

# Supplementary data

## One pot synthesis of 1,2,4,5-tetrasubstituted-imidazoles catalyzed by trityl chloride in neutral media

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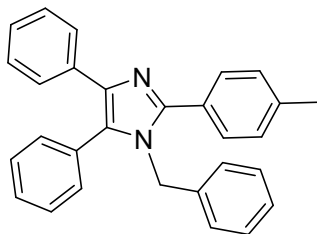
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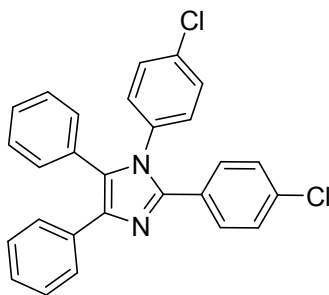
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**Data of Compounds:**



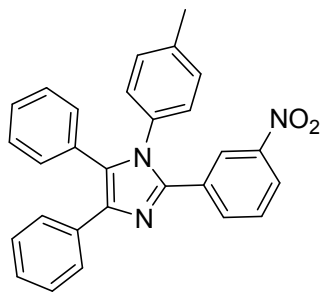
**1-Benzyl-4,5-diphenyl-2-*p*-tolyl-1*H*-imidazole (1c).**

$^1\text{H}$ NMR (500 MHz, DMSO- $d_6$ )  $\delta$ : 2.33 (s, 3H), 5.14 (s, 2H), 7.13-7.16 (m, 2H), 7.18-7.21 (m, 2H), 7.24-7.29 (m, 4H), 7.32-7.35 (m, 3H), 7.39-7.44 (m, 6H), 7.54 (d,  $J=8.0$  Hz, 2H).



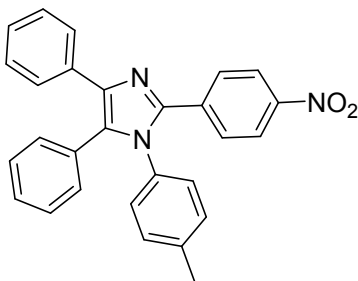
**1,2-Bis(4-chlorophenyl)-4,5-diphenyl-1*H*-imidazole (1d).**

$^1\text{H}$  NMR (500 MHz, DMSO- $d_6$ )  $\delta$ : 7.17-7.19 (m, 1H), 7.23-7.25 (m, 4H), 7.29-7.32 (m, 5H), 7.38-7.42 (m, 6H), 7.50 (d,  $J = 7.0$  Hz, 2H).  $^{13}\text{C}$  NMR (125 MHz, DMSO- $d_6$ )  $\delta$ : 127.2, 127.4, 129.0, 129.2, 129.44, 129.49, 129.9, 130.1, 130.8, 130.9, 131.3, 132.0, 132.3, 134.1, 134.3, 135.0, 136.2, 145.8.



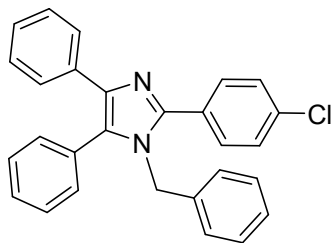
**2-(3-Nitrophenyl)-4,5-diphenyl-1-p-tolyl-1H-imidazole (1f).**

$^1\text{H}$  NMR (500 MHz,  $\text{DMSO-}d_6$ )  $\delta$ : 7.32-7.39 (m, 6H), 7.54-7.56 (m, 8H), 7.77 (t,  $J = 7.7$  Hz, 1H), 8.20 (d,  $J = 8.0$  Hz, 1H), 8.52 (d,  $J = 7.5$  Hz, 1H), 8.95 (s, 1H).



**2-(4-Nitrophenyl)-4,5-diphenyl-1-p-tolyl-1H-imidazole (1g).**

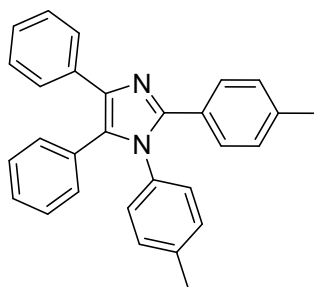
$^1\text{H}$  NMR (500 MHz,  $\text{DMSO-}d_6$ )  $\delta$ : 2.28 (s, 3H), 7.15-7.20 (m, 5H), 7.24-7.27 (m, 4H), 7.31-7.32 (m, 3H), 7.50 (d,  $J = 7.5$  Hz, 2H), 7.63 (d,  $J = 8.5$  Hz, 2H), 8.14 (d,  $J = 9.0$  Hz, 2H).  $^{13}\text{C}$  NMR (125 MHz,  $\text{DMSO-}d_6$ )  $\delta$ : 21.5, 124.3, 127.2, 127.6, 129.0, 129.1, 129.3, 129.5, 129.6, 130.7, 130.8, 131.9, 133.7, 134.5, 134.8, 137.3, 138.7, 139.5, 144.7, 147.5.



**1-Benzyl-2-(4-chlorophenyl)-4,5-diphenyl-1H-imidazole(1h).**

$^1\text{H}$ NMR (500 MHz,  $\text{DMSO-}d_6$ )  $\delta$ : 5.16 (s, 2H), 6.75 (d,  $J = 7.0$  Hz, 2H), 7.12-7.22 (m, 6H), 7.29-7.30 (m, 2H), 7.40-7.41 (m, 3H), 7.45-7.50 (m, 4H), 7.68 (d,  $J = 8.0$  Hz, 2H).

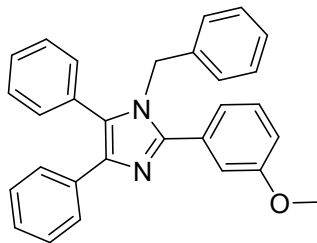
$^{13}\text{C}$ NMR (125 MHz,  $\text{DMSO-}d_6$ )  $\delta$ : 48.6, 126.5, 127.0, 127.2, 128.1, 128.9, 129.4, 129.5, 129.8, 130.5, 131.0, 131.3, 131.4, 131.6, 134.4, 135.2, 137.9, 146.7.



**4,5-Diphenyl-1,2-dip-tolyl-1H-imidazole (1j).**

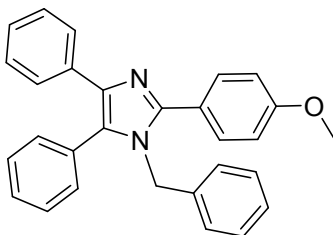
$^1\text{H}$ NMR (500 MHz,  $\text{DMSO-}d_6$ )  $\delta$ : 2.25 (s, 3H), 2.26 (s, 3H), 7.08-7.10 (m, 6H), 7.15-7.17 (m, 1H), 7.21-7.24 (m, 5H), 7.47-7.49 (m, 2H).

$^{13}\text{C}$ NMR (125 MHz,  $\text{DMSO-}d_6$ )  $\delta$ : 21.4, 21.5, 127.2, 128.6, 128.9, 129.0, 129.1, 129.2, 129.3, 129.5, 130.4, 131.4, 132.0, 135.0, 135.4, 137.5, 138.5, 138.8, 147.0.



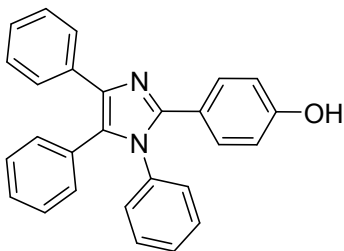
**1-Benzyl-2-(3-methoxyphenyl)-4,5-diphenyl-1H-imidazole (1k).**

$^1\text{H}$  NMR (500 MHz,  $\text{DMSO-}d_6$ )  $\delta$ : 3.68 (s, 3H), 5.16 (s, 2H), 6.79 (d,  $J = 7.5$  Hz, 2H), 6.98-7.00 (m, 1H), 7.13-7.16 (m, 3H), 7.17-7.25 (m, 5H), 7.29-7.35 (m, 3H), 7.40-7.41 (m, 3H), 7.46-7.47 (m, 2H).  $^{13}\text{C}$  NMR (125 MHz,  $\text{DMSO-}d_6$ )  $\delta$ : 48.6, 55.9, 114.6, 115.6, 121.7, 126.4, 127.0, 127.1, 128.0, 128.9, 129.4, 129.74, 129.78, 130.5, 131.1, 131.4, 131.7, 132.8, 135.4, 137.7, 138.2, 147.7, 160.0.



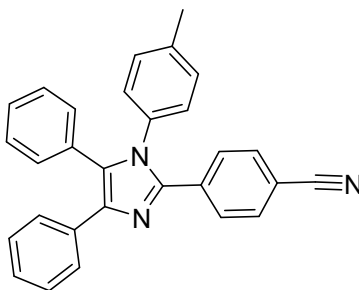
**1-Benzyl-2-(4-methoxyphenyl)-4,5-diphenyl-1H-imidazole (1n).**

$^1\text{H}$  NMR (500 MHz,  $\text{DMSO-}d_6$ )  $\delta$ : 3.77 (s, 3H), 5.13 (s, 2H), 6.76 (d,  $J = 7.0$  Hz, 2H), 6.90 (d,  $J = 9.0$  Hz, 2H), 7.11-7.21 (m, 6H), 7.26-7.28 (m, 2H), 7.38-7.39 (m, 3H), 7.46 (d,  $J = 7.0$  Hz, 2H), 7.58 (d,  $J = 9.0$  Hz, 2H).  $^{13}\text{C}$  NMR (125 MHz,  $\text{DMSO-}d_6$ )  $\delta$ : 48.5, 56.0, 114.9, 124.0, 126.4, 126.9, 127.0, 128.0, 128.9, 129.3, 129.6, 129.7, 130.6, 130.8, 131.6, 131.7, 135.5, 137.5, 138.3, 147.9, 160.5.



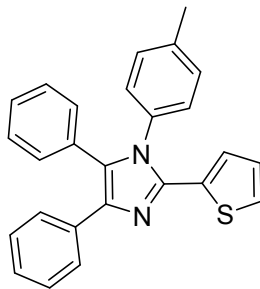
**4-(1,4,5-Triphenyl-1*H*-imidazol-2-yl)phenol (1o).**

$^1\text{H}$ NMR (500 MHz,  $\text{DMSO-}d_6$ )  $\delta$ : 6.64 (d,  $J = 9.0$  Hz, 2H), 7.14-7.24 (m, 9H), 7.27-7.28 (m, 3H), 7.30-7.32 (m, 3H), 7.48 (d,  $J = 7.0$  Hz, 2H), 9.60 (s, 1H).  $^{13}\text{C}$ NMR (125 MHz,  $\text{DMSO-}d_6$ )  $\delta$ : 115.8, 122.1, 127.1, 127.2, 128.9, 129.1, 129.3, 129.6, 129.9, 130.6, 131.4, 131.5, 132.0, 135.5, 137.3, 137.7, 147.3, 158.4.

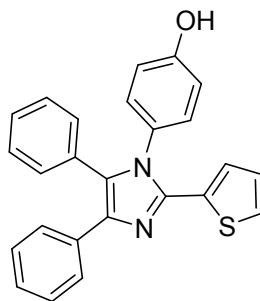


**4-(4,5-Diphenyl-1-*p*-tolyl-1*H*-imidazol-2-yl)benzotrile (1p).**

$^1\text{H}$  NMR (500 MHz,  $\text{DMSO-}d_6$ )  $\delta$ : 2.24 (s, 3H), 7.08-7.49 (m, 14H), 6.68 (d,  $J = 7.5$  Hz, 2H), 7.95 (d,  $J = 7.5$  Hz, 2H).  $^{13}\text{C}$  NMR (125 MHz,  $\text{DMSO-}d_6$ )  $\delta$ : 21.4, 111.3, 115.2, 121.0, 127.12, 127.18, 128.7, 129.1, 129.36, 129.39, 130.1, 130.3, 131.1, 131.4, 132.0, 137.2, 138.7, 143.9, 147.5, 153.33, 153.66.

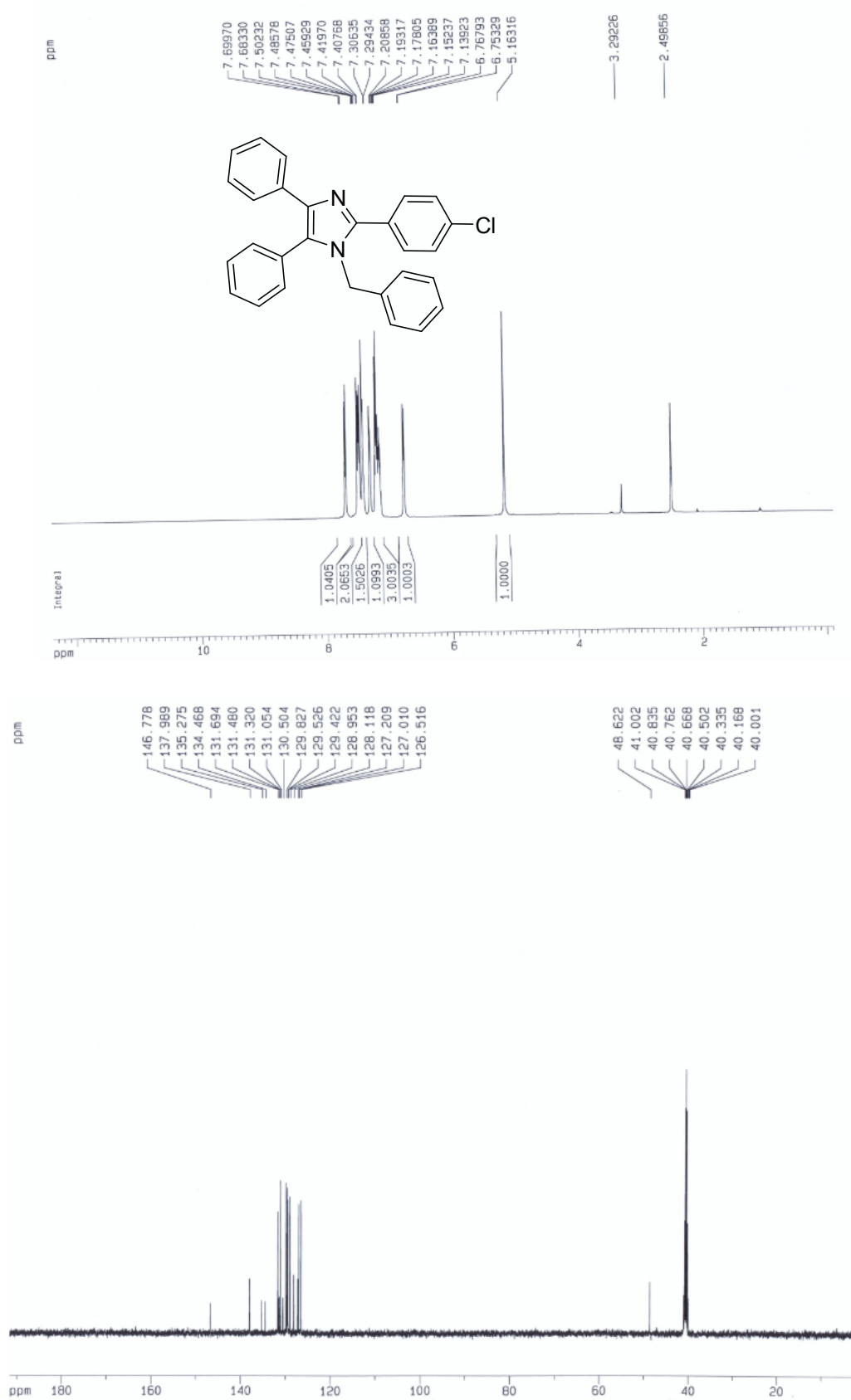


**4,5-Diphenyl-2-(thiophen-2-yl)-1-*p*-tolyl-1*H*-imidazole (1r).**  $^1\text{H}$  NMR (500 MHz,  $\text{DMSO-}d_6$ )  $\delta$ : 2.31 (s, 3H), 6.51(d,  $J = 3.5$  Hz, 1H), 6.62 (t,  $J = 4.5$  Hz, 1H), 7.18-7.29 (m, 12H), 7.47-7.50 (m, 3H).  $^{13}\text{C}$  NMR (125 MHz,  $\text{DMSO-}d_6$ )  $\delta$ : 21.6, 126.1, 127.1, 127.3, 127.9, 128.3, 129.0, 129.3, 129.6, 130.8, 130.9, 131.9, 132.1, 133.8, 134.4, 134.9, 137.6, 139.9, 142.3.



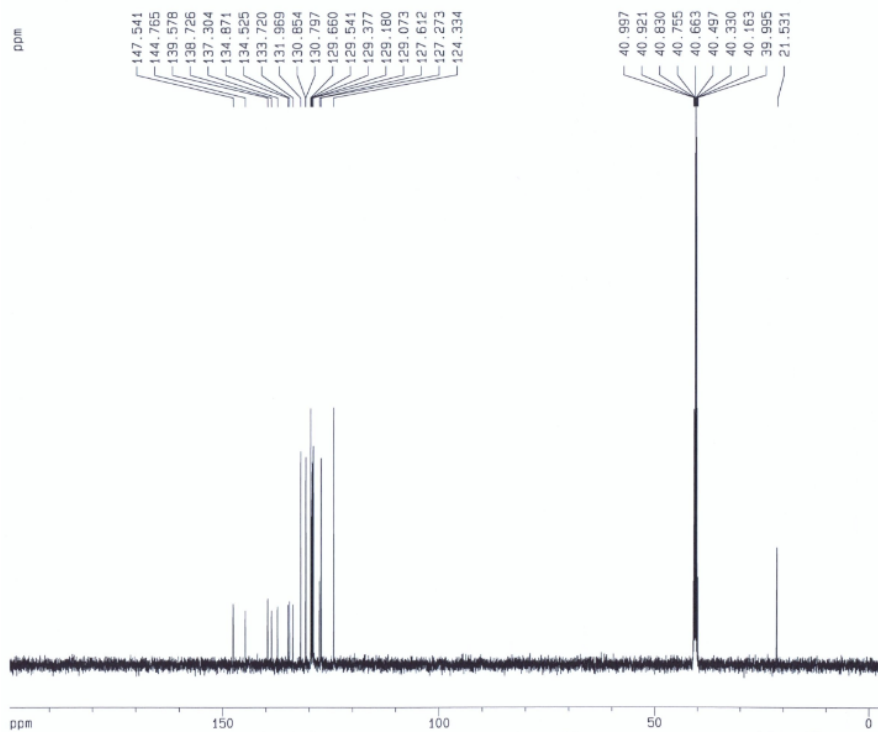
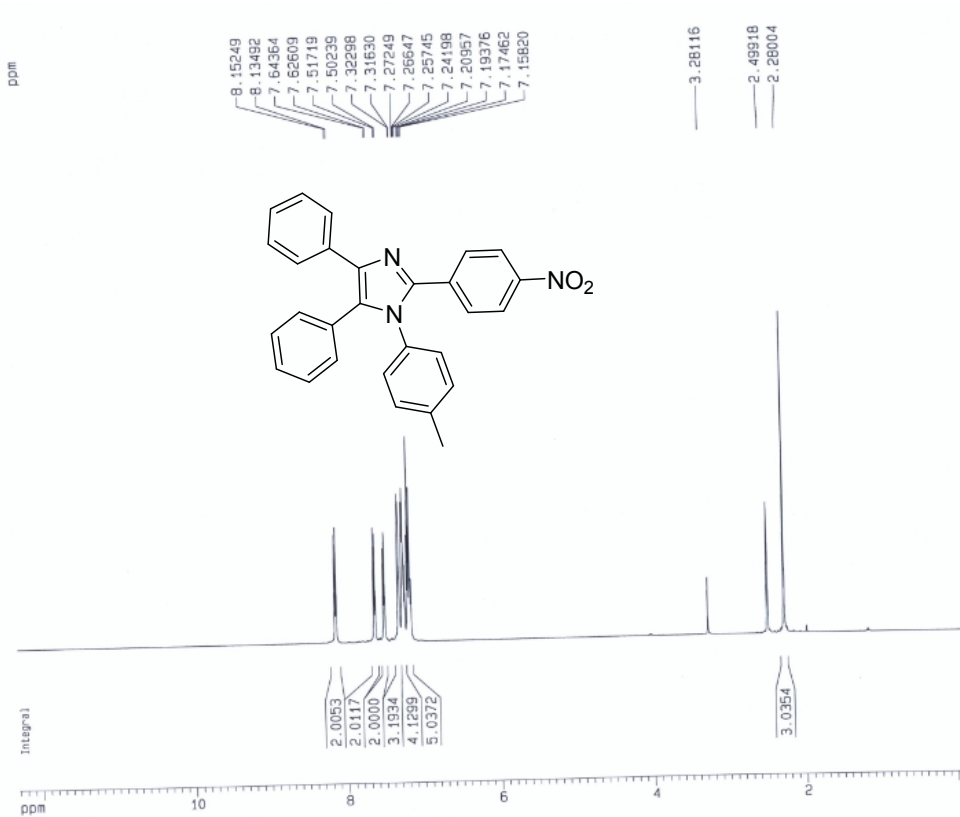
**4-(4,5-Diphenyl-2-(thiophen-2-yl)-1*H*-imidazol-1-yl)phenol (1s).**  $^1\text{H}$  NMR (500 MHz,  $\text{DMSO-}d_6$ )  $\delta$ : 6.58 (s, 1H), 6.77 (d,  $J = 8.0$  Hz, 2H), 6.95 (m, 1H), 7.18-7.50 (m, 13H), 9.88 (s, 1H).  $^{13}\text{C}$  NMR (125 MHz,  $\text{DMSO-}d_6$ )  $\delta$ : 116.7, 126.1, 127.1, 127.3, 127.8, 127.9, 128.3, 129.0, 129.23, 129.29, 131.0, 131.1, 131.9, 132.3, 133.9, 135.0, 137.4, 142.6, 158.9.

# 1-Benzyl-2-(4-chlorophenyl)-4,5-diphenyl-1H-imidazole(1c).

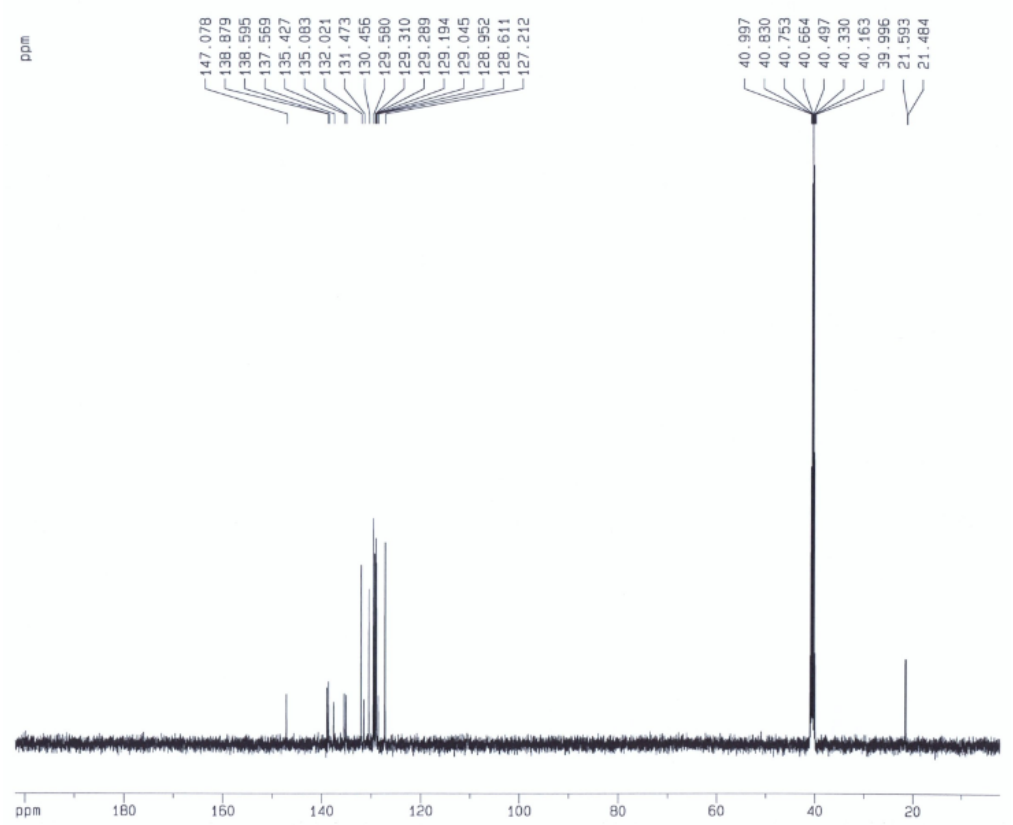
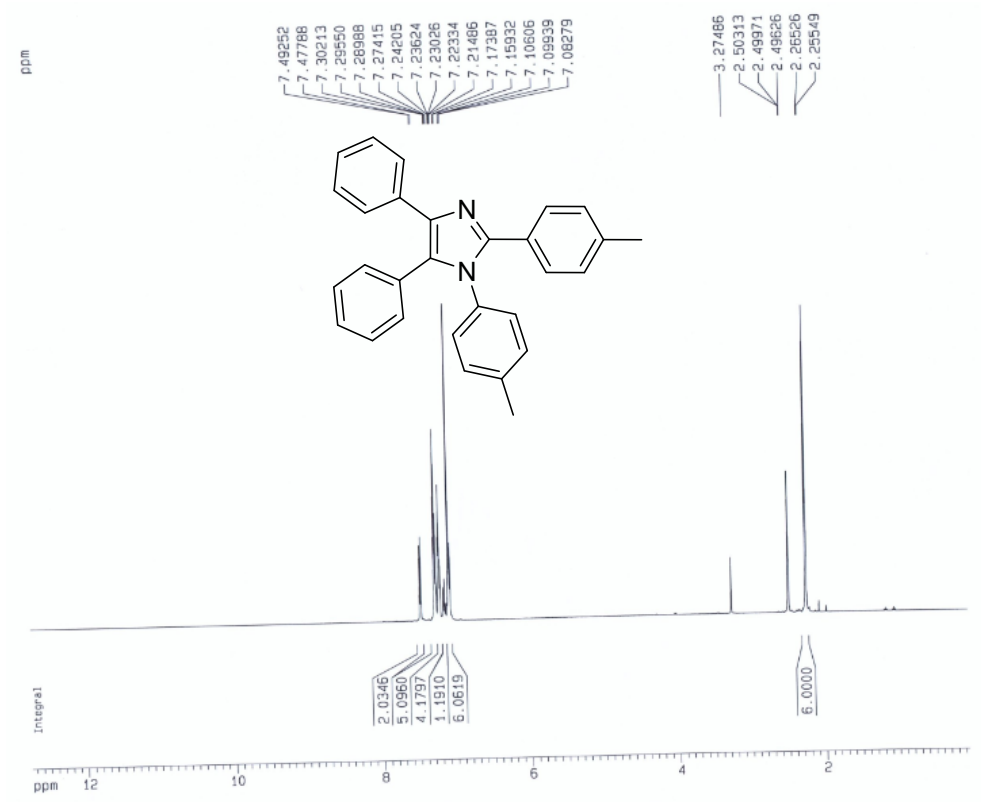




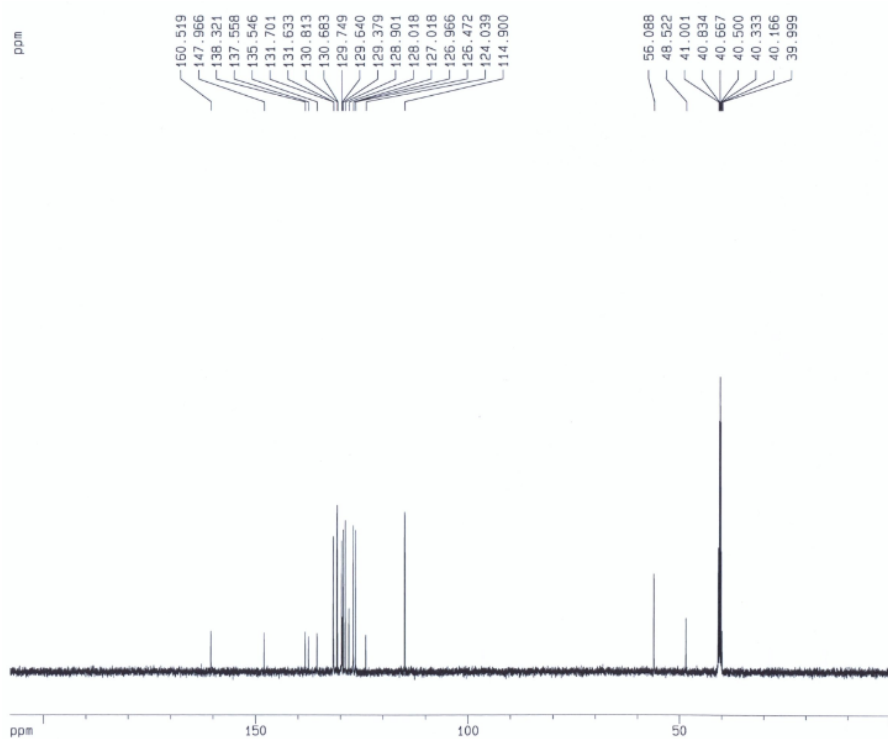
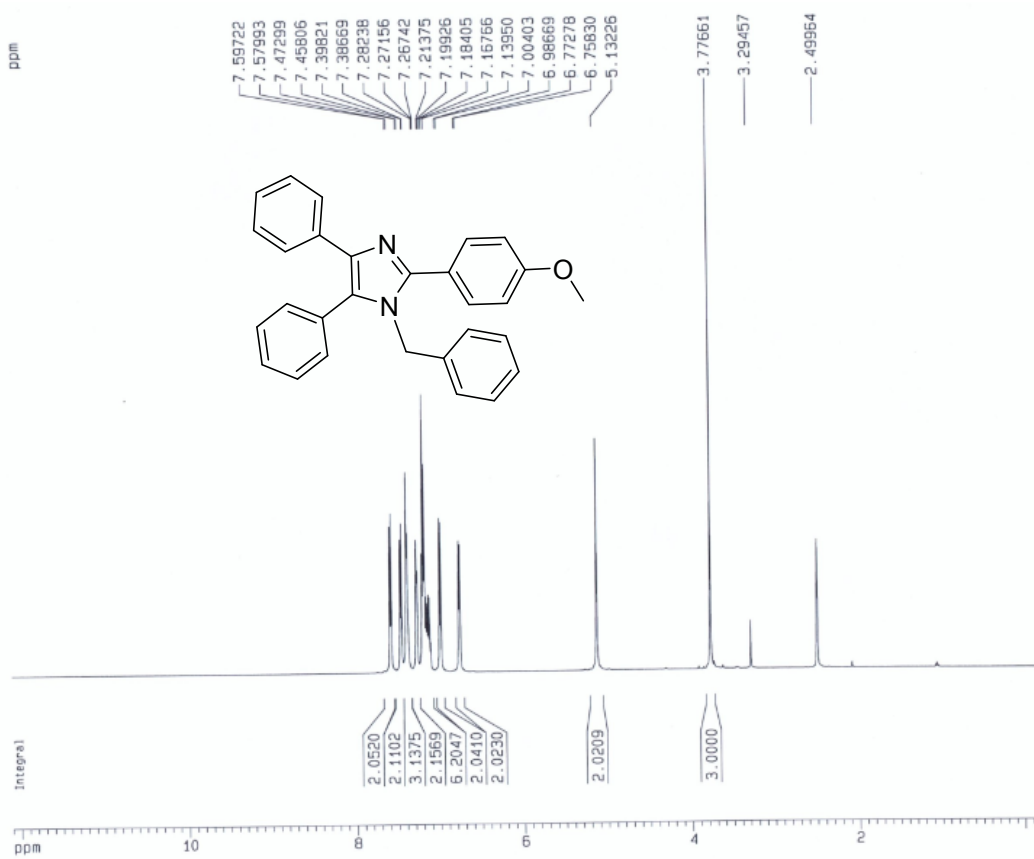
**2-(4-Nitrophenyl)-4,5-diphenyl-1-*p*-tolyl-1*H*-imidazole (1g).**



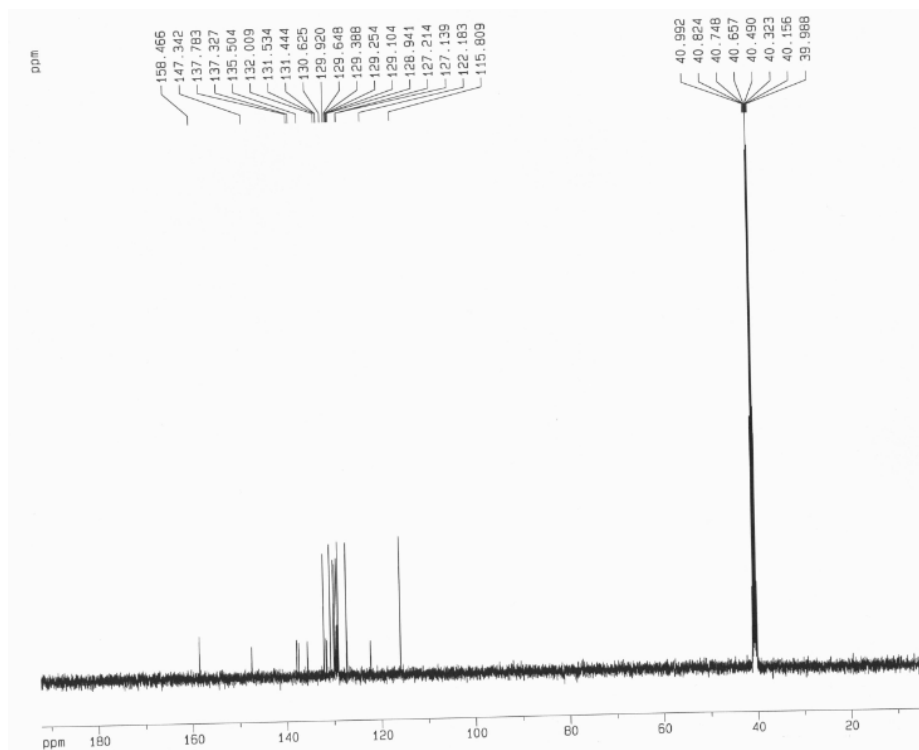
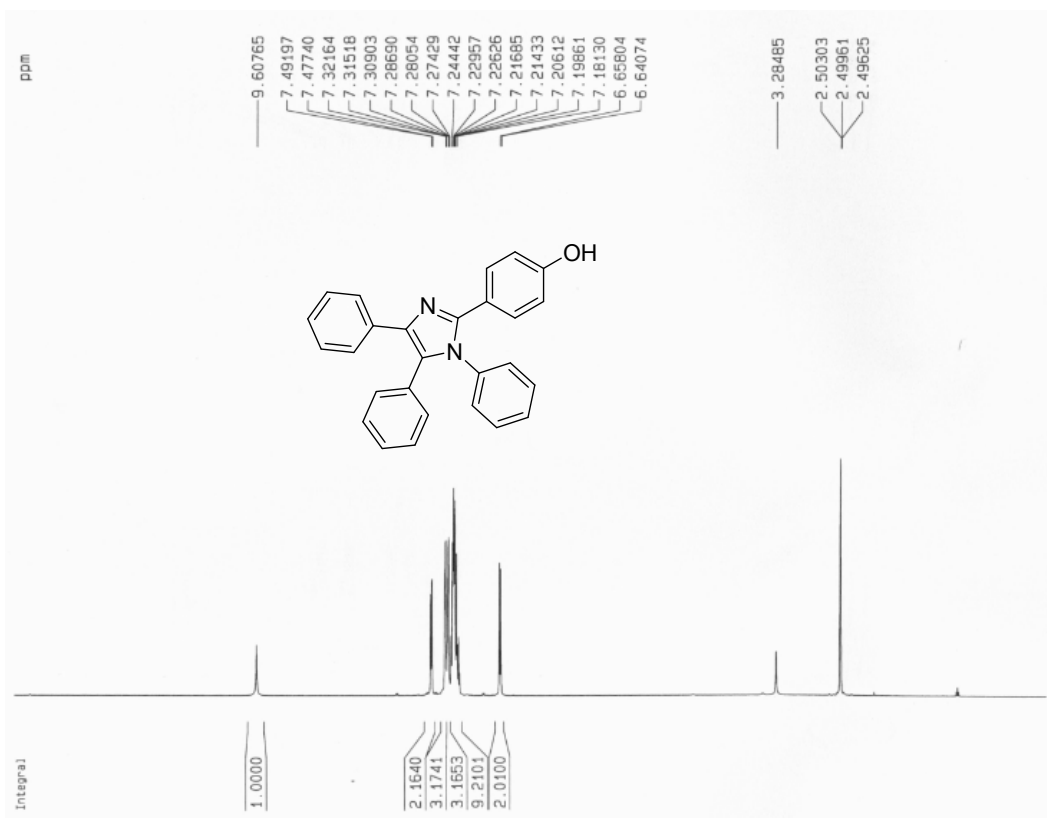
# 4,5-Diphenyl-1,2-dip-tolyl-1H-imidazole (1j).

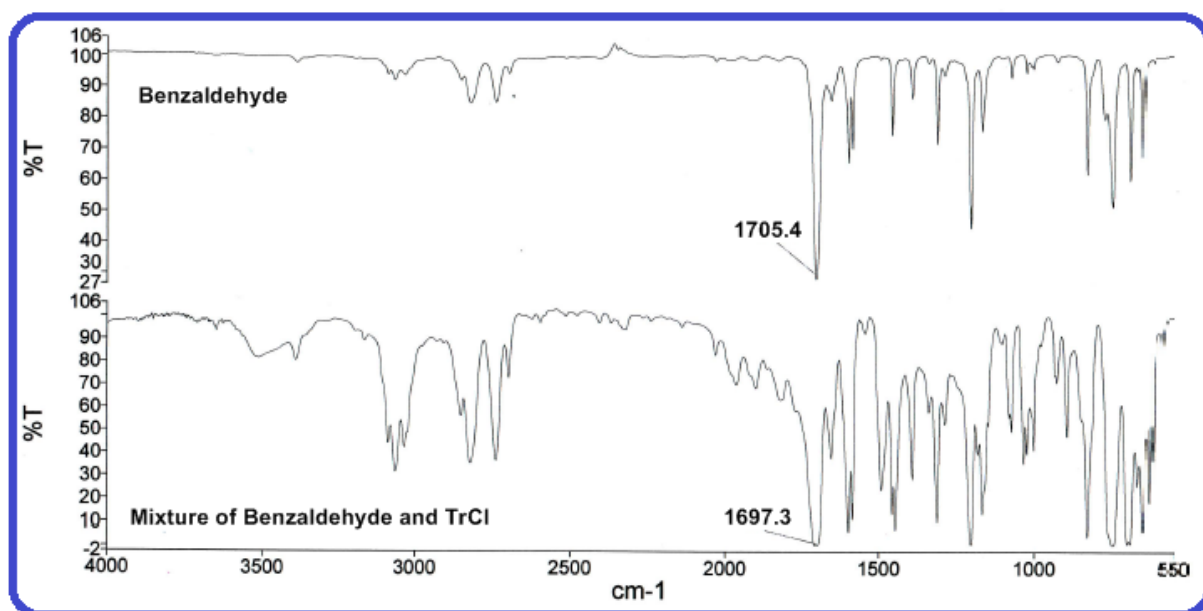


**1-Benzyl-2-(4-methoxyphenyl)-4,5-diphenyl-1H-imidazole (1n).**

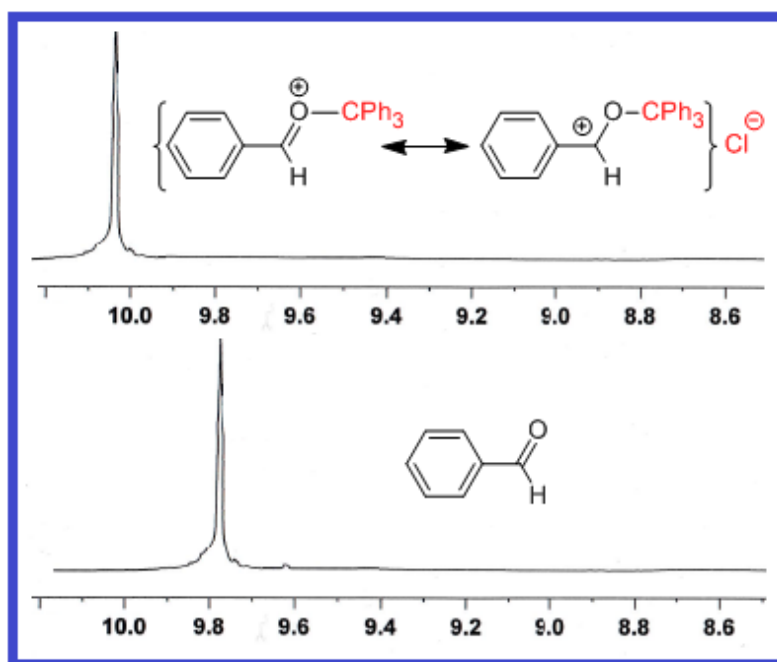


**4-(1,4,5-Triphenyl-1H-imidazol-2-yl)phenol (1o).**

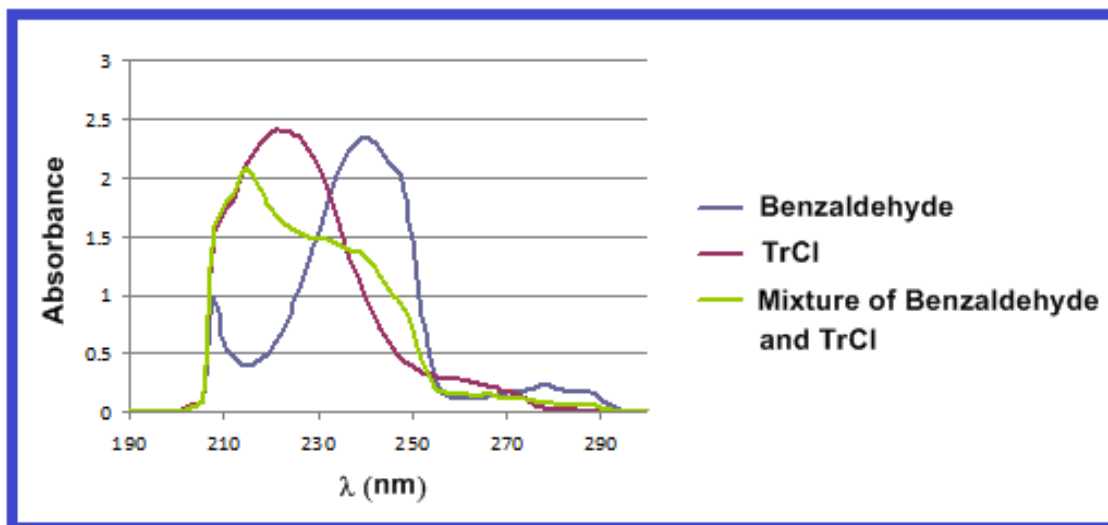




**Figure S1.** IR spectra of PhCHO, and the mixture of PhCHO and TrCl.



**Figure S2.** Chemical shift of the aldehydic hydrogen in  $^1\text{H}$  NMR spectra of PhCHO, and the complexes (**I** and **II**) formed from PhCHO and TrCl at room temperature in  $\text{CDCl}_3$ .



**Figure S3.** UV spectra of PhCHO, and the mixture of PhCHO and TrCl at room temperature in *n*-hexane.