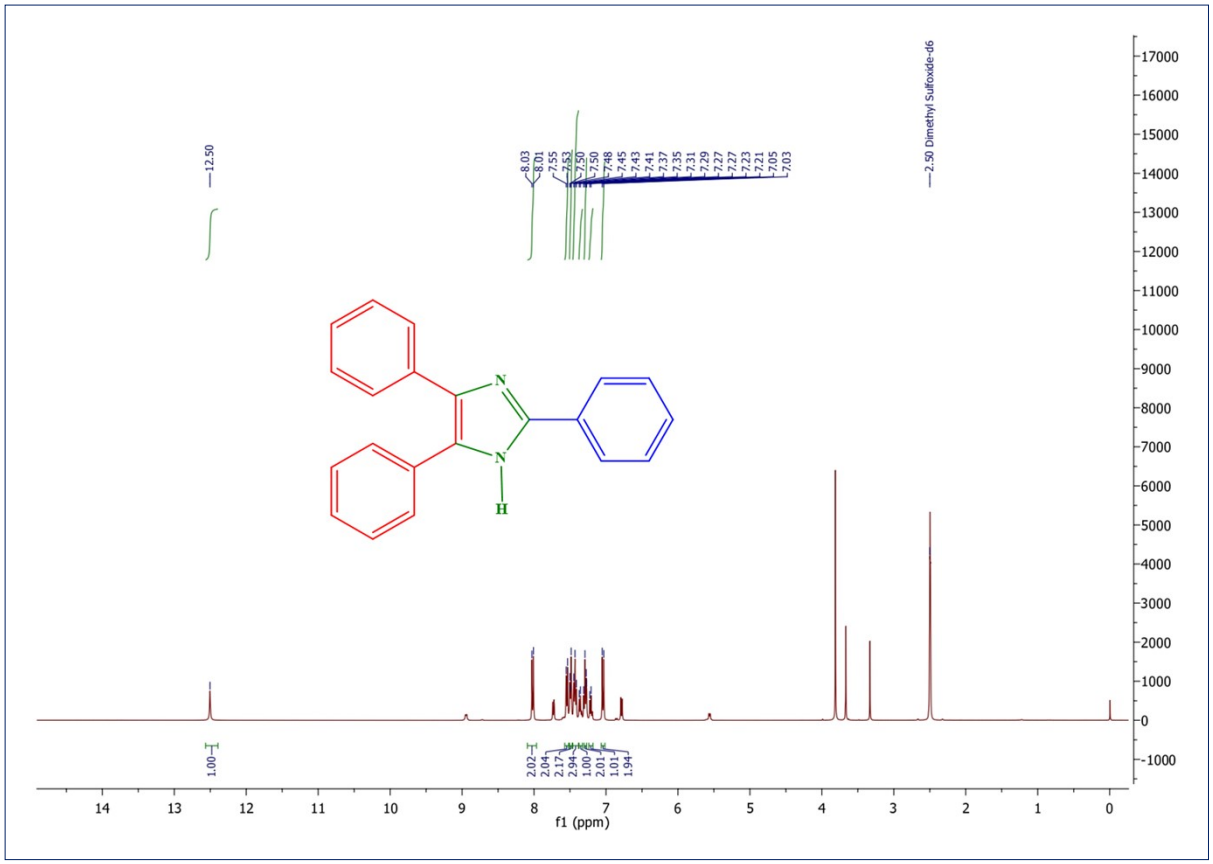
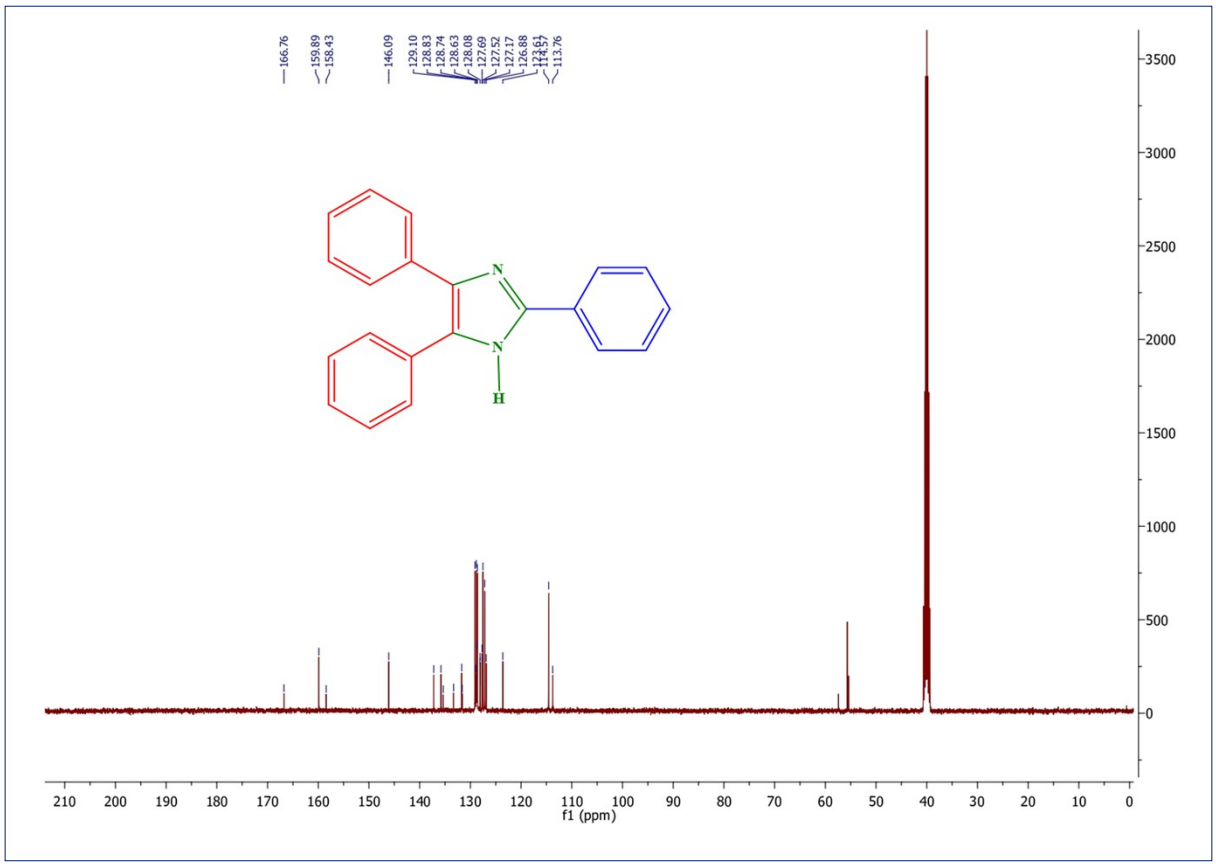
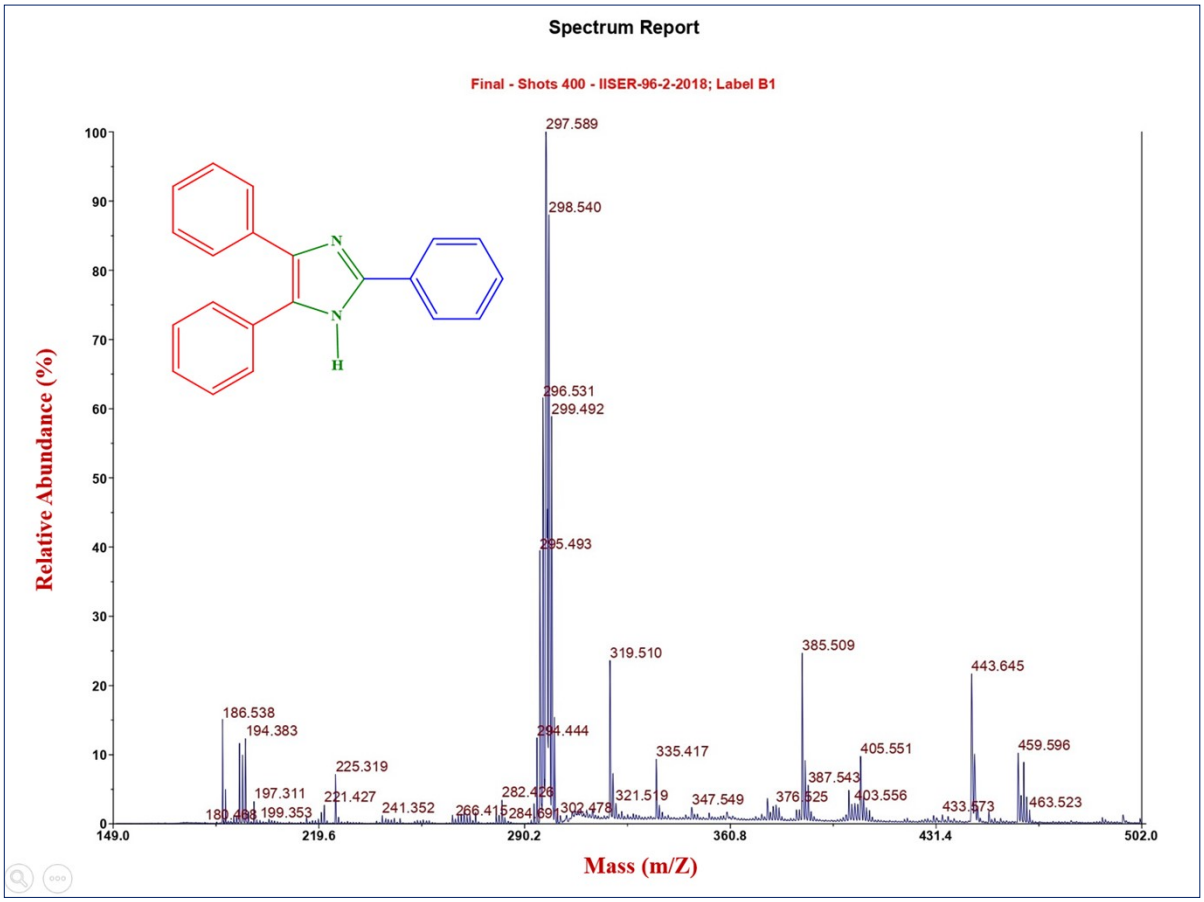


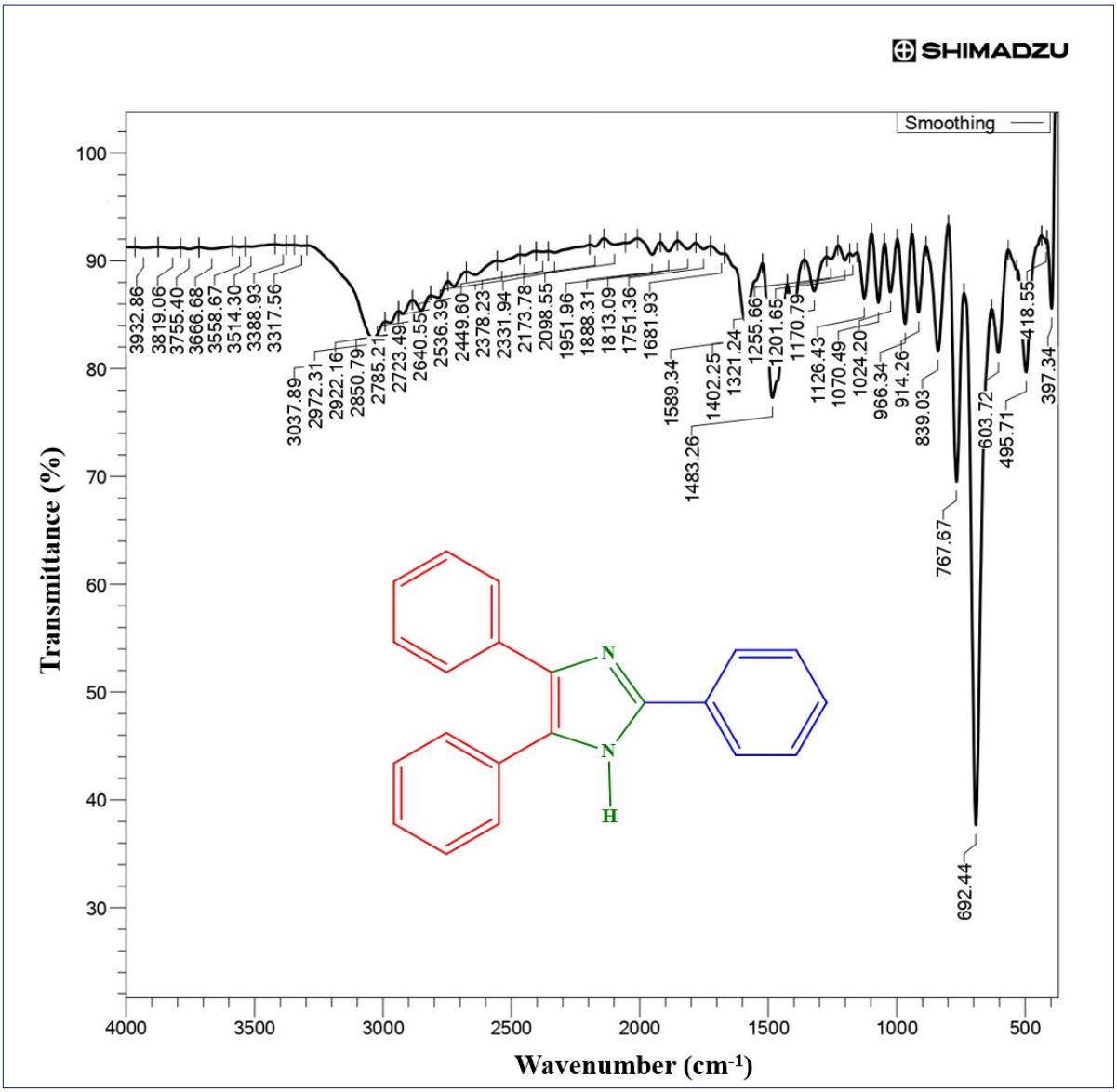
Spectrum 1 : ^{1}H NMR Spectrum of 2, 4, 5-triphenyl-1H-imidazole (4a)



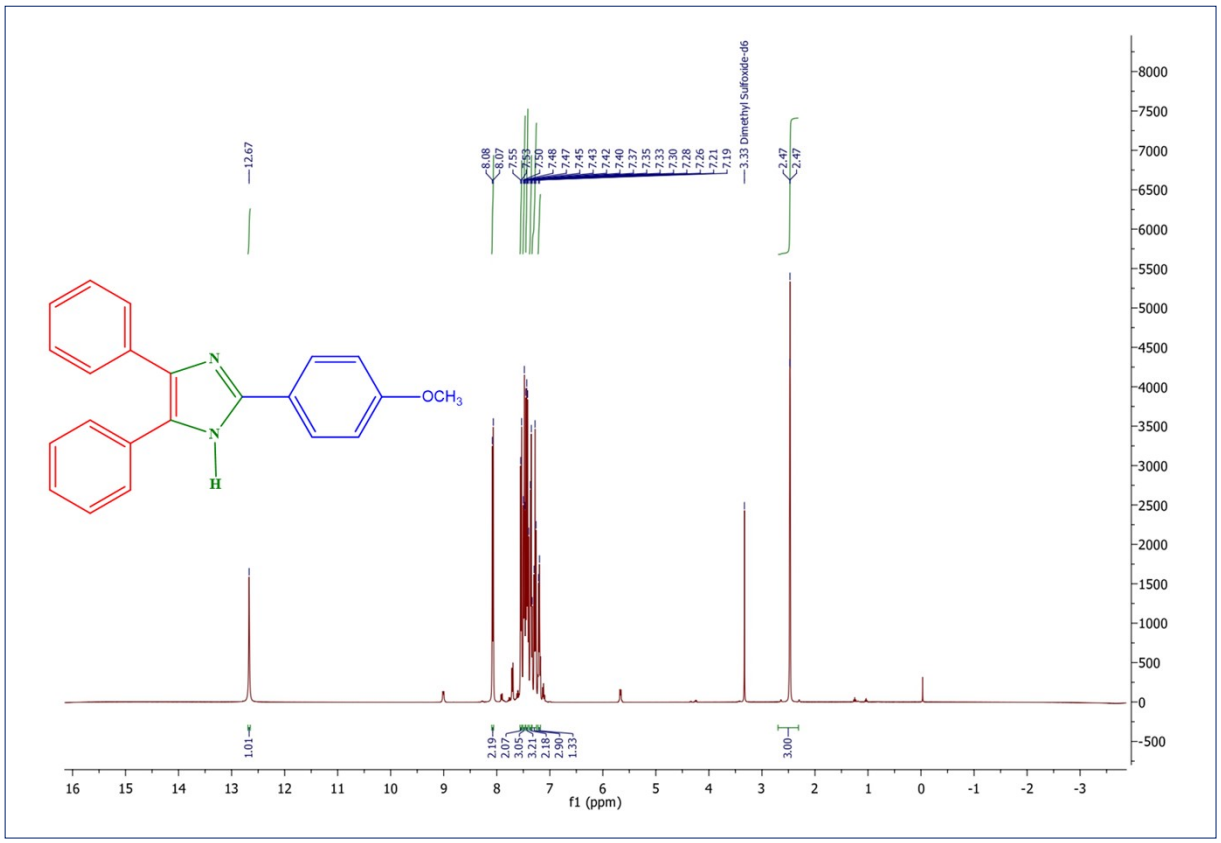
Spectrum 2 : ^{13}C NMR Spectrum of 2, 4, 5-triphenyl-1H-imidazole (4a)



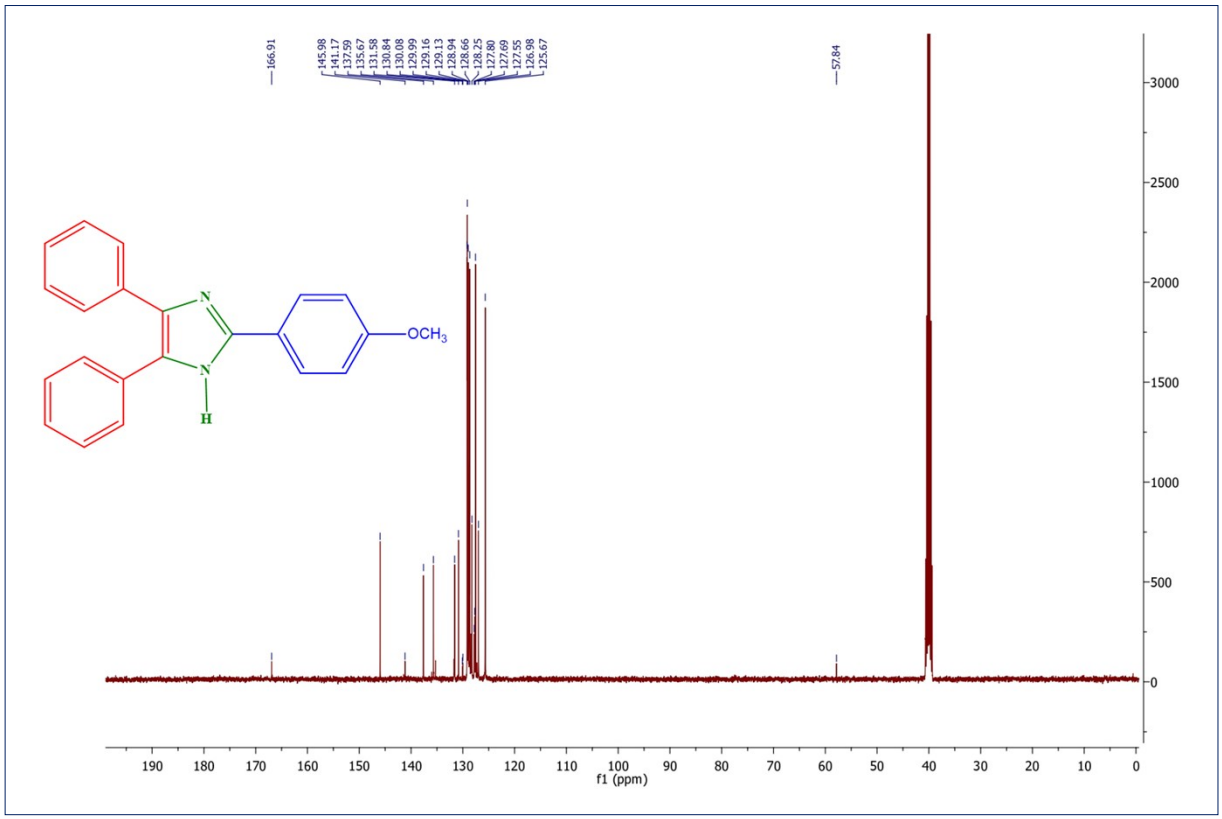
Spectrum 3 : Mass Spectrum of 2, 4, 5-triphenyl-1H-imidazole (4a)



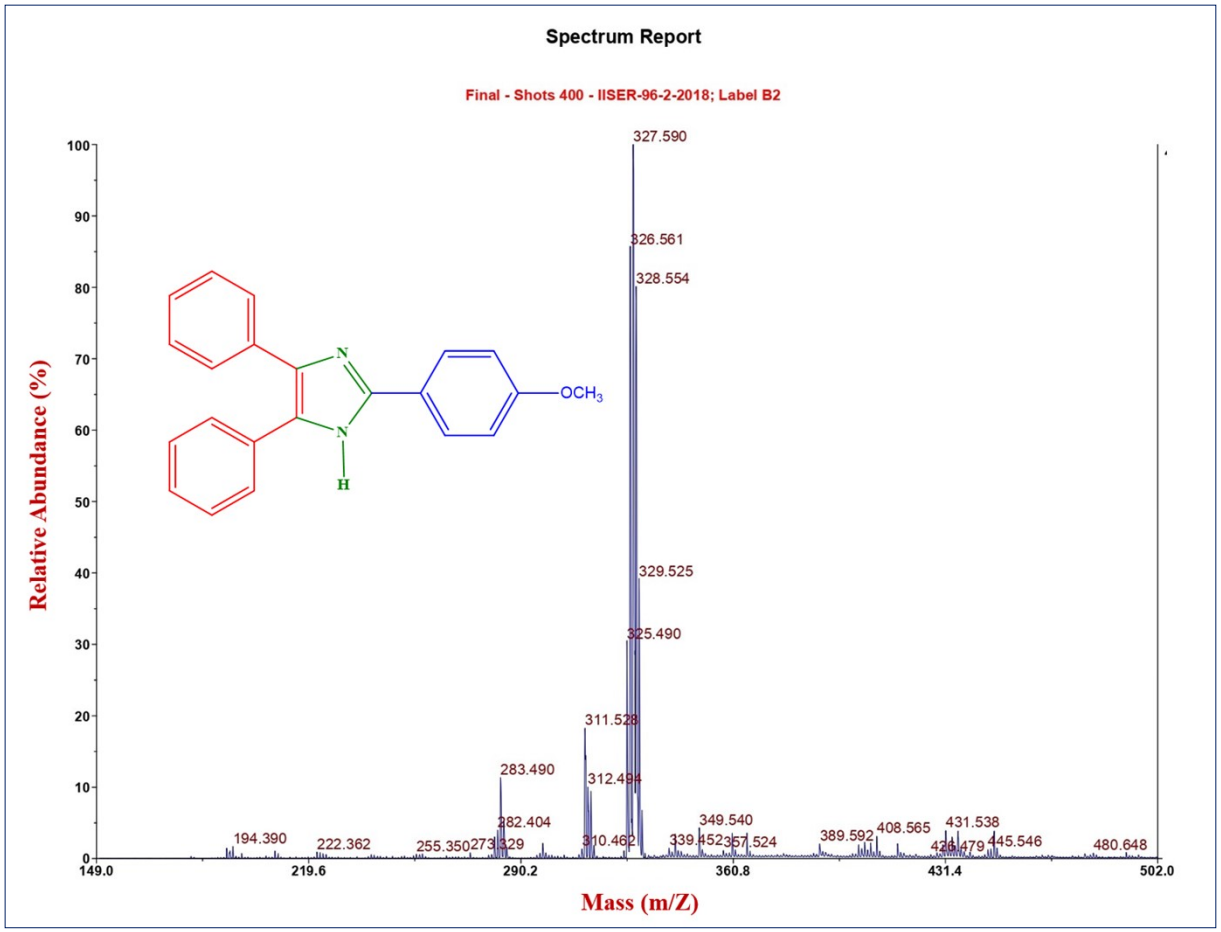
Spectrum 4 : IR Spectrum of 2, 4, 5-triphenyl-1H-imidazole (4a)



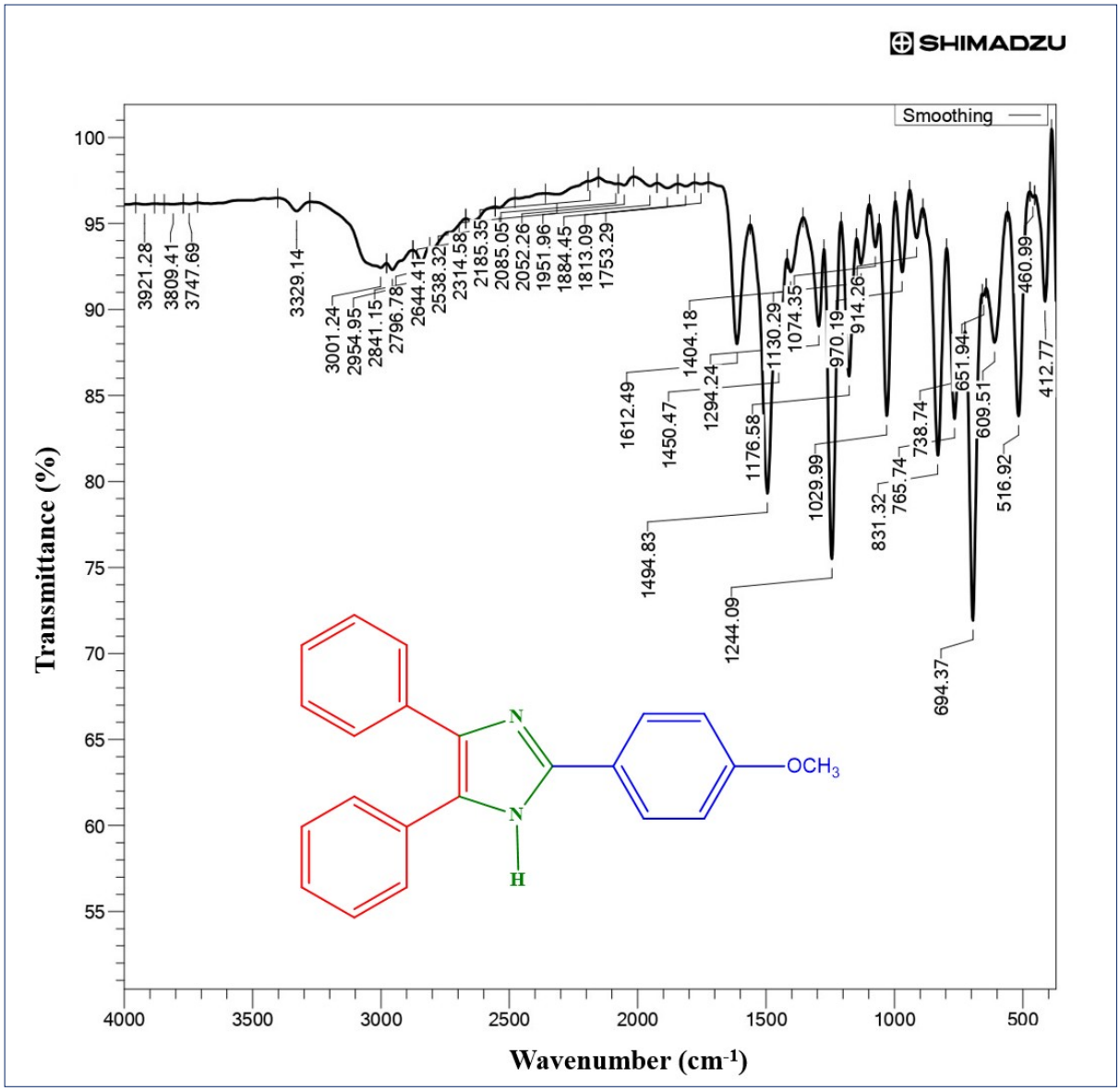
Spectrum 5 : ^{1}H NMR Spectrum of 2-(4-methoxyphenyl)-4,5-diphenyl-1H-imidazole (4b)



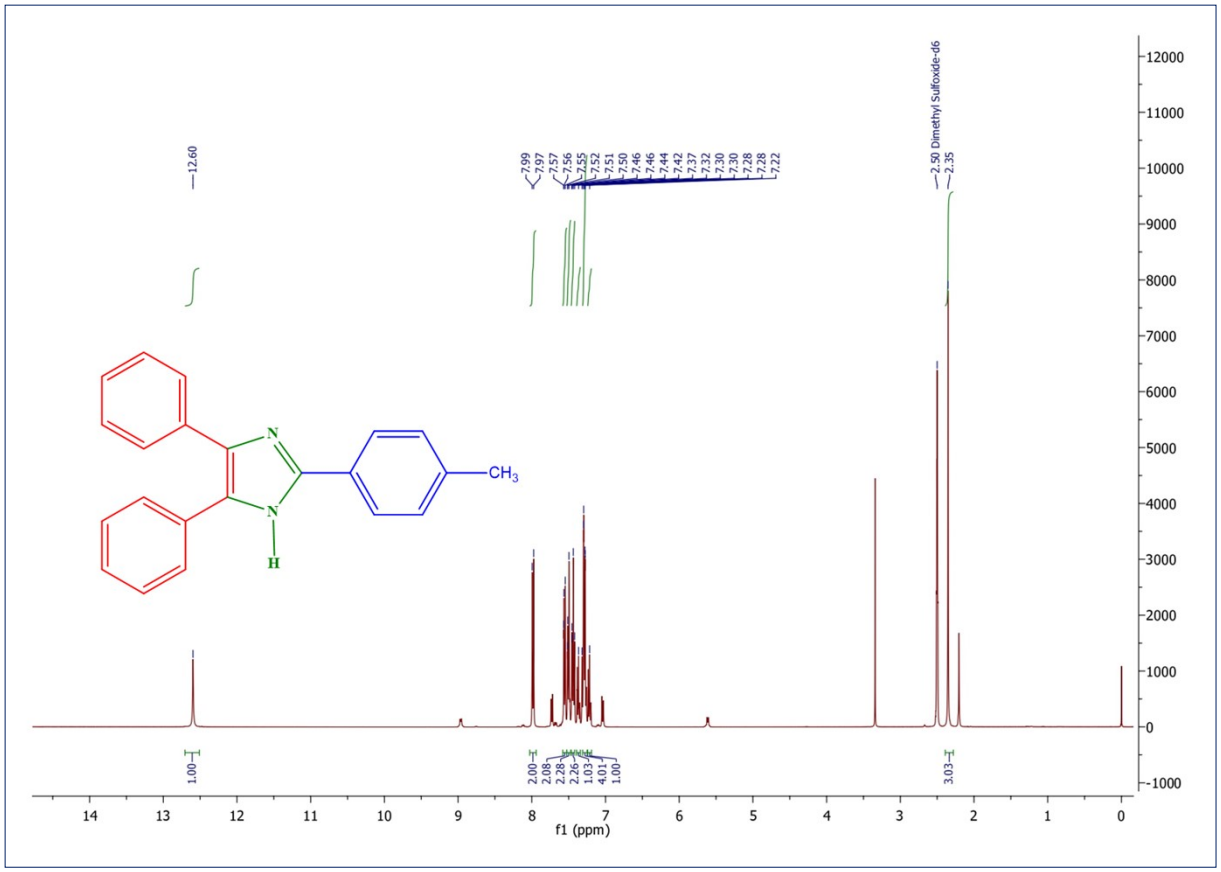
Spectrum 6 : ^{13}C NMR Spectrum of 2-(4-methoxyphenyl)-4,5-diphenyl-1H-imidazole (4b)



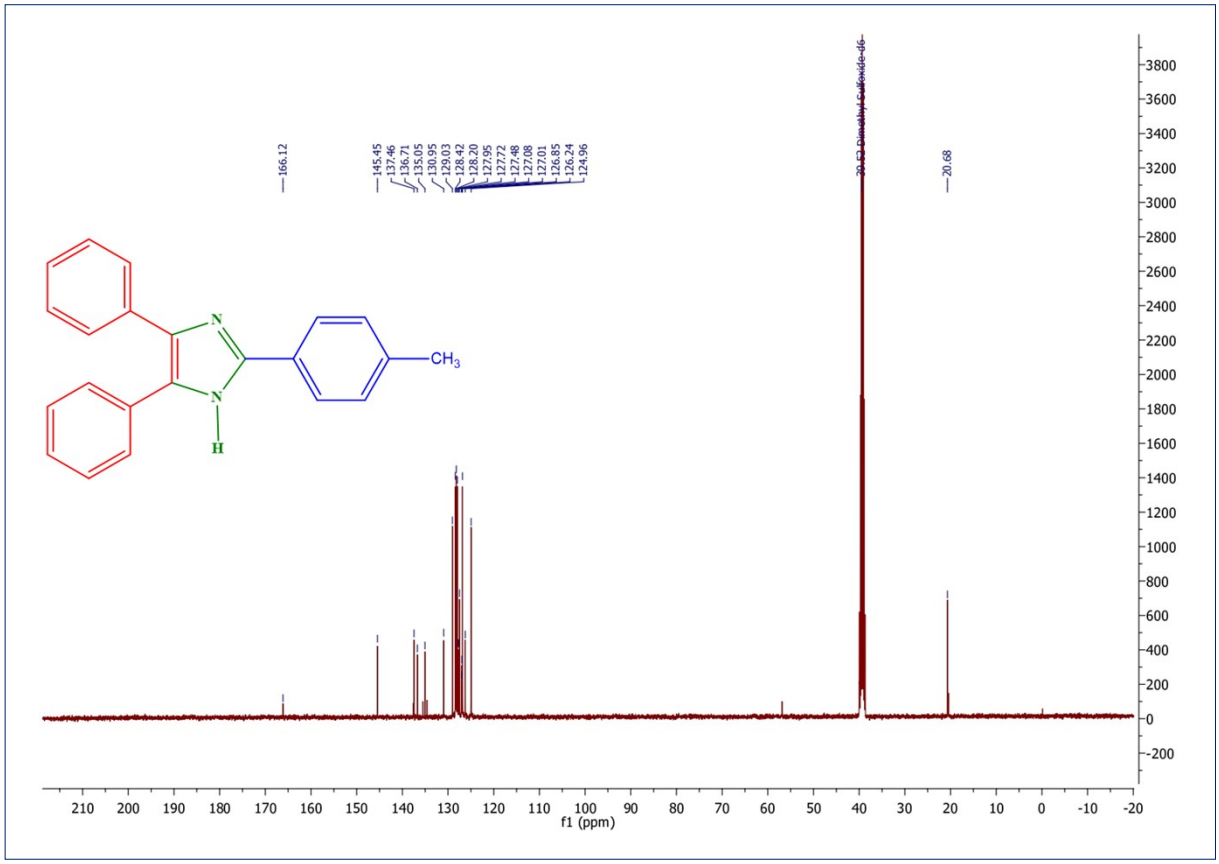
Spectrum 7 : Mass Spectrum of 2-(4-methoxyphenyl)-4,5-diphenyl-1H-imidazole (4b)



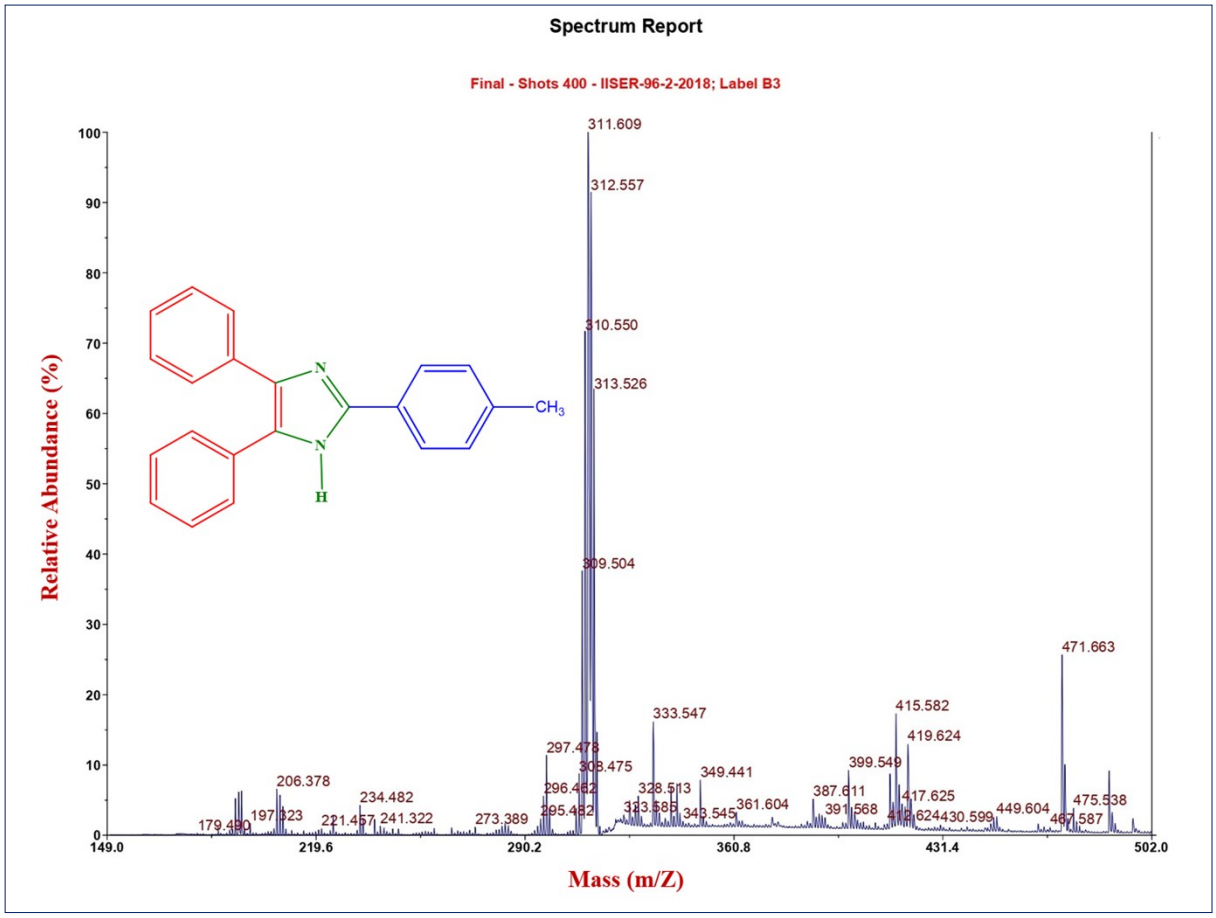
Spectrum 8 : IR Spectrum of 2-(4-methoxyphenyl)-4,5-diphenyl-1H-imidazole (4b)



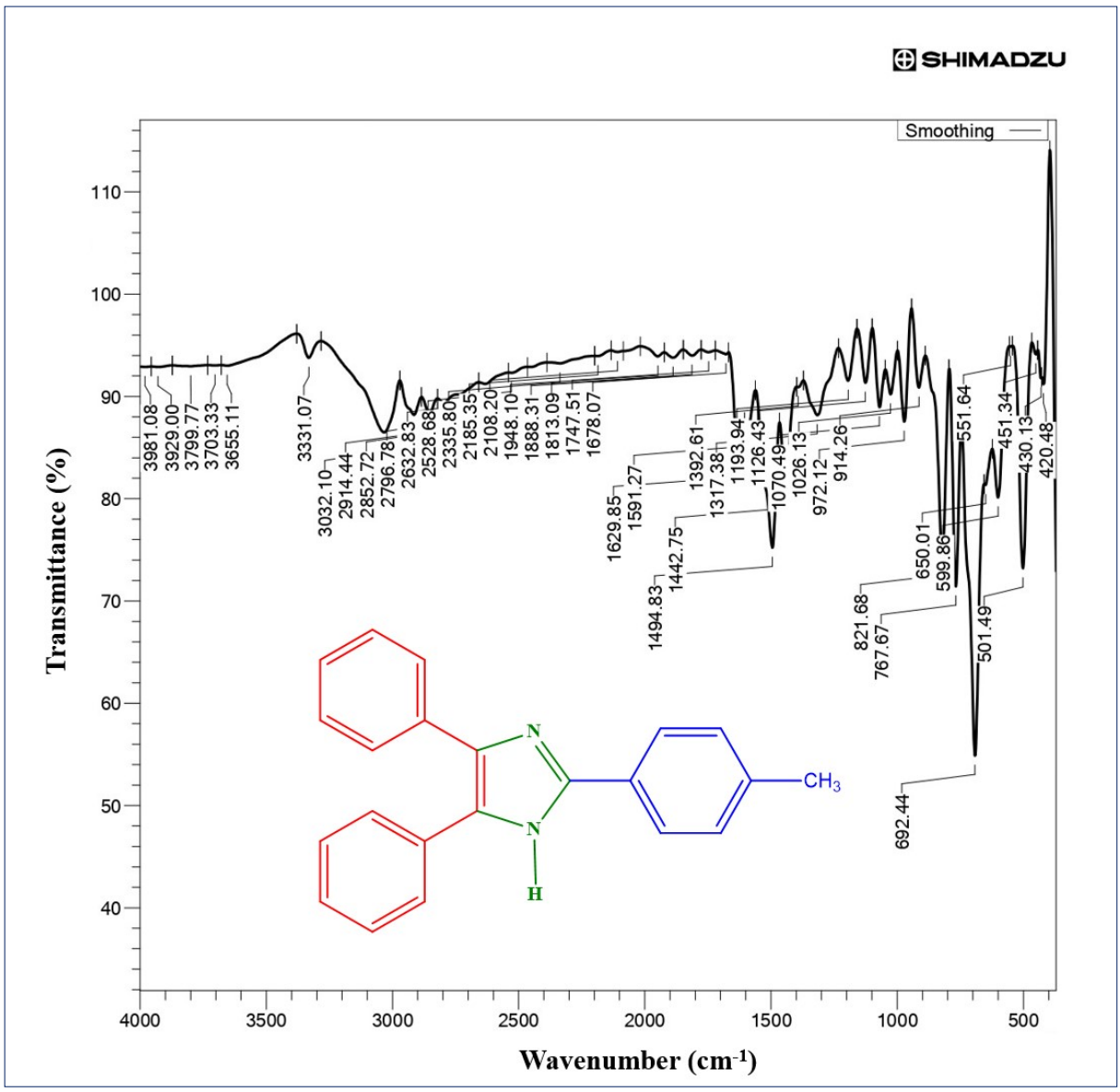
Spectrum 9 : ^{1}H NMR Spectrum of 2-(4-methylphenyl)-4,5-diphenyl-1H-imidazole (4c)



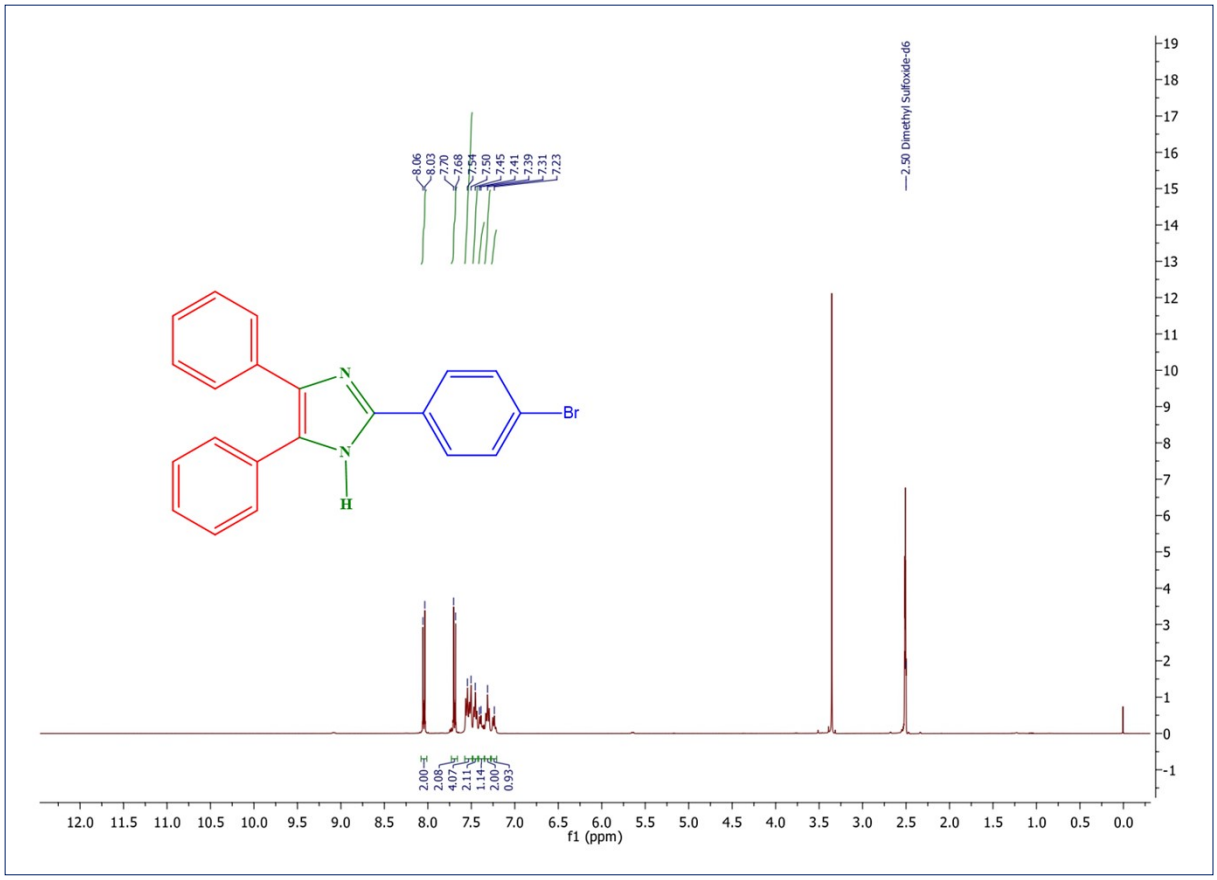
Spectrum 10 : ^{13}C NMR Spectrum of 2-(4-methylphenyl)-4,5-diphenyl-1H-imidazole (4c)



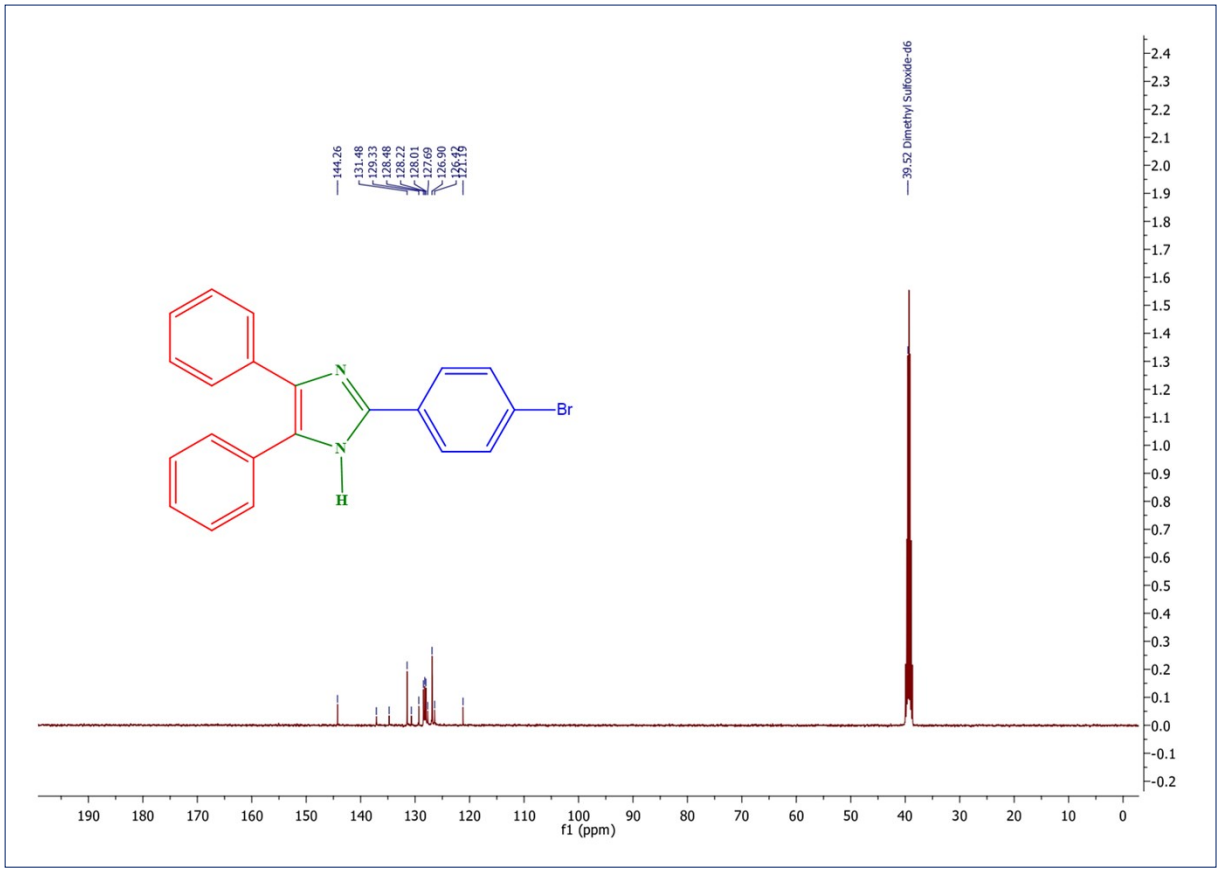
Spectrum 11 : Mass Spectrum of 2-(4-methylphenyl)-4,5-diphenyl-1H-imidazole (4c)



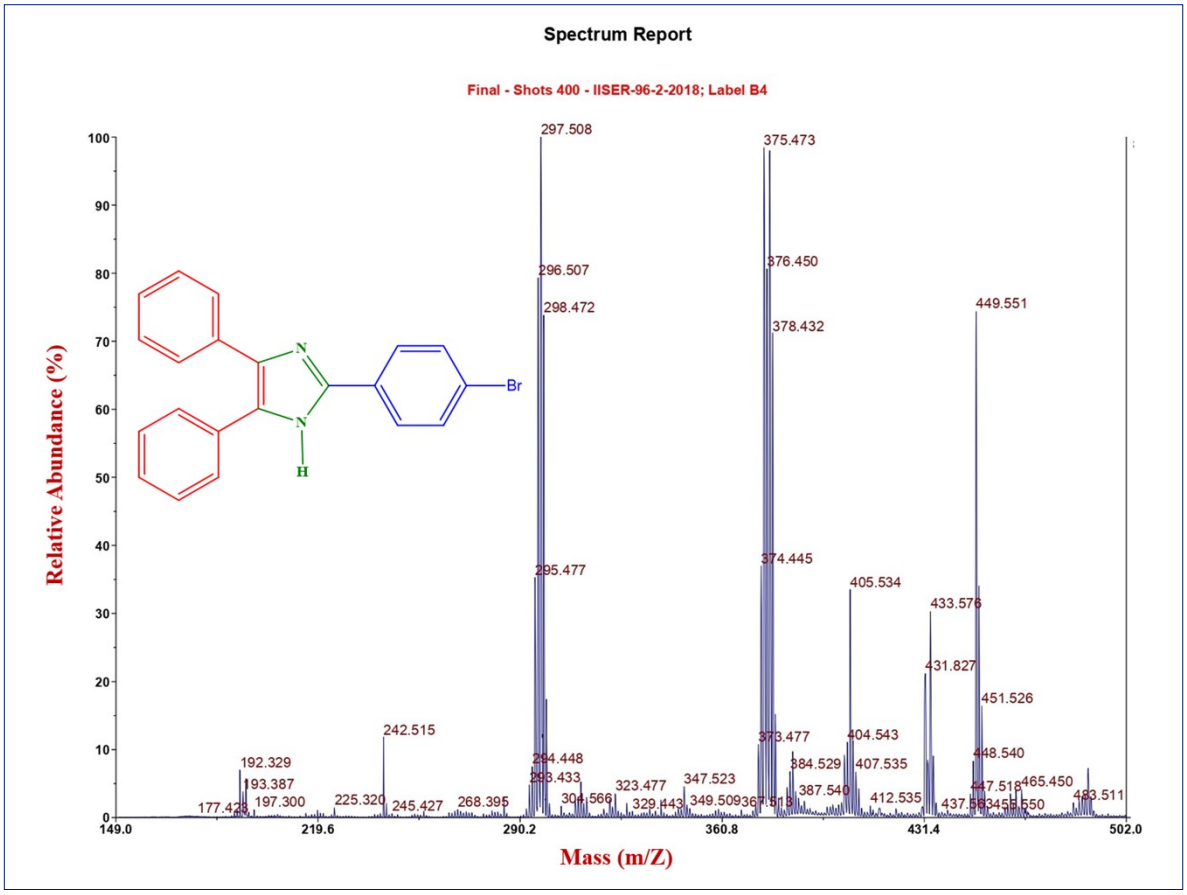
Spectrum 12 : IR Spectrum of 2-(4-methylphenyl)-4,5-diphenyl-1H-imidazole (4c)



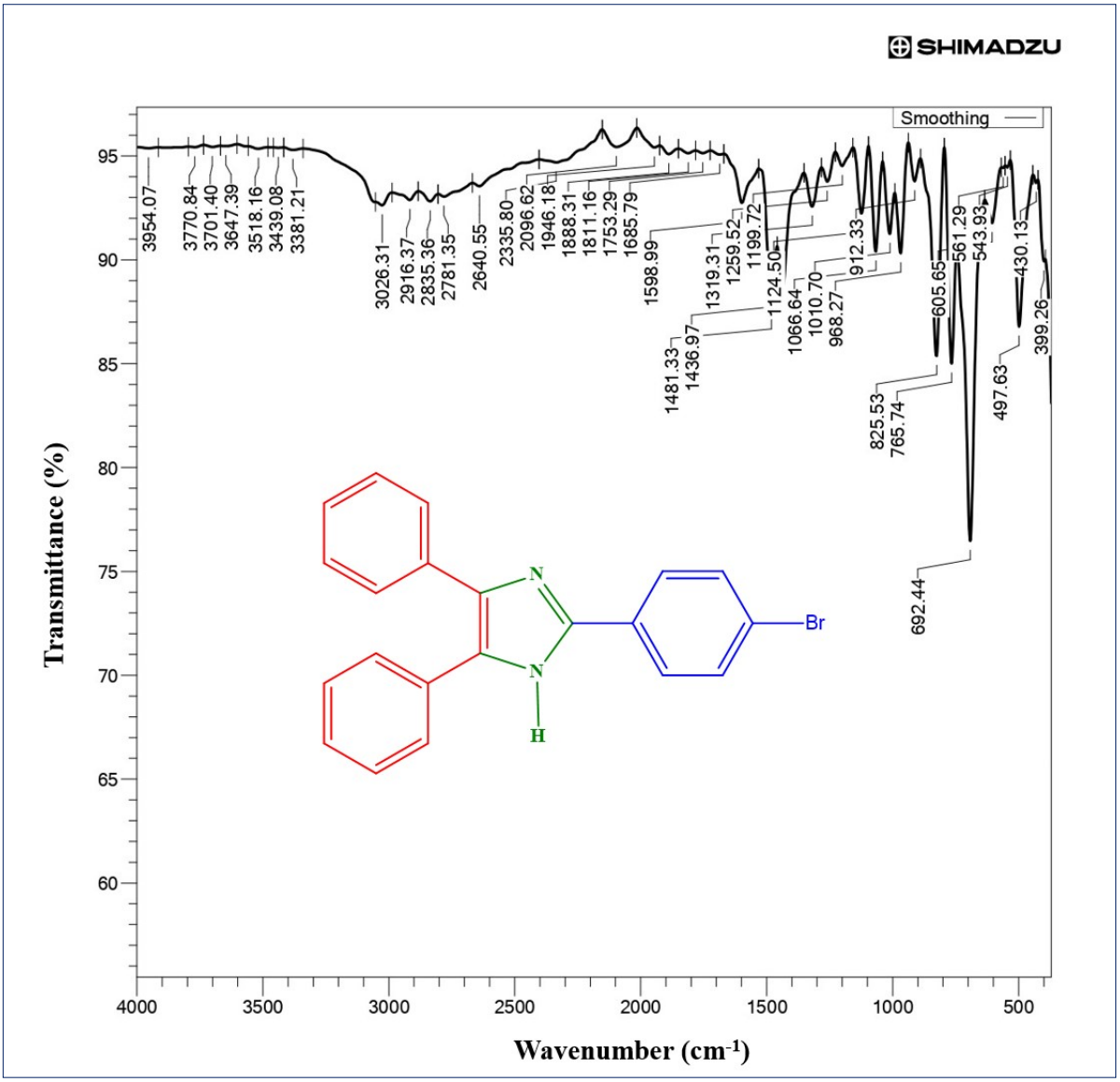
Spectrum 13 : ^{1}H NMR Spectrum of 2-(4-bromophenyl)-4,5-diphenyl-1H-imidazole (4d)



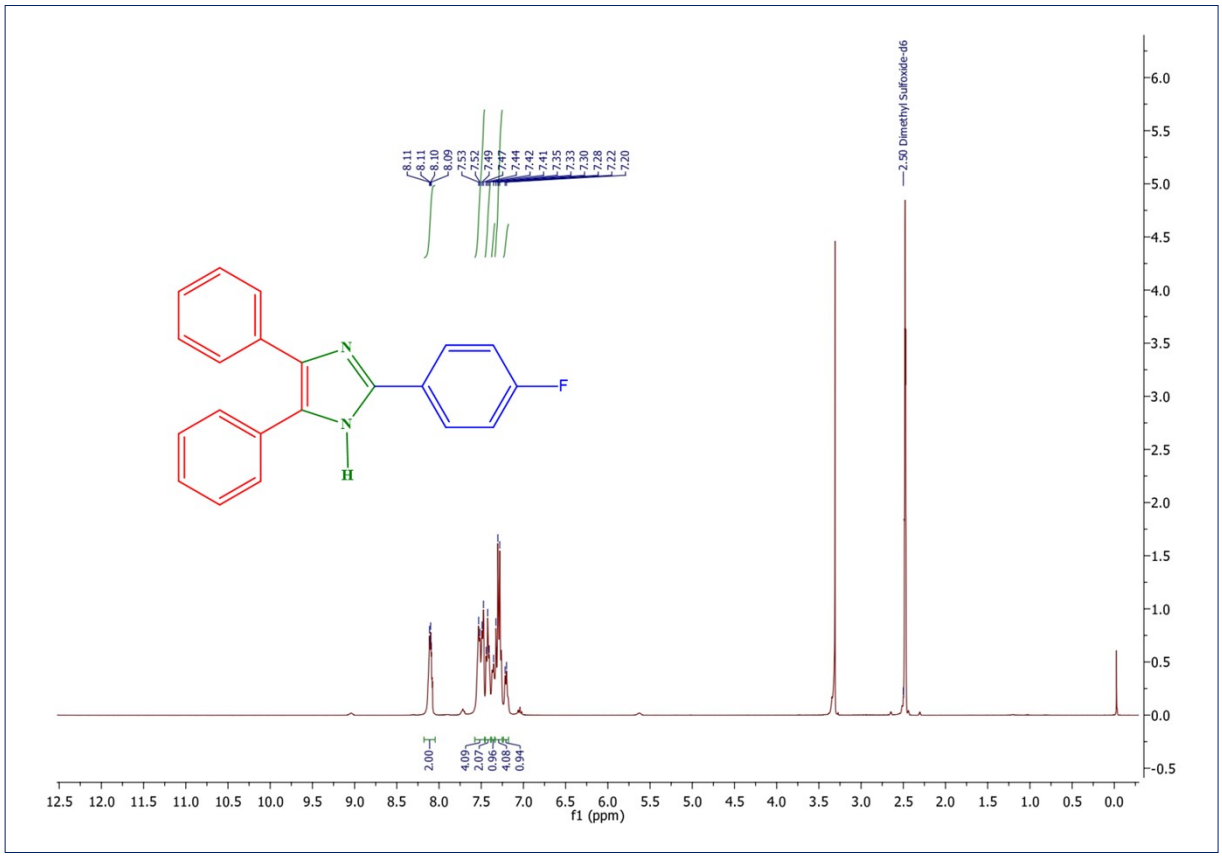
Spectrum 14 : ^{13}C NMR Spectrum of 2-(4-bromophenyl)-4,5-diphenyl-1H-imidazole (4d)



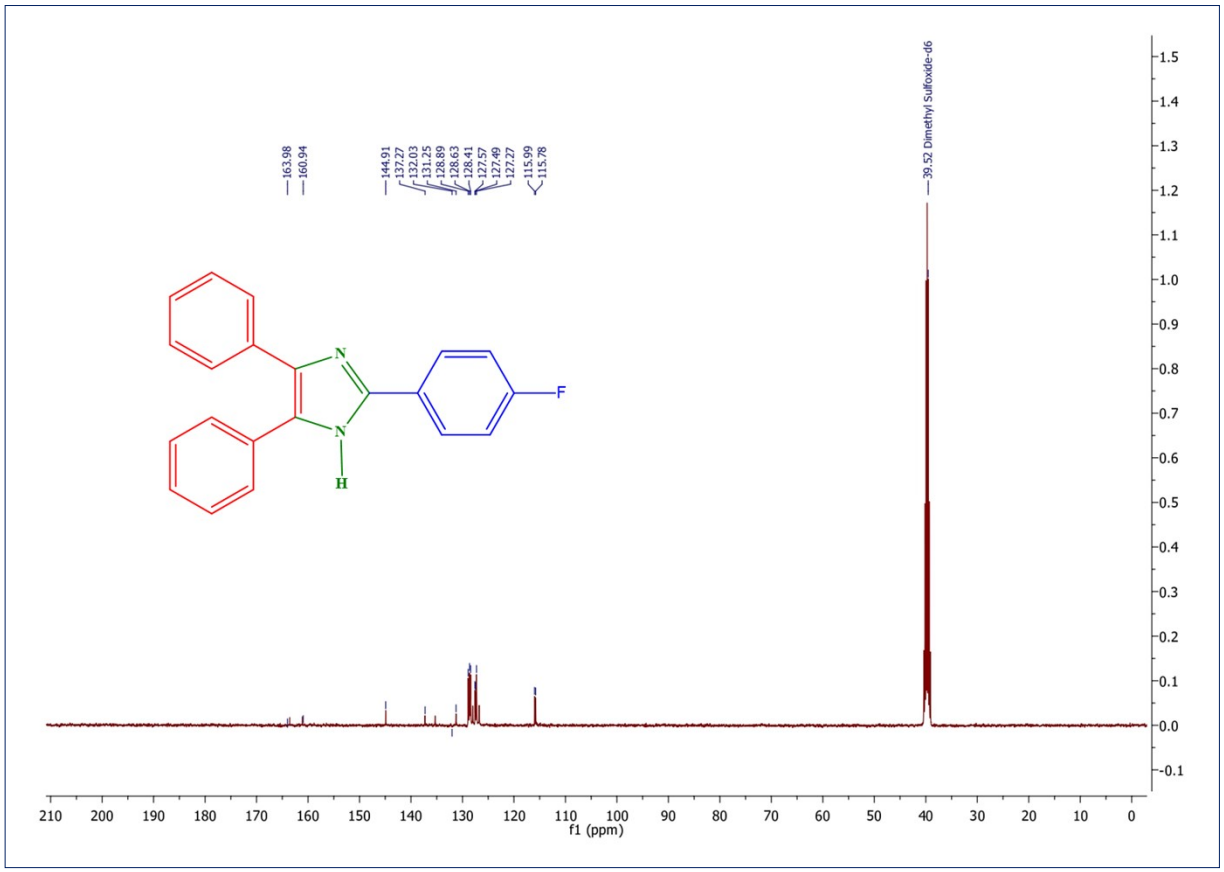
Spectrum 15 : Mass Spectrum of 2-(4-bromophenyl)-4,5-diphenyl-1H-imidazole (4d)



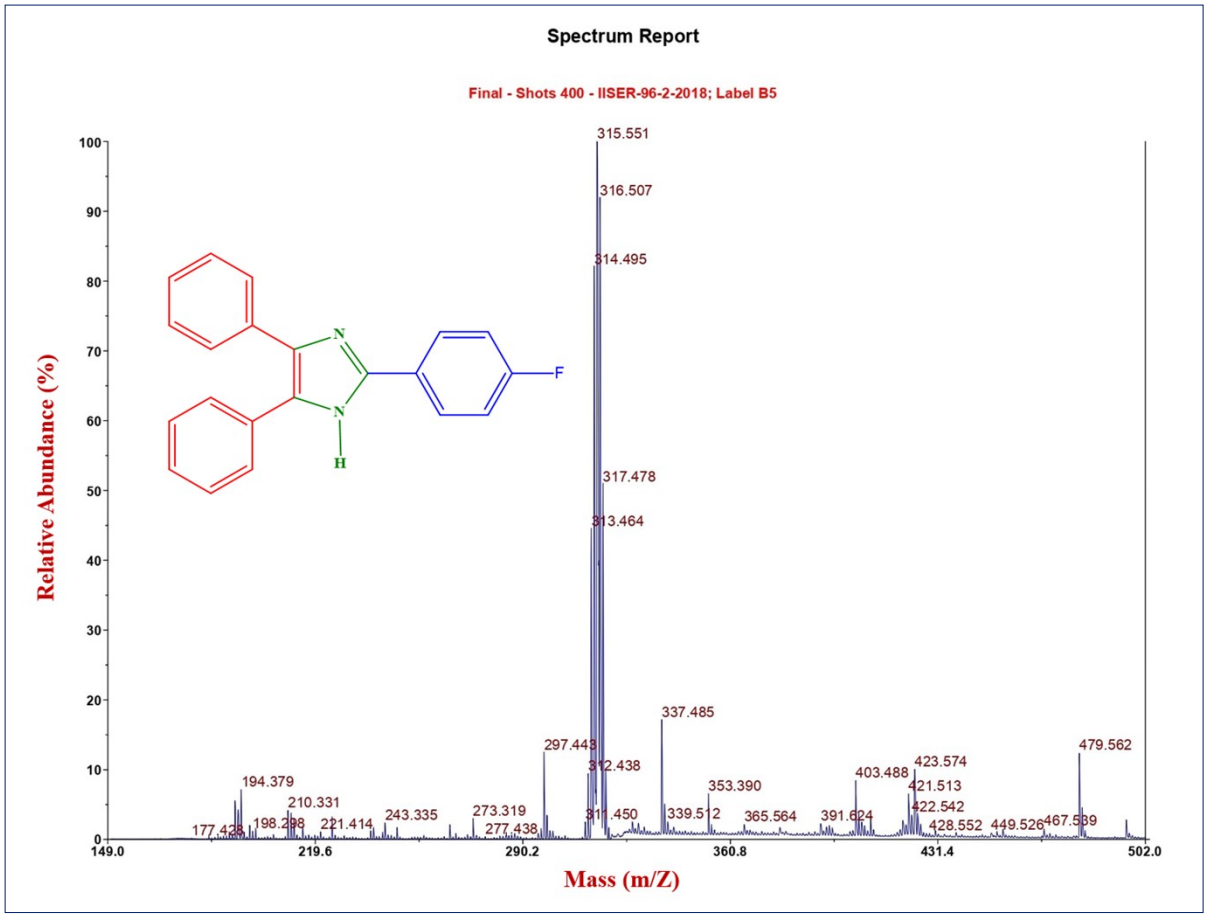
Spectrum 16 : IR Spectrum of 2-(4-bromophenyl)-4,5-diphenyl-1H-imidazole (4d)



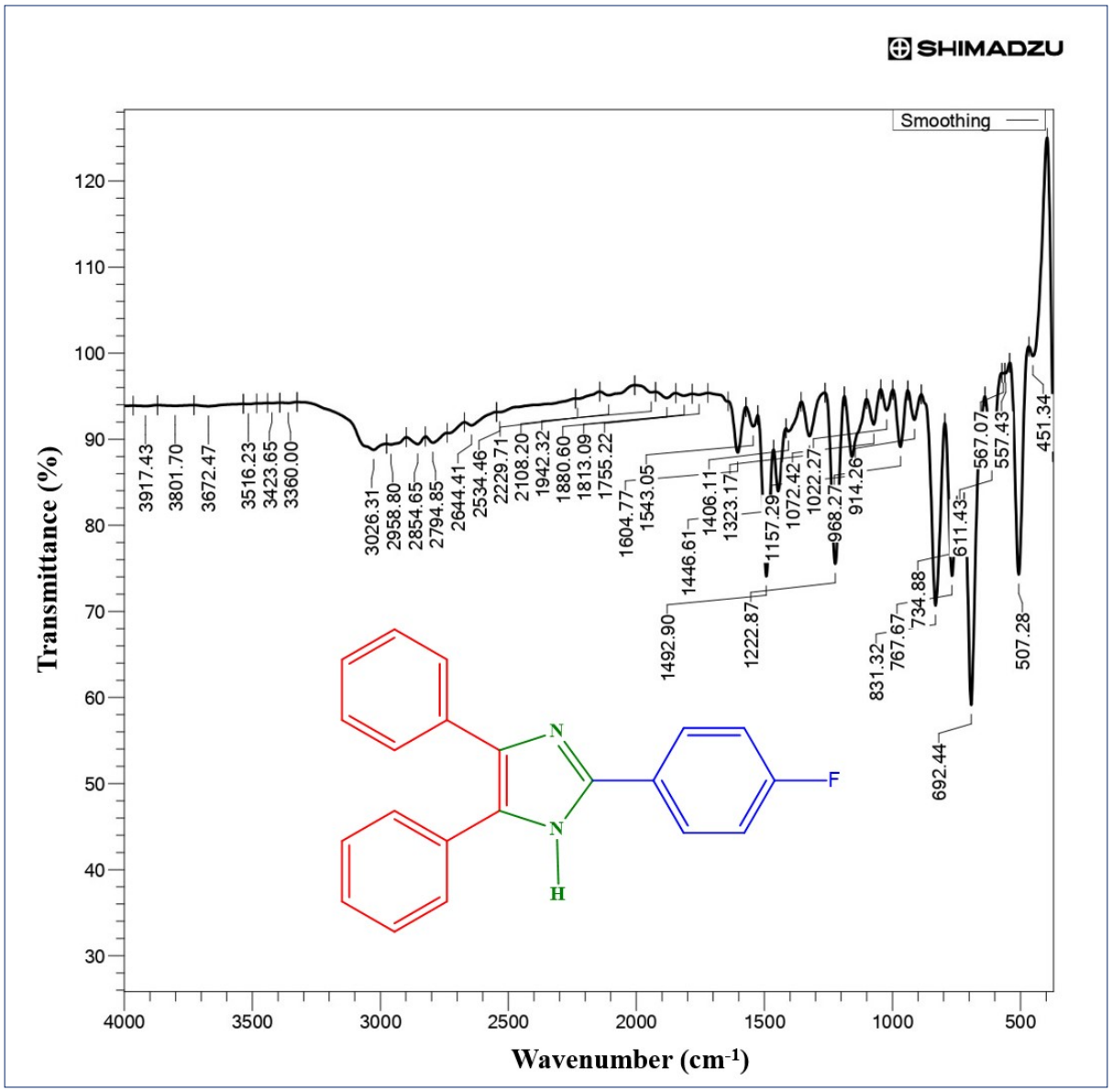
Spectrum 17 : ^{1}H NMR Spectrum of 2-(4-fluorophenyl)-4,5-diphenyl-1H-imidazole (4e)



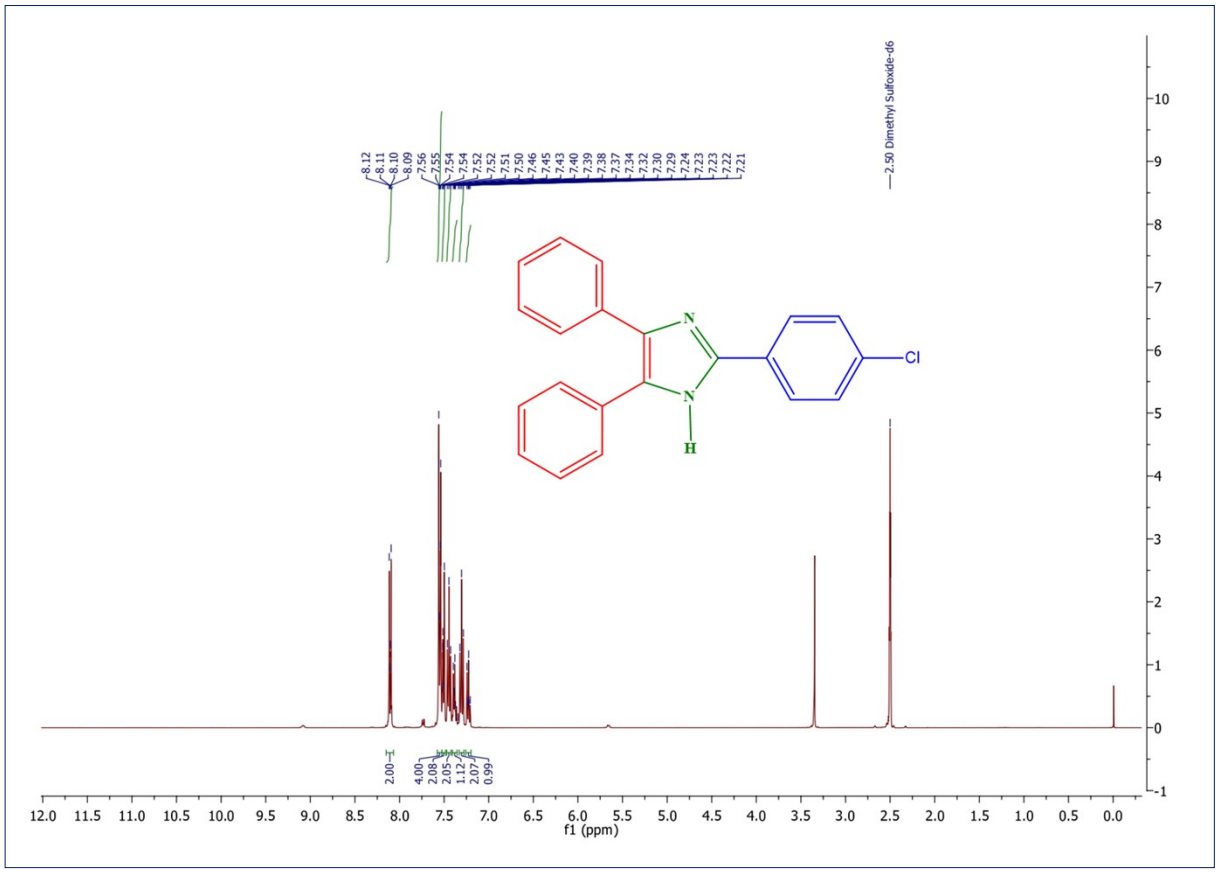
Spectrum 18 : ^{13}C NMR Spectrum of 2-(4-fluorophenyl)-4,5-diphenyl-1H-imidazole (4e)



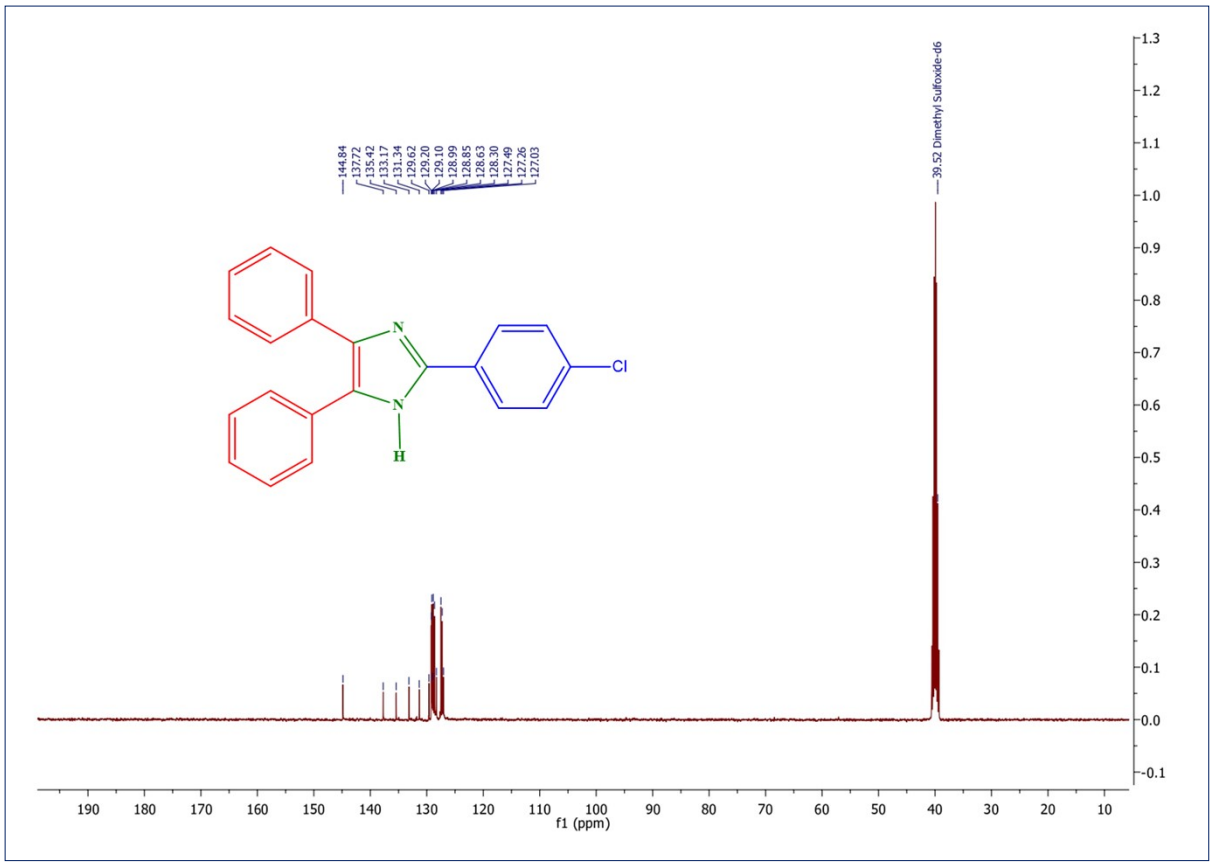
Spectrum 19 : Mass Spectrum of 2-(4-fluorophenyl)-4,5-diphenyl-1H-imidazole (4e)



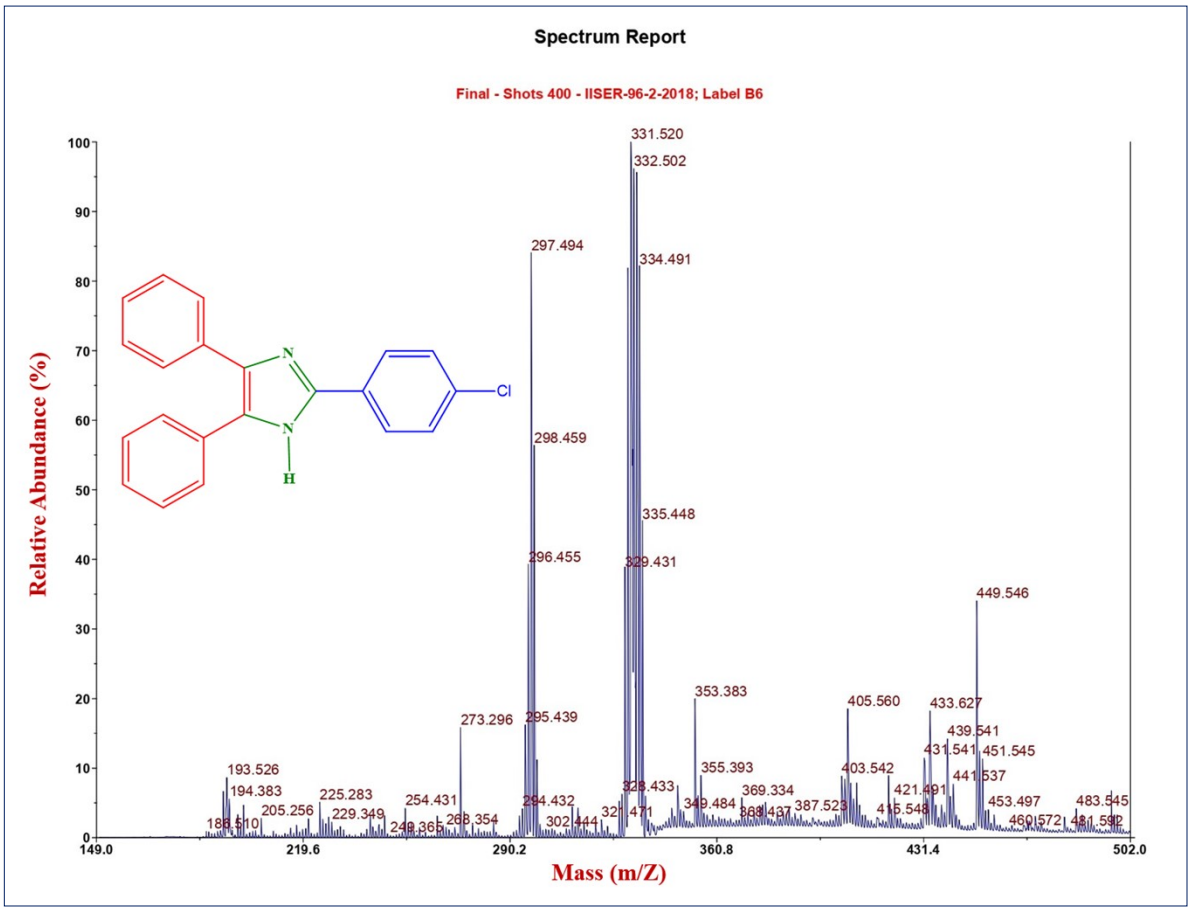
Spectrum 20 : IR Spectrum of 2-(4-fluorophenyl)-4,5-diphenyl-1H-imidazole (4e)



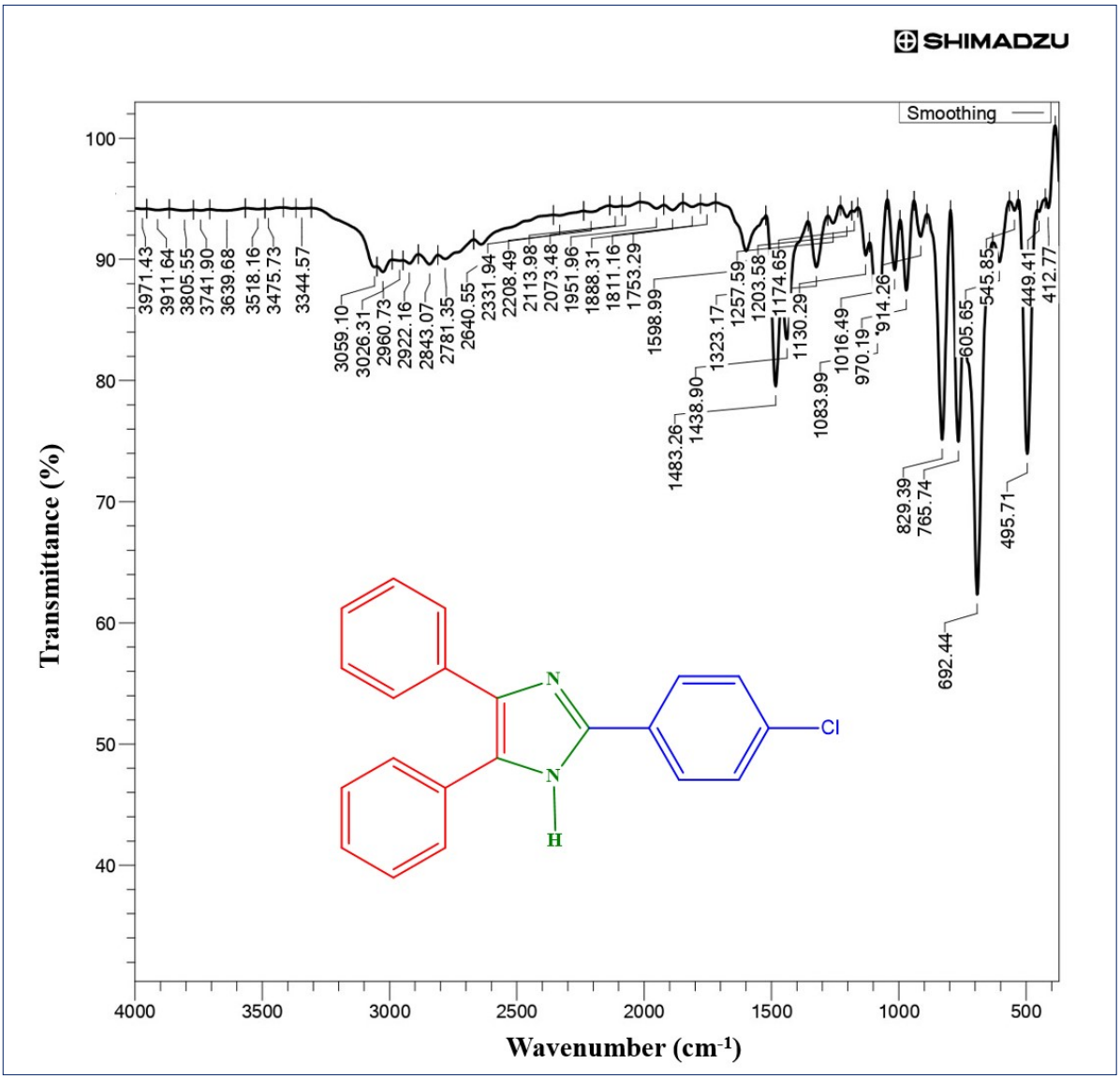
Spectrum 21 : ^{1}H NMR Spectrum of 2-(4-chlorophenyl)-4,5-diphenyl-1H-imidazole (4f)



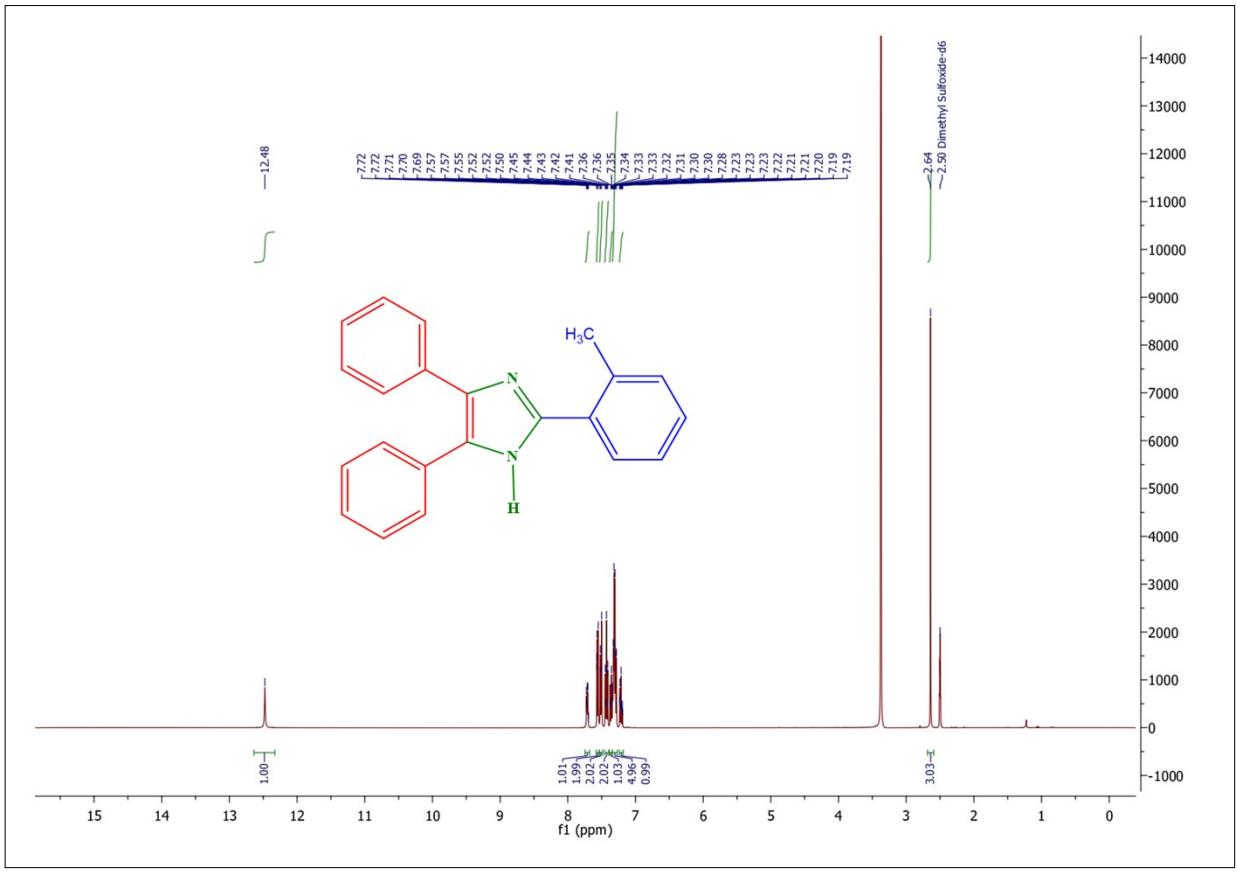
Spectrum 22 : ^{13}C NMR Spectrum of 2-(4-chlorophenyl)-4,5-diphenyl-1H-imidazole (4f)



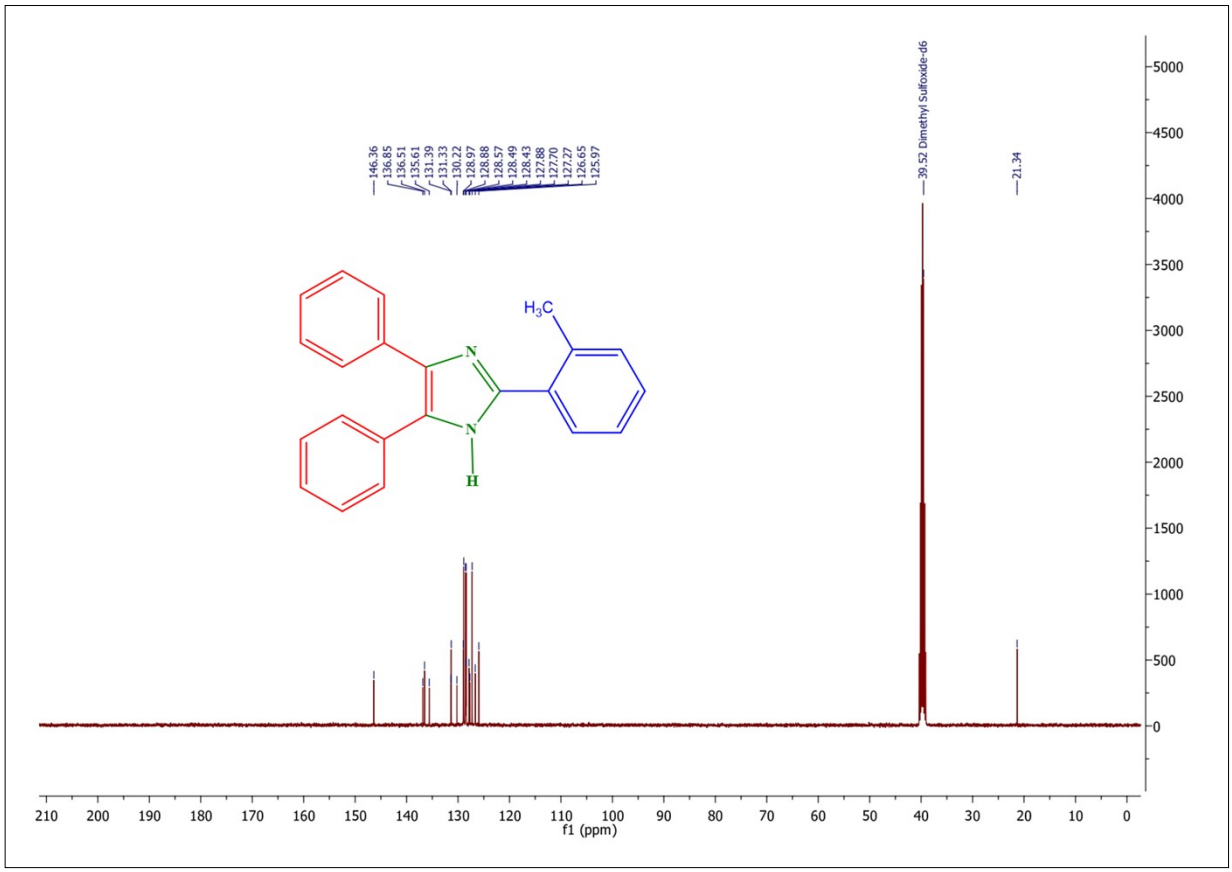
Spectrum 23 : Mass Spectrum of 2-(4-chlorophenyl)-4,5-diphenyl-1H-imidazole (4f)



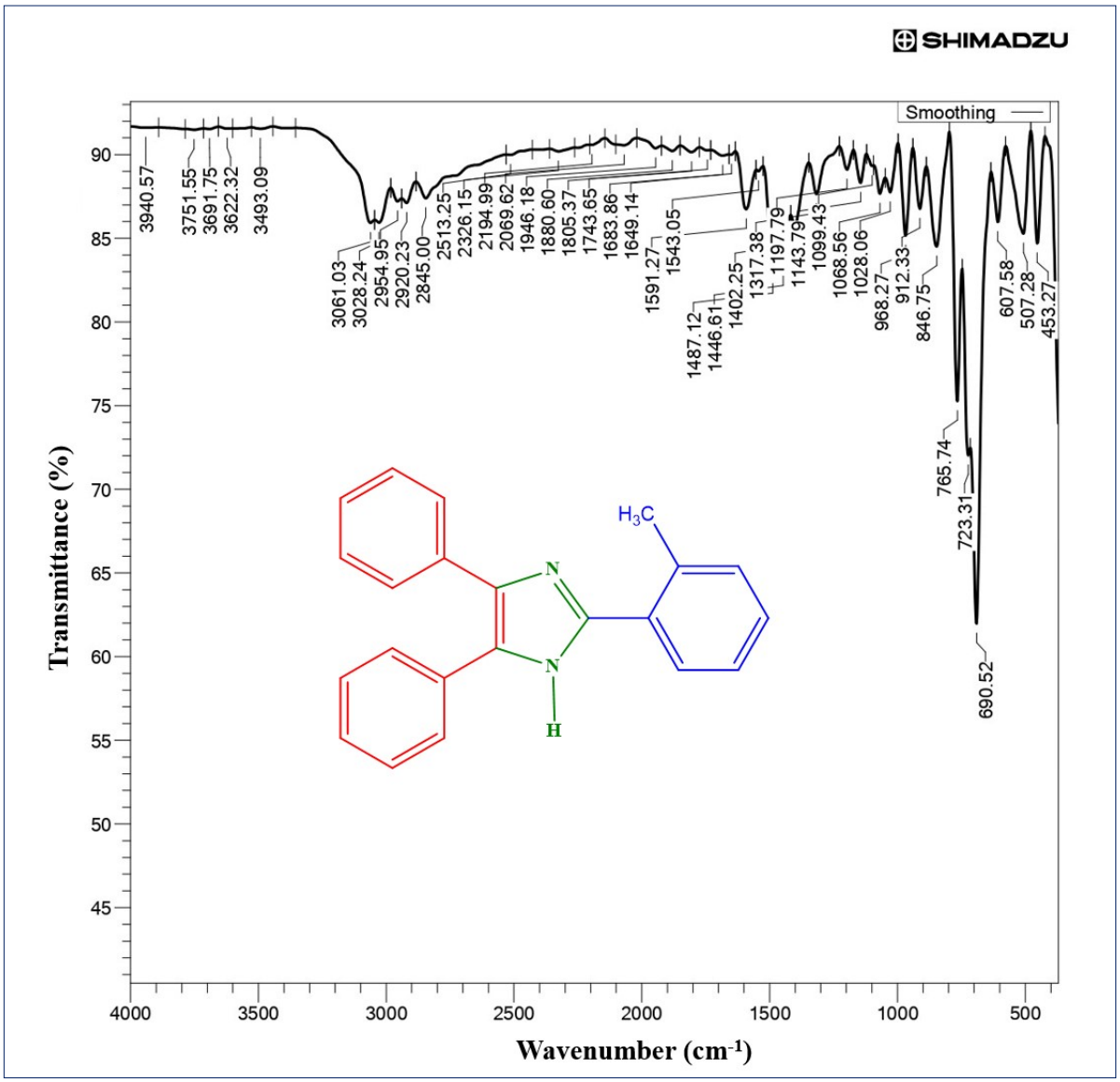
Spectrum 24 : IR Spectrum of 2-(4-chlorophenyl)-4,5-diphenyl-1H-imidazole (4f)



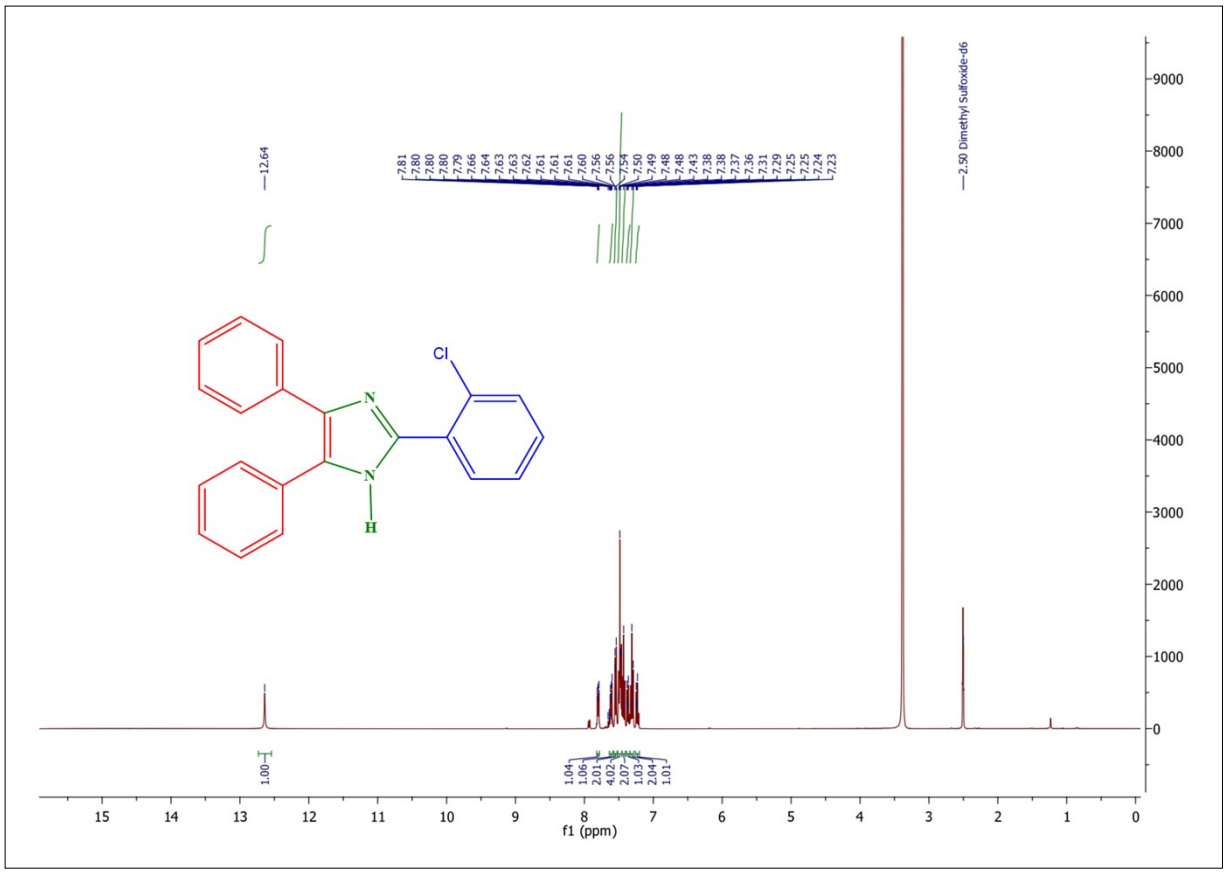
Spectrum 25 : ^{1}H Spectrum of 2-(2-methylphenyl)-4,5-diphenyl-1H-imidazole (4h)



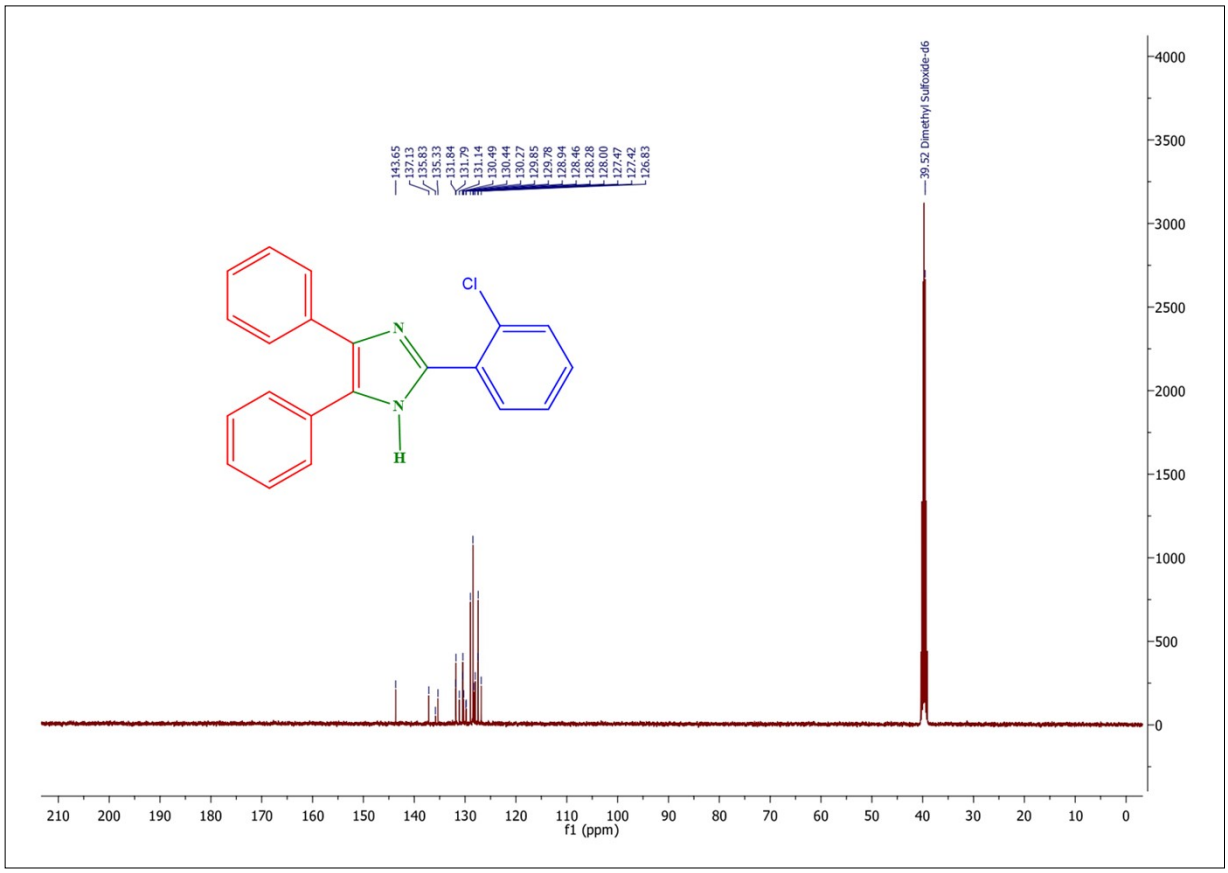
Spectrum 26 : ^{13}C Spectrum of 2-(2-methylphenyl)-4,5-diphenyl-1H-imidazole (4h)



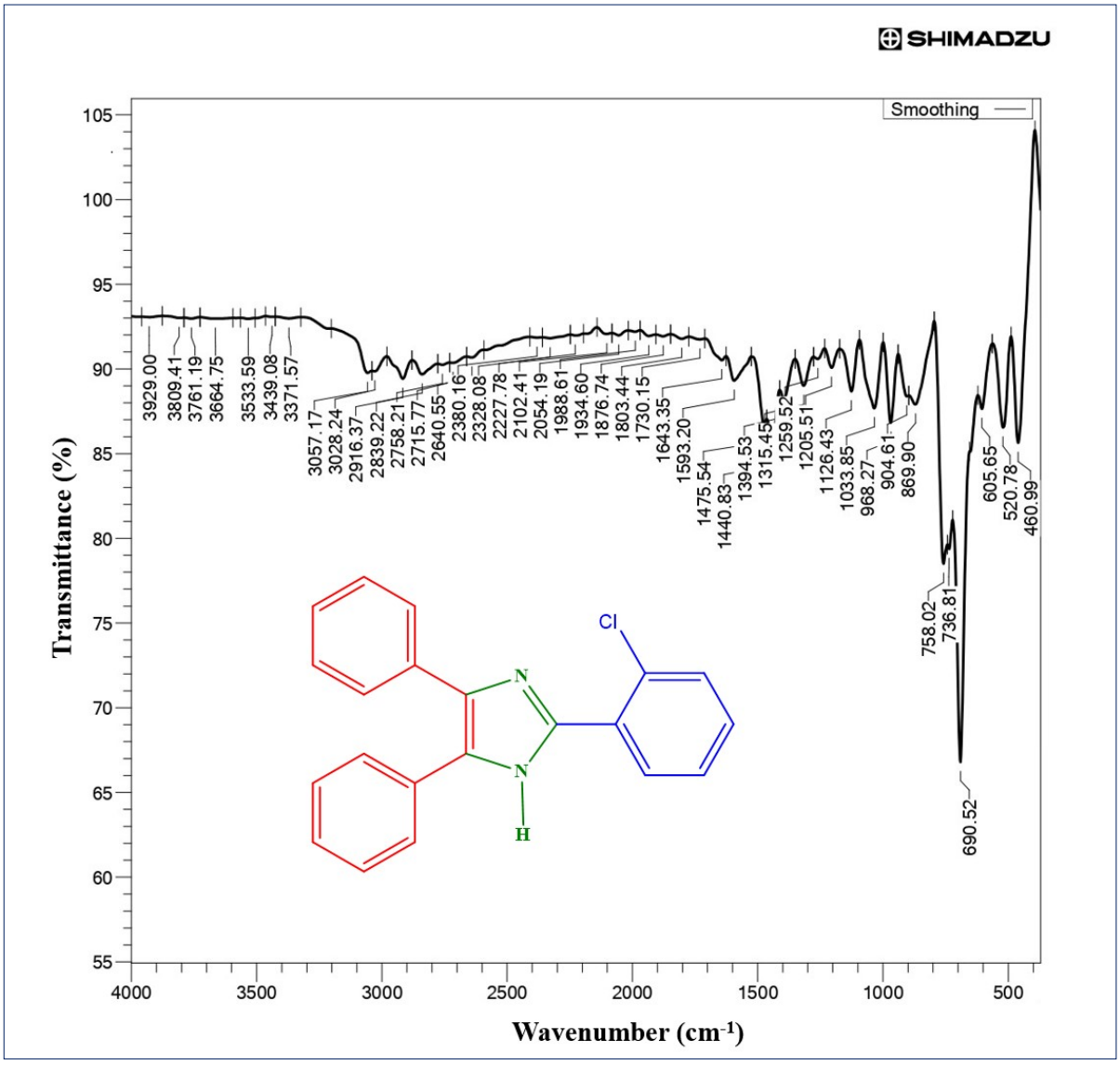
Spectrum 27 : IR Spectrum of 2-(2-methylphenyl)-4,5-diphenyl-1H-imidazole (4h)



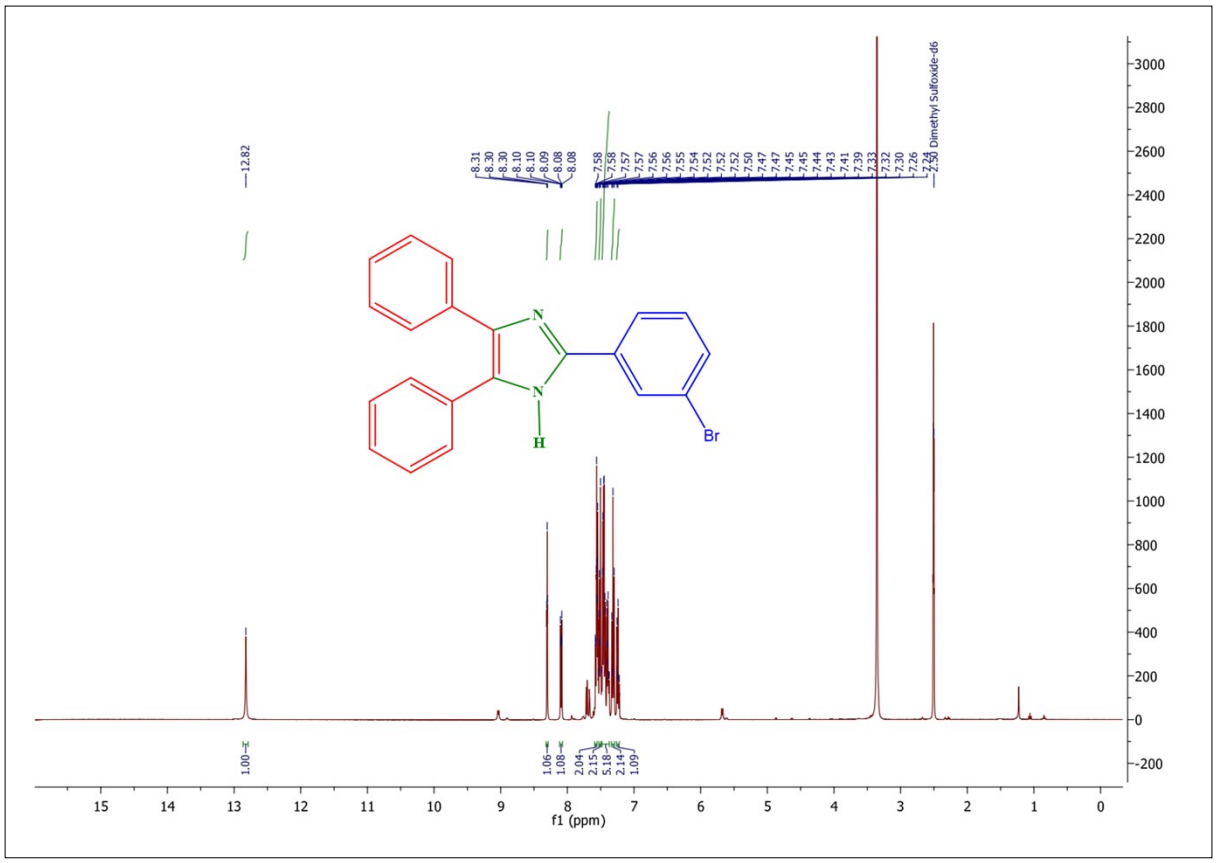
Spectrum 28 : ^{1}H Spectrum of 2-(2-chlorophenyl)-4,5-diphenyl-1H-imidazole (4i)



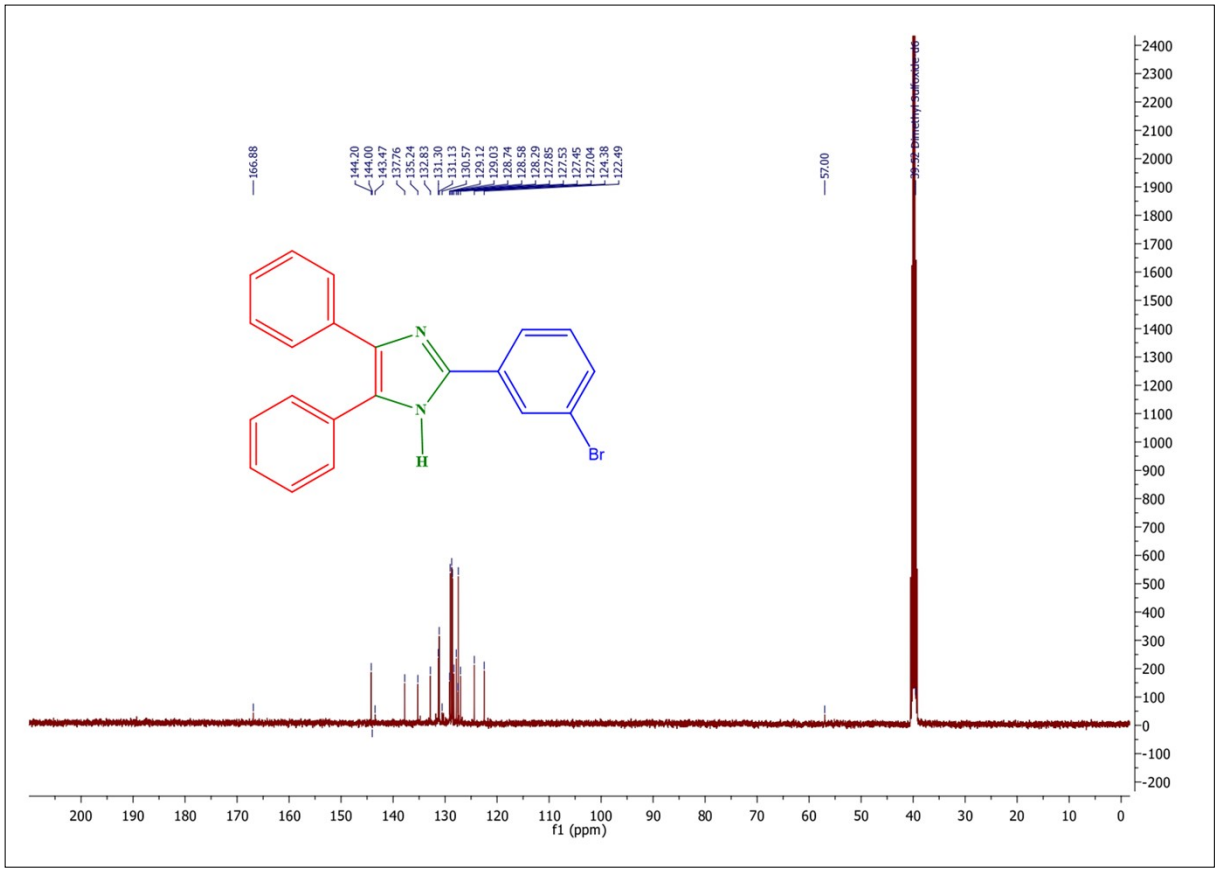
Spectrum 29 : ^{13}C Spectrum of 2-(2-chlorophenyl)-4,5-diphenyl-1H-imidazole (4i)



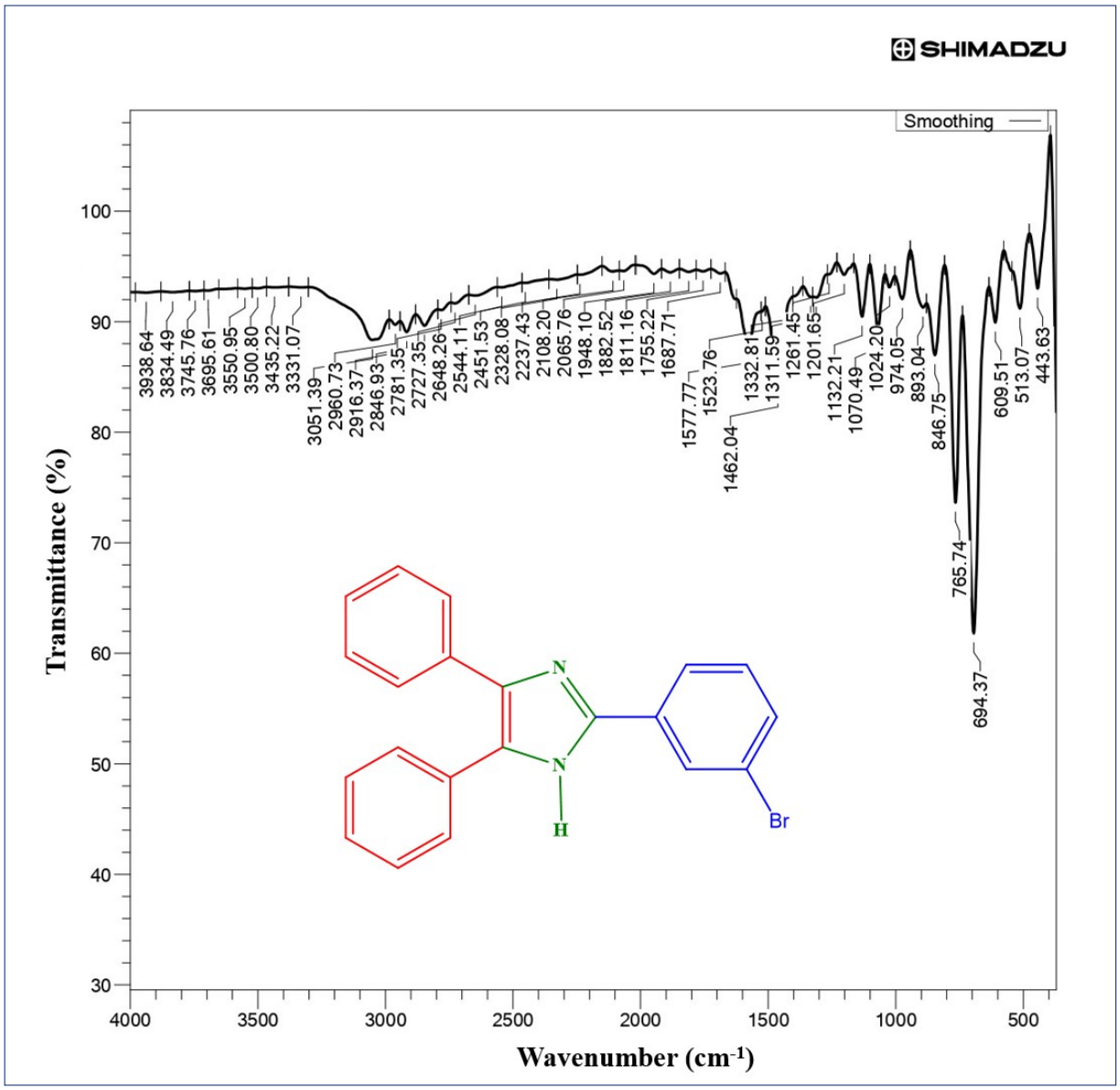
Spectrum 30 : IR Spectrum of 2-(2-chlorophenyl)-4,5-diphenyl-1H-imidazole (4i)



Spectrum 31 : ^{1}H Spectrum of 2-(3-bromophenyl)-4,5-diphenyl-1H-imidazole (4j)



Spectrum 32 : ^{13}C Spectrum of 2-(3-bromophenyl)-4,5-diphenyl-1H-imidazole (4j)



Spectrum 33 : IR Spectrum of 2-(3-bromophenyl)-4,5-diphenyl-1H-imidazole (4j)

Spectral data of represented arylimidazole derivatives

2, 4, 5-triphenyl-1H-imidazole (4a)

White solid; M.P. : 269–270 °C

IR (υ_{max} cm^{-1}): 3317 (N-H), 3037, 2972 (Ar–H), 1589 (C=N), 1483 (C=C aromatic).

^{1}H NMR (400 MHz, - DMSO, δ ppm) : 12.51 (s, 1H), 8.03 (d, J = 8.8 Hz, 2H), 7.74 (d, J = 7.0 Hz, 1H), 7.55 (d, J = 7.3 Hz, 2H), 7.52 – 7.40 (m, 4H), 7.36 (t, J = 7.2 Hz, 1H), 7.32 – 7.27 (m, 2H), 7.22 (t, J = 7.3 Hz, 1H), 7.05 (d, J = 8.8 Hz, 2H).

^{13}C NMR (101 MHz, DMSO, δ ppm) : 166.76 (s), 159.89 (s), 158.43 (s), 146.09 (s), 137.23 (s), 135.80 (s), 135.35 (s), 133.31 (s), 131.66 (d, J = 10.3 Hz), 129.29 – 128.48 (m), 128.10 (d, J = 3.4 Hz), 127.61 (d, J = 17.6 Hz), 127.17 (s), 126.88 (s), 123.61 (s), 114.57 (s), 113.76 (s).

Mass of $C_{21}H_{16}N_2$, M^+ : 297.58.

2-(4-methoxyphenyl)-4,5-diphenyl-1H-imidazole (4b)

White solid; M.P. : 229-232 °C

IR (υ_{max} cm^{-1}): 3329 (N-H), 3001, 2954 (Ar–H), 1612 (C=N), 1494 (C=C aromatic).

^{1}H NMR (400 MHz, - DMSO, δ ppm) : 12.60 (s, 1H), 7.98 (d, J = 8.2 Hz, 2H), 7.58 – 7.53 (m, 2H), 7.52 – 7.47 (m, 2H), 7.44 (dd, J = 11.4, 4.3 Hz, 2H), 7.37 (s, 1H), 7.29 (dd, J = 8.1, 1.4 Hz, 4H), 7.22 (s, 1H), 2.47 (s, 3H).

^{13}C NMR (101 MHz, DMSO, δ ppm) : 166.91 (s), 156.45 (d, J = 2107.0 Hz), 137.73 (m), 147.91 (dd, J = 1718.0, 1233.5 Hz), 135.59 (m), 132.25 (m), 130.94 (m), 130.40 (m), 129.34 (m), 128.89 (m), 128.04 (m), 126.04 (m), 125.67 (s), 57.84 (s).

Mass of $C_{21}H_{18}N_2O$, M^+ : 327.59.

2-(4-methylphenyl)-4,5-diphenyl-1H-imidazole (4c)

White solid; M.P. : 228-230 °C

IR (υ_{max} cm^{-1}): 3331 (N-H), 3032, 2914 (Ar–H), 1591 (C=N), 1494 (C=C aromatic).

^{1}H NMR (400 MHz, - DMSO, δ ppm) : 12.60 (s, 1H), 7.98 (d, J = 8.2 Hz, 2H), 7.58 – 7.53 (m, 2H), 7.52 – 7.47 (m, 2H), 7.44 (dd, J = 11.4, 4.3 Hz, 2H), 7.37 (s, 1H), 7.29 (dd, J = 8.1, 1.4 Hz, 4H), 7.22 (s, 1H), 2.35 (s, 3H).

^{13}C NMR (101 MHz, DMSO, δ ppm) : 166.12 (s), 145.45 (s), 137.46 (d, J = 11.9 Hz), 136.71 (s), 135.05 (s), 130.95 (s), 129.03 (s), 128.42 (s), 128.20 – 127.48 (m), 127.08 (s), 127.01 (s), 126.85 – 126.24 (m), 124.96 (s), 20.68 (d, J = 26.3 Hz).

Mass of $C_{21}H_{18}N_2$, M^+ : 311.60.

2-(4-bromophenyl)-4,5-diphenyl-1H-imidazole (4d)

White solid; M.P. : 257-260 °C

IR (υ_{max} cm^{-1}): 3381 (N-H), 3026, 2916 (Ar–H), 1598 (C=N), 1481 (C=C aromatic).

^{1}H NMR (400 MHz, - DMSO, δ ppm) : 8.06 – 7.99 (m, 2H), 7.69 – 7.67 (m, 1H), 7.67 – 7.65 (m, 1H), 7.53 (t, J = 6.8 Hz, 2H), 7.47 (d, J = 12.8 Hz, 2H), 7.40 (dd, J = 18.8, 7.1 Hz, 2H), 7.31 (dd, J = 16.2, 8.6 Hz, 2H), 7.22 (t, J = 7.2 Hz, 1H).

^{13}C NMR (101 MHz, DMSO, δ ppm) : 144.99 (s), 137.85 (s), 135.50 (s), 132.21 (s), 131.43 (s), 130.05 (s), 128.83 (dd, J = 50.2, 29.2 Hz), 128.58 (d, J = 32.6 Hz), 128.58 (d, J = 32.6 Hz), 127.63 (s), 127.15 (s), 121.92 (s).

Mass of $C_{21}H_{15}BrN_2$, M^+ : 375.47.

2-(4-fluorophenyl)-4,5-diphenyl-1H-imidazole (4e)

White solid; M.P. : 188-190 °C

IR (υ_{max} cm^{-1}): 3360 (N-H), 3026, 2958 (Ar–H), 1604 (C=N), 1492 (C=C aromatic).

^{1}H NMR (400 MHz, - DMSO, δ ppm) : 8.24 – 8.05 (m, 2H), 7.54 (d, J = 6.2 Hz, 2H), 7.50 (d, J = 7.1 Hz, 2H), 7.44 (t, J = 7.2 Hz, 2H), 7.33 (dt, J = 16.3, 7.0 Hz, 5H), 7.22 (d, J = 6.9 Hz, 1H).

^{13}C NMR (101 MHz, DMSO, δ ppm) : 163.87 (s), 161.43 (s), 145.22 (s), 137.58 (s), 135.62 (s), 131.56 (s), 129.20 (s), 128.83 (d, J = 21.6 Hz), 128.46 – 127.74 (m), 127.58 (s), 127.07 (s), 116.30 (s), 116.09 (s).

Mass of $C_{21}H_{15}FN_2$, M^+ : 315.55.

2-(4-chlorophenyl)-4,5-diphenyl-1H-imidazole (4f)

White solid; M.P. : 261-263 °C

IR (υ_{max} cm^{-1}): 3344 (N-H), 3059, 2960 (Ar–H), 1598 (C=N), 1483 (C=C aromatic).

^{1}H NMR (400 MHz, - DMSO, δ ppm) : 8.16 – 8.06 (m, 2H), 7.56 (dd, J = 6.8, 1.6 Hz, 4H), 7.52 (dd, J = 5.2, 3.3 Hz, 2H), 7.45 (t, J = 7.5 Hz, 2H), 7.42 – 7.37 (m, 1H), 7.31 (t, J = 7.6 Hz, 2H), 7.26 – 7.21 (m, 1H).

13C NMR (101 MHz, DMSO, δ ppm) : 144.95 (s), 137.82 (s), 135.52 (s), 133.27 (s), 131.45 (s), 129.72 (s), 129.14 (dd, J = 23.2, 11.9 Hz), 128.74 (s), 128.41 (s), 127.60 (s), 127.36 (s), 127.14 (s).

Mass of $C_{21}H_{15}ClN_2$, M^+ : 331.52.

2-(2-methylphenyl)-4,5-diphenyl-1H-imidazole (4h)

White solid; M.P. : 253-255 °C

IR (υ_{max} cm^{-1}): 3493 (N-H), 3061, 2954 (Ar–H), 1591 (C=N), 1487 (C=C aromatic).

^{1}H NMR (400 MHz, - DMSO, δ ppm) : 12.48 (s, 1H), 7.75 – 7.68 (m, 1H), 7.58 – 7.54 (m, 2H), 7.53 – 7.49 (m, 2H), 7.46 – 7.40 (m, 2H), 7.36 (t, J = 2.3 Hz, 1H), 7.31 (ddd, J = 12.1, 6.0, 3.6 Hz, 5H), 7.24 – 7.18 (m, 1H), 2.64 (s, 3H).

^{13}C NMR (101 MHz, DMSO, δ ppm) : 146.36 (s), 136.85 (s), 136.51 (s), 135.61 (s), 131.36 (d, J = 5.3 Hz), 130.22 (s), 128.93 (d, J = 8.6 Hz), 128.72 – 128.29 (m), 127.79 (d, J = 18.0 Hz), 127.27 (s), 126.65 (s), 125.97 (s), 21.34 (s).

2-(2-chlorophenyl)-4,5-diphenyl-1H-imidazole (4i)

White solid; M.P. : 189-192 °C

IR (υmax cm−1): 3439 (N-H), 3057, 2916 (Ar–H), 1593 (C=N), 1475 (C=C aromatic).

1H NMR (400 MHz, - DMSO, δ ppm) : 12.64 (s, 1H), 7.82 – 7.78 (m, 1H), 7.64 – 7.59 (m, 1H), 7.57 – 7.53 (m, 2H), 7.52 – 7.46 (m, 4H), 7.43 (s, 2H), 7.39 – 7.34 (m, 1H), 7.30 (d, J = 7.6 Hz, 2H), 7.26 – 7.20 (m, 1H).

13C NMR (101 MHz, DMSO, δ ppm) : 143.65 (s), 137.13 (s), 135.83 (s), 135.33 (s), 131.81 (d, J = 4.8 Hz), 131.14 (s), 130.40 (t, J = 11.1 Hz), 129.82 (d, J = 7.3 Hz), 128.94 (s), 128.37 (d, J = 17.7 Hz), 128.00 (s), 127.44 (d, J = 4.7 Hz), 126.83 (s).

2-(3-bromophenyl)-4,5-diphenyl-1H-imidazole (4j)

White solid; M.P. : 293-295 °C

IR (υ_{max} cm^{-1}): 3435 (N-H), 3051, 2960 (Ar–H), 1577 (C=N), 1462 (C=C aromatic).

^{1}H NMR (400 MHz, - DMSO, δ ppm) : 12.82 (s, 1H), 8.30 (t, J = 1.7 Hz, 1H), 8.12 – 8.07 (m, 1H), 7.59 – 7.55 (m, 2H), 7.52 (dd, J = 5.2, 3.4 Hz, 2H), 7.42 (dtd, J = 9.5, 7.0, 1.6 Hz, 5H), 7.32 (dd, J = 10.2, 4.6 Hz, 2H), 7.26 – 7.22 (m, 1H).

^{13}C NMR (101 MHz, DMSO, δ ppm) : 166.88 (s), 144.20 (s), 144.10 – 143.90 (m), 143.47 (s), 137.76 (s), 135.24 (s), 132.83 (s), 131.22 (d, J = 16.8 Hz), 130.57 (s), 129.08 (d, J = 9.6 Hz), 128.66 (d, J = 15.9 Hz), 128.29 (s), 127.87 (s), 127.86 – 127.31 (m), 127.04 (s), 124.38 (s), 122.49 (s), 57.00 (s).