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Visible light-mediated arylation of *ortho*-hydroxyarylenaminones: Direct access to isoflavones.

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(A) Experimental Section.

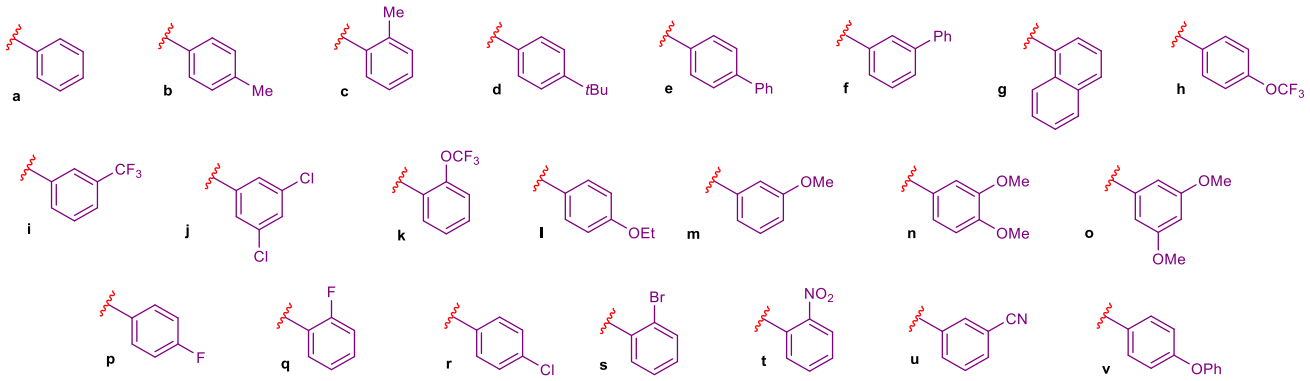
Commercially available starting materials, reagents, catalysts, anhydrous and degassed solvents were used without further purification. Flash column chromatography was performed with Merck Silica gel 60 (230-400 mesh). The solvents for column chromatography were distilled before the use. Thin layer chromatography was carried out using Merck TLC Silica gel 60 F_{254} and visualized by short-wavelength ultraviolet light or by treatment with potassium permanganate ($KMnO_4$) stain. ^{1}H, ^{13}C and ^{19}F NMR spectra were recorded on a Bruker 250 and 500 MHz at 20ºC. All ^{1}H NMR spectra are reported in parts per million (ppm) downfield of TMS and were measured relative to the signals for $CHCl_3$ (7.26 ppm) and DMSO (2.50 ppm). All ^{13}C NMR spectra were reported in ppm relative to residual $CHCl_3$ (77.00 ppm) or DMSO (39.70 ppm) and were obtained with ^{1}H decoupling. Coupling constants, *J*, are reported in Hertz (Hz). Gas chromatographic analyses was performed on Gas Chromatograph Mass Spectrometer GCMS-QP2010 Ultra instrument.

The optimal reaction conditions were identified by Microscale High-Throughput Experimentation Screening. Parallel synthesis was accomplished in an MBraun glovebox operating with a constant Ar-purge (oxygen and water <5 ppm). Screening reactions were carried out in 10 mL vials using suitable heating blocks. Liquid chemicals were dosed using gas tight micro syringes. Isolation of obtained compounds was achieved by column chromatography on Silica gel.

General procedure for the synthesis of aryl diazonium tetrafluoroborates starting from commercial anilines.

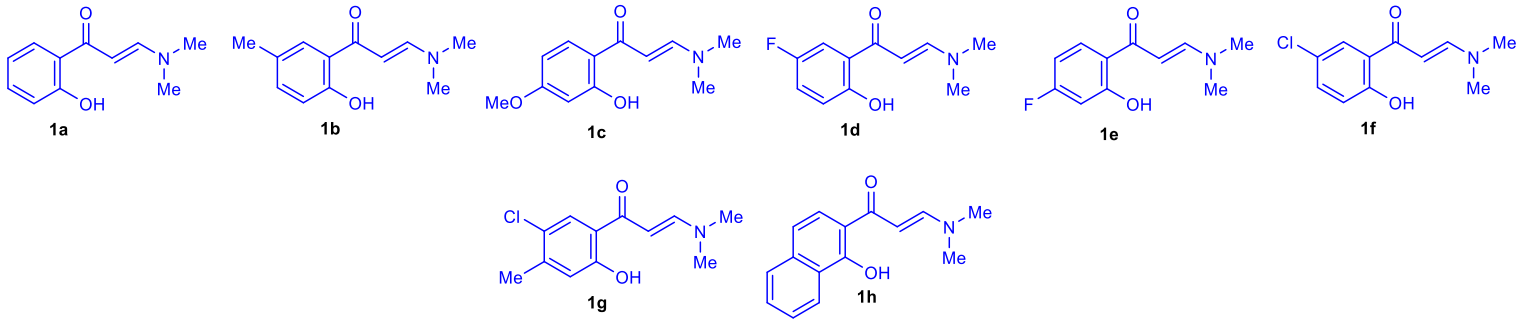
An appropriate aniline (20 mmol) was added dropwise to the mixture of aqueous HBF_4 48% (40 mmol, 5.2 mL) and absolute EtOH (7 mL) placed in 50 mL round bottom-flask. Subsequently, the reaction mixture was stirred until total homogeneity, followed by the slow addition of *t*-BuONO 90% (40 mmol, 5.4 mL) at 0°C. Afterwards, the mixture was stirred intensively for 10 minutes at 0°C and additionally for 30 minutes at room temperature. Finally, addition of Et_2O (20 mL) caused precipitation of the title diazonium salt which was filtrated and washed 4 times with Et_2O, then dried in vacuum.

Aryl part:



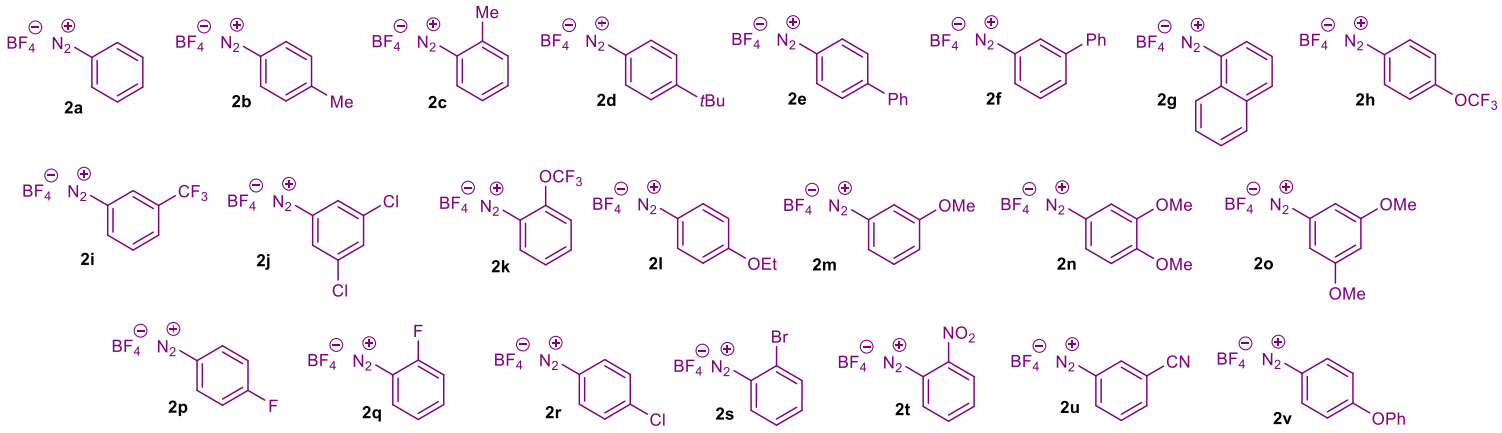
Scheme 1. List of aryl substituents.

Scope of ortho-hydroxyarylenaminones 1:



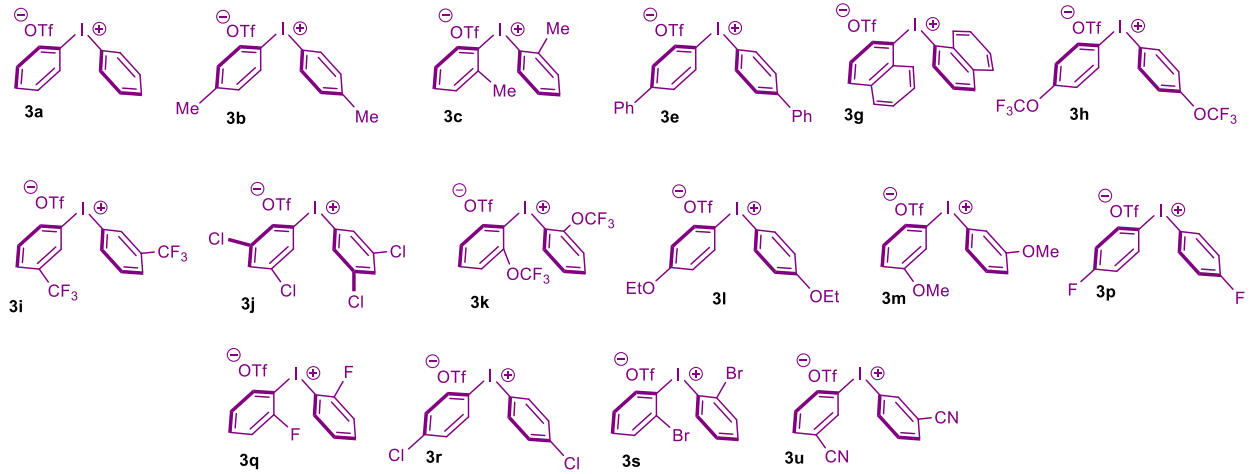
Scheme 2. List of *ortho*-hydroxyarylenaminones **1** used for preparation of 3-arylchromones.

Scope of diazonium tetrafuoroborates 2:



Scheme 3. List of diazonium tetrafuoroborates **2** used for preparation of 3-arylchromones.

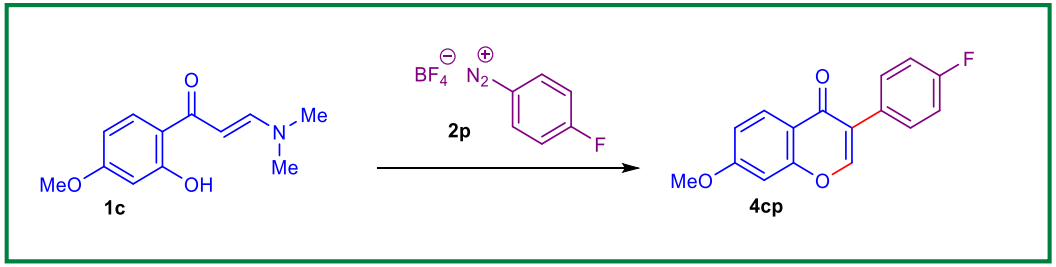
Scope of diaryliodonium triflates 3:



Scheme 4. List of diaryliodonium triflates **3** used for preparation of 3-arylchromones.

1. Reaction condition screening for arylation of *ortho*-hydroxyarylenaminones.

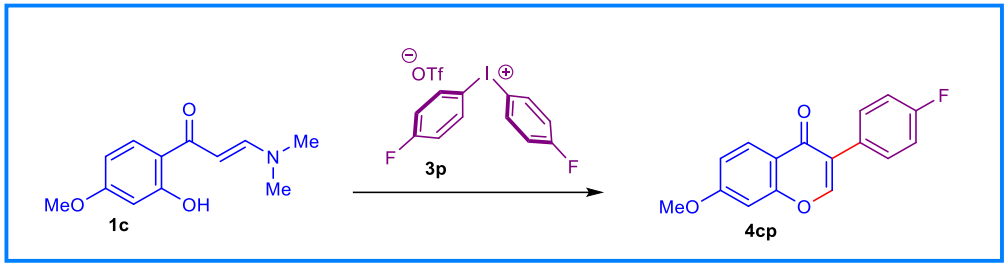
Table S1. Optimization of the reaction conditions.



Reaction (a)[b]				
entry	catalysts (equiv.)/reagent (equiv.)/additive	light source	Solvent/temperature/time	yield (%) **4cp**[a]
1	Eosin Y (0.03)/diazonium salt (1.5)	Green LED	MeOH/10h	52
2	Eosin Y (0.03)/diazonium salt (1.5)	Green LED	CH_3CN/10h	44
3	Eosin Y (0.03)/diazonium salt (1.5)	Green LED	DMSO/10h	87
4	**Eosin Y (0.03)/diazonium salt (1.3)**	**Green LED**	**DMSO/3h**	**86**
5	Eosin Y (0.03)/diazonium salt (1.3)	NO	DMSO/3h	0[c]
6	diazonium salt (1.3)	Green LED	DMSO/3h	0[c]
7	Eosin Y (0.03)/diazonium salt (1.3)/TEMPO (1.5)	Green LED	DMSO/3h	0[c]
8	Porphyrin (0.015)/diazonium salt (1.5)	Blue LED	DMSO/10h	33
9	*fac*-Ir(ppy)$_3$ (0.01)/diazonium salt (1.3)	Blue LED	CH_3CN/10h	75
10	***fac*-Ir(ppy)$_3$ (0.01)/diazonium salt (1.3)**	**Blue LED**	**DMSO/10h**	**79**
11	$Ru(bpy)_3Cl_2*6H_2O$ (0.02)/diazonium salt (1.5)	Blue LED	DMSO/10h	43
12	$Ru(bpm)_3Cl_2*6H_2O$ (0.02)/diazonium salt (1.5)	Blue LED	DMSO/10h	47

[a] Isolated yield. [b] All reactions were conducted at room temperature in inert atmosphere. [c] These experiments were analyzed by both ^1H NMR and GC/MS techniques.

Table S2. Optimization of the reaction conditions.



Reaction (b)[b]				
entry	catalysts (equiv.)/reagent (equiv.)	light source	solvent/time	yield (%) **4cp**[a]
1	*fac*-Ir(ppy)$_3$ (0.01)/diaryliodonium salt (1.5)	Blue LED	MeOH/12h	61
2	***fac*-Ir(ppy)$_3$ (0.01)/diaryliodonium salt (1.5)**	**Blue LED**	**DMSO /12h**	**77**
3	Ru(bpy)$_3$Cl$_2$*6H$_2$O (0.02)/diaryliodonium salt (1.5)	Blue LED	DMSO/12h	57
4	Ru(bpy)$_3$Cl$_2$*6H$_2$O (0.02)/diaryliodonium salt (1.5)	Blue LED	MeOH/12h	28
5	Ru(bpy)$_3$Cl$_2$*6H$_2$O (0.02)diaryliodonium salt (1.5)	Blue LED	CH$_3$CN/12h	79
6	**Ru(bpy)$_3$Cl$_2$*6H$_2$O (0.02)/diaryliodonium salt (1.5)**	**Blue LED**	**CH$_3$CN/4h**	**80**
7	Ru(bpy)$_3$Cl$_2$*6H$_2$O (0.02)/diaryliodonium salt (1.8)	Blue LED	CH$_3$CN/4h	80
8	Ru(bpy)$_3$Cl$_2$*6H$_2$O (0.02)/diaryliodonium salt (1.3)	Blue LED	CH$_3$CN/4h	69
9	Ru(bpy)$_3$Cl$_2$*6H$_2$O (0.02)/diaryliodonium salt (1.5)	NO	CH$_3$CN/4h	0[c]
10	diaryliodonium salt (1.5)	Blue LED	CH$_3$CN/4h	0[c]
11	Ru(bpy)$_3$Cl$_2$*6H$_2$O (0.02)/diaryliodonium salt (1.5)/TEMPO (1.7)	Blue LED	CH$_3$CN/4h	0[c]
12	Ru(bpm)$_3$Cl$_2$*6H$_2$O (0.02)/diaryliodonium salt (1.5)	Blue LED	CH$_3$CN/4h	64
13	Ru(bpz)$_3$Cl$_2$*6H$_2$O(0.02)/diaryliodonium salt (1.5)	Blue LED	CH$_3$CN/4h	60
14	[Cu(dpp)$_2$]PF$_6$ (0.02)/diaryliodonium salt (1.5)	Green LED	CH$_3$CN/12h	0
15	[Cu(dpp)$_2$]PF$_6$ (0.02)/diaryliodonium salt (1.5)	Green LED	DMSO/12h	0
16	[Cu(dap)$_2$]PF$_6$ (0.02)/diaryliodonium salt (1.5)	Green LED	CH$_3$CN/12h	0

[a] Isolated yield. [b] All reactions were conducted at room temperature in inert atmosphere. [c] These experiments were analyzed by both ^{1}H NMR and GC/MS techniques.

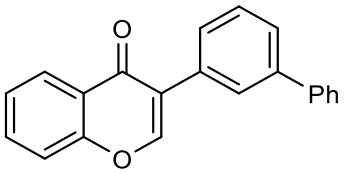
2. Reaction procedures with optimised reaction conditions.

Protocol A: ***General procedure for the synthesis of 3-arylchromones 4 by reaction of ortho-hydroxyarylenaminones with aryl diazonium tetrafluoroborates.*** Under inert atmosphere (glovebox operating with a constant Ar-purge) to a 10 mL vial equipped with a stir bar was placed photocatalyst Eosin Y (19.5 mg, 0.03 mmol, 0.03 equiv.), appropriate *ortho*-hydroxyarylenaminone (1.0 mmol, 1.0 equiv.) and appropriate aryl diazonium tetrafluoroborate (1.3 mmol, 1.3 equiv.). Afterwards, dry DMSO (0.2 mmol/mL) was added and the reaction vial was properly capped by Teflon Mininert Valve. Finally, the reaction vial was removed from the glovebox and subjected to irradiation under vigorous stirring using 24 W green (525±5 nm) LED strips for 3 hours. The reaction was controlled by both GC MS and TLC. After completion the reaction mixture was evaporated till the dryness using an oil pump and the crude was directly subjected to gradient flash chromatography on silica gel using appropriate mixture of hexane/ethyl acetate as eluent to isolate the desired chromone derivative. The gram scale synthesis was conducted on 10 mmol of the starting *ortho*-hydroxyarylenaminone.

Protocol B: ***General procedure for the synthesis of 3-arylchromones 4 by reaction of ortho-hydroxyarylenaminones with diaryliodonium triflates.*** Under inert atmosphere (glovebox operating with a constant Ar-purge) to a 20 mL vial equipped with a stir bar was placed photocatalyst $Ru(bpy)_3Cl_2*6H_2O$ (15.0 mg, 0.02 mmol, 0.02 equiv.), appropriate *ortho*-hydroxyarylenaminone (1.0 mmol, 1.0 equiv.) and appropriate diaryliodonium triflate (1.5 mmol, 1.5 equiv.). Afterwards, dry CH_3CN (0.12 mmol/mL) was added and the reaction vial was properly capped by Teflon Mininert Valve. Finally, the reaction vial was removed from the glovebox and subjected to irradiation under vigorous stirring using 34 W blue LED lamps (Kessil KSH150B Blue LED Grow Light; 5 cm - 6 cm away, with cooling fan on top to keep the reaction mixture at room temperature) for 4 hours. The reaction was controlled by both GC MS and TLC. After completion the reaction mixture was evaporated till the dryness using rotary evaporator and the crude was directly subjected to gradient flash chromatography on silica gel using appropriate mixture of hexane/ethyl acetate as eluent to isolate the desired chromone derivative. Compounds **4bg**, **4ci**, **4cp**, **4db**, **4fa**, **4hq** were prepared starting from corresponding diaryliodonium hexafluorophosphates following the same procedure. The gram scale synthesis was conducted on 10 mmol of the starting *ortho*-hydroxyarylenaminone.

(B) Characterization of products.

3-([1,1'-biphenyl]-3-yl)-4H-chromen-4-one (4af).



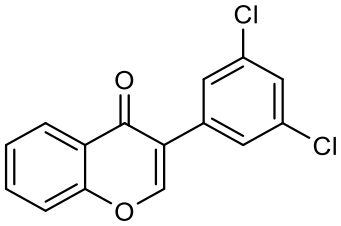
The title compound was prepared by following ***protocol A*** starting from photocatalyst Eosin Y (19.5 mg, 0.03 mmol, 0.03 equiv.), (E)-3-(dimethylamino)-1-(2-hydroxyphenyl)prop-2-en-1-one **1a** (191 mg, 1.0 mmol, 1.0 equiv.), [1,1'-biphenyl]-3-diazonium diazonium tetrafluoroborate **2f** (348 mg, 1.3 mmol, 1.3 equiv.) and dry DMSO (0.2 mmol/mL). Purification was accomplished by gradient flash chromatography on silica gel using a mixture of hexane/ethyl acetate 5:1 to 3:1 as eluent to isolate the desired chromone derivative **4af** (256 mg, 0.86 mmol, 86%).

Light yellow solid, mp 184-185 ^{o}C. ^{1}H NMR (500 MHz, $CDCl_3$): δ 7.35 – 7.38 (m, 1H, CH_{Ar}), 7.44 – 7.47 (m, 3H, CH_{Ar}), 7.50 – 7.58 (m, 3H, CH_{Ar}), 7.62 – 7.67 (m, 3H, CH_{Ar}), 7.69 – 7.72 (m, 1H, CH_{Ar}), 7.81 – 7.82 (m, 1H, CH_{Ar}), 8.09 (s, 1H, CH_{Ar}), 8.34 (dd, 1H, ^{3}J = 8.0 Hz, ^{4}J = 1.4 Hz, CH_{Ar}).

^{13}C NMR (126 MHz, $CDCl_3$): δ 118.1, 124.6, 125.3, 125.4, 126.5, 127.1, 127.4, 127.5, 127.8, 127.9, 128.8, 129.0, 132.4, 133.7, 141.0, 141.6, 153.2, 156.3, 176.3.

HRMS (TOF MS ES+): Calcd for $C_{21}H_{15}O_2$ (M+H) 299.1076. Found 299.1072.

3-(3,5-dichlorophenyl)-4H-chromen-4-one (4aj).

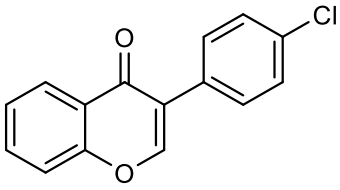


The title compound was prepared by following ***protocol A*** starting from photocatalyst Eosin Y (19.5 mg, 0.03 mmol, 0.03 equiv.), (E)-3-(dimethylamino)-1-(2-hydroxyphenyl)prop-2-en-1-one **1a** (191 mg, 1.0 mmol, 1.0 equiv.), 3,5-dichlorobenzenediazonium tetrafluoroborate **2j** (338 mg, 1.3 mmol, 1.3 equiv.) and dry DMSO (0.2 mmol/mL). Purification was accomplished by gradient flash chromatography on silica gel using a mixture of hexane/ethyl acetate 15:1 to 12:1 as eluent to isolate the desired chromone derivative **4aj** (232 mg, 0.80 mmol, 80%).

Alternatively the title compound was prepared by following ***protocol B*** starting from photocatalyst $Ru(bpy)_3Cl_2{*}6H_2O$ (15.0 mg, 0.02 mmol, 0.02 equiv.), (E)-3-(dimethylamino)-1-(2-hydroxyphenyl)prop-2-en-1-one **1a** (191 mg, 1.0 mmol, 1.0 equiv.) and bis(3,5-dichlorophenyl)iodonium

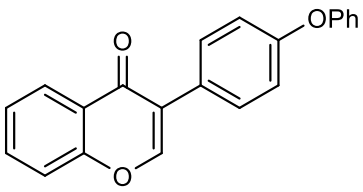
triflate **3j** (852 mg, 1.5 mmol, 1.5 equiv.) and dry CH_3CN (0.12 mmol/mL). Purification was accomplished by gradient flash chromatography on silica gel using a mixture of hexane/ethyl acetate 15:1 to 12:1 as eluent to isolate the desired chromone derivative **4aj** (215 mg, 0.74 mmol, 74%).
Light yellow solid, mp 129-130 °C. ^{1}H NMR (500 MHz, $CDCl_3$): 7.38 (d, 1H, ^4J = 1.9 Hz, CH_{Ar}), 7.45 – 7.48 (m, 1H, CH_{Ar}), 7.49 (d, 2H, ^4J = 1.8 Hz, CH_{Ar}), 7.51 (d, 1H, ^3J = 8.4 Hz, CH_{Ar}), 7.71 – 7.74 (m, 1H, CH_{Ar}), 8.50 (s, 1H, CH_{Ar}), 8.30 (dd, 1H, ^3J = 7.9 Hz, ^4J = 1.5 Hz, CH_{Ar}).
^{13}C NMR (126 MHz, $CDCl_3$): δ 118.1, 124.3, 125.7, 126.4, 127.3, 128.3, 134.1, 134.7, 135.0, 153.6, 156.1, 175.6.
HRMS (TOF MS ES+): Calcd for $C_{15}H_9O_2Cl_2$ (M+H) 290.9982. Found 290.9980.

3-(4-chlorophenyl)-4H-chromen-4-one (4ar).



The title compound was prepared by following ***protocol A*** starting from photocatalyst Eosin Y (19.5 mg, 0.03 mmol, 0.03 equiv.), (E)-3-(dimethylamino)-1-(2-hydroxyphenyl)prop-2-en-1-one **1a** (191 mg, 1.0 mmol, 1.0 equiv.), 4-chlorobenzenediazonium tetrafluoroborate **2r** (294 mg, 1.3 mmol, 1.3 equiv.) and dry DMSO (0.2 mmol/mL). Purification was accomplished by gradient flash chromatography on silica gel using a mixture of hexane/ethyl acetate 12:1 to 10:1 as eluent to isolate the desired chromone derivative **4ar** (213 mg, 0.83 mmol, 83%).
Alternatively the title compound was prepared by following ***protocol B*** starting from photocatalyst $Ru(bpy)_3Cl_2{*}6H_2O$ (15.0 mg, 0.02 mmol, 0.02 equiv.), (E)-3-(dimethylamino)-1-(2-hydroxyphenyl)prop-2-en-1-one **1a** (191 mg, 1.0 mmol, 1.0 equiv.), bis(4-chlorophenyl)iodonium triflate **3r** (748 mg, 1.5 mmol, 1.5 equiv.) and dry CH_3CN (0.12 mmol/mL). Purification was accomplished by gradient flash chromatography on silica gel using a mixture of hexane/ethyl acetate 12:1 to 10:1 as eluent to isolate the desired chromone derivative **4ar** (203 mg, 0.79 mmol, 79%).
Light brown solid, mp 186-187°C. ^{1}H NMR (500 MHz, $CDCl_3$): δ 7.40 – 7.45 (m, 3H, CH_{Ar}), 7.48 – 7.53 (m, 3H, CH_{Ar}), 7.68 – 7.71 (m, 1H, CH_{Ar}), 8.02 (s, 1H, CH_{Ar}), 8.30 (dd, 1H, ^3J = 8.0 Hz, ^4J = 1.6 Hz, CH_{Ar}).
^{13}C NMR (126 MHz, $CDCl_3$): δ 118.1, 124.3, 124.4, 125.4, 126.4, 128.7, 130.1, 130.2, 133.8, 134.2, 153.0, 156.1, 176.0.
HRMS (TOF MS ES+): Calcd for $C_{15}H_{10}O_2Cl$ (M+H) 257.0376. Found 257.0369.

3-(4-phenoxyphenyl)-4H-chromen-4-one (4av).



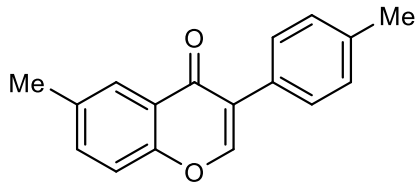
The title compound was prepared by following ***protocol A*** starting from photocatalyst Eosin Y (19.5 mg, 0.03 mmol, 0.03 equiv.), (E)-3-(dimethylamino)-1-(2-hydroxyphenyl)prop-2-en-1-one **1a** (191 mg, 1.0 mmol, 1.0 equiv.), 4-phenoxybenzenediazonium tetrafluoroborate **2v** (269 mg, 1.3 mmol, 1.3 equiv.) and dry DMSO (0.2 mmol/mL). Purification was accomplished by gradient flash chromatography on silica gel using a mixture of hexane/ethyl acetate 10:1 to 8:1 as eluent to isolate the desired chromone derivative **4av** (254 mg, 0.81 mmol, 81%).

White solid, mp 158-159 °C. ^{1}H NMR (500 MHz, $CDCl_3$): δ 7.06 – 7.09 (m, 4H, CH_{Ar}), 7.11 – 7.15 (m, 1H, CH_{Ar}), 7.35 (d, 1H, ^3J = 8.6 Hz, CH_{Ar}), 7.37 (d, 1H, ^3J = 8.6 Hz, CH_{Ar}), 7.43 (dt, 1H, ^3J = 7.9 Hz, ^4J = 1.0 Hz, CH_{Ar}), 7.49 (d, 1H, ^3J = 8.4 Hz, CH_{Ar}), 7.55 (td, 2H, ^3J = 8.9 Hz, ^4J = 2.2 Hz, CH_{Ar}), 7.69 – 7.70 (m, 1H, CH_{Ar}), 8.03 (s, 1H, CH_{Ar}), 8.32 (dd, 1H, ^3J = 7.9 Hz, ^4J = 1.4 Hz, CH_{Ar}).

^{13}C NMR (126 MHz, $CDCl_3$): δ 118.0, 118.6, 119.2, 123.5, 124.4, 124.7, 125.2, 126.4, 126.6, 129.8, 130.3, 133.6, 156.1, 156.8, 157.4, 176.3.

HRMS (TOF MS ES+): Calcd for $C_{21}H_{15}O_3$ (M+H) 315.1030. Found 315.1021.

6-methyl-3-(p-tolyl)-4H-chromen-4-one (4bb).



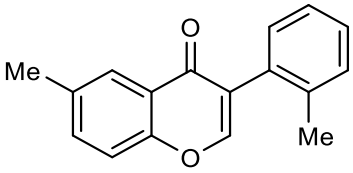
The title compound was prepared by following ***protocol A*** starting from photocatalyst Eosin Y (19.5 mg, 0.03 mmol, 0.03 equiv.), (E)-3-(dimethylamino)-1-(2-hydroxy-5-methylphenyl)prop-2-en-1-one **1b** (205 mg, 1.0 mmol, 1.0 equiv.), 4-methylbenzenediazonium tetrafluoroborate **2b** (268 mg, 1.3 mmol, 1.3 equiv.) and dry DMSO (0.2 mmol/mL). Purification was accomplished by gradient flash chromatography on silica gel using a mixture of hexane/ethyl acetate 7:1 to 5:1 as eluent to isolate the desired chromone derivative **4bb** (225 mg, 0.90 mmol, 90%).

White solid, mp 138-139 °C. ^{1}H NMR (500 MHz, $CDCl_3$): δ 2.47 2.39 (s, 3H, Me), 2.47 (s, 3H, Me), 7.25 (d, 2H, ^3J = 7.5 Hz, CH_{Ar}), 7.36 (d, 1H, ^3J = 8.1 Hz, CH_{Ar}), 7.30 – 7.33 (m, 2H, CH_{Ar}), 7.45 (d, 2H, ^3J = 8.1 Hz, CH_{Ar}), 7.49 (dd, 1H, ^3J = 8.8 Hz, ^4J = 2.0 Hz, CH_{Ar}), 7.98 (s, 1H, CH_{Ar}), 8.09 (br.s, 1H, CH_{Ar}).

^{13}C NMR (126 MHz, $CDCl_3$): δ 21.0, 21.2, 117.7, 124.2, 125.1, 125.6, 128.8, 129.0, 129.2, 134.8, 135.1, 137.9, 152.7, 154.4, 176.4.

HRMS (TOF MS ES+): Calcd for $C_{17}H_{15}O_2$ (M+H) 251.1082. Found 251.1072.

6-methyl-3-(o-tolyl)-4H-chromen-4-one (4bc).



The title compound was prepared by following ***protocol A*** starting from photocatalyst Eosin Y (19.5 mg, 0.03 mmol, 0.03 equiv.), (E)-3-(dimethylamino)-1-(2-hydroxy-5-methylphenyl)prop-2-en-1-one **1b** (205 mg, 1.0 mmol, 1.0 equiv.), 2-methylbenzenediazonium tetrafluoroborate **2c** (294 mg, 1.3 mmol, 1.3 equiv.) and dry DMSO (0.2 mmol/mL). Purification was accomplished by gradient flash chromatography on silica gel using a mixture of hexane/ethyl acetate 8:1 to 7:1 as eluent to isolate the desired chromone derivative **4bc** (175 mg, 0.70 mmol, 70%).

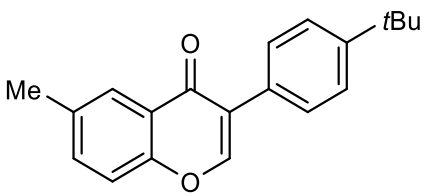
Alternatively the title compound was prepared by following ***protocol B*** starting from photocatalyst $Ru(bpy)_3Cl_2{*}6H_2O$ (15.0 mg, 0.02 mmol, 0.02 equiv.), (E)-3-(dimethylamino)-1-(2-hydroxy-5-methylphenyl)prop-2-en-1-one **1b** (205 mg, 1.0 mmol, 1.0 equiv.), di-o-tolyliodonium triflate **3c** (687 mg, 1.5 mmol, 1.5 equiv.) and dry CH_3CN (0.12 mmol/mL). Purification was accomplished by gradient flash chromatography on silica gel using a mixture of hexane/ethyl acetate 8:1 to 7:1 as eluent to isolate the desired chromone derivative **4bc** (152 mg, 0.61 mmol, 61%).

Light brown solid, mp 221-222 ^oC. ^1H NMR (500 MHz, $CDCl_3$): δ 2.27 (s, 3H, Me), 2.49 (s, 3H, Me), 7.19 (d, 1H, ^3J = 7.37 Hz, CH_{Ar}), 7.23 – 7.26 (m, 1H, CH_{Ar}), 7.30 – 7.33 (m, 2H, CH_{Ar}), 7.40 (d, 1H, ^3J = 8.7 Hz, CH_{Ar}), 7.50 (dd, 1H, ^3J = 8.6 Hz, ^4J = 2.1 Hz, CH_{Ar}), 7.86 (s, 1H, CH_{Ar}), 8.10 (br.s, 1H, CH_{Ar}).

^{13}C NMR (126 MHz, $CDCl_3$): δ 19.9, 20.8, 117.8, 123.9, 125.5, 125.7, 126.1, 128.5, 130.1, 130.4, 131.7, 134.8, 135.1, 138.0, 153.4, 154.6, 175.9.

HRMS (TOF MS ES+): Calcd for $C_{17}H_{15}O_2$ (M+H) 251.1074. Found 251.1072.

3-(4-(tert-butyl)phenyl)-6-methyl-4H-chromen-4-one (4bd).



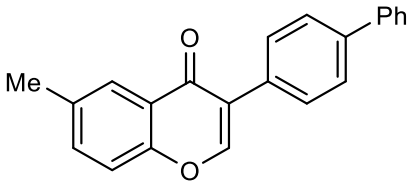
The title compound was prepared by following ***protocol A*** starting from photocatalyst Eosin Y (19.5 mg, 0.03 mmol, 0.03 equiv.), (E)-3-(dimethylamino)-1-(2-hydroxy-5-methylphenyl)prop-2-en-1-one **1b** (205 mg, 1.0 mmol, 1.0 equiv.), 4-(tert-butyl)benzenediazonium tetrafluoroborate **2d** (322 mg, 1.3 mmol, 1.3 equiv.) and dry DMSO (0.2 mmol/mL). Purification was accomplished by gradient flash chromatography on silica gel using a mixture of hexane/ethyl acetate 8:1 to 7:1 as eluent to isolate the desired chromone derivative **4bd** (239 mg, 0.82 mmol, 82%).

White solid, mp 133-134 ^oC. ^1H NMR (500 MHz, $CDCl_3$): δ 1.36 (s, 9H, *t*Bu), 2.48 (s, 3H, Me), 7.37 (d, 1H, ^3J = 8.6 Hz, CH_{Ar}), 7.46 – 7.50 (m, 3H, CH_{Ar}), 7.51 – 7.53 (m, 2H, CH_{Ar}), 8.02 (s, 1H, CH_{Ar}), 8.11 (br s, 1H, CH_{Ar}).

^{13}C NMR (126 MHz, $CDCl_3$): δ 21.0, 31.3, 34.6, 117.7, 124.2, 125.0, 125.5, 125.7, 128.6, 129.0, 134.8, 135.1, 151.0, 152.9, 154.4, 176.4.

HRMS (TOF MS ES+): Calcd for $C_{20}H_{21}O_2$ (M+H) 293.1547. Found 293.1542.

6-methyl-3-(4-phenoxyphenyl)-4H-chromen-4-one (4be).



The title compound was prepared by following ***protocol A*** starting from photocatalyst Eosin Y (19.5 mg, 0.03 mmol, 0.03 equiv.), (E)-3-(dimethylamino)-1-(2-hydroxy-5-methylphenyl)prop-2-en-1-one **1b** (205 mg, 1.0 mmol, 1.0 equiv.), [1,1'-biphenyl]-4-diazonium tetrafluoroborate **2e** (348 mg, 1.3 mmol, 1.3 equiv.) and dry DMSO (0.2 mmol/mL). Purification was accomplished by gradient flash chromatography on silica gel using a mixture of hexane/ethyl acetate 4:1 to 2:1 as eluent to isolate the desired chromone derivative **4be** (287 mg, 0.92 mmol, 92%).

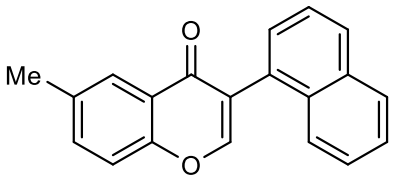
Alternatively the title compound was prepared by following ***protocol B*** starting from photocatalyst $Ru(bpy)_3Cl_2{*}6H_2O$ (15.0 mg, 0.02 mmol, 0.02 equiv.), (E)-3-(dimethylamino)-1-(2-hydroxy-5-methylphenyl)prop-2-en-1-one **1b** (205 mg, 1.0 mmol, 1.0 equiv.), di([1,1'-biphenyl]-4-yl)iodonium triflate **3e** (873 mg, 1.5 mmol, 1.5 equiv.) and dry CH_3CN (0.12 mmol/mL). Purification was accomplished by gradient flash chromatography on silica gel using a mixture of hexane/ethyl acetate 4:1 to 2:1 as eluent to isolate the desired chromone derivative **4be** (262 mg, 0.84 mmol, 84%).

Yellow solid, mp 182-183 °C. ^{1}H NMR (500 MHz, $CDCl_3$): δ 2.49 (s, 3H, Me), 7.35 – 7.38 (m, 1H, CH_{Ar}), 7.40 (d, 1H, ^3J = 8.6 Hz, CH_{Ar}), 7.45 – 7.48 (m, 2H, CH_{Ar}), 7.51 (dd, 1H, ^3J = 8.6 Hz, ^4J = 2.0 Hz, CH_{Ar}), 7.62 – 7.69 (m, 6H, CH_{Ar}), 8.07 (s, 1H, CH_{Ar}), 8.12 (d, 1H, ^4J = 0.9 Hz, CH_{Ar}).

^{13}C NMR (126 MHz, $CDCl_3$): δ 21.0, 117.8, 118.7, 119.2, 123.5, 124.2, 124.6, 125.7, 126.8, 129.8, 130.4, 134.9, 135.2, 152.7, 154.5, 156.9, 157.4, 176.4.

HRMS (TOF MS ES+): Calcd for $C_{22}H_{17}O_2$ (M+H) 313.1235. Found 313.1229.

6-methyl-3-(naphthalen-1-yl)-4H-chromen-4-one (4bg).



The title compound was prepared by following ***protocol A*** starting from photocatalyst Eosin Y (19.5 mg, 0.03 mmol, 0.03 equiv.), (E)-3-(dimethylamino)-1-(2-hydroxy-5-methylphenyl)prop-2-en-1-one **1b** (205 mg, 1.0 mmol, 1.0 equiv.), naphthalene-1-diazonium tetrafluoroborate **2g** (315 mg, 1.3 mmol, 1.3 equiv.) and dry DMSO (0.2 mmol/mL). Purification was accomplished by gradient flash chromatography on silica gel using a mixture of hexane/ethyl acetate 12:1 to 10:1 as eluent to isolate the desired chromone derivative **4bg** (226 mg, 0.79 mmol, 79%).

Alternatively the title compound was prepared by following ***protocol B*** starting from photocatalyst $Ru(bpy)_3Cl_2{*}6H_2O$ (15.0 mg, 0.02 mmol, 0.02 equiv.), (E)-3-(dimethylamino)-1-(2-hydroxy-5-methylphenyl)prop-2-en-1-one **1b** (205 mg, 1.0 mmol, 1.0 equiv.), di(naphthalen-1-yl)iodonium

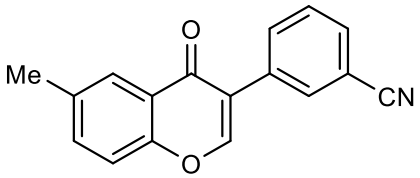
triflate **3g** (795 mg, 1.5 mmol, 1.5 equiv.) and dry CH_3CN (0.12 mmol/mL). Purification was accomplished by gradient flash chromatography on silica gel using a mixture of hexane/ethyl acetate 12:1 to 10:1 as eluent to isolate the desired chromone derivative **4bg** (180 mg, 0.63 mmol, 63%). This compound (171 mg, 0.60 mmol, 60%) can be prepared following the same protocol starting from di(naphthalen-1-yl)iodonium hexafluorophosphate (789 mg, 1.5 mmol, 1.5 equiv.).

Light greenish, mp 120-121 °C. ^{1}H NMR (500 MHz, $CDCl_3$): δ 2.50 (s, 3H, Me), 7.43 – 7.48 (m, 3H, CH_{Ar}), 7.51 – 7.55 (m, 3H, CH_{Ar}), 7.76 (d, 1H, ^3J = 8.2 Hz, CH_{Ar}), 7.92 (t, 2H, ^3J = 8.5 Hz, CH_{Ar}), 8.00 (s, 1H, CH_{Ar}), 8.16 (br. s, 1H, CH_{Ar}).

^{13}C NMR (126 MHz, $CDCl_3$): δ 20.9, 117.8, 123.9, 125.0, 125.2, 125.3, 125.5, 125.6, 125.8, 126.2, 128.1, 128.3, 129.9, 132.3, 133.5, 134.9, 135.2, 154.0, 154.6, 176.5.

HRMS (TOF MS ES+): Calcd for $C_{20}H_{15}O_2$ (M+H) 287.1080. Found 287.1072.

3-(6-methyl-4-oxo-4H-chromen-3-yl)benzonitrile (4bu).



The title compound was prepared by following ***protocol A*** starting from photocatalyst Eosin Y (19.5 mg, 0.03 mmol, 0.03 equiv.), (E)-3-(dimethylamino)-1-(2-hydroxy-5-methylphenyl)prop-2-en-1-one **1b** (205 mg, 1.0 mmol, 1.0 equiv.), 3-cyanobenzenediazonium tetrafluoroborate **2u** (282 mg, 1.3 mmol, 1.3 equiv.) and dry DMSO (0.2 mmol/mL). Purification was accomplished by gradient flash chromatography on silica gel using a mixture of hexane/ethyl acetate 10:1 to 8:1 as eluent to isolate the desired chromone derivative **4bu** (201 mg, 0.77 mmol, 77%).

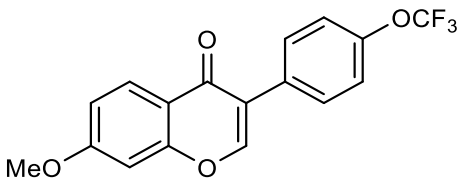
Alternatively the title compound was prepared by following ***protocol B*** starting from photocatalyst $Ru(bpy)_3Cl_2{*}6H_2O$ (15.0 mg, 0.02 mmol, 0.02 equiv.), (E)-3-(dimethylamino)-1-(2-hydroxy-5-methylphenyl)prop-2-en-1-one **1b** (205 mg, 1.0 mmol, 1.0 equiv.), bis(3-cyanophenyl)iodonium triflate **3u** (720 mg, 1.5 mmol, 1.5 equiv.) and dry CH_3CN (0.12 mmol/mL). Purification was accomplished by gradient flash chromatography on silica gel using a mixture of hexane/ethyl acetate 10:1 to 8:1 as eluent to isolate the desired chromone derivative **4bu** (185 mg, 0.71 mmol, 71%).

White solid, mp 191 °C. ^{1}H NMR (500 MHz, $CDCl_3$): δ 2.49 (s, 3H, Me), 7.41 (d, 1H, ^3J = 8.1 Hz, CH_{Ar}), 7.52 – 7.54 (m, 1H, CH_{Ar}), 7.55 (d, 1H, ^3J = 7.8 Hz, CH_{Ar}), 7.65 (dt, 1H, ^3J = 7.3 Hz, ^4J = 1.3 Hz, CH_{Ar}), 7.83 (dt, 1H, ^3J = 7.7 Hz, ^4J = 1.3 Hz, CH_{Ar}), 7.88 – 7.89 (m, 1H, CH_{Ar}), 8.04 (s, 1H, CH_{Ar}), 8.07 (d, 1H, ^4J = 1.0 Hz, CH_{Ar}).

^{13}C NMR (126 MHz, $CDCl_3$): δ 21.0, 112.7, 117.9, 118.6, 123.3, 124.0, 125.6, 129.3, 131.6, 132.4, 133.3, 133.4, 135.4, 135.8, 153.4, 154.5, 175.7.

HRMS (TOF MS ES+): Calcd for $C_{17}H_{12}NO_2$ (M+H) 262.0868. Found 262.0868.

7-methoxy-3-(4-(trifluoromethoxy)phenyl)-4H-chromen-4-one (4ch).



The title compound was prepared by following ***protocol A*** starting from photocatalyst Eosin Y (19.5 mg, 0.03 mmol, 0.03 equiv.), (E)-3-(dimethylamino)-1-(2-hydroxy-4-methoxyphenyl)prop-2-en-1-one **1c** (221 mg, 1.0 mmol, 1.0 equiv.), 4-(trifluoromethoxy)benzenediazonium tetrafluoroborate **2h** (359 mg, 1.3 mmol, 1.3 equiv.) and dry DMSO (0.2 mmol/mL). Purification was accomplished by gradient flash chromatography on silica gel using a mixture of hexane/ethyl acetate 5:1 to 1:1 as eluent to isolate the desired chromone derivative **4ch** (292 mg, 0.87 mmol, 87%).

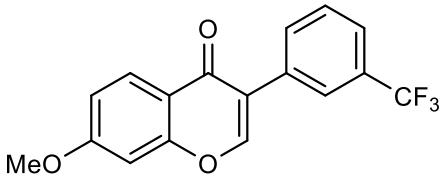
Alternatively the title compound was prepared by following ***protocol B*** starting from photocatalyst $Ru(bpy)_3Cl_2{*}6H_2O$ (15.0 mg, 0.02 mmol, 0.02 equiv.), (E)-3-(dimethylamino)-1-(2-hydroxy-4-methoxyphenyl)prop-2-en-1-one **1c** (221 mg, 1.0 mmol, 1.0 equiv.), bis(4-(trifluoromethoxy)phenyl)iodonium triflate **3h** (897 mg, 1.5 mmol, 1.5 equiv.) and dry CH_3CN (0.12 mmol/mL). Purification was accomplished by gradient flash chromatography on silica gel using a mixture of hexane/ethyl acetate 5:1 to 1:1 as eluent to isolate the desired chromone derivative **4ch** (276 mg, 0.82 mmol, 82%).

Light yellow solid, mp 149-150 ^oC. ^1H NMR (500 MHz, $CDCl_3$): δ 3.92 (s, 3H, OMe), 6.86 (d, 1H, ^4J = 2.4 Hz, CH_{Ar}), 7.00 (dd, 1H, ^3J = 8.7 Hz, ^4J = 2.4 Hz, CH_{Ar}), 7.27 (d, 2H, ^3J = 8.3 Hz, CH_{Ar}), 7.59 (d, 2H, ^3J = 9.0 Hz, CH_{Ar}), 7.95 (s, 1H, CH_{Ar}), 7.59 (d, 1H, ^3J = 8.7 Hz, CH_{Ar}).

^{13}C NMR (126 MHz, $CDCl_3$): δ 55.9, 100.2, 114.8, 118.3, 120.4 (d, $^1J_{CF}$ = 253.3 Hz), 121.1, 124.1, 127.8, 130.4, 130.7, 149.1, 152.7, 158.0, 164.2, 175.4.

HRMS (TOF MS ES+): Calcd for $C_{17}H_{12}O_4F_3$ (M+H) 337.0703. Found 337.0699.

7-methoxy-3-(3-(trifluoromethyl)phenyl)-4H-chromen-4-one (4ci).



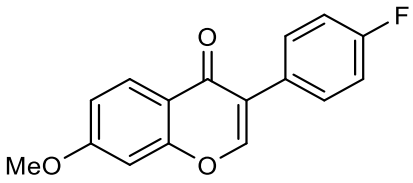
The title compound was prepared by following ***protocol A*** starting from photocatalyst Eosin Y (19.5 mg, 0.03 mmol, 0.03 equiv.), (E)-3-(dimethylamino)-1-(2-hydroxy-4-methoxyphenyl)prop-2-en-1-one **1c** (221 mg, 1.0 mmol, 1.0 equiv.), 3-(trifluoromethyl)benzenediazonium tetrafluoroborate **2i** (338 mg, 1.3 mmol, 1.3 equiv.) and dry DMSO (0.2 mmol/mL). Purification was accomplished by gradient flash chromatography on silica gel using a mixture of hexane/ethyl acetate 7:1 to 3:1 as eluent to isolate the desired chromone derivative **4ci** (256 mg, 0.83 mmol, 83%). Alternatively the title compound was prepared by following ***protocol B*** starting from photocatalyst $Ru(bpy)_3Cl_2{*}6H_2O$ (15.0 mg, 0.02 mmol, 0.02 equiv.), (E)-3-(dimethylamino)-1-(2-hydroxy-4-methoxyphenyl)prop-2-en-1-one **1c** (221 mg, 1.0 mmol, 1.0 equiv.), bis(3-(trifluoromethyl)phenyl)iodonium triflate **3i** (849 mg, 1.5 mmol, 1.5 equiv.) and dry CH_3CN (0.12 mmol/mL). Purification was accomplished by gradient flash chromatography on silica gel using a mixture of hexane/ethyl acetate 7:1 to 3:1 as eluent to isolate the desired chromone derivative **4ci** (246 mg, 0.77 mmol, 77%). This compound (243 mg, 0.76 mmol, 76 %) can be prepared following the same protocol starting from bis(3-(trifluoromethyl)phenyl)iodonium hexafluorophosphate (843 mg, 1.5 mmol, 1.5 equiv.).

White solid, mp 124 - 125 °C. ^{1}H NMR (500 MHz, $CDCl_3$): δ 3.92 (s, 3H, OMe), 6.87 (d, 1H, ^4J = 2.3 Hz, CH_{Ar}), 7.01 (dd, 1H, ^3J = 8.9 Hz, ^4J = 2.3 Hz, CH_{Ar}), 7.55 (t, 1H, ^3J = 7.7 Hz, CH_{Ar}), 7.63 (d, 1H, ^3J = 7.7 Hz, CH_{Ar}), 7.77 (d, 1H, ^3J = 7.7 Hz, CH_{Ar}), 7.82 (s, 1H, CH_{Ar}), 7.99 (s, 1H, CH_{Ar}), 8.20 (d, 1H, ^3J = 8.8 Hz, CH_{Ar}).

^{13}C NMR (126 MHz, $CDCl_3$): δ 55.9, 100.2, 118.2, 124.0 (q, $^1J_{CF}$ = 273.3 Hz, CF_3), 124.1, 124.8 (m), 125.6 (m), 127.7, 128.9, 130.9 (q, $^2J_{CF}$ = 32.0 Hz, CCF_3), 132.3, 132.8, 152.9, 158.0, 164.3, 175.2.

HRMS (TOF MS ES+): Calcd for $C_{17}H_{12}O_3F_3$ (M+H) 321.0746. Found 321.0739.

3-(4-fluorophenyl)-7-methoxy-4H-chromen-4-one (4cp).



The title compound was prepared by following ***protocol A*** starting from photocatalyst Eosin Y (19.5 mg, 0.03 mmol, 0.03 equiv.), (E)-3-(dimethylamino)-1-(2-hydroxy-4-methoxyphenyl)prop-2-en-1-one **1c** (221 mg, 1.0 mmol, 1.0 equiv.), 4-fluorobenzenediazonium tetrafluoroborate **2p** (273 mg, 1.3 mmol, 1.3 equiv.) and dry DMSO (0.2 mmol/mL). Purification was accomplished by gradient flash chromatography on silica gel using a mixture of hexane/ethyl acetate 5:1 to 3:1 as eluent to isolate the desired chromone derivative **4cp** (232 mg, 0.86 mmol, 86%).

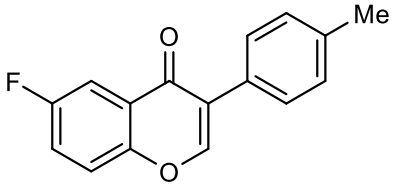
Alternatively the title compound was prepared by following ***protocol B*** starting from photocatalyst $Ru(bpy)_3Cl_2{*}6H_2O$ (15.0 mg, 0.02 mmol, 0.02 equiv.), (E)-3-(dimethylamino)-1-(2-hydroxy-4-methoxyphenyl)prop-2-en-1-one **1c** (221 mg, 1.0 mmol, 1.0 equiv.), bis(4-fluorophenyl)iodonium triflate **3p** (699 mg, 1.5 mmol, 1.5 equiv.) and dry CH_3CN (0.12 mmol/mL). Purification was accomplished by gradient flash chromatography on silica gel using a mixture of hexane/ethyl acetate 5:1 to 3:1 as eluent to isolate the desired chromone derivative **4cp** (216 mg, 0.80 mmol, 80%). This compound (224 mg, 0.83 mmol, 83 %) can be prepared following the same protocol starting from bis(4-fluorophenyl)iodonium hexafluorophosphate (693 mg, 1.5 mmol, 1.5 equiv.).

Yellow solid, mp 138 - 139 °C. ^{1}H NMR (500 MHz, $CDCl_3$): δ 3.91 (s, 3H, OMe), 6.85 (d, 1H, ^4J = 2.4 Hz, CH_{Ar}), 7.01 (dd, 1H, ^3J = 8.9 Hz, ^4J = 2.3 Hz, CH_{Ar}), 7.05 – 7.09 (m, 1H, CH_{Ar}), 7.31 – 7.39 (m, 3H, CH_{Ar}), 7.96 (s, 1H, CH_{Ar}), 8.20 (d, 1H, ^3J = 8.7 Hz, CH_{Ar}).

^{13}C NMR (126 MHz, $CDCl_3$): δ 55.9, 100.1, 114.8, 115.0 (d, J_{CF} = 20.8 Hz), 116.0 (d, J_{CF} = 20.8 Hz), 118.3, 124.1 (m), 124.4 (d, J_{CF} = 2.9 Hz), 127.8, 129.9 (d, J_{CF} = 8.3 Hz), 134.0 (d, J_{CF} = 8.6 Hz), 152.8, 157.9, 162.7 (d, $^1J_{CF}$ = 245.0 Hz, CF), 164.1, 175.2.

HRMS (TOF MS ES+): Calcd for $C_{16}H_{12}O_3F$ (M+H) 271.0772. Found 271.0770.

6-fluoro-3-(p-tolyl)-4H-chromen-4-one (4db).



The title compound was prepared by following ***protocol A*** starting from photocatalyst Eosin Y (19.5 mg, 0.03 mmol, 0.03 equiv.), (E)-3-(dimethylamino)-1-(5-fluoro-2-hydroxyphenyl)prop-2-en-1-one **1d** (209 mg, 1.0 mmol, 1.0 equiv.), 4-methylbenzenediazonium tetrafluoroborate **2b** (268 mg, 1.3 mmol, 1.3 equiv.) and dry DMSO (0.2 mmol/mL). Purification was accomplished by gradient flash chromatography on silica gel using a mixture of hexane/ethyl acetate 7:1 to 5:1 as eluent to isolate the desired chromone derivative **4db** (206 mg, 0.81 mmol, 81%).

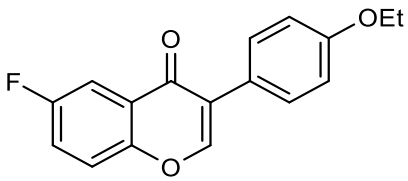
Alternatively the title compound was prepared by following ***protocol B*** starting from photocatalyst $Ru(bpy)_3Cl_2{*}6H_2O$ (15.0 mg, 0.02 mmol, 0.02 equiv.), (E)-3-(dimethylamino)-1-(5-fluoro-2-hydroxyphenyl)prop-2-en-1-one **1d** (209 mg, 1.0 mmol, 1.0 equiv.), di-p-tolyliodonium triflate **3b** (687 mg, 1.5 mmol, 1.5 equiv.) and dry CH_3CN (0.12 mmol/mL). Purification was accomplished by gradient flash chromatography on silica gel using a mixture of hexane/ethyl acetate 7:1 to 5:1 as eluent to isolate the desired chromone derivative **4db** (185 mg, 0.73 mmol, 73%). This compound (180 mg, 0.71 mmol, 71 %) can be prepared following the same protocol starting from di-p-tolyliodonium hexafluorophosphate (681 mg, 1.5 mmol, 1.5 equiv.).

White solid, mp 160-161 °C. ^{1}H NMR (500 MHz, $CDCl_3$): δ 2.41 (s, 3H, Me), 7.27 (d, 2H, ^3J = 8.0 Hz, CH_{Ar}), 7.39 – 7.43 (m, 1H, CH_{Ar}), 7.46 – 7.51 (m, 3H, CH_{Ar}), 7.95 (dd, 1H, ^3J = 8.3 Hz, ^4J = 3.1 Hz, CH_{Ar}), 8.02 (s, 1H, CH_{Ar}).

^{13}C NMR (126 MHz, $CDCl_3$): δ 21.2, 111.1 (d, J_{CF} = 24.0 Hz), 120.1 (d, J_{CF} = 8.1 Hz), 121.7 (d, J_{CF} = 25.3 Hz), 124.5, 125.5 (d, J_{CF} = 7.0 Hz), 128.4, 128.7, 129.2, 138.2, 152.3, 152.9, 159.5 (d, $^1J_{CF}$ = 252.0 Hz), 175.5.

HRMS (TOF MS ES+): Calcd for $C_{61}H_{12}O_2F$ (M+H) 255.0822. Found 255.0821.

3-(4-ethoxyphenyl)-6-fluoro-4H-chromen-4-one (4dl).



The title compound was prepared by following ***protocol A*** starting from photocatalyst Eosin Y (19.5 mg, 0.03 mmol, 0.03 equiv.), (E)-3-(dimethylamino)-1-(5-fluoro-2-hydroxyphenyl)prop-2-en-1-one **1d** (209 mg, 1.0 mmol, 1.0 equiv.), 4-ethoxybenzenediazonium tetrafluoroborate **2l** (307 mg, 1.3 mmol, 1.3 equiv.) and dry DMSO (0.2 mmol/mL). Purification was accomplished by gradient flash chromatography on silica gel using a mixture of hexane/ethyl acetate 5:1 to 3:1 as eluent to isolate the desired chromone derivative **4dl** (227 mg, 0.80 mmol, 80%).

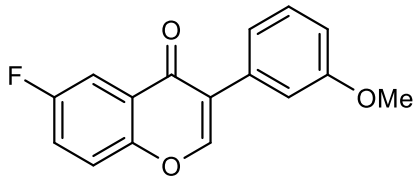
Alternatively the title compound was prepared by following ***protocol B*** starting from photocatalyst $Ru(bpy)_3Cl_2{*}6H_2O$ (15.0 mg, 0.02 mmol, 0.02 equiv.), (E)-3-(dimethylamino)-1-(5-fluoro-2-hydroxyphenyl)prop-2-en-1-one **1d** (209 mg, 1.0 mmol, 1.0 equiv.), bis(4-ethoxyphenyl)iodonium triflate **3l** (777 mg, 1.5 mmol, 1.5 equiv.) and dry CH_3CN (0.12 mmol/mL). Purification was accomplished by gradient flash chromatography on silica gel using a mixture of hexane/ethyl acetate 5:1 to 3:1 as eluent to isolate the desired chromone derivative **4dl** (224 mg, 0.79 mmol, 79%).

White solid, mp 163-164 °C. ^{1}H NMR (500 MHz, $CDCl_3$): δ 1.43 (t, 3H, ^3J = 6.7 Hz, OCH_2CH_3), 4.06 (q, 2H, ^3J = 6.7 Hz, OCH_2CH_3), 6.96 (d, 2H, ^3J = 8.9 Hz, CH_{Ar}), 7.37 – 7.42 (m, 1H, CH_{Ar}), 7.47 – 7.50 (m, 3H, CH_{Ar}), 7.93 (dd, 1H, ^3J = 8.3 Hz, ^4J = 3.0 Hz, CH_{Ar}), 8.00 (s, 1H, CH_{Ar}).

^{13}C NMR (126 MHz, $CDCl_3$): δ 14.8, 63.5, 111.1 (d, J_{CF} = 22.0 Hz), 120.11 (d, J_{CF} = 7.8 Hz), 121.7 (d, J_{CF} = 25.9 Hz), 123.5, 124.4, 125.5 (d, J_{CF} = 7.6 Hz), 130.0, 152.4, 152.7, 159.1, 159.5 (d, $^1J_{CF}$ = 249.5 Hz), 160.7, 175.7.

HRMS (TOF MS ES+): Calcd for $C_{17}H_{14}O_3F$ (M+H) 285.0931. Found 285.0927.

6-fluoro-3-(3-methoxyphenyl)-4H-chromen-4-one (4dm).



The title compound was prepared by following ***protocol A*** starting from photocatalyst Eosin Y (19.5 mg, 0.03 mmol, 0.03 equiv.), (E)-3-(dimethylamino)-1-(5-fluoro-2-hydroxyphenyl)prop-2-en-1-one **1d** (209 mg, 1.0 mmol, 1.0 equiv.), 3-methoxybenzenediazonium tetrafluoroborate **2m** (288 mg, 1.3 mmol, 1.3 equiv.) and dry DMSO (0.2 mmol/mL). Purification was accomplished by gradient flash chromatography on silica gel using a mixture of hexane/ethyl acetate 5:1 to 3:1 as eluent to isolate the desired chromone derivative **4dm** (210 mg, 0.78 mmol, 78%).

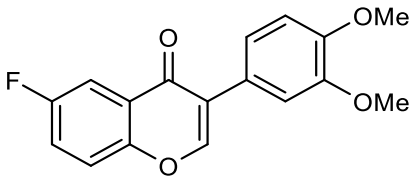
Alternatively the title compound was prepared by following ***protocol B*** starting from photocatalyst $Ru(bpy)_3Cl_2{*}6H_2O$ (15.0 mg, 0.02 mmol, 0.02 equiv.), (E)-3-(dimethylamino)-1-(5-fluoro-2-hydroxyphenyl)prop-2-en-1-one **1d** (209 mg, 1.0 mmol, 1.0 equiv.), bis(3-methoxyphenyl)iodonium triflate **3m** (735 mg, 1.5 mmol, 1.5 equiv.) and dry CH_3CN (0.12 mmol/mL). Purification was accomplished by gradient flash chromatography on silica gel using a mixture of hexane/ethyl acetate 5:1 to 3:1 as eluent to isolate the desired chromone derivative **4dm** (192 mg, 0.71 mmol, 71%).

White solid, mp 133-134 °C. ^{1}H NMR (500 MHz, $CDCl_3$): δ 3.83 (s 3H, OMe), 6.91 (dd, 1H, ^3J = 8.4 Hz, ^4J = 2.1 Hz, CH_{Ar}), 7.09 (d, 1H, ^3J = 7.7 Hz, CH_{Ar}), 7.13 – 7.14 (m, 1H, CH_{Ar}), 7.33 (d, 1H, ^3J = 8.0 Hz, CH_{Ar}), 7.37 – 7.41 (m, 1H, CH_{Ar}), 7.46 – 7.49 (m, 1H, CH_{Ar}), 7.91 (dd, 1H, ^3J = 8.5 Hz, ^4J = 3.0 Hz, CH_{Ar}), 8.02 (s, 1H, CH_{Ar}).

^{13}C NMR (126 MHz, $CDCl_3$): δ 55.2, 111.0 (d, J_{CF} = 23.5 Hz), 114.2 (d, J_{CF} = 48.8 Hz), 120.1 (d, J_{CF} = 7.9 Hz), 121.0, 121.6 (d, J_{CF} = 25.1 Hz), 124.4, 125.5 (d, J_{CF} = 7.2 Hz), 129.5, 132.7, 152.3, 153.3, 159.5, 159.52 (d, $^1J_{CF}$ = 244.6 Hz), 175.3.

HRMS (TOF MS ES+): Calcd for $C_{16}H_{12}O_3F$ (M+H) 271.0778. Found 271.0770.

3-(3,4-dimethoxyphenyl)-6-fluoro-4H-chromen-4-one (4dn).



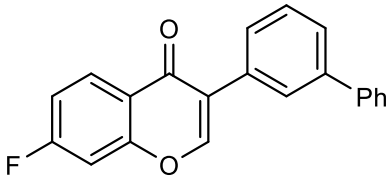
The title compound was prepared by following ***protocol A*** starting from photocatalyst Eosin Y (19.5 mg, 0.03 mmol, 0.03 equiv.), (E)-3-(dimethylamino)-1-(5-fluoro-2-hydroxyphenyl)prop-2-en-1-one **1d** (209 mg, 1.0 mmol, 1.0 equiv.), 3,4-dimethoxybenzenediazonium tetrafluoroborate **2n** (327 mg, 1.3 mmol, 1.3 equiv.) and dry DMSO (0.2 mmol/mL). Purification was accomplished by gradient flash chromatography on silica gel using a mixture of hexane/ethyl acetate 3:1 to pure ethyl acetate as eluent to isolate the desired chromone derivative **4dn** (264 mg, 0.88 mmol, 88%).

Light brown solid, mp 152 - 153 °C. ^{1}H NMR (500 MHz, $CDCl_3$): δ 3.91 (s, 3H, OMe), 3.93 (s, 3H, OMe), 6.92 (d, 1H, ^3J = 8.4 Hz, CH_{Ar}), 7.05 (dd, 1H, ^3J = 8.4 Hz, ^4J = 1.9 Hz, CH_{Ar}), 7.18 (d, 1H, ^4J = 2.0 Hz, CH_{Ar}), 7.39 – 7.43 (m, 1H, CH_{Ar}), 7.48 – 7.51 (m, 1H, CH_{Ar}), 7.93 (dd, 1H, ^3J = 8.3 Hz, ^4J = 3.0 Hz, CH_{Ar}), 8.03 (s, 1H, CH_{Ar}).

^{13}C NMR (126 MHz, $CDCl_3$): δ 55.92, 55.93, 111.0 (d, J_{CF} = 24.5 Hz), 111.2, 112.3, 120.1 (d, J_{CF} = 8.0 Hz), 121.0, 121.8 (d, J_{CF} = 25.6 Hz), 124.1, 124.4, 125.5 (d, J_{CF} = 7.7 Hz), 148.8, 149.2, 152.4, 152.9, 159.6 (d, $^1J_{CF}$ = 248.8 Hz), 175.7.

HRMS (TOF MS ES+): Calcd for $C_{17}H_{14}O_4F$ (M+H) 301.0874. Found 301.0876.

3-([1,1'-biphenyl]-3-yl)-7-fluoro-4H-chromen-4-one (4ef).



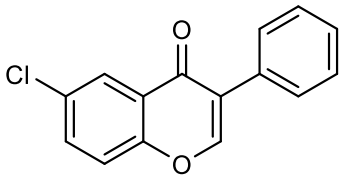
The title compound was prepared by following ***protocol A*** starting from photocatalyst Eosin Y (19.5 mg, 0.03 mmol, 0.03 equiv.), (E)-3-(dimethylamino)-1-(4-fluoro-2-hydroxyphenyl)prop-2-en-1-one **1e** (209 mg, 1.0 mmol, 1.0 equiv.), [1,1'-biphenyl]-3-diazonium tetrafluoroborate **2f** (348 mg, 1.3 mmol, 1.3 equiv.) and dry DMSO (0.2 mmol/mL). Purification was accomplished by gradient flash chromatography on silica gel using a mixture of hexane/ethyl acetate 7:1 to 3:1 as eluent to isolate the desired chromone derivative **4ef** (287 mg, 0.91 mmol, 91%).

White solid, mp 131-132 °C. ^{1}H NMR (500 MHz, $CDCl_3$): δ 7.16 – 7.19 (m, 2H, CH_{Ar}), 7.35 – 7.38 (m, 2H, CH_{Ar}), 7.44 – 7.47 (m, 2H, CH_{Ar}), 7.52 – 7.53 (m, 2H, CH_{Ar}), 7.62 – 7.65 (m, 3H, CH_{Ar}), 7.79 (s, 1H, CH_{Ar}), 8.04 (s, 1H, CH_{Ar}), 8.34 – 8.37 (m, 1H, CH_{Ar}).

^{13}C NMR (126 MHz, $CDCl_3$): δ 104.6 (d, J_{CF} = 27.0 Hz), 114.1 (d, J_{CF} = 23.0 Hz), 121.4, 125.5, 127.1, 127.2, 127.4, 127.8 (d, $^1J_{CF}$ = 3.1 Hz), 128.7, 128.9, 129.0, 131.8, 140.7, 141.5, 153.2, 157.1 (d, J_{CF} = 11.7 Hz), 165.5 (d, $^1J_{CF}$ = 251.7 Hz), 175.3.

HRMS (TOF MS ES+): Calcd for $C_{21}H_{14}O_2F$ (M+H) 317.0987. Found 317.0978.

6-chloro-3-phenyl-4H-chromen-4-one (4fa).



The title compound was prepared by following ***protocol A*** starting from photocatalyst Eosin Y (19.5 mg, 0.03 mmol, 0.03 equiv.), (E)-1-(5-chloro-2-hydroxyphenyl)-3-(dimethylamino)prop-2-en-1-one **1f** (225 mg, 1.0 mmol, 1.0 equiv.), benzenediazonium tetrafluoroborate **2a** (249 mg, 1.3 mmol, 1.3 equiv.) and dry DMSO (0.2 mmol/mL). Purification

was accomplished by gradient flash chromatography on silica gel using a mixture of hexane/ethyl acetate 9:1 to 7:1 as eluent to isolate the desired chromone derivative **4fa** (208 mg, 0.81 mmol, 81%).

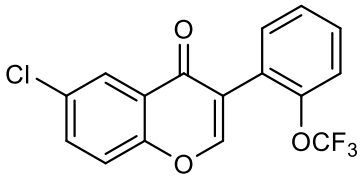
Alternatively the title compound was prepared by following ***protocol B*** starting from photocatalyst $Ru(bpy)_3Cl_2{*}6H_2O$ (15.0 mg, 0.02 mmol, 0.02 equiv.), (E)-1-(5-chloro-2-hydroxyphenyl)-3-(dimethylamino)prop-2-en-1-one **1f** (225 mg, 1.0 mmol, 1.0 equiv.), diphenyliodonium triflate **3a** (645 mg, 1.5 mmol, 1.5 equiv.) and dry CH_3CN (0.12 mmol/mL). Purification was accomplished by gradient flash chromatography on silica gel using a mixture of hexane/ethyl acetate 9:1 to 7:1 as eluent to isolate the desired chromone derivative **4fa** (192 mg, 0.75 mmol, 75%). This compound (187 mg, 0.73 mmol, 73 %) can be prepared following the same protocol starting from diphenyliodonium hexafluorophosphate (639 mg, 1.5 mmol, 1.5 equiv.).

White solid, mp 179-180°C. ^{1}H NMR (500 MHz, $CDCl_3$): δ 7.40 – 7.47 (m, 4H, CH_{Ar}), 7.55 (m, 2H, CH_{Ar}), 7.62 (dd, 1H, ^3J = 8.9 Hz, ^4J = 2.6 Hz, CH_{Ar}) 8.02 (s, 1H, CH_{Ar}), 8.27 (d, 1H, ^4J = 2.6 Hz, CH_{Ar}).

^{13}C NMR (126 MHz, $CDCl_3$): δ 119.8, 125.4, 125.5, 125.8, 128.4, 128.6, 128.9, 131.2, 131.3, 133.9, 153.2, 154.5, 175.1.

HRMS (TOF MS ES+): Calcd for $C_{15}H_{10}O_2Cl$ (M+H) 257.0374. Found 257.0369.

6-chloro-3-(2-(trifluoromethoxy)phenyl)-4H-chromen-4-one (4fk).



The title compound was prepared by following ***protocol A*** starting from photocatalyst Eosin Y (19.5 mg, 0.03 mmol, 0.03 equiv.), (E)-1-(5-chloro-2-hydroxyphenyl)-3-(dimethylamino)prop-2-en-1-one **1f** (225 mg, 1.0 mmol, 1.0 equiv.), 2-(trifluoromethoxy)benzenediazonium tetrafluoroborate **2k** (359 mg, 1.3 mmol, 1.3 equiv.) and dry DMSO (0.2 mmol/mL). Purification was accomplished by gradient flash chromatography on silica gel using a mixture of hexane/ethyl acetate 7:1 to 5:1 as eluent to isolate the desired chromone derivative **4fk** (265 mg, 0.78 mmol, 78%).

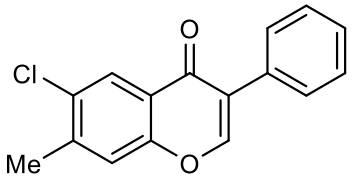
Alternatively the title compound was prepared by following ***protocol B*** starting from photocatalyst $Ru(bpy)_3Cl_2{*}6H_2O$ (15.0 mg, 0.02 mmol, 0.02 equiv.), (E)-1-(5-chloro-2-hydroxyphenyl)-3-(dimethylamino)prop-2-en-1-one **1f** (225 mg, 1.0 mmol, 1.0 equiv.), bis(2-(trifluoromethoxy)phenyl)iodonium triflate **3k** (897 mg, 1.5 mmol, 1.5 equiv.) and dry CH_3CN (0.12 mmol/mL). Purification was accomplished by gradient flash chromatography on silica gel using a mixture of hexane/ethyl acetate 7:1 to 5:1 as eluent to isolate the desired chromone derivative **4fk** (204 mg, 0.60 mmol, 60%).

White solid, mp 140-141 °C. ^{1}H NMR (500 MHz, $CDCl_3$): δ 7.35 – 7.38 (m, 2H, CH_{Ar}), 7.43 – 7.48 (m, 3H, CH_{Ar}), 7.63 (dd, 1H, ^3J = 8.9 Hz, ^4J = 2.6 Hz, CH_{Ar}), 7.98 (s, 1H, CH_{Ar}), 8.24 (d, 1H, ^4J = 2.5 Hz, CH_{Ar}).

^{13}C NMR (126 MHz, $CDCl_3$): δ 119.9, 120.3 (d, $^1J_{CF}$ = 258.3 Hz), 120.8, 121.5, 124.7, 125.1, 125.7, 126.8, 130.1, 131.4, 132.4, 134.0, 147.3, 154.4, 154.6, 174.3.

HRMS (TOF MS ES+): Calcd for $C_{16}H_9O_3F_3Cl$ (M+H) 341.0197. Found 341.0192.

6-chloro-7-methyl-3-phenyl-4H-chromen-4-one (4ga).



The title compound was prepared by following ***protocol A*** starting from photocatalyst Eosin Y (19.5 mg, 0.03 mmol, 0.03 equiv.), (E)-1-(5-chloro-2-hydroxy-4-methylphenyl)-3-(dimethylamino)prop-2-en-1-one **1g** (239 mg, 1.0 mmol, 1.0 equiv.), benzenediazonium tetrafluoroborate **2a** (249 mg, 1.3 mmol, 1.3 equiv.) and dry DMSO (0.2 mmol/mL). Purification was accomplished by gradient flash chromatography on silica gel using a mixture of hexane/ethyl acetate 10:1 to 7:1 as eluent to isolate the desired chromone derivative **4ga** (243 mg, 0.90 mmol, 90%).

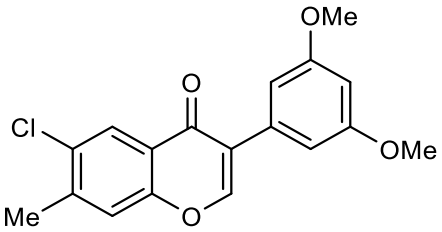
Alternatively the title compound was prepared by following ***protocol B*** starting from photocatalyst $Ru(bpy)_3Cl_2{*}6H_2O$ (15.0 mg, 0.02 mmol, 0.02 equiv.), (E)-1-(5-chloro-2-hydroxy-4-methylphenyl)-3-(dimethylamino)prop-2-en-1-one **1g** (239 mg, 1.0 mmol, 1.0 equiv.), diphenyliodonium triflate **3a** (645 mg, 1.5 mmol, 1.5 equiv.) and dry CH_3CN (0.12 mmol/mL). Purification was accomplished by gradient flash chromatography on silica gel using a mixture of hexane/ethyl acetate 10:1 to 7:1 as eluent to isolate the desired chromone derivative **4ga** (214 mg, 0.79 mmol, 79%).

Light yellow solid, mp 193-194°C. ^{1}H NMR (500 MHz, $CDCl_3$): δ 2.52 (s, 3H, Me), 7.37 – 7.46 (m, 4H, CH_{Ar}), 7.54 – 7.56 (m, 2H, CH_{Ar}), 7.96 (s, 1H, CH_{Ar}), 8.26 (s, 1H, CH_{Ar}).

^{13}C NMR (126 MHz, $CDCl_3$): δ 20.8, 119.8, 123.6, 125.3, 126.0, 128.3, 128.6, 128.9, 131.6, 132.0, 142.9, 153.0, 154.5, 175.1.

HRMS (TOF MS ES+): Calcd for $C_{16}H_{12}O_2Cl$ (M+H) 271.0529. Found 271.0526.

6-chloro-3-(3,5-dimethoxyphenyl)-7-methyl-4H-chromen-4-one (4go).



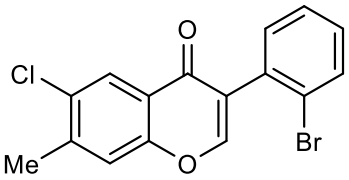
The title compound was prepared by following ***protocol A*** starting from photocatalyst Eosin Y (19.5 mg, 0.03 mmol, 0.03 equiv.), (E)-1-(5-chloro-2-hydroxy-4-methylphenyl)-3-(dimethylamino)prop-2-en-1-one **1g** (239 mg, 1.0 mmol, 1.0 equiv.), 3,5-dimethoxybenzenediazonium tetrafluoroborate **2o** (327 mg, 1.3 mmol, 1.3 equiv.) and dry DMSO (0.2 mmol/mL). Purification was accomplished by gradient flash chromatography on silica gel using a mixture of hexane/ethyl acetate 10:1 to 7:1 as eluent to isolate the desired chromone derivative **4go** (268 mg, 0.81 mmol, 81%).

Light yellow solid, mp 158-159°C. ^{1}H NMR (500 MHz, $CDCl_3$): δ 2.51 (s, 3H, Me), 3.82 (s, 6H, 2xOMe), 6.49 (s, 1H, CH_{Ar}), 7.40 (s, 1H, CH_{Ar}), 6.69 (d, 1H, ^{4}J = 2.0 Hz, CH_{Ar}), 7.36 (s, 1H, CH_{Ar}), 7.99 (s, 1H, CH_{Ar}), 8.24 (br. s, 1H, CH_{Ar}).

^{13}C NMR (126 MHz, $CDCl_3$): δ 20.8, 55.4, 100.6, 107.0, 119.8, 123.6, 125.1, 126.0, 132.0, 126.0, 132.0, 133.5, 143.0, 153.1, 154.4, 160.7, 175.0.

HRMS (TOF MS ES+): Calcd for $C_{18}H_{16}O_4Cl$ (M+H) 331.0745. Found 331.0737.

3-(2-bromophenyl)-6-chloro-7-methyl-4H-chromen-4-one (4gs).



The title compound was prepared by following ***protocol A*** starting from photocatalyst Eosin Y (19.5 mg, 0.03 mmol, 0.03 equiv.), (E)-1-(5-chloro-2-hydroxy-4-methylphenyl)-3-(dimethylamino)prop-2-en-1-one **1g** (239 mg, 1.0 mmol, 1.0 equiv.), 2-bromobenzenediazonium tetrafluoroborate **2s** (352 mg, 1.3 mmol, 1.3 equiv.) and dry DMSO (0.2 mmol/mL). Purification was accomplished by gradient flash chromatography on silica gel using a mixture of hexane/ethyl acetate 10:1 to 8:1 as eluent to isolate the desired chromone derivative **4gs** (182 mg, 0.52 mmol, 52%).

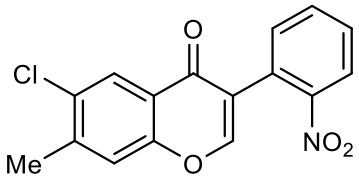
Alternatively the title compound was prepared by following ***protocol B*** starting from photocatalyst $Ru(bpy)_3Cl_2{*}6H_2O$ (15.0 mg, 0.02 mmol, 0.02 equiv.), (E)-1-(5-chloro-2-hydroxy-4-methylphenyl)-3-(dimethylamino)prop-2-en-1-one **1g** (239 mg, 1.0 mmol, 1.0 equiv.), bis(2-bromophenyl)iodonium triflate **3s** (882 mg, 1.5 mmol, 1.5 equiv.) and dry CH_3CN (0.12 mmol/mL). Purification was accomplished by gradient flash chromatography on silica gel using a mixture of hexane/ethyl acetate 10:1 to 8:1 as eluent to isolate the desired chromone derivative **4gs** (108 mg, 0.31 mmol, 31%).

Light brown solid, mp 186-187°C. ^{1}H NMR (500 MHz, $CDCl_3$): δ 2.51 (s, 3H, Me), 7.24 – 7.28 (m, 1H, CH_{Ar}), 7.31 (dd, 1H, ^{3}J = 7.8 Hz, ^{4}J = 1.9 Hz, CH_{Ar}), 7.36 (dd, 1H, ^{3}J = 7.6 Hz, ^{4}J = 0.9 Hz, CH_{Ar}), 7.39 (s, 1H, CH_{Ar}), 7.66 (dd, 1H, ^{3}J = 8.9 Hz, ^{4}J = 0.9 Hz, CH_{Ar}), 7.90 (s, 1H, CH_{Ar}), 8.24 (br. s, 1H, CH_{Ar}).

^{13}C NMR (126 MHz, $CDCl_3$): δ 20.8, 119.9, 123.4, 124.7, 125.7, 126.0, 127.4, 130.1, 132.0, 132.1, 132.6, 133.0, 143.1, 154.3, 154.6, 174.3.

HRMS (TOF MS ES+): Calcd for $C_{16}H_{11}O_2ClBr$ (M+H) 348.9637. Found 348.9631.

6-chloro-7-methyl-3-(2-nitrophenyl)-4H-chromen-4-one (4gt).



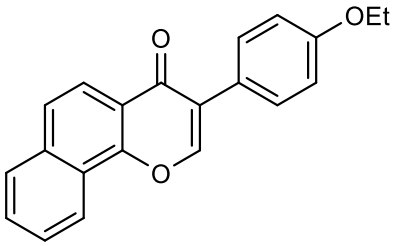
The title compound was prepared by following ***protocol A*** starting from photocatalyst Eosin Y (19.5 mg, 0.03 mmol, 0.03 equiv.), (E)-1-(5-chloro-2-hydroxy-4-methylphenyl)-3-(dimethylamino)prop-2-en-1-one **1g** (239 mg, 1.0 mmol, 1.0 equiv.), 2-nitrobenzenediazonium tetrafluoroborate **2t** (308 mg, 1.3 mmol, 1.3 equiv.) and dry DMSO (0.2 mmol/mL). Purification was accomplished by gradient flash chromatography on silica gel using a mixture of hexane/ethyl acetate 7:1 to 3:1 as eluent to isolate the desired chromone derivative **4gt** (218 mg, 0.69 mmol, 69%).

Yellow solid, mp 189-190°C. ^{1}H NMR (500 MHz, $CDCl_3$): δ 2.52 (s, 3H, Me), 7.37 (dd, 1H, ^3J = 7.5 Hz, ^4J = 1.0 Hz, CH_{Ar}), 7.40 (s, 1H, CH_{Ar}), 7.58 (dd, 1H, ^3J = 7.1 Hz, ^4J = 1.0 Hz, CH_{Ar}), 7.67 (dd, 1H, ^3J = 7.5 Hz, ^4J = 1.4 Hz, CH_{Ar}), 8.01 (s, 1H, CH_{Ar}), 8.10 (dd, 1H, ^3J = 8.0 Hz, ^4J = 1.3 Hz, CH_{Ar}), 8.19 (br. s, 1H, CH_{Ar}).

^{13}C NMR (126 MHz, $CDCl_3$): δ 20.9, 119.9, 122.7, 124.5, 124.9, 126.1, 126.6, 129.7, 132.0, 132.3, 133.3, 143.5, 149.6, 152.0, 154.7, 174.0.

HRMS (TOF MS ES+): Calcd for $C_{16}H_{11}NO_4Cl$ (M+H) 316.0381. Found 316.0377.

3-(4-ethoxyphenyl)-4H-benzo[h]chromen-4-one (4hl).



The title compound was prepared by following ***protocol A*** starting from photocatalyst Eosin Y (19.5 mg, 0.03 mmol, 0.03 equiv.), (E)-3-(dimethylamino)-1-(1-hydroxynaphthalen-2-yl)prop-2-en-1-one **1h** (241 mg, 1.0 mmol, 1.0 equiv.), 4-ethoxybenzenediazonium tetrafluoroborate **2l** (307 mg, 1.3 mmol, 1.3 equiv.) and dry DMSO (0.2 mmol/mL). Purification was accomplished by gradient flash chromatography on silica gel using a mixture of hexane/ethyl acetate 7:1 to 5:1 as eluent to isolate the desired chromone derivative **4hl** (265 mg, 0.84 mmol, 84%).

Alternatively the title compound was prepared by following ***protocol B*** starting from photocatalyst $Ru(bpy)_3Cl_2{*}6H_2O$ (15.0 mg, 0.02 mmol, 0.02 equiv.), (E)-3-(dimethylamino)-1-(1-hydroxynaphthalen-2-yl)prop-2-en-1-one **1h** (241 mg, 1.0 mmol, 1.0 equiv.), bis(4-ethoxyphenyl)iodonium

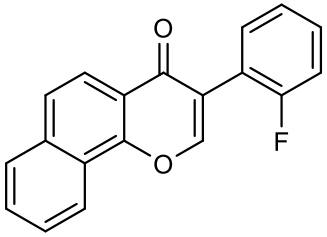
triflate **3l** (777 mg, 1.5 mmol, 1.5 equiv.) and dry CH_3CN (0.12 mmol/mL). Purification was accomplished by gradient flash chromatography on silica gel using a mixture of hexane/ethyl acetate 7:1 to 5:1 as eluent to isolate the desired chromone derivative **4hl** (227 mg, 0.72 mmol, 72%).

Light yellow solid, mp 159 - 160 °C. ^{1}H NMR (500 MHz, $CDCl_3$): δ 1.44 (t, 3H, ^3J = 8.5 Hz, OCH_2CH_3), 4.08 (q, 2H, ^3J = 7.3 Hz, OCH_2CH_3), 6.98 (d, 2H, ^3J = 8.0 Hz, CH_{Ar}), 7.57 (d, 2H, ^3J = 8.8 Hz, CH_{Ar}), 7.67 – 7.72 (m, 2H, CH_{Ar}), 7.76 (d, 1H, ^3J = 8.7 Hz, CH_{Ar}), 7.92 (d, 1H, ^3J = 7.8 Hz, CH_{Ar}), 8.17 (s, 1H, CH_{Ar}), 8.23 (d, 1H, ^3J = 8.6 Hz, CH_{Ar}), 8.48 (d, 1H, ^3J = 7.8 Hz, CH_{Ar}).

^{13}C NMR (126 MHz, $CDCl_3$): δ 14.8, 63.5, 114.5, 120.8, 121.3, 122.2, 123.8, 124.0, 125.2, 126.2, 127.1, 128.1, 129.2, 130.1, 135.6, 151.6, 153.5, 159.1, 176.3.

HRMS (TOF MS ES+): Calcd for $C_{21}H_{17}O_3$ (M+H) 317.1176. Found 317.1178.

3-(2-fluorophenyl)-4H-benzo[h]chromen-4-one (4hq).



The title compound was prepared by following ***protocol A*** starting from photocatalyst Eosin Y (19.5 mg, 0.03 mmol, 0.03 equiv.), (E)-3-(dimethylamino)-1-(1-hydroxynaphthalen-2-yl)prop-2-en-1-one **1h** (241 mg, 1.0 mmol, 1.0 equiv.), 2-fluorobenzenediazonium tetrafluoroborate **2q** (273 mg, 1.3 mmol, 1.3 equiv.) and dry DMSO (0.2 mmol/mL). Purification was accomplished by gradient flash chromatography on silica gel using a mixture of hexane/ethyl acetate 7:1 to 3:1 as eluent to isolate the desired chromone derivative **4hq** (232 mg, 0.80 mmol, 80%).

Alternatively the title compound was prepared by following ***protocol B*** starting from photocatalyst $Ru(bpy)_3Cl_2{*}6H_2O$ (15.0 mg, 0.02 mmol, 0.02 equiv.), (E)-3-(dimethylamino)-1-(1-hydroxynaphthalen-2-yl)prop-2-en-1-one **1h** (241 mg, 1.0 mmol, 1.0 equiv.), bis(2-fluorophenyl)iodonium triflate **3q** (699 mg, 1.5 mmol, 1.5 equiv.) and dry CH_3CN (0.12 mmol/mL). Purification was accomplished by gradient flash chromatography on silica gel using a mixture of hexane/ethyl acetate 7:1 to 3:1 as eluent to isolate the desired chromone derivative **4hq** (188 mg, 0.63 mmol, 63%). This compound (185 mg, 0.64 mmol, 64 %) can be prepared following the same protocol starting from bis(2-fluorophenyl)iodonium hexafluorophosphate (693 mg, 1.5 mmol, 1.5 equiv.).

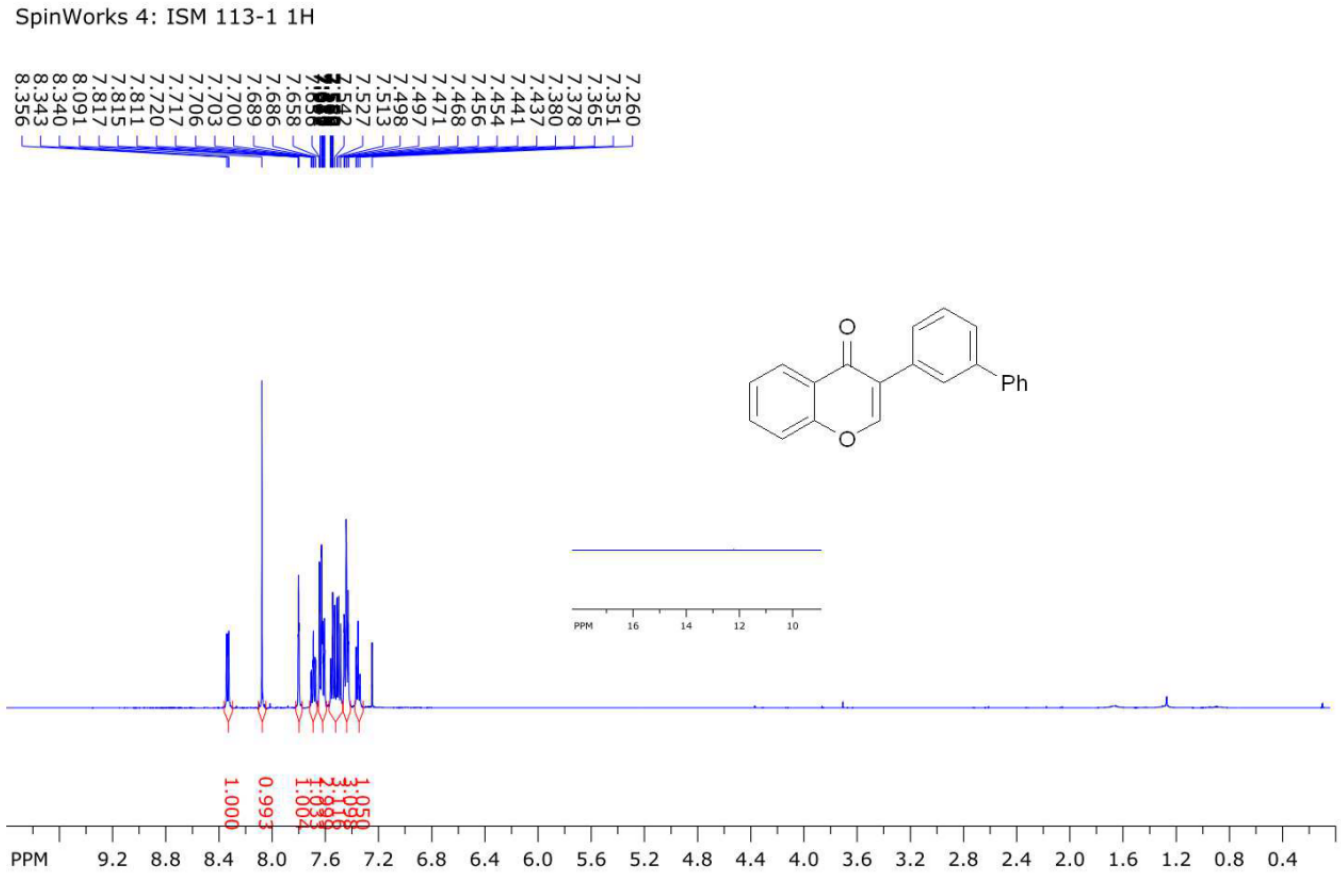
Light yellow solid, mp 181-182 °C. ^{1}H NMR (500 MHz, $CDCl_3$): δ 7.19 – 7.27 (m, 2H, CH_{Ar}), 7.39 – 7.42 (m, 1H, CH_{Ar}), 7.58 (dt, 1H, ^3J = 7.4 Hz, ^4J = 1.6 Hz, CH_{Ar}), 7.68 – 7.74 (m, 2H, CH_{Ar}), 7.79 (d, 1H, ^3J = 8.7 Hz, CH_{Ar}), 7.94 (d, 1H, ^3J = 7.8 Hz, CH_{Ar}), 8.24 (d, 1H, ^3J = 8.8 Hz, CH_{Ar}), 8.25 (s, 1H, CH_{Ar}), 8.50 (d, 1H, ^3J = 8.0 Hz, CH_{Ar}).

^{13}C NMR (126 MHz, $CDCl_3$): δ 115.8 (d, J_{CF} = 22.3 Hz), 119.4 (d, J_{CF} = 14.1 Hz), 120.7, 121.2, 121.5, 122.2, 123.9, 124.1 (d, $^{1}J_{CF}$ = 3.5 Hz), 125.5, 127.2, 128.1, 129.4, 130.1 (d, J_{CF} = 8.4 Hz), 132.0 (d, J_{CF} = 2.8 Hz), 135.8, 153.6, 153.7 (d, J_{CF} = 3.2 Hz), 160.3 (d, $^{1}J_{CF}$ = 247.6 Hz), 175.4.

HRMS (TOF MS ES+): Calcd for $C_{19}H_{12}O_2F$ (M+H) 291.0828. Found 291.0821.

(C) Copies ^{1}H and ^{13}C NMR spectra

Compound 4af



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time domain size: 65536 points
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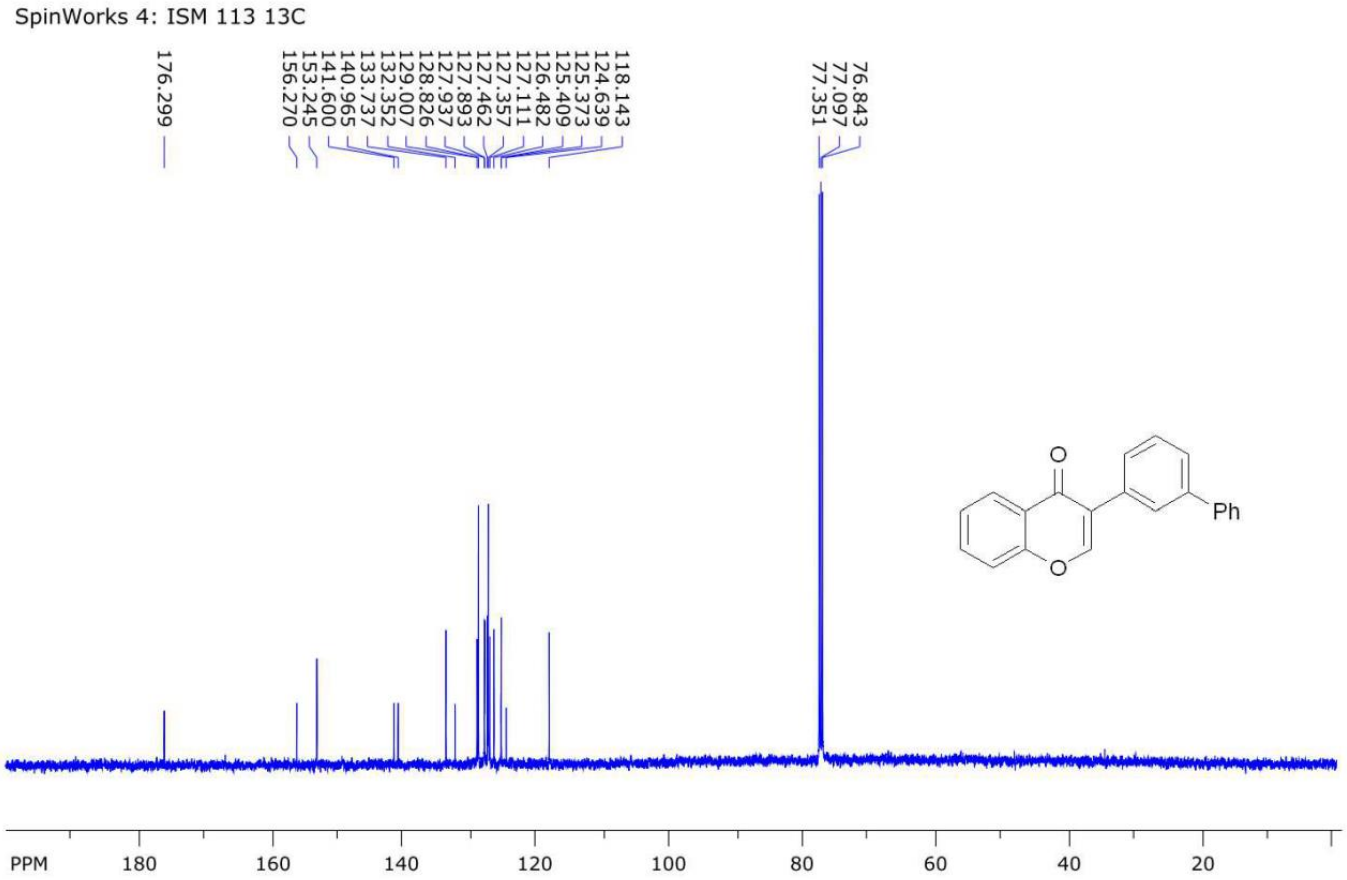
number of scans: 24

freq. of 0 ppm: 500.130023 MHz
processed size: 65536 complex points
LB: 0.300 GF: 0.0000
Hz/cm: 199.770 ppm/cm: 0.39943

Compound 4af



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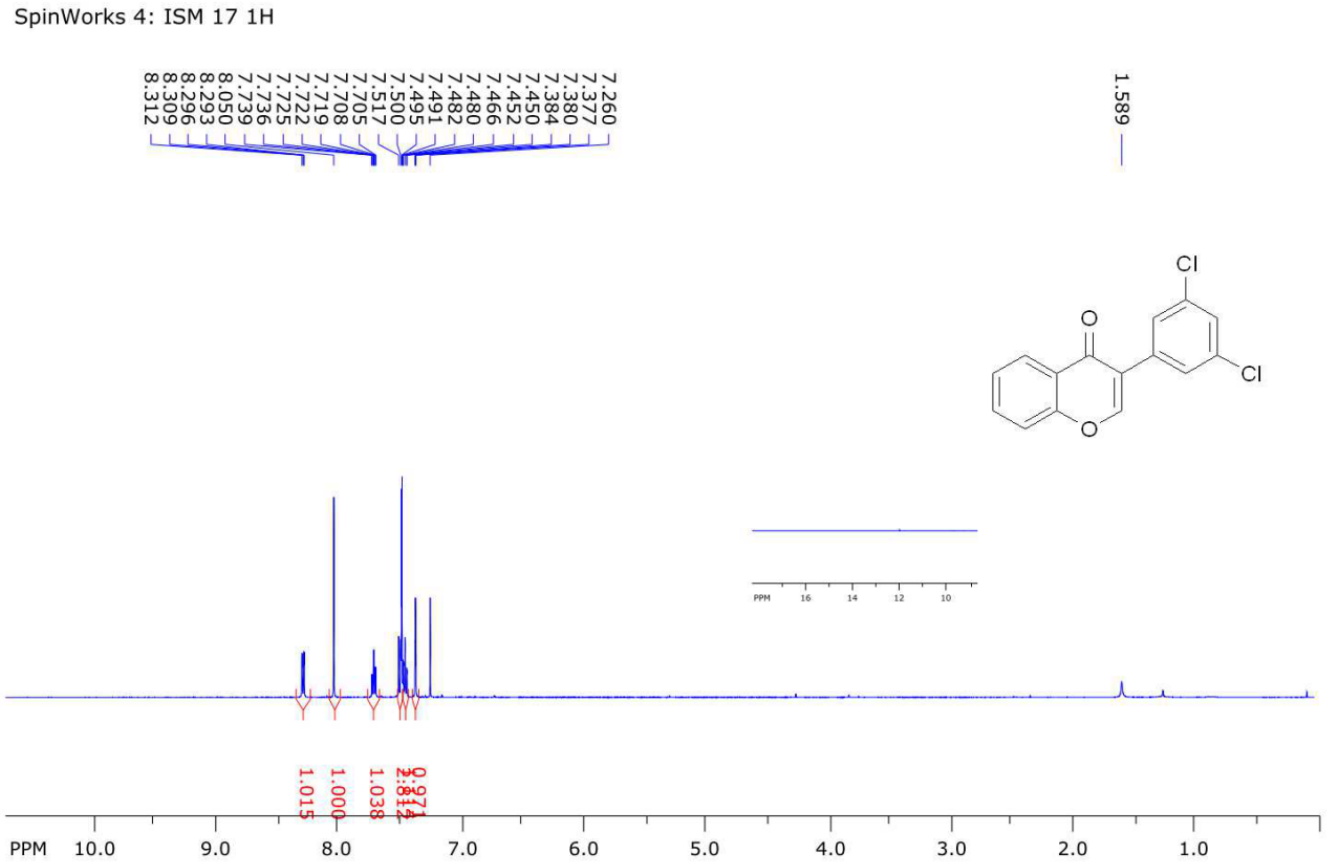
time domain size: 65536 points
width: 36057.69 Hz = 286.6889 ppm = 0.550197 Hz/pt
number of scans: 512

freq. of 0 ppm: 125.757789 MHz
processed size: 32768 complex points
LB: 2.000 GF: 0.0000
Hz/cm: 1011.530 ppm/cm: 8.04251

Compound 4aj



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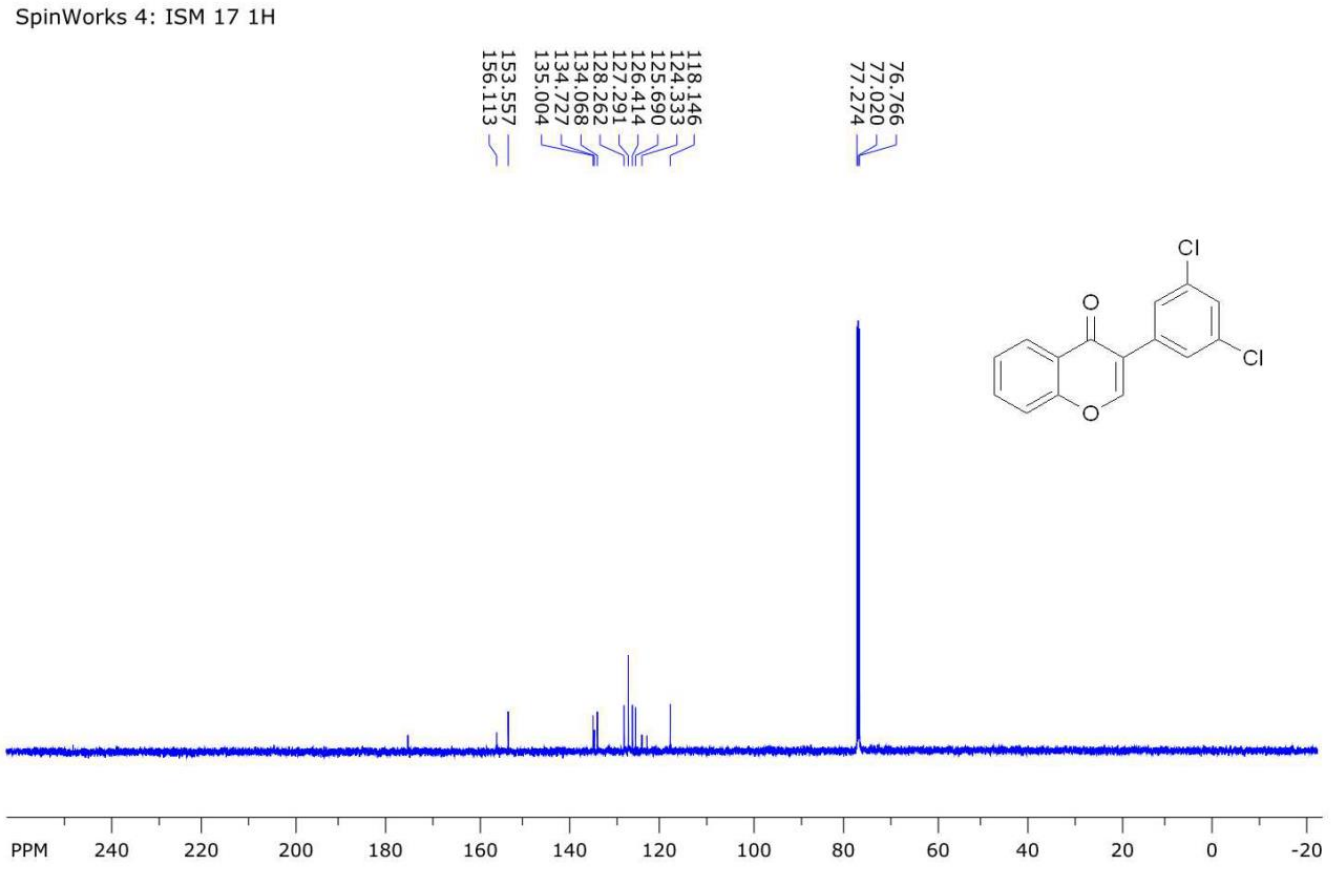
time domain size: 65536 points
width: 12335.53 Hz = 24.6645 ppm = 0.188225 Hz/pt
number of scans: 24

freq. of 0 ppm: 500.130023 MHz
processed size: 65536 complex points
LB: 0.300 GF: 0.0000
Hz/cm: 214.770 ppm/cm: 0.42943

Compound 4aj



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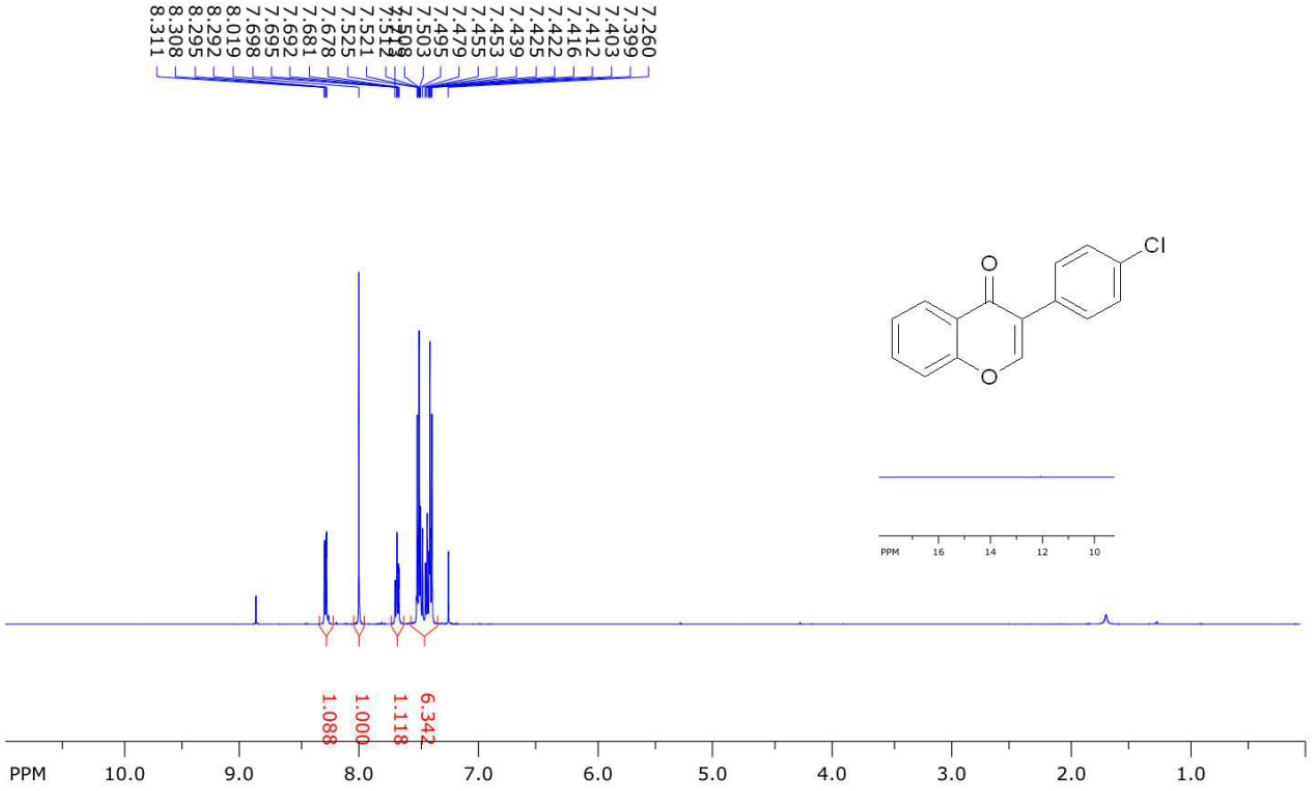
time domain size: 65536 points
width: 36057.69 Hz = 286.6889 ppm = 0.550197 Hz/pt
number of scans: 256

freq. of 0 ppm: 125.757792 MHz
processed size: 32768 complex points
LB: 2.000 GF: 0.0000
Hz/cm: 1442.308 ppm/cm: 11.46756

Compound 4ar

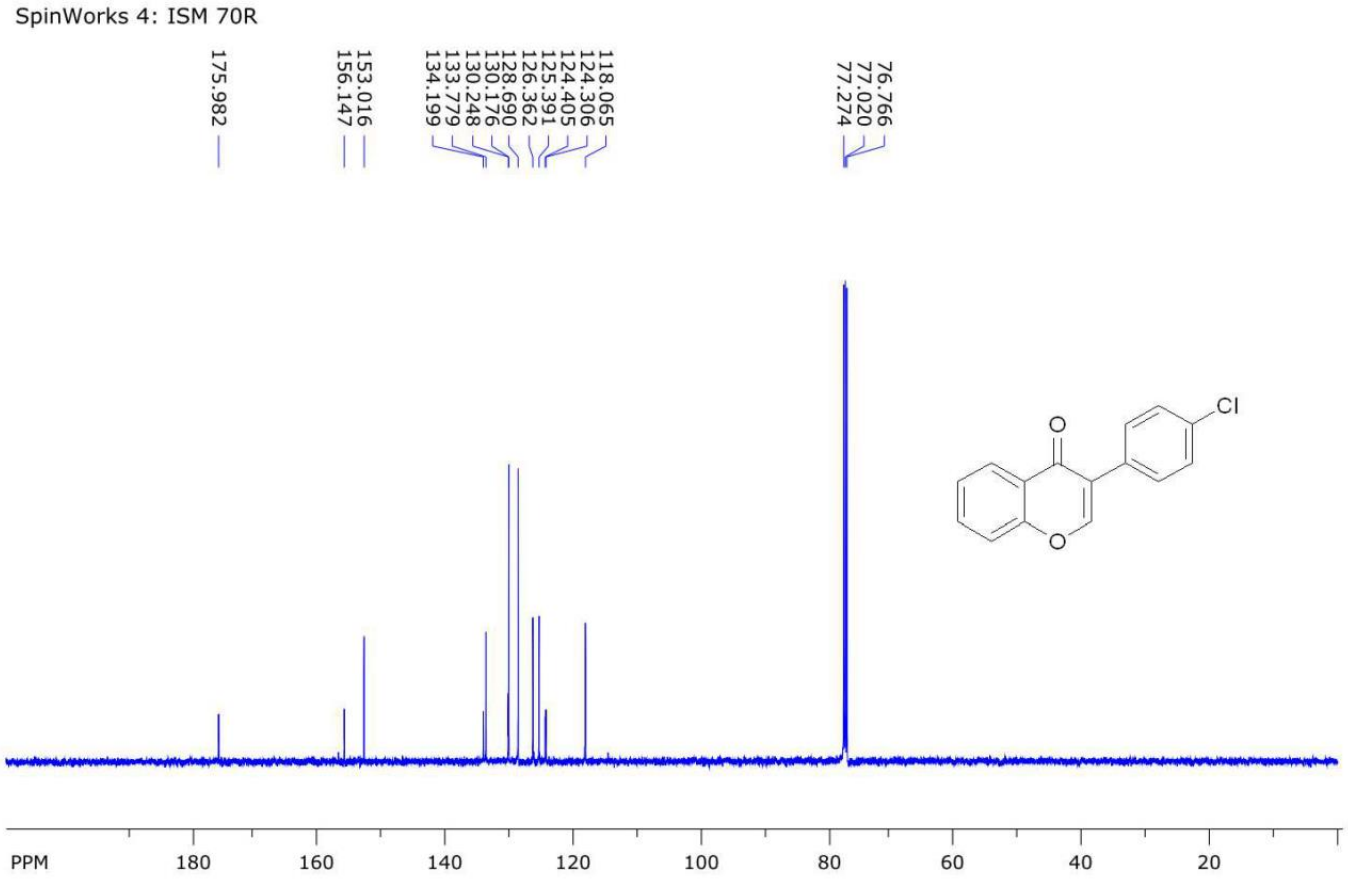
SpinWorks 4: ISM 70R



file: F:\Napo\NMR\500-1\mkr12706\13\fid expt: <zg30>
transmitter freq.: 500.133001 MHz
time domain size: 65536 points
width: 12335.53 Hz = 24.6645 ppm = 0.188225 Hz/pt
number of scans: 32

freq. of 0 ppm: 500.130023 MHz
processed size: 65536 complex points
LB: 0.300 GF: 0.0000
Hz/cm: 219.727 ppm/cm: 0.43934

Compound 4ar



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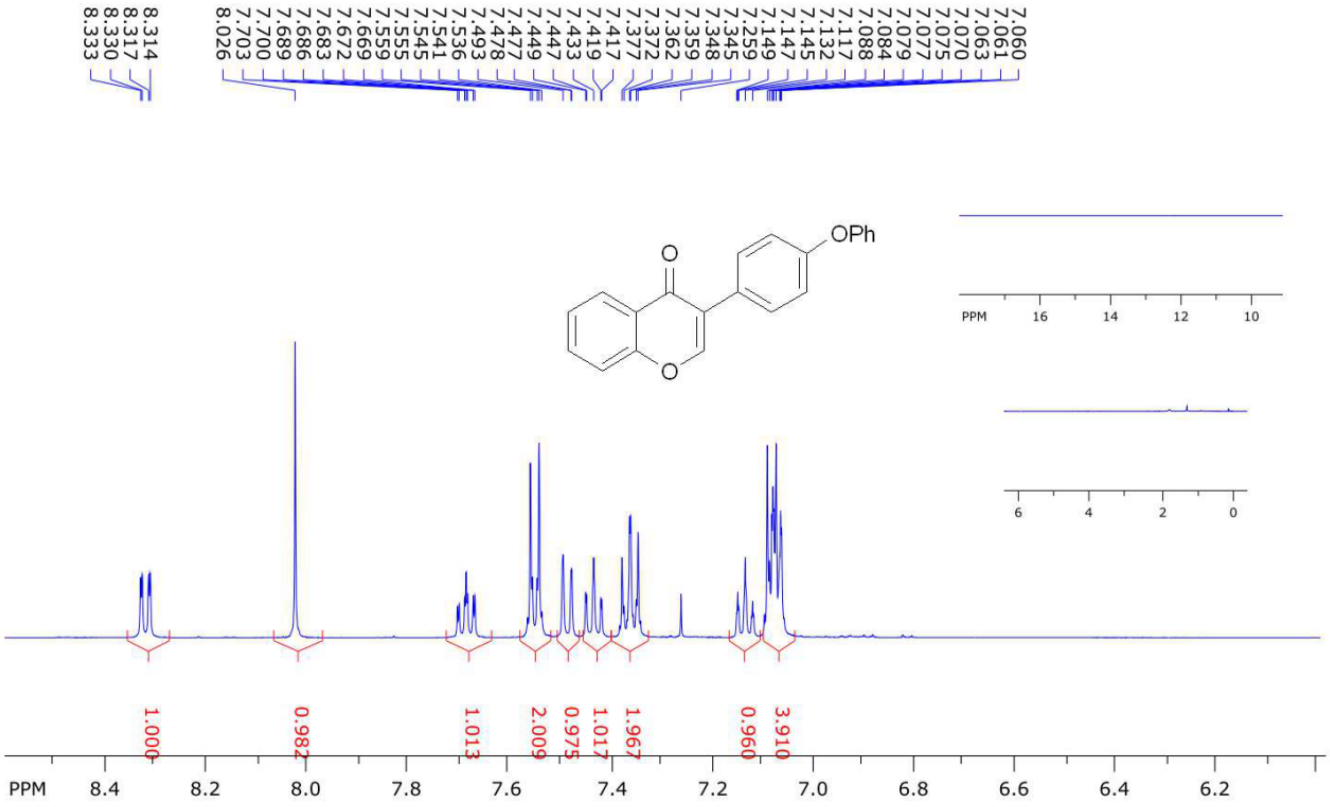
time domain size: 65536 points
width: 36057.69 Hz = 286.6889 ppm = 0.550197 Hz/pt
number of scans: 368

freq. of 0 ppm: 125.757796 MHz
processed size: 32768 complex points
LB: 2.000 GF: 0.0000
Hz/cm: 1057.585 ppm/cm: 8.40869

Compound 4av

SpinWorks 4: ISM 94-1 1H



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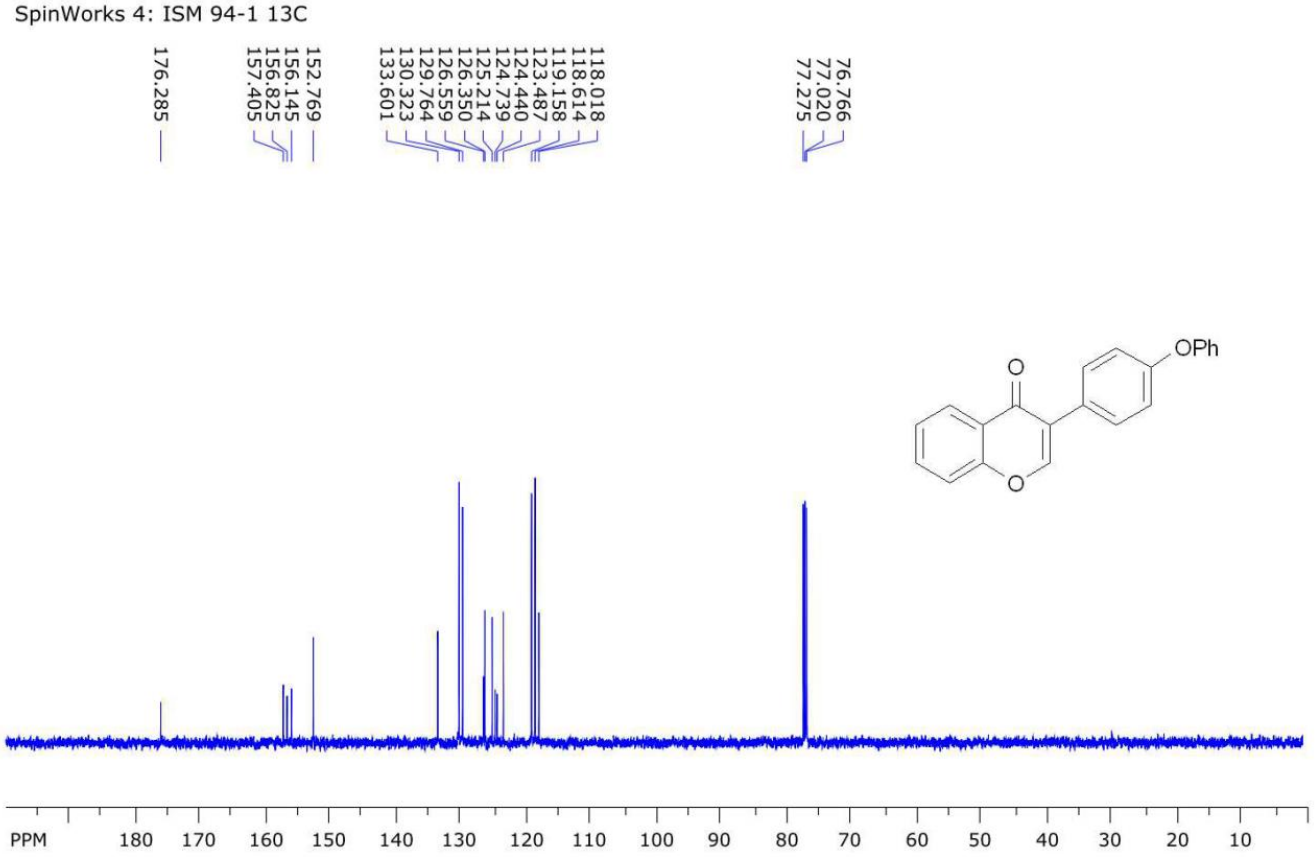
transmitter freq.: 500.133001 MHz
time domain size: 65536 points
width: 12335.53 Hz = 24.6645 ppm = 0.188225 Hz/pt
number of scans: 24

freq. of 0 ppm: 500.130024 MHz
processed size: 65536 complex points
LB: 0.300 GF: 0.0000
Hz/cm: 52.290 ppm/cm: 0.10455

Compound 4av



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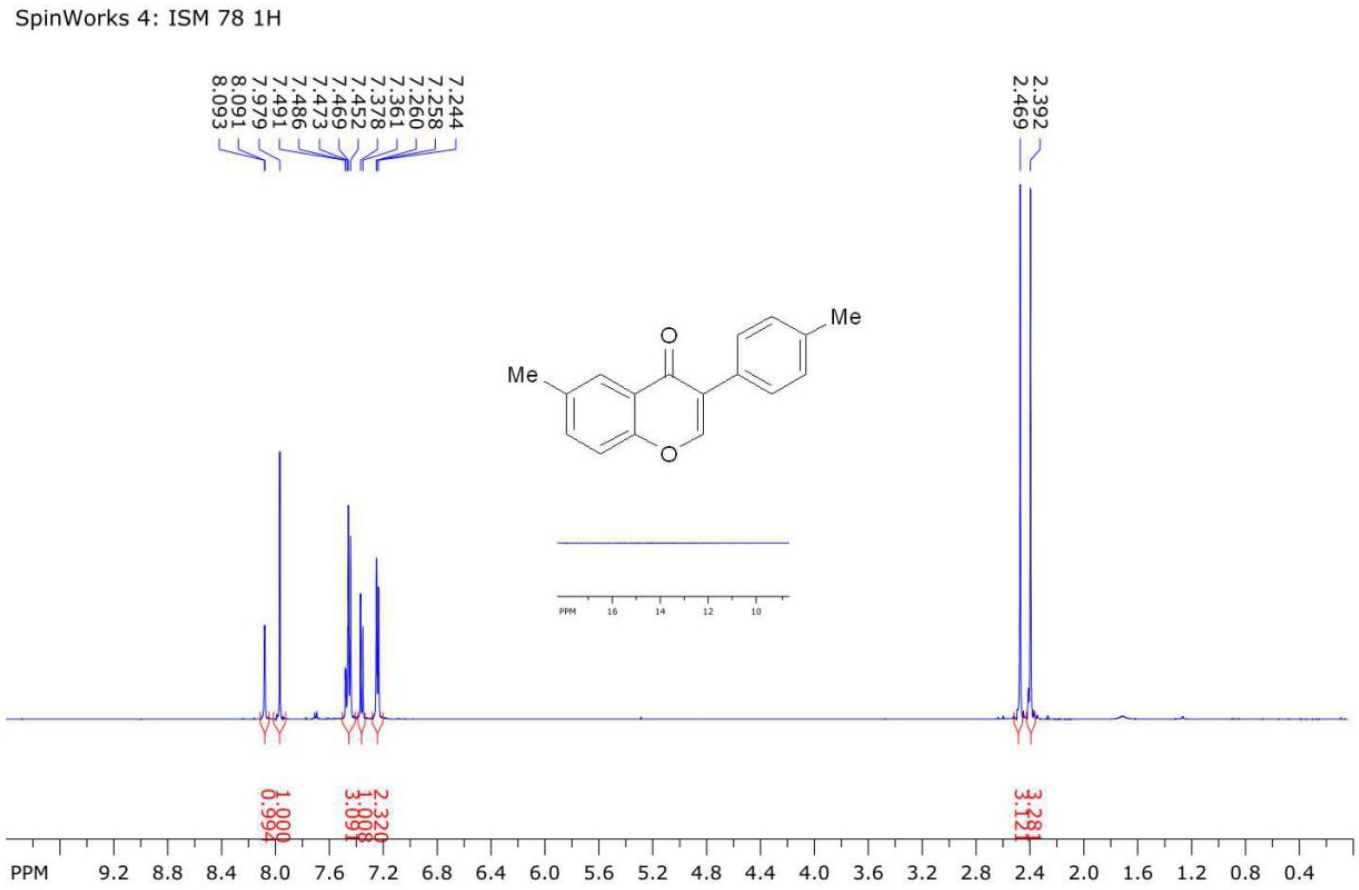
time domain size: 65536 points
width: 36057.69 Hz = 286.6889 ppm = 0.550197 Hz/pt
number of scans: 64

freq. of 0 ppm: 125.757799 MHz
processed size: 32768 complex points
LB: 2.000 GF: 0.0000
Hz/cm: 1005.148 ppm/cm: 7.99177

Compound 4bb



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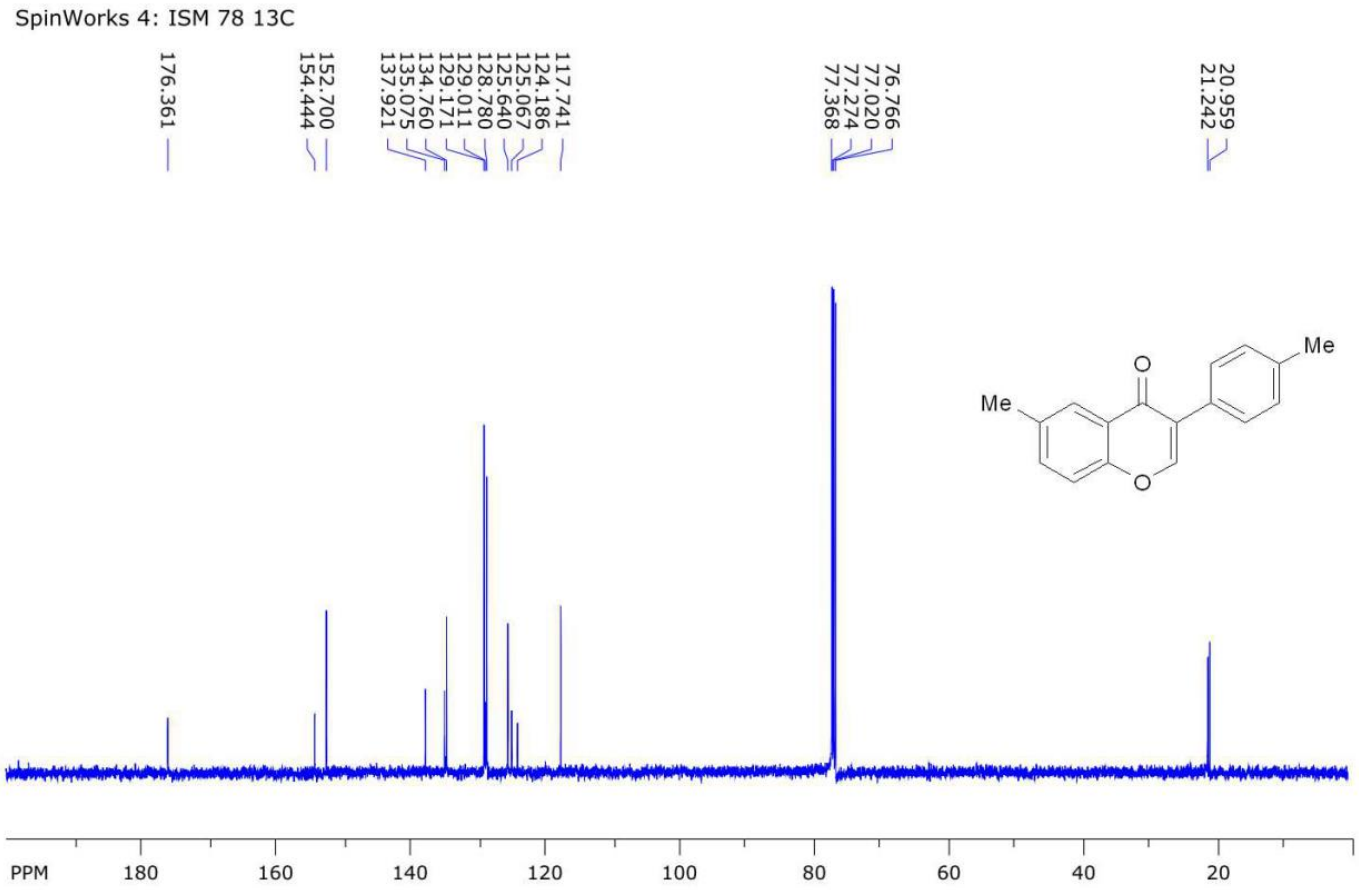
time domain size: 65536 points
width: 12335.53 Hz = 24.6645 ppm = 0.188225 Hz/pt
number of scans: 32

freq. of 0 ppm: 500.130025 MHz
processed size: 65536 complex points
LB: 0.300 GF: 0.0000
Hz/cm: 199.770 ppm/cm: 0.39943

Compound 4bb



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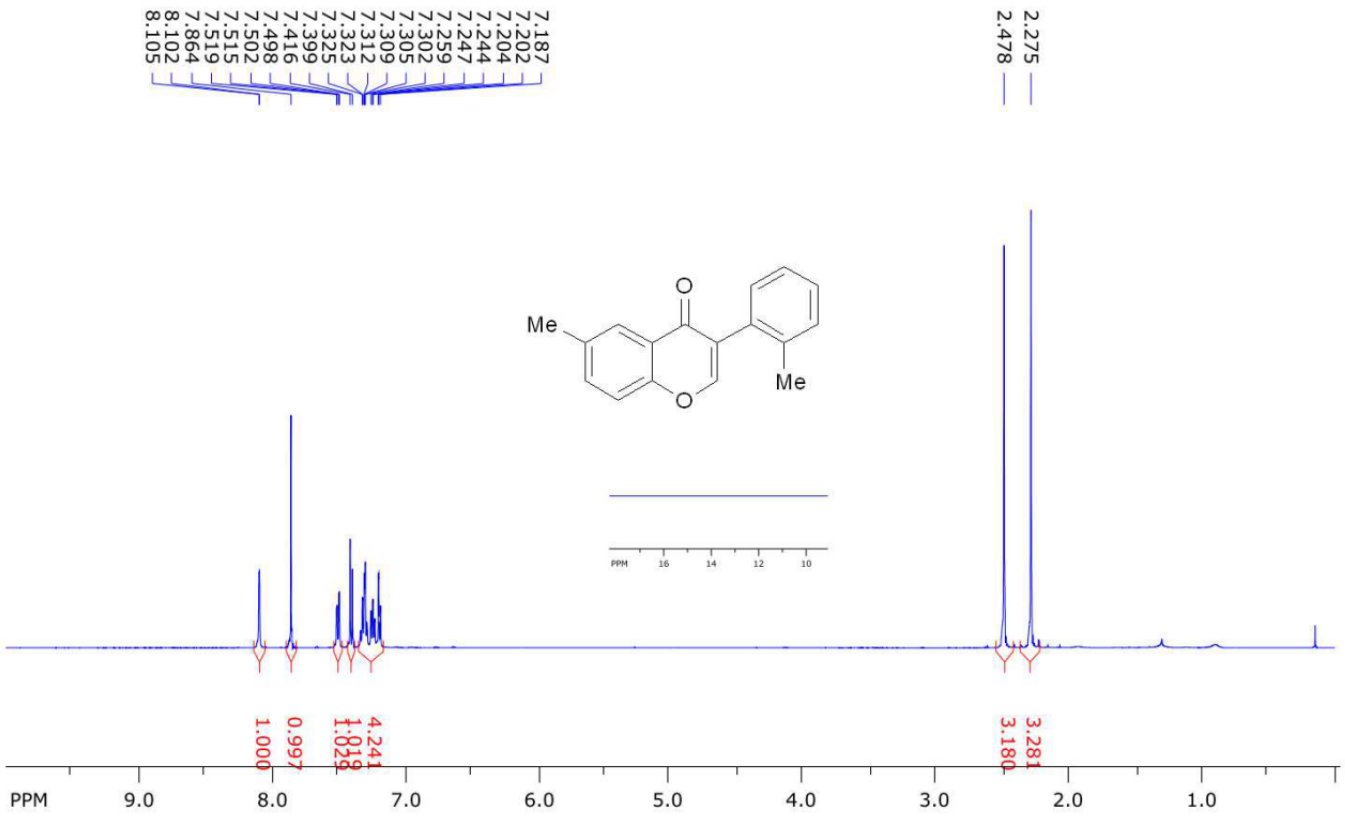
time domain size: 65536 points
width: 36057.69 Hz = 286.6889 ppm = 0.550197 Hz/pt
number of scans: 164

freq. of 0 ppm: 125.757797 MHz
processed size: 32768 complex points
LB: 2.000 GF: 0.0000
Hz/cm: 1006.744 ppm/cm: 8.00446

Compound 4bc

SpinWorks 4: ISM 75 1H



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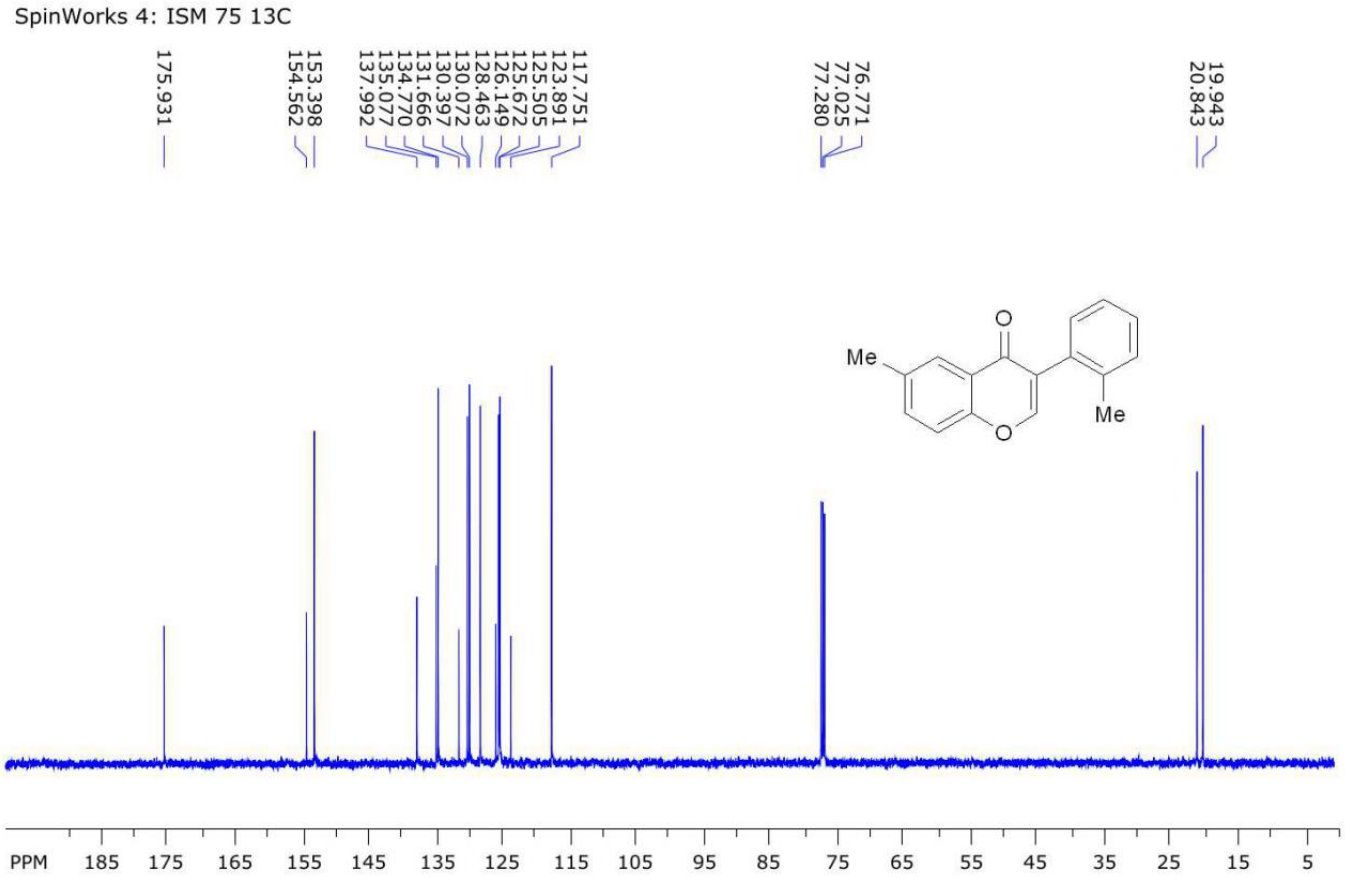
time domain size: 65536 points
width: 12335.53 Hz = 24.6645 ppm = 0.188225 Hz/pt
number of scans: 16

freq. of 0 ppm: 500.130024 MHz
processed size: 65536 complex points
LB: 0.300 GF: 0.0000
Hz/cm: 200.862 ppm/cm: 0.40162

Compound 4bc



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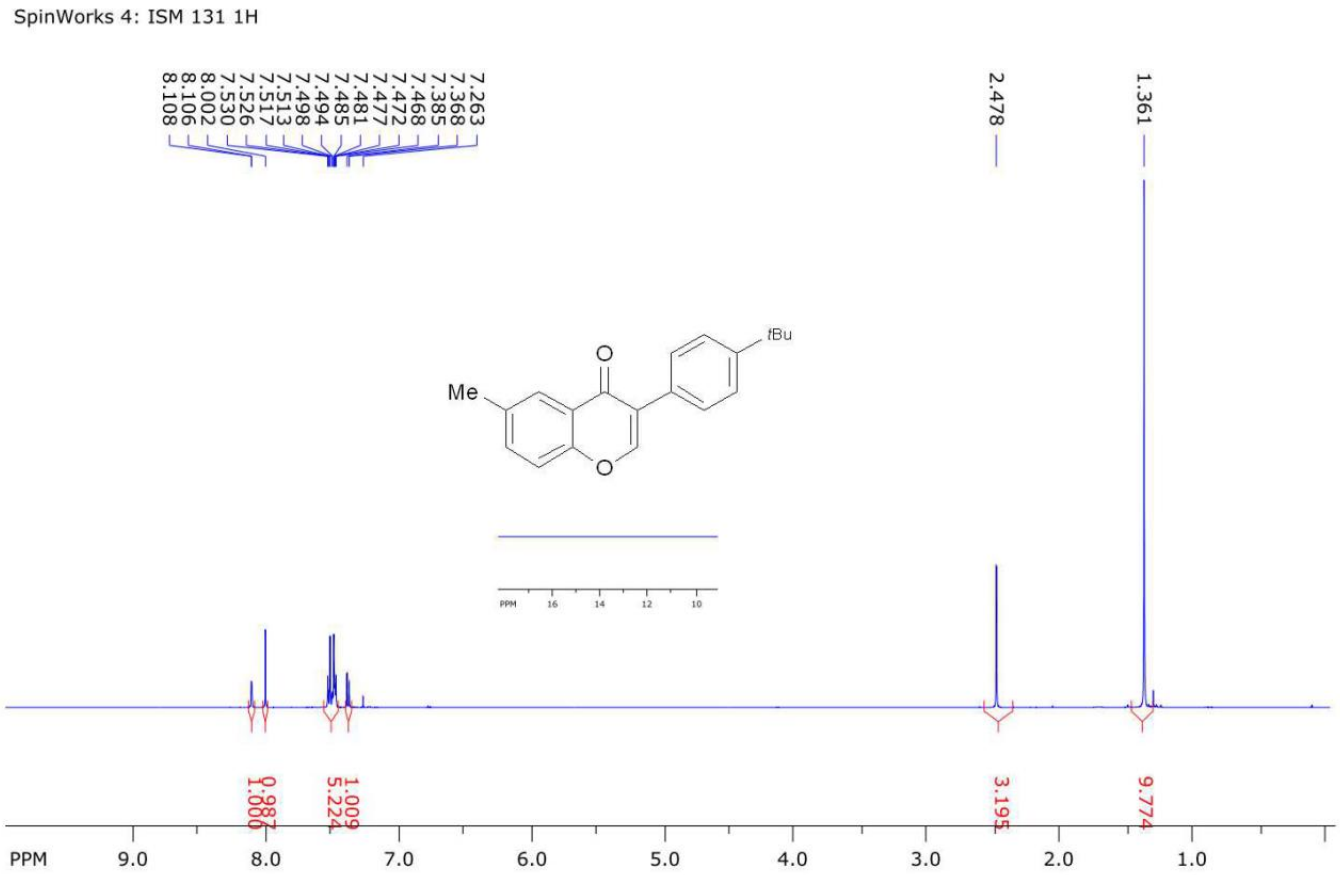
time domain size: 65536 points
width: 36057.69 Hz = 286.6889 ppm = 0.550197 Hz/pt
number of scans: 128

freq. of 0 ppm: 125.757812 MHz
processed size: 32768 complex points
LB: 2.000 GF: 0.0000
Hz/cm: 1003.553 ppm/cm: 7.97909

Compound 4bd



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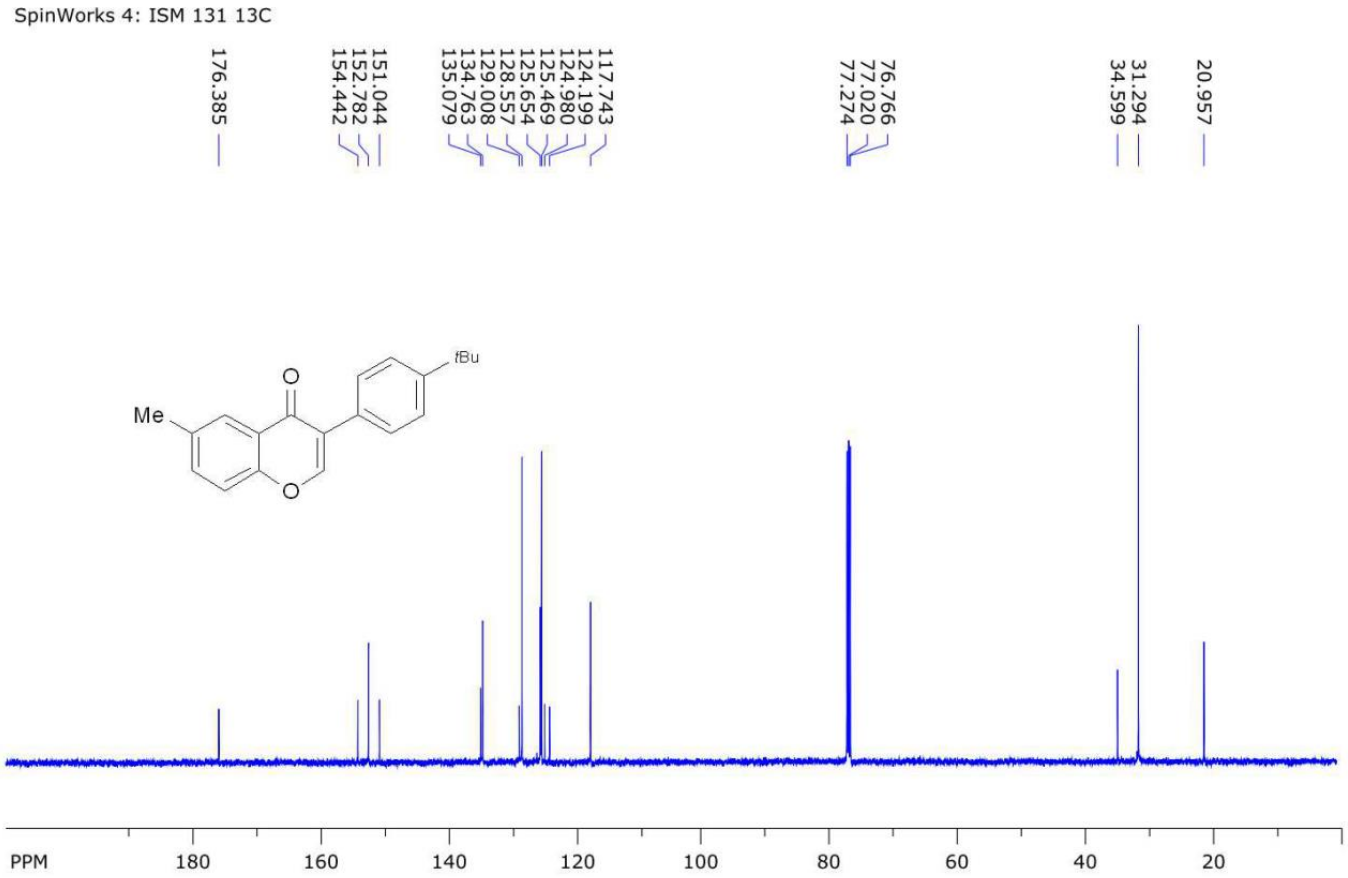
time domain size: 65536 points
width: 12335.53 Hz = 24.6645 ppm = 0.188225 Hz/pt
number of scans: 24

freq. of 0 ppm: 500.130022 MHz
processed size: 65536 complex points
LB: 0.300 GF: 0.0000
Hz/cm: 200.316 ppm/cm: 0.40053

Compound 4bd



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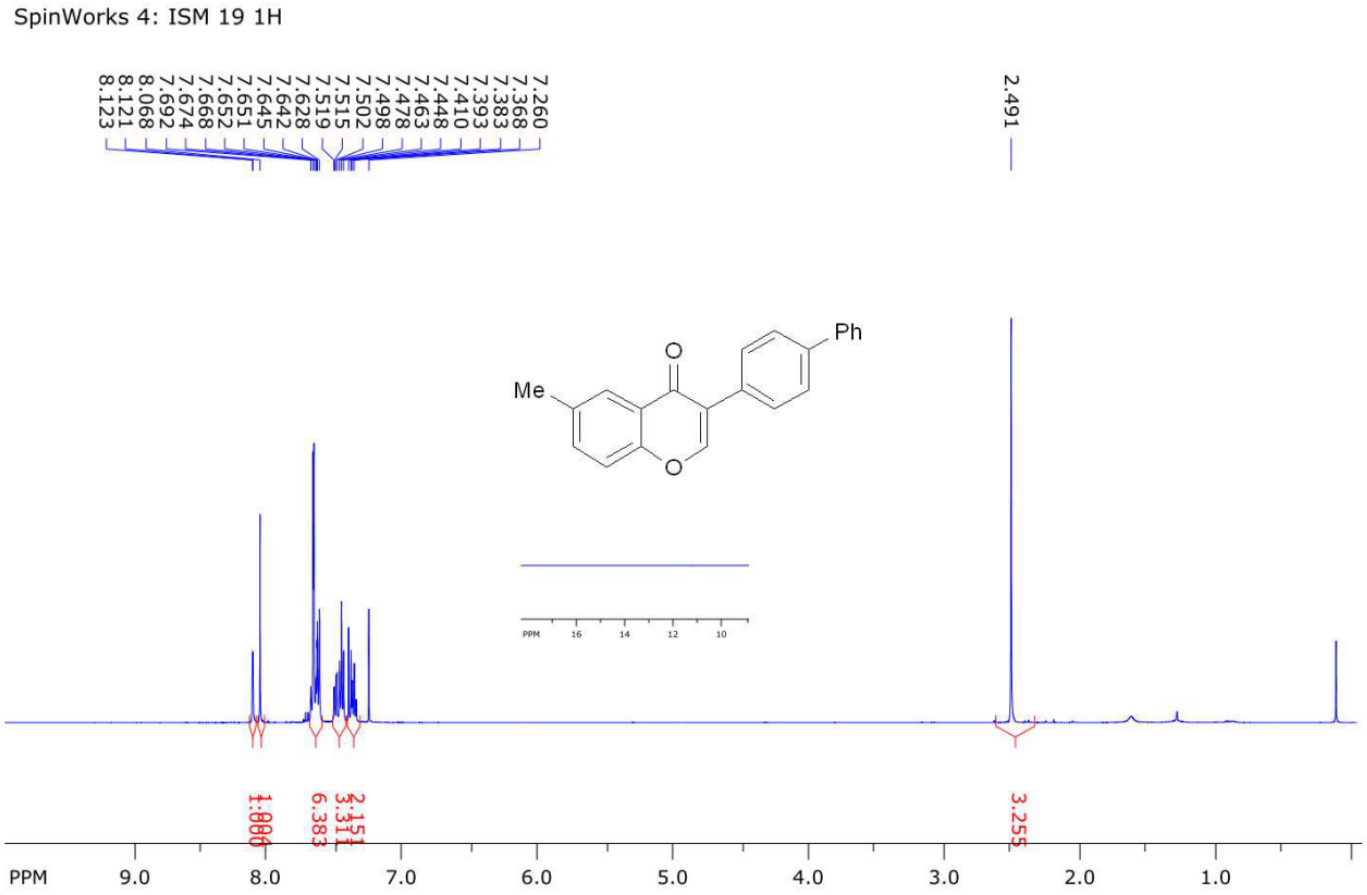
time domain size: 65536 points
width: 36057.69 Hz = 286.6889 ppm = 0.550197 Hz/pt
number of scans: 512

freq. of 0 ppm: 125.757797 MHz
processed size: 32768 complex points
LB: 2.000 GF: 0.0000
Hz/cm: 1056.203 ppm/cm: 8.39770

Compound 4be



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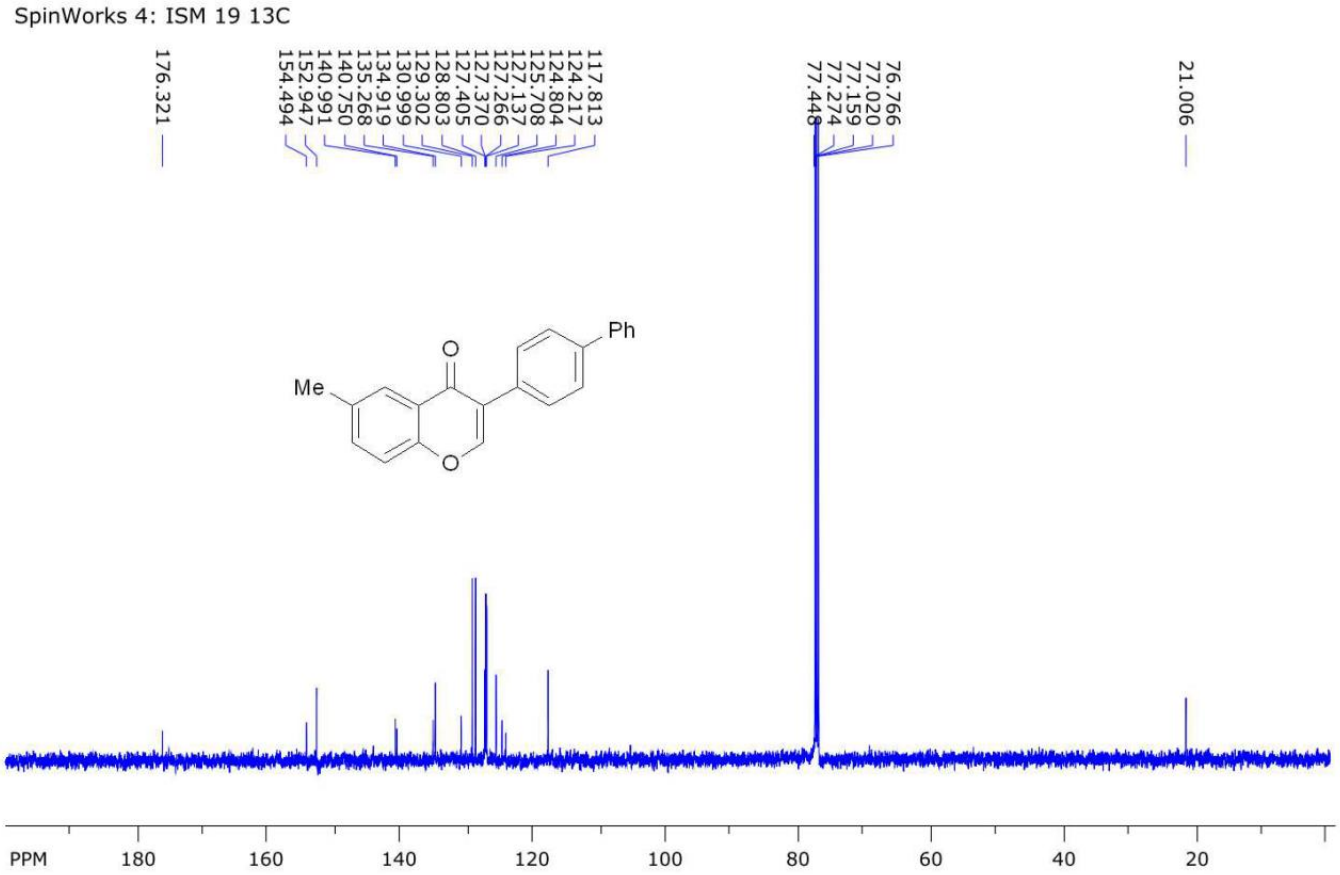
time domain size: 65536 points
width: 12335.53 Hz = 24.6645 ppm = 0.188225 Hz/pt
number of scans: 24

freq. of 0 ppm: 500.130023 MHz
processed size: 65536 complex points
LB: 0.300 GF: 0.0000
Hz/cm: 200.862 ppm/cm: 0.40162

Compound 4be



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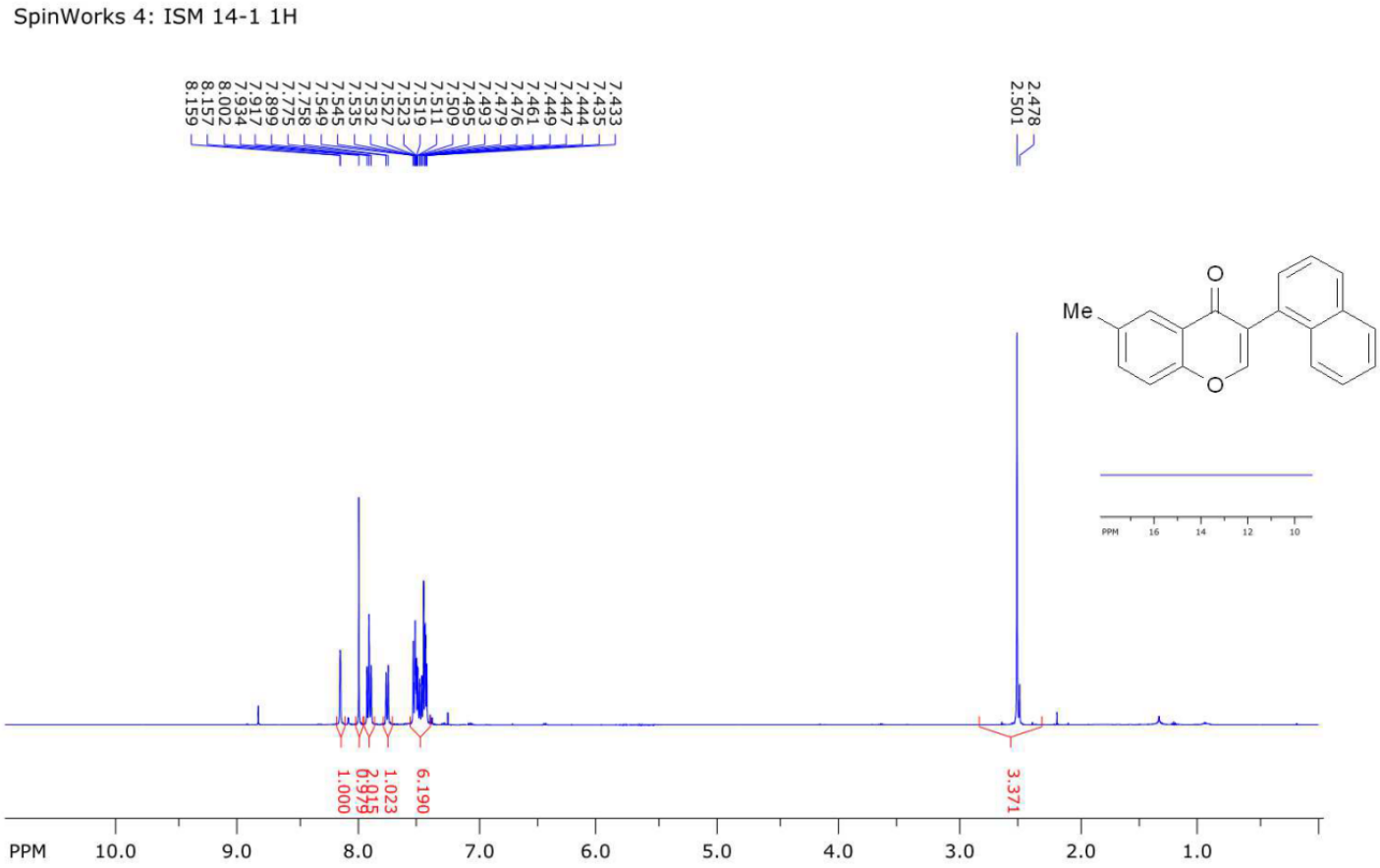
time domain size: 65536 points
width: 36057.69 Hz = 286.6889 ppm = 0.550197 Hz/pt
number of scans: 256

freq. of 0 ppm: 125.757793 MHz
processed size: 32768 complex points
LB: 2.000 GF: 0.0000
Hz/cm: 1011.530 ppm/cm: 8.04251

Compound 4bg



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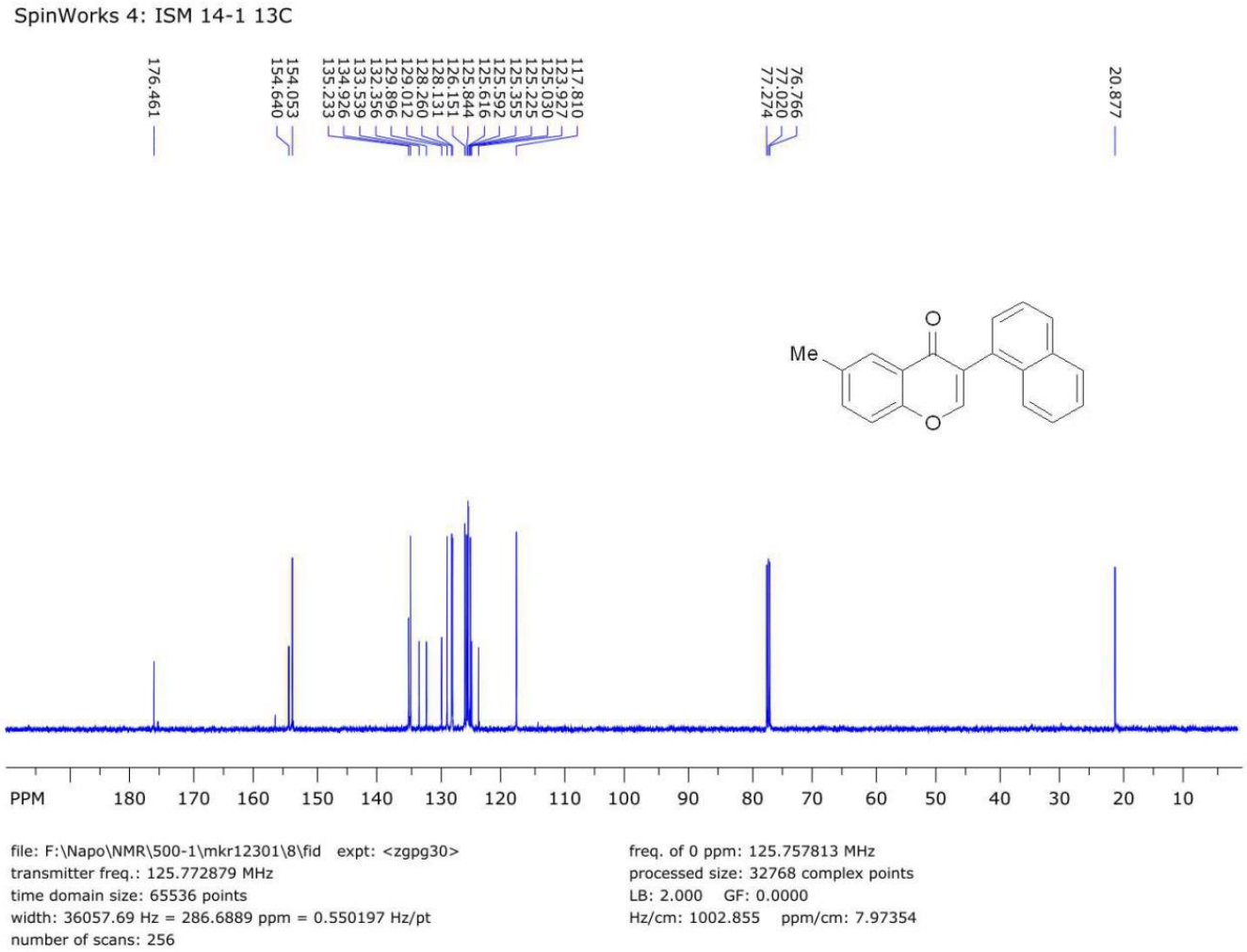
transmitter freq.: 500.133001 MHz
time domain size: 65536 points
width: 12335.53 Hz = 24.6645 ppm = 0.188225 Hz/pt
number of scans: 24

freq. of 0 ppm: 500.130024 MHz
processed size: 65536 complex points
LB: 0.300 GF: 0.0000
Hz/cm: 219.727 ppm/cm: 0.43934

Compound 4bg



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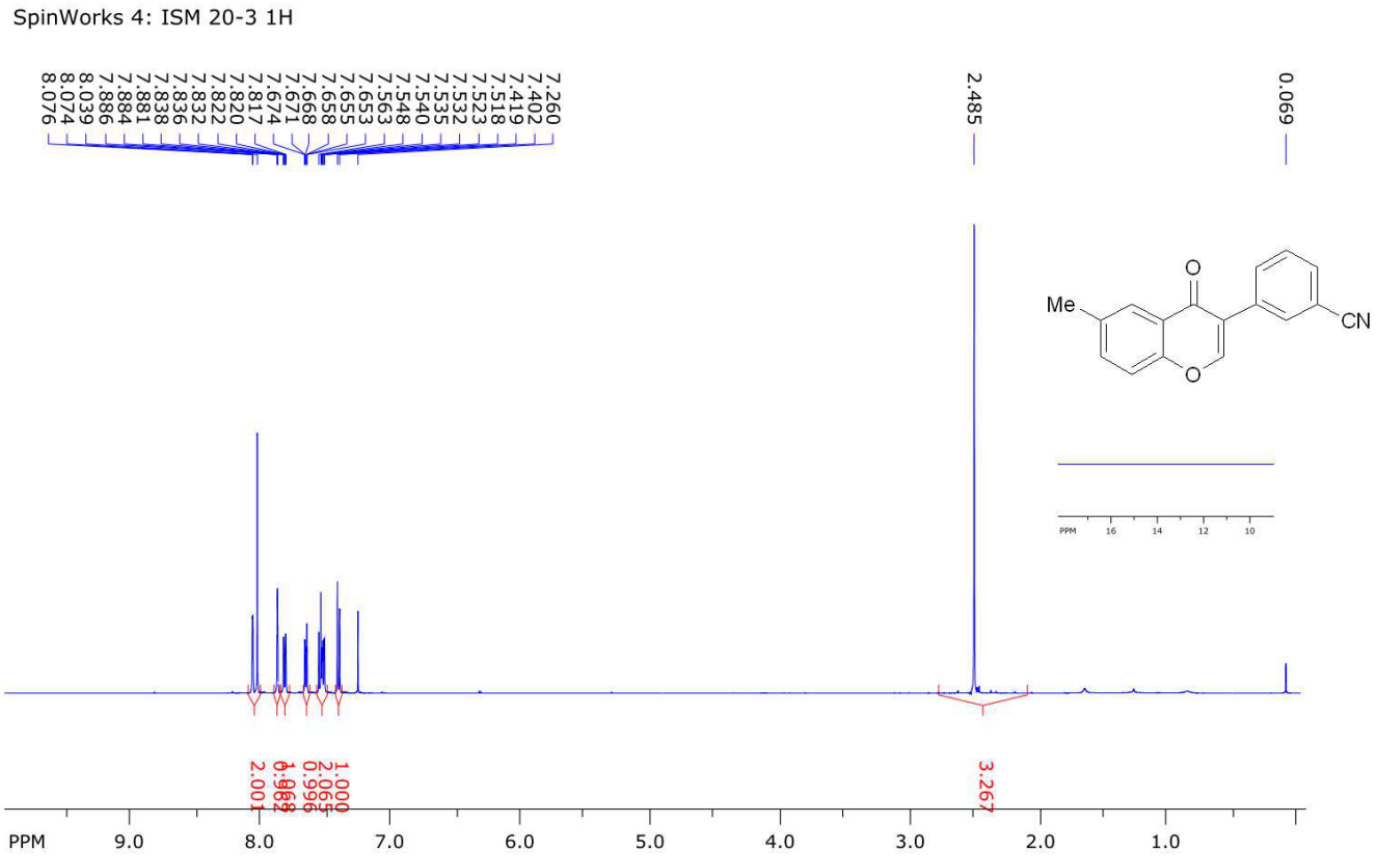
time domain size: 65536 points
width: 36057.69 Hz = 286.6889 ppm = 0.550197 Hz/pt
number of scans: 256

freq. of 0 ppm: 125.757813 MHz
processed size: 32768 complex points
LB: 2.000 GF: 0.0000
Hz/cm: 1002.855 ppm/cm: 7.97354

Compound 4bu



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number of scans: 24

freq. of 0 ppm: 500.130023 MHz
processed size: 65536 complex points
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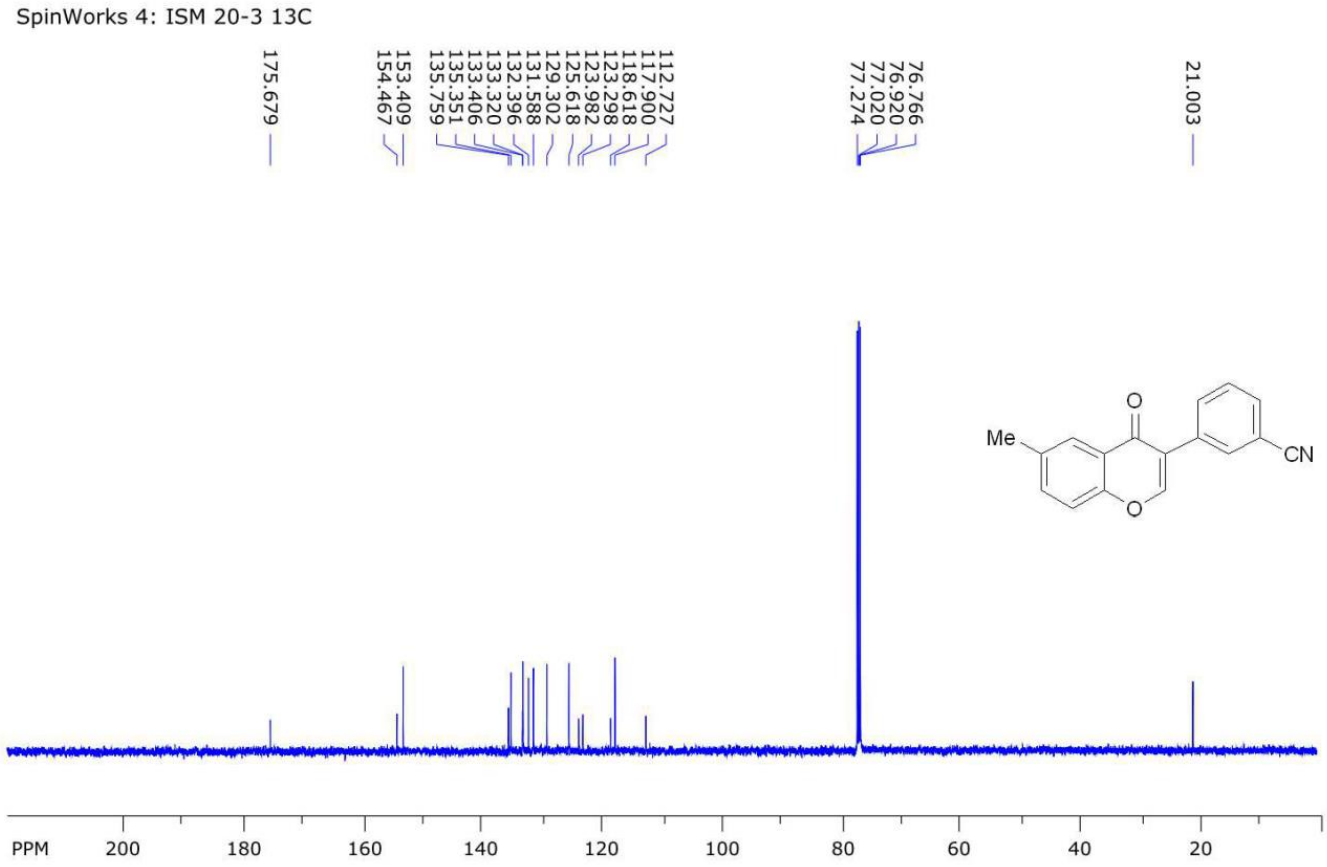
Hz/cm: 201.003 ppm/cm: 0.40190

Compound 4bu



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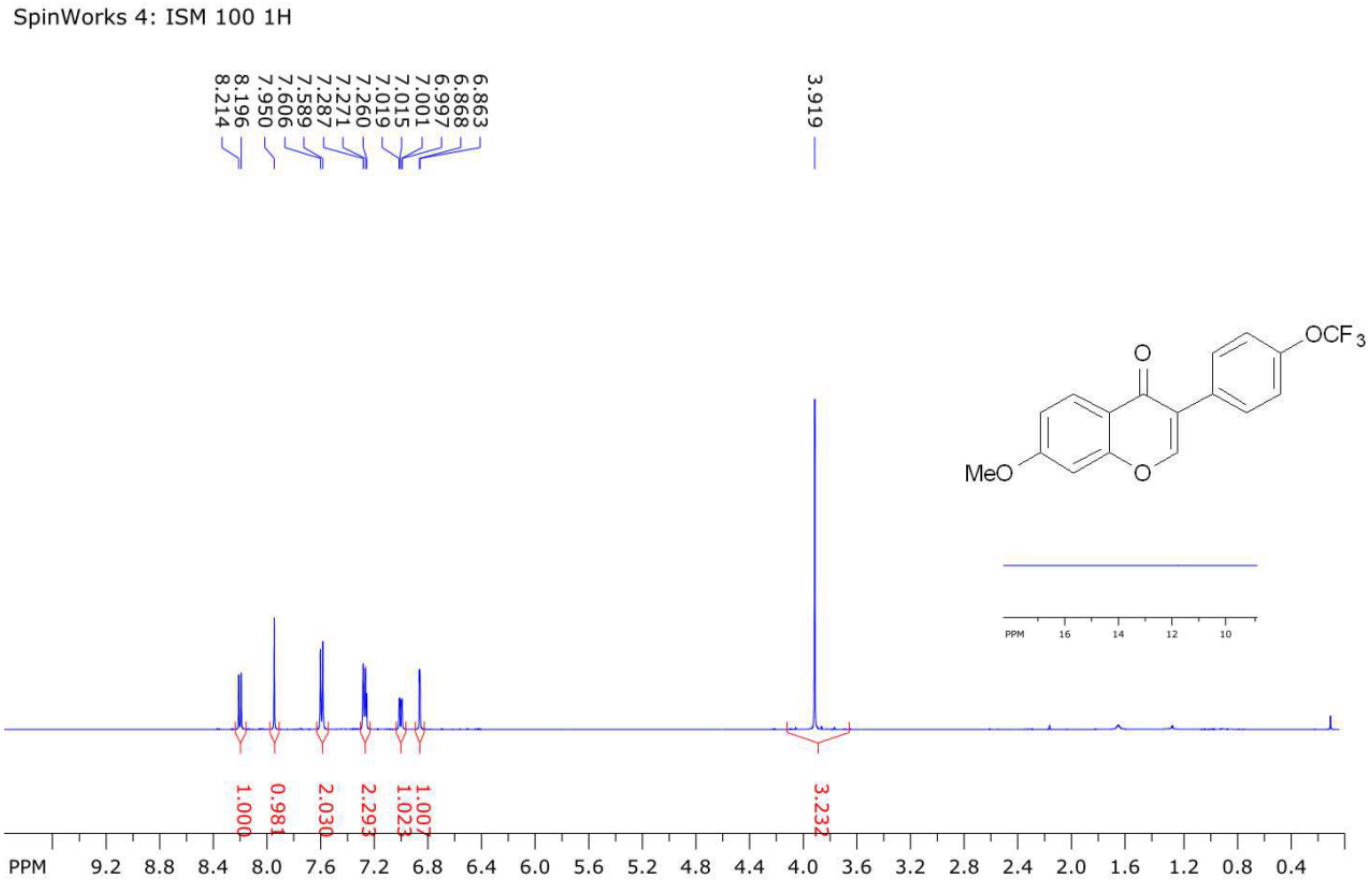
width: 36057.69 Hz = 286.6889 ppm = 0.550197 Hz/pt
number of scans: 256

freq. of 0 ppm: 125.757794 MHz
processed size: 32768 complex points
LB: 2.000 GF: 0.0000
Hz/cm: 1104.267 ppm/cm: 8.77985

Compound 4ch



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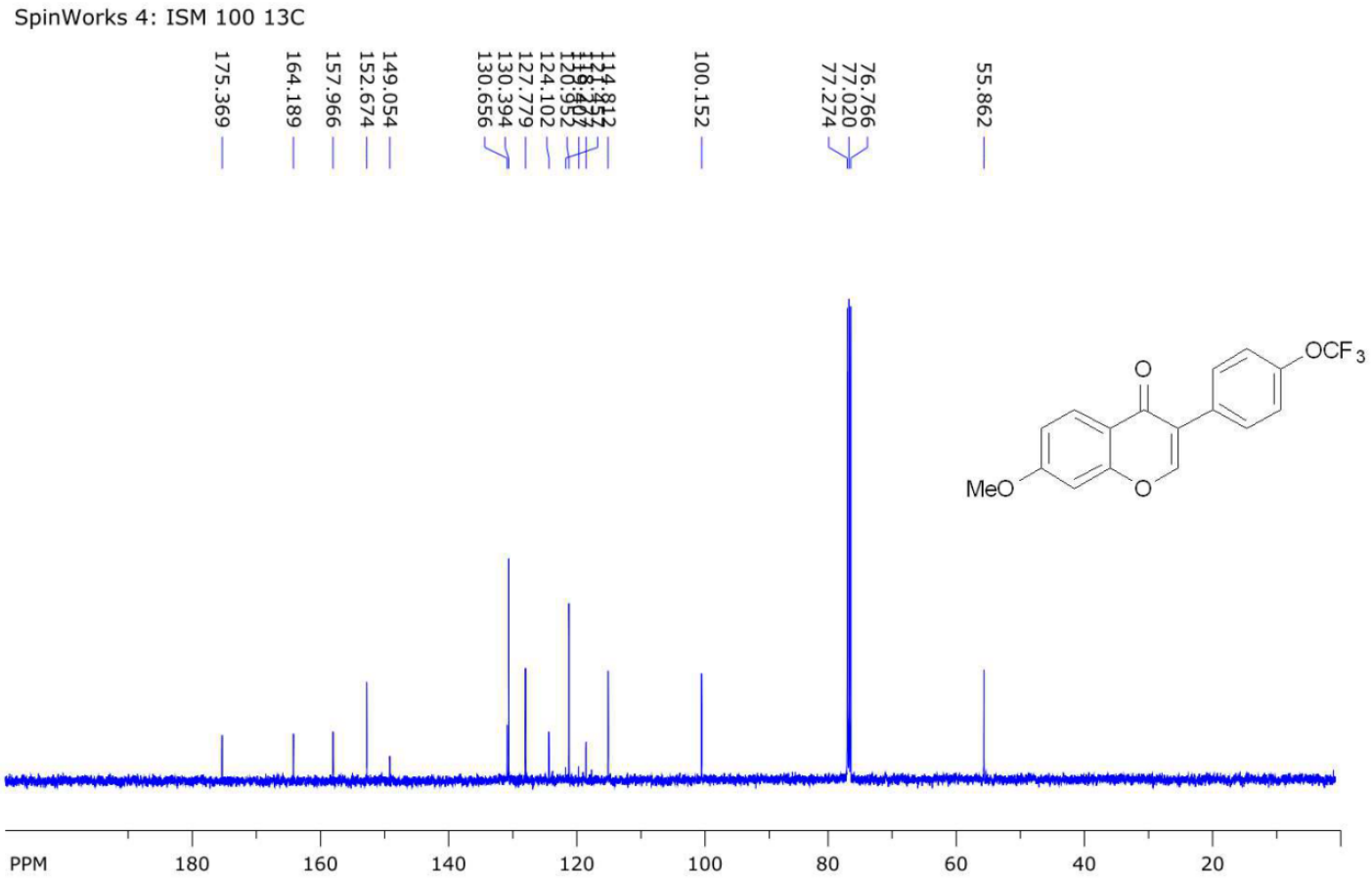
time domain size: 65536 points
width: 12335.53 Hz = 24.6645 ppm = 0.188225 Hz/pt
number of scans: 24

freq. of 0 ppm: 500.130023 MHz
processed size: 65536 complex points
LB: 0.300 GF: 0.0000
Hz/cm: 199.224 ppm/cm: 0.39834

Compound 4ch



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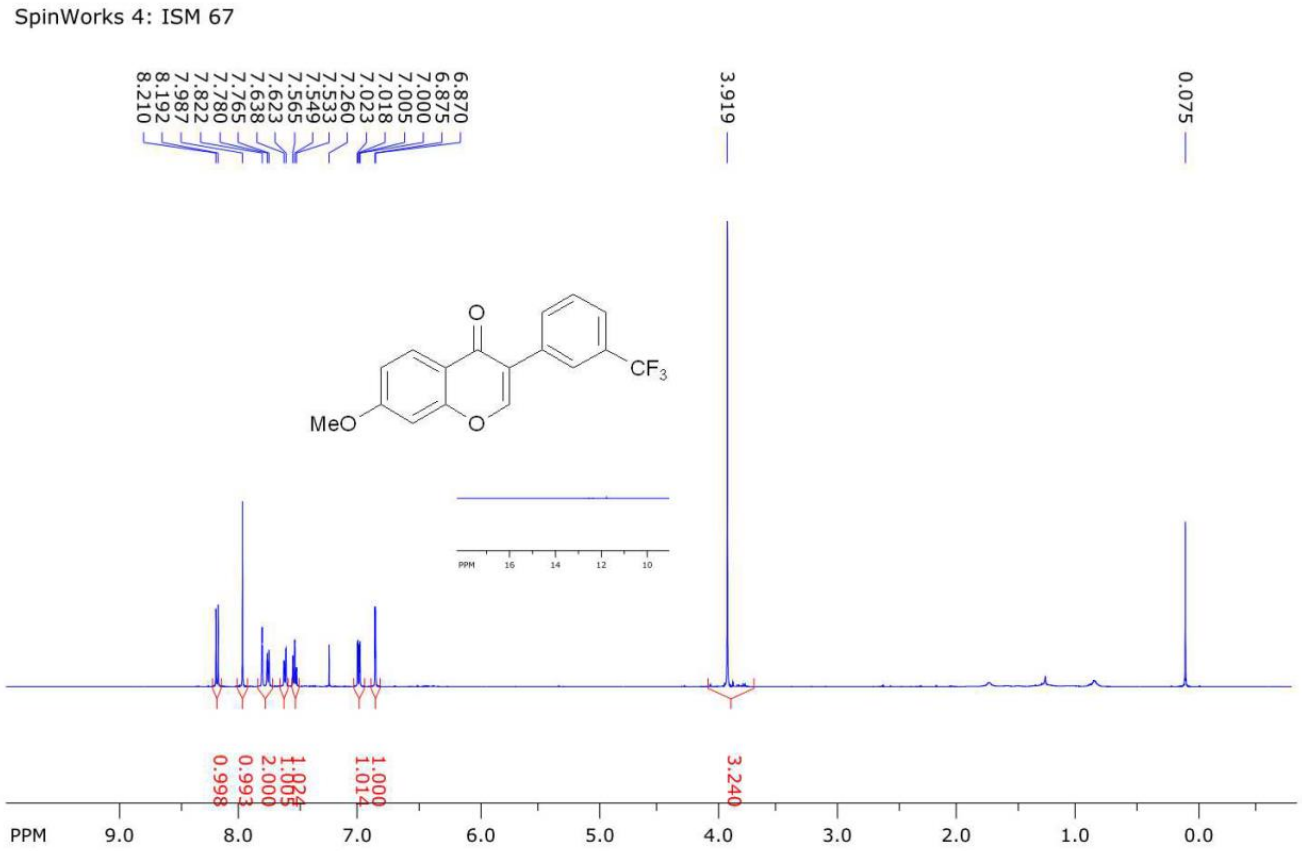
time domain size: 65536 points
width: 36057.69 Hz = 286.6889 ppm = 0.550197 Hz/pt
number of scans: 256

freq. of 0 ppm: 125.757792 MHz
processed size: 32768 complex points
LB: 2.000 GF: 0.0000
Hz/cm: 1049.821 ppm/cm: 8.34696

Compound 4ci



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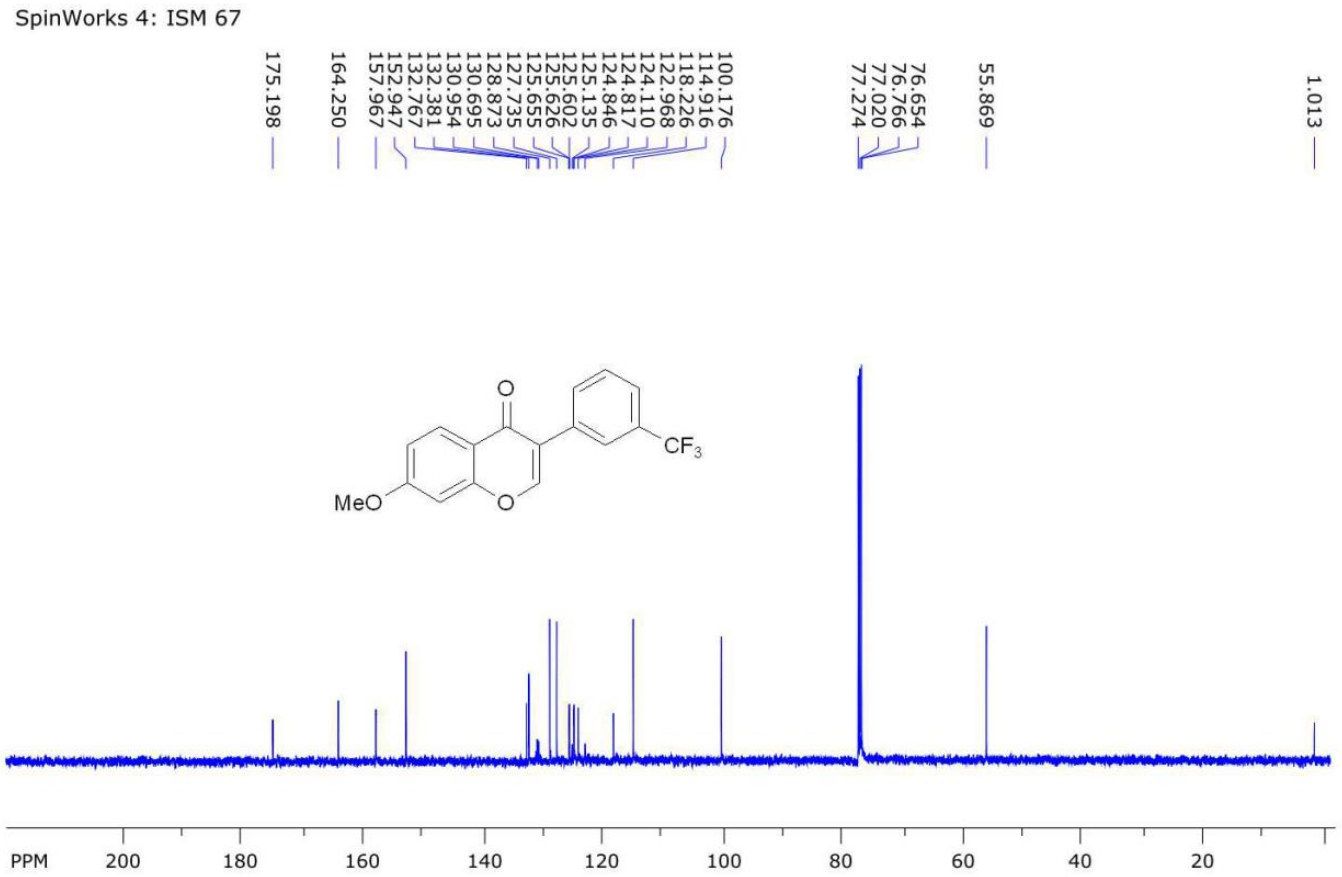
time domain size: 65536 points
width: 12335.53 Hz = 24.6645 ppm = 0.188225 Hz/pt
number of scans: 24

freq. of 0 ppm: 500.130023 MHz
processed size: 65536 complex points
LB: 0.300 GF: 0.0000
Hz/cm: 215.872 ppm/cm: 0.43163

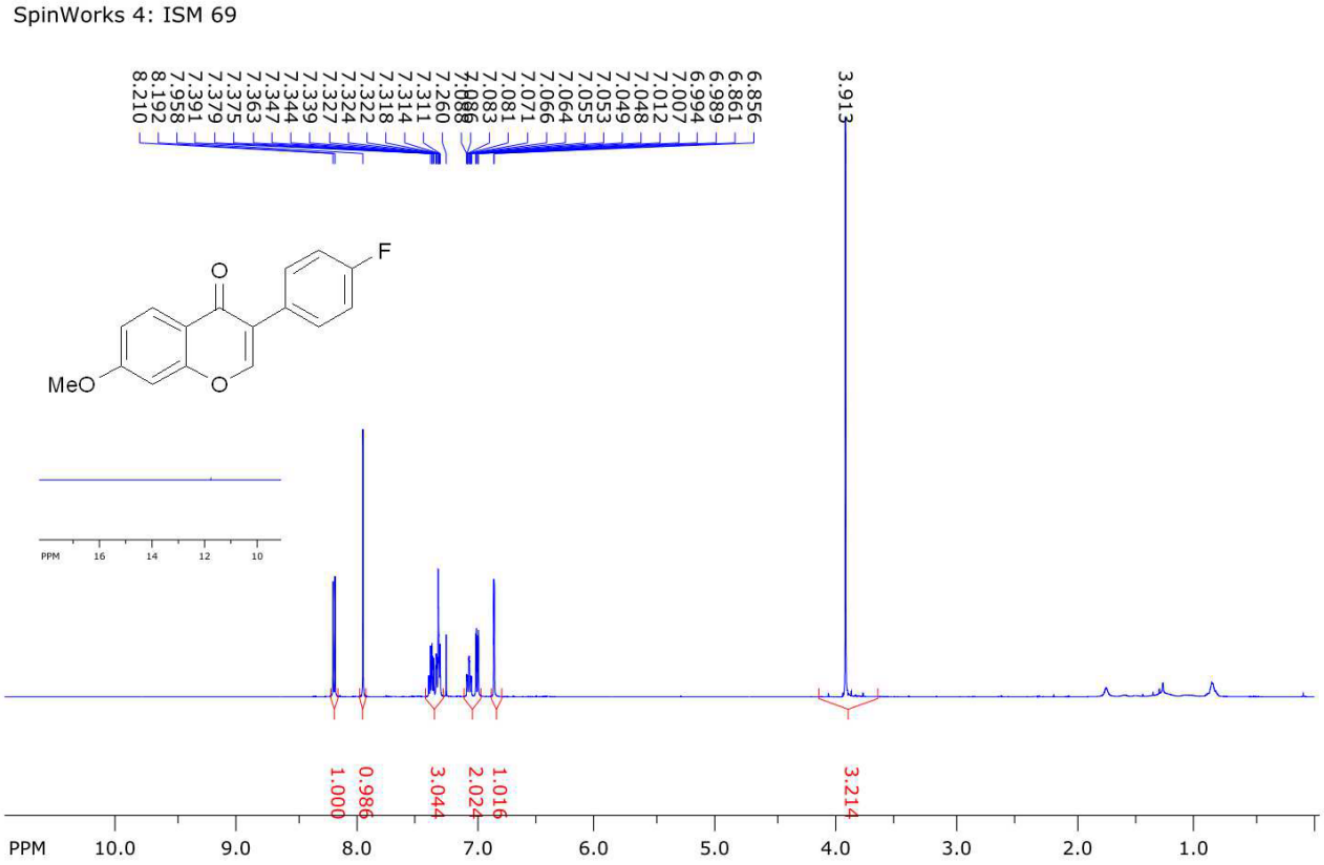
Compound 4ci



file: F:\Napo\NMR\500-1\mkr12706\28\fid expt: <zgpg30>
transmitter freq.: 125.772879 MHz
time domain size: 65536 points
width: 36057.69 Hz = 286.6889 ppm = 0.550197 Hz/pt
number of scans: 270

freq. of 0 ppm: 125.757793 MHz
processed size: 32768 complex points
LB: 2.000 GF: 0.0000
Hz/cm: 1113.925 ppm/cm: 8.85664

Compound 4cp



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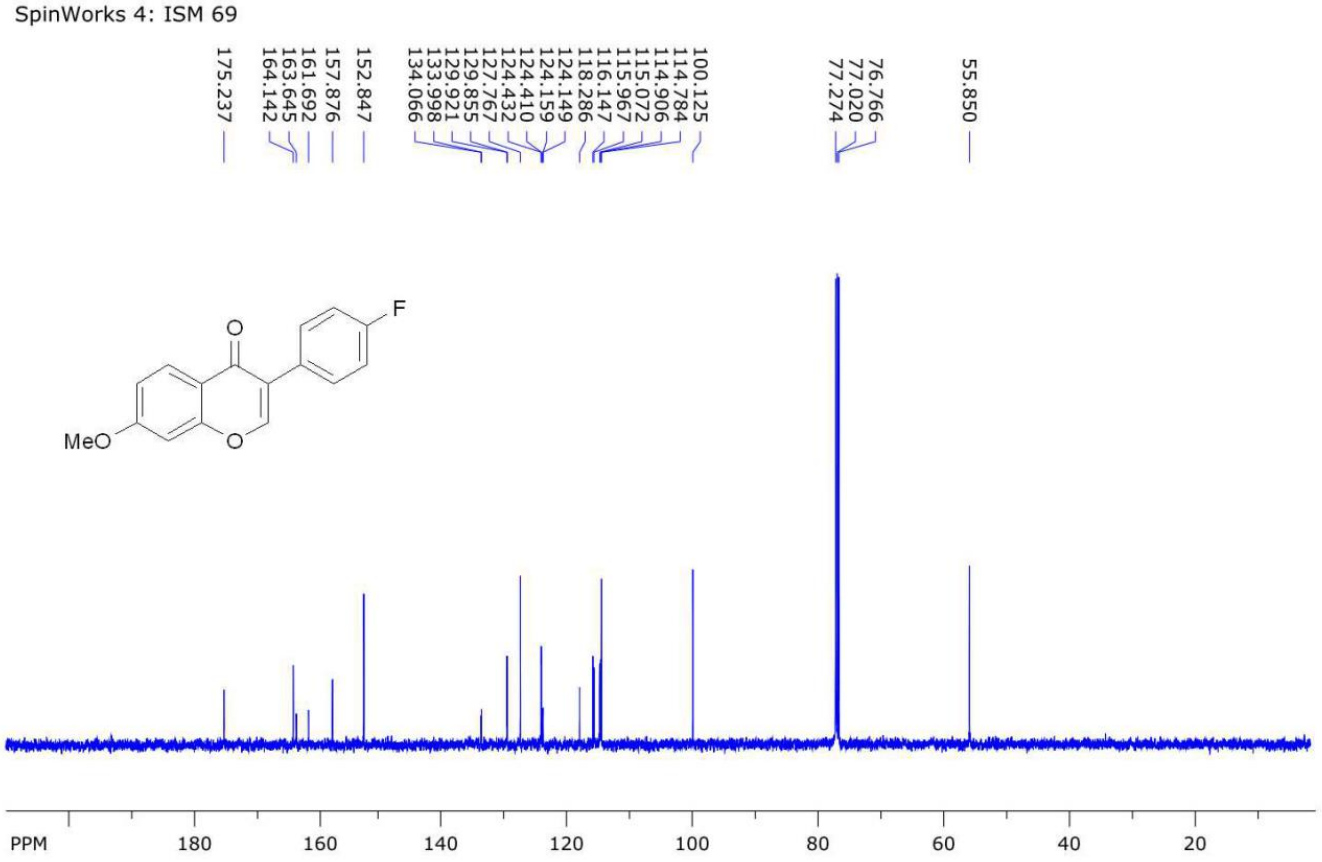
time domain size: 65536 points
width: 12335.53 Hz = 24.6645 ppm = 0.188225 Hz/pt
number of scans: 32

freq. of 0 ppm: 500.130023 MHz
processed size: 65536 complex points
LB: 0.300 GF: 0.0000
Hz/cm: 219.727 ppm/cm: 0.43934

Compound 4cp



file: F:\Napo\NMR\500-1\mkr12706\20\fid expt: <zgpg30>
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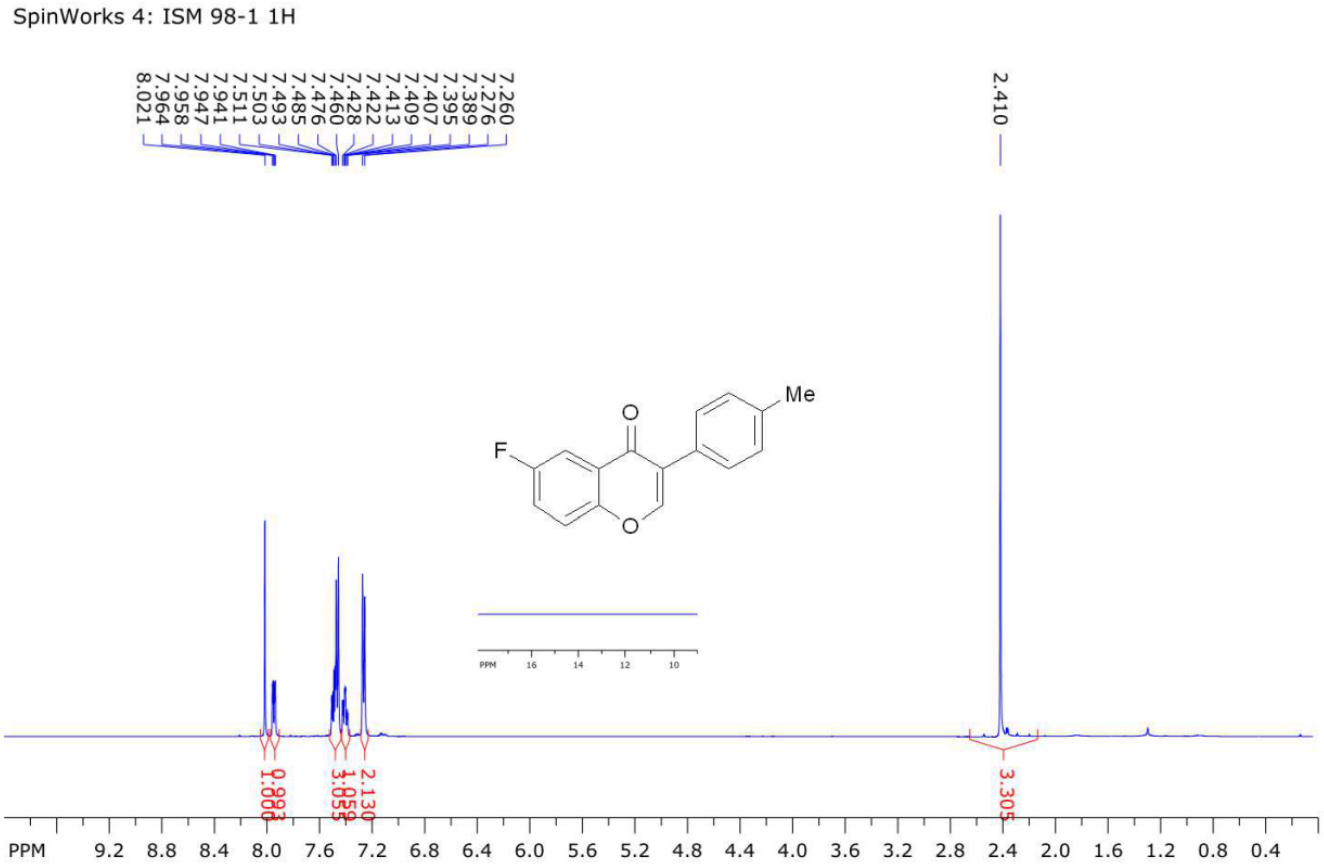
time domain size: 65536 points
width: 36057.69 Hz = 286.6889 ppm = 0.550197 Hz/pt
number of scans: 256

freq. of 0 ppm: 125.757795 MHz
processed size: 32768 complex points
LB: 2.000 GF: 0.0000
Hz/cm: 1051.146 ppm/cm: 8.35749

Compound 4db

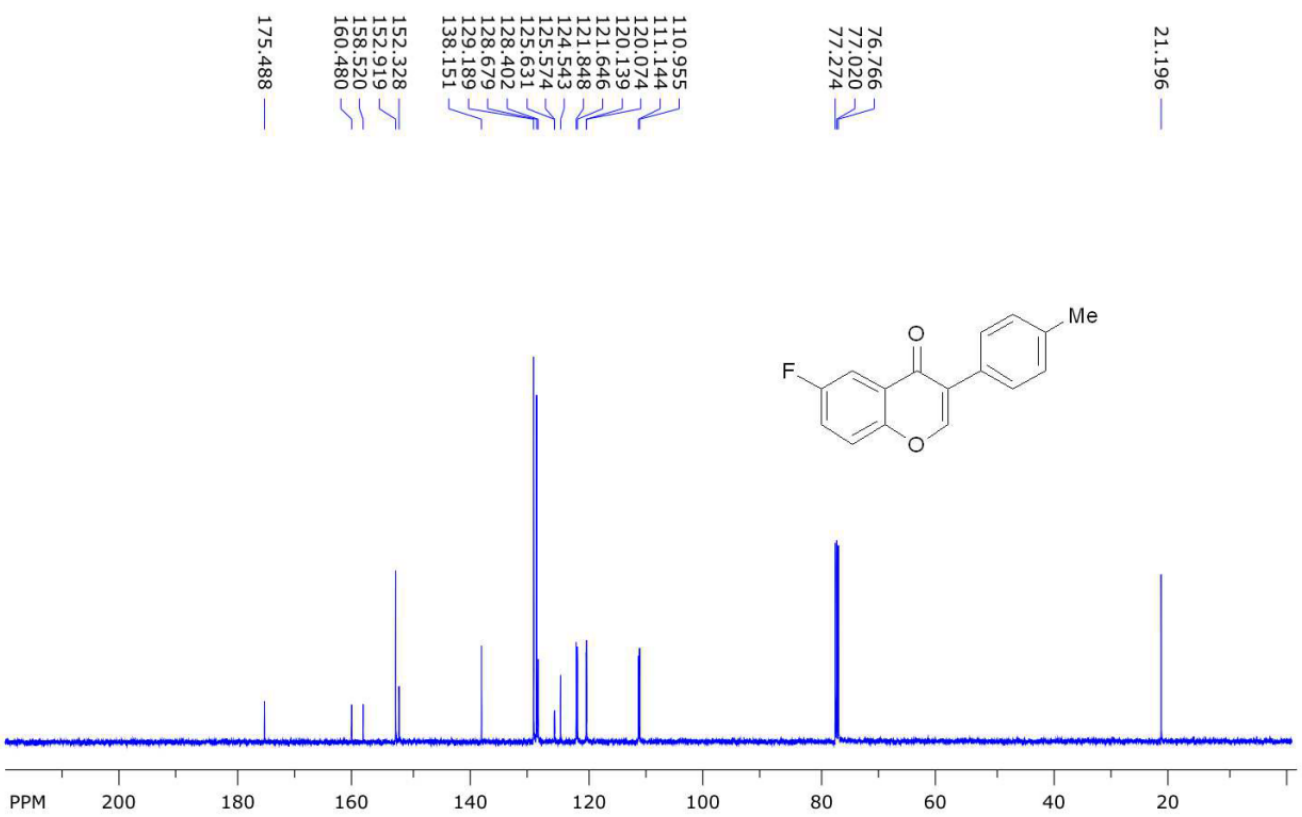


file: D:\NAPO\NMR\500-1\mkr12611\25\fid expt: <zg30>
transmitter freq.: 500.133001 MHz
time domain size: 65536 points
width: 12335.53 Hz = 24.6645 ppm = 0.188225 Hz/pt
number of scans: 24

freq. of 0 ppm: 500.130014 MHz
processed size: 65536 complex points
LB: 0.300 GF: 0.0000
Hz/cm: 199.770 ppm/cm: 0.39943

Compound 4db

SpinWorks 4: ISM 98-1 13C

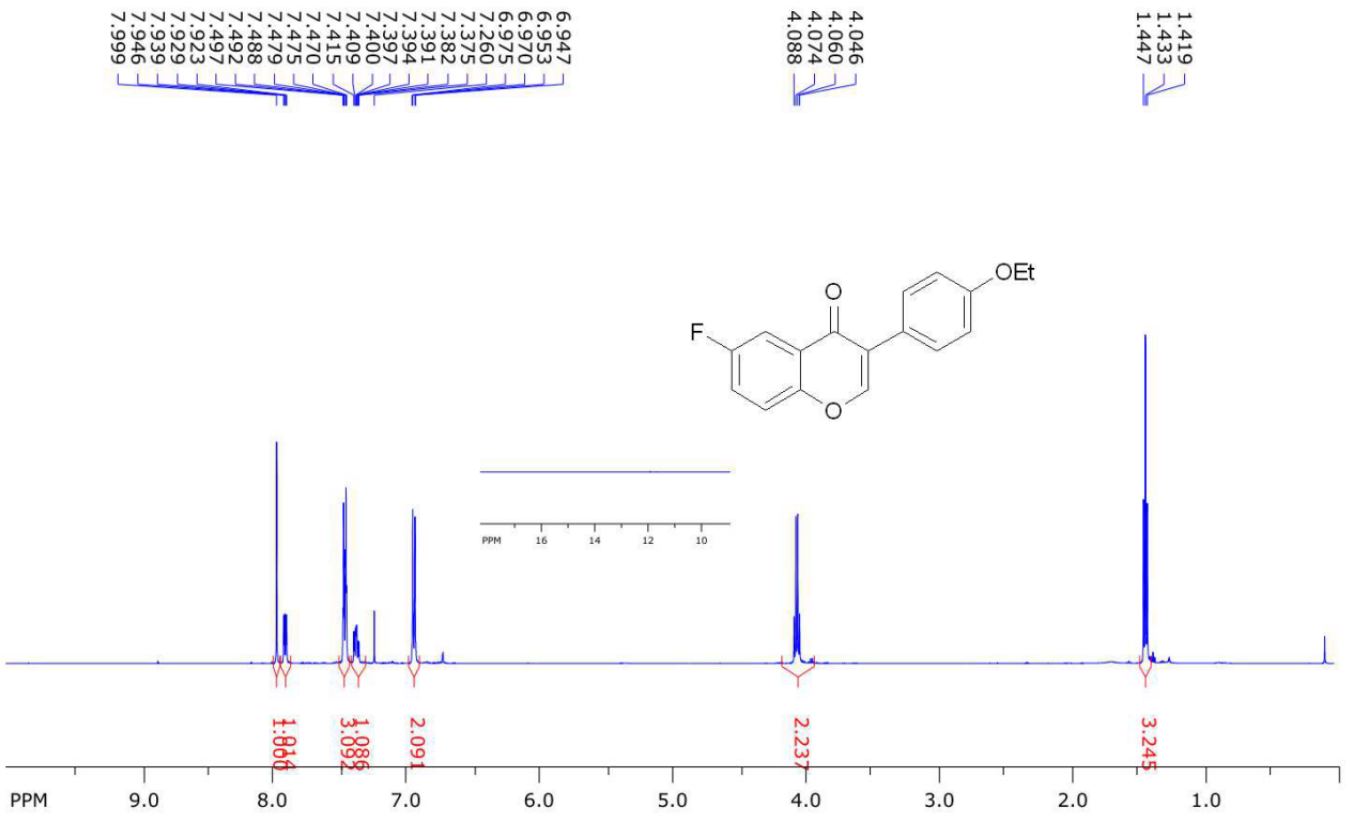


file: D:\NAPO\NMR\500-1\mkr12611\26\fid expt: <zgpg30>
transmitter freq.: 125.772879 MHz
time domain size: 65536 points
width: 36057.69 Hz = 286.6889 ppm = 0.550197 Hz/pt
number of scans: 256

freq. of 0 ppm: 125.757802 MHz
processed size: 32768 complex points
LB: 2.000 GF: 0.0000
Hz/cm: 1113.640 ppm/cm: 8.85437

Compound 4dl

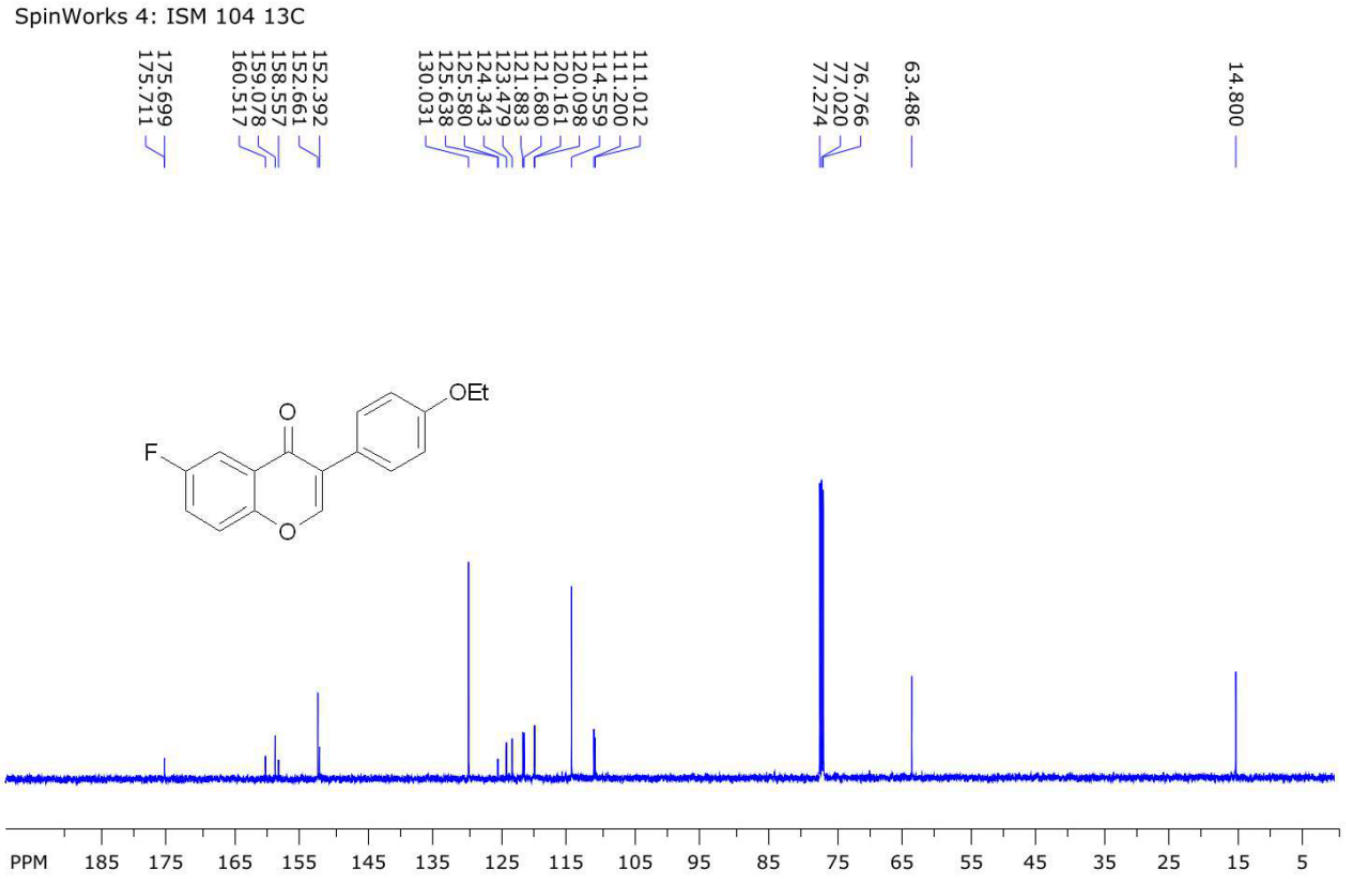
SpinWorks 4: ISM 104 1H



file: D:\NAPO\NMR\500-2\mkr11412\25\fid expt: <zg30>
transmitter freq.: 500.133001 MHz
time domain size: 65536 points
width: 12335.53 Hz = 24.6645 ppm = 0.188225 Hz/pt
number of scans: 24

freq. of 0 ppm: 500.130023 MHz
processed size: 65536 complex points
LB: 0.300 GF: 0.0000
Hz/cm: 200.862 ppm/cm: 0.40162

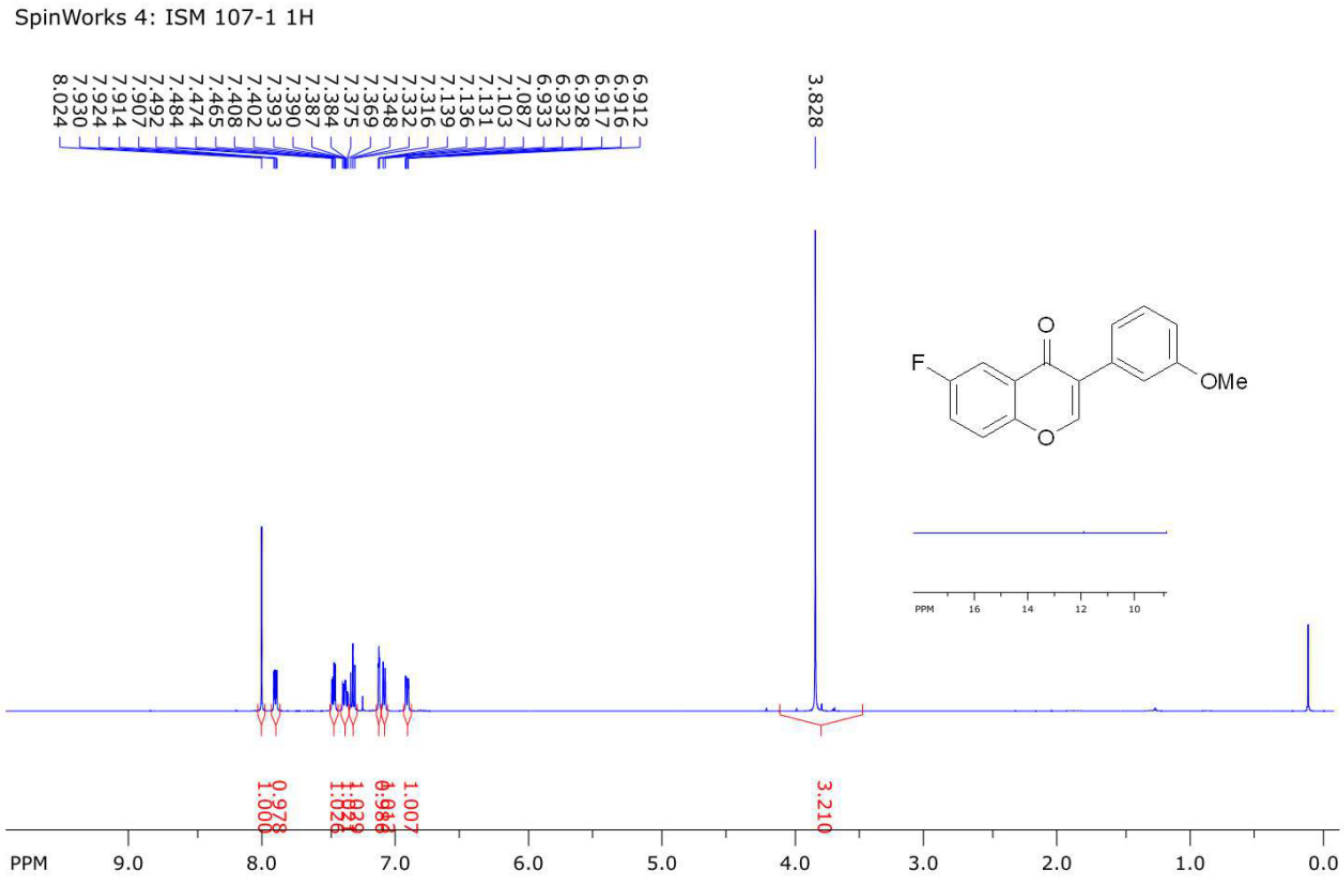
Compound 4dl



file: D:\NAPO\NMR\500-2\mkr11412\26\fid expt: <zgpg30>
transmitter freq.: 125.772879 MHz
time domain size: 65536 points
width: 36057.69 Hz = 286.6889 ppm = 0.550197 Hz/pt
number of scans: 256

freq. of 0 ppm: 125.757795 MHz
processed size: 32768 complex points
LB: 2.000 GF: 0.0000
Hz/cm: 1003.553 ppm/cm: 7.97909

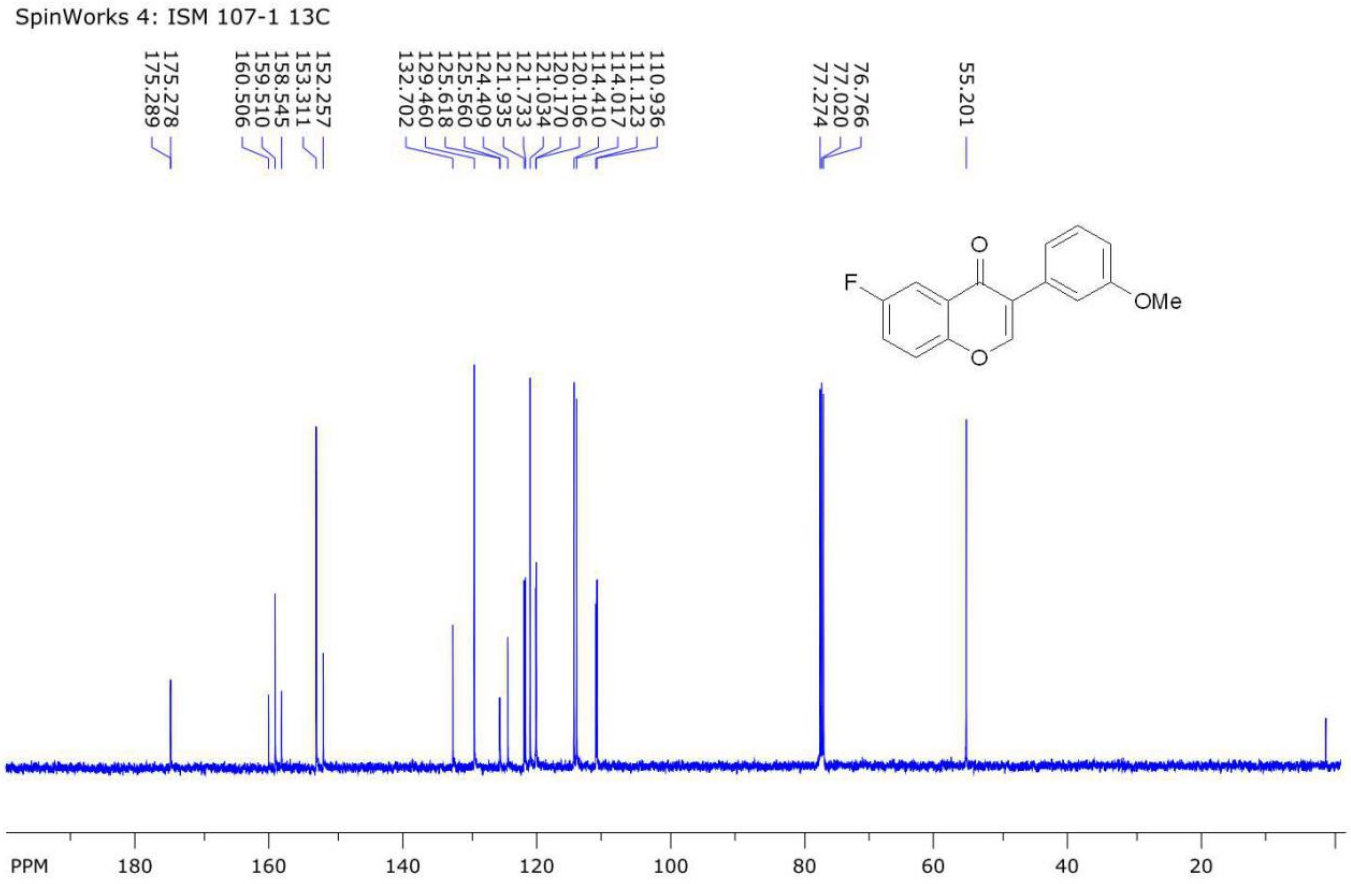
Compound 4dm



file: D:\NAPO\NMR\500-2\mkr11412\21\fid expt: <zg30>
transmitter freq.: 500.133001 MHz
time domain size: 65536 points
width: 12335.53 Hz = 24.6645 ppm = 0.188225 Hz/pt
number of scans: 24

freq. of 0 ppm: 500.130024 MHz
processed size: 65536 complex points
LB: 0.300 GF: 0.0000
Hz/cm: 201.407 ppm/cm: 0.40271

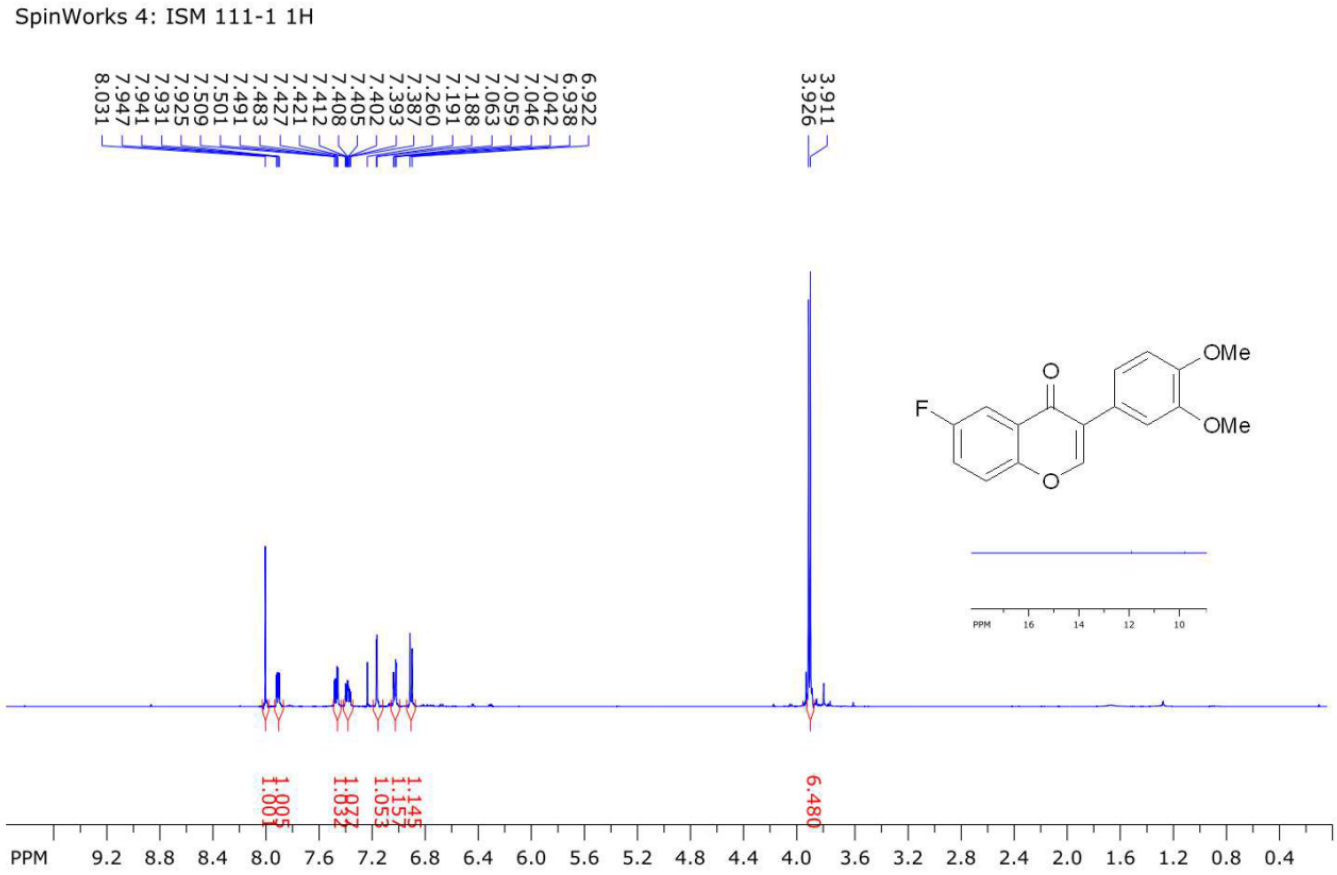
Compound 4dm



file: D:\NAPO\NMR\500-2\mkr11412\22\fid expt: <zgpg30>
transmitter freq.: 125.772879 MHz
time domain size: 65536 points
width: 36057.69 Hz = 286.6889 ppm = 0.550197 Hz/pt
number of scans: 256

freq. of 0 ppm: 125.757803 MHz
processed size: 32768 complex points
LB: 2.000 GF: 0.0000
Hz/cm: 1013.125 ppm/cm: 8.05520

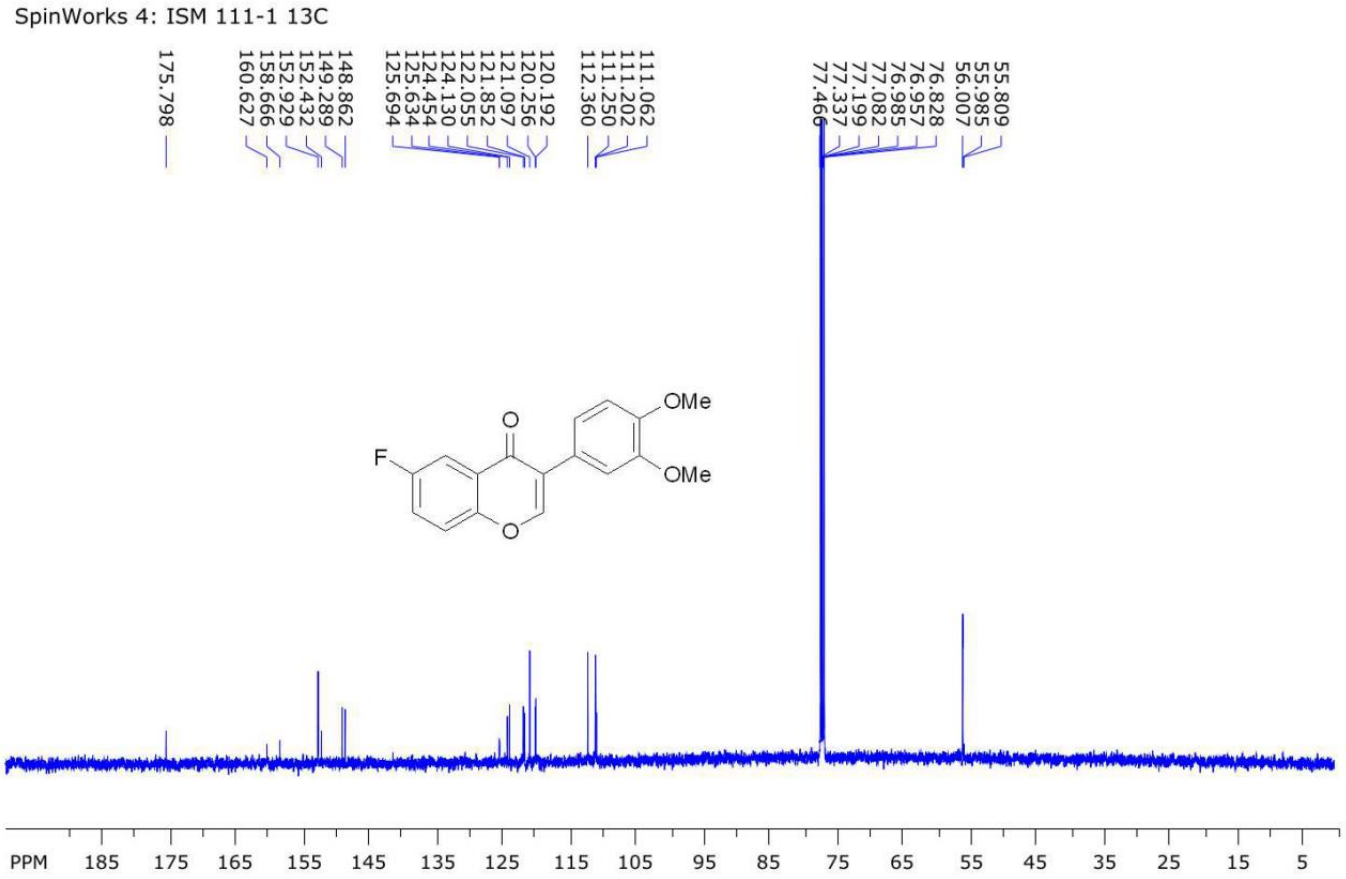
Compound 4dn



file: D:\NAPO\NMR\500-2\mkr10701\29\fid expt: <zg30>
transmitter freq.: 500.133001 MHz
time domain size: 65536 points
width: 12335.53 Hz = 24.6645 ppm = 0.188225 Hz/pt
number of scans: 16

freq. of 0 ppm: 500.130023 MHz
processed size: 65536 complex points
LB: 0.300 GF: 0.0000
Hz/cm: 199.770 ppm/cm: 0.39943

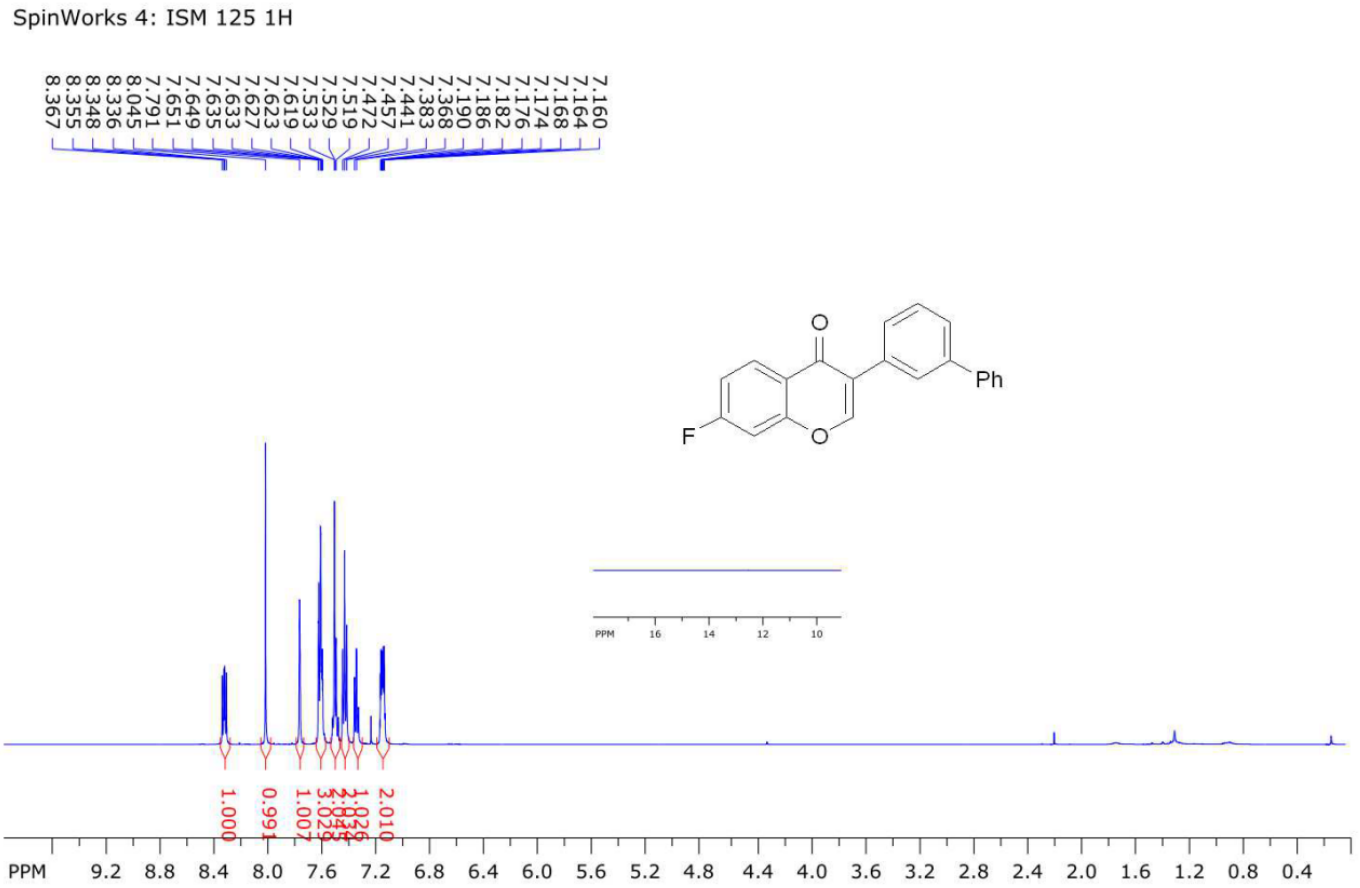
Compound 4dn



file: D:\NAPO\NMR\500-2\mkr10701\30\fid expt: <zgpg30>
transmitter freq.: 125.772879 MHz
time domain size: 65536 points
width: 36057.69 Hz = 286.6889 ppm = 0.550197 Hz/pt
number of scans: 512

freq. of 0 ppm: 125.757789 MHz
processed size: 32768 complex points
LB: 2.000 GF: 0.0000
Hz/cm: 1005.148 ppm/cm: 7.99177

Compound 4ef

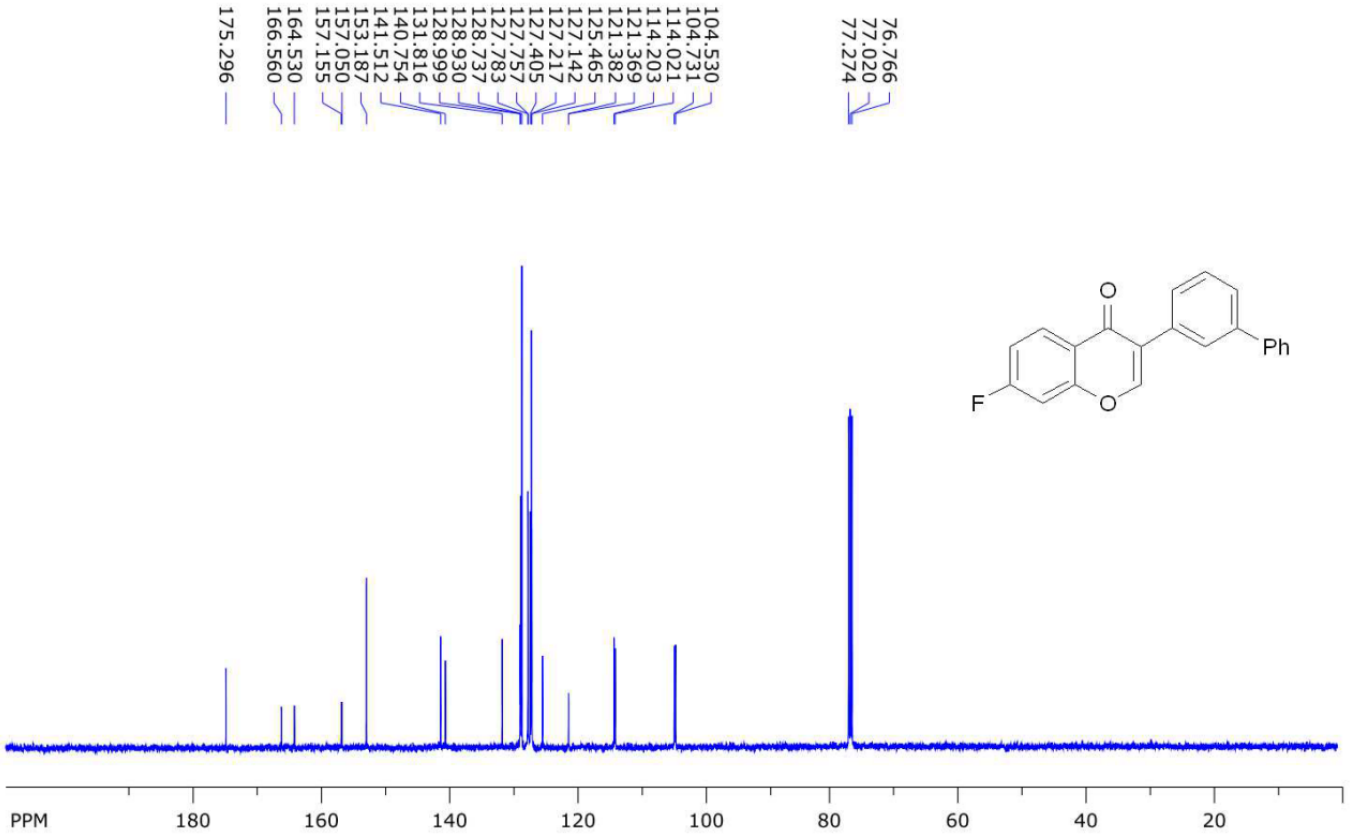


file: D:\NAPO\NMR\500-2\mkr12103\11\fid expt: <zg30>
transmitter freq.: 500.133001 MHz
time domain size: 65536 points
width: 12335.53 Hz = 24.6645 ppm = 0.188225 Hz/pt
number of scans: 24

freq. of 0 ppm: 500.130023 MHz
processed size: 65536 complex points
LB: 0.300 GF: 0.0000
Hz/cm: 199.770 ppm/cm: 0.39943

Compound 4ef

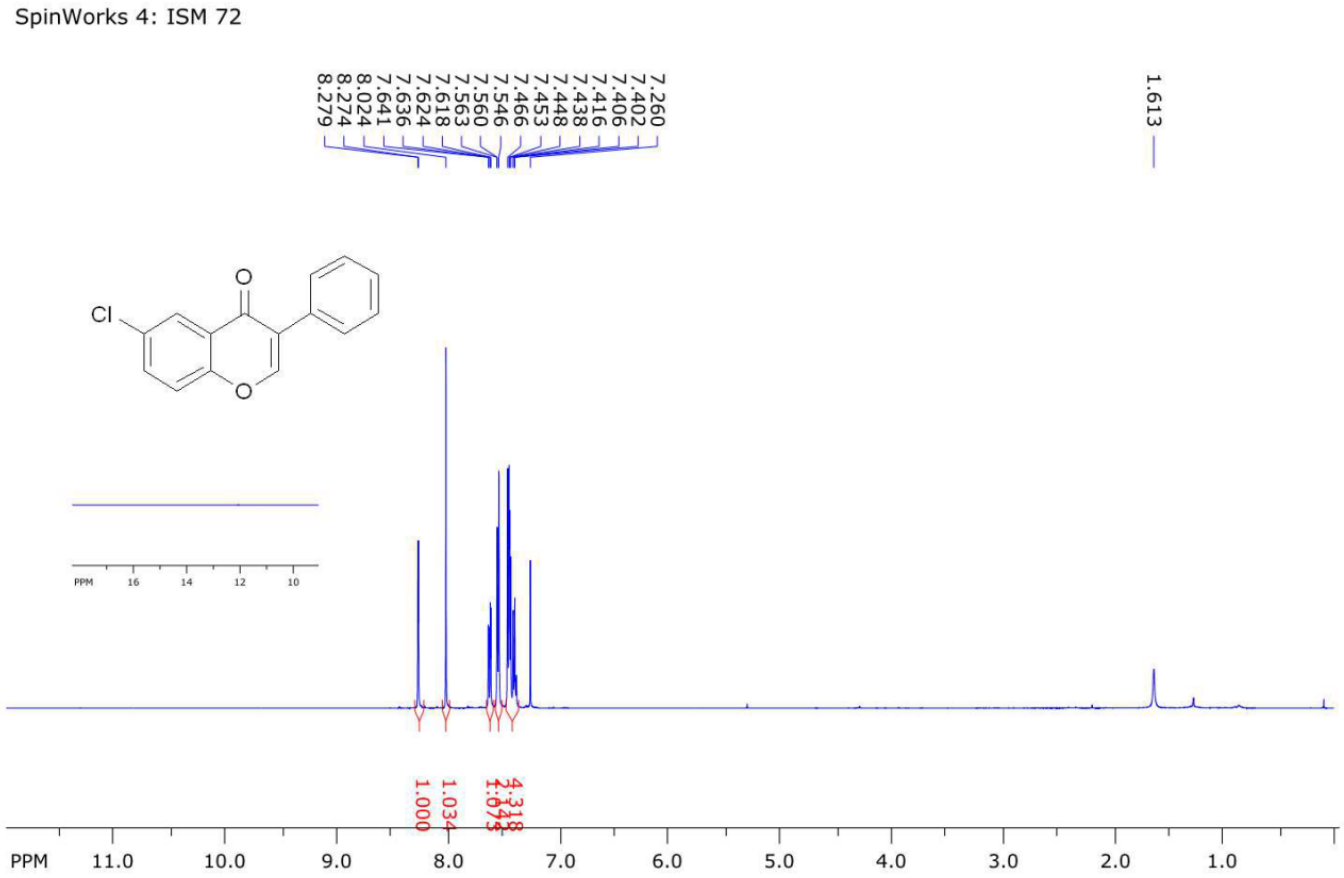
SpinWorks 4: ISM 125 13C



file: D:\NAPO\NMR\500-2\mkr12103\12\fid expt: <zgpg30>
transmitter freq.: 125.772879 MHz
time domain size: 65536 points
width: 36057.69 Hz = 286.6889 ppm = 0.550197 Hz/pt
number of scans: 512

freq. of 0 ppm: 125.757801 MHz
processed size: 32768 complex points
LB: 2.000 GF: 0.0000
Hz/cm: 1054.608 ppm/cm: 8.38502

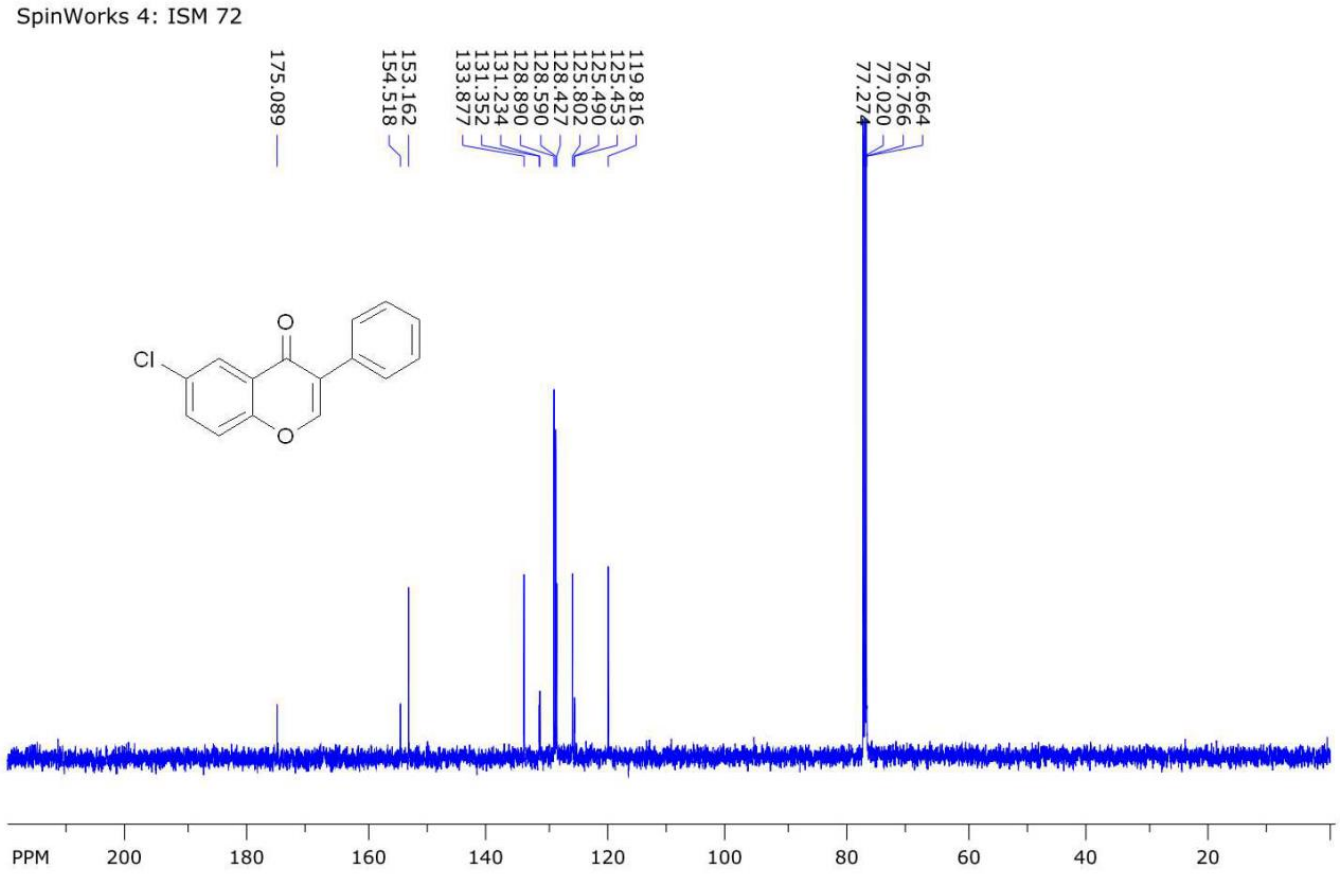
Compound 4fa



file: F:\Napo\NMR\500-1\mkr12706\25\fid expt: <zg30>
transmitter freq.: 500.133001 MHz
time domain size: 65536 points
width: 12335.53 Hz = 24.6645 ppm = 0.188225 Hz/pt
number of scans: 32

freq. of 0 ppm: 500.130023 MHz
processed size: 65536 complex points
LB: 0.300 GF: 0.0000
Hz/cm: 240.653 ppm/cm: 0.48118

Compound 4fa

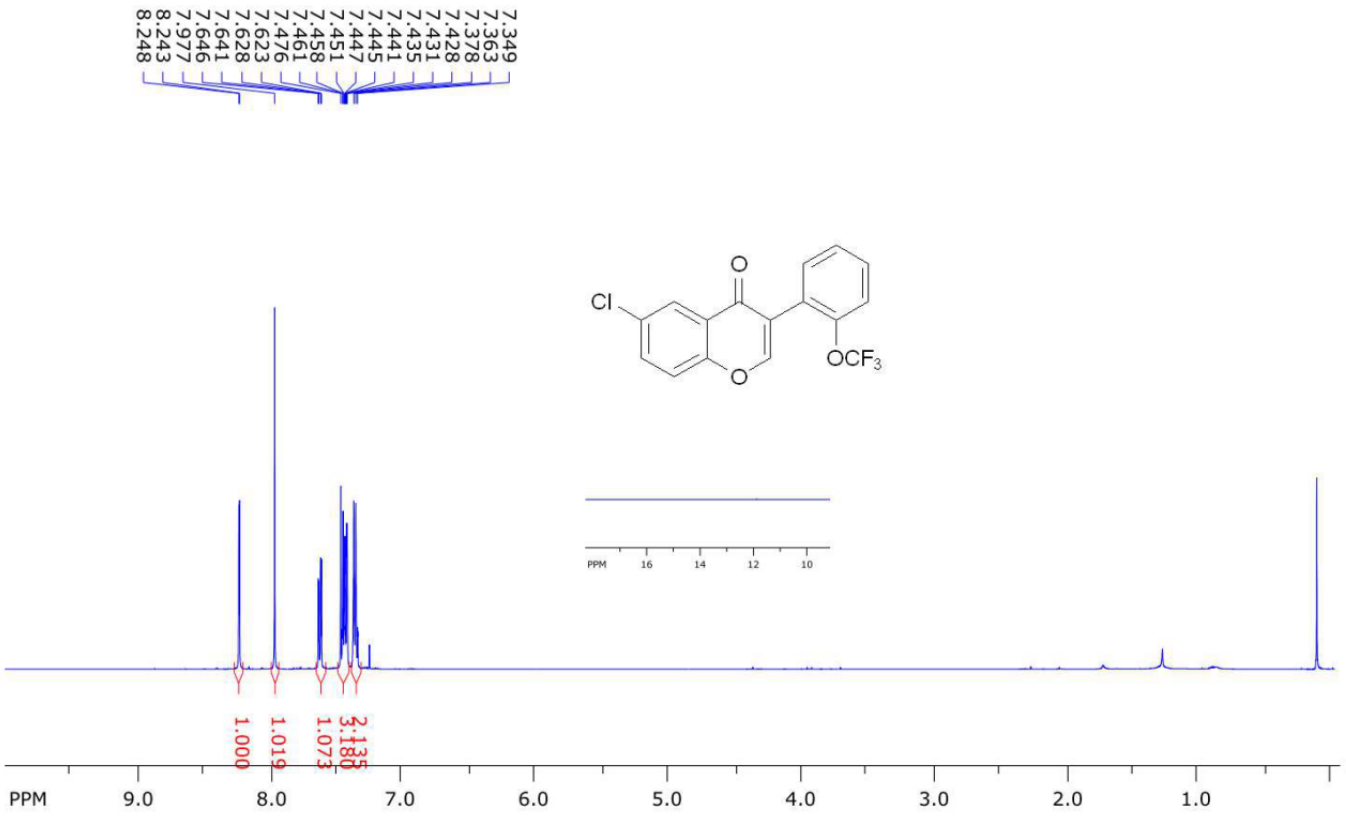


file: F:\Napo\NMR\500-1\mkr12706\26\fid expt: <zgpg30>
transmitter freq.: 125.772879 MHz
time domain size: 65536 points
width: 36057.69 Hz = 286.6889 ppm = 0.550197 Hz/pt
number of scans: 256

freq. of 0 ppm: 125.757793 MHz
processed size: 32768 complex points
LB: 2.000 GF: 0.0000
Hz/cm: 1110.706 ppm/cm: 8.83104

Compound 4fk

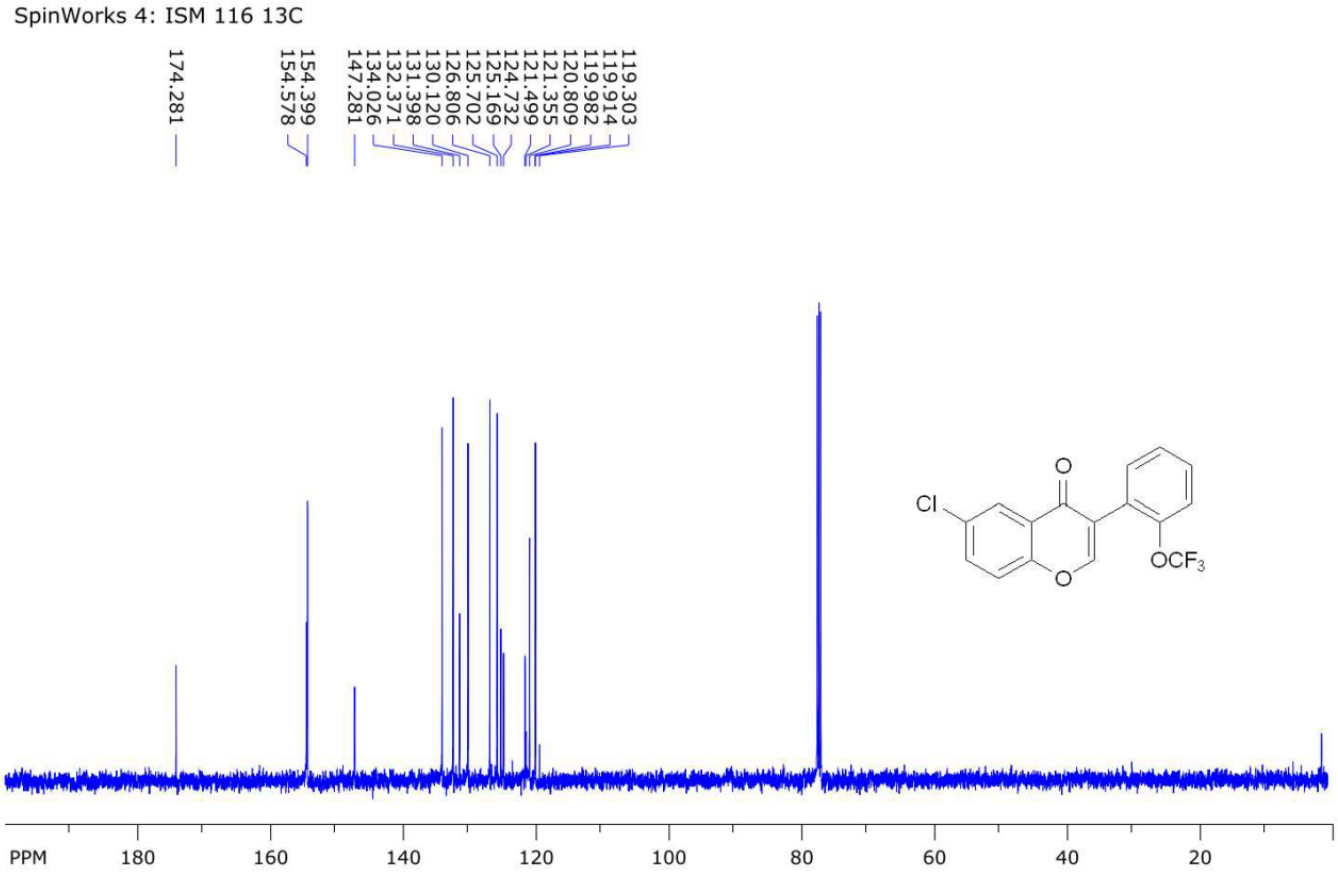
SpinWorks 4: ISM 116 1H



file: D:\NAPO\NMR\500-2\mkr12401\3\fid expt: <zg30>
transmitter freq.: 500.133001 MHz
time domain size: 65536 points
width: 12335.53 Hz = 24.6645 ppm = 0.188225 Hz/pt
number of scans: 24

freq. of 0 ppm: 500.130023 MHz
processed size: 65536 complex points
LB: 0.300 GF: 0.0000
Hz/cm: 201.407 ppm/cm: 0.40271

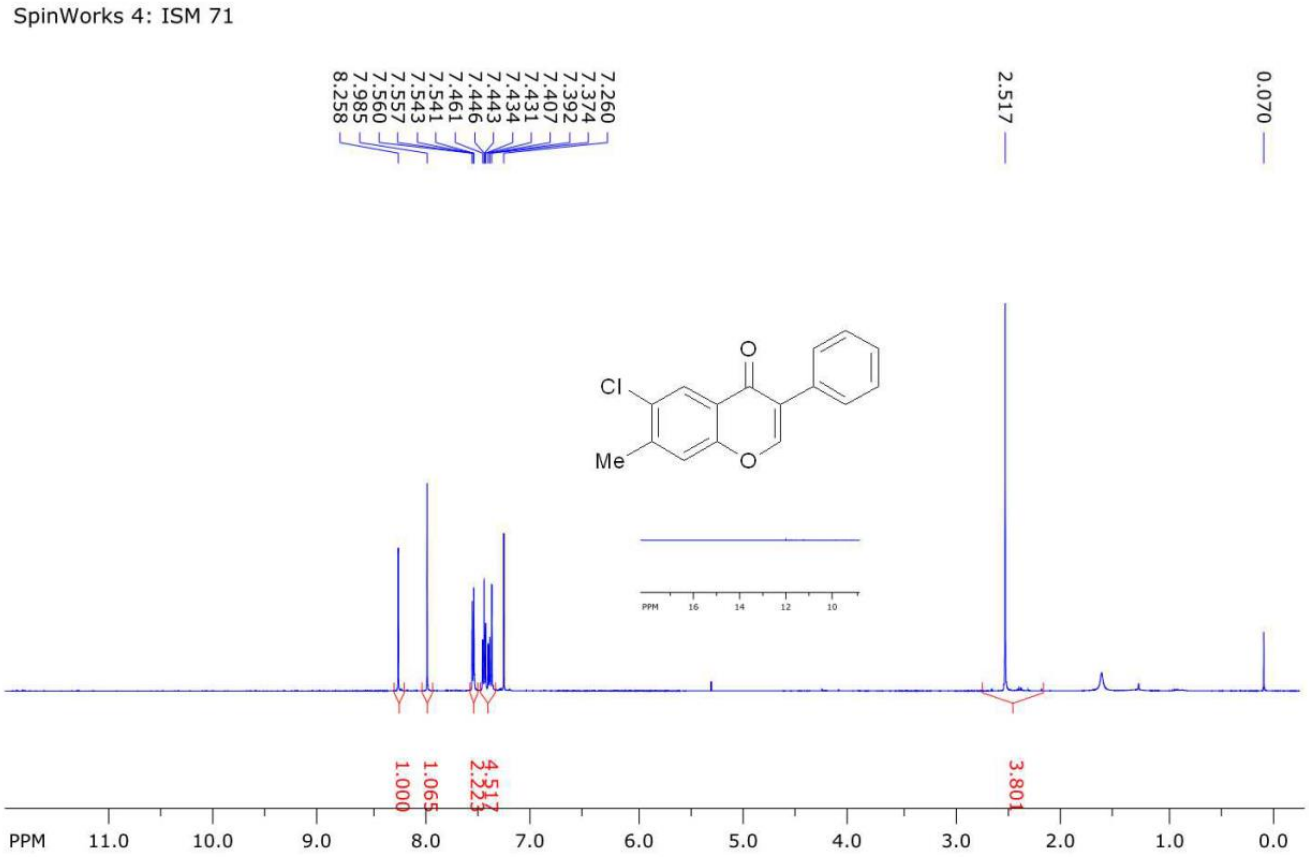
Compound 4fk



file: D:\NAPO\NMR\500-2\mkr12401\4\fid expt: <zgpg30>
transmitter freq.: 125.772879 MHz
time domain size: 65536 points
width: 36057.69 Hz = 286.6889 ppm = 0.550197 Hz/pt
number of scans: 96

freq. of 0 ppm: 125.757797 MHz
processed size: 32768 complex points
LB: 2.000 GF: 0.0000
Hz/cm: 1006.744 ppm/cm: 8.00446

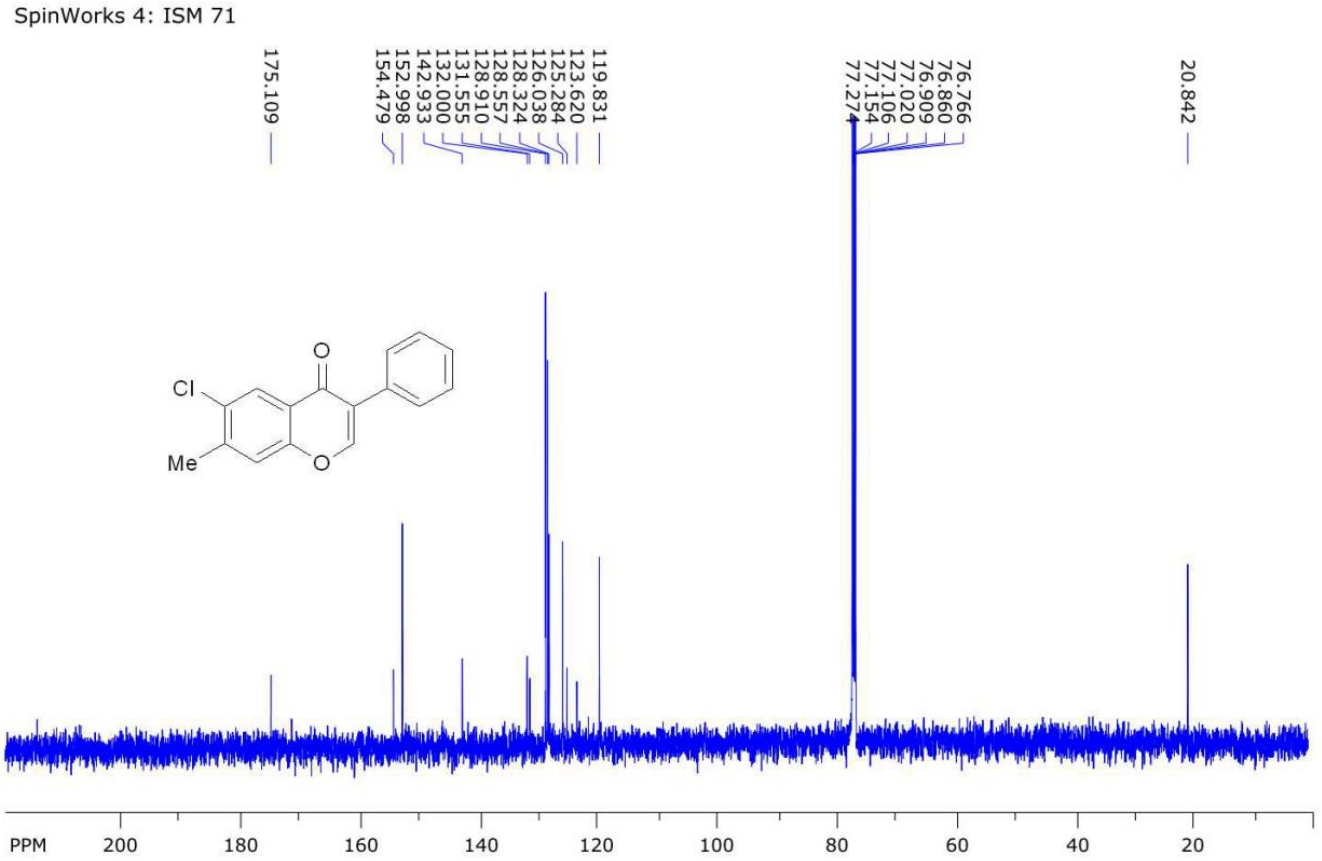
Compound 4ga



file: F:\Napo\NMR\500-1\mkr10506\9\fid expt: <zg30>
transmitter freq.: 500.133001 MHz
time domain size: 65536 points
width: 12335.53 Hz = 24.6645 ppm = 0.188225 Hz/pt
number of scans: 24

freq. of 0 ppm: 500.130023 MHz
processed size: 65536 complex points
LB: 0.300 GF: 0.0000
Hz/cm: 245.058 ppm/cm: 0.48999

Compound 4ga

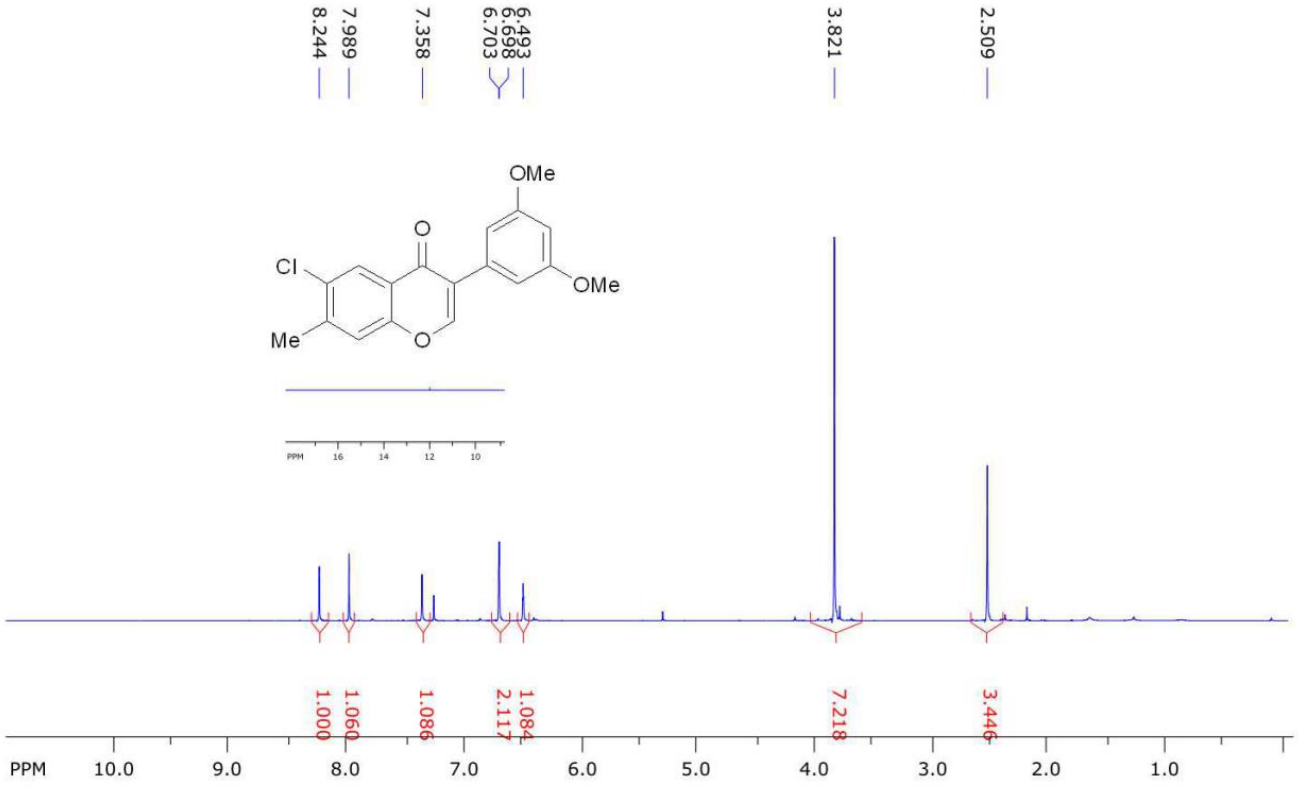


file: F:\Napo\NMR\500-1\mkr10506\10\fid expt: <zgpg30>
transmitter freq.: 125.772879 MHz
time domain size: 65536 points
width: 36057.69 Hz = 286.6889 ppm = 0.550197 Hz/pt
number of scans: 512

freq. of 0 ppm: 125.757792 MHz
processed size: 32768 complex points
LB: 2.000 GF: 0.0000
Hz/cm: 1102.657 ppm/cm: 8.76705

Compound 4go

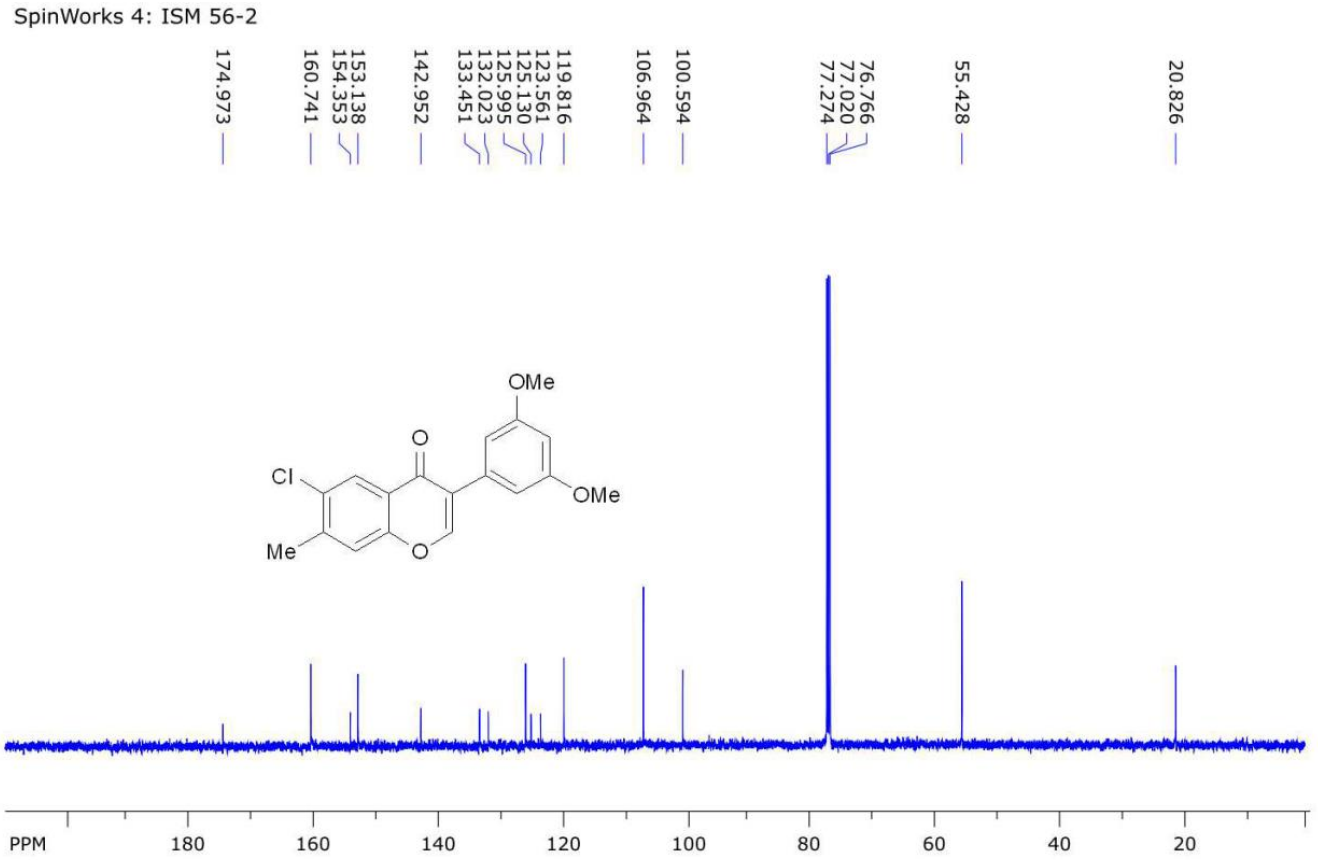
SpinWorks 4: ISM 56-2



file: F:\Napo\NMR\500-1\mkr12304\3\fid expt: <zg30>
transmitter freq.: 500.133001 MHz
time domain size: 65536 points
width: 12335.53 Hz = 24.6645 ppm = 0.188225 Hz/pt
number of scans: 24

freq. of 0 ppm: 500.130023 MHz
processed size: 65536 complex points
LB: 0.300 GF: 0.0000
Hz/cm: 220.277 ppm/cm: 0.44044

Compound 4go

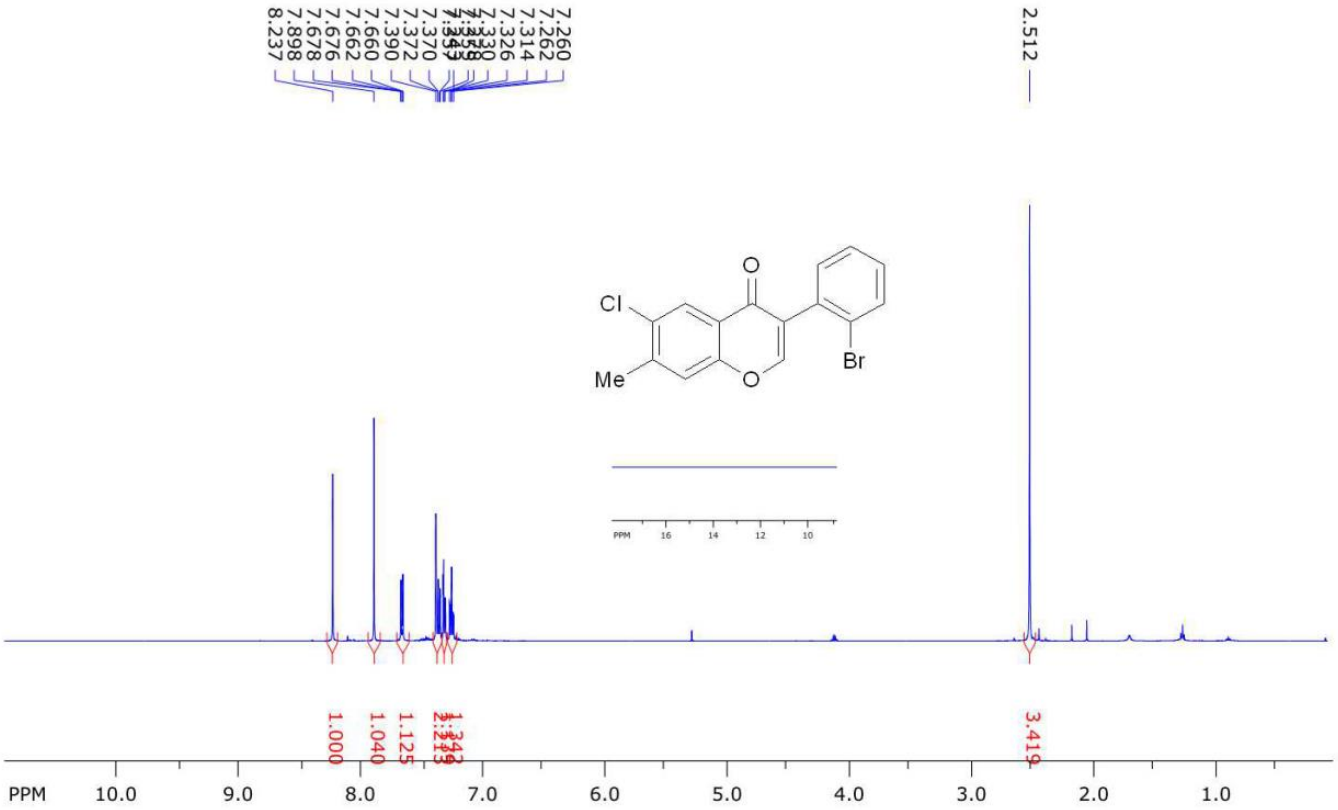


file: F:\Napo\NMR\500-1\mkr12304\4\fid expt: <zgpg30>
transmitter freq.: 125.772879 MHz
time domain size: 65536 points
width: 36057.69 Hz = 286.6889 ppm = 0.550197 Hz/pt
number of scans: 256

freq. of 0 ppm: 125.757793 MHz
processed size: 32768 complex points
LB: 2.000 GF: 0.0000
Hz/cm: 1057.585 ppm/cm: 8.40869

Compound 4gs

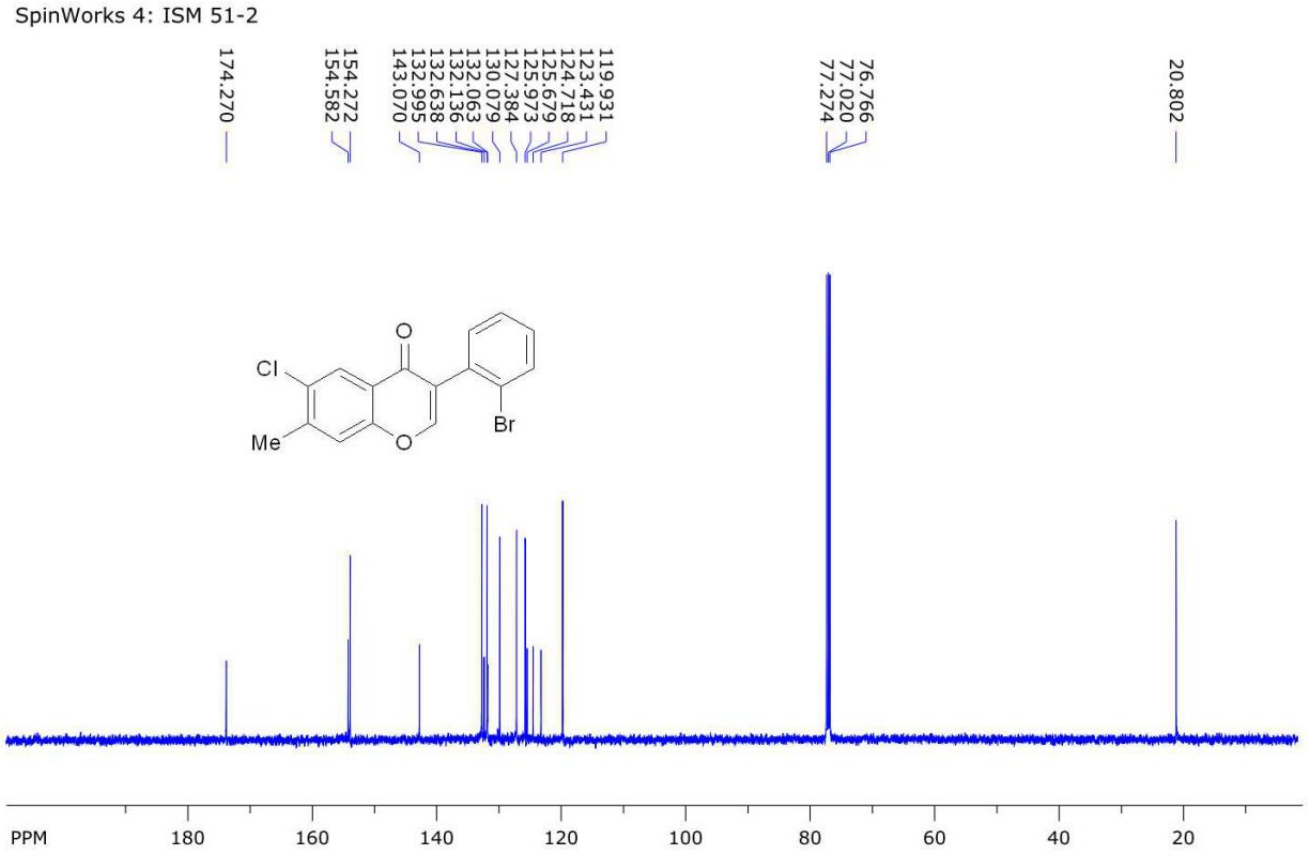
SpinWorks 4: IVA 51-2



file: F:\Napo\NMR\500-1\mkr12304\13\fid expt: <zg30>
transmitter freq.: 500.133001 MHz
time domain size: 65536 points
width: 12335.53 Hz = 24.6645 ppm = 0.188225 Hz/pt
number of scans: 24

freq. of 0 ppm: 500.130023 MHz
processed size: 65536 complex points
LB: 0.300 GF: 0.0000
Hz/cm: 217.524 ppm/cm: 0.43493

Compound 4gs

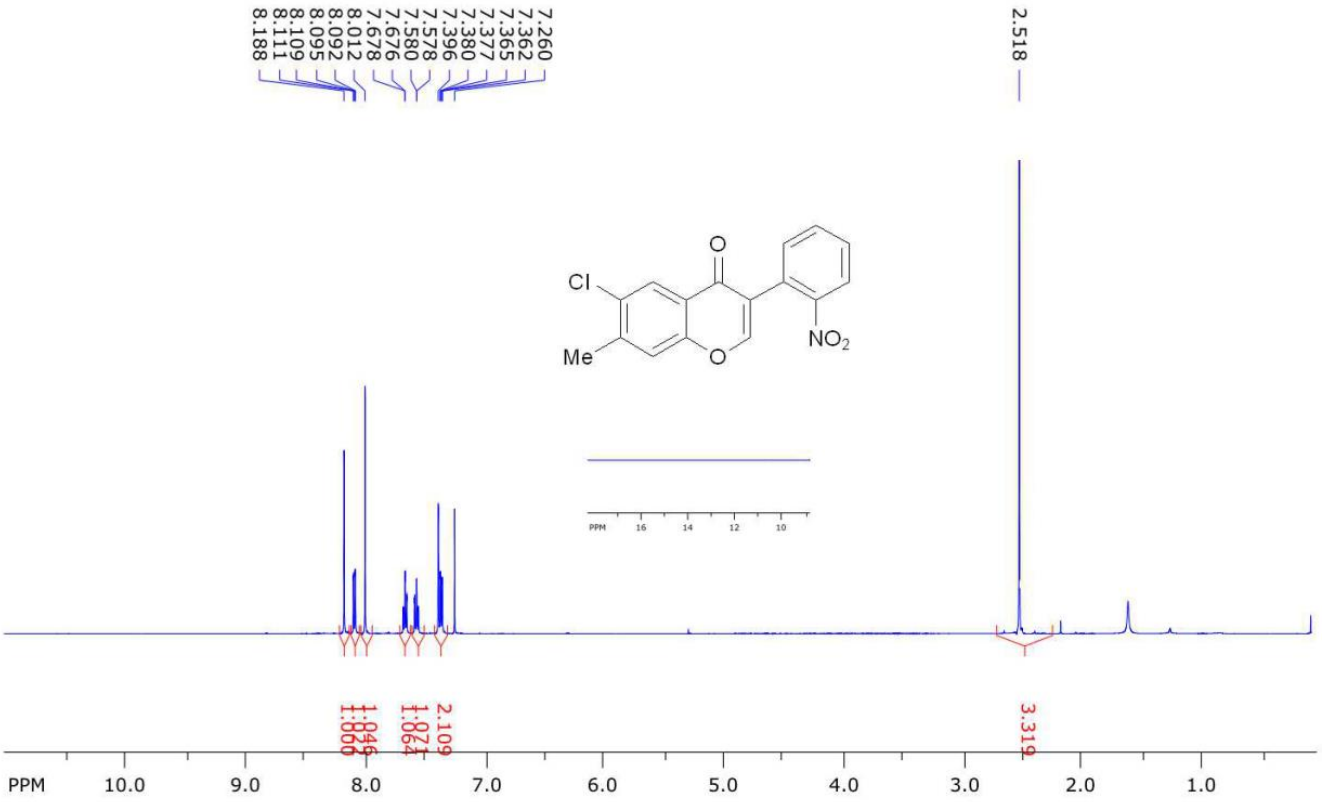


file: F:\Napo\NMR\500-1\mkr12304\14\fid expt: <zgpg30>
transmitter freq.: 125.772879 MHz
time domain size: 65536 points
width: 36057.69 Hz = 286.6889 ppm = 0.550197 Hz/pt
number of scans: 256

freq. of 0 ppm: 125.757799 MHz
processed size: 32768 complex points
LB: 2.000 GF: 0.0000
Hz/cm: 1049.536 ppm/cm: 8.34470

Compound 4gt

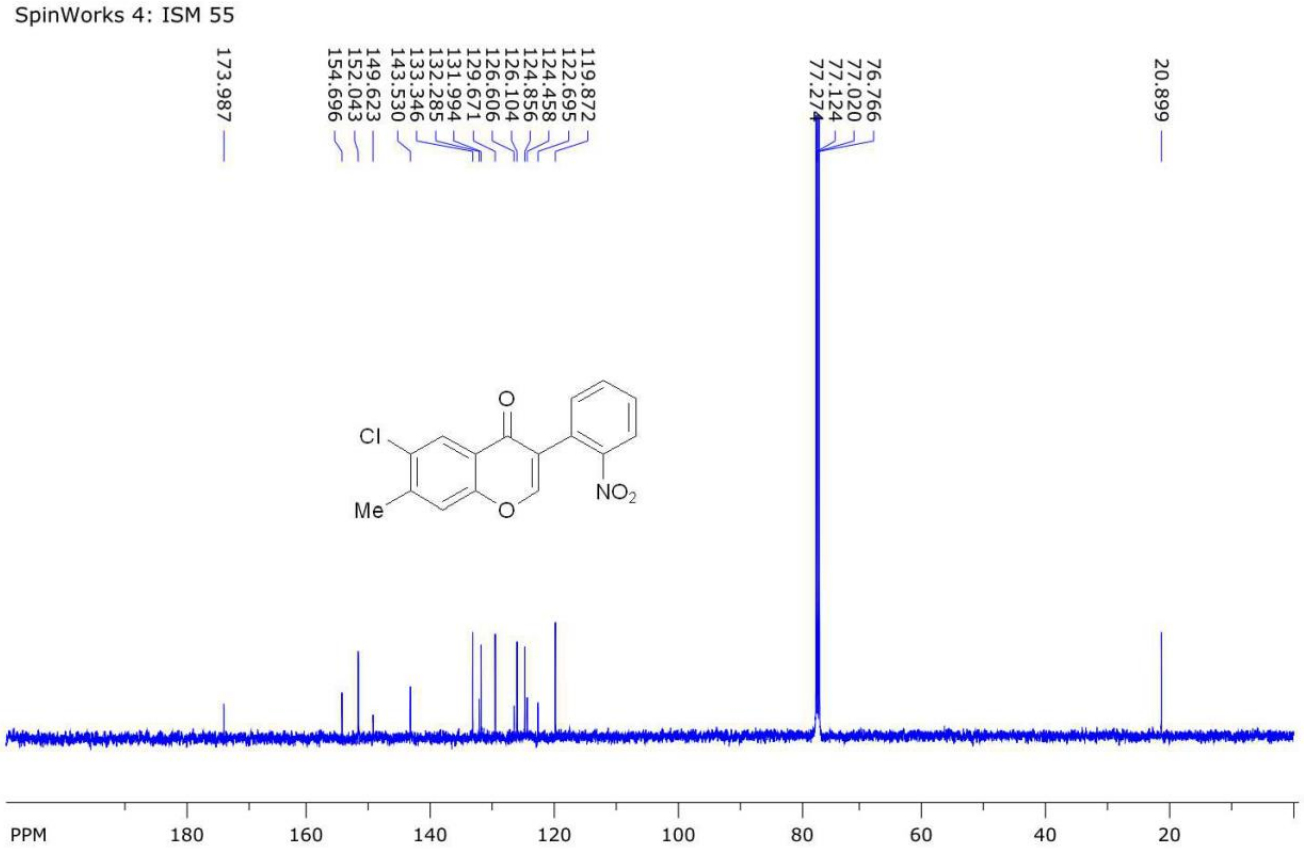
SpinWorks 4: ISM 55



file: F:\Napo\NMR\500-1\mkr10506\3\fid expt: <zg30>
transmitter freq.: 500.133001 MHz
time domain size: 65536 points
width: 12335.53 Hz = 24.6645 ppm = 0.188225 Hz/pt
number of scans: 24

freq. of 0 ppm: 500.130023 MHz
processed size: 65536 complex points
LB: 0.300 GF: 0.0000
Hz/cm: 219.727 ppm/cm: 0.43934

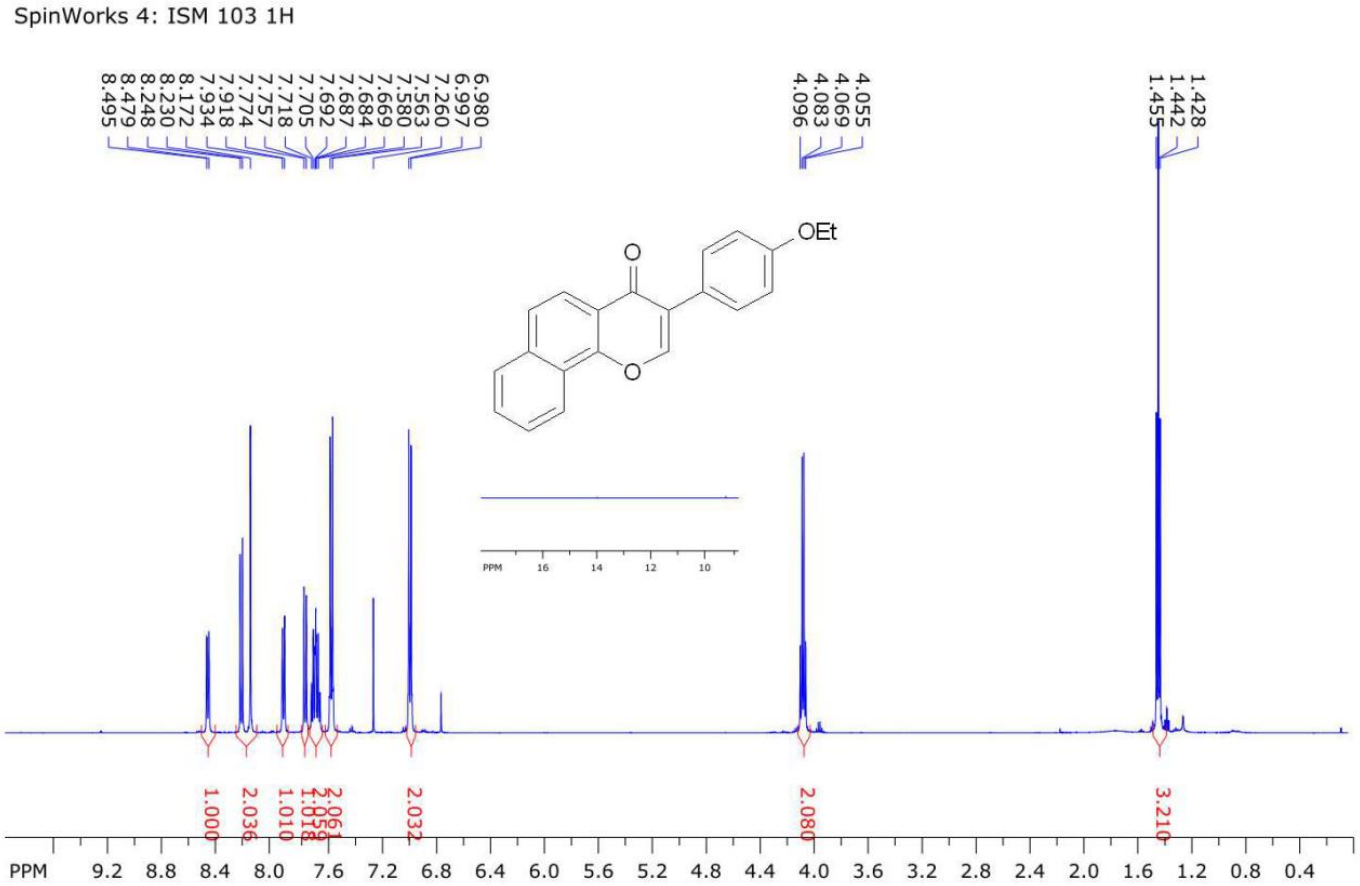
Compound 4gt



file: F:\Napo\NMR\500-1\mkr10506\4\fid expt: <zgpg30>
transmitter freq.: 125.772879 MHz
time domain size: 65536 points
width: 36057.69 Hz = 286.6889 ppm = 0.550197 Hz/pt
number of scans: 512

freq. of 0 ppm: 125.757793 MHz
processed size: 32768 complex points
LB: 2.000 GF: 0.0000
Hz/cm: 1057.585 ppm/cm: 8.40869

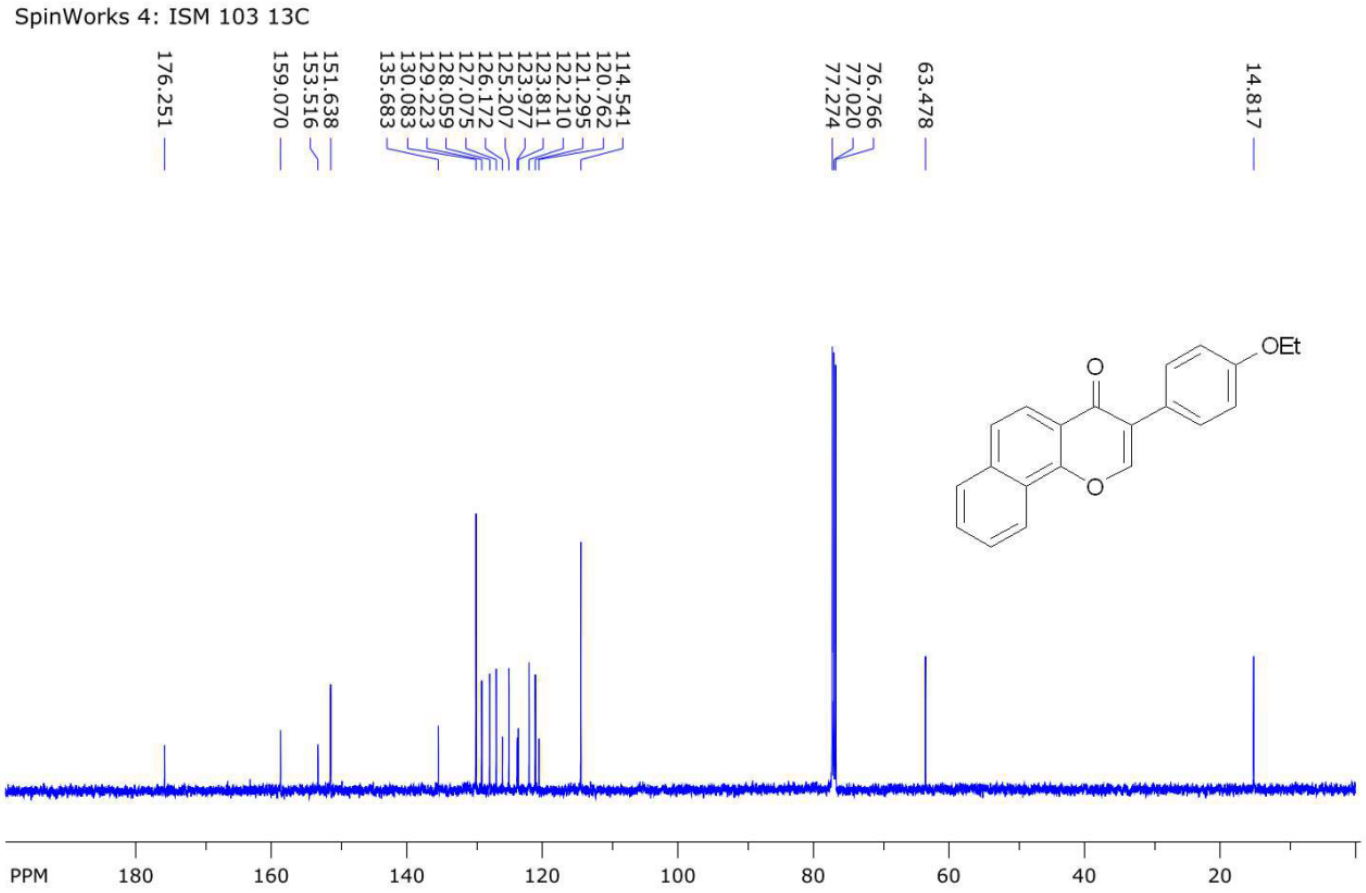
Compound 4hl



file: D:\NAPO\NMR\500-2\mkr11412\27\fid expt: <zg30>
transmitter freq.: 500.133001 MHz
time domain size: 65536 points
width: 12335.53 Hz = 24.6645 ppm = 0.188225 Hz/pt
number of scans: 24

freq. of 0 ppm: 500.130023 MHz
processed size: 65536 complex points
LB: 0.300 GF: 0.0000
Hz/cm: 199.224 ppm/cm: 0.39834

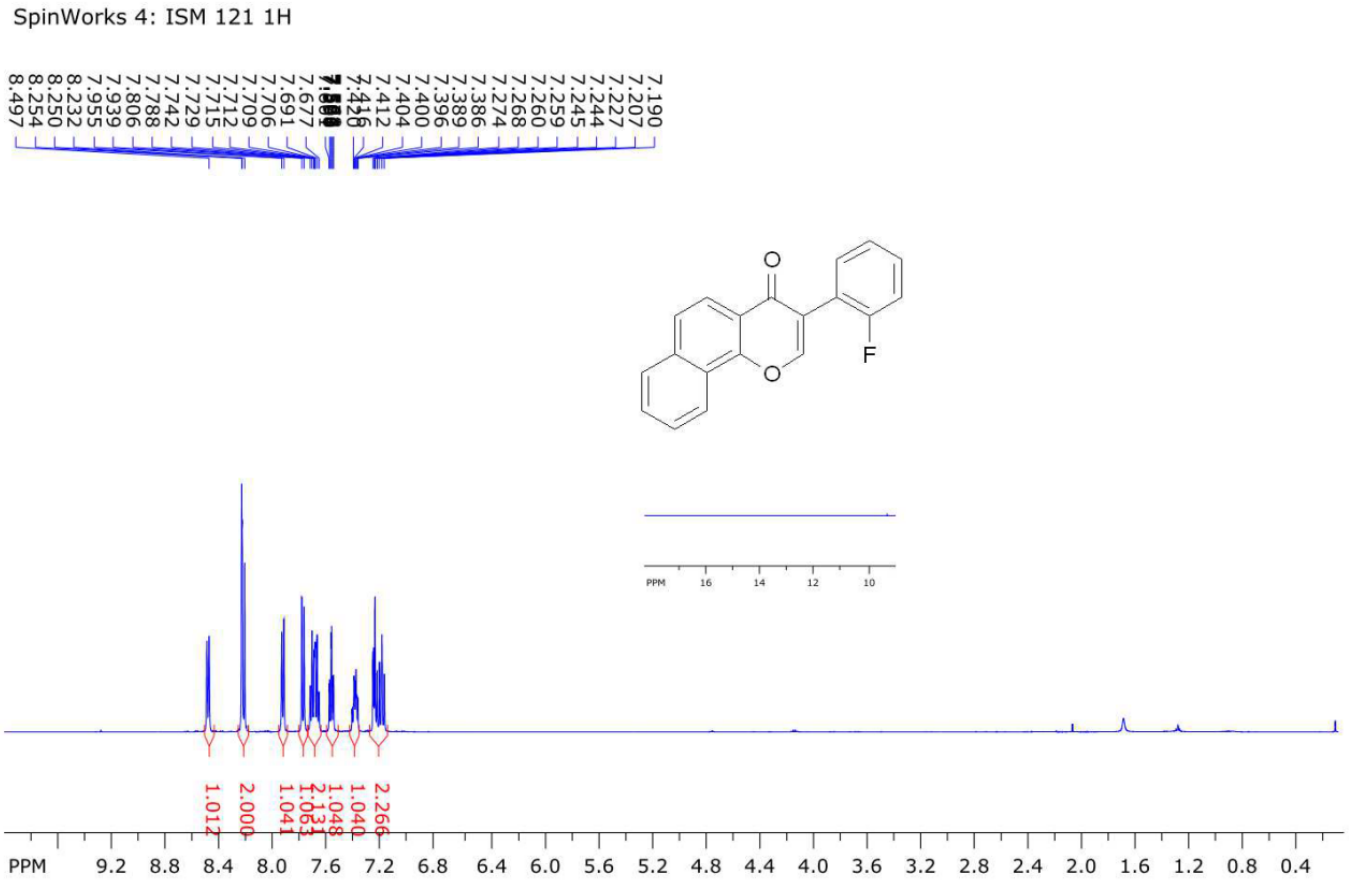
Compound 4hl



file: D:\NAPO\NMR\500-2\mkr11412\28\fid expt: <zgpg30>
transmitter freq.: 125.772879 MHz
time domain size: 65536 points
width: 36057.69 Hz = 286.6889 ppm = 0.550197 Hz/pt
number of scans: 256

freq. of 0 ppm: 125.757796 MHz
processed size: 32768 complex points
LB: 2.000 GF: 0.0000
Hz/cm: 1006.744 ppm/cm: 8.00446

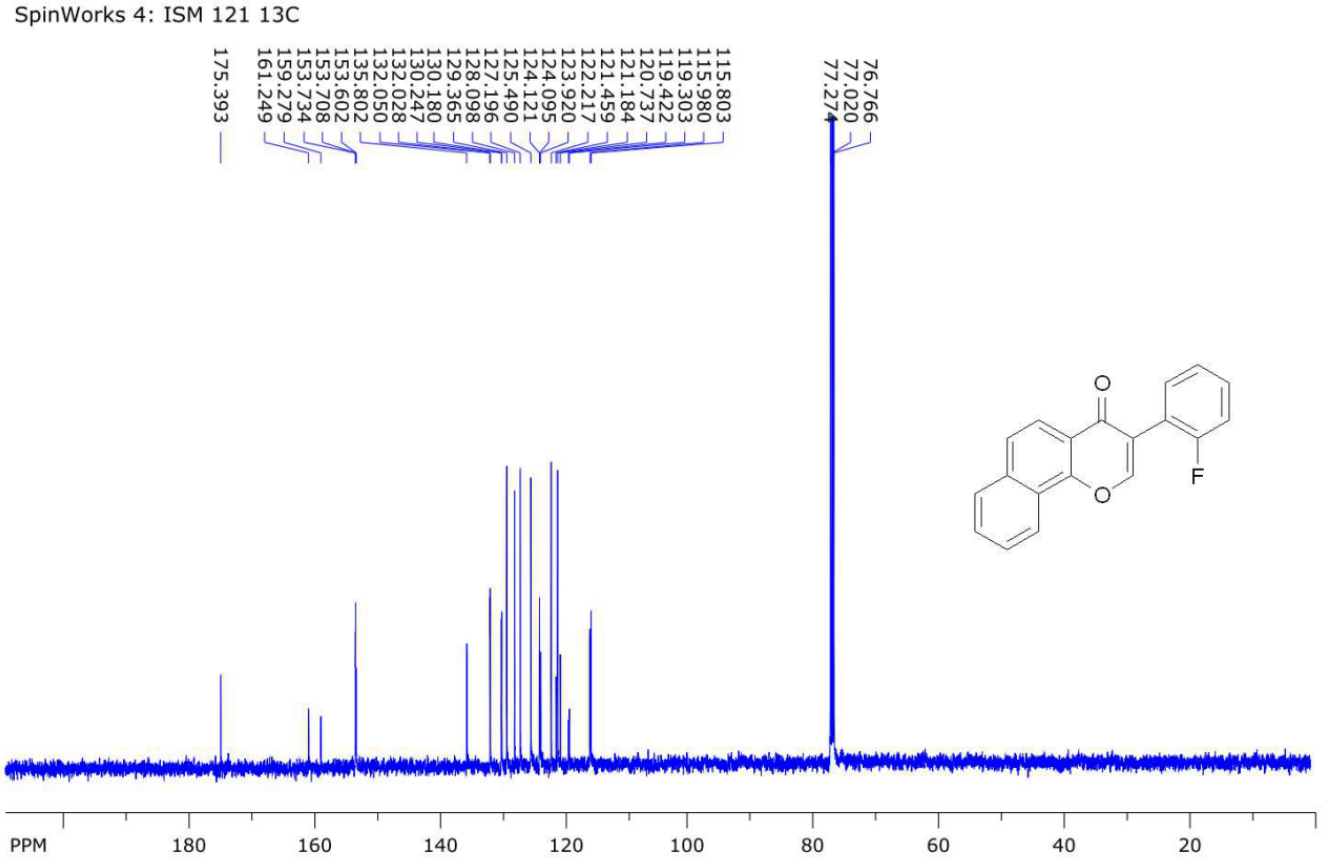
Compound 4hq



file: D:\NAPO\NMR\500-2\mkr12102\35\fid expt: <zg30>
transmitter freq.: 500.133001 MHz
time domain size: 65536 points
width: 12335.53 Hz = 24.6645 ppm = 0.188225 Hz/pt
number of scans: 24

freq. of 0 ppm: 500.130019 MHz
processed size: 65536 complex points
LB: 0.300 GF: 0.0000
Hz/cm: 199.224 ppm/cm: 0.39834

Compound 4hq



file: D:\NAPO\NMR\500-2\mkr12102\36\fid expt: <zgpg30>
transmitter freq.: 125.772879 MHz
time domain size: 65536 points
width: 36057.69 Hz = 286.6889 ppm = 0.550197 Hz/pt
number of scans: 512

freq. of 0 ppm: 125.757795 MHz
processed size: 32768 complex points
LB: 2.000 GF: 0.0000
Hz/cm: 1056.203 ppm/cm: 8.39770