

Supplementary information

Supplementary data: 1D and 2D NMR, FT-IR spectra for the compound (3a), (3b) and (3c)

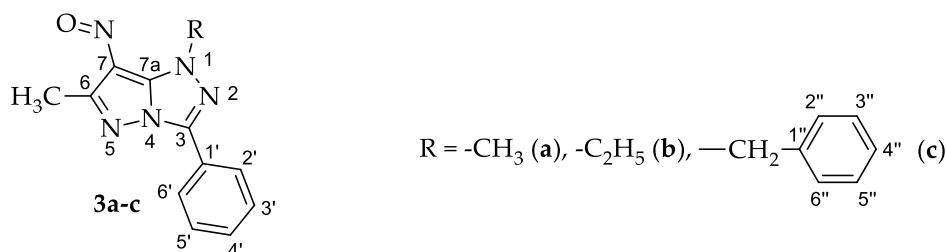


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1D and 3c NMR spectra for compound (3a)

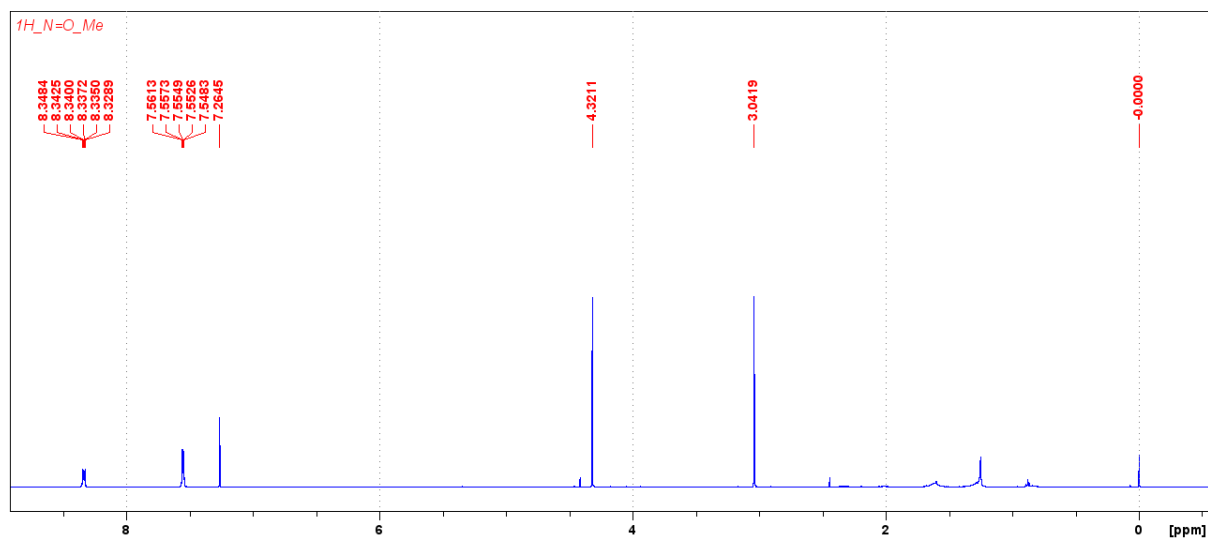


Figure S1 ¹H NMR spectrum of the compound (3a)

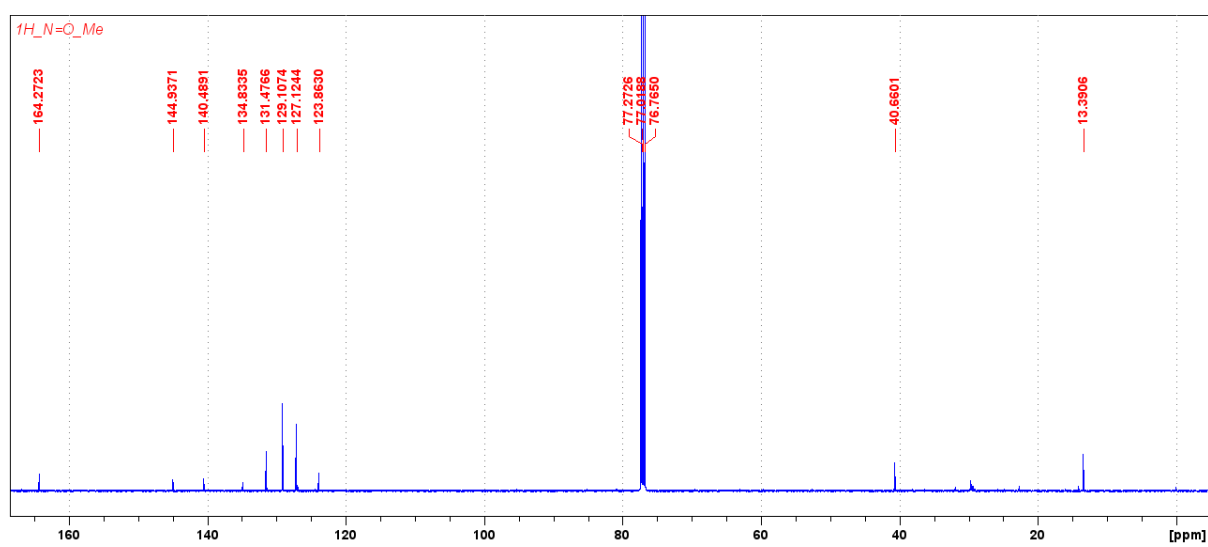


Figure S2 ¹³C NMR spectrum of the compound (3a)

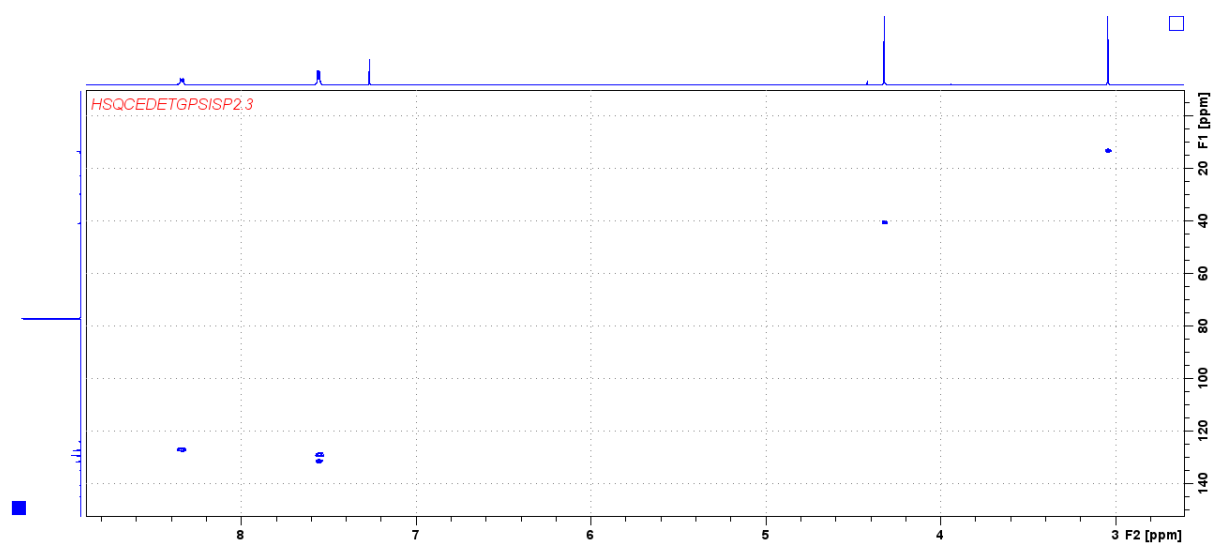


Figure S3 HSQC ^1H - ^{13}C spectrum of the compound (3a)

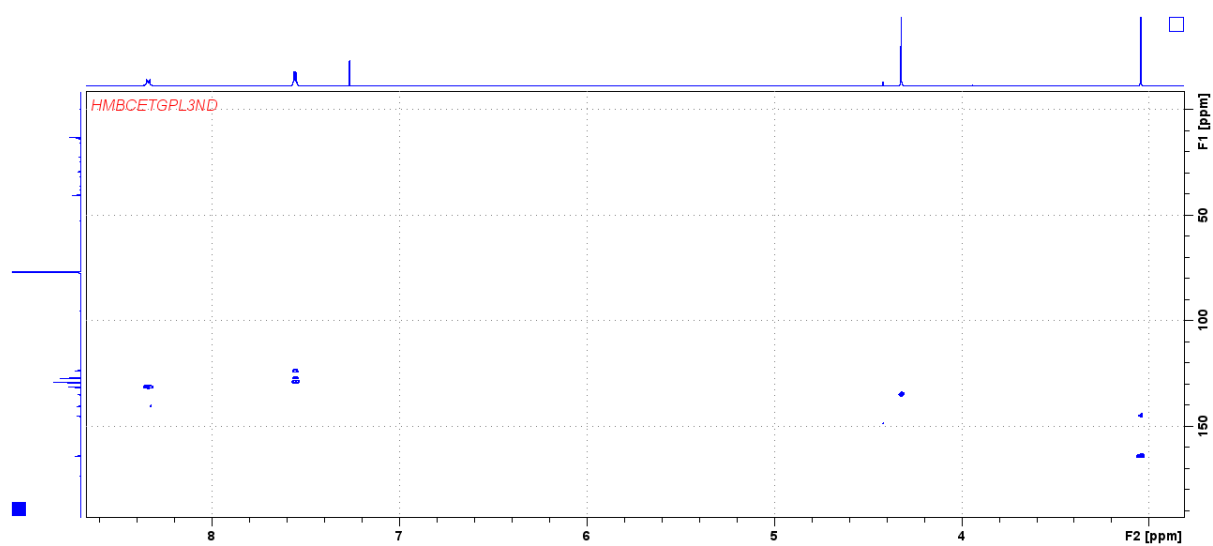


Figure S4 HMBC ^1H - ^{13}C spectrum of the compound (3a)

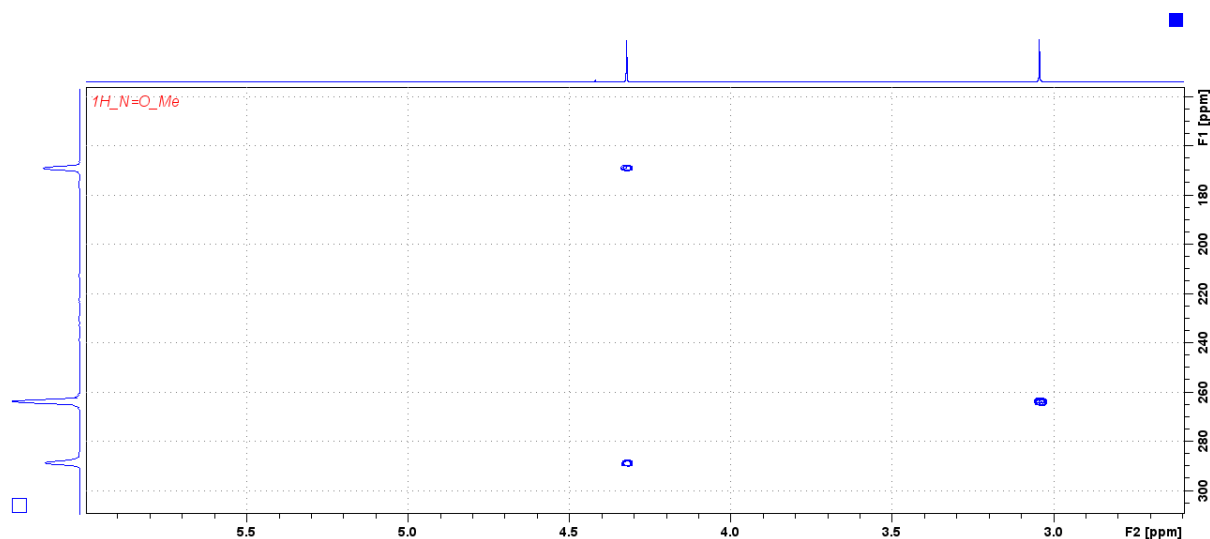
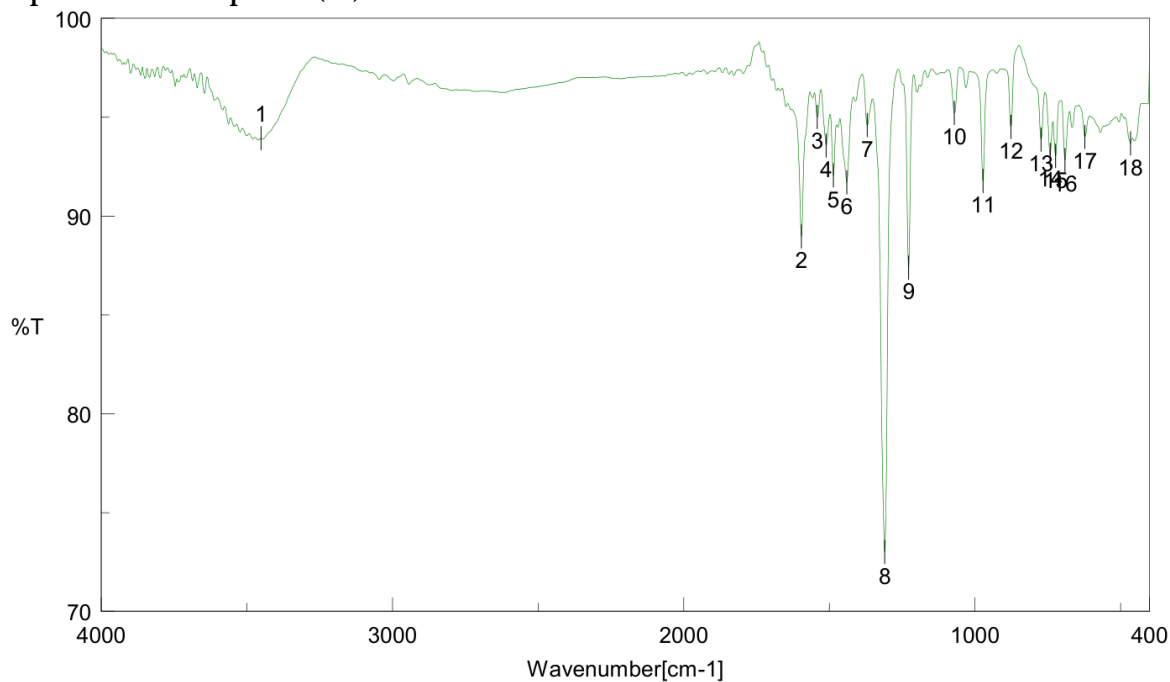


Figure S5 HMBC ^1H - ^{15}N spectrum of the compound (3a)

IR spectrum for compound (3a)



1: 3450.99, 93.9477	2: 1595.81, 88.9763	3: 1540.85, 95.0204
4: 1510.95, 93.5791	5: 1485.88, 92.0709	6: 1439.6, 91.714
7: 1369.21, 94.611	8: 1309.43, 73.0023	9: 1227.47, 87.3918
10: 1070.3, 95.2194	11: 971.947, 91.7829	12: 876.488, 94.5152
13: 772.351, 93.879	14: 741.496, 93.1034	15: 723.175, 93.0475
16: 690.391, 92.8414	17: 621.931, 94.0112	18: 465.725, 93.6886

Figure S6 FT-IR spectrum of the compound (3a)

1D and 3c NMR spectra for compound (3b)

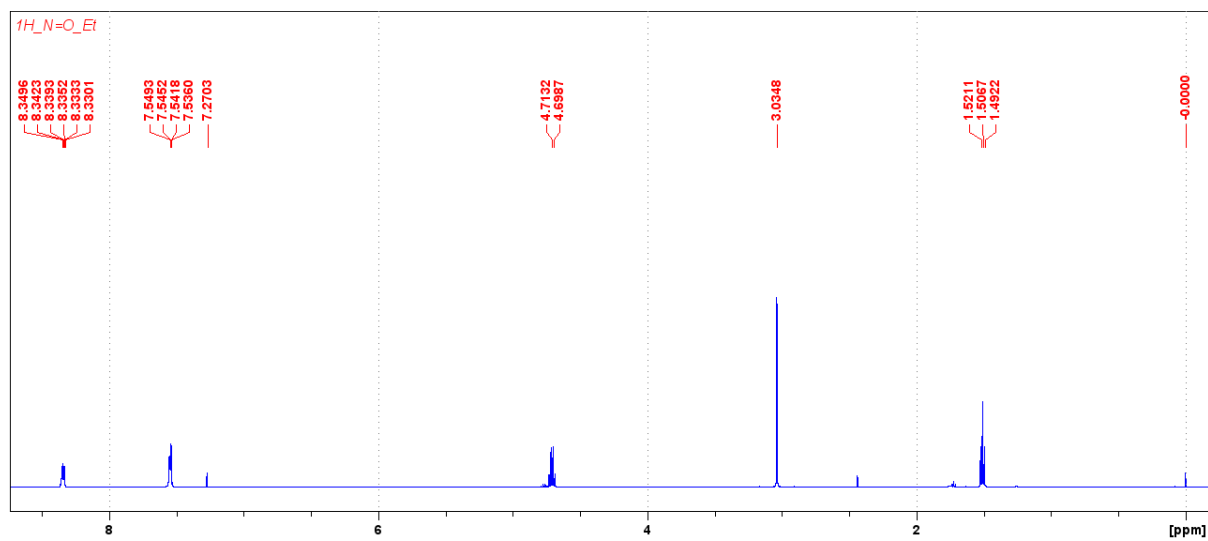


Figure S7 ¹H NMR spectrum of the compound (3b)

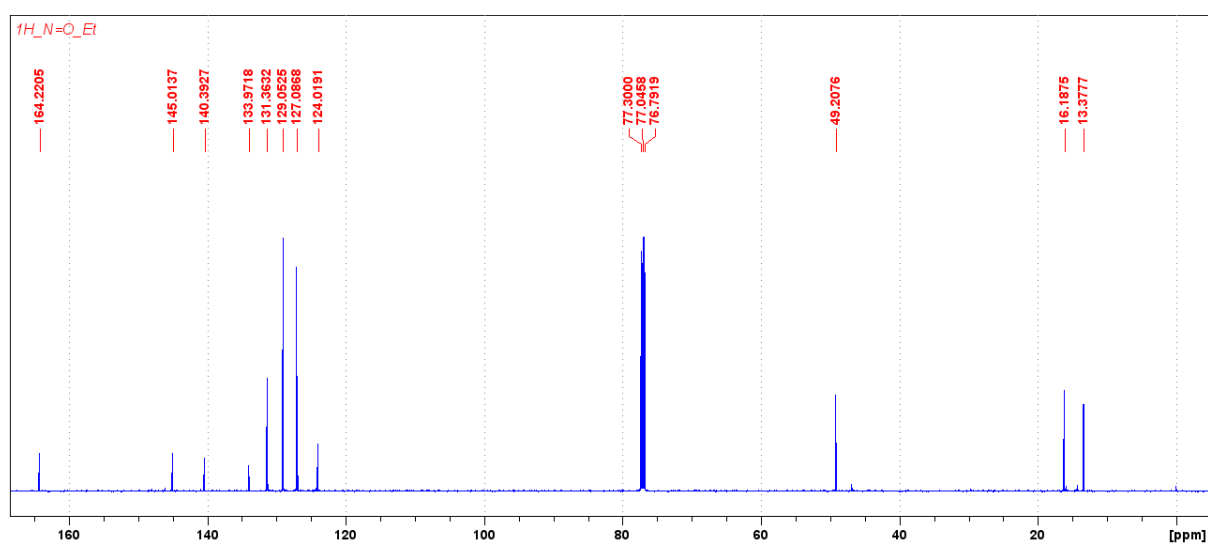


Figure S8 ¹³C NMR spectrum of the compound (3b)

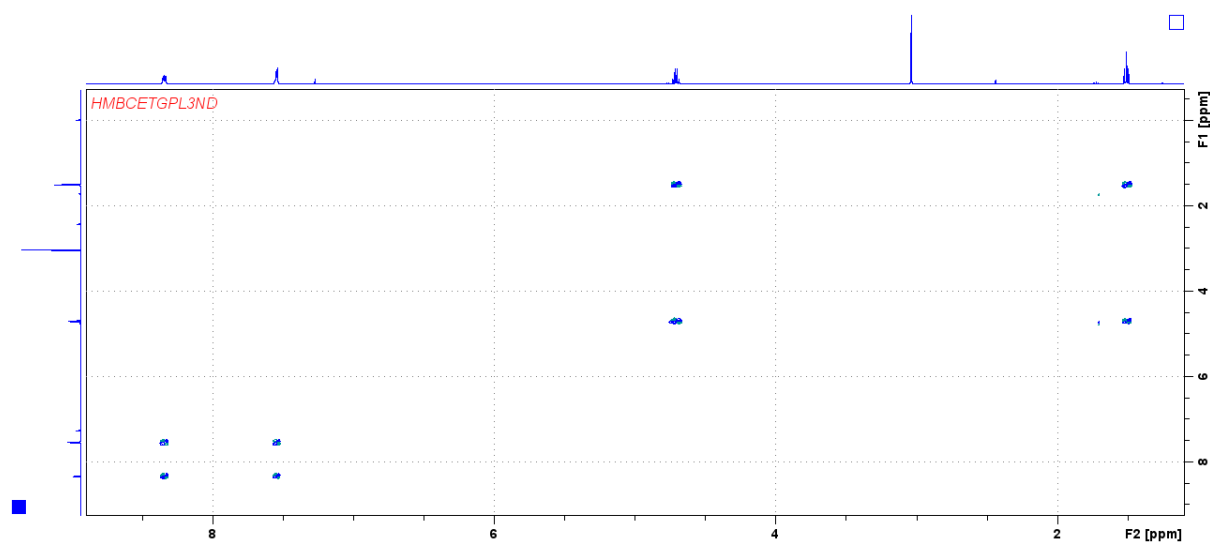


Figure S9 COSY ^1H - ^1H spectrum of the compound (3b)

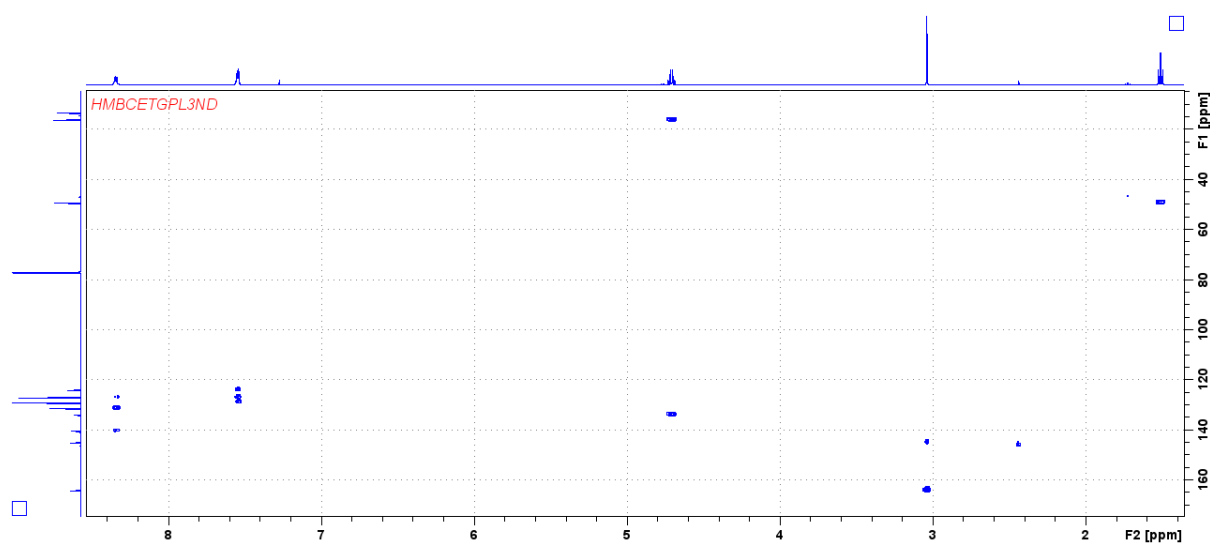


Figure S10 HMBC ^1H - ^{13}C spectrum of the compound (3b)

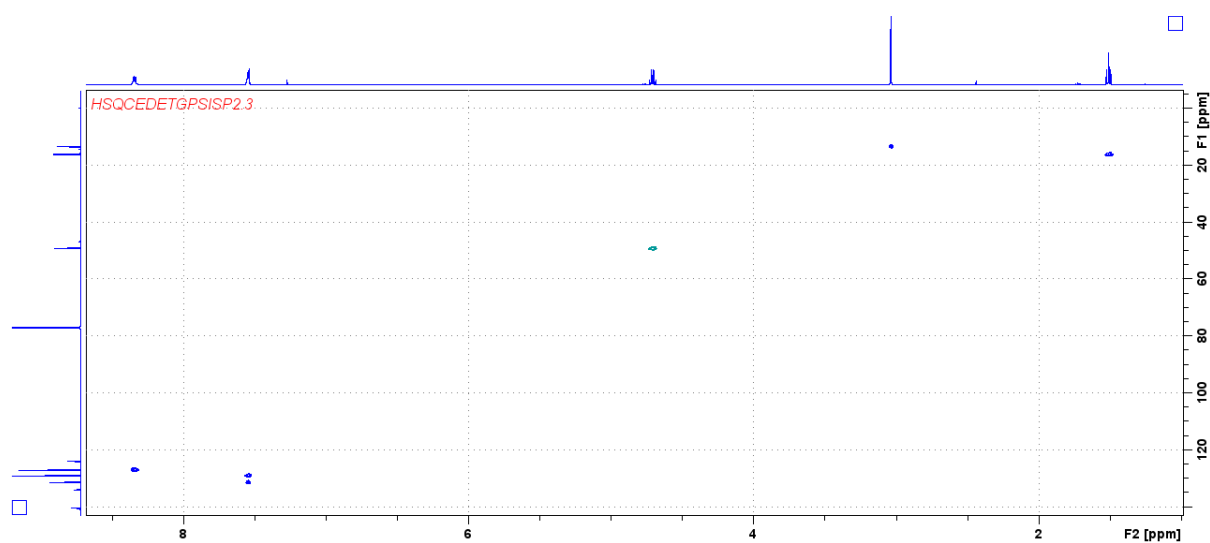


Figure S11 ^1H - ^{13}C spectrum of the compound (3b)

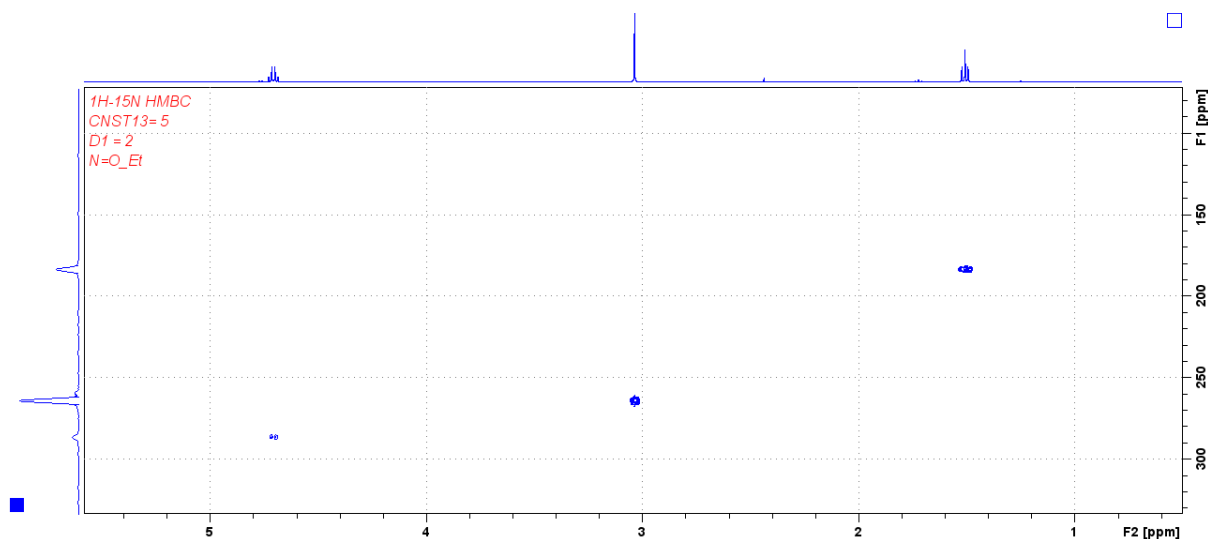
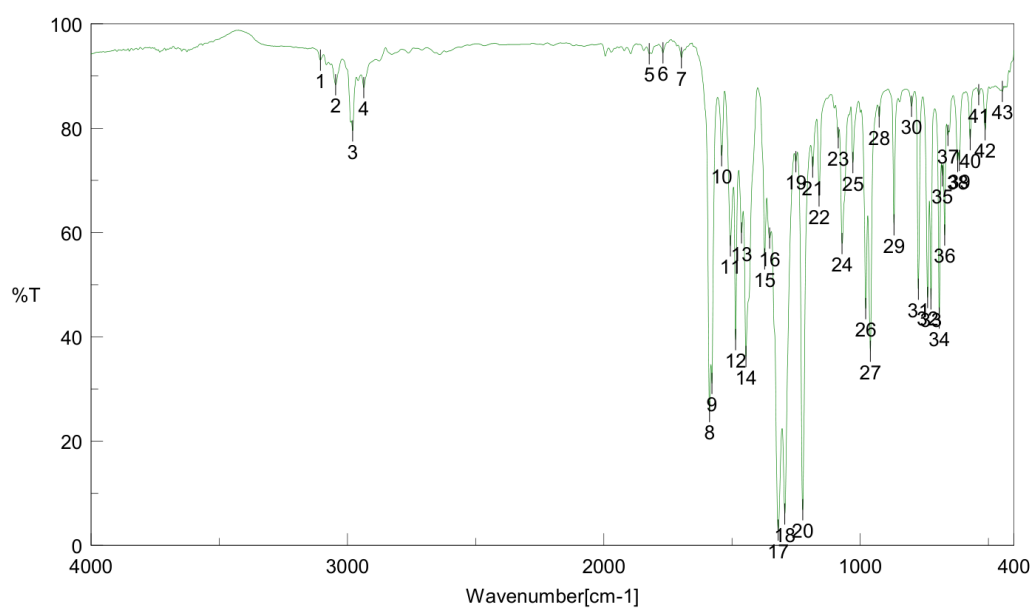


Figure S12 HMBC ^1H - ^{15}N spectrum of the compound (3b)

IR spectrum for compound (3b)



1: 3104.83, 93.0649	2: 3046.01, 88.3428	3: 2979.48, 79.4971
4: 2936.09, 87.7727	5: 1822.4, 94.301	6: 1769.37, 94.4702
7: 1697.05, 93.5098	8: 1587.13, 25.6654	9: 1578.45, 31.0849
10: 1539.88, 74.7318	11: 1506.13, 57.4234	12: 1485.88, 39.4641
13: 1462.74, 59.93	14: 1445.39, 36.2526	15: 1372.1, 54.9232
16: 1352.82, 58.9224	17: 1320.04, 2.97183	18: 1294, 6.03579
19: 1250.61, 73.5753	20: 1223.61, 6.85857	21: 1185.04, 72.5375
22: 1159.97, 67.0325	23: 1085.73, 78.1721	24: 1070.3, 57.8799
25: 1027.87, 73.4346	26: 978.697, 45.4036	27: 960.377, 37.2512
28: 925.664, 82.1613	29: 867.81, 61.4806	30: 799.35, 84.2236
31: 772.351, 49.1192	32: 736.674, 47.55	33: 724.139, 47.2652
34: 691.355, 43.5833	35: 679.785, 70.851	36: 670.142, 59.5438
37: 657.607, 78.6433	38: 620.002, 73.6551	39: 613.253, 73.8047
40: 570.826, 77.8239		

Figure S13 FT-IR spectrum of the compound (3b)

1D and 2D NMR spectra for compound (3c)

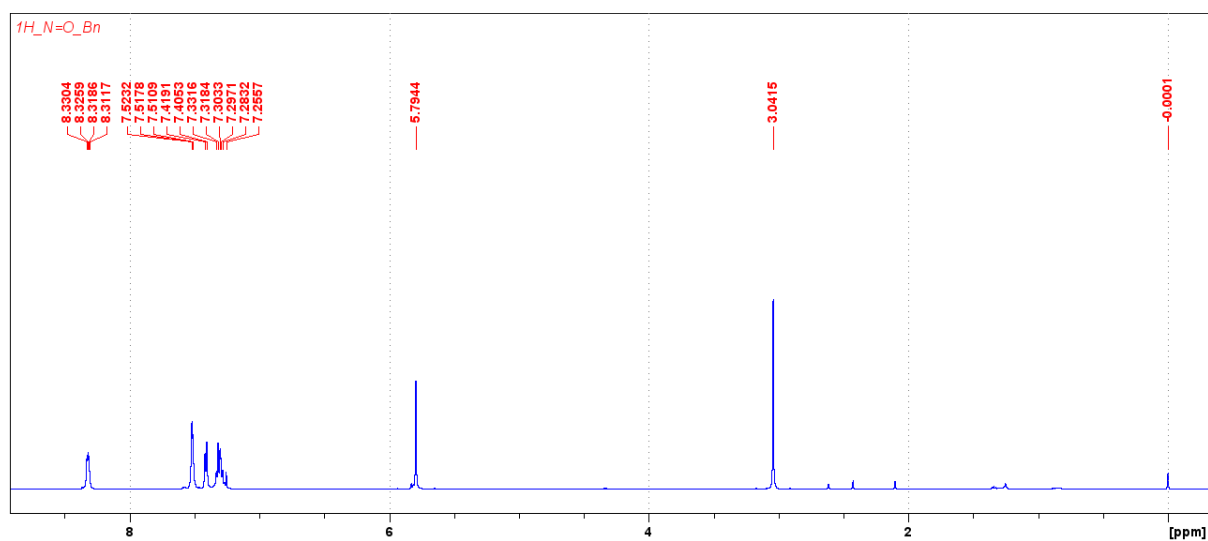


Figure S14 ¹H NMR spectrum of the compound (3c)

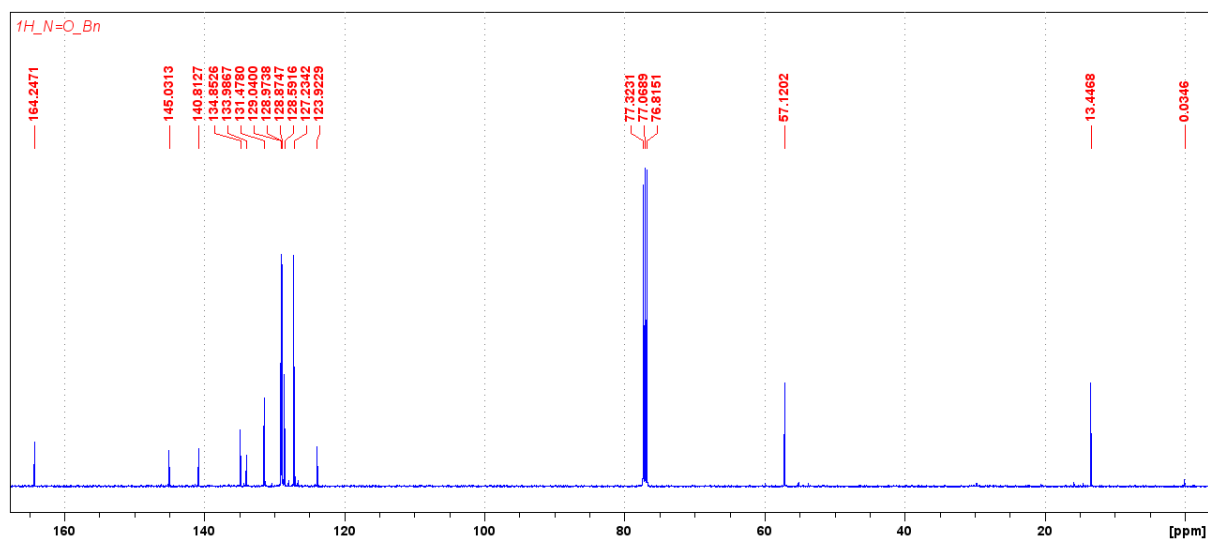


Figure S15 ¹³C NMR spectrum of the compound (3c)

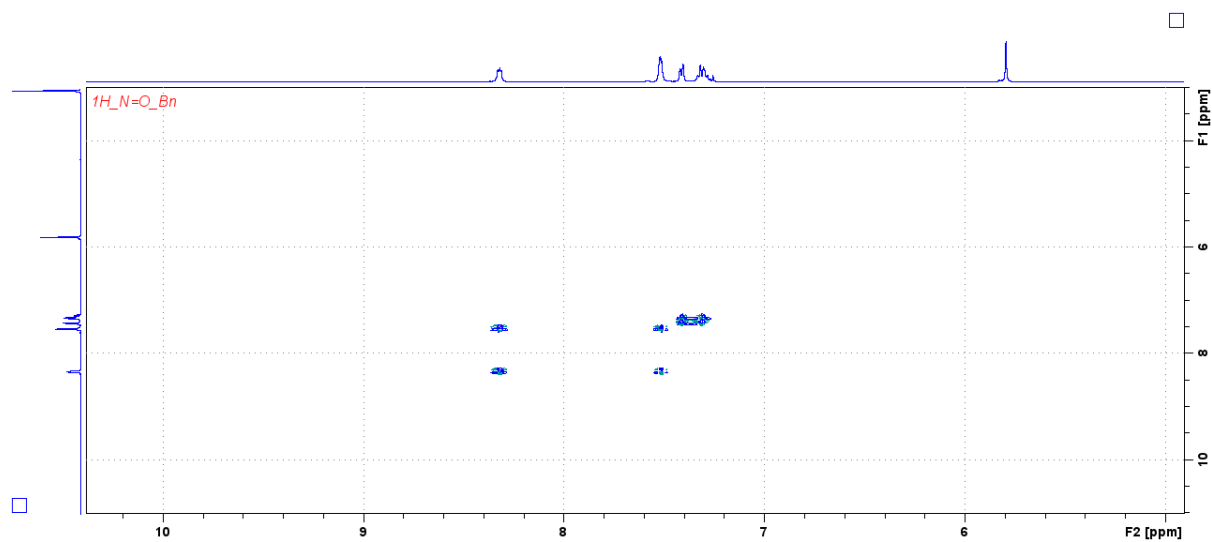


Figure S16 COSY ^1H - ^1H spectrum of the compound (3c)

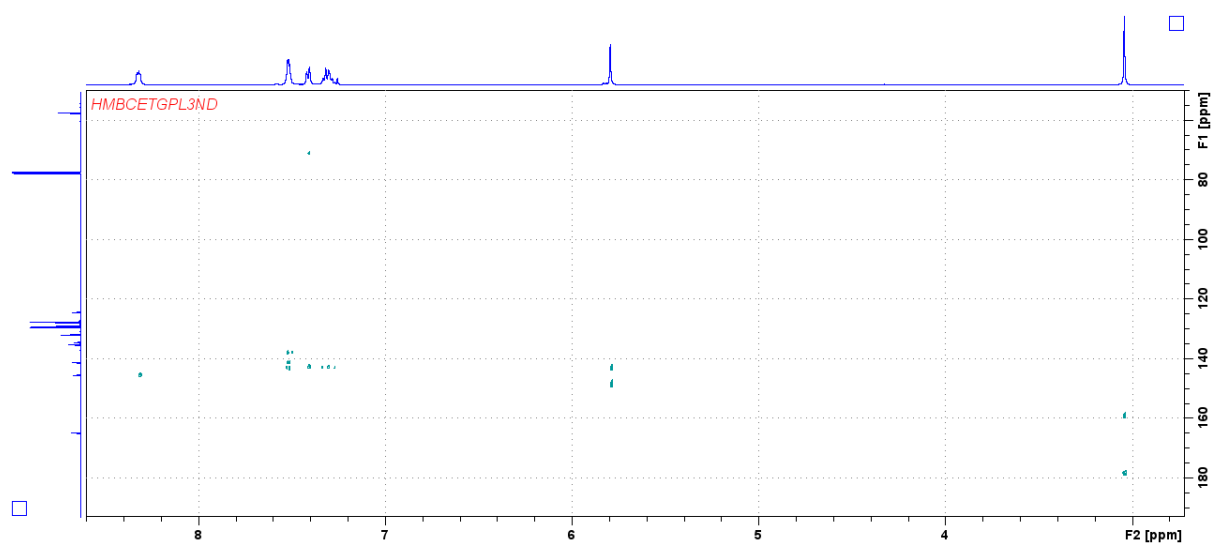


Figure S17 HMBC ^1H - ^{13}C spectrum of the compound (3c)

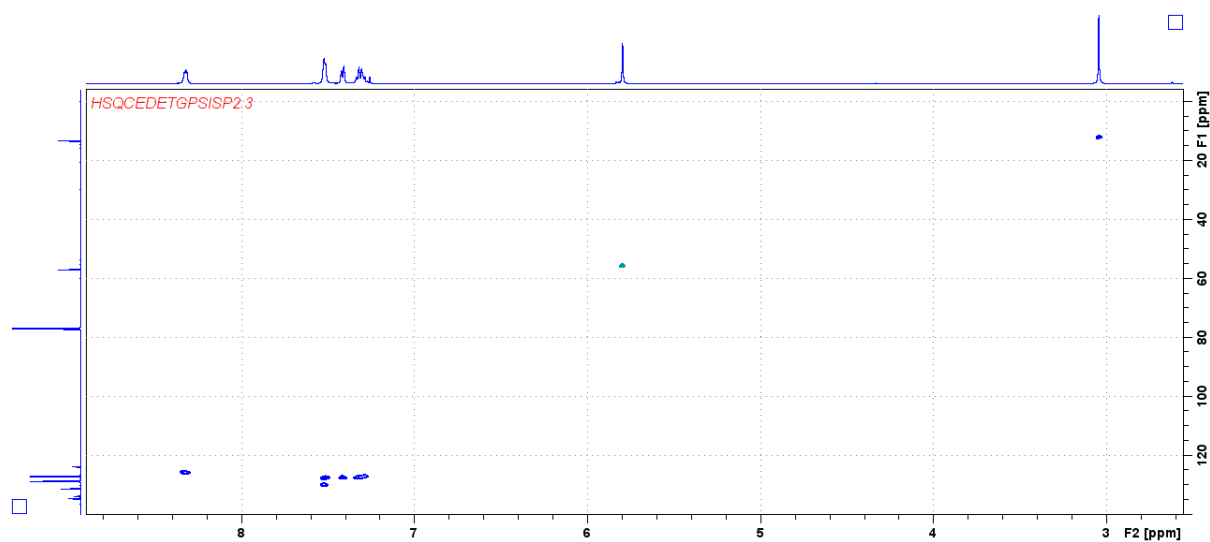


Figure S18 ^1H - ^{13}C spectrum of the compound (3c)

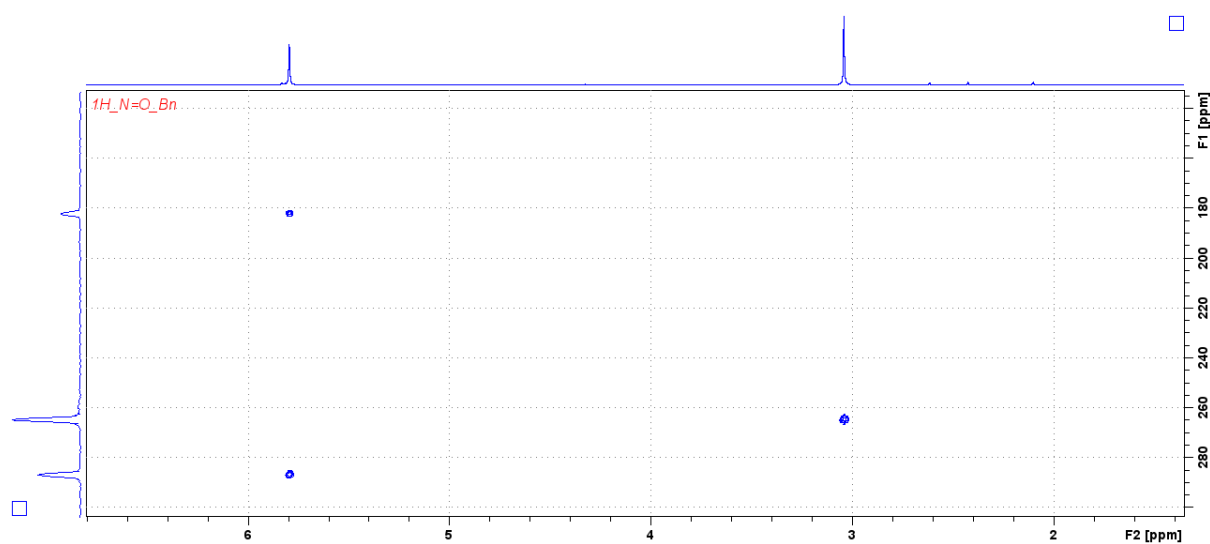
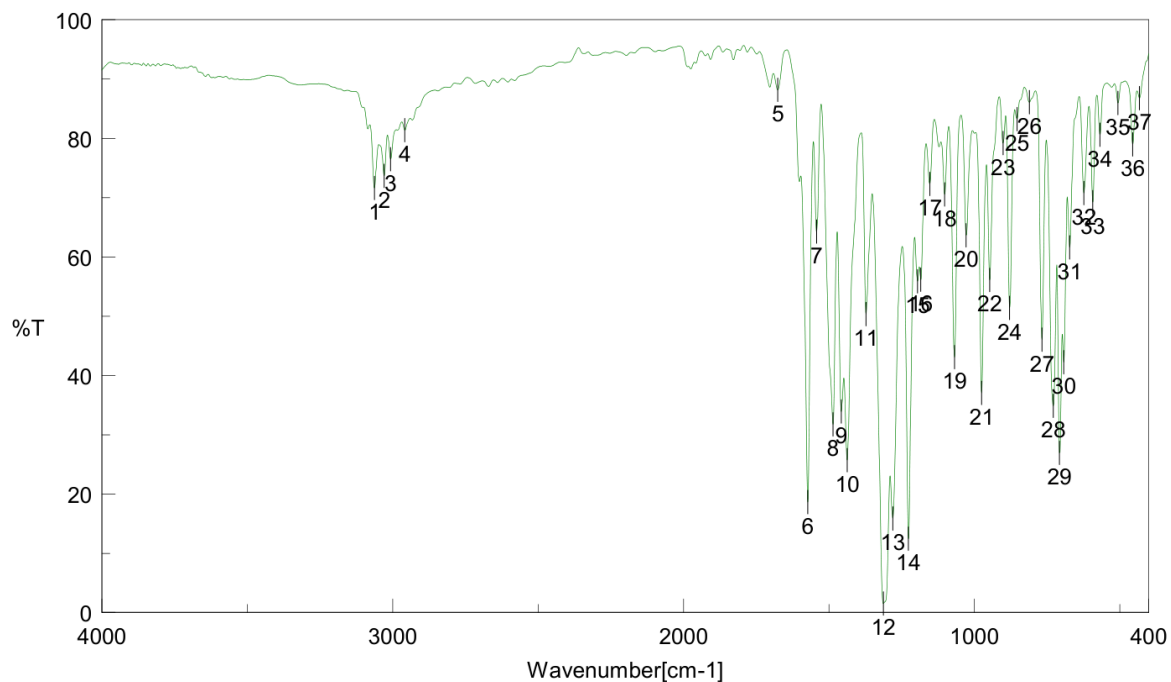


Figure S19 HMBC ^1H - ^{15}N spectrum of the compound (3c)

IR spectrum for compound (3c)



1: 3062.41, 71.6415	2: 3029.62, 73.6839	3: 3007.44, 76.5088
4: 2958.27, 81.3795	5: 1675.84, 88.1952	6: 1572.66, 18.6558
7: 1541.81, 64.2698	8: 1485.88, 31.7405	9: 1456.96, 33.9182
10: 1436.71, 25.7169	11: 1372.1, 50.3822	12: 1312.32, 1.5523
13: 1280.5, 15.9006	14: 1226.51, 12.4616	15: 1195.65, 55.8958
16: 1184.08, 56.1722	17: 1153.22, 72.3282	18: 1102.12, 70.564
19: 1068.37, 43.1122	20: 1027.87, 63.6596	21: 974.84, 37.0807
22: 946.877, 56.1286	23: 900.594, 79.2118	24: 878.417, 51.3895
25: 853.347, 83.259	26: 810.92, 86.0942	27: 767.53, 46.0318
28: 727.996, 34.8765	29: 706.783, 26.9554	30: 692.32, 42.2534
31: 672.071, 61.6152	32: 622.895, 70.7834	33: 593.004, 69.2597
34: 567.934, 80.6054	35: 506.223, 85.9959	36: 455.118, 79.0009
37: 431.977, 86.7995		

Figure S20 FT-IR spectrum of the compound (3c)