Supplementary Information (Manuscript C005066K)

1) Experimental procedures and spectroscopic data for compounds **6-12**, **16-19** and **21-29** described in the paper are given in the supporting information.
2) ^{1}H NMR scans for all compounds **6-12**, **13a-g**, 16-**19** and **21-29** are provided.

Isopropyl 4-acetylbenzenesulfonate (6). 4-Dimethylaminopyridine (2.30 g, 18.9 mmol) and dry CH_2Cl_2 (50 mL) were added to 2-propanol (1.45 mL, 19.0 mmol), the mixture was cooled to 0-5°C, and a solution of 4-acetylbenzenesulfonyl chloride (**5**, 1.38 g, 6.3 mmol) in dry CH_2Cl_2 (20 mL) was added drop wise with stirring. The reaction was allowed to proceed at 25°C for 4 hours with stirring, the mixture was washed with 1M aqueous HCl solution (2 x 80 mL) and then brine (100 mL), the organic layer was dried ($MgSO_4$), and the solvent was removed in vacuo to give **6 (**1.35 g, 88%) as a yellowish oil which was used without further purification. IR (film): 2986, 1698, 1368, 1184 cm^{-1}; ESI-MS: 243 $[M+H]^+$; ^{1}H NMR ($CDCl_3$): δ 1.31 (d, J = 6.1 Hz, 6H, CH*(CH$_3$)$_2$*), 2.67 (s, 3H, CO*CH$_3$*), 4.83 (heptet, J = 6.1 Hz, 1H, *CH*(CH_3)$_2$), 8.02 (dd, J = 6.7, 1.8 Hz, 2H, phenyl H-2, H-6), 8.11 (dd, J = 6.7, 1.8 Hz, 2H, phenyl H-3, H-5).

1,1-Diphenyl-2-(4-isopropoxysulfonylphenyl)prop-1-ene (7). $TiCl_4$ (2.73 mL, 24.8 mmol) was added drop wise to a stirred suspension of Zn powder (3.24 g, 49.8 mmol) in dry THF (80 mL), under an argon atmosphere at -10°C, and the reaction mixture was refluxed for 2 hours. A solution of isopropyl 4-acetylbenzenesulfonate (**6,** 1.5 g, 6.2 mmol) and benzophenone (1.13 g, 6.2 mmol) in dry THF (20 mL) were added to a cooled suspension of the titanium reagent at 0°C, and the reaction was allowed to proceed at reflux for 30 minutes. After cooling to 25°C, the reaction mixture was poured into a 10% aqueous K_2CO_3 solution (100 mL), this mixture was stirred vigorously for 5 minutes, and the dispersed insoluble material was removed by vacuum filtration through a pad of Celite 545. The organic layer was separated and the aqueous layer was extracted with EtOAc (2 x 80 mL). The combined organic fractions were washed with water and then brine, and the organic fraction was dried ($MgSO_4$). Removal of the solvent in vacuo gave a residue that was purified by silica gel column chromatography using EtOAc:hexane (1:20, v/v) as eluant to afford **7** (650 mg, 27.1%) as a white solid, mp 91-94°C. IR (film): 2990, 2919, 1364, 1185 cm^{-1}; ESI-MS: 393 $[M+H]^+$, 410 $[M+NH_4]^+$; ^{1}H NMR ($CDCl_3$): δ 1.23 (d, J = 6.1 Hz, 6H, CH*(CH$_3$)$_2$*), 2.17 (s, 3H, *CH$_3$*C=C), 4.68 (heptet, J = 6.1 Hz, 1H, *CH*(CH_3)$_2$), 6.84-6.88 (m, 2H,

phenyl hydrogens), 7.00-7.10 (m, 3H, phenyl hydrogens), 7.23-7.40 (m, 7H, phenyl hydrogens, sulfonylphenyl H-2, H-6), 7.69 (dd, *J* = 6.7, 1.8 Hz, 2H, sulfonylphenyl H-3, H-5).

1,1-Di-(4-methylphenyl)-2-(4-isopropoxysulfonylphenyl)prop-1-ene (8). Compound **8** was prepared using a methodology similar to that described above for the synthesis of compound **7** except that 4,4'-dimethylbenzophenone was used in place of benzophenone; 33.6% yield, white solid, mp 150-153°C; IR (film): 2928, 2923, 1360, 1193 cm^{-1}; ESI-MS: 443 $[M+Na]^+$; ^1H NMR ($CDCl_3$): δ 1.24 (d, *J* = 6.1 Hz, 6H, CH*(CH$_3$)$_2$*), 2.17 (s, 3H, Ar*CH$_3$*), 2.21 (s, 3H, Ar*CH$_3$*), 2.38 (s, 3H, *CH$_3$*C=C), 4.69 (heptet, *J* = 6.1 Hz, 1H, *CH*(CH_3)$_2$), 6.72 and 6.82 (two d, *J* = 7.9 Hz, 2H each, tolyl H-3, H-5), 7.11-7.31 (m, 6H, two tolyl H-2, H-6 and sulfonylphenyl H-2, H-6), 7.69 (dd, *J* = 6.7, 1.8 Hz, 2H, sulfonylphenyl H-3, H-5).

1,1-Diphenyl-2-(4-oxysulfonylphenyl)prop-1-ene sodium salt (9). 1,1-Diphenyl-2-(4-isopropoxysulfonylphenyl)prop-1-ene (**7,** 0.478 g, 1.14 mmol) was dissolved in acetone (15 mL), NaI (0.256 g, 1.17 mmol) was added, and the reaction *mixture* was stirred at reflux for 16 hours. Removal of the solvent *in vacuo* gave a solid which was washed with acetone (2 mL) and then EtOAc (2 mL) to provide **9** (92%) as a white solid, mp 265-270°C; IR (KBr): 3058, 3017, 1206, 1134 cm^{-1}; ESI-MS: 349 $[M-Na]^-$; ^1H NMR (DMSO-d_6): δ 2.03 (s, 3H, *CH$_3$*C=C), 6.87-6.89 (m, 2H, phenyl hydrogens), 7.01-7.30 (m, 10H, phenyl hydrogens and sulfonylphenyl H-2, H-6), 7.36 (d, *J* = 7.9 Hz, 2H, sulfonylphenyl H-3, H-5).

1,1-Di-(4-methylphenyl)-2-(4-oxysulfonylphenyl)prop-1-ene sodium salt (10). Reaction of **8** with NaI, using a methodology similar to that used to prepare **9**, furnished **10** (88%) as a white solid; mp > 300 °C; IR (KBr): 3037, 2919, 1191, 1129 cm^{-1}; ESI-MS: 377 $[M-Na]^-$; ^1H NMR (DMSO-d_6): δ 2.03 (s, 3H, *CH$_3$*C=C), 2.15 (s, 3H, Ar*CH$_3$*), 2.31 (s, 3H, Ar*CH$_3$*), 6.73 and 6.88 (two d, *J* = 7.9 Hz, 2H each, tolyl H-3, H-5), 7.06 and 7.09 (two overlapping d, *J* = 7.9 Hz, 4H total, tolyl H-2, H-6), 7.17 (d, *J* = 7.9 Hz, 2H, sulfonylphenyl H-2, H-6), 7.36 (d, *J* = 7.9 Hz, 2H, sulfonylphenyl H-3, H-5).

1,1-Diphenyl-2-(4-chlorosulfonylphenyl)prop-1-ene (11). 1,1-Diphenyl-2-(4-oxysulfonylphenyl)prop-1-ene sodium salt (**9**, 0.290 g, 7.25 mmol) was dissolved in DMF (10 mL) and $SOCl_2$ (0.173 g, 1.45 mmol) was added. The reaction mixture was stirred at 25°C for 1 hour, poured into cold water (80 mL), and extracted with EtOAc (3 x 80 mL). The combined organic fractions were washed with aqueous HCl solution and then brine prior to drying the organic fraction (Na_2SO_4). Removal of the solvent in vacuo gave **11** as a brown syrup (85.2%)

that was used without further purification. IR (film): 1378, 1189 cm^{-1}; ESI-MS: 369 $[M+H]^+$; ^1H NMR ($CDCl_3$): δ 2.19 (s, 3H, CH_3C=C), 6.86-6.89 (m, 2H, phenyl hydrogens), 7.07-7.09 (m, 3H, phenyl hydrogens), 7.24-7.41 (m, 7H, phenyl hydrogens and sulfonylphenyl H-2, H-6), 7.82 (d, J = 7.9 Hz, 2H, sulfonylphenyl H-3, H-5).

1,1-Di-(4-methylphenyl)-2-(4-chlorosulfonylphenyl)prop-1-ene (12). Compound **12** was synthesized, using a methodology similar to that used to prepare **11**, as a brown syrup (79%); IR (film): 2969, 2919, 2849, 1382, 1176 cm^{-1}; ESI-MS: 397 $[M+H]^+$; ^1H NMR ($CDCl_3$): δ 2.17 (s, 3H, CH_3C=C), 2.23 (s, 3H, ArCH_3), 2.38 (s, 3H, ArCH_3), 6.73 and 6.86 (two d, J = 8.6 and 7.9 Hz, respectively, 2H each, tolyl H-3, H-5), 7.10-7.19 (m, 4H, two tolyl H-2, H-6), 7.34-7.38 (m, 2H, sulfonylphenyl H-2, H-6), 7.81 (dd, J = 6.7, 1.8 Hz, 2H, sulfonylphenyl H-3, H-5).

1,1-Di-(4-fluorophenyl)-2-phenylprop-1-ene (16). The McMurry reaction of acetopheneone (**14**) and 4,4'-difluorobenopheneone, using a procedure similar to that used to prepare **7**, afforded the title compound **16** as a white syrup (71.3%). IR (film): 1604, 1508, 1220, 1154 cm^{-1}; ESI-MS: 307 $[M+H]^+$; ^1H NMR ($CDCl_3$): δ 2.14 (s, 3H, CH_3C=C), 6.70-6.76 and 6.8-6.86 (two m, 2H each, 4-fluorophenyl H-3, H-5), 6.94-7.23 (m, 9H, two 4-fluorophenyl H-2, H-6 and five phenyl hydrogens).

1,1-Di-(4-fluorophenyl)-2-phenylhex-1-ene (17). The McMurry cross-coupling reaction of valerophenone (**15**) and 4,4'-difluorobenzophenone, using a procedure similar to that used for the synthesis of **7**, furnished the title compound **17** as a white solid (83%); mp 73-75°C; IR (film): 1512, 1224, 1159 cm^{-1}; ESI-MS: 349 $[M+H]^+$; ^1H NMR ($CDCl_3$): δ 0.79 (t, J = 7.3 Hz, 3H, $CH_2CH_2CH_2CH_3$), 1.20-1.29 (m, 4H, $CH_2CH_2CH_2CH_3$), 2.41 (t, J = 7.3 Hz, 2H, CH_2C=C), 6.67-6.73, 6.79-6.86 (two m, 2H each, 4-fluorophenyl H-3, H-5), 6.94-7.27 (m, 9H, two 4-fluorophenyl H-2, H-6 and five phenyl hydrogens).

1,1-Di-(4-fluorophenyl)-2-(4-chlorosulfonylphenyl)prop-1-ene (18). Chlorosulfonic acid (1.10 mL, 16.3 mmol) was added slowly to a solution of the olefin **16** (1.0 g, 3.27 mmol) in $CHCl_3$ (55 mL). The reaction was allowed to proceed with stirring at 25°C for 2 hours, the reaction mixture was washed with aqueous HCl solution and then brine, and the organic fraction was dried (Na_2SO_4). Removal of the solvent *in vacuo* gave the product **18** as a brown syrup (34.2%) that was used in subsequent reactions without further purification. IR (film): 1506, 1380, 1224, 1158 cm^{-1}; ESI-MS: 405 $[M+H]^+$; ^1H NMR ($CDCl_3$): δ 2.18 (s, 3H, CH_3C=C), 6.78-6.86, 6.94-6.99 (two m, 2H each, 4-fluorophenyl H-3, H-5), 7.05-7.37 (m, 6H, two 4-

fluorophenyl H-2, H-6 and sulfonylphenyl H-2, H-6), 7.86 (d, *J* = 7.9 Hz, 2H, sulfonylphenyl H-3, H-5).

1,1-Di-(4-fluorophenyl)-2-(4-chlorosulfonylphenyl)hex-1-ene (19). Chlorosulfonation of **17**, using a procedure similar to that described for the synthesis of **18**, afforded **19** (43.1%) as a brown syrup; IR (film): 2958, 2927, 2872, 1509, 1388, 1166 cm^{-1}; ESI-MS: 447 $[M+H]^+$; ^1H NMR ($CDCl_3$): δ 0.81 (t, *J* = 6.7 Hz, 3H, $CH_2CH_2CH_2CH_3$), 1.22-1.27 (m, 4H, $CH_2CH_2CH_2CH_3$), 2.47 (t, *J* = 6.7 Hz, 2H, CH_2C=C), 6.72-6.85, 6.93-6.98 (two m, 2H each, 4-fluorophenyl H-3, H-5), 7.05-7.34 (m, 6H, two 4-fluorophenyl H-2, H-6 and sulfonylphenyl H-2, H-6), 7.85 (dd, *J* = 6.7, 1.8 Hz, 2H, sulfonylphenyl H-3, H5).

4-Amylbenzenesulfonyl chloride (21). Chlorosulfonic acid (5.41 mL, 81 mmol) was added slowly to a solution of amylbenzene (**20**, 4g, 27 mmol) in $CHCl_3$ (27 mL). The reaction mixture was stirred at 25°C for 3 hours, slowly poured into ice-water (100 mL), and the mixture was extracted with EtOAc (3 x 100 mL). The combined organic extracts were washed with brine and the organic fraction was dried (Na_2SO_4). Removal of the solvent *in vacuo* gave a colorless oil which solidified upon standing in a refrigerator to provide the title compound **21** as a white solid (92.1%), mp 39-40°C (lit. mp 44-46°C; M. E. Neubert, S. J. Laskos, R. F. Griffith, M. E. Stahl and L. J. Maurer, *Molecular Crystals and Liquid Crystals*, 1979, **54**, 221); IR (film): 2963, 2927, 2860, 1380, 1174 cm^{-1}; ESI-MS: 247 $[M+H]^+$; ^1H NMR ($CDCl_3$): δ 0.91 (t, *J* = 6.7 Hz, 3H, $CH_2CH_2CH_2CH_2CH_3$), 1.31-1.36 (m, 4H, $CH_2CH_2CH_2CH_2CH_3$), 1.64-1.69 (m, 2H, $CH_2CH_2CH_2CH_2CH_3$), 2.73 (t, *J* = 7.9 Hz, 2H, CH_2C=C), 7.42 (d, *J* = 7.9 Hz, 2H, H-3, H-5), 7.93 (d, *J* = 7.9 Hz, 2H, H-2, H-6).

Isopropyl 4-amylbenzenesulfonate (22). Compound **22**, prepared using a procedure similar to that described for the synthesis of **6**, was obtained as a yellowish oil (89.1%), IR (film): 2989, 2932, 2855, 1365, 1190 cm^{-1}; ESI-MS: 271 $[M+H]^+$, 288 $[M+NH_4]^+$, 293 $[M+Na]^+$; ^1H NMR ($CDCl_3$): δ 0.90 (t, *J* = 7.3 Hz, 3H, $CH_2CH_2CH_2CH_2CH_3$), 1.28 (d, *J* = 6.1 Hz, 6H, $CH(CH_3)_2$), 1.31-1.36 (m, 4H, $CH_2CH_2CH_2CH_2CH_3$), 1.59-1.66 (m, 2H, $CH_2CH_2CH_2CH_2CH_3$), 2.69 (t, *J* = 7.3 Hz, 2H, CH_2C=C), 4.75 (heptet, *J* = 6.1 Hz, 1H, $CH(CH_3)_2$), 7.34 (d, *J* = 7.9 Hz, 2H, H-3, H-5), 7.81 (dd, *J* = 7.9, 1.8 Hz, 2H, H-2, H-6).

Isopropyl 4-pentanoylbenzenesulfonate (23). A solution of isopropyl 4-amylbenzenesulfonate (**22**, 6.6 g, 24.4 mmol) in acetone (250 mL) was cooled to -78°C using a dry ice/acetone bath. $KMnO_4$ (38 g, 0.244 mol) and $FeCl_3$ (9.9 g, 61 mmol) were added, this

mixture was stirred for 2h at -78°C, the reaction flask was removed from the cooling bath, the reaction mixture was allowed to warm gradually (~1 hour) to 25°C, and stirring was continued for an additional 1 hour at 25°C. The resulting suspension was filtered, the residue was washed with EtOAc (3 x 30 mL). The combined filtrate and washings were dried (Na_2SO_4), and the solvent was removed to give a residue that was purified by flash silica gel column chromatography using *n*-hexane:EtOAc (3:1, v/v) as eluent to afford the title compound **23** (2.9 g, 41.8%) as a yellowish oil. IR (film): 2962, 2874, 1707, 1361, 1186 cm^{-1}; ESI-MS: 285 $[M+H]^+$; ^1H NMR ($CDCl_3$): δ 0.97 (t, J = 7.3 Hz, 3H, $CH_2CH_2CH_2\mathit{CH_3}$), 1.31 (d, J = 6.1 Hz, 6H, $CH\mathit{(CH_3)_2}$), 1.37-1.46 (m, 2H, $CH_2CH_2\mathit{CH_2}CH_3$), 1.69-1.79 (m, 2H, $CH_2\mathit{CH_2}CH_2CH_3$), 3.01 (t, J = 6.7 Hz, 2H, $\mathit{CH_2}C{=}C$), 4.82 (heptet, J = 6.1 Hz, 1H, $\mathit{CH}(CH_3)_2$), 8.02 (d, J = 7.9 Hz, 2H, H-2, H-6), 8.10 (dd, J = 7.9, 1.8 Hz, 2H, H-3, H-5).

1,1-Diphenyl-2-(4-isopropoxysulfonylphenyl)hex-1-ene (24). The title compound, prepared using a McMurry cross-coupling reaction of **23** with benzophenone, was obtained as a white solid (32.1%), mp 68-70 °C; IR (film): 2960, 2929, 2857, 1368, 1192 cm^{-1}; ESI-MS: 435 $[M+H]^+$; ^1H NMR ($CDCl_3$): δ 0.78 (t, J = 6.7 Hz, 3H, $CH_2CH_2CH_2\mathit{CH_3}$), 1.21 (d, J = 6.1 Hz, 6H, $CH\mathit{(CH_3)_2}$), 1.24-1.27 (m, 4H, $CH_2\mathit{CH_2CH_2}CH_3$), 2.47 (t, J = 6.7 Hz, 2H, $\mathit{CH_2}C{=}C$), 4.67 (heptet, J = 6.1 Hz, 1H, $\mathit{CH}(CH_3)_2$), 6.83-6.86 (m, 2H, phenyl hydrogens), 6.98-7.01 (m, 3H, phenyl hydrogens), 7.22-7.39 (m, 7H, phenyl hydrogens and sulfonylphenyl H-2, H-6), 7.70 (dd, J = 6.7, 1.8 Hz, 2H, sulfonylphenyl H-3, H-5).

1,1-Di(4-methylphenyl)-2-(4-isopropoxysulfonylphenyl)hex-1-ene (25). The title compound, prepared using a McMurry cross-coupling reaction of **23** with 4,4'-dimethylbenzophenone, was obtained (28.7%), mp 69-71°C; IR (film): 2962, 2926, 2869, 1372, 1186 cm^{-1}; ESI-MS: 463 $[M+H]^+$, 480 $[M+NH_4]^+$, 485 $[M+Na]^+$; ^1H NMR ($CDCl_3$): δ 0.78 (t, J = 7.3 Hz, 3H, $CH_2CH_2CH_2\mathit{CH_3}$), 1.21 (d, J = 6.7 Hz, 6H, $CH\mathit{(CH_3)_2}$), 1.24-1.33 (m, 4H, $CH_2\mathit{CH_2CH_2}CH_3$), 2.18 (s, 3H, $Ar\mathit{CH_3}$), 2.37 (s, 3H, $Ar\mathit{CH_3}$), 2.47 (t, J = 7.3 Hz, 2H, $\mathit{CH_2}C{=}C$), 4.67 (heptet, J = 6.7 Hz, 1H, $\mathit{CH}(CH_3)_2$), 6.71, 6.79 (two d, J = 7.9 Hz, 2H each, tolyl H-3, H-5), 7.09-7.18 (m, 4H, two tolyl H-2, H-6), 7.25-7.28 (m, 2H, sulfonylphenyl H-2, H-6), 7.69 (dd, J = 7.9, 1.8 Hz, 2H, sulfonylphenyl H-3, H-5).

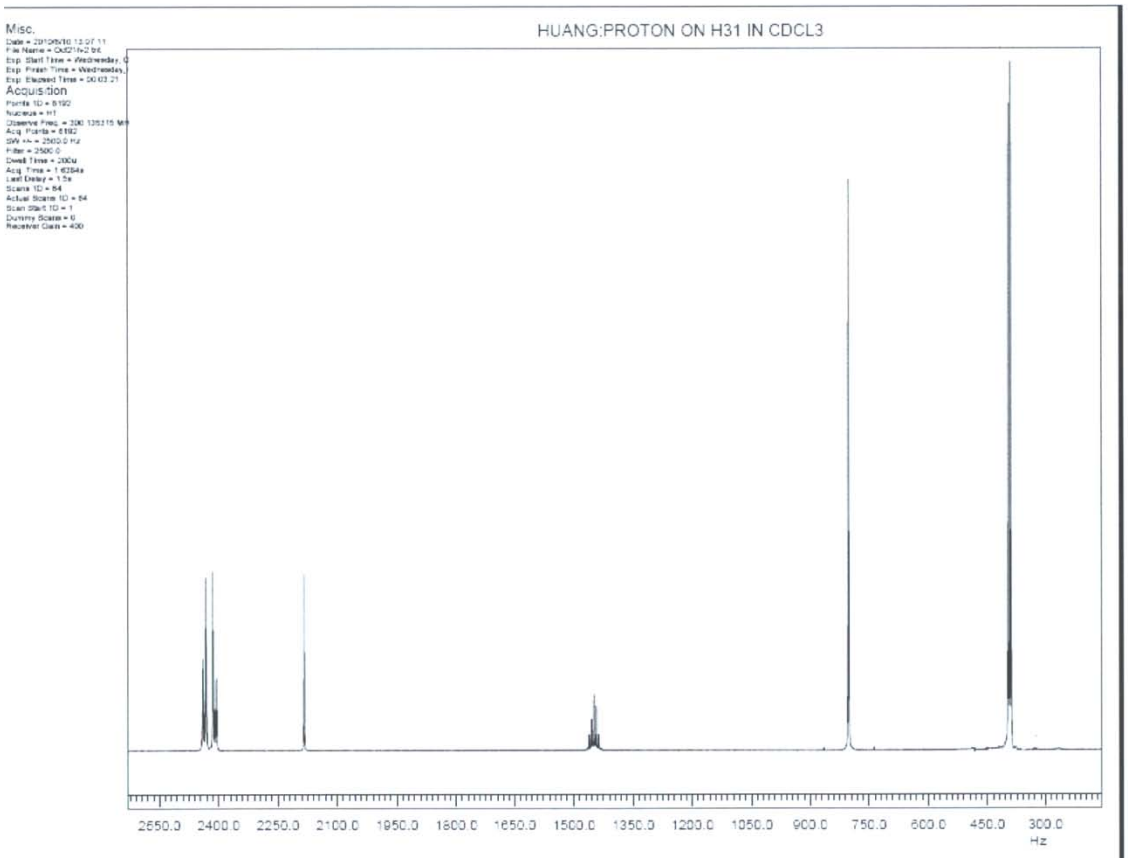
1,1-Diphenyl-2-(4-oxysulfonylphenyl)hex-1-ene sodium salt (26). Cleavage of the isopropyl sulfonate **24** with NaI, using the method described for the synthesis of **9**, afforded the title compound as a white solid (89.2%); mp > 300 °C; IR (KBr): 2970, 2929, 2856, 1206, 1134

cm^{-1}; ESI-MS: 437 $[M+Na]^+$; ^1H NMR (DMSO-d_6): δ 0.71 (t, J = 6.7 Hz, 3H, $CH_2CH_2CH_2\mathit{CH_3}$), 1.13-1.23 (m, 4H, $CH_2\mathit{CH_2CH_2}CH_3$), 2.35 (t, J = 6.7 Hz, 2H, $\mathit{CH_2}C{=}C$), 6.87-6.91 (m, 2H, phenyl hydrogens), 6.99-7.09 (m, 5H, phenyl hydrogens), 7.21-7.30 (m, 5H, phenyl hydrogens and sulfonylphenyl H-2, H-6), 7.37 (d, J = 7.9 Hz, 2H, sulfonylphenyl H-3, H-5).

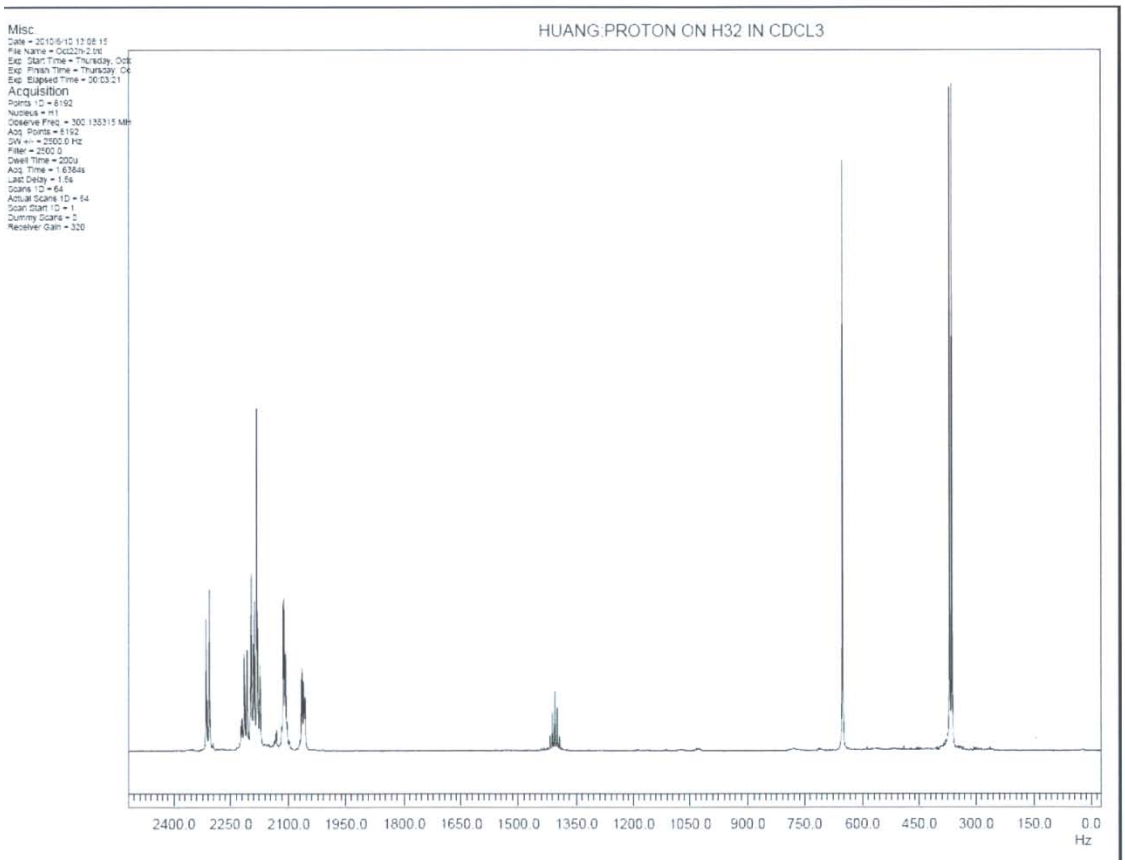
1,1-Di-(4-methylphenyl)-2-(4-oxysulfonylphenyl)hex-1-ene sodium salt (27). Cleavage of the isopropyl sulfonate **25** with NaI, using the method described for the synthesis of **9**, afforded the title compound **27 (**86.8%) as a white solid, mp > 300 °C; IR (KBr): 2960, 2919, 2856, 1201, 1132 cm^{-1}; ESI-MS: 419 $[M-Na]^-$; ^1H NMR (DMSO-d_6): δ 0.72 (t, J = 6.7 Hz, 3H, $CH_2CH_2CH_2\mathit{CH_3}$), 1.13-1.19 (m, 4H, $CH_2\mathit{CH_2CH_2}CH_3$), 2.13 (s, 3H, Ar$\mathit{CH_3}$), 2.30 (s, 3H, Ar$\mathit{CH_3}$), 2.32-2.35 (m, 2H, $\mathit{CH_2}C{=}C$), 6.72 and 6.85 (two d, J = 7.9 Hz, 2H each, tolyl H-3, H-5), 7.03-7.08 (m, 4H, two tolyl H-2, H-6), 7.17 (d, J = 7.9 Hz, 2H, sulfonylphenyl H-2, H-6), 7.37 (d, J = 7.9 Hz, 2H, sulfonylphenyl H-3, H-5).

1,1-Diphenyl-2-(4-chlorosulfonylphenyl)hex-1-ene (28). Reaction of **26** with $SOCl_2$, using the method described for the synthesis of **11**, furnished the title compound **28** as a brown syrup (88.9%); IR (film): 2962, 2926, 2858, 1382, 1175 cm^{-1}; ESI-MS: 411 $[M+H]^+$; ^1H NMR ($CDCl_3$): δ 0.81 (t, J = 6.7 Hz, 3H, $CH_2CH_2CH_2\mathit{CH_3}$), 1.23-1.33 (m, 4H, $CH_2\mathit{CH_2CH_2}CH_3$), 2.50 (t, J = 6.7 Hz, 2H, $\mathit{CH_2}C{=}C$), 6.84-6.87 (m, 2H, phenyl hydrogens), 7.05-7.07 (m, 3H, phenyl hydrogens), 7.24-7.41 (m, 7H, phenyl hydrogens and sulfonylphenyl H-2, H-6), 7.82 (dd, J = 7.9, 1.8 Hz, 2H, sulfonylphenyl H-3, H-5).

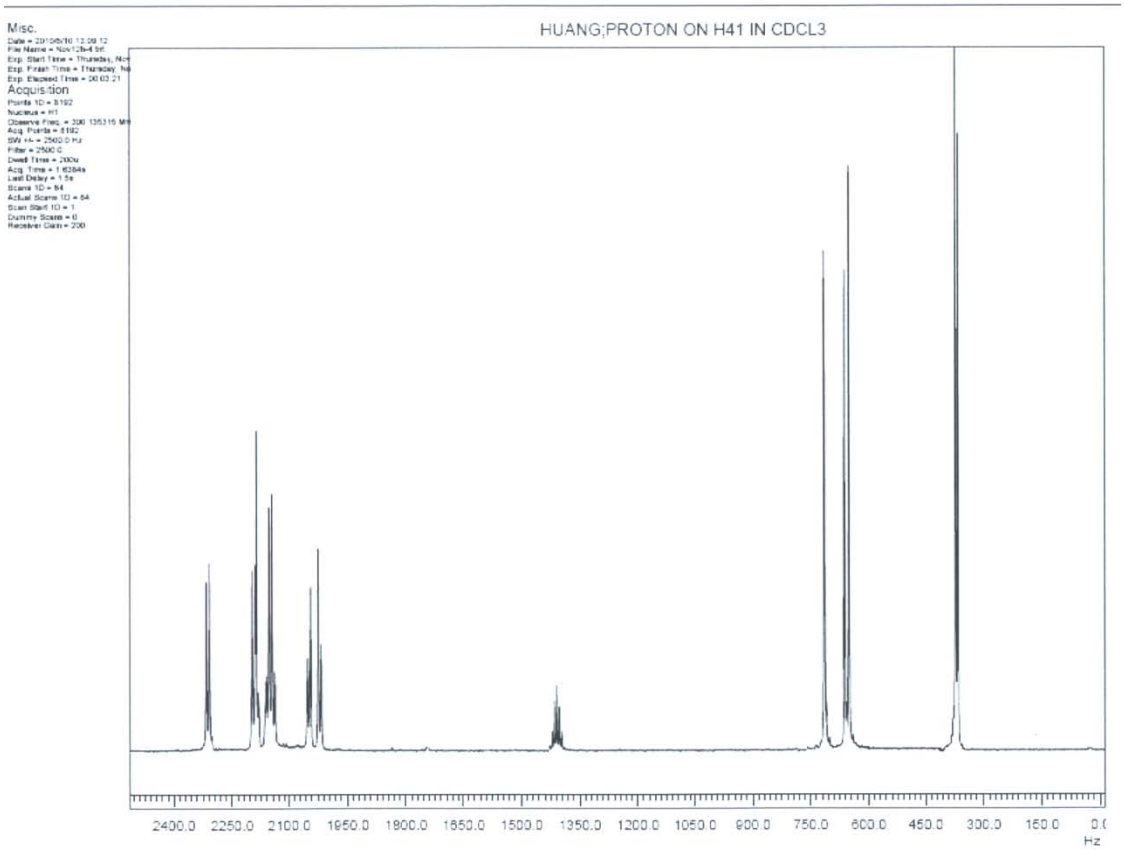
1,1-Di(4-methylphenyl)-2-(4-chlorosulfonylphenyl)hex-1-ene (29). Reaction of **27** with $SOCl_2$, using the method described for the synthesis of **11**, provided the title compound **29** (85.5%) as a brown solid, mp 149-150°C; IR (film): 2956, 2915, 2858, 1383, 1178 cm^{-1}; ESI-MS: 439 $[M+H]^+$; ^1H NMR ($CDCl_3$): δ 081 (t, J = 7.3 Hz, 3H, $CH_2CH_2CH_2\mathit{CH_3}$), 1.25-1.29 (m, 4H, $CH_2\mathit{CH_2CH_2}CH_3$), 2.22 (s, 3H, Ar$\mathit{CH_3}$), 2.38 (s, 3H, Ar$\mathit{CH_3}$), 2.50 (t, J = 7.9 Hz, 2H, $\mathit{CH_2}C{=}C$), 6.72, 6.85 (two d, J = 7.9 Hz, 2H each, tolyl H-3, H-5), 7.10-7.17 (m, 4H, two tolyl H-2, H-6), 7.34 (d, J = 8.5 Hz, 2H, sulfonylphenyl H-2, H-6), 7.82 (dd, J = 7.9, 1.8 Hz, 2H, sulfonylphenyl H-3, H-5).


Misc.
HUANG:PROTON ON H31 IN CDCL3
Acquisition
2650.0 2400.0 2250.0 2100.0 1950.0 1800.0 1650.0 1500.0 1350.0 1200.0 1050.0 900.0 750.0 600.0 450.0 300.0
Hz

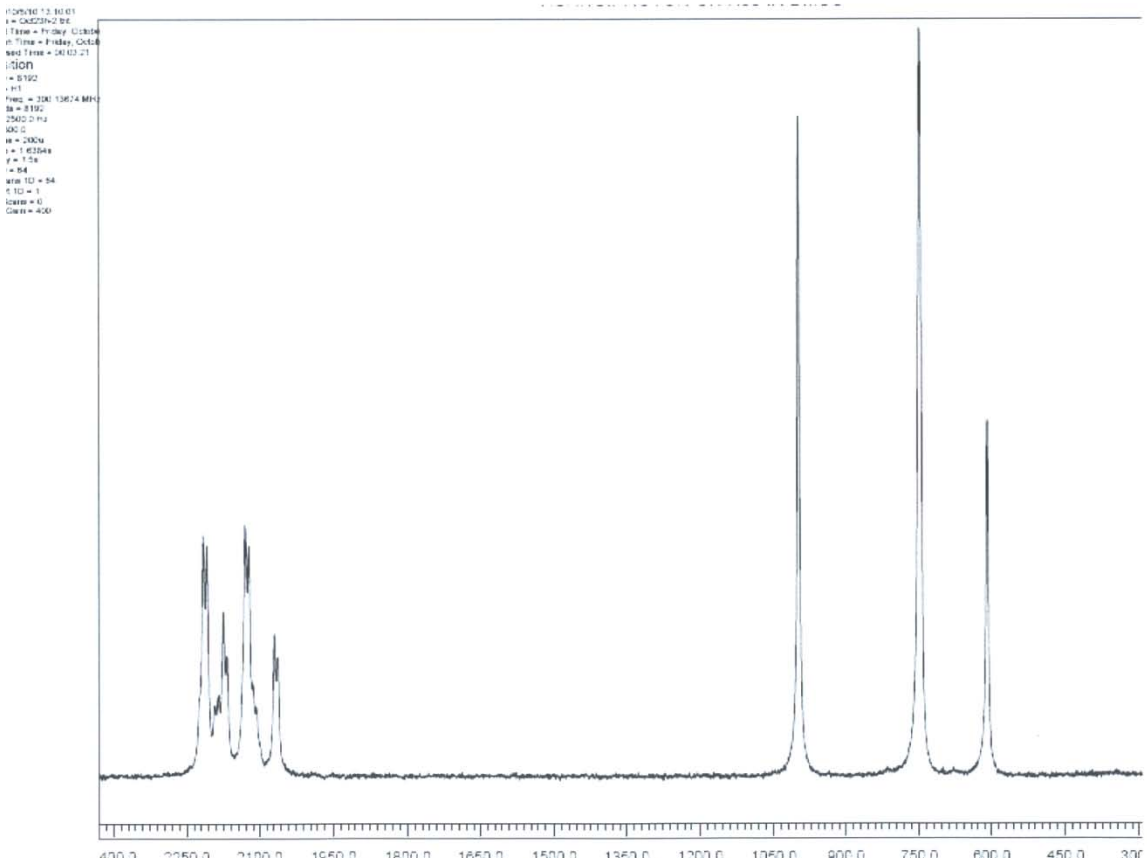
Compound 6


HUANG:PROTON ON H32 IN CDCL3
Misc
Acquisition
2400.0 2250.0 2100.0 1950.0 1800.0 1650.0 1500.0 1350.0 1200.0 1050.0 900.0 750.0 600.0 450.0 300.0 150.0 0.0
Hz

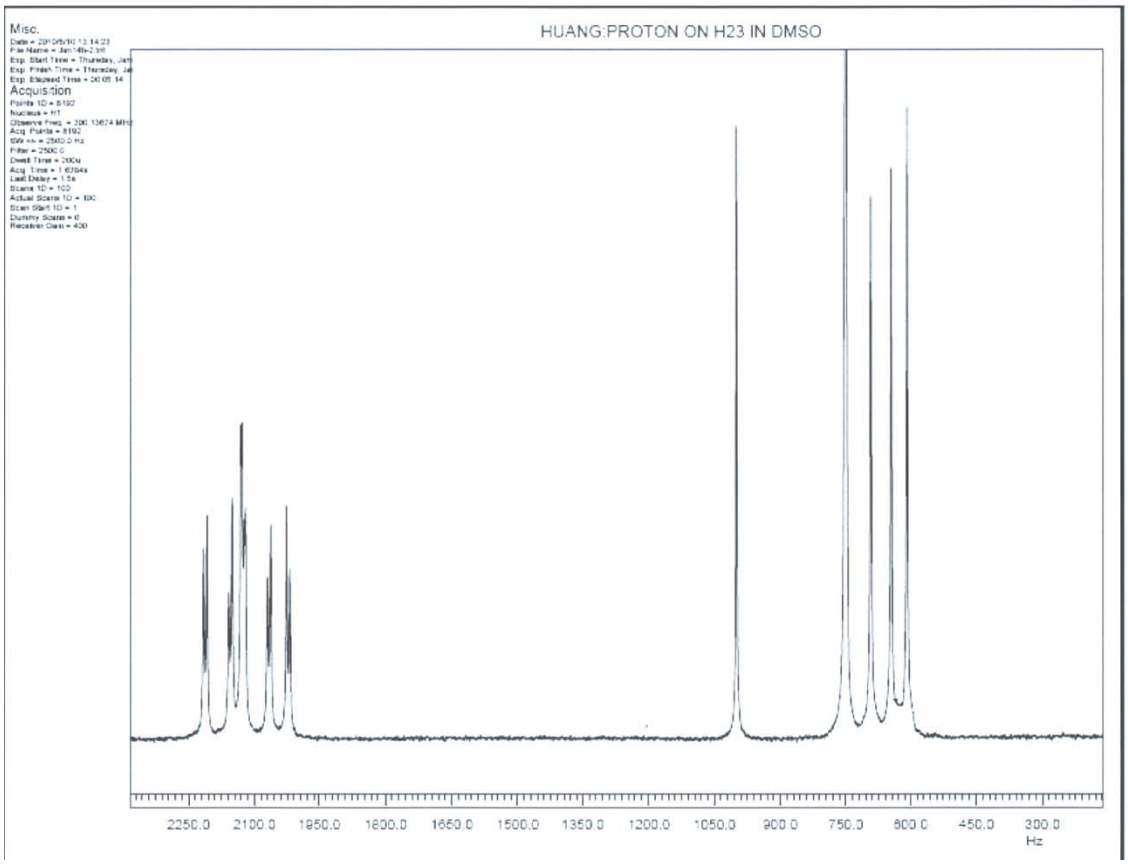
Compound 7



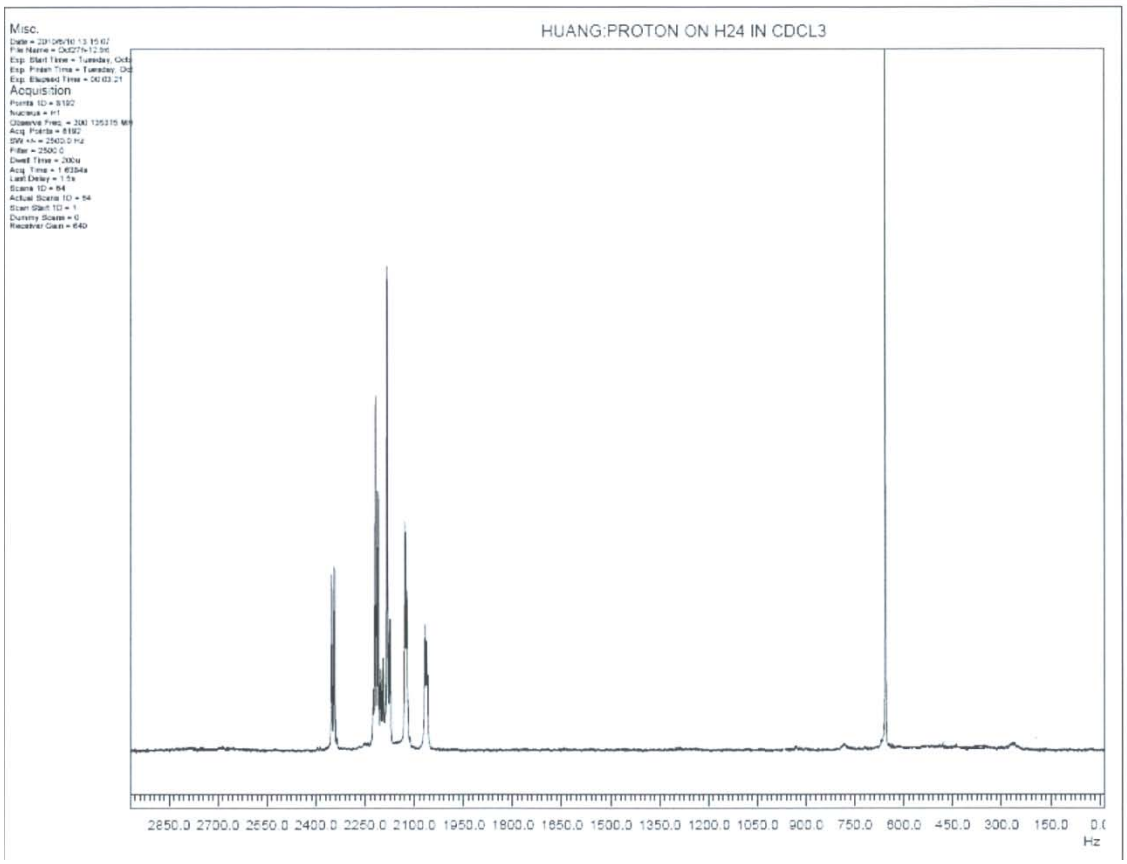
Compound 8



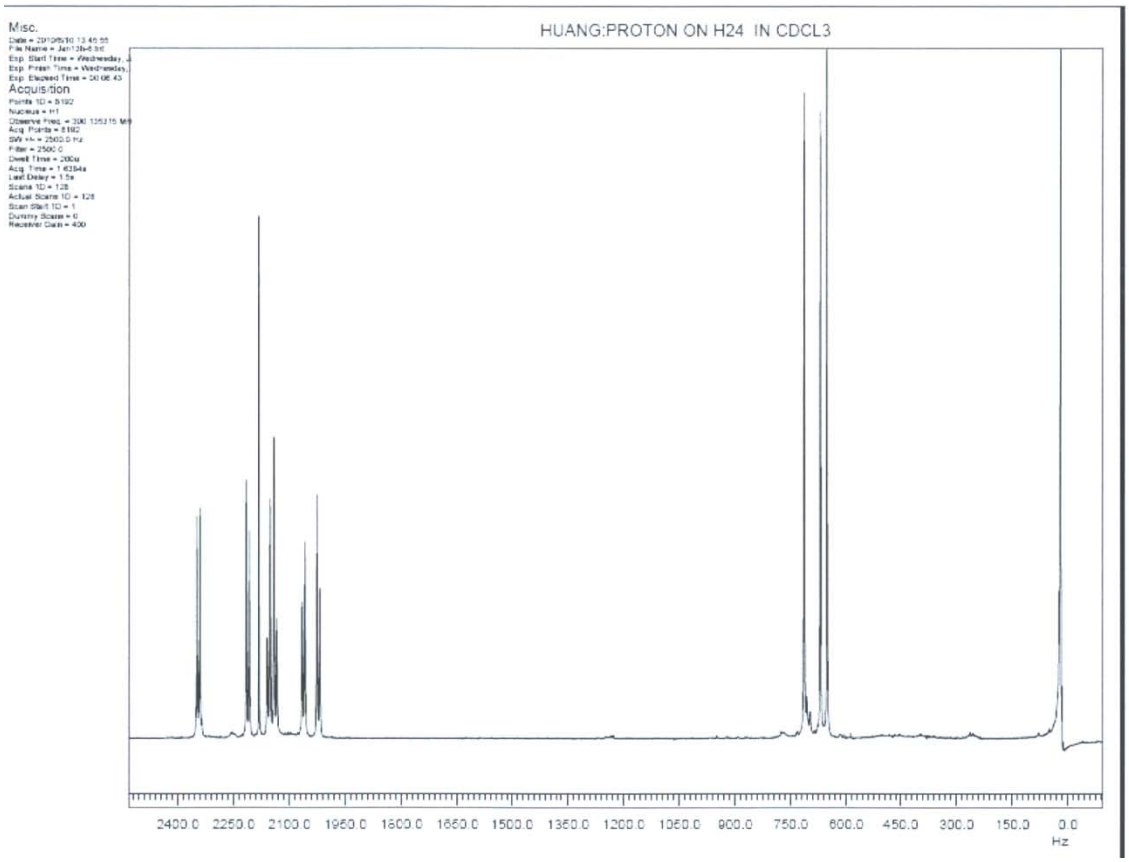
Compound 9



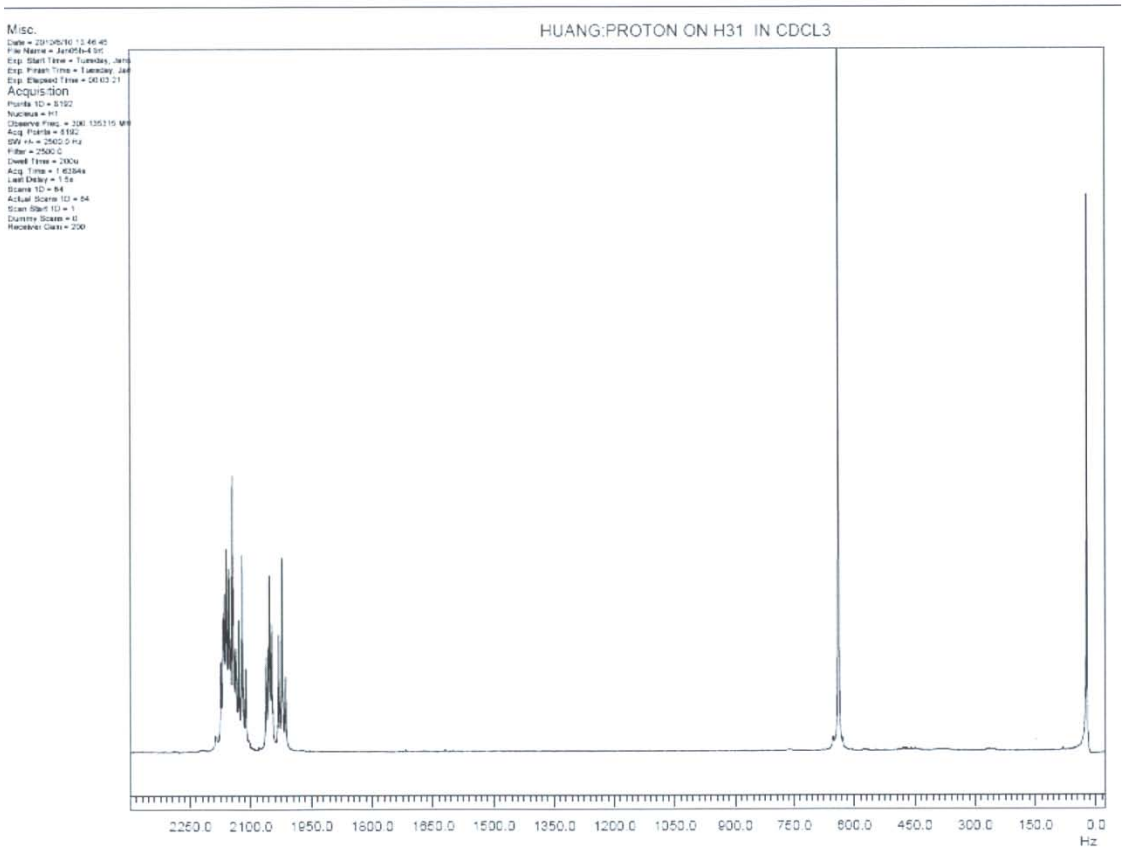
Compound 10


HUANG:PROTON ON H24 IN CDCL3
Misc.
Acquisition
2850.0 2700.0 2550.0 2400.0 2250.0 2100.0 1950.0 1800.0 1650.0 1500.0 1350.0 1200.0 1050.0 900.0 750.0 600.0 450.0 300.0 150.0
Hz

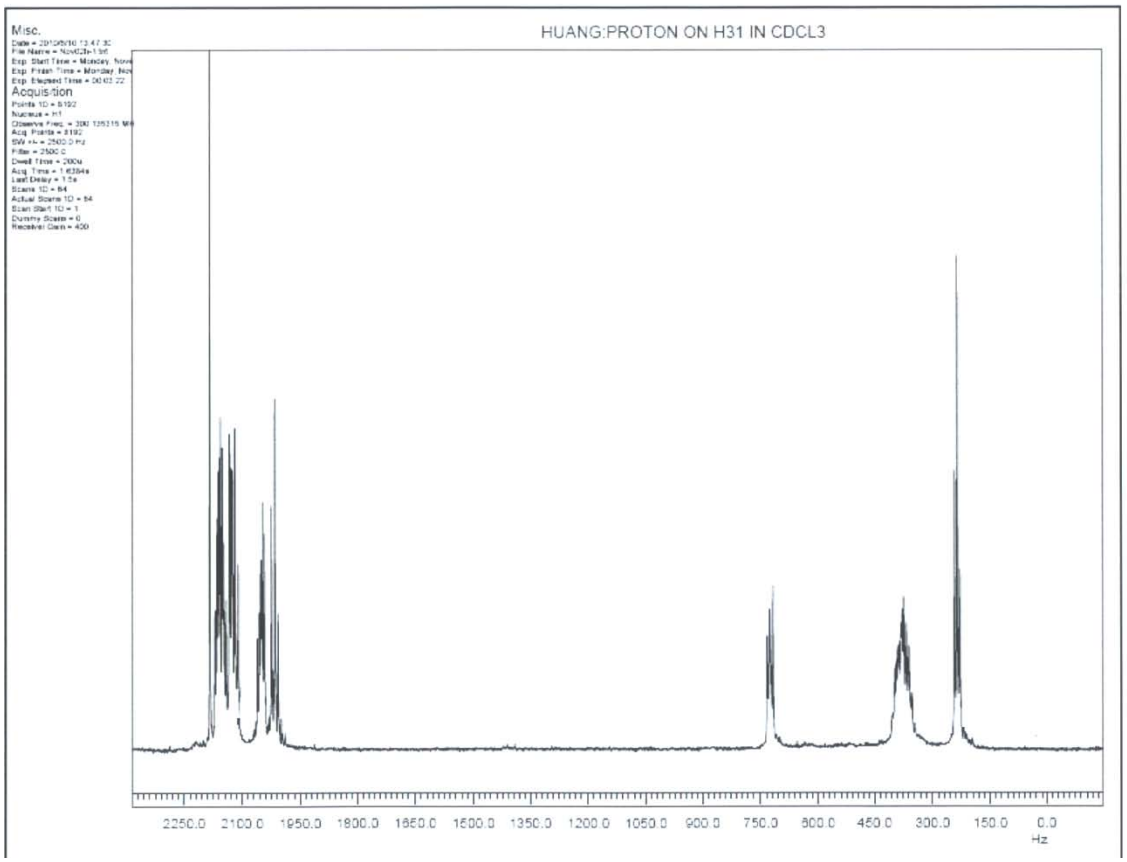
Compound 11


HUANG:PROTON ON H24 IN CDCL3
Misc.
Acquisition
2400.0 2250.0 2100.0 1950.0 1800.0 1650.0 1500.0 1350.0 1200.0 1050.0 900.0 750.0 600.0 450.0 300.0 150.0 0.0
Hz

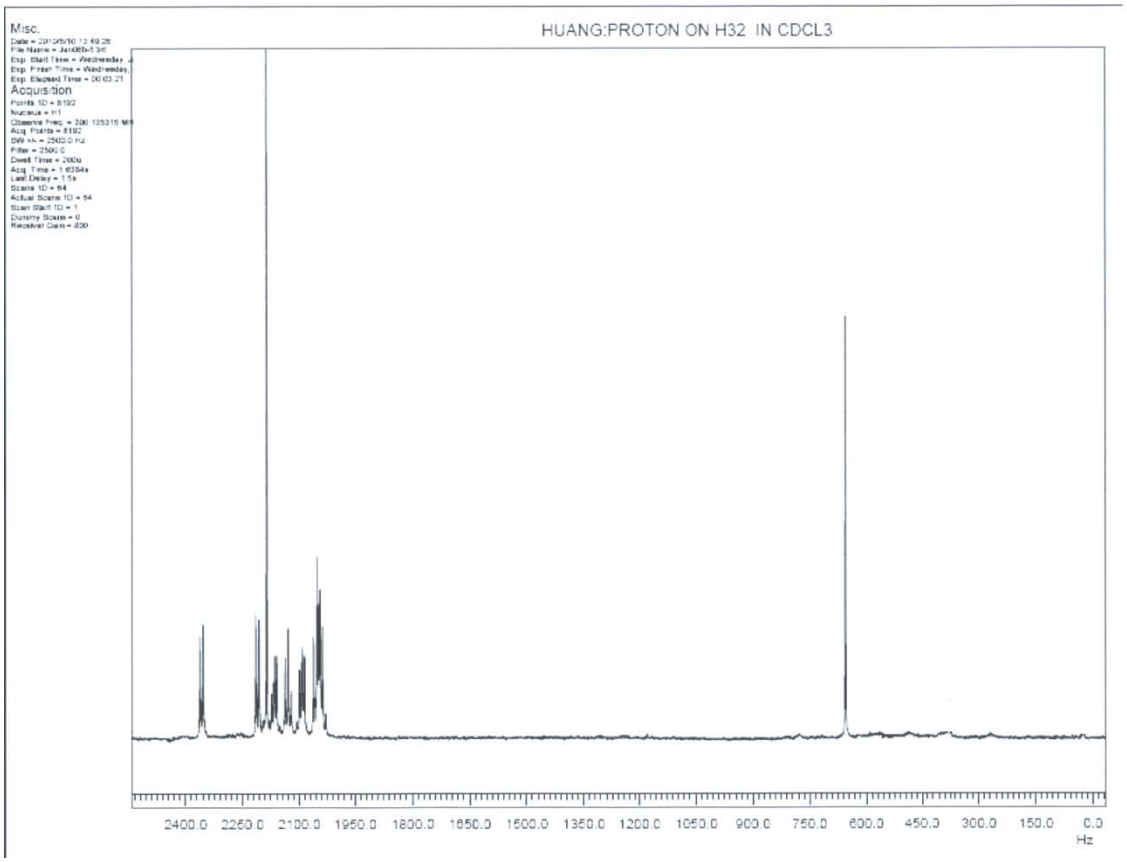
Compound 12


Misc.
HUANG:PROTON ON H31 IN CDCL3
Acquisition
2250.0 2100.0 1950.0 1800.0 1650.0 1500.0 1350.0 1200.0 1050.0 900.0 750.0 600.0 450.0 300.0 150.0 0.0
Hz

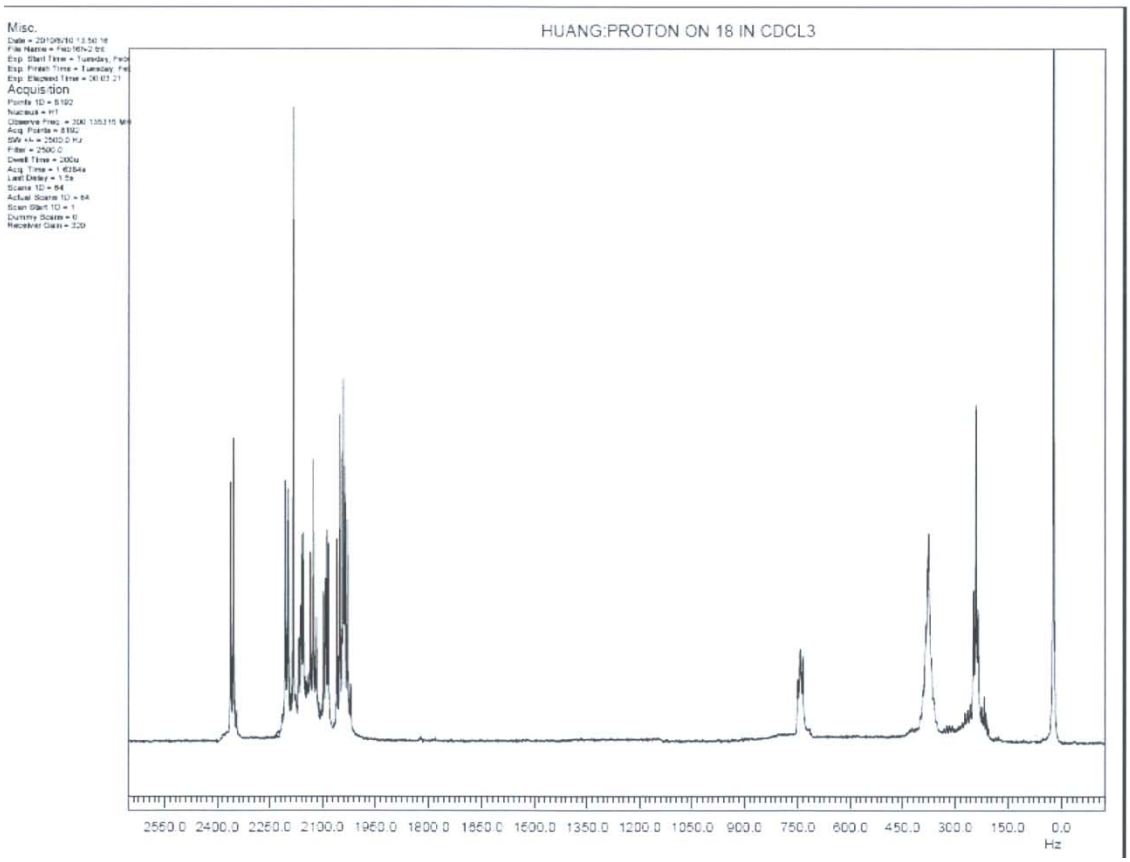
Compound 16


Misc.
HUANG:PROTON ON H31 IN CDCL3
Acquisition
2250.0 2100.0 1950.0 1800.0 1650.0 1500.0 1350.0 1200.0 1050.0 900.0 750.0 600.0 450.0 300.0 150.0 0.0
Hz

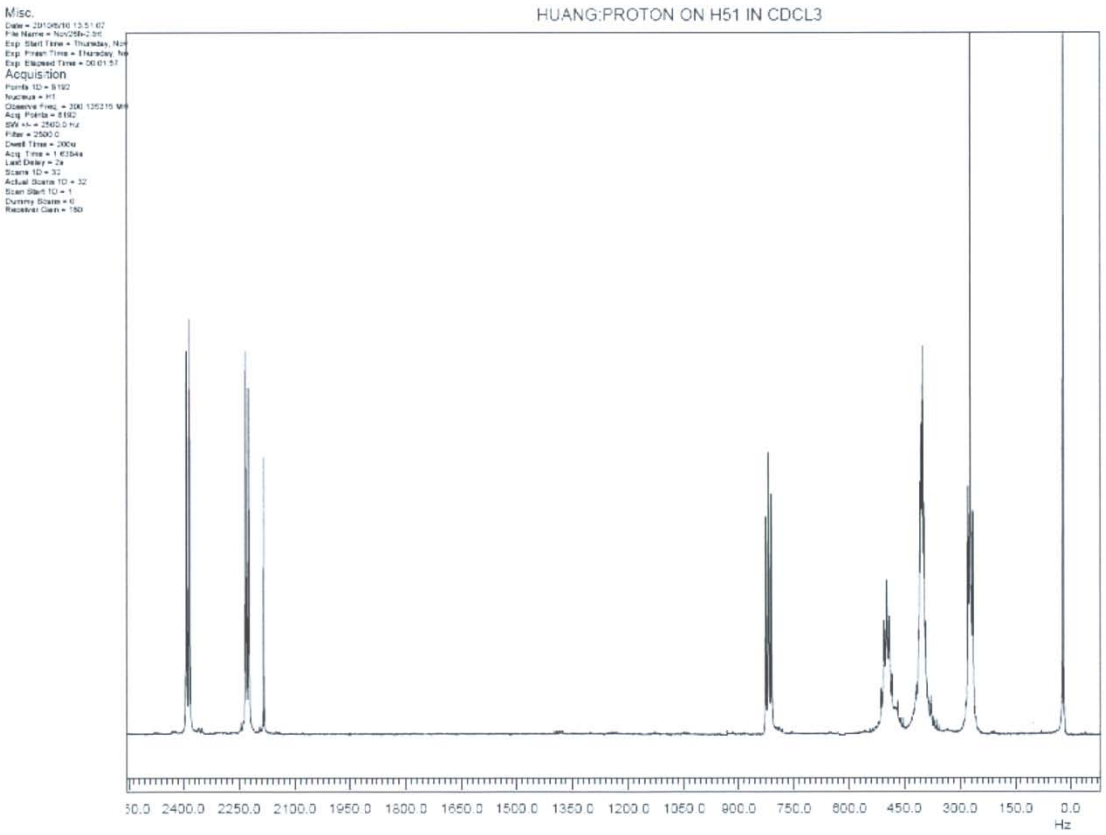
Compound 17


HUANG:PROTON ON H32 IN CDCL3
Misc.
Acquisition
2400.0 2250.0 2100.0 1950.0 1800.0 1650.0 1500.0 1350.0 1200.0 1050.0 900.0 750.0 600.0 450.0 300.0 150.0 0.0
Hz

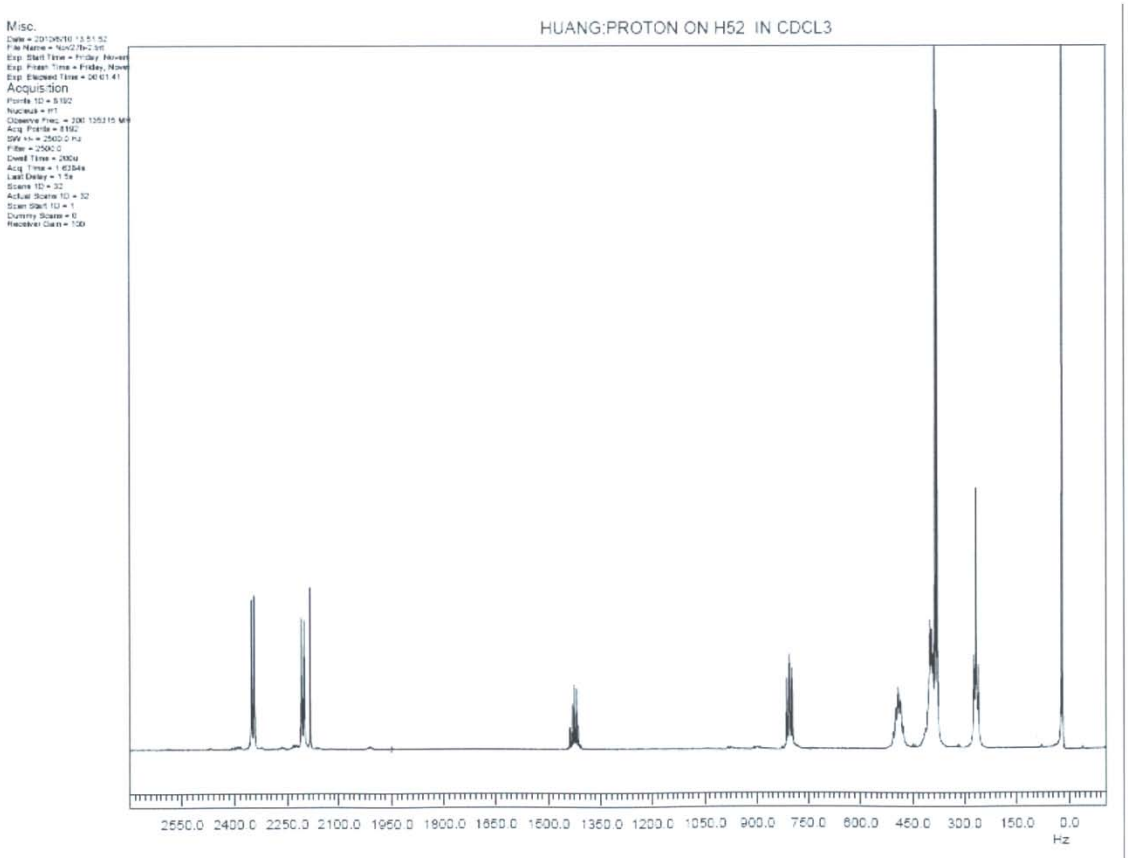
Compound 18


Misc.
HUANG:PROTON ON 18 IN CDCL3
Acquisition
2550.0 2400.0 2250.0 2100.0 1950.0 1800.0 1650.0 1500.0 1350.0 1200.0 1050.0 900.0 750.0 600.0 450.0 300.0 150.0 0.0
Hz

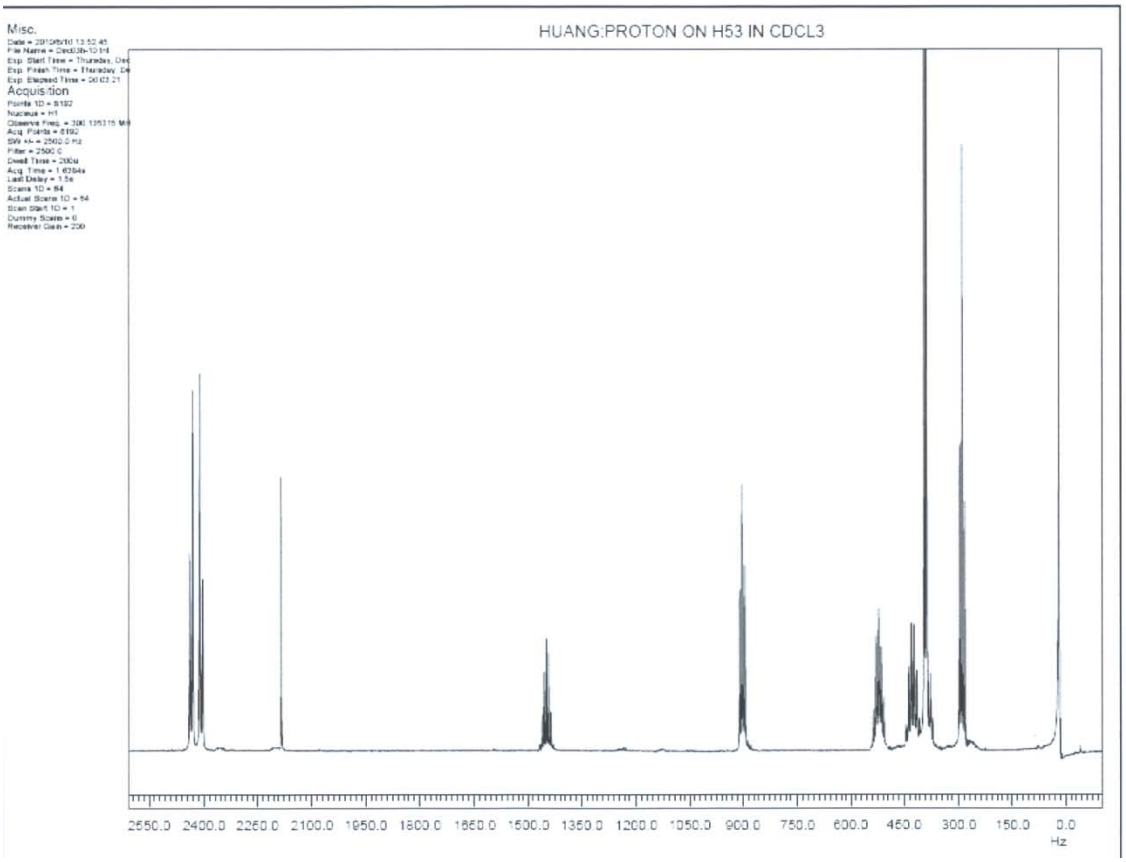
Compound 19


HUANG:PROTON ON H51 IN CDCL3
Misc.
Acquisition
2400.0 2250.0 2100.0 1950.0 1800.0 1650.0 1500.0 1350.0 1200.0 1050.0 900.0 750.0 600.0 450.0 300.0 150.0 0.0
Hz

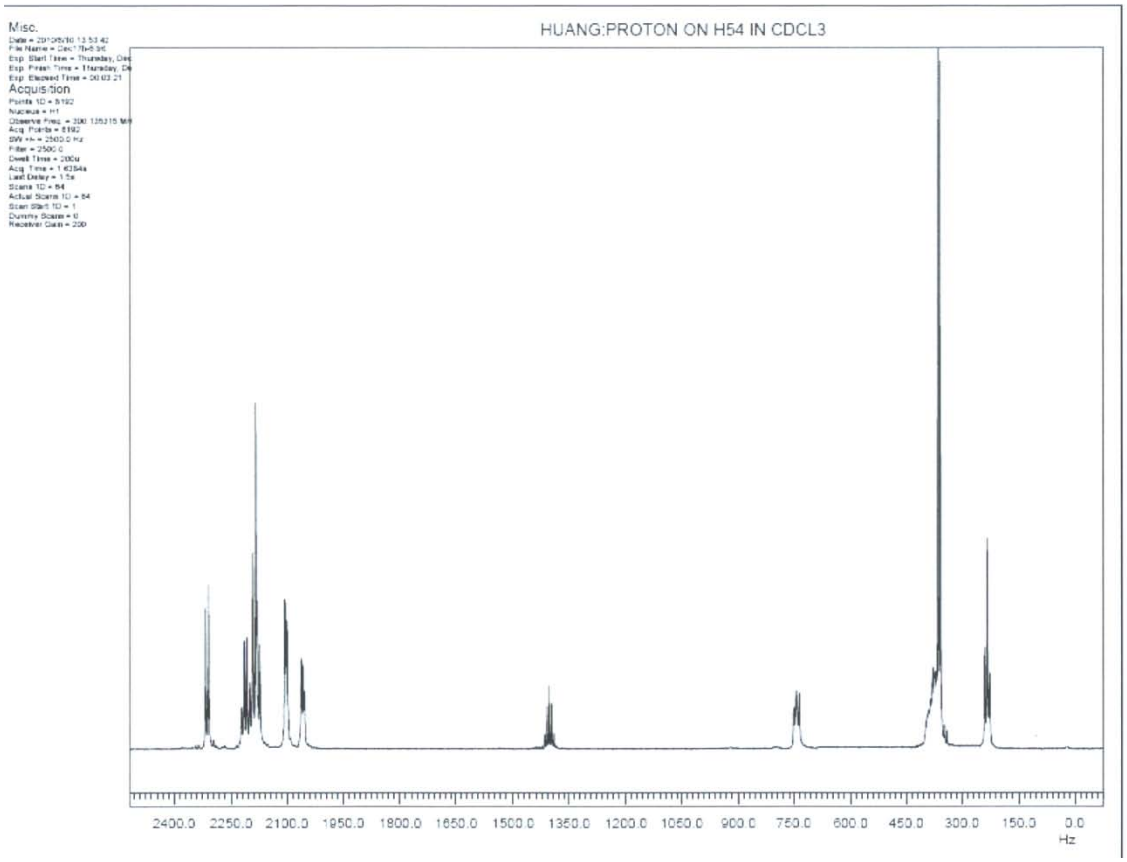
Compound 21


HUANG:PROTON ON H52 IN CDCL3
Misc.
Acquisition
2550.0 2400.0 2250.0 2100.0 1950.0 1800.0 1650.0 1500.0 1350.0 1200.0 1050.0 900.0 750.0 600.0 450.0 300.0 150.0 0.0
Hz

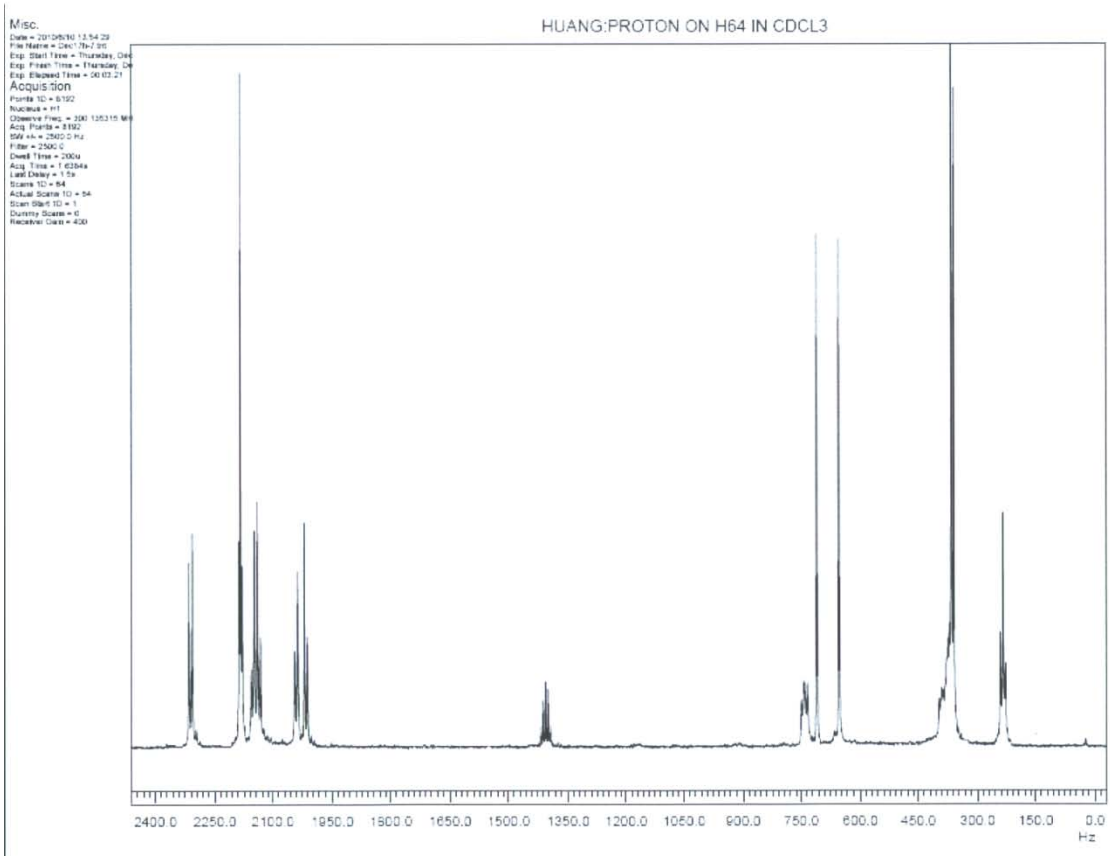
Compound 22


Misc.
HUANG:PROTON ON H53 IN CDCL3
Acquisition
2650.0 2400.0 2250.0 2100.0 1950.0 1800.0 1650.0 1500.0 1350.0 1200.0 1050.0 900.0 750.0 600.0 450.0 300.0 150.0 0.0
Hz

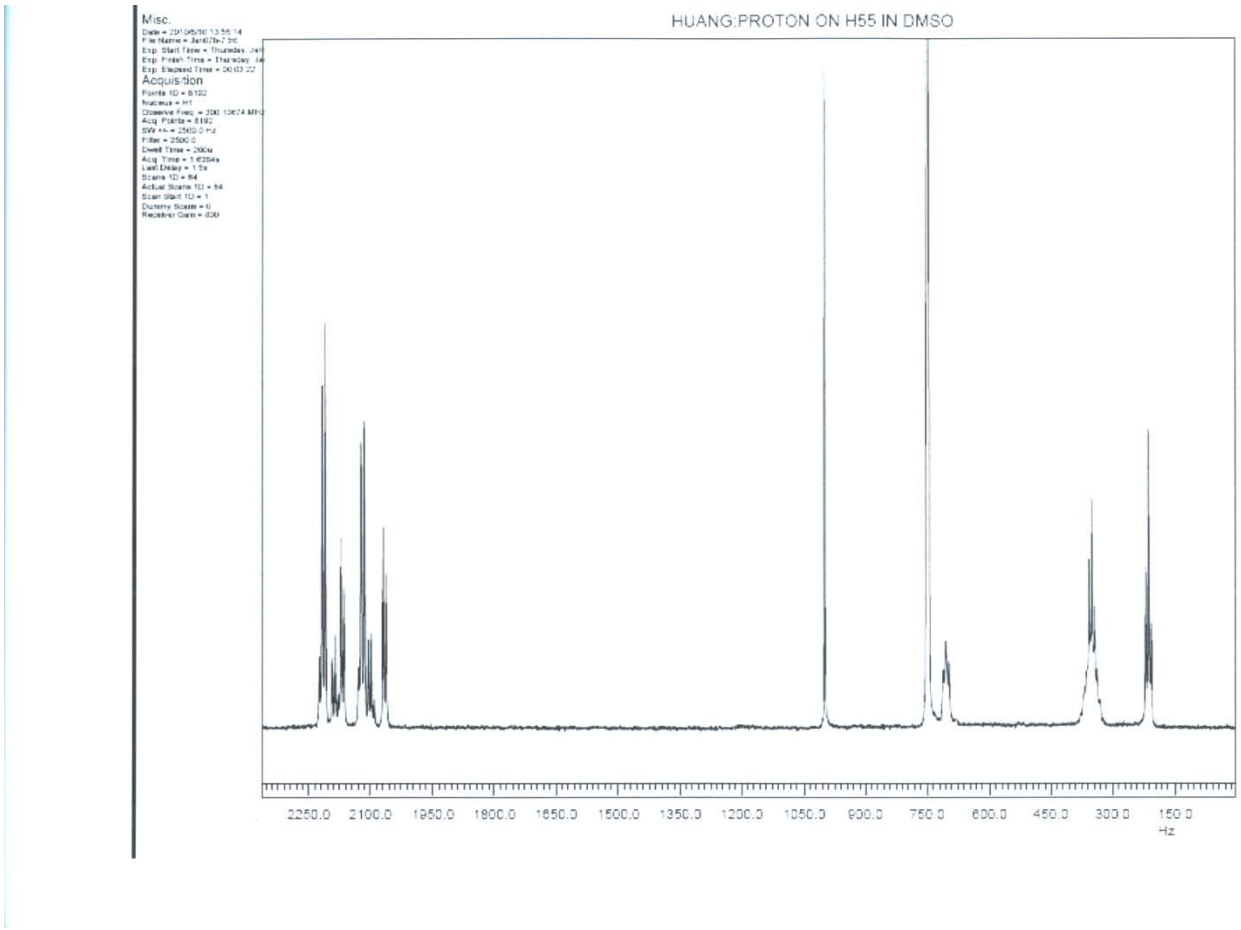
Compound 23


HUANG:PROTON ON H54 IN CDCL3
Misc.
Acquisition
2400.0 2250.0 2100.0 1950.0 1800.0 1650.0 1500.0 1350.0 1200.0 1050.0 900.0 750.0 600.0 450.0 300.0 150.0 0.0
Hz

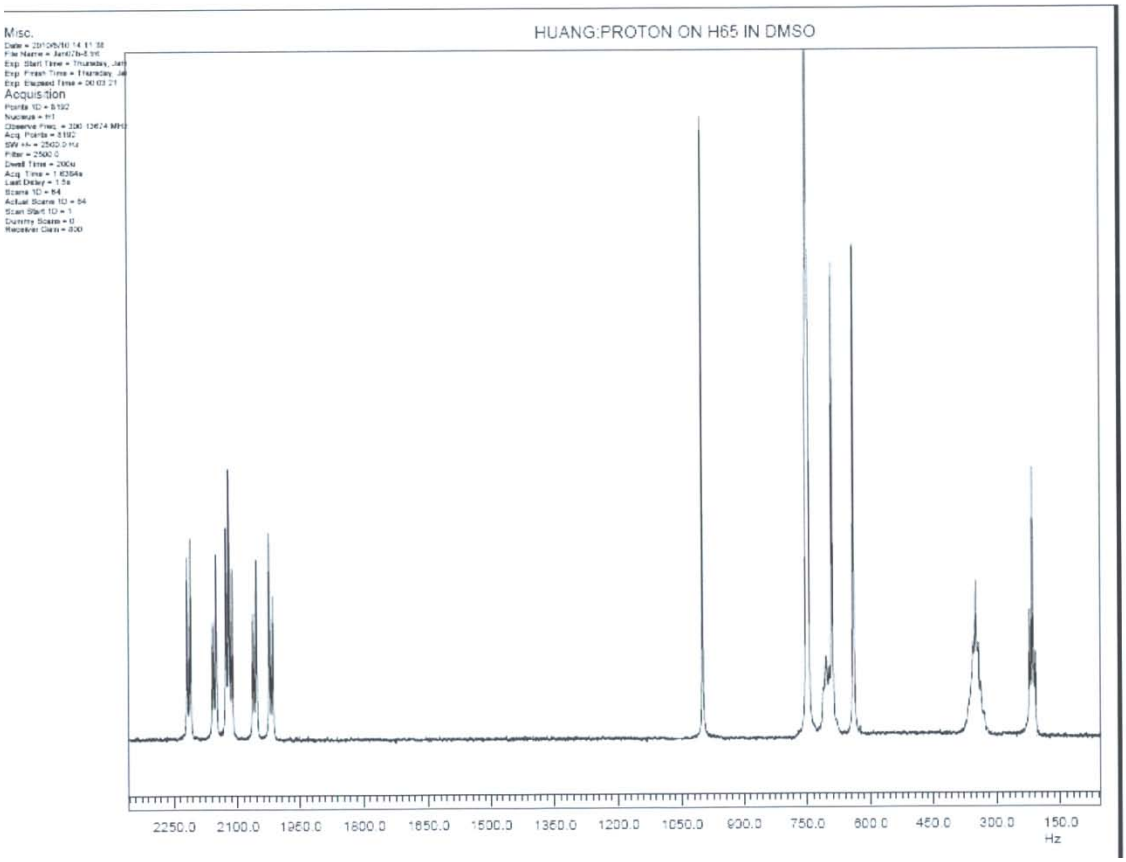
Compound 24


Misc.
Acquisition
HUANG:PROTON ON H64 IN CDCL3
2400.0 2250.0 2100.0 1950.0 1800.0 1650.0 1500.0 1350.0 1200.0 1050.0 900.0 750.0 600.0 450.0 300.0 150.0 0.0
Hz

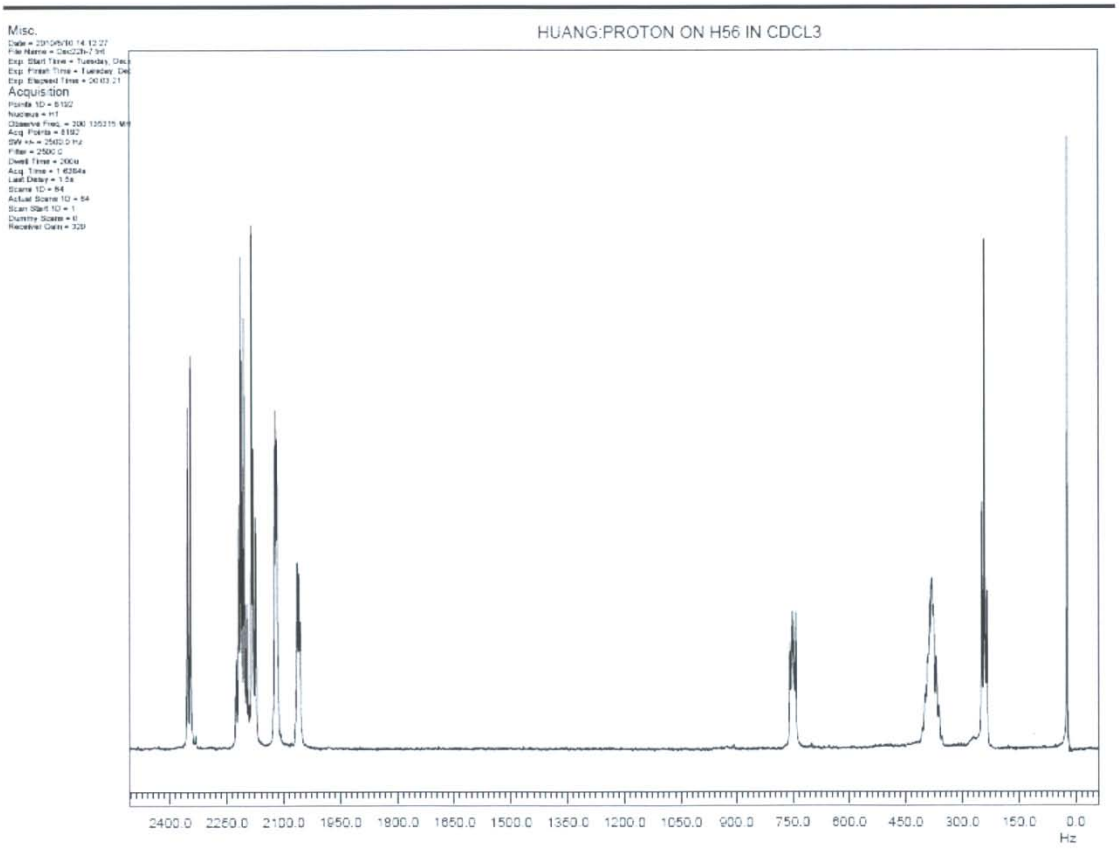
Compound 25


HUANG:PROTON ON H55 IN DMSO
Misc.
Acquisition
2250.0 2100.0 1950.0 1800.0 1650.0 1500.0 1350.0 1200.0 1050.0 900.0 750.0 600.0 450.0 300.0 150.0
Hz

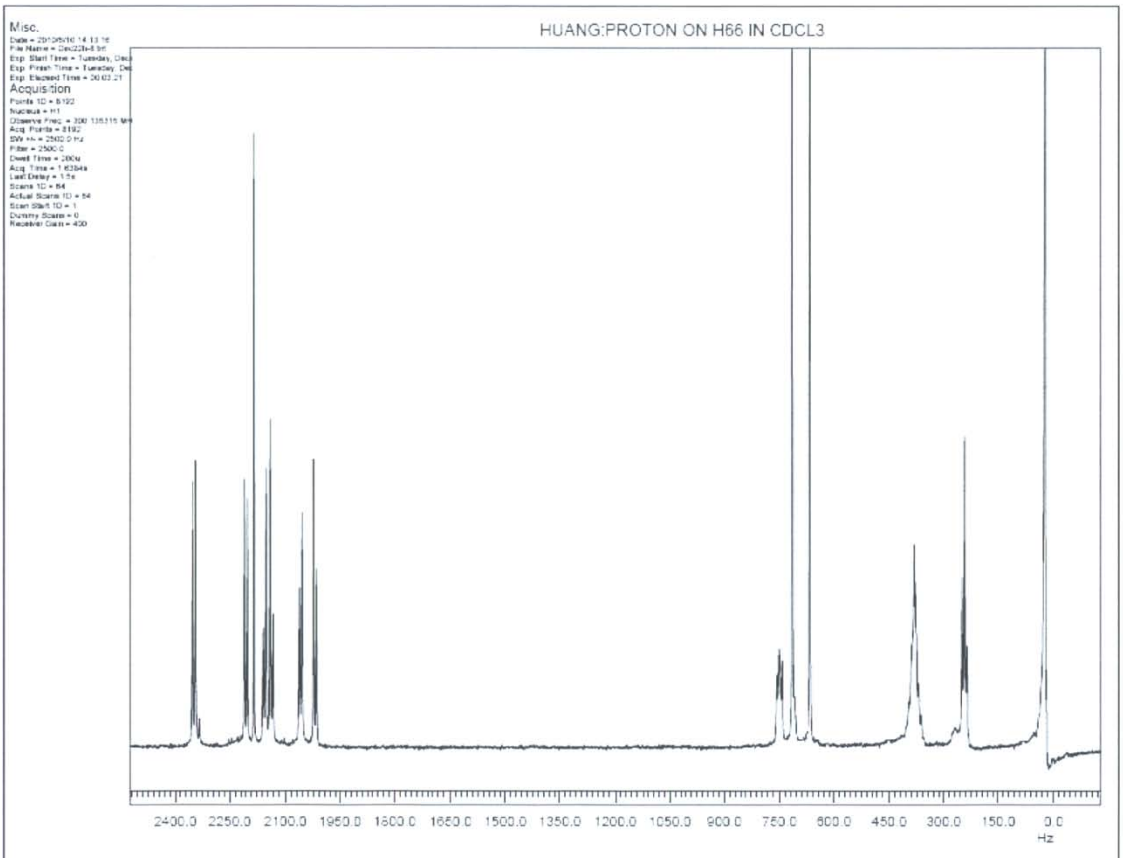
Compound 26


HUANG:PROTON ON H65 IN DMSO
Misc.
Acquisition
2250.0
2100.0
1950.0
1800.0
1650.0
1500.0
1350.0
1200.0
1050.0
900.0
750.0
600.0
450.0
300.0
150.0
Hz

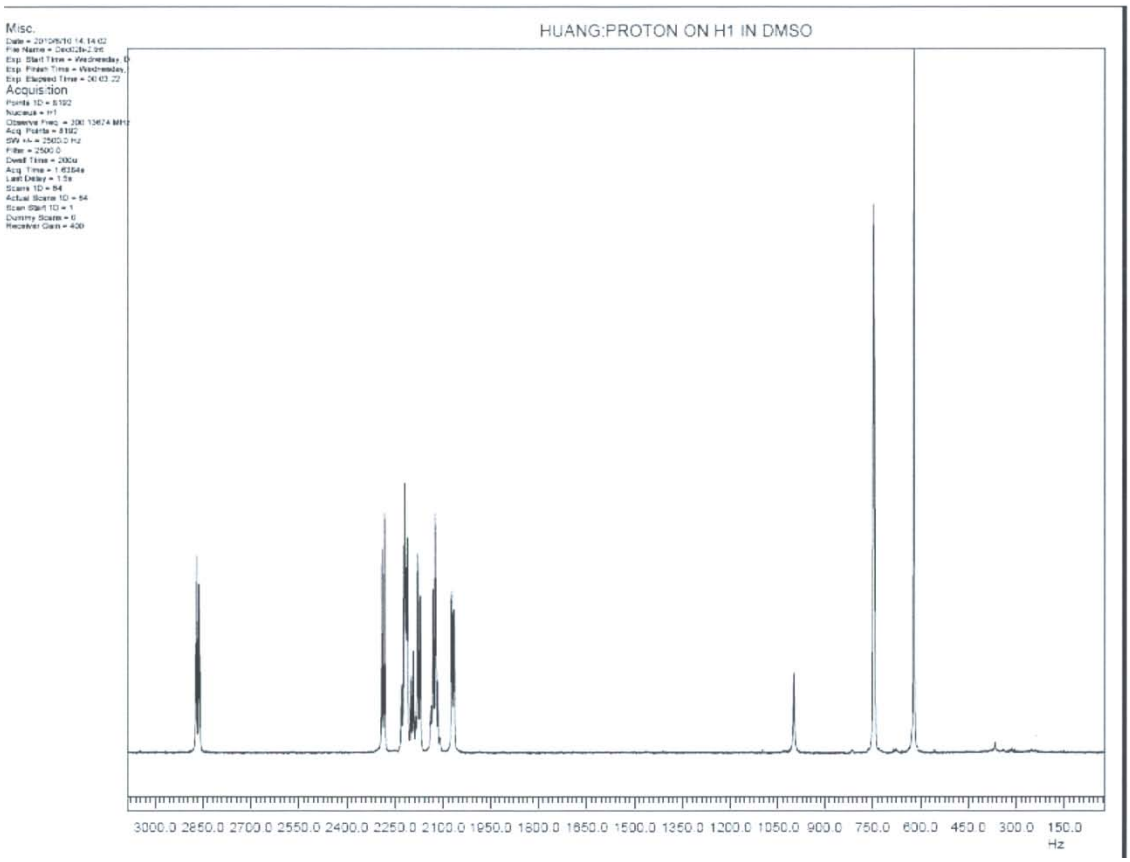
Compound 27


Misc.
Acquisition
HUANG:PROTON ON H56 IN CDCL3
2400.0 2250.0 2100.0 1950.0 1800.0 1650.0 1500.0 1350.0 1200.0 1050.0 900.0 750.0 600.0 450.0 300.0 150.0 0.0
Hz

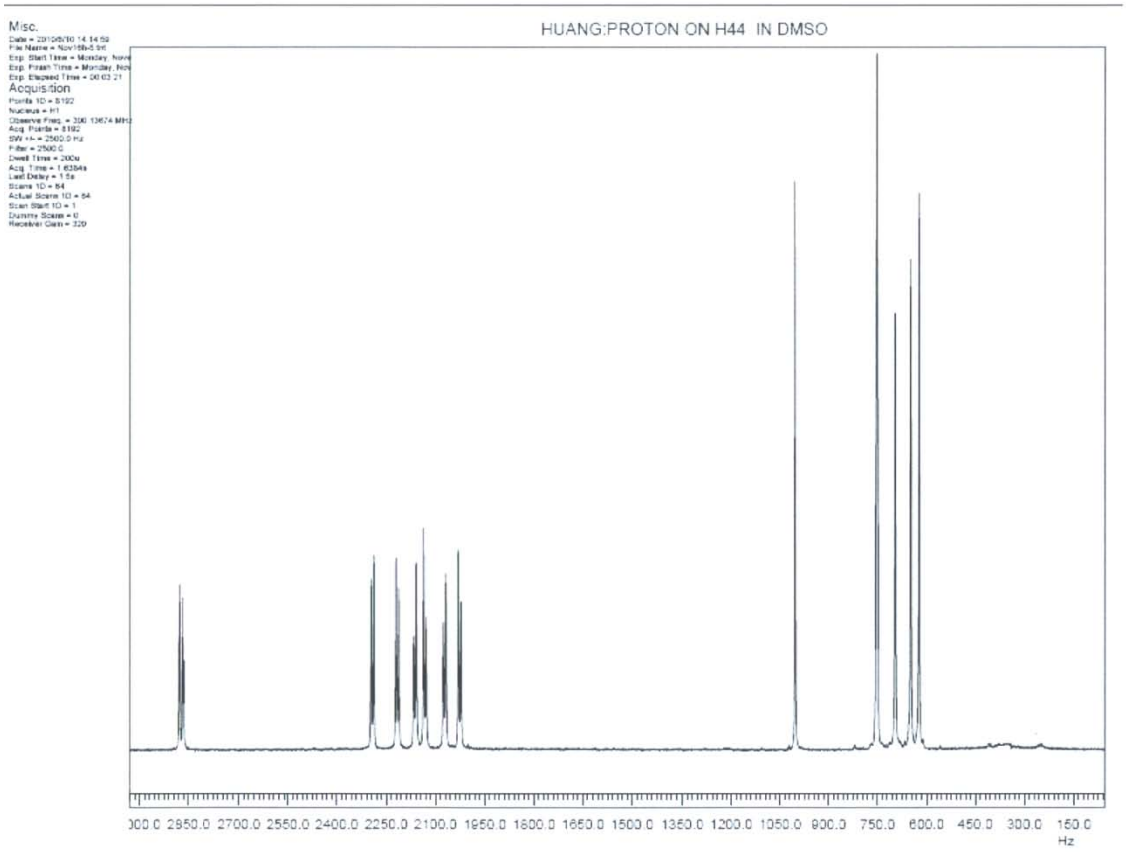
Compound 28


HUANG:PROTON ON H66 IN CDCL3
Misc.
Acquisition
2400.0 2250.0 2100.0 1950.0 1800.0 1650.0 1500.0 1350.0 1200.0 1050.0 900.0 750.0 600.0 450.0 300.0 150.0 0.0
Hz

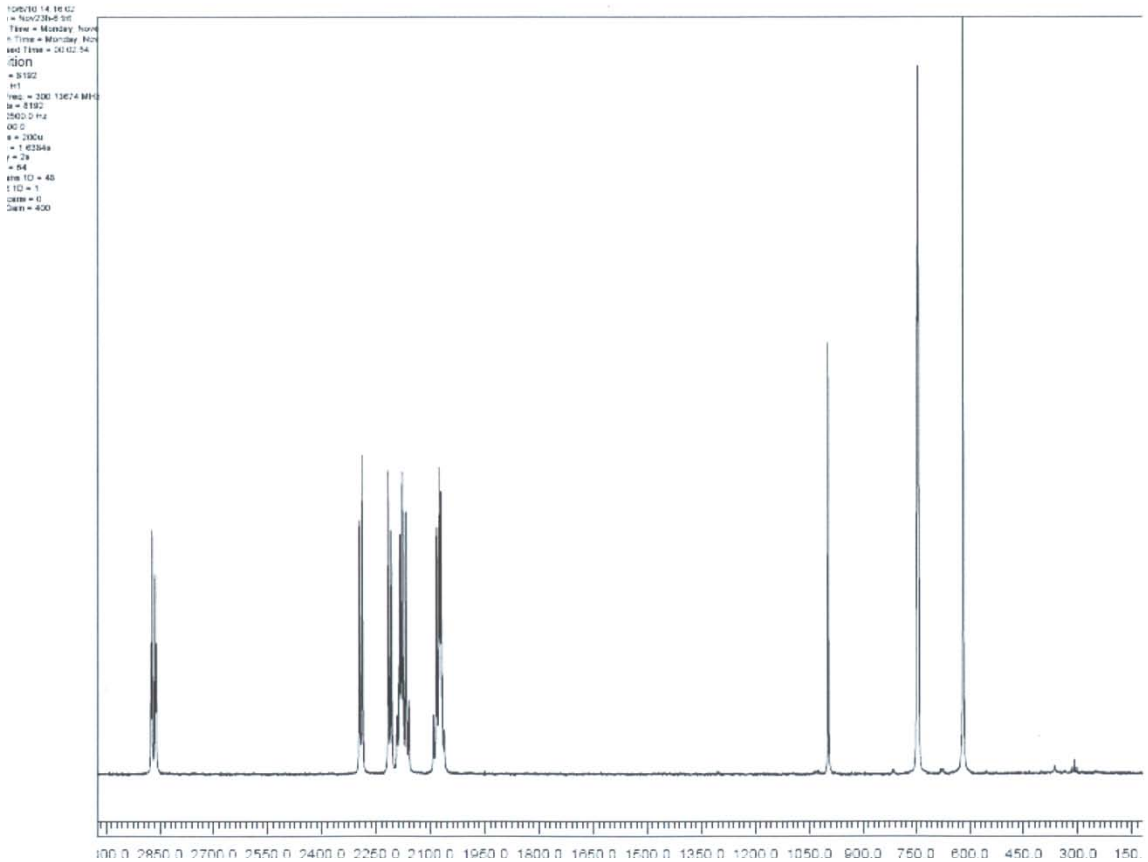
Compound 29



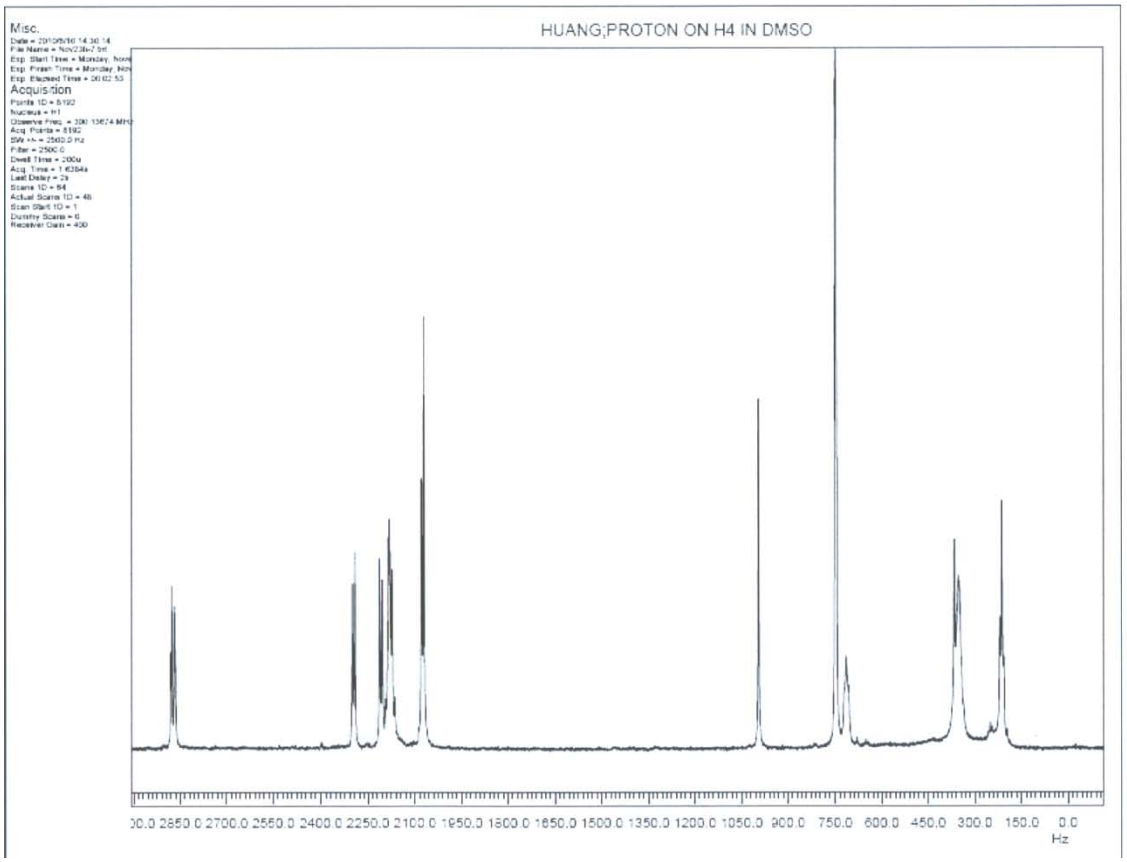
Compound 13a



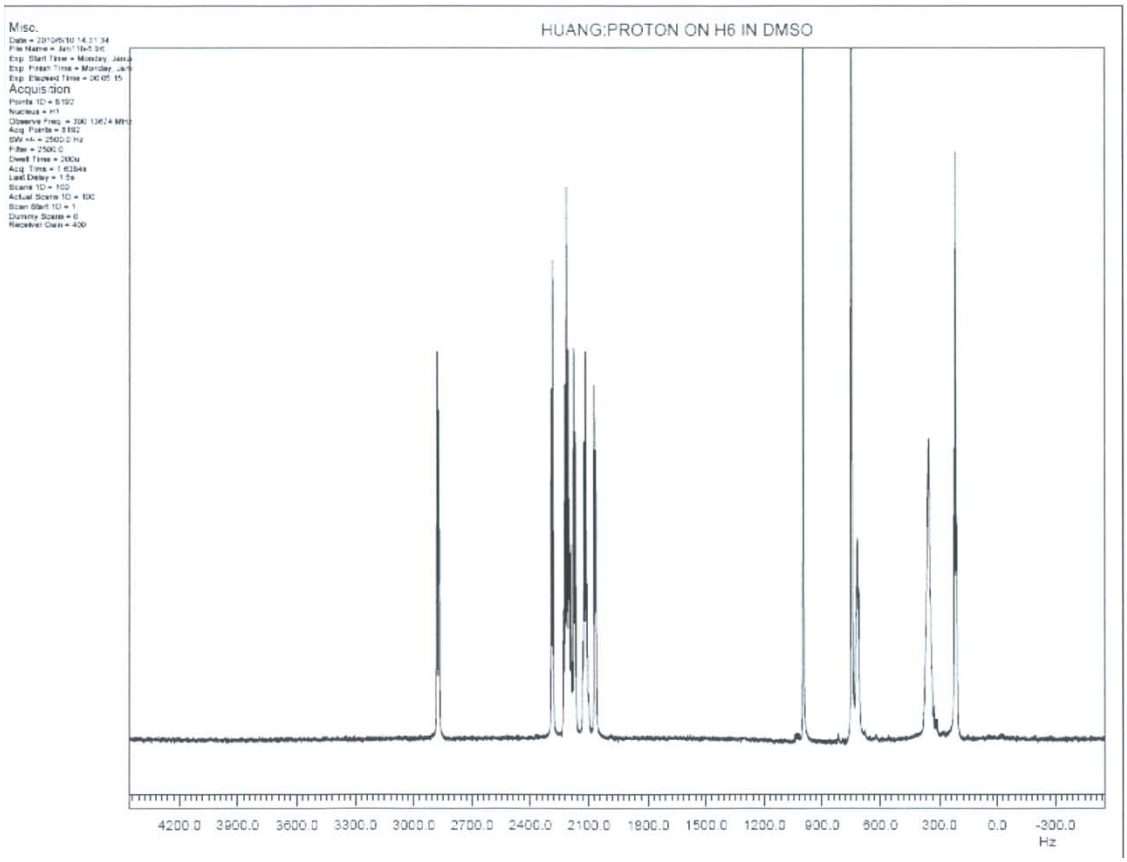
Compound 13b



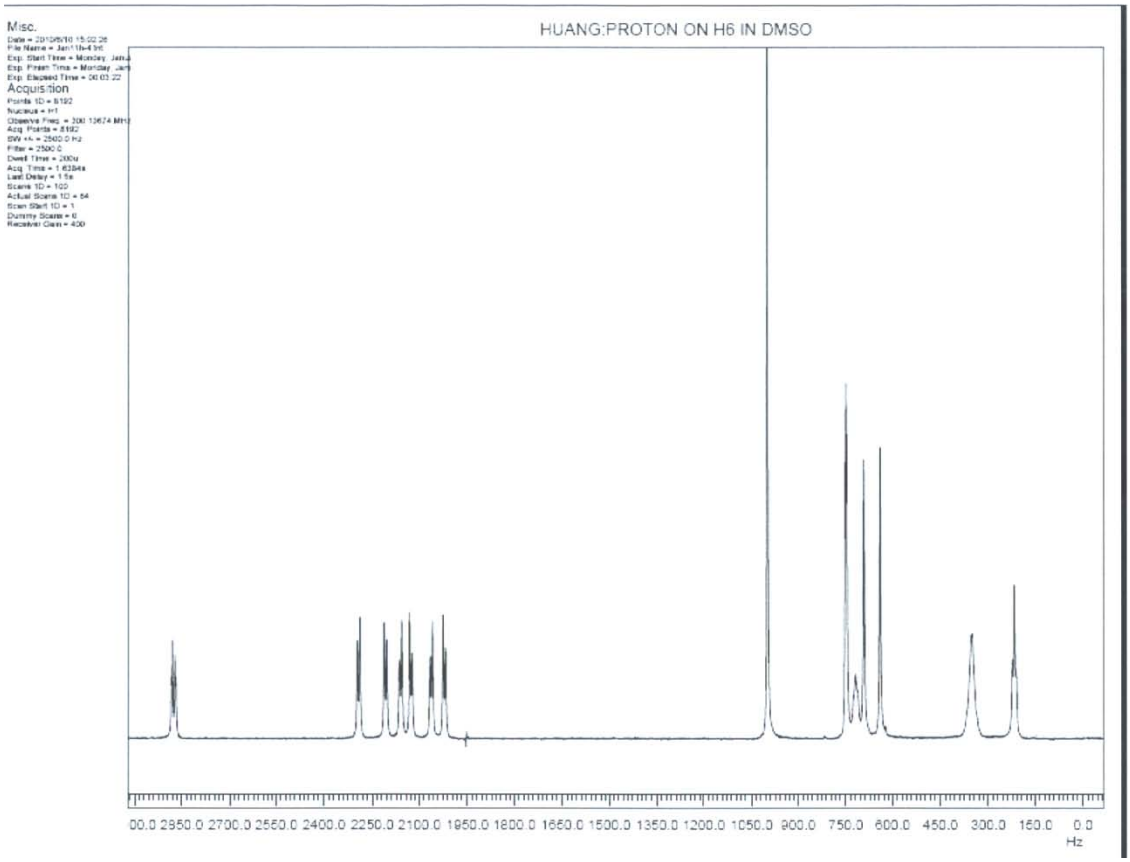
Compound 13c



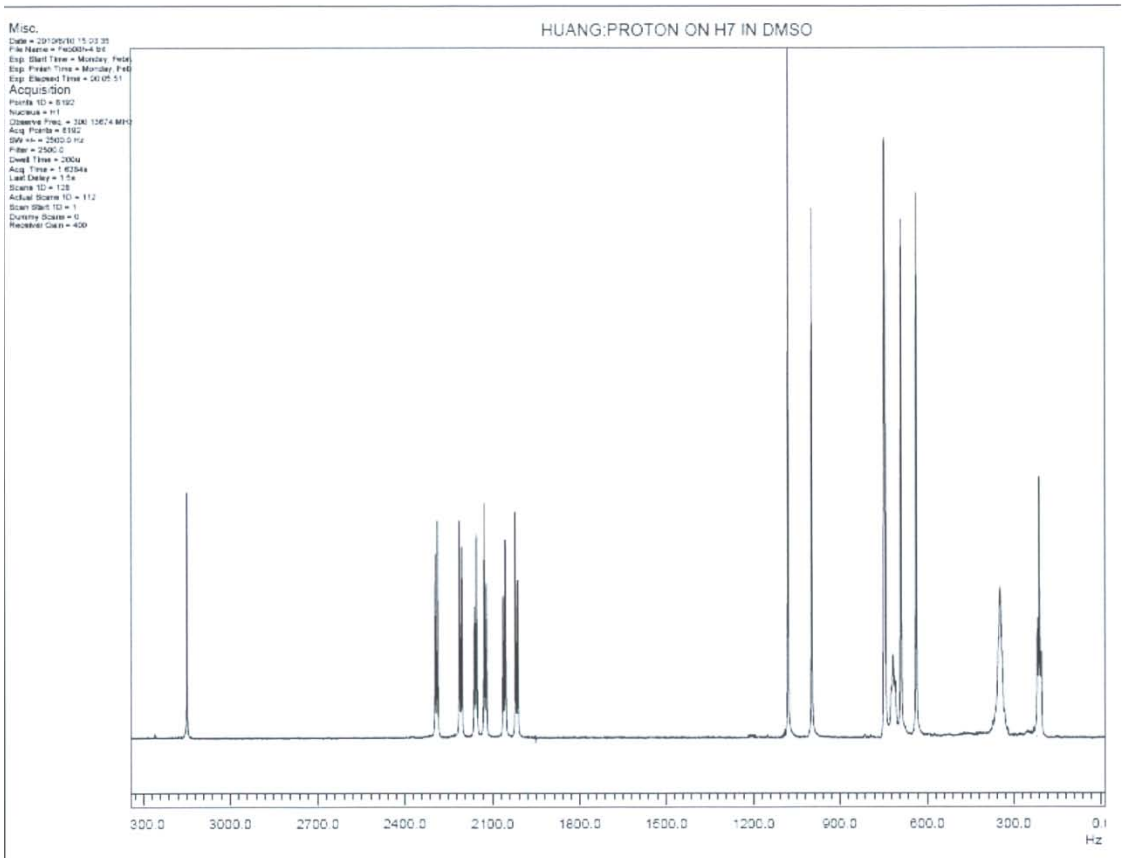
Compound 13d



Compound 13e



Compound 13f



Compound 13g