Electronic Supplementary Material (ESI) for RSC Advances.

A waste to wealth approach through utilization of nano-Ceramic Tile Waste as an accessible and inexpensive solid support to produce a heterogeneous solid acid catalyst: To kill three birds with one stone

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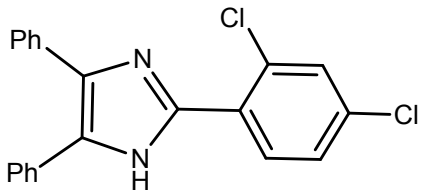
Spectral data of some selected compounds

2-(2,4-dichlorophenyl)-4,5-diphenylimidazole (Table 2, entry 4)



Melting point: 175-177, FT-IR (KBr), ν.max (cm^{-1}): 3400, 3020, 1597, 1473. ^{1}H-NMR (500 MHz; DMSO-d_6): δ_H (ppm): 12.65 (s, 1H, NH), 7.73 (d, 1H), 7.79 (d, 1H), 7.58–7.22 (m, 11H).

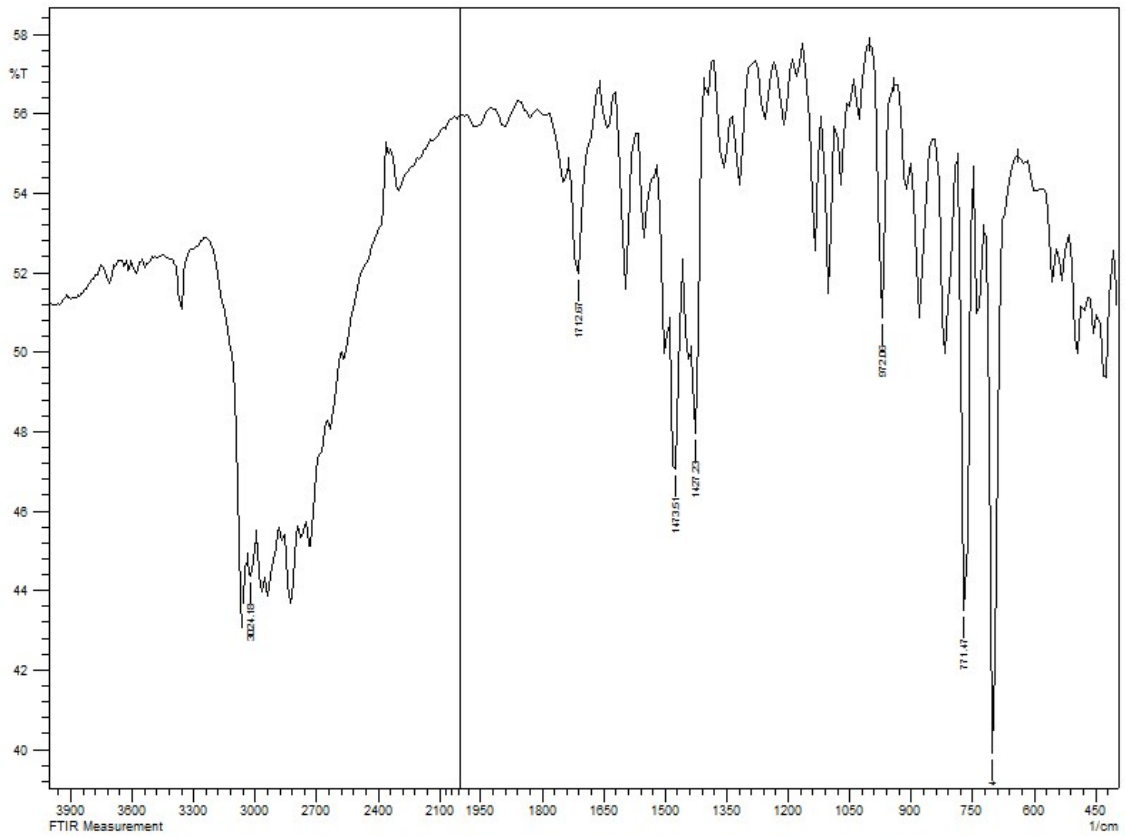


Fig.1. FT-IR (KBr discs) spectrum of 2-(2,4-dichlorophenyl)-4,5-diphenylimidazole (Table 2, entry 4).

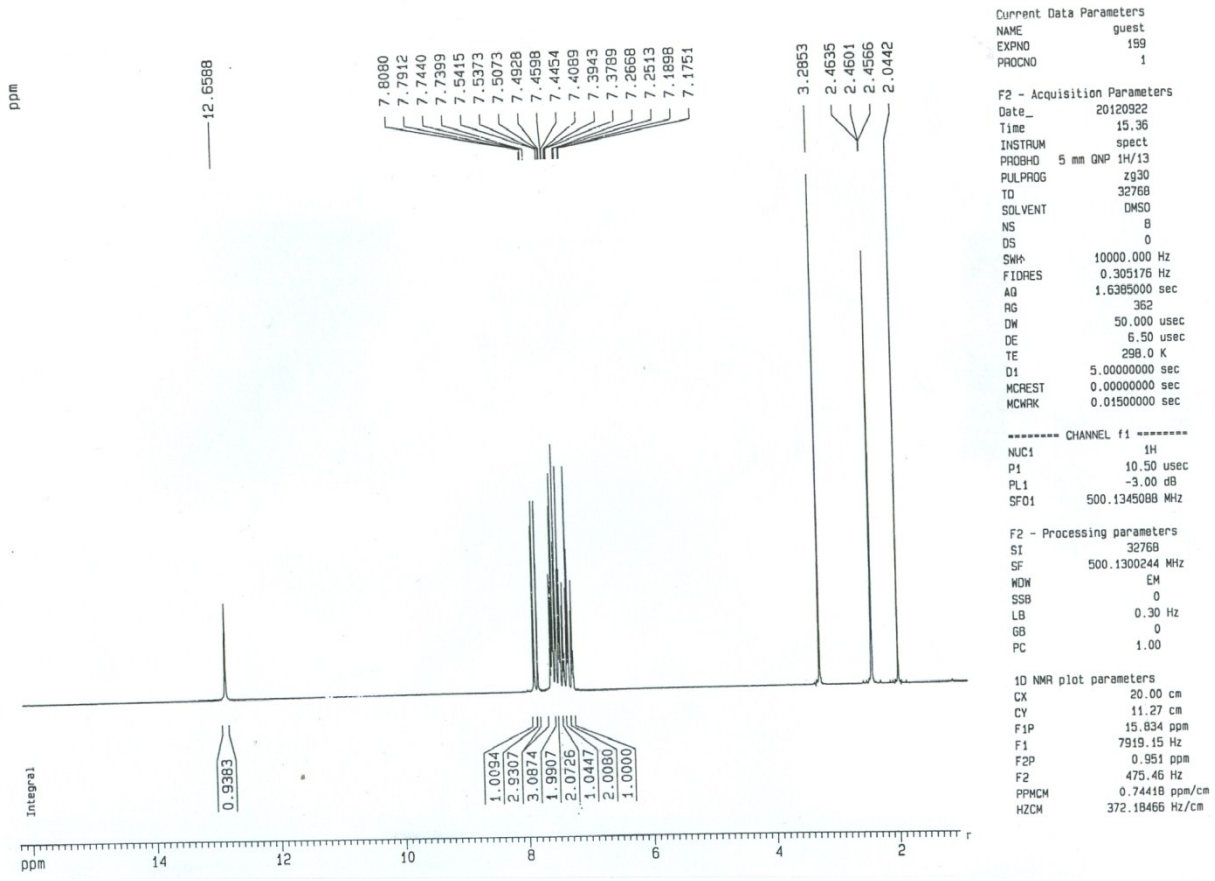
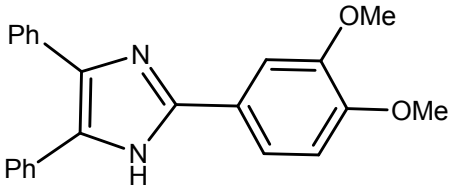


Fig. 2. ^{1}H-NMR spectrum of 2-(2,4-dichlorophenyl)-4,5-diphenylimidazole in DMSO-d_6 (Table 2, entry 4)

2-(3,4-Dimethoxyphenyl)-4,5-diphenyl imidazole (Table 2, entry 16).



Melting point: 220–223°C, FT-IR (KBr), ν.max (cm^{-1}): 3422, 3100, 2954, 1504, 1444, 1326, 1026, 763, 702. ^{1}H-NMR (500 MHz; DMSO-d_6): δ_H (ppm): 12.47 (s, 1H, NH), 7.63 (s, 1H), 7.61 (d, 1H), 7.20–7.48 (m, 10H), 7.02 (d, 1H), 3.81 (s, 3H, OCH_3), 3.77 (s, 3H, OCH_3).

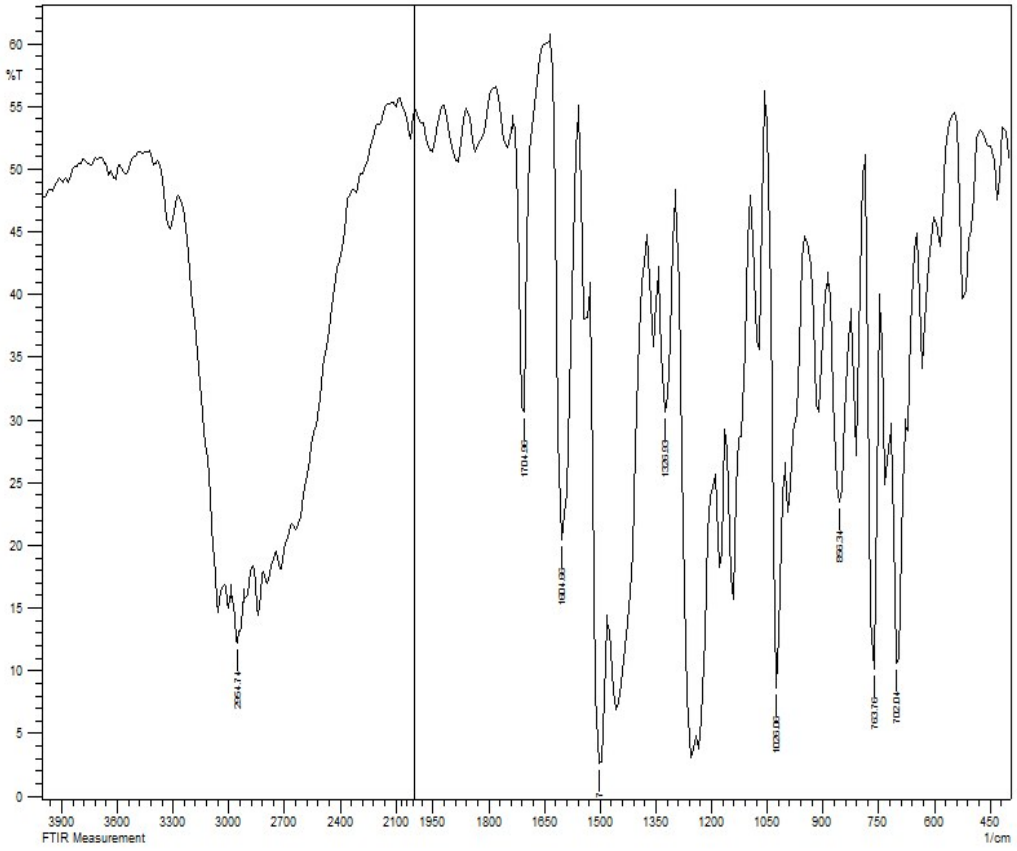


Fig.3. FT-IR (KBr discs) spectrum of 2-(3,4-Dimethoxyphenyl)-4,5-diphenyl imidazole (Table 2, entry 16).

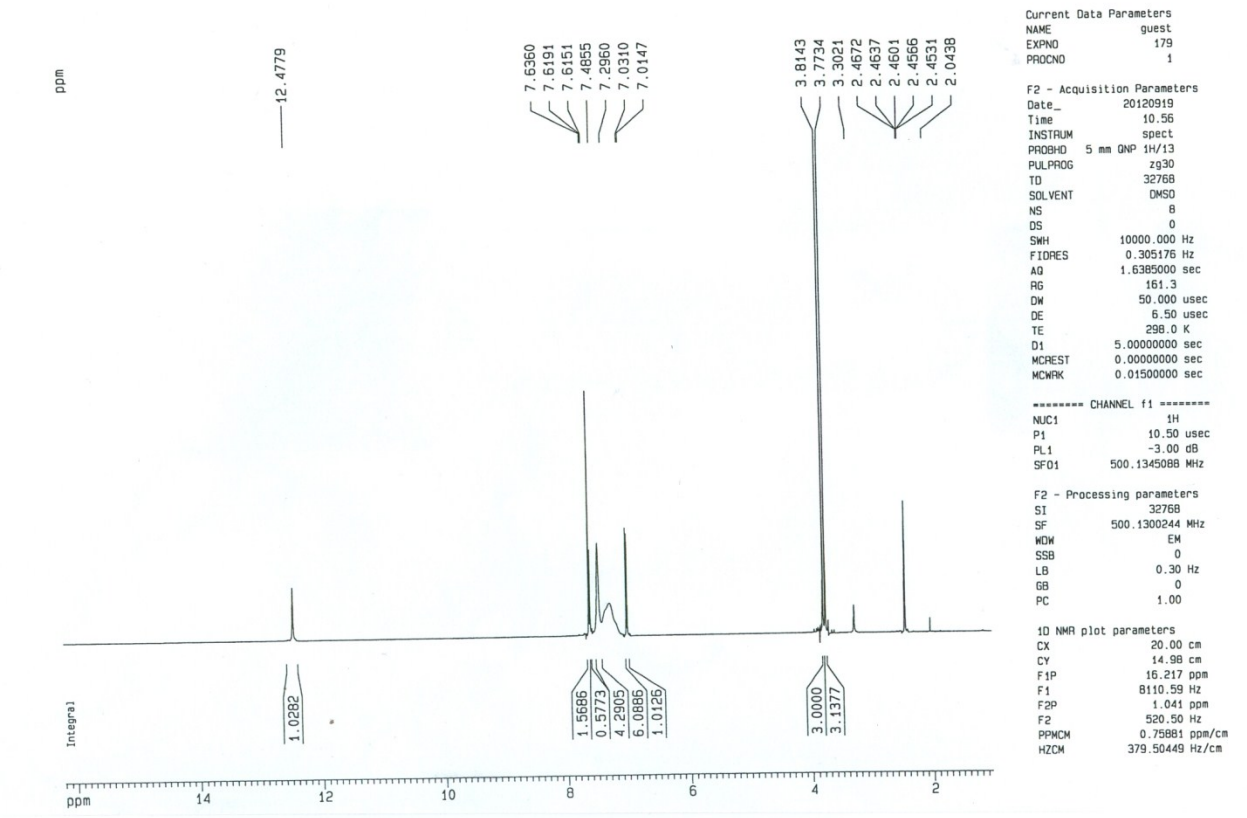
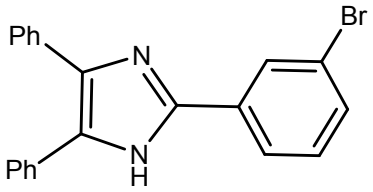


Fig. 4. ^{1}H-NMR spectrum of 2-(3,4-Dimethoxyphenyl)-4,5-diphenyl imidazole in DMSO-d_6 (Table 2, entry 16).

2-(3-Bromophenyl)-4,5-diphenyl-1*H*-imidazole (Table2, entry 6).



Melting point: 306-309°C, FT-IR (KBr), v.max (cm^{-1}): 3400, 3055, 1635, 1573, 1473. ^{1}H-NMR (500 MHz; DMSO-d_6): δ_H (ppm): 12.99 (s, 1H, NH), 8.13 (s, 1H), 8.09 (d, 1H), 7.23–7.59 (m, 12H).

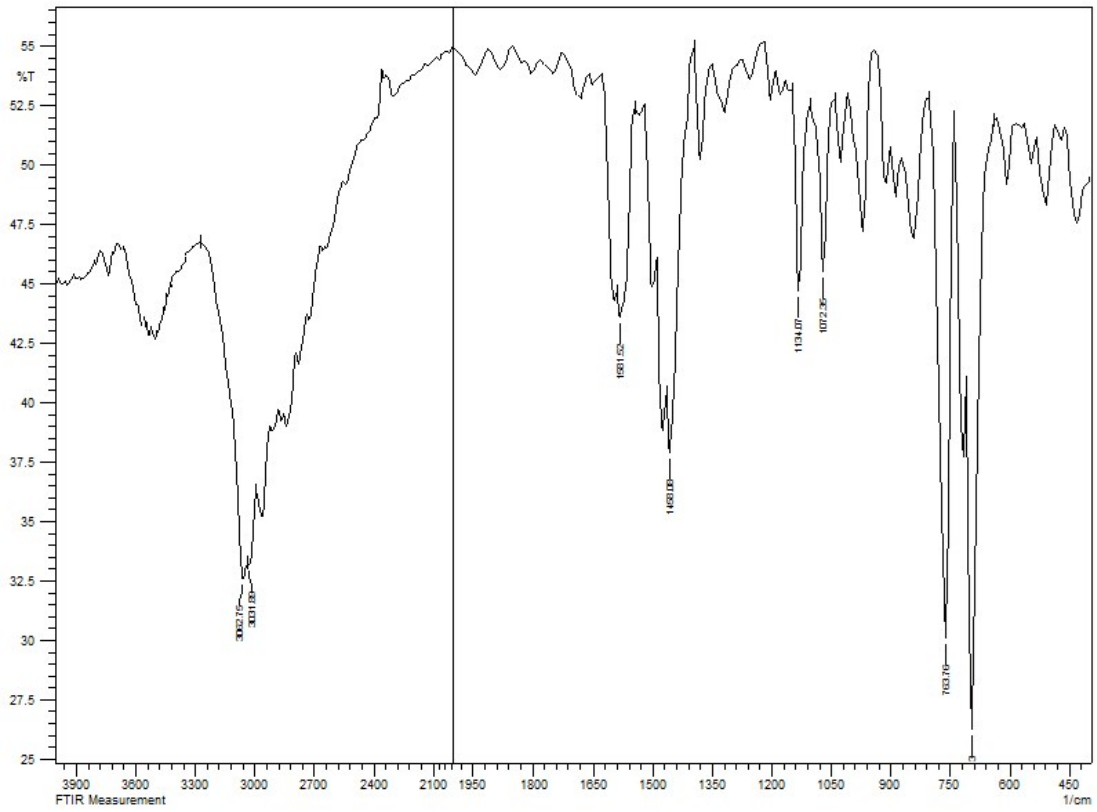


Fig. 5. FT-IR (KBr discs) spectrum of 2-(3-Bromophenyl)-4,5-diphenyl-1*H*-imidazole (Table2, entry 6).

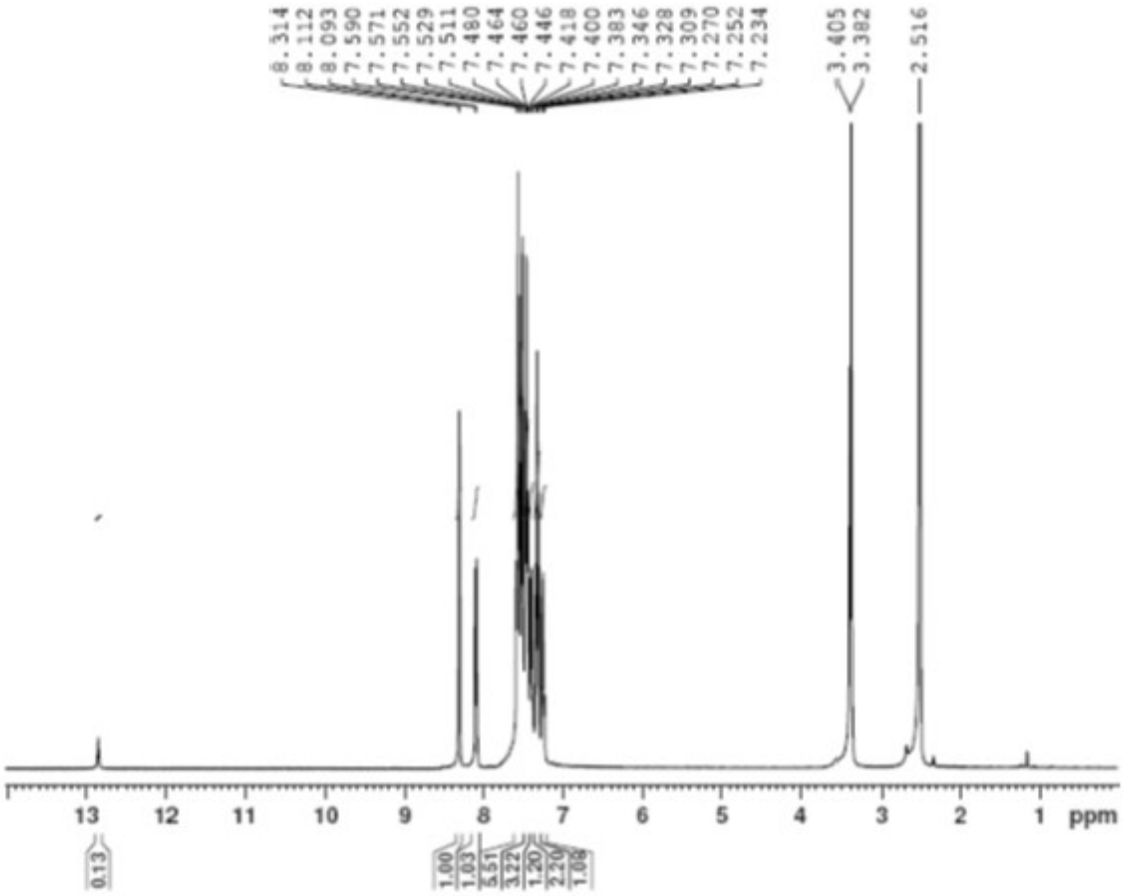
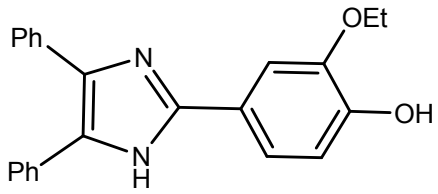


Fig. 6. ^{1}H-NMR spectrum of 2-(3-Bromophenyl)-4,5-diphenyl-1*H*-imidazole in DMSO-d_6 (Table2, entry 6).

4-(4,5-diphenyl-1*H*-imidazol-2-yl)-2-ethoxyphenol (table 2, entry 15).



Melting point: 265-267°C, FT-IR (KBr), ν.max (cm^{-1}): 3560, 3412, 2923, 1604, 1496, 1265. ^{1}H-NMR (400 MHz; DMSO-d_6): δ_H (ppm): 12.43 (s, 1H, NH), 9.23 (s, 1H, OH), 7.22-7.63 (m, 12H), 6.86 (d, 1H), 4.11 (q, 2H, OCH_2- CH_3), 1.394 (t, 3H, OCH_2- CH_3).

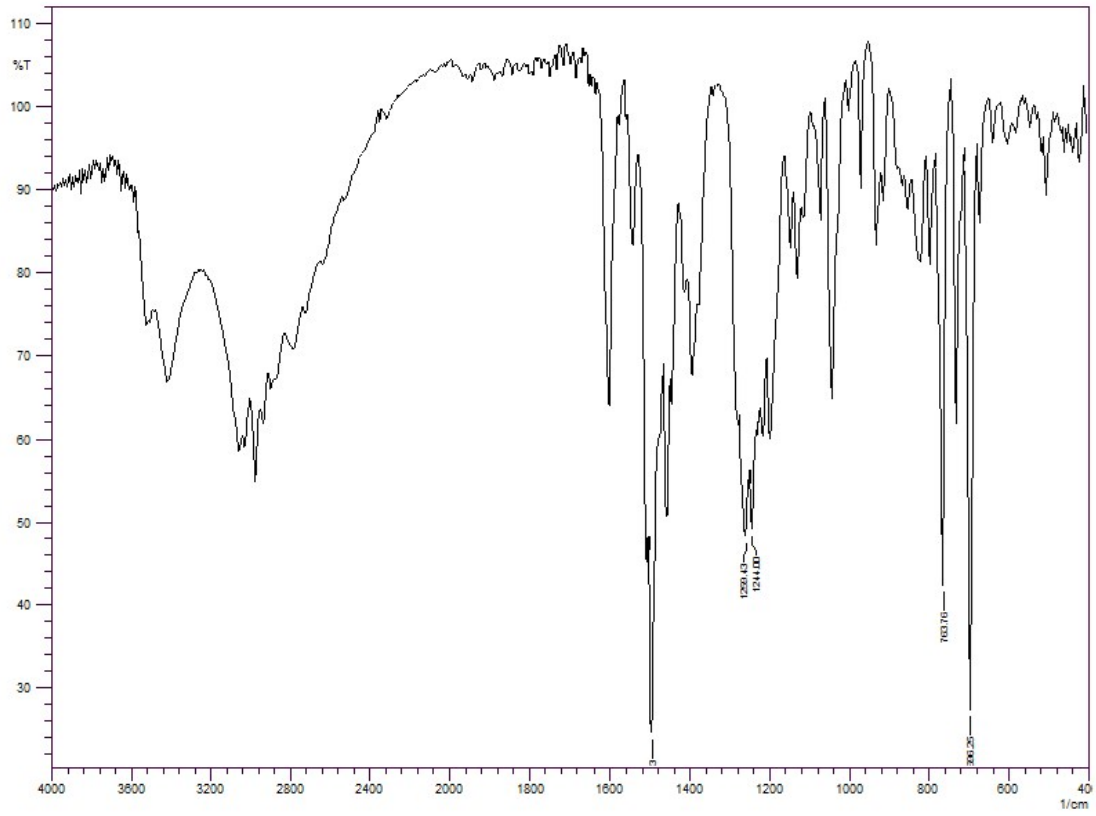


Fig. 7. FT-IR (KBr discs) spectrum of 4-(4,5-diphenyl-1*H*-imidazol-2-yl)-2-ethoxyphenol (table 2, entry 15).

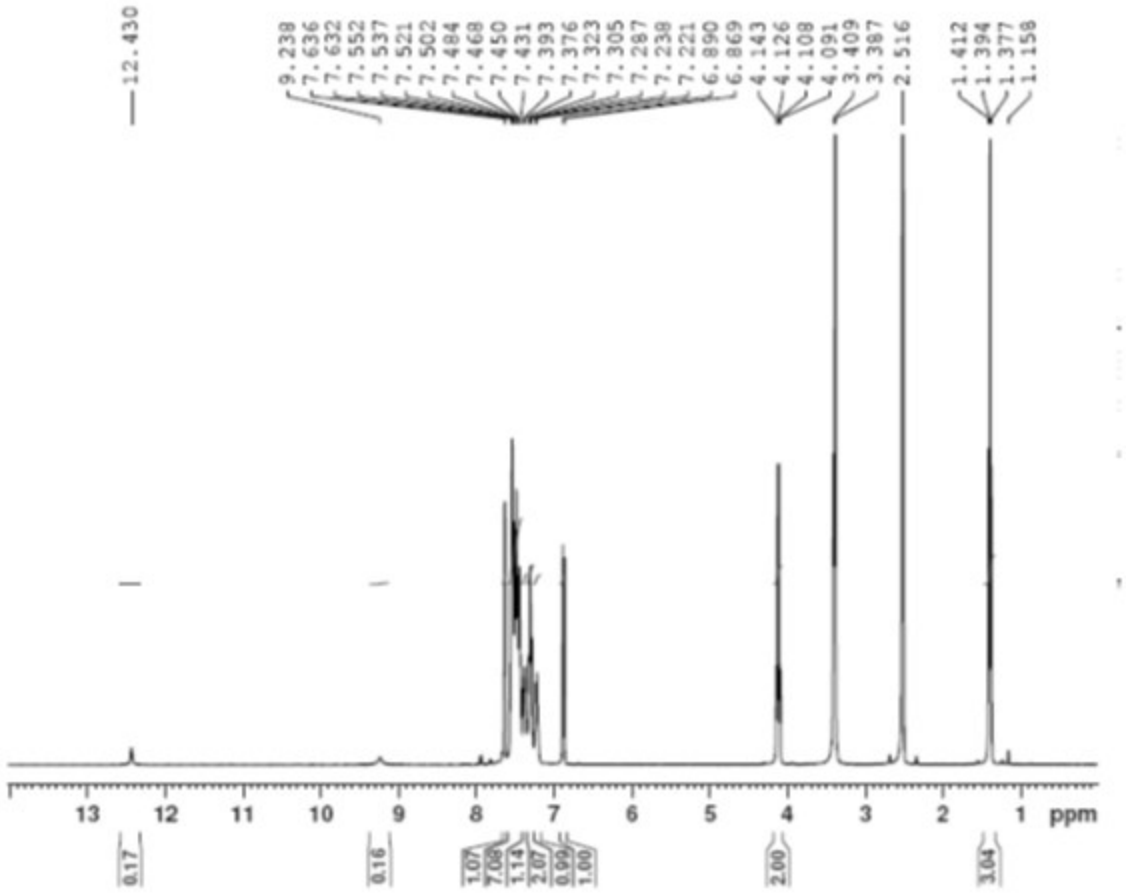
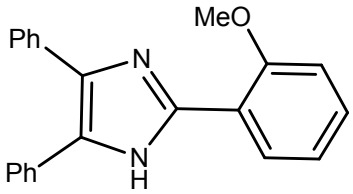


Fig. 8. ^{1}H-NMR spectrum of 4-(4,5-diphenyl-1*H*-imidazol-2-yl)-2-ethoxyphenol in DMSO-d_6 (table 2, entry 15).

2-(2-Methoxyphenyl)-4,5-diphenyl-1*H*-imidazole (Table 2, entry 10).



Melting point: 209-211°C, FT-IR (KBr), ν.max (cm^{-1}): 3400, 3100, 1650, 1615, 1475. ^{1}H-NMR (500 MHz; DMSO-d_6): δ_H (ppm): 11.85, (s, 1H), 8.02 (d, 1H), 6.86–7.47 (m, 13H), 3.30 (s, 3H, OCH_3).

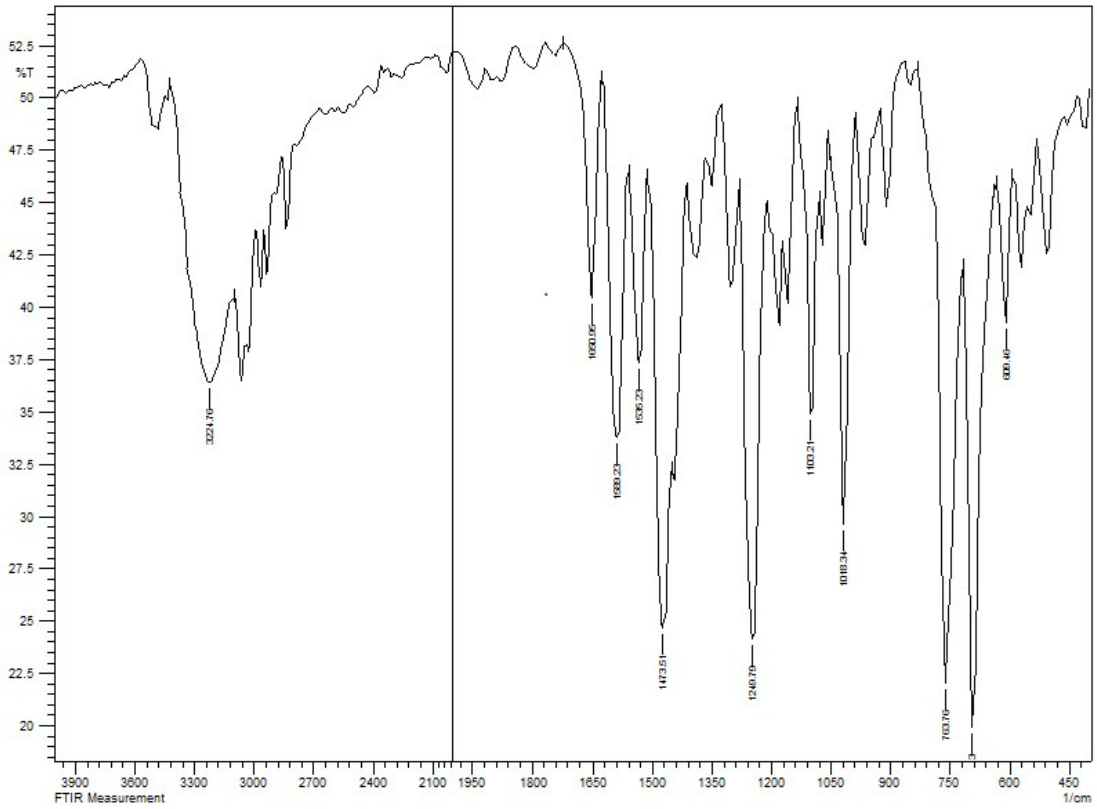


Fig. 9. FT-IR (KBr discs) spectrum of 2-(2-Methoxyphenyl)-4,5-diphenyl-1*H*-imidazole (Table 2, entry 10).

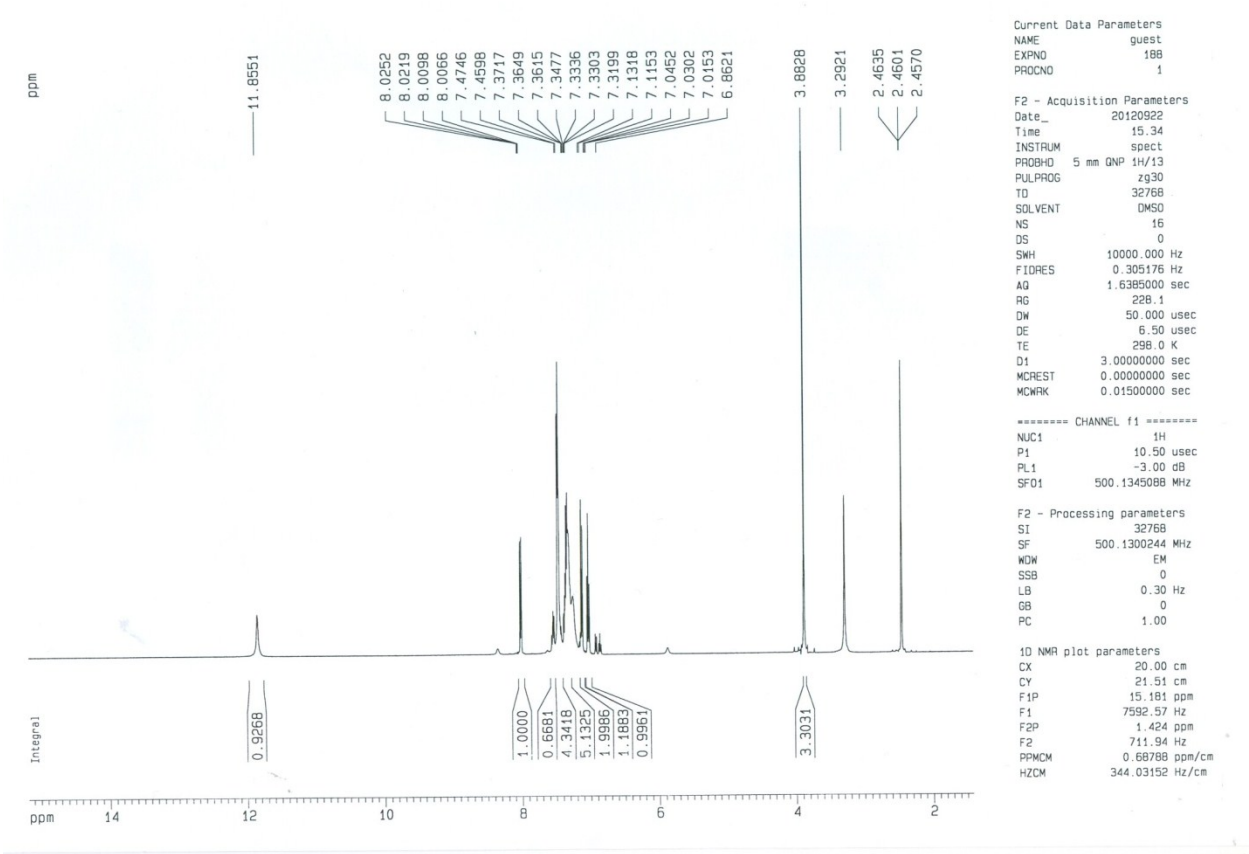
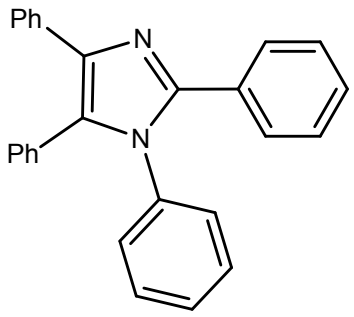


Fig. 10. ^{1}H-NMR spectrum of 2-(2-Methoxyphenyl)-4,5-diphenyl-1*H*-imidazole in DMSO-d_6 (Table 2, entry 10).

1,2,4,5-tetraphenyl-1*H*-imidazole (Table 4, entry 1).



Melting point: 218-219°C, FT-IR (KBr), v.max (cm^{-1}): 3058, 1595, 1494, 1440, 694, 914. ^{1}H-NMR (500 MHz; DMSO-d_6): δ_H (ppm): 23.7-61.7 (m, 20H). ^{13}C NMR (500 MHz; DMSO-d_6): δ_C (ppm): 136.127-260.138

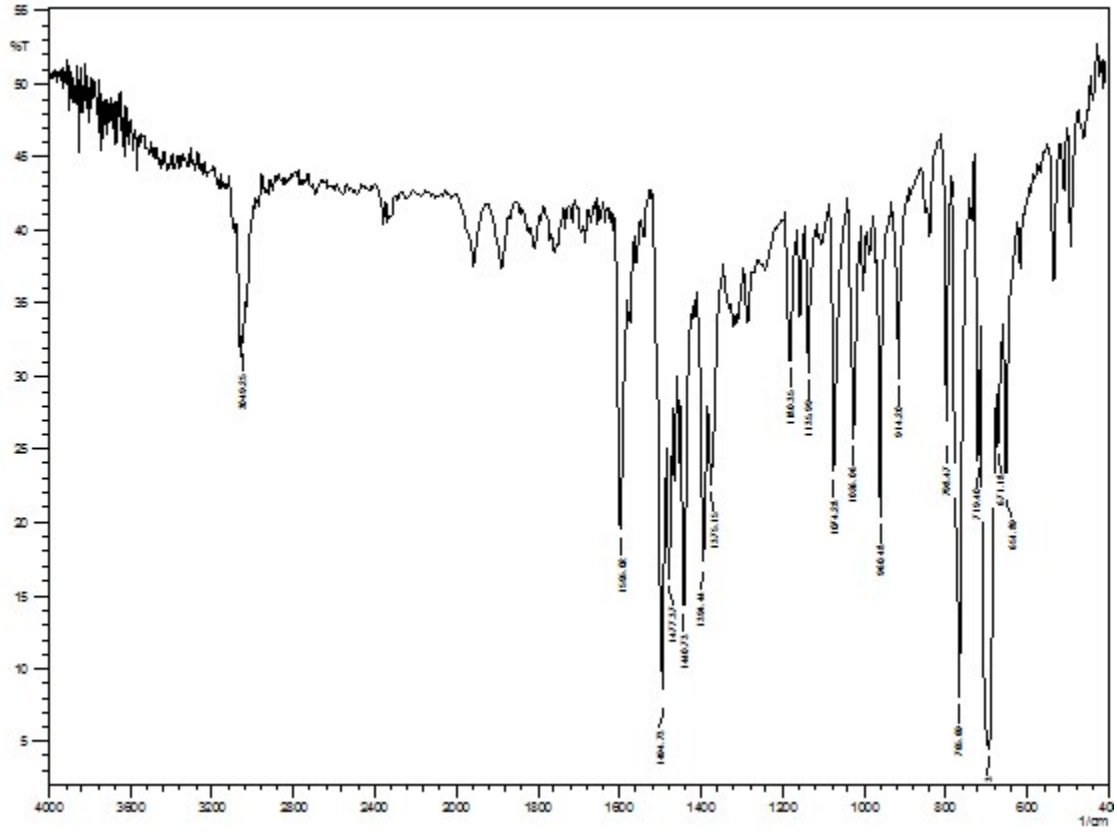


Fig. 11. FT-IR (KBr discs) spectrum of 1,2,4,5-tetraphenyl-1*H*-imidazole (Table 4, entry 1).

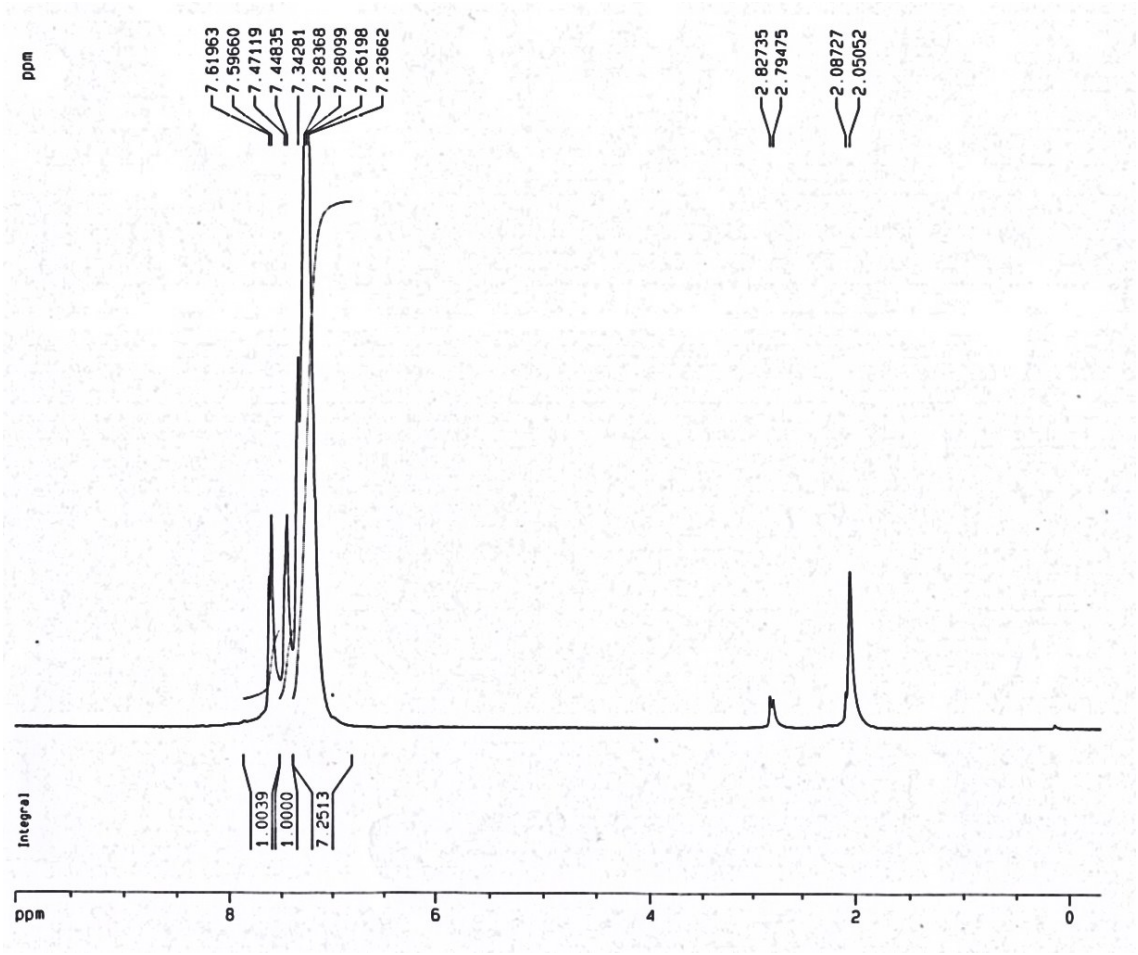
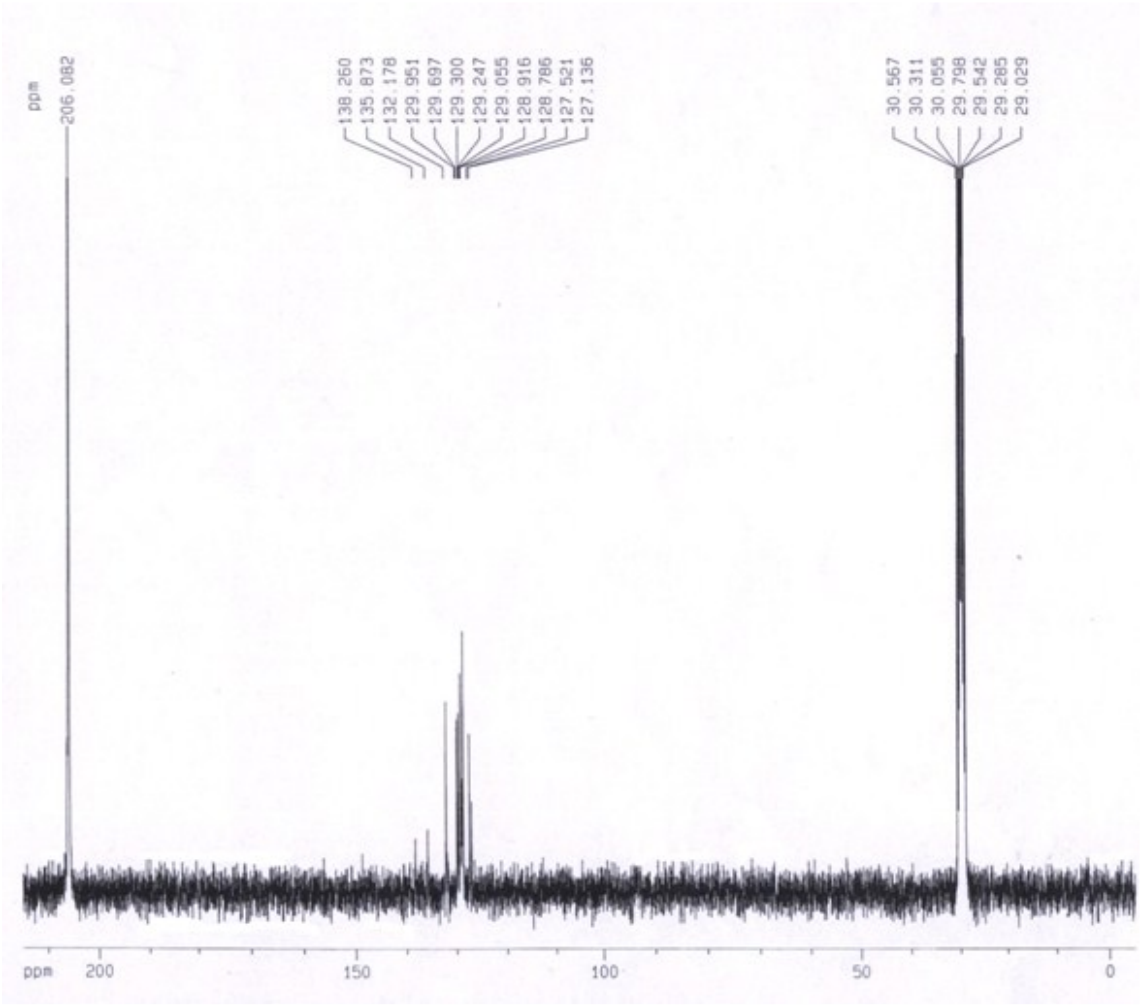


Fig. 12. ^{1}H-NMR spectrum of 1,2,4,5-tetraphenyl-1*H*-imidazole in DMSO-d_6 (Table 4, entry 1).



-Fig. 13. ^{13}C-NMR spectrum of 1,2,4,5-tetraphenyl-1*H*-imidazole in DMSO-d_6 (Table 4, entry 1).