

## Supporting Information

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### Efficient one-pot three-component synthesis of 2*H*-indazole [2,1-*b*] phthalazine-1,6,11(13*H*)-triones at room temperature

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## S.1. Experimental Section

### S.1.1. General

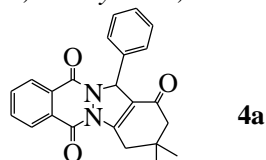
The progress of reaction was monitored by TLC.  $^1\text{H}$  NMR and  $^{13}\text{C}$  NMR spectra of 2*H*-indazole [2, 1-*b*] phthalazine-1,6,11(13*H*)-triones were recorded with TMS as an internal standard using a Agilent technologies 400 MHz spectrometer in  $\text{DMSO-}d_6$ . Chemical shifts ( $\delta$ ) are in ppm and coupling constant ( $J$ ) are expressed in hertz (Hz). Mass spectra were taken on a Macro mass spectrometer (Waters) by electro-spray method (ES). IR spectra were recorded on a Bruker spectrophotometer using KBr discs, and the absorption bands are expressed. Melting points were determined in open capillaries Veego Melting Point Apparatus.

### S.1.2. Experimental Procedure

Mixture of aldehyde (1.2 mmol), phthalhydrazide (1 mmol) and dimedone (1 mmol), and catalyst TBAB (10 mol%),  $\text{Cs}_2\text{CO}_3$  (10 mol%) was stirred for the specified time as mentioned in Table 2 (in main text), at room temperature in ethanol (5 ml). After completion TLC, the reaction mixture was washed with diethyl ether (3x15 ml) and the organic layer was evaporated on rotary evaporator to obtain crude product which was purified by recrystallization in aqueous ethanol (25%).

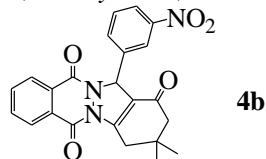
### S.1.3. Spectral Data of Compounds

#### 3,4-Dihydro-3,3-dimethyl-13-phenyl-2*H*-indazolo[1,2-*b*]phthalazine-1,6,11(13*H*)-trione (**4a**)



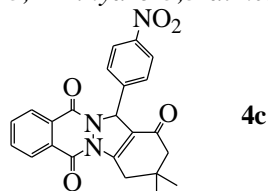
Yellow powder: m. p: 205-206 °C; IR (KBr,  $\text{cm}^{-1}$ ): 2955, 2375, 1669, 1570;  $^1\text{H}$  NMR: (400 MHz,  $\text{DMSO-}d_6$ ):  $\delta$  = 1.21 (s, 6H), 2.33 (s, 2H), 3.22-3.47 (AB System,  $J$  = 18.10 Hz, 2H), 6.44 (s, 1H), 7.23 - 8.35 (m, 9H);  $^{13}\text{C}$  NMR: (400 MHz,  $\text{DMSO-}d_6$ ):  $\delta$  = 28.3, 28.7, 34.8, 38.1, 50.9, 64.8, 118.7, 127.0, 127.9, 128.6, 129.1, 129.4, 129.5, 133.9, 134.5, 136.4, 150.8, 154.2, 156.0, 192.1; MS:  $m/z$ : = 372 ( $\text{M}^+$ ).

#### 3,4-Dihydro-3,3-dimethyl-13-(3-nitrophenyl)-2*H*-indazolo[1,2-*b*]phthalazine-1,6,11(13*H*)-trione (**4b**)



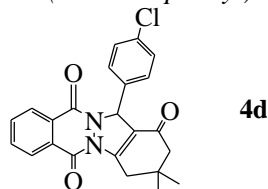
Yellow powder: m. p: 268-270 °C; IR (KBr,  $\text{cm}^{-1}$ ): 2972, 1682, 1663, 1625;  $^1\text{H}$  NMR: (400 MHz,  $\text{DMSO-}d_6$ ):  $\delta$  = 1.23 (s, 6H), 2.34 (s, 2H), 3.23-3.45 (AB System,  $J$  = 18.9 Hz, 2H), 6.53 (s, 1H), 7.54-8.40 (m, 8H);  $^{13}\text{C}$  NMR: (100 MHz,  $\text{DMSO-}d_6$ ):  $\delta$  = 28.4, 28.9, 35.7, 38.4, 51.8, 63.1, 118.1, 122.5, 124.7, 128.2, 128.8, 129.1, 129.7, 132.9, 133.2, 134.4, 138.7, 148.5, 150.8, 154.3, 155.9, 192.1; MS:  $m/z$ : = 417 ( $\text{M}^+$ ).

3,4-Dihydro-3,3-dimethyl-13-(4-nitrophenyl)-2H-indazolo[1,2-b]phthalazine-1,6,11(13H)-trione (**4c**)



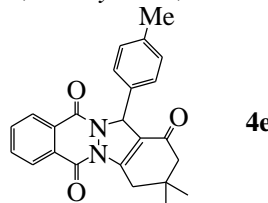
Yellow powder; m. p: 222-224 °C; IR (KBr,  $\text{cm}^{-1}$ ): 2972, 2957, 1693, 1661;  $^1\text{H}$  NMR: (400 MHz,  $\text{DMSO-}d_6$ ):  $\delta$  = 1.18 (s, 3H), 1.26 (s, 3H), 2.34 (s, 2H), 3.24-3.45 (AB system,  $J$  = 19.2 Hz, 2H), 6.53 (s, 1H), 7.27 and 8.15 (dd, 4H,  $J$  = 11.1 Hz), 7.87-7.90 (m, 2H), 8.25-8.38 (m, 2H);  $^{13}\text{C}$ NMR: (100MHz,  $\text{DMSO-}d_6$ ):  $\delta$  = 27.4, 28.5, 33.5, 37.1, 51.8, 63.1, 114.3, 121.0, 125.7, 127.0, 128.7, 128.9, 129.5, 132.9, 133.8, 142.4, 145.9, 152.6, 153.5, 154.9, 192.9; MS:  $m/z$  = 417 ( $\text{M}^+$ ).

13-(4-Chlorophenyl)-3,4-dihydro-3,3-dimethyl-2H-indazolo[1,2-b]phthalazine-1,6,11(13H)-trione (**4d**)



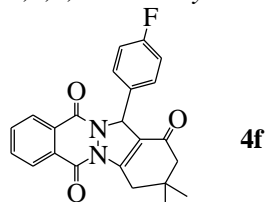
Yellow powder; m. p: 262-264 °C; IR (KBr,  $\text{cm}^{-1}$ ): 2957, 2931, 1688, 1654, 1622;  $^1\text{H}$  NMR (400 MHz,  $\text{DMSO-}d_6$ ):  $\delta$  = 1.22 (s, 6H), 2.33 (s, 2H), 3.22-3.44 (AB system,  $J$  = 19.1 Hz, 2H), 6.41 (s, 1H, CHN), 7.28-7.38 (m, 4H), 7.84-8.38 (m, 4H);  $^{13}\text{C}$ NMR: (100 MHz,  $\text{DMSO-}d_6$ ):  $\delta$  = 27.4, 28.2, 33.7, 36.0, 51.9, 63.3, 114.6, 122.0, 126.1, 127.7, 128.1, 128.7, 128.9, 129.8, 129.9, 130.1, 131.5, 132.5, 134.4, 149.8, 151.3, 154.0, 156.1, 192.2; MS:  $m/z$  = 404 ( $\text{M}^+$ ).

3,4-Dihydro-3,3-dimethyl-13-p-tolyl-2H-indazolo[1,2-b]phthalazine-1,6,11(13H)-trione (**4e**)



Yellow powder; m. p: 226-228 °C; IR (KBr,  $\text{cm}^{-1}$ ): 2958, 1667, 1631;  $^1\text{H}$  NMR: (400 MHz,  $\text{DMSO-}d_6$ ):  $\delta$  = 1.21 (s, 6H), 2.20 (s, 3H), 2.33 (s, 2H), 3.21-3.45 (AB system,  $J$  = 18.9 Hz, 2H), 6.43 (s, 1H), 7.12-7.32 (dd,  $J$  = 7.8 Hz, 4H), 7.83-8.36 (m, 4H);  $^{13}\text{C}$ NMR: (100 MHz,  $\text{DMSO-}d_6$ ):  $\delta$  = 21.3, 28.4, 28.6, 34.6, 38.1, 50.9, 64.7, 118.7, 127.1, 127.7, 128.9, 129.1, 129.4, 133.4, 134.4, 138.3, 148.5, 150.7, 154.1, 156.1, 192.1; MS:  $m/z$  = 386 ( $\text{M}^+$ ).

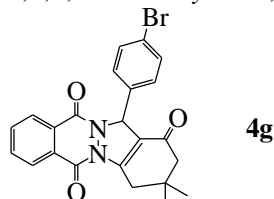
2,3,4,13-Tetrahydro-3,3-dimethyl-13-(4-fluorophenyl)-indazolo[2,1-b]phthalazine-1,6,11-trione (**4f**)



Yellow powder; m. p: 219-220 °C; IR (KBr,  $\text{cm}^{-1}$ ): 2958, 2867, 1664, 1655, 1626; 1473, 1309;  $^1\text{H}$  NMR (400 MHz,  $\text{CDCl}_3$ )  $\delta$  = 1.24 (s, 6H), 2.36 (s, 2H), 3.26-3.43 (AB system,  $J$  = 19.1 Hz, 2H), 6.46 (s, 1H), 7.02-7.06 (m, 2H), 7.40-7.44 (m, 2H), 7.86-7.89 (m, 2H), 8.27-8.39 (m, 2H);  $^{13}\text{C}$  NMR (100 MHz,

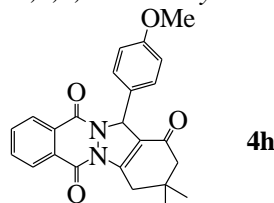
$\text{CDCl}_3$ )  $\delta = 28.8, 29.1, 35.1, 38.4, 51.3, 64.7, 116.0, 116.2, 118.6, 128.1, 128.4, 129.3, 129.4, 132.6, 134.0, 135.0, 151.4, 154.8, 156.4, 162.1, 164.1, 192.5$ .

*2,3,4,13-Tetrahydro-3,3-dimethyl-13-(4-bromophenyl)-indazolo[1,2-b]phthalazine-1,6,11-trione (4g)*



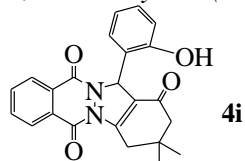
White powder; m.p: 264-266 °C; IR (KBr,  $\text{cm}^{-1}$ ): 2957, 1656, 1623, 1543, 1471, 1308, 1267;  $^1\text{H}$  NMR (400 MHz,  $\text{CDCl}_3$ )  $\delta = 1.23$  (s, 6H), 2.36 (s, 2H), 3.26-3.42 (AB system,  $J = 19.0$  Hz, 2H), 6.42 (s, 1H), 7.29-7.40 (m, 4H), 7.80-8.29 (m, 4H);  $^{13}\text{C}$  NMR (100 MHz,  $\text{CDCl}_3$ )  $\delta = 28.5, 28.7, 34.7, 38.0, 50.9, 64.4, 118.0, 122.8, 127.8, 128.1, 128.8, 128.9, 129.0, 131.9, 133.7, 134.7, 135.5, 151.1, 154.4, 156.0, 192.1$ .

*2,3,4,13-Tetrahydro-3,3-dimethyl-13-(4-methoxyphenyl)-indazolo[2,1-b]phthalazine-1,6,11-trione (4h)*



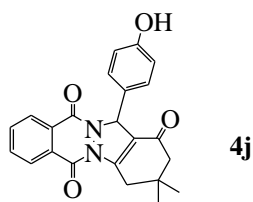
Yellow powder; m.p: 218-220 °C; IR (KBr,  $\text{cm}^{-1}$ ): 2957, 1665, 1627, 1602, 1511, 1467, 1427, 1360, 1314, 1266, 1243, 1170, 1101, 1029, 842, 799, 701;  $^1\text{H}$  NMR (400 MHz,  $\text{CDCl}_3$ )  $\delta = 1.23$  (s, 3 H), 1.24 (s, 3 H), 2.33 (s, 2 H), 3.26-3.42 (AB System,  $J = 18.9$  Hz 2H), 3.75 (s, 3H), 6.42 (s, 1H), 6.84-7.35 (m, 4H), 7.82-7.85 (m, 2H), 8.27-8.35 (m, 2H);  $^{13}\text{C}$  NMR (100 MHz,  $\text{CDCl}_3$ )  $\delta = 28.4, 28.7, 34.6, 38.1, 50.9, 55.1, 64.5, 114.1, 118.5, 127.6, 127.9, 128.3, 128.5, 128.9, 129.1, 133.4, 134.9, 150.7, 154.2, 156.0, 159.6, 192.2$ ; MS:  $m/z = 402$  ( $\text{M}^+$ ).

*3,3-Dimethyl-13-(2-hydroxyphenyl)-3,4-dihydro-2H-indazolo[1,2-b]phthalazine-1,6,11(13H)-trione (4i)*



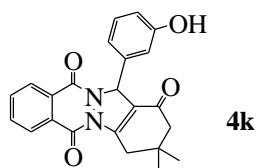
Yellow solid; m.p: 184-186 °C; IR (KBr,  $\text{cm}^{-1}$ ): 2897, 1661, 1492, 1378, 1328, 1262, 1082, 791;  $^1\text{H}$  NMR (400 MHz,  $\text{CDCl}_3$ )  $\delta = 0.97$  (s, 3H,  $\text{CH}_3$ ), 1.03 (s, 3H), 2.32 (s, 2H), 3.26-3.37 (AB System,  $J = 18.0$  Hz, 2H), 6.33 (s, 1H), 6.97-7.56 (m, 4H), 7.83-7.85 (m, 2H), 8.25-8.34 (m, 2H), 10.98 (s, 1H, OH);  $^{13}\text{C}$  NMR (100 MHz,  $\text{CDCl}_3$ )  $\delta = 26.4, 27.3, 41.5, 43.3, 52.2, 111.1, 115.8, 120.6, 124.5, 127.5, 128.1, 128.7, 131.7, 133.4, 137.1, 150.8, 161.5, 169.3, 196.1, 201.1$ .

3,4-Dihydro-3,3-dimethyl-13-(4-hydroxyphenyl)-2H-indazolo[2,1-b]phthalazine-1,6,11(13H)-trione (**4j**)



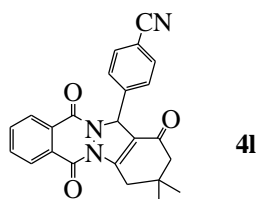
White solid; m.p: 258-260 °C; IR (KBr,  $\text{cm}^{-1}$ ): 3443, 2956, 1660, 1626, 1467, 1361, 1313, 1273;  $^1\text{H}$  NMR (400 MHz,  $\text{DMSO}-d_6$ )  $\delta$  = 1.10 (s,  $\text{CH}_3$ ), 1.11 (s,  $\text{CH}_3$ ), 2.24 (s,  $\text{CH}_2$ ), 3.22-3.36 (AB System,  $J$  = 19.0 Hz 2H), 3.36 (s, OH), 6.22 (s, CH), 6.84 (d, 2H,  $J$  = 8.4 Hz), 7.33 (d, 2CH,  $J$  = 8.4 Hz), 7.93 (t, 2CH,  $J$  = 7.6 Hz), 8.07 (d, 1H,  $J$  = 7.2 Hz), 8.23 (d, 1H,  $J$  = 7.2 Hz).

13-(3-Hydroxyphenyl)-3,3-dimethyl-3,4-dihydro-1H-indazolo [1,2-b]phthalazine-1,6,11(2H,13H)-trione (**4k**)



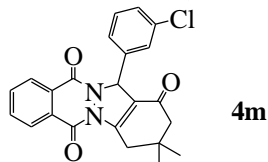
Yellow powder; m. p. 268-27 °C; IR (KBr,  $\text{cm}^{-1}$ ): 3357, 2954, 2895, 1663;  $^1\text{H}$  NMR (400 MHz,  $\text{CDCl}_3$ )  $\delta$  = 1.21 (s, 6H), 2.32 (s, 2H), 3.21-3.44 (AB System,  $J$  = 18.9 Hz, 2H), 5.97 (s, 1H, OH), 6.41 (s, 1H), 6.71-7.19 (m, 4H), 7.84-7.90 (m, 2H), 8.27-8.38 (m, 2H);  $^{13}\text{C}$  NMR (100 MHz,  $\text{CDCl}_3$ )  $\delta$  = 28.5, 28.6, 34.6, 38.0, 50.9, 64.7, 114.6, 115.9, 118.5, 118.6, 127.7, 128.0 (2), 128.9, 129.9, 133.6, 134.6, 137.9, 151.0, 154.0, 156.1, 192.3; MS:  $m/z$  388 ( $\text{M}^+$ ).

13-(4-Cyanophenyl)-3,3-dimethyl-3,4-dihydro-2H-indazolo[1,2-b]phthalazine-1,6,11(13H)-trione (**4l**)



Yellow powder; m.p: 226-228 °C; IR (KBr,  $\text{cm}^{-1}$ ): 2961, 2227, 1667, 1623, 1473;  $^1\text{H}$  NMR (400 MHz,  $\text{CDCl}_3$ )  $\delta$  = 1.23 (s, 6H), 2.35 (s, 2H), 3.24-3.41 (AB System,  $J$  = 18.9 Hz, 2H), 6.47 (s, 1H), 7.29-7.66 (m, 4H), 7.89-8.40 (m, 4H);  $^{13}\text{C}$  NMR (100 MHz,  $\text{CDCl}_3$ )  $\delta$  = 28.4, 28.7, 34.7, 38.0, 50.8, 64.4, 112.5, 117.4, 118.45, 127.79, 127.9, 128.2, 128.7, 128.9, 132.6, 133.9, 134.8, 141.6, 151.6, 154.5, 155.9, 192.1

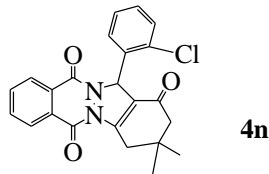
2,3,4,13-Tetrahydro-3,3-dimethyl-13-(3-chlorophenyl)-indazolo[2,1-b]phthalazine-1,6,11-trione (**4m**)



Light yellow powder; m.p: 204-206 °C; IR (KBr,  $\text{cm}^{-1}$ ): 2952, 1659, 1620, 1467, 1363, 1307, 1268, 789;  $^1\text{H}$  NMR (400 MHz,  $\text{CDCl}_3$ )  $\delta$  = 1.21 (s, 6H), 2.34 (s, 2H), 3.21-3.41 (AB System,  $J$  = 19.1 Hz, 2H), 6.40

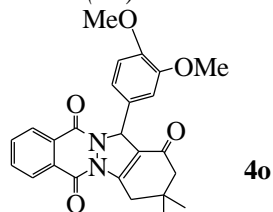
(s, 1H), 7.24-7.38 (m, 4H), 7.86 (dd, 2H,  $J = 3.6$  Hz), 8.27 (dd, 1H,  $J = 3.6$  Hz), 8.36 (t, 1H,  $J = 4.5$  Hz);  $^{13}\text{C}$  NMR (100 MHz,  $\text{CDCl}_3$ )  $\delta = 28.5, 28.6, 34.7, 38.0, 50.9, 64.3, 117.9, 125.8, 127.0, 127.7, 128.1, 128.9, 129.0, 130.0, 133.7, 134.6, 138.5, 151.2, 154.4, 156.0, 192.1$ .

*2,3,4,13-Tetrahydro-3,3-dimethyl-13-(2-chlorophenyl)-indazolo[2,1-b]phthalazine-1,6,11-trione (4n)*



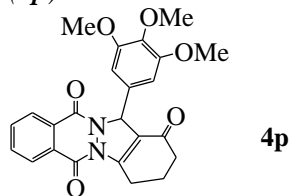
Yellow powder; m.p: 266-268 °C; IR (KBr,  $\text{cm}^{-1}$ ): 2957, 1661, 1622, 1467, 1472, 1359, 1311, 1267, 791;  $^1\text{H}$  NMR (400 MHz,  $\text{CDCl}_3$ )  $\delta = 1.23$  (s, 6H), 2.34 (s, 2H), 3.26-3.42 (AB System,  $J = 19.0$  Hz, 2H), 6.70 (s, 1H), 7.24-7.50 (m, 4H), 7.87-8.39 (m, 4H);  $^{13}\text{C}$  NMR (100 MHz,  $\text{CDCl}_3$ )  $\delta = 28.8, 29.2, 35.0, 38.4, 51.3, 64.4, 116.7, 127.6, 128.1, 128.4, 129.1, 129.4, 130.2, 130.9, 132.0, 133.0, 133.9, 134.9, 152.2, 154.6, 156.6, 192.4$ .

*13-(3,4-Dimethoxy-phenyl)-3,3-dimethyl-2,3,4,13-dihydro-indazolo[1,2-b]phthalazine-1,6,11(13H)-trione (4o)*



Yellow powder; mp: 185-186 °C; IR (KBr,  $\text{cm}^{-1}$ ): 2959, 1662, 1630, 1361, 1313, 1267, 699.  $^1\text{H}$  NMR (400 MHz,  $\text{CDCl}_3$ )  $\delta = 1.22$  (s, 6H), 2.35 (s, 2H), 3.22-3.44 (AB System,  $J = 19.2$  Hz, 2H), 3.82 (s, 3H), 3.87 (s, 3H), 6.41 (s, 1H), 6.79-7.00 (m, 3H), 7.83-7.88 (m, 2H), 8.26-8.36 (m, 2H);  $^{13}\text{C}$  NMR (100 MHz,  $\text{CDCl}_3$ )  $\delta = 28.33, 28.84, 34.64, 38.09, 50.99, 55.82, 55.98, 64.77, 111.05, 111.17, 118.52, 119.31, 127.74, 127.96, 128.79, 128.97, 129.16, 133.52, 134.53, 149.30, 150.76, 154.41, 156.12, 192.2$ ; MS (ESI):  $m/z = 432$  ( $\text{M}^+$ ).

*3,4-Dihydro-3-(3,4,5-trimethoxyphenyl)-3,3-dimethyl-2H-indazolo[1,2-b]phthalazine-1,6,11(13H)-trione (4p)*



Yellow powder: m. p: 234-236 °C; IR (KBr,  $\text{cm}^{-1}$ ): 2958, 2838, 1655, 1627;  $^1\text{H}$  NMR: (400 MHz,  $\text{DMSO}-d_6$ ):  $\delta = 1.23$  (s, 6H), 2.37 (s, 2H), 3.20-3.45 (AB System,  $J = 19.1$  Hz, 2H), 3.81 (s, 9H), 6.39 (s, 1H), 6.63 (s, 2H) 7.83-8.37 (m, 4H);  $^{13}\text{C}$ NMR: (400 MHz,  $\text{DMSO}-d_6$ ):  $\delta = 28.1, 28.9, 34.6, 38.0, 50.9, 56.2, 60.7, 64.9, 104.6, 118.3, 127.7, 128.0$  (2C), 129.7, 129.30, 131.7, 133.5, 134.7, 138.3, 150.8, 153.3, 154.5, 156.1, 192.1; MS:  $m/z = 462$  ( $\text{M}^+$ ).

**Table S1:** <sup>1</sup>H NMR data of compounds **4a-p**

Entry							
<b>4a</b>	1.21(s, 6H)	2.33 (s,2H)	3.22 -3.47 (AB System, <i>J</i> = 18.10 Hz, 2H)	6.44 (s,1H)	7.23 - 8.35 (m, 9H)		
<b>4b</b>	1.23 (s, 6H)	2.34 (s, 2H)	3.23-3.45 (AB System, <i>J</i> = 18.9 Hz, 2H)	6.53 (s,1H)	7.54-8.40 (m, 8H)		
<b>4c</b>	1.18 (s, 3H) 1.26 (s, 3H)	2.34 (s, 2H)	3.24-3.45 (AB system, <i>J</i> = 19.2 Hz, 2H)	6.53 (s,1H)	7.27 and 8.15 (dd, 4H, <i>J</i> = 11.1 Hz)	7.87-7.90 (m, 2H) 8.25-8.38 (m, 2H)	
<b>4d</b>	1.22 (s, 6H)	2.33 (s, 2H)	3.22-3.44 (AB system, <i>J</i> = 19.1 Hz, 2H)	6.41 (s,1H)	7.28 - 7.38 (m, 4H)	7.84-8.38 (m, 4H)	
<b>4e</b>	1.21 (s, 6H)	2.20 (s, 3H) 2.33 (s, 2H)	3.24-3.42 (AB system, <i>J</i> = 18.9 Hz, 2H)	6.43(s, 1H)	7.12-7.32 (dd, 4H, <i>J</i> = 7.8 Hz)	7.83-8.36 (m, 4H)	
<b>4f</b>	1.24 (s, 6H)	2.36 (s, 2H)	3.26-3.43 (AB system, <i>J</i> = 19.1 Hz, 2H)	6.46 (s, 1H)	7.02-7.06 (m, 2H) 7.40-7.44 (m, 2H)	7.86-7.89 (m, 2H) 8.27-8.39 (m, 2H)	
<b>4g</b>	1.23 (s, 6H)	2.36 (s, 2H)	3.26-3.42 (AB system, <i>J</i> = 19.0 Hz, 2H)	6.42 (s, 1H)	7.29-7.40 (m, 4H)	7.80-8.29 (m, 4H)	
<b>4h</b>	1.23 (s, 3H) 1.24 (s,3H)	2.30 (s, 2 H)	3.26-3.42 (AB System, <i>J</i> = 18.9 Hz 2H)	6.42 (s, 1 H)	6.84-7.35 (m, 4H), 7.82-7.85 (m, 2H)	8.27-8.35 (m, 2H)	
<b>4i</b>	0.97 (s, 3H) 1.03 (s, 3H)	2.32 (s, 2H)	3.26-3.37 (AB System, <i>J</i> = 18.0 Hz, 2H)	6.33 (s, 1H)	6.97-7.56 (m, 4H) 7.83-7.85 (m, 2H) 8.25-8.34 (m, 2H)	10.98 (br s, 1H, OH)	

<b>4j</b>	1.10 (s,3H), 1.11 (s,3H)	2.24 (s, 2H)	3.22-3.36 (AB System, $J = 19.0$ Hz 2H)	6.22 (s, 2H)	6.84 (d, 2H, $J = 8.4$ Hz), 7.33 (d, 2H, $J = 8.4$ Hz) 7.93 (t, 2H, $J = 7.6$ Hz),	8.07 (d, 1H, $J = 7.2$ Hz) 8.23 (d, 1H, $J = 7.2$ Hz)
<b>4k</b>	1.21 (s, 6H)	2.32 (s, 2H)	3.21-3.44 (AB System, $J = 18.9$ Hz, 2H)	5.97 (s, 1H, OH) 6.41 (s, 1H)	6.71-7.19 (m, 4H)	7.84-7.90 (m, 2H) 8.27-8.38 (m, 2H)
<b>4l</b>	1.23 (s, 6H)	2.35 (s, 2H)	3.24-3.41 (AB System, $J = 18.9$ Hz, 2H)	6.47 (s, 1H)	7.29-7.66 (m, 4H)	7.89-8.40 (m, 4H)
<b>4m</b>	1.21 (s, 6H)	2.34 (s, 2H)	3.21-3.41 (AB System, $J = 19.1$ Hz, 2H)	6.40 (s, 1H)	7.24-7.38 (m, 4H) 7.86 (dd, 2H, $J = 3.6$ Hz)	8.27 (dd, 1H, $J = 3.6$ Hz) 8.36 (t, 1H, $J = 4.5$ Hz)
<b>4n</b>	1.23 (s, 6H)	2.34 (s, 2H)	3.26-3.42 (AB System, $J = 19.0$ Hz, 2H)	6.70 (s, 1H)	7.24-7.50 (m, 4H)	7.87-8.39 (m, 4H)
<b>4o</b>	1.22 (s, 6H)	2.35 (s, 2H)	3.22-3.44 (AB System, $J = 19.2$ Hz, 2H) 3.87 (s, 3H), 3.82 (s, 3H)	6.41 (s, 1H)	6.79-7.00 (m, 3H) 7.83-7.88 (m, 2H)	8.26-8.36 (m, 2H)
<b>4p</b>	1.29 (s, 6H)	2.41 (s, 2H)	3.20-3.45 (AB System, $J = 19.1$ Hz, 2H), 3.90 (s, 9H)	6.29 (s, 1H) 6.63 (s, 2H)	7.83-8.37 (m, 4H)	



**Table S2:** <sup>13</sup>C NMR data of compounds **4a-p**

Entry				
<b>4a</b>	28.3, 28.7, 34.8, 38.1	50.9, 64.8	118.7, 127.0, 127.9, 128.6, 129.1, 129.4, 129.5, 133.9, 134.5, 136.4, 150.8, 154.2, 156.0	192.1
<b>4b</b>	28.4, 28.9, 35.7, 38.4	51.8, 63.1	118.1, 122.5, 124.7, 128.2, 128.8, 129.1, 129.7, 132.9, 133.2, 134.4, 138.7, 148.5, 150.8, 154.3, 155.9	192.1
<b>4c</b>	27.4, 28.5, 33.5, 37.1	51.8, 63.1	114.3, 121.0, 125.7, 127.0, 128.7, 128.9, 129.5, 132.9, 133.8, 142.4, 145.9, 152.6, 153.5, 154.9	192.9
<b>4d</b>	27.4, 28.2, 33.7, 36.0	51.9, 63.3	114.6, 122.0, 126.1, 127.7, 128.1, 128.7, 128.9, 129.8, 129.9, 130.1, 131.5, 132.5, 134.4, 149.8, 151.3, 154.0, 156.1	192.2
<b>4e</b>	21.3, 28.7, 28.9, 34.7, 38.1	51.9, 62.8	117.7, 126.02, 126.7, 126.9, 128.7, 129.4, 129.7, 132.40, 132.41, 133.5, 137.4, 147.5, 153.7, 154.1, 156.1	192.1

<b>4f</b>	28.8, 29.1, 35.1, 38.4	51.3, 64.7	116.0, 116.2, 118.6, 128.1, 128.4, 129.3, 129.4, 132.6, 134.0, 135.0, 151.4, 154.8, 156.4, 162.1, 164.1	192.5
<b>4g</b>	28.5, 28.7, 34.7, 38.0	50.9, 64.4	118.0, 122.8, 127.8, 128.1, 128.8, 128.9, 129.0, 131.9, 133.7, 134.7, 135.5, 151.1, 154.4, 156.0	192.1
<b>4h</b>	28.4, 28.7, 34.6, 38.1	50.9, 55.1, 64.5	114.1, 118.5, 127.6, 127.9, 128.3, 128.5, 128.9, 129.1, 133.4, 134.9, 150.7, 154.2, 156.0, 159.6	192.2
<b>4i</b>	27.3, 26.4	52.2, 43.3, 41.5	111.1, 115.8, 120.6, 124.5, 127.5, 128.1, 128.7, 131.7, 133.4, 137.1, 150.8, 161.5, 169.3	196.1, 201.1
<b>4j</b>	<b>No data</b>			
<b>4k</b>	28.5, 28.6, 34.6, 38.0	50.9, 64.7	114.6, 115.9, 118.5, 118.6, 127.7, 128.0 (2), 128.9, 129.9, 133.6, 134.6, 137.9, 151.0, 154.0, 156.1	192.3

<b>4l</b>	28.4, 28.7, 34.7, 38.0,	50.8, 64.4	112.5, 118.45, 127.9, 128.7, 132.6, 134.8, 151.6, 155.9	117.4, 127.79, 128.2, 128.9, 133.9, 141.6, 154.5,	192.1
<b>4m</b>	28.5, 28.6, 34.7, 38.0	50.9, 64.3	117.9, 125.8, 127.0, 127.7, 128.1, 128.9, 129.0, 130.0, 133.7, 134.6, 138.5, 151.2, 154.4, 156.0		192.1
<b>4n</b>	28.8, 29.2, 35.0, 38.4	51.3, 64.4	116.7, 127.6, 128.1, 128.4, 129.1, 129.4, 130.2, 130.9, 132.0, 133.0, 133.9, 134.9, 152.2, 154.6, 156.6		192.4
<b>4o</b>	34.64, 38.09	50.99, 55.82, 55.98, 64.77	111.05, 111.17, 118.52, 119.31, 127.74, 127.96, 128.79, 128.97, 129.16, 133.52, 134.53, 149.30, 150.76, 154.41, 156.12		192.2
<b>4p</b>	24.5, 28.6, 33.6, 37.0	51.9, 55.2, 61.7, 63.9	105.6, 119.3, 128.7 (2C), 129.0 (2C), 129.7, 129.30, 132.7, 133.5, 134.7, 137.3, 151.8, 154.3, 153.5, 155.1		193.1

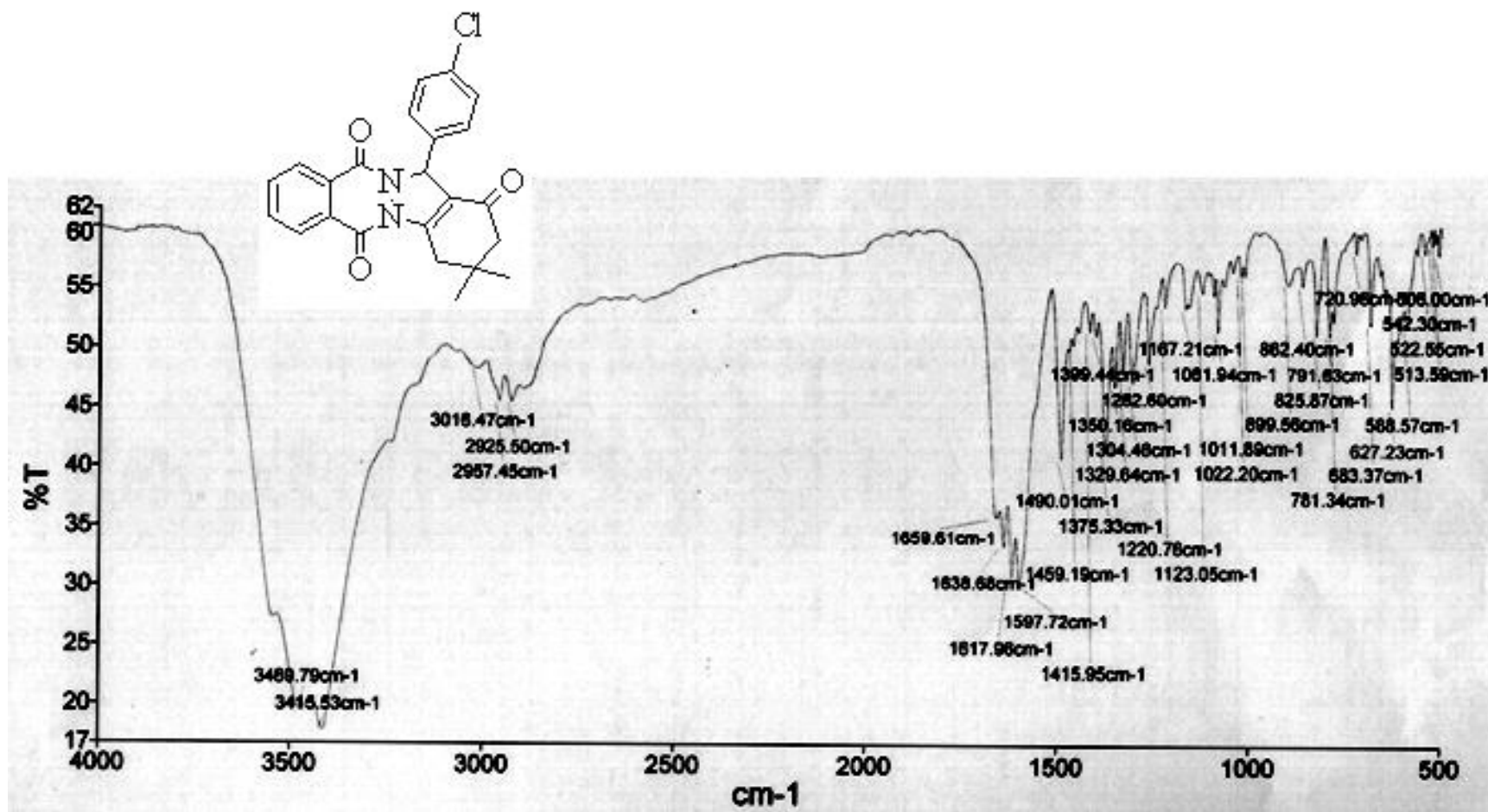


Figure S1: IR Spectra of 4d

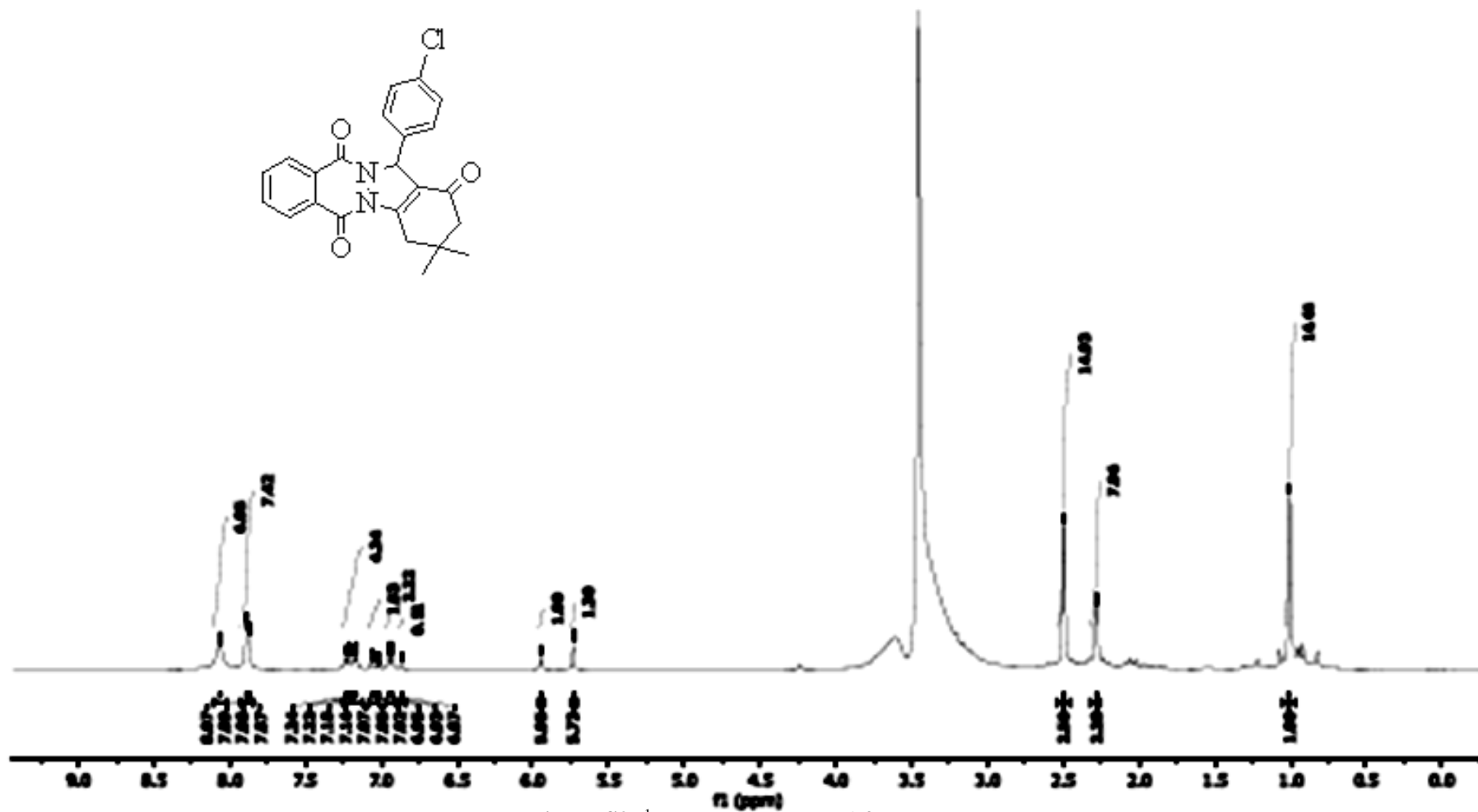


Figure S2: <sup>1</sup>H NMR Spectrum of 4d

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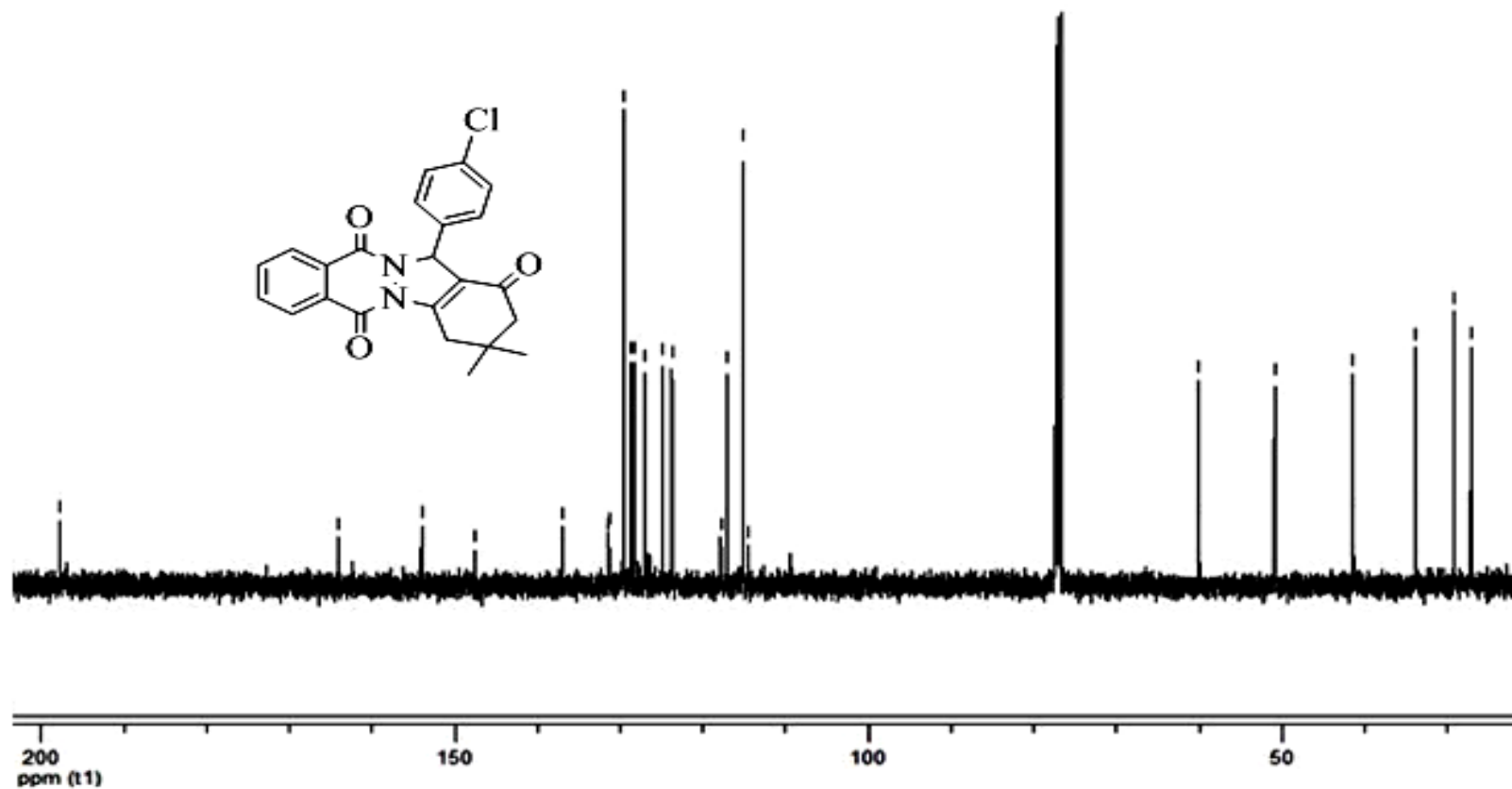


Figure S3: <sup>13</sup>C NMR Spectra of 5d

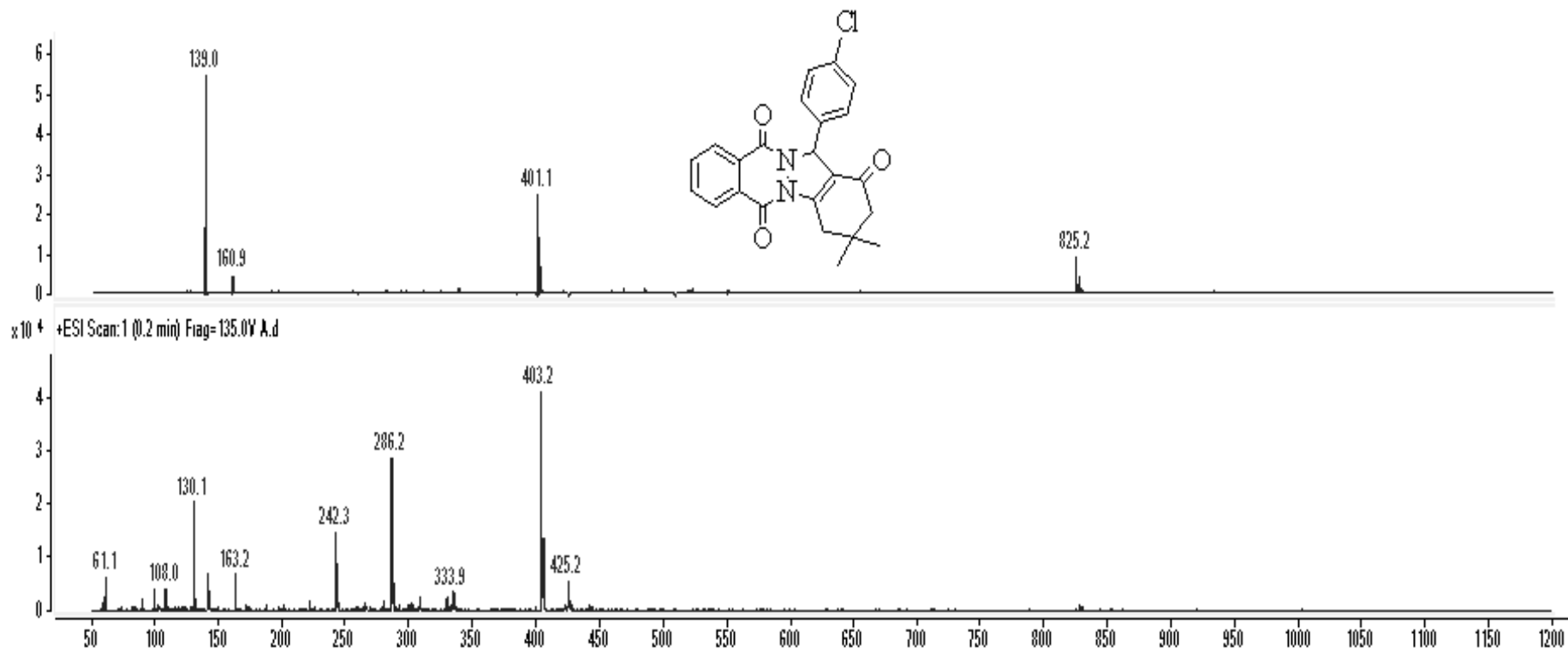


Figure S4: Mass Spectrum of 4d