483
	470.4136	478.0902	488.5912	1097.7925	1119.9711	1133.0849
	498.9082	510.5587	515.0479	1133.1832	1133.7061	1134.8252
	521.5716	539.9122	546.1618	1134.9978	1138.8290	1140.1610
	556.4998	592.4076	608.3100	1142.3287	1145.6342	1146.0365
	611.0613	613.2546	613.4427	1152.7827	1153.6653	1155.2536
	613.6683	615.5729	625.0754	1156.7339	1161.1614	1167.5514
	628.5097	631.1630	633.1077	1168.0992	1169.2866	1178.8266
	635.4305	635.9578	642.9689	1179.4727	1188.5470	1202.7643
	650.7766	677.2863	683.1504	1207.0292	1208.4218	1216.5017
	694.2369	697.5923	698.1342	1233.5420	1235.9934	1256.3338
	700.7304	703.0156	708.7534	1256.9790	1258.1530	1263.6469
	721.9846	744.4009	745.8401	1268.5418	1277.3487	1278.8848
	748.8309	753.6014	756.9307	1283.5879	1284.5946	1290.6616
	766.0427	774.6765	775.9984	1291.5287	1308.4019	1312.7660
	780.0711	782.6711	800.5670	1321.9157	1325.5338	1332.5754

1348.8237	1361.3341	1366.0231	701.4266	704.5146	708.5285
1366.5463	1368.3442	1369.6613	723.3309	745.3560	746.6172
1386.9333	1402.9265	1407.0286	749.3476	753.1868	756.8857
1410.1776	1412.0344	1419.8130	764.8047	774.3308	775.1932
1423.9486	1425.2536	1428.0998	782.5277	783.8996	795.5557
1429.1637	1430.8929	1431.8255	807.9362	813.4113	819.5234
1438.3642	1445.4214	1447.6954	828.8963	830.8031	831.8286
1450.2458	1465.5728	1468.1724	835.3316	847.8854	851.4559
1469.4770	1471.2847	1471.3374	862.9354	864.2895	876.3829
1474.8141	1532.5268	1540.4775	880.6263	885.1699	889.1273
1571.5167	1574.2784	1588.6249	892.6923	899.3891	903.1943
1589.8090	1590.9587	1592.1487	906.1370	911.7868	914.9522
1601.4133	1602.5173	1605.4387	919.5750	922.6854	928.2730
1605.7994	1608.7392	1609.2210	932.7923	933.6576	935.7257
2926.1939	2932.6534	2949.9688	938.9336	947.1136	947.5429
2974.5227	2988.5948	2992.5647	957.9837	959.3830	960.5953
2996.1173	3002.8671	3041.9059	972.3325	975.3375	975.7949
3042.5399	3051.4454	3058.3431	978.9354	979.6731	979.8653
3066.1404	3078.9555	3090.3428	981.0791	983.8644	985.5326
3091.5109	3091.7304	3092.7564	987.2834	988.3260	988.8088
3092.9624	3095.4713	3096.6135	994.1627	1005.9629	1014.2536
3097.5613	3097.7389	3100.3986	1014.4959	1025.0812	1026.1409
3100.6220	3101.7282	3104.7714	1027.0677	1028.2960	1029.3484
3106.7594	3107.8752	3109.8071	1030.9675	1043.1548	1051.7475
3110.9243	3111.5037	3112.3392	1053.8232	1054.8245	1060.3816
3113.7943	3114.3376	3114.9726	1071.7778	1072.0541	1075.2214
3115.2209	3115.8830	3121.3566	1079.0912	1093.8478	1094.9529
3122.0592	3122.5410	3123.2043	1095.9030	1122.0728	1131.8949
3124.6474	3124.6851	3126.4231	1133.6877	1133.8274	1134.1005
3126.9047	3134.6995	3140.1314	1135.5108	1139.0245	1140.1299

1_r

12.7876	26.2922	28.6776	1153.8609	1155.2886	1156.5912
32.8261	37.2695	40.8532	1157.0094	1164.3304	1167.5246
47.6778	49.8562	53.3450	1168.2019	1169.9010	1182.2675
54.6023	58.2924	62.0327	1183.7242	1191.5279	1204.0869
65.1614	68.8583	70.4249	1207.1235	1210.7141	1216.6717
71.8542	81.0753	85.3881	1229.5792	1235.3489	1253.7663
87.5095	90.1547	101.5207	1256.5083	1257.4462	1261.7907
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170.4789	178.6131	184.5164	1319.4154	1330.2667	1335.2434
195.0521	199.2548	213.7389	1347.7158	1360.8967	1366.1048
219.8351	234.1030	243.6921	1366.8614	1368.6180	1369.9209
248.1536	256.3082	259.9747	1378.9254	1397.4448	1402.4301
268.3845	270.4273	277.1217	1407.2857	1411.9951	1419.8962
287.2955	289.5304	307.1808	1422.7604	1424.7985	1428.6880
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337.9729	348.1719	359.8986	1433.5346	1440.1351	1443.0350
385.3737	401.3616	401.9525	1451.2445	1460.5050	1466.2235
405.6106	407.3822	411.8702	1471.0380	1472.0244	1472.0770
413.5124	445.0772	453.9612	1476.9787	1532.4623	1538.2071
465.8269	488.6455	490.2656	1571.9648	1574.9338	1589.5762
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611.8232	613.2321	613.4183	2908.3291	2920.3648	2936.7927
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636.6639	636.9220	649.2012	3043.0659	3047.8784	3053.1473
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			3096.5487	3096.7352	3096.9707

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1_o

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48.5456	51.0127	54.0321	1158.0607	1160.5450	1166.1824
56.8126	58.5096	60.2310	1168.5591	1171.7968	1176.5175
62.9392	67.5573	70.5211	1184.2976	1186.7018	1201.6477
72.0687	80.1781	83.0973	1207.3687	1210.3456	1219.6302
88.9923	91.0672	98.9614	1238.1674	1238.6070	1255.3384
103.8856	106.2883	113.9778	1260.6357	1262.8914	1267.0592
115.6319	119.9013	124.3162	1274.5191	1277.3044	1281.3337
129.9282	135.3001	156.7249	1281.9622	1283.9481	1288.4978
163.6917	168.9815	176.8450	1289.2058	1309.1781	1311.9345
193.4803	194.7427	200.2840	1322.3376	1328.8804	1334.4511
214.2202	216.8359	227.1210	1348.2649	1354.3307	1365.8120
230.0322	240.5802	251.7638	1366.3746	1368.3687	1369.5728
253.2266	265.3786	267.1901	1396.8127	1398.7173	1406.5732
276.4463	280.0092	287.6509	1408.4413	1417.4259	1421.5063
295.5963	310.1693	321.0985	1424.2060	1425.0481	1427.3412
334.0975	341.7868	348.5165	1428.4689	1430.5225	1431.1315
380.2531	400.8710	401.4216	1443.3818	1447.0139	1456.1459
404.4276	407.6659	408.6925	1456.6559	1467.4123	1468.8331
410.2677	420.0943	433.3789	1470.2166	1470.3878	1474.4462
464.6022	470.8789	485.7366	1497.0927	1540.8387	1573.6277
498.3745	509.4085	516.5963	1576.8282	1587.7816	1589.0223
521.6929	537.1452	548.1196	1590.3121	1591.3572	1593.2476
558.8569	583.2271	611.3088	1602.6037	1603.5208	1604.7524
612.5359	613.0472	613.2892	1605.0696	1608.0367	1608.4798
613.5392	621.9413	623.1900	2921.7737	2939.4066	2945.9647
628.3891	629.8295	633.4819	2974.0853	2985.9741	2987.9083
635.2621	636.4671	641.4997	2997.6335	3006.1748	3035.2998
649.5521	672.2102	681.6748	3043.7046	3049.4322	3050.6333
696.9917	698.3101	700.4771	3064.2016	3064.5875	3084.4105
702.1014	707.2125	717.9763	3090.4096	3090.5446	3091.2474
722.0490	745.2206	747.1109	3093.3257	3094.9350	3095.3033
749.8701	755.5790	759.0742	3096.5223	3099.0952	3099.3561
769.2088	775.2478	776.1884	3100.1614	3100.2205	3102.0277
780.0397	782.7582	815.4127	3102.5903	3104.9688	3110.9849
826.1514	828.6329	829.2029	3111.1387	3112.7177	3112.9981
830.3448	831.6168	833.0362	3113.2651	3114.1044	3114.2635
841.9509	851.2274	863.1855	3115.5761	3120.7711	3120.9332
864.2547	878.1926	881.2900	3121.7669	3122.5495	3122.7851
885.4793	889.8546	893.2482	3124.4943	3125.5597	3125.9056
898.0781	900.8383	905.0546	3129.1427	3133.5462	3138.0641

6_s

9.7493	11.2998	18.4475
20.3269	26.8579	35.8122
37.2225	42.7129	44.4685
45.4915	52.6229	54.1554
56.3321	57.9656	61.7054
63.5838	67.3342	68.0924
72.4341	77.5574	79.1967
80.4246	84.2222	91.8352
92.8450	96.1850	101.2747
102.0164	106.9225	109.7931

112.0087	114.6513	117.6444	1073.3491	1073.6671	1074.4253
122.4730	125.6221	129.2936	1074.6926	1077.6669	1084.2679
153.5104	172.6334	184.4189	1088.8359	1095.6266	1099.0706
190.5154	202.9676	214.9521	1132.4563	1132.9554	1133.0328
219.9736	222.1749	230.8784	1134.0509	1134.7251	1135.5975
233.1584	236.3481	239.0911	1135.9876	1136.3530	1136.7161
241.7623	248.8984	260.6667	1137.4731	1139.2525	1144.3364
269.9721	276.3957	282.7928	1144.9899	1148.5160	1152.1472
287.7701	289.7078	292.4501	1154.0233	1154.6102	1155.5800
295.1034	301.0715	314.9078	1156.8064	1160.5514	1162.0258
319.7757	326.8744	337.2481	1162.8453	1163.2802	1176.6526
342.0772	346.1080	357.0744	1179.0277	1185.0889	1188.8295
377.8605	391.7895	398.7623	1238.6137	1241.5376	1259.1927
399.0659	404.1035	405.9690	1270.7839	1271.5453	1274.9965
408.8402	409.4676	410.6105	1275.4238	1281.6208	1281.8344
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426.1806	428.8745	437.7335	1290.4031	1301.2576	1322.4159
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482.7992	489.3595	503.3533	1349.7944	1362.2411	1363.7358
508.1758	510.0593	521.8210	1366.7740	1367.5263	1368.7694
528.2248	533.3138	542.0796	1369.7041	1369.9363	1375.8512
552.4196	557.2745	577.9445	1395.4059	1403.1453	1418.5548
587.4632	607.6069	607.8783	1426.5190	1427.5657	1429.3738
611.1763	611.8655	612.6074	1430.0098	1430.2850	1430.8135
613.6569	613.7840	614.4407	1431.9902	1433.6540	1440.7378
616.3585	618.9214	626.9610	1455.9449	1469.7226	1471.4172
630.5368	632.1736	633.5163	1471.8129	1472.0986	1472.3584
635.2728	637.3323	643.2134	1474.7743	1475.0932	1476.2243
648.2894	661.1527	667.8815	1478.0583	1487.5415	1503.2455
687.8198	688.4066	694.6930	1514.1482	1552.4828	1572.0036
696.8223	696.9807	700.4857	1576.6661	1577.3283	1578.0972
701.4990	705.1452	706.4759	1582.6517	1583.2746	1588.7601
712.9296	719.3140	724.0094	1589.8095	1592.3033	1592.6621
729.1709	735.0937	737.5196	1603.2354	1604.7992	1605.3599
747.0920	749.0790	752.4630	1606.1552	1606.6896	1607.1434
755.2810	757.1223	760.9203	1610.1807	1610.5936	1610.8905
767.0446	768.5495	774.9993	1612.2149	1613.3901	3095.2656
779.1281	779.8242	789.5336	3095.3568	3095.6745	3095.8341
809.8192	813.2111	814.7311	3096.7183	3097.2719	3097.4256
826.9743	827.2679	829.9438	3097.9537	3099.8941	3100.3375
831.2920	834.9145	835.0415	3100.4520	3102.8509	3104.1033
835.8884	842.7519	843.4932	3105.1576	3108.5352	3109.3883
863.3489	866.9145	887.7488	3109.4459	3109.7577	3109.9139
893.6967	900.6789	905.0151	3111.3643	3111.5859	3113.2012
908.0675	911.3707	912.2137	3113.2567	3115.0725	3115.3237
916.6176	920.2266	925.0801	3115.6006	3117.3536	3118.8051
929.7132	932.9275	934.0691	3119.2857	3119.5172	3119.9529
942.5847	943.4971	946.3853	3121.5241	3121.6990	3122.6231
949.5102	954.5177	957.9776	3122.9058	3123.9017	3124.5417
961.0445	962.1255	963.6309	3126.0827	3126.3107	3126.9178
964.9592	968.4837	968.9259	3128.0032	3128.0896	3130.1136
970.2911	974.3381	975.8856	3131.7471	3132.3135	3134.0898
976.6272	981.3281	982.2621	3135.6313	3137.6189	3138.1817
983.4230	985.1669	985.4170	3142.2156	3145.7576	3162.0238
985.6472	985.9846	986.5847			
986.6966	987.2512	987.9833			
988.3136	988.8712	989.3598	6_T		
990.8375	993.9235	1003.7851	-1.2730	7.2271	17.5145
1021.6601	1022.2212	1022.6777	19.2022	25.0209	26.5368
1024.0418	1026.2069	1026.7316	28.8120	36.2977	36.7590
1027.2984	1028.1899	1029.8960	42.0707	44.2150	46.5872
1032.6860	1043.4078	1051.7771	49.6846	52.3688	55.4895
1056.9460	1068.2013	1071.8992	58.2038	61.0829	69.6661
			70.3231	72.5249	73.2819

77.2012	78.6115	81.5821	1026.5427	1028.9748	1030.0499
87.0582	91.3393	99.0724	1030.1987	1044.8868	1046.9738
101.3209	102.3066	106.1324	1058.8668	1071.8536	1072.3326
111.1208	113.7269	115.5955	1073.4995	1074.2352	1074.8012
118.2493	121.1908	129.0019	1075.7075	1077.7471	1079.9309
151.2173	158.5077	183.2729	1091.0876	1097.0719	1097.9876
188.7187	197.1650	208.9019	1128.1720	1132.1826	1134.0029
212.3359	216.5995	220.0501	1134.6757	1135.5843	1136.2502
222.8373	226.5000	236.3187	1136.5224	1136.5824	1137.8233
237.7054	244.9900	251.0197	1137.9502	1138.9074	1140.5237
261.6872	263.0614	271.7340	1146.6502	1147.1819	1154.0266
287.0035	288.5321	293.8506	1154.7037	1156.7001	1156.8654
295.2275	301.2036	302.2861	1157.4342	1159.6825	1160.5231
311.1179	319.5920	323.4996	1163.4920	1166.3552	1176.6255
330.7957	345.1427	348.5862	1187.8383	1194.2750	1196.6546
363.3172	379.4729	392.6772	1238.5214	1241.0460	1258.5265
399.6890	401.1538	403.2831	1269.8028	1272.6522	1273.0606
404.5853	408.4883	410.4063	1275.5555	1280.1255	1280.6968
411.6494	412.2668	413.1503	1283.3404	1284.4176	1289.3168
414.5472	420.0157	425.4185	1289.5545	1303.0176	1316.2071
431.3581	446.5673	456.8771	1327.1579	1336.5176	1341.7288
468.6799	476.3949	488.2988	1345.8150	1346.3145	1360.8831
496.4377	507.7663	515.2180	1361.2922	1368.3638	1368.9946
519.0768	527.3585	534.1063	1371.3143	1372.3024	1375.4643
541.3887	548.7837	553.1985	1375.9405	1395.8500	1420.3091
576.5115	581.7678	594.0986	1426.5822	1428.8508	1430.3834
597.6789	605.4958	612.1612	1430.7562	1430.9074	1432.9248
612.5588	612.9249	613.5638	1434.0184	1440.4785	1440.9575
613.9421	614.6454	615.6130	1457.1599	1467.4138	1470.4514
616.1347	617.1100	625.8429	1471.9108	1472.0390	1473.6820
630.5220	632.7175	634.2623	1473.8759	1474.3204	1478.8050
637.1969	638.6808	663.5315	1480.6563	1504.7415	1554.6292
670.2818	688.9954	690.4313	1570.8578	1572.3455	1573.3144
695.7783	697.6817	700.1046	1574.6491	1575.4076	1580.6562
700.3055	701.2083	703.5164	1583.9094	1590.7271	1592.1183
704.5901	705.7865	713.5083	1593.3139	1594.1552	1599.4763
727.7556	731.9610	737.0274	1601.1918	1603.8456	1604.7459
744.7221	748.3457	748.9231	1607.5131	1607.8422	1608.6380
751.7314	752.4288	756.9983	1610.6351	1611.4742	1614.4378
760.6107	763.4120	765.2811	1624.1546	1690.5988	3095.0607
768.8058	769.1279	778.4323	3095.7531	3096.3074	3096.5010
807.6043	814.3143	816.1235	3096.7946	3097.0802	3097.6356
820.9393	824.8124	826.7135	3098.9138	3099.5449	3099.7329
831.1142	833.9773	835.5784	3101.0052	3102.8520	3103.6337
839.1447	840.2480	842.4801	3104.4372	3104.5954	3105.5452
865.7795	866.8340	889.0167	3105.5492	3105.8707	3106.2268
895.8120	897.8336	900.2500	3107.9327	3109.6936	3112.4040
903.8970	908.5784	910.0197	3112.5435	3113.1923	3113.6618
911.0270	917.9912	923.0426	3114.0830	3115.2680	3116.1404
923.7321	930.2817	932.8205	3116.9635	3117.5756	3117.8083
933.8503	934.7503	945.1704	3117.8801	3119.7620	3120.5150
945.7128	955.9652	956.8550	3122.4565	3122.5829	3123.5264
957.7044	960.2649	964.6858	3123.8149	3124.3649	3124.9011
965.5908	966.5766	967.4244	3125.5587	3125.8417	3126.1973
968.2485	974.5185	976.6573	3127.1991	3127.2687	3130.0843
976.8012	977.0555	979.2304	3130.7162	3130.8558	3131.2866
981.2157	981.5338	982.4488	3132.1572	3138.8553	3148.3564
982.7716	983.8687	984.9936			
985.3161	986.2453	986.9111			
987.1053	987.3861	989.0623	6 ₀		
991.0214	993.1147	995.8329	11.8397	16.4028	20.4524
1003.6690	1021.6494	1023.1671	26.5339	28.2991	31.0861
1023.4084	1024.0105	1026.0307	37.3762	41.9151	46.3200
			47.1424	49.2966	54.2746

55.0613	57.7388	62.8531	992.3285	1000.4810	1003.4498
64.3752	70.2287	70.7926	1016.5950	1022.6952	1023.2186
73.1304	77.3214	78.4130	1024.4759	1025.2385	1025.6686
82.0194	84.4817	89.2520	1026.2254	1027.0371	1028.2944
91.0279	95.0846	97.2536	1029.7113	1042.6258	1048.2993
101.2474	103.7346	107.9495	1050.6414	1069.3062	1073.6476
112.0427	115.1794	118.9000	1073.7800	1074.7580	1075.7524
121.4609	127.6859	136.2692	1077.1122	1078.6130	1082.0752
146.1349	148.8867	176.2151	1088.0769	1095.1369	1097.5178
183.6553	198.2937	202.0934	1127.1414	1131.3358	1133.7891
207.5204	213.6848	221.4846	1134.3723	1134.9080	1135.0909
225.8219	230.6075	234.9170	1136.3053	1136.4910	1136.7671
238.7279	247.2185	253.0533	1136.8706	1137.8198	1138.1643
258.4376	262.0901	272.1973	1145.7878	1148.1234	1152.9108
278.3148	282.3818	288.7481	1153.1828	1156.0294	1156.4091
293.7429	294.3017	298.4449	1159.3374	1159.7651	1162.2151
310.9918	319.2153	322.4891	1163.1825	1167.4192	1177.2762
336.0680	342.2461	351.9430	1181.3074	1194.5455	1196.8489
352.1529	371.6829	378.6685	1237.2120	1241.1626	1260.3650
386.5576	399.1405	401.1905	1266.3351	1269.3828	1270.3373
401.8485	404.8074	406.4505	1275.2858	1278.6560	1280.4084
407.8861	409.6279	410.6946	1283.3763	1286.0337	1286.6876
415.8969	416.2301	420.1211	1296.4253	1303.5404	1306.6162
421.5457	426.5808	459.4121	1326.0530	1331.2255	1340.2142
466.8263	472.4857	479.8704	1342.5111	1345.8962	1360.5234
486.8760	493.7119	508.3793	1361.4837	1366.0050	1369.5940
510.4567	514.4971	518.0260	1370.6592	1373.5215	1374.5640
530.7488	541.0238	546.4411	1376.8695	1392.6066	1420.7699
552.3285	563.2361	578.7358	1425.8923	1427.3586	1428.9276
587.4461	590.6064	611.5133	1430.5904	1431.4882	1434.0484
611.9747	612.5715	612.7332	1434.4408	1439.5012	1441.5510
612.9514	613.7886	614.3241	1455.9006	1468.8884	1470.4574
615.2492	616.1645	625.5827	1472.0127	1473.6693	1473.7557
627.4833	629.7916	631.1278	1474.9693	1476.2322	1479.1438
633.1560	633.7840	635.9151	1481.6015	1505.0670	1555.0660
663.4792	667.4493	687.2340	1571.1726	1572.8913	1574.8108
689.1734	694.0590	695.9993	1575.6561	1577.5228	1581.3416
698.5548	701.0430	701.8106	1586.8041	1592.1317	1592.4609
702.5820	708.8747	710.7123	1593.3082	1596.1434	1599.7396
711.3431	724.7189	730.9448	1600.7966	1605.2443	1605.8757
736.6134	746.2199	750.0157	1606.8098	1607.7909	1608.8377
750.5466	752.0586	752.8561	1610.7815	1613.3153	1615.5436
756.0523	760.6602	764.2721	1642.8692	1739.8098	3086.0132
765.0228	766.6514	778.2350	3093.9214	3094.6627	3095.0255
798.6194	812.9210	815.6403	3095.1044	3096.0836	3096.3088
818.8494	827.3468	828.3724	3096.4301	3096.7215	3097.0457
829.3453	833.8129	835.6540	3098.2872	3101.7201	3102.1950
836.6337	839.3110	849.1649	3102.7926	3104.5304	3106.0646
862.7352	868.6673	884.2258	3106.1236	3107.2396	3108.5970
893.9764	894.3299	901.4515	3110.1692	3110.1940	3110.3181
901.8107	904.4554	908.1739	3110.7802	3111.0331	3113.4469
910.6688	917.0373	922.2696	3113.6370	3114.3879	3117.3554
925.2809	925.3855	928.9117	3117.4067	3117.5245	3117.7195
931.1100	933.3974	944.7943	3118.0381	3119.4958	3121.3590
945.1338	954.8923	956.4182	3121.8238	3122.5788	3122.7110
956.9944	961.1590	963.5227	3126.2356	3126.8445	3126.9834
964.0908	964.9400	969.6209	3127.4629	3128.4646	3128.6052
973.2433	975.6668	976.4555	3129.4140	3129.9220	3130.7807
977.0591	977.9513	978.8902	3132.4771	3135.5043	3136.9443
980.9723	981.2632	982.4754	3137.9984	3138.1600	3163.8400
983.5526	983.8570	985.7884			
986.0046	986.6391	987.0278			
987.5946	988.2461	989.9183			