

Supplementary Materials for

**Enantioselective Iron/Bisquinolyldiamine Ligand-
Catalyzed Oxidative Coupling Reaction of 2-Naphthols**

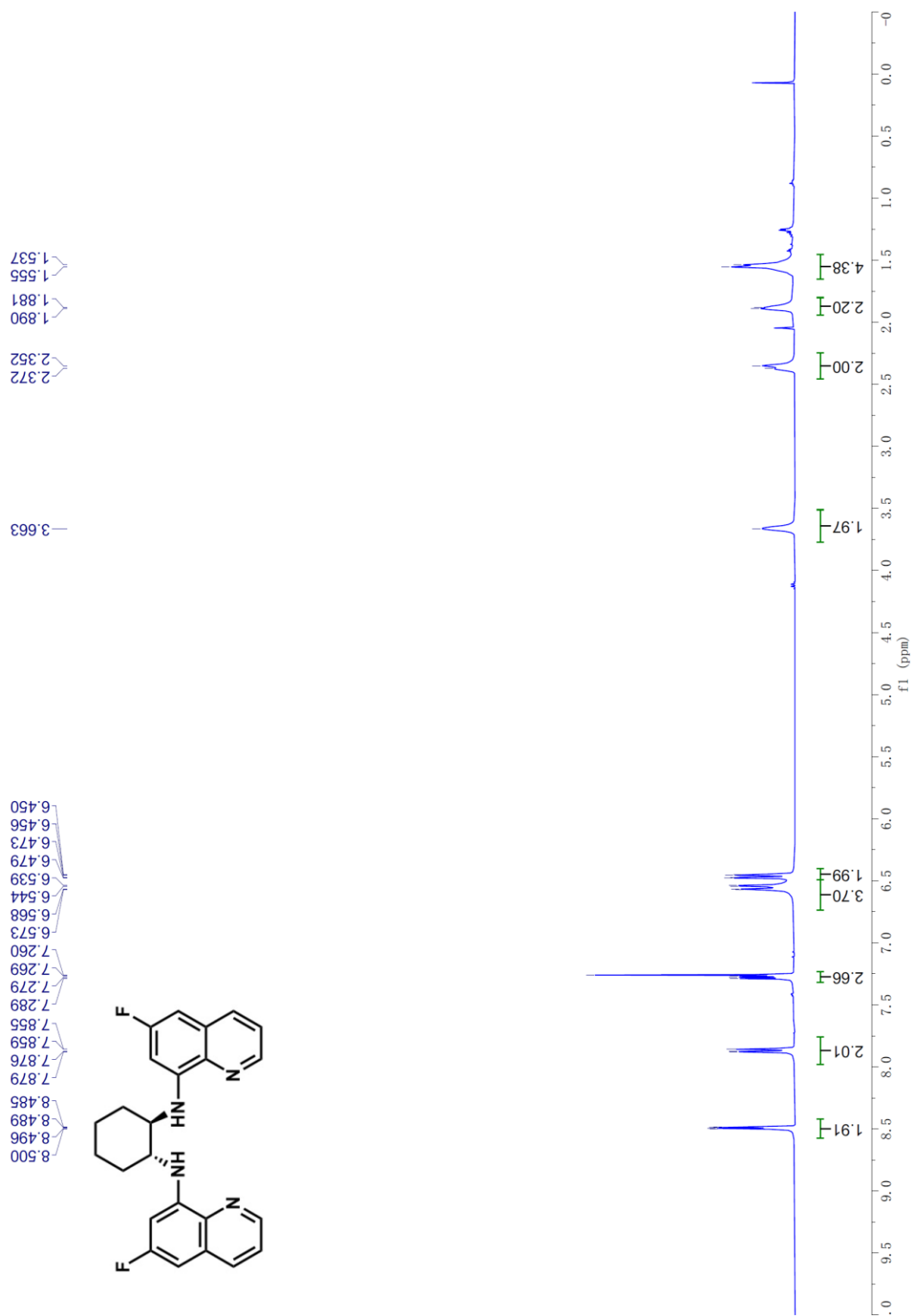
Lin-Yang Wu, Muhammad Usman and Wen-Bo Liu*

Sauvage Center for Molecular Sciences; Engineering Research Center of Organosilicon Compounds & Materials, Ministry of Education; College of Chemistry and Molecular Sciences; Wuhan University, Wuhan, Hubei 430072, China

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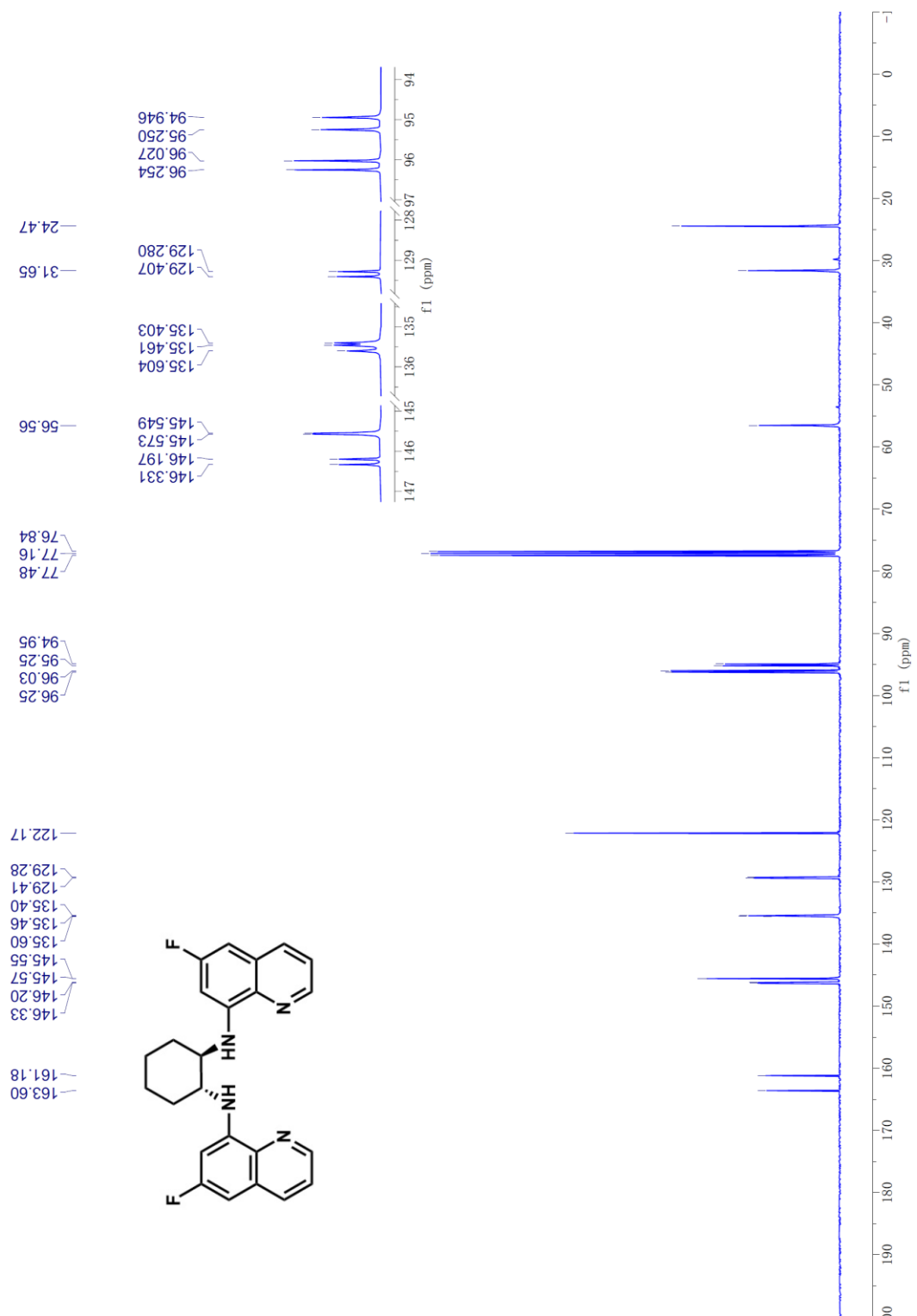
Copies of NMR Spectra	S2
Copies of HPLC Spectrum	S19

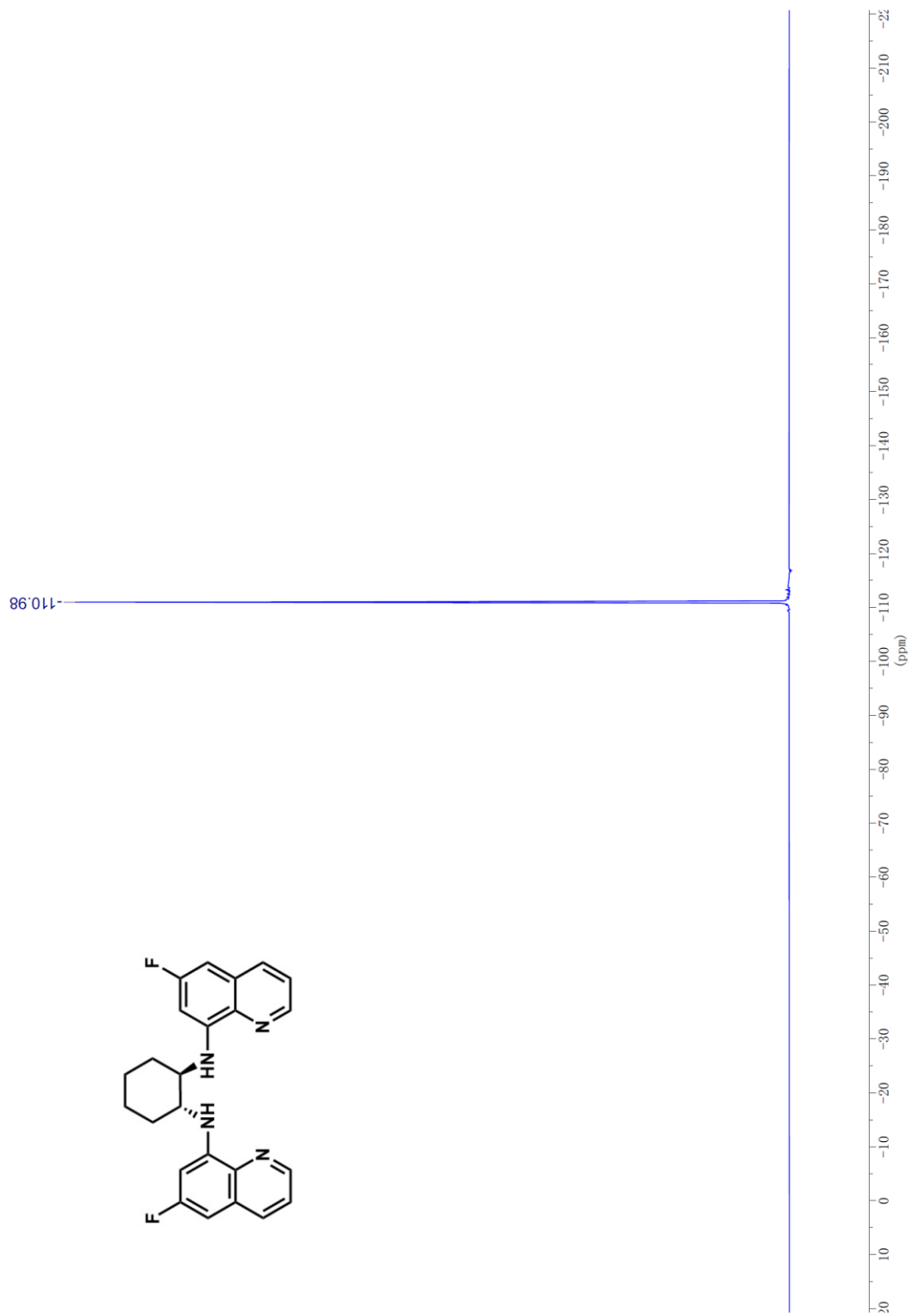
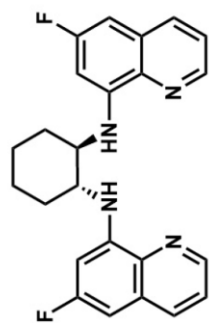
Copies of NMR Spectra



¹H NMR of L2

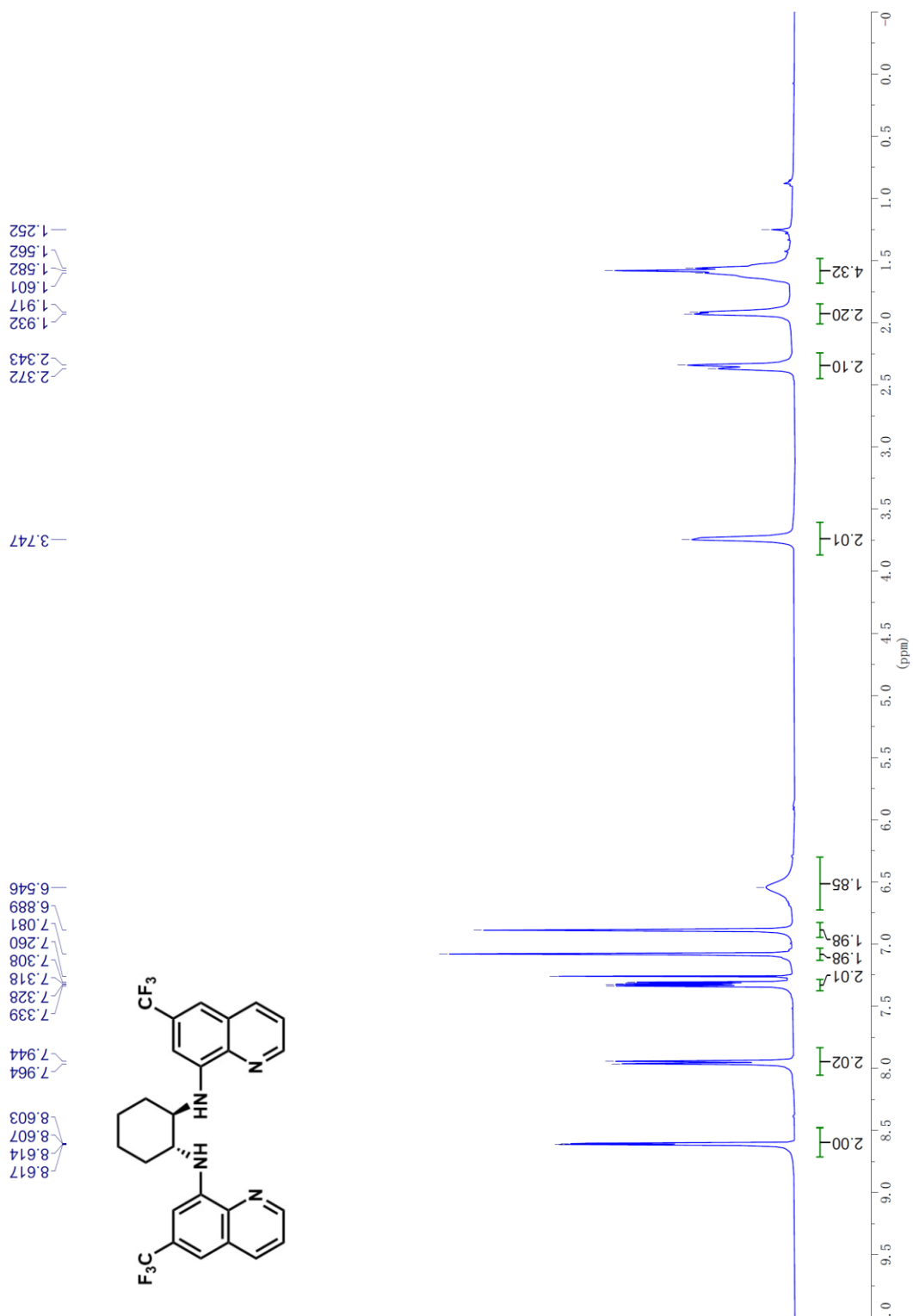
¹³C NMR of L2



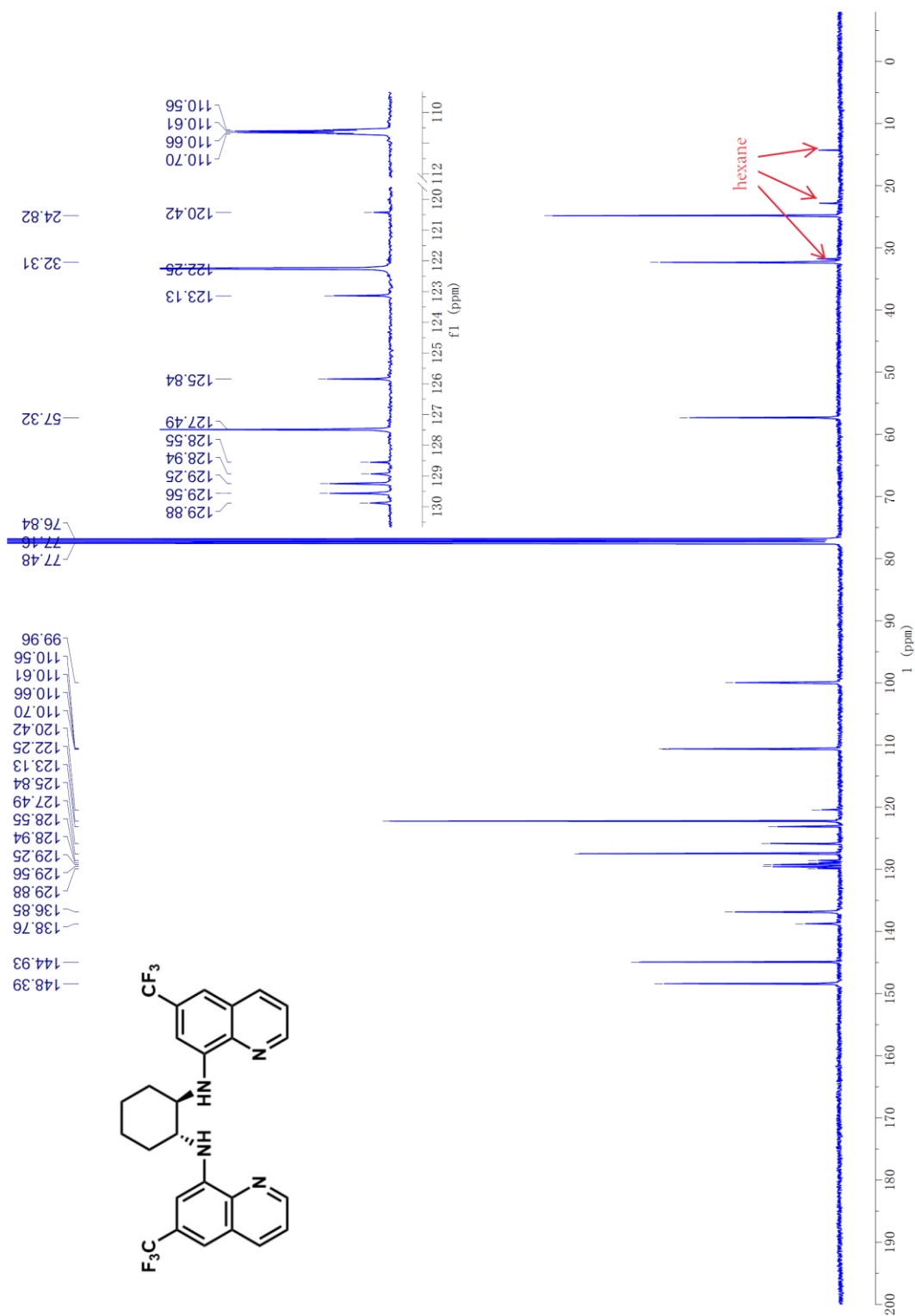


^{19}F NMR of L2

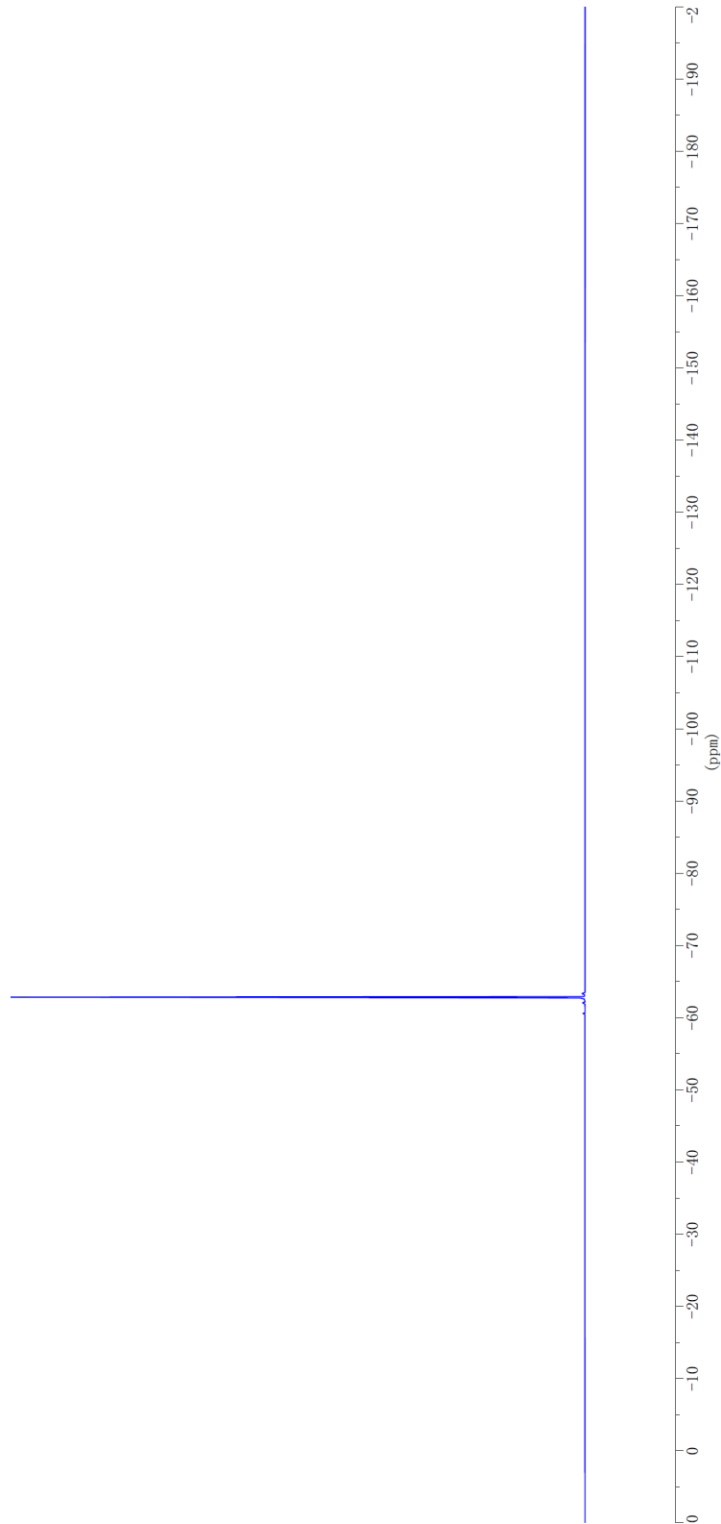
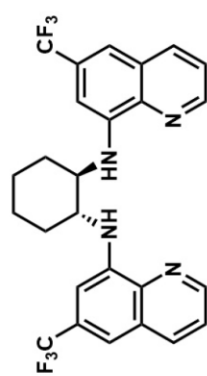
¹H NMR of L3



¹³C NMR of L3

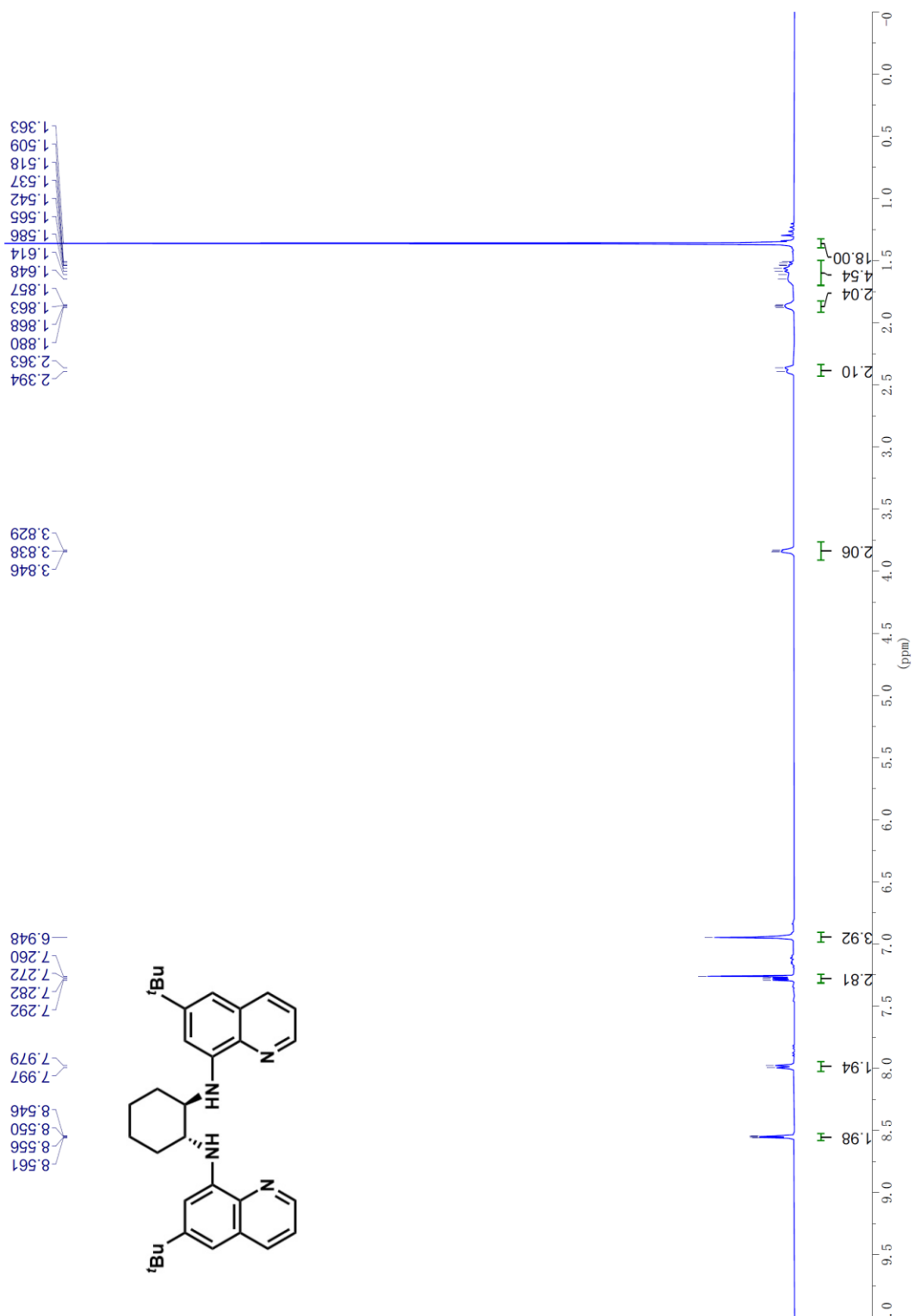


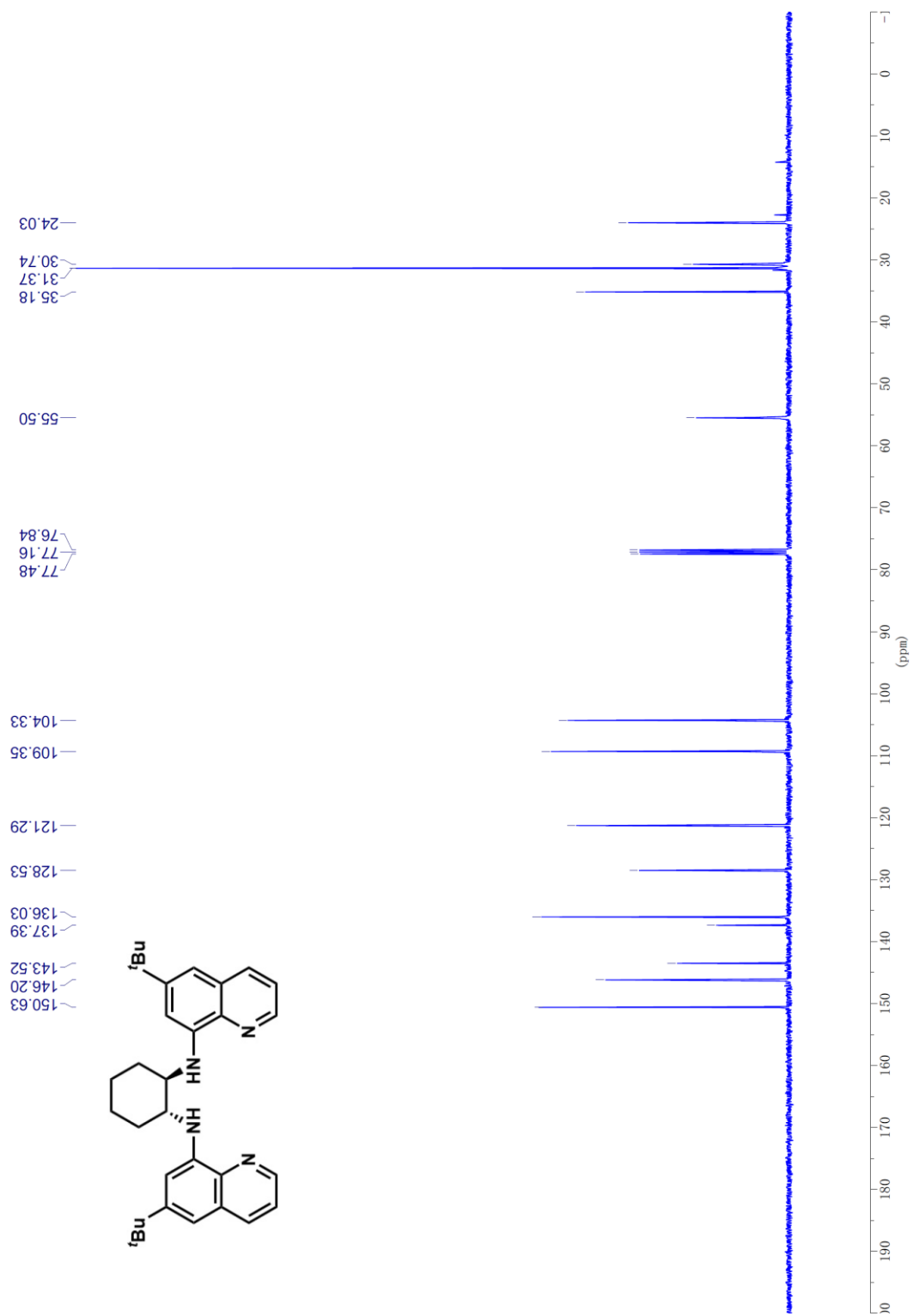
—62.83



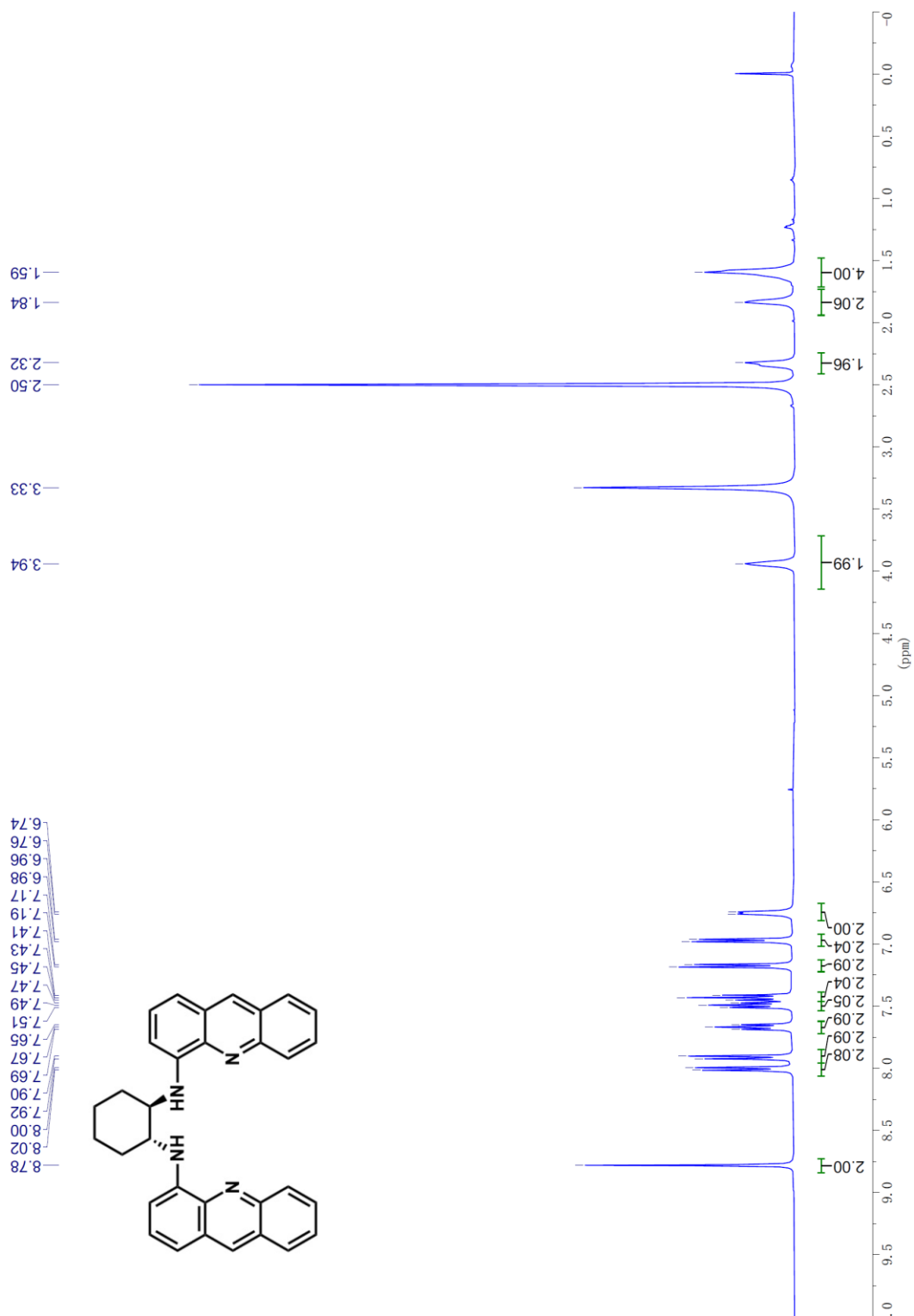
¹⁹F NMR of L3

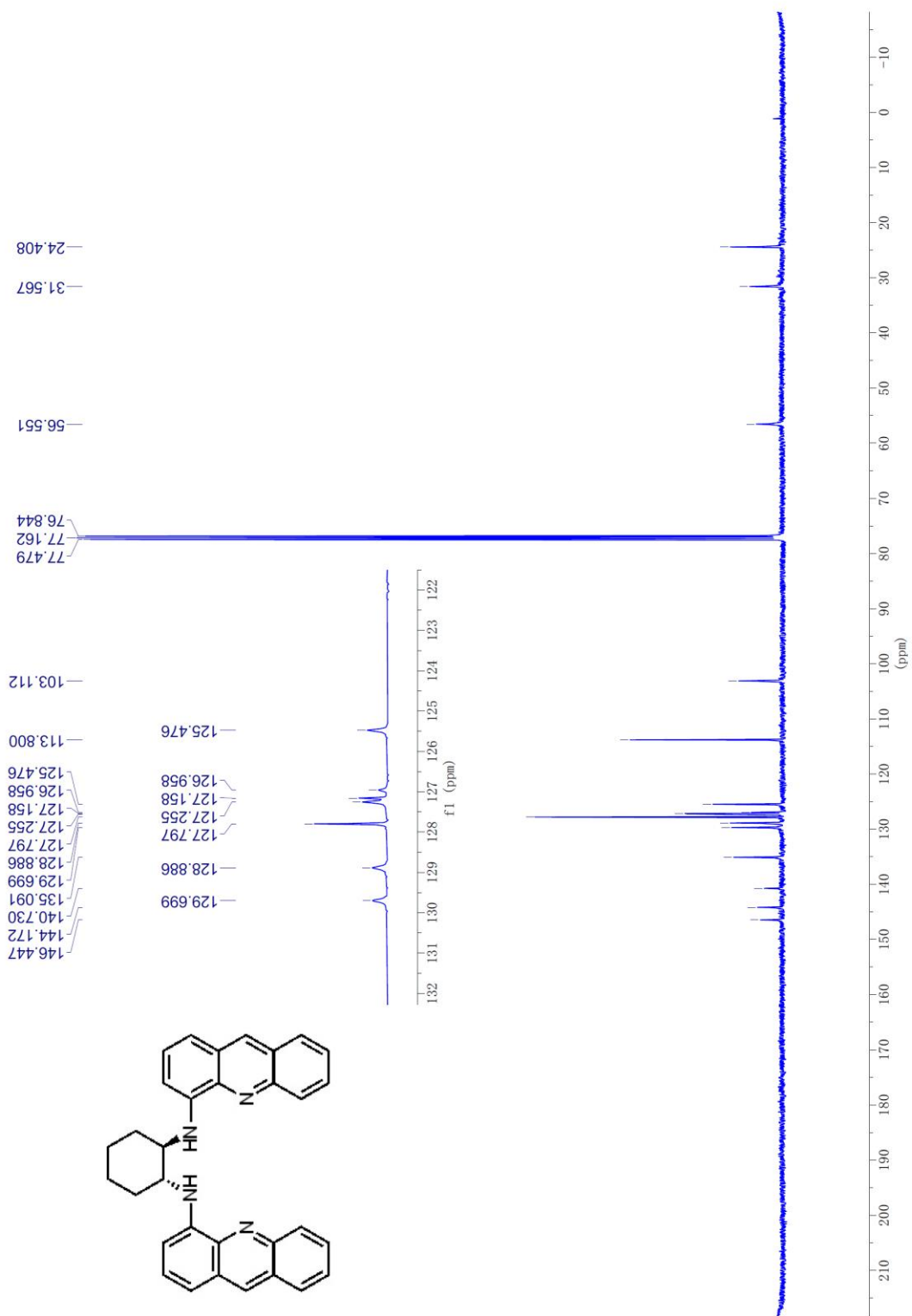
¹H NMR of L4

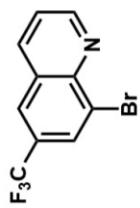




¹H NMR of L5

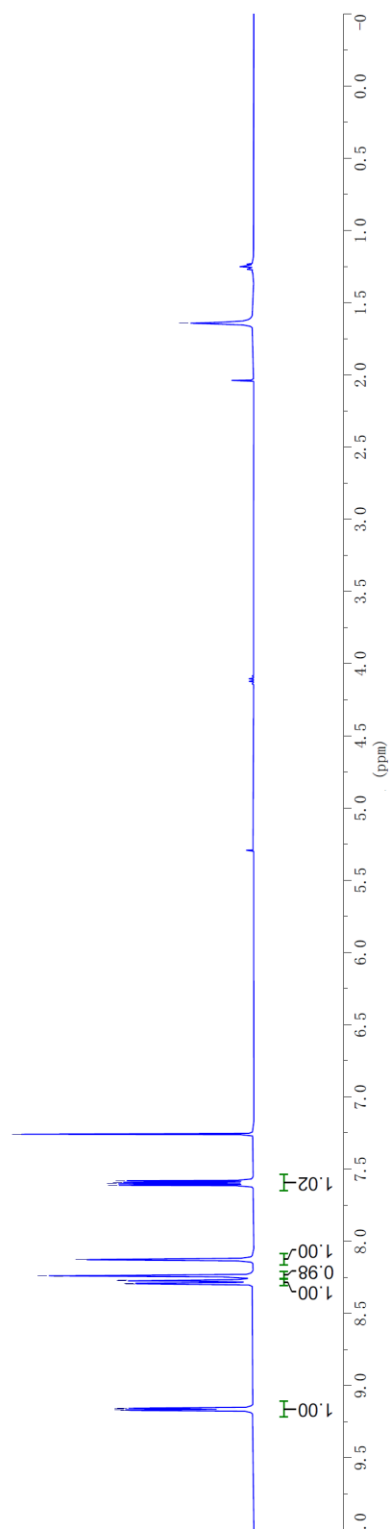




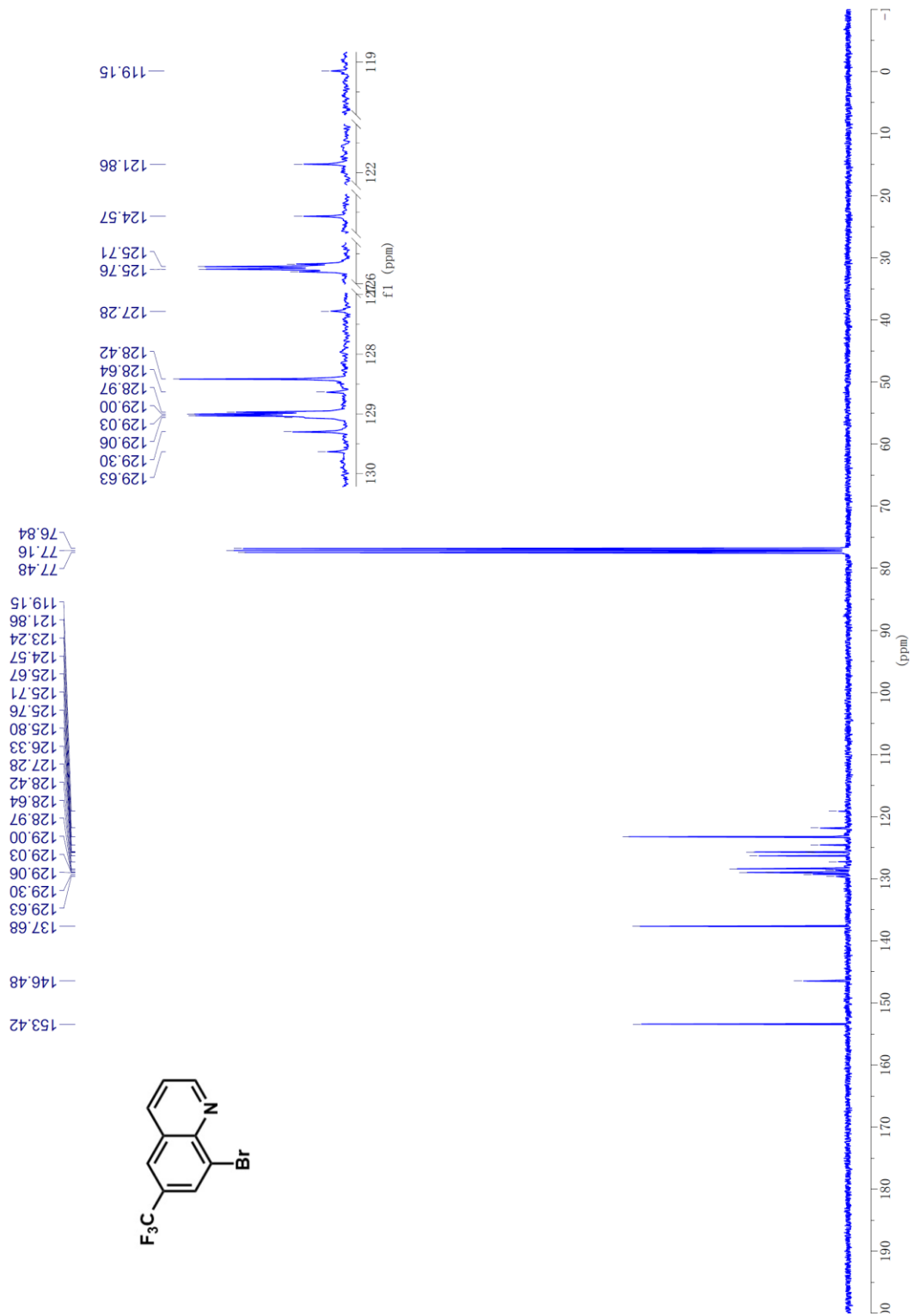
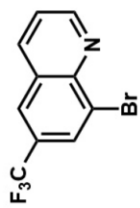


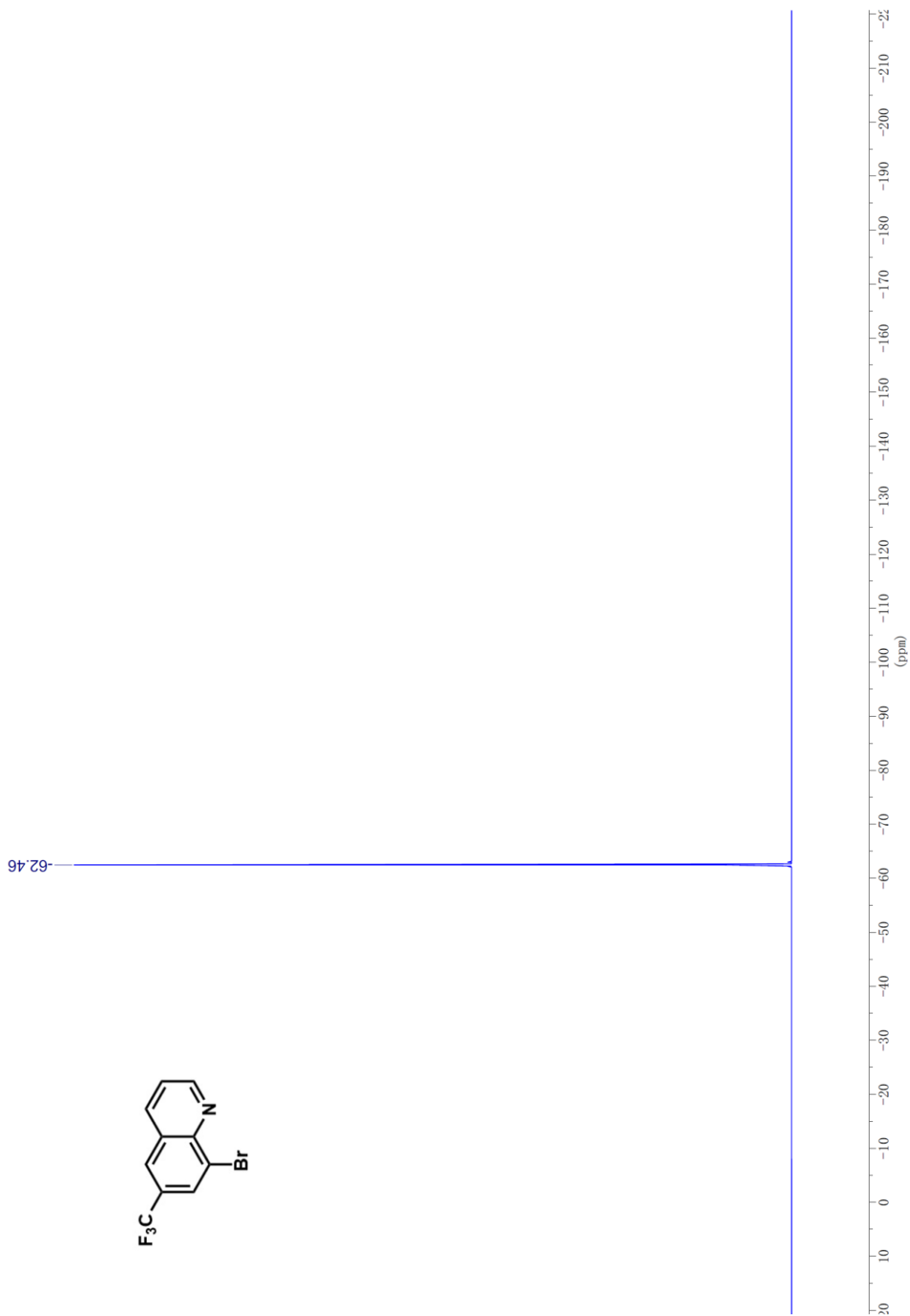
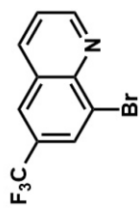
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1.643



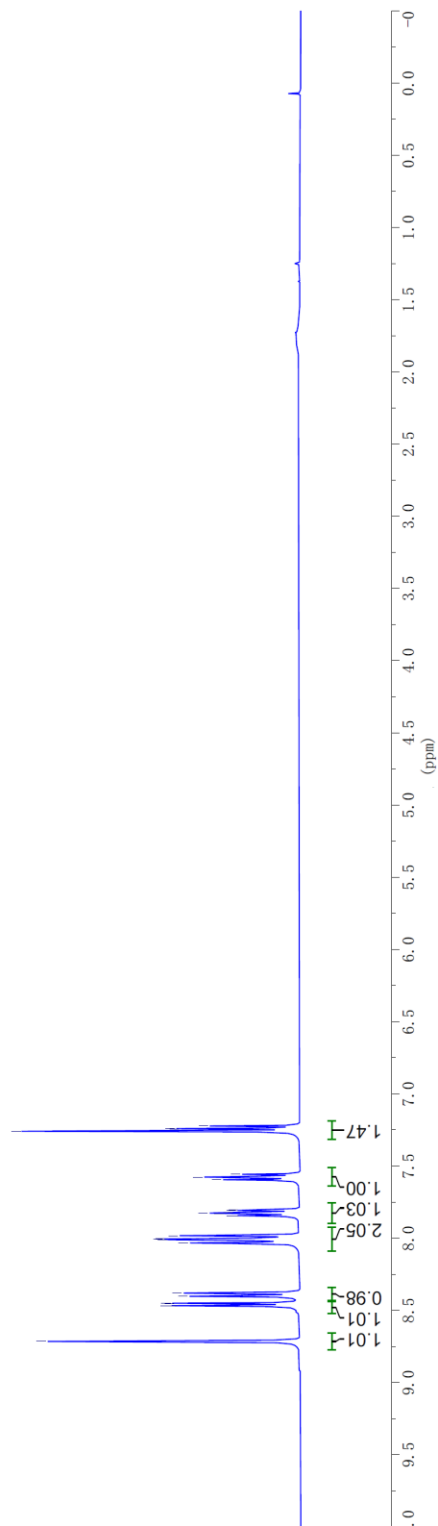
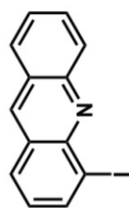
¹H NMR of 4c

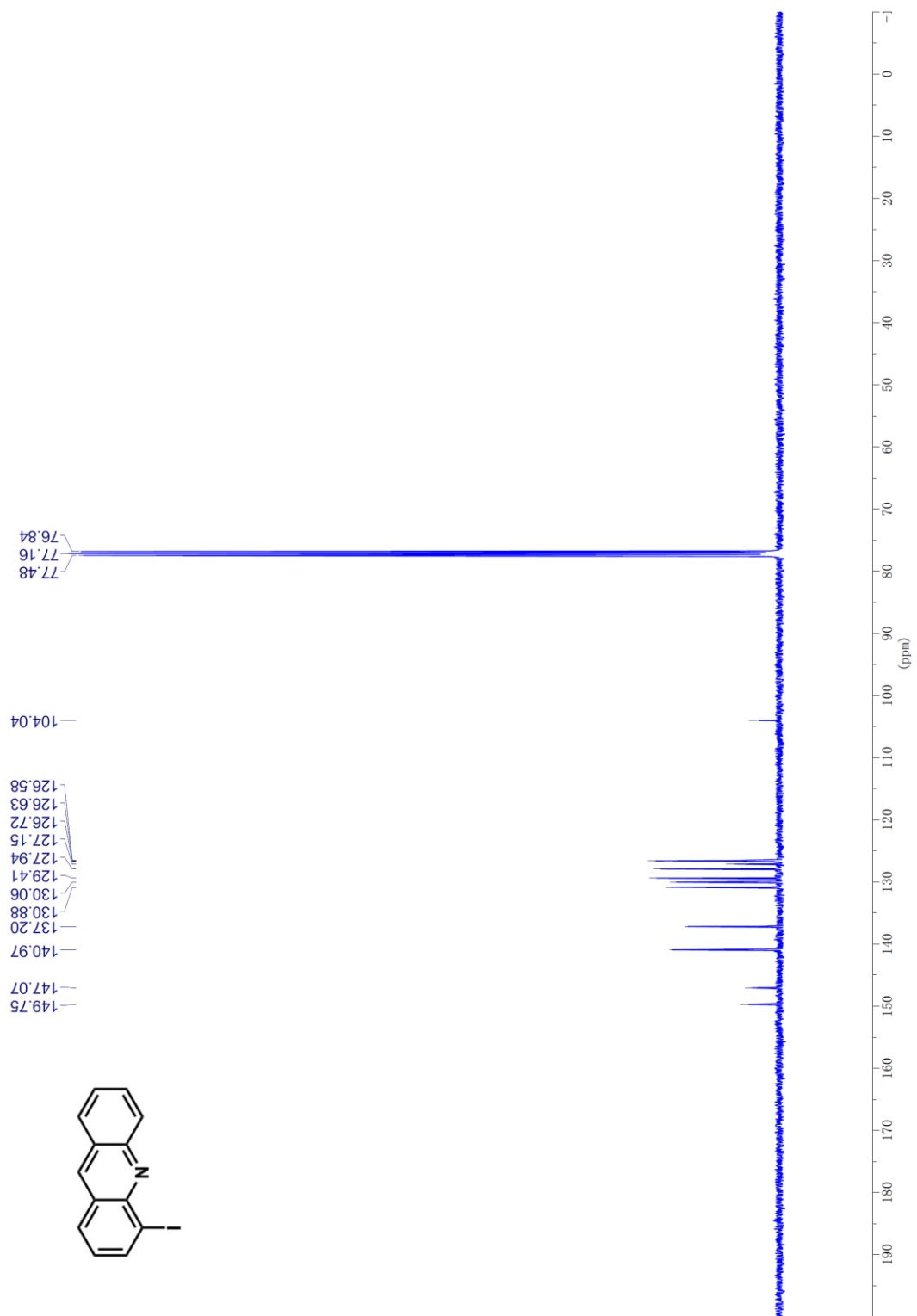


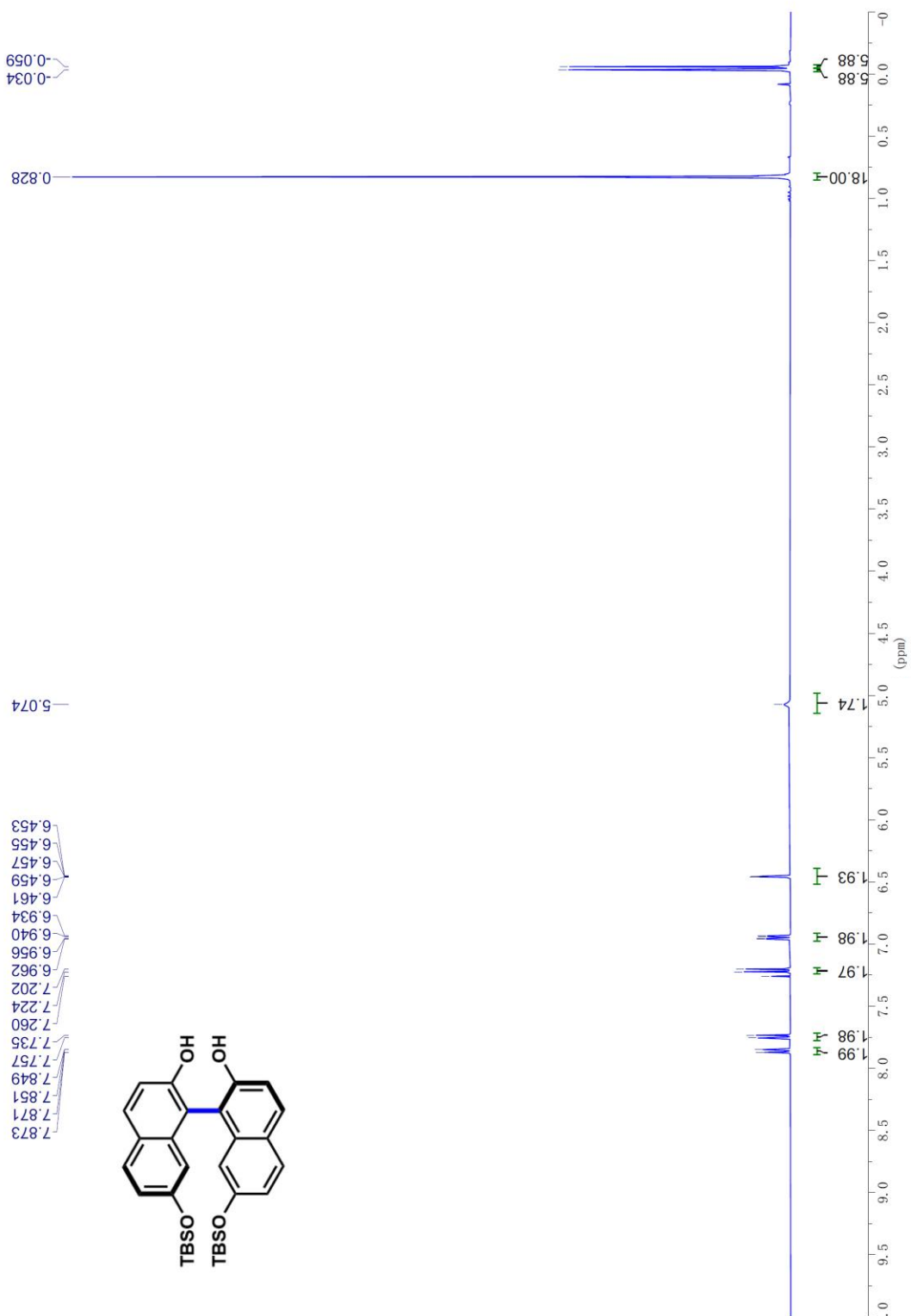


¹⁹F NMR of **4c**

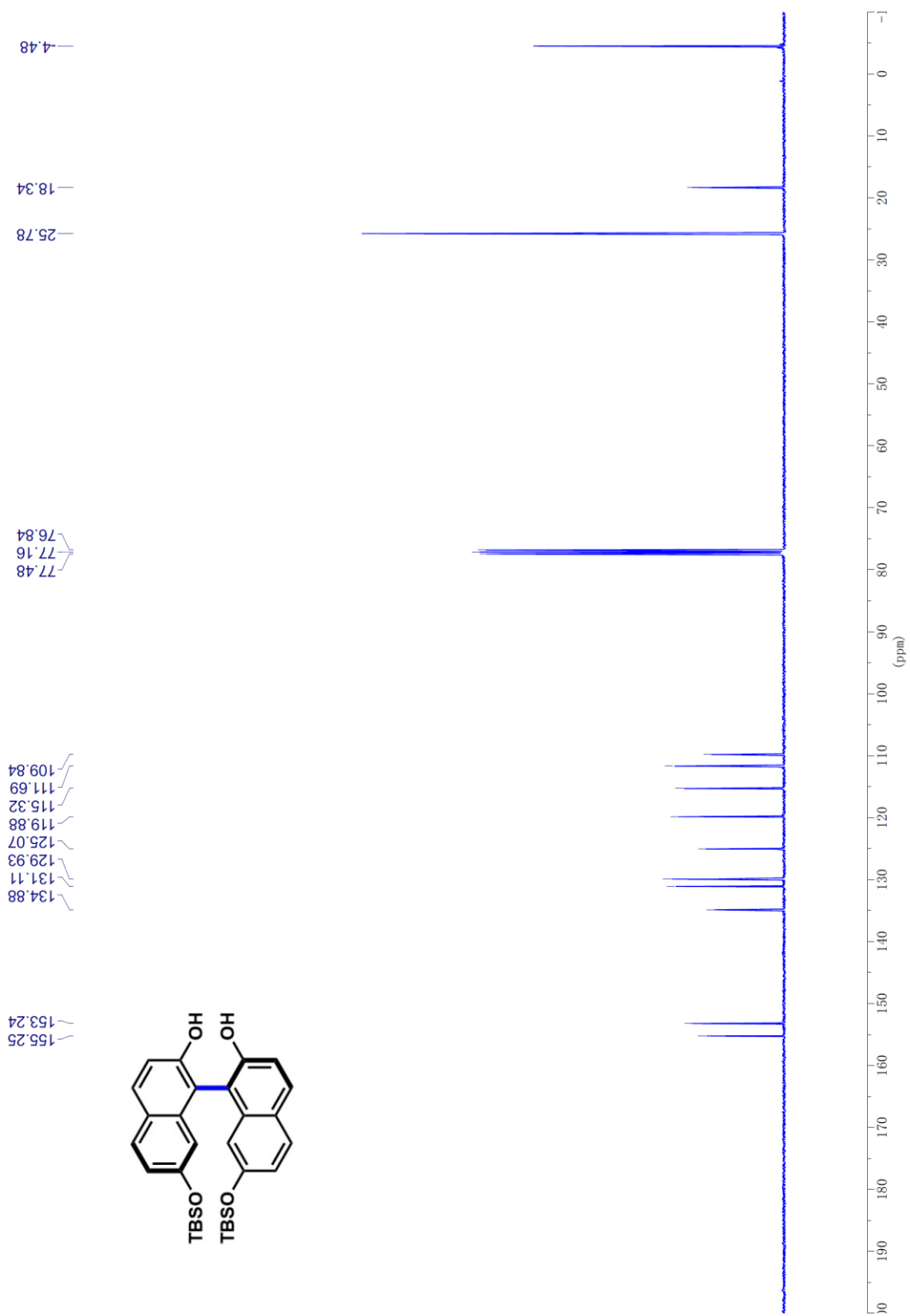
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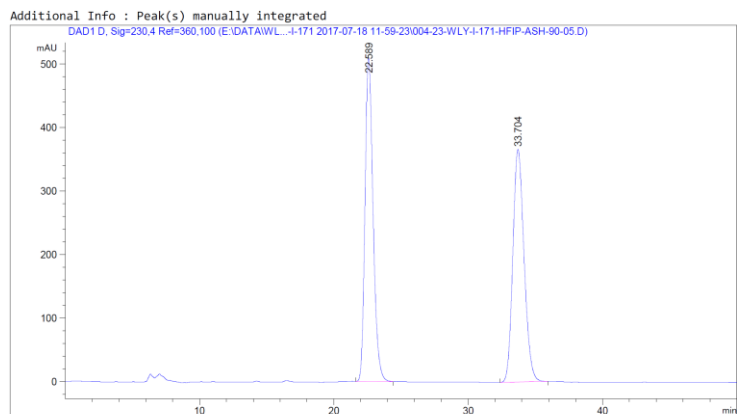
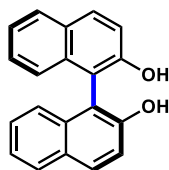




¹³C NMR of **2n**



Copies of HPLC Spectrum

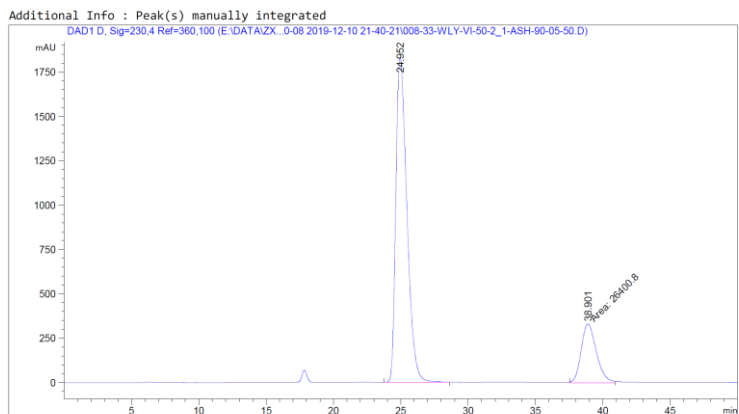


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 Area Percent Report
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Sorted By : Signal
 Multiplier : 1.0000
 Dilution : 1.0000
 Use Multiplier & Dilution Factor with ISTDs

Signal 1: DAD1 D, Sig=230,4 Ref=360,100

Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	22.589	BB	0.6379	2.13227e4	508.31418	50.0704
2	33.704	BB	0.8048	2.12627e4	366.27551	49.9296

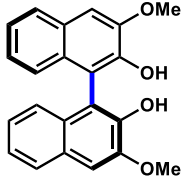


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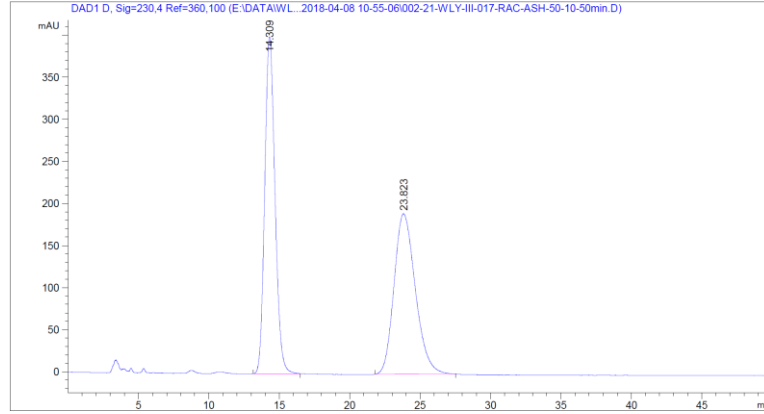
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 Use Multiplier & Dilution Factor with ISTDs

Signal 1: DAD1 D, Sig=230,4 Ref=360,100

Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	24.952	BB	0.6798	1.04650e5	1825.58789	79.8546
2	38.901	MM	1.3212	2.64008e4	333.04184	20.1454



Additional Info : Peak(s) manually integrated



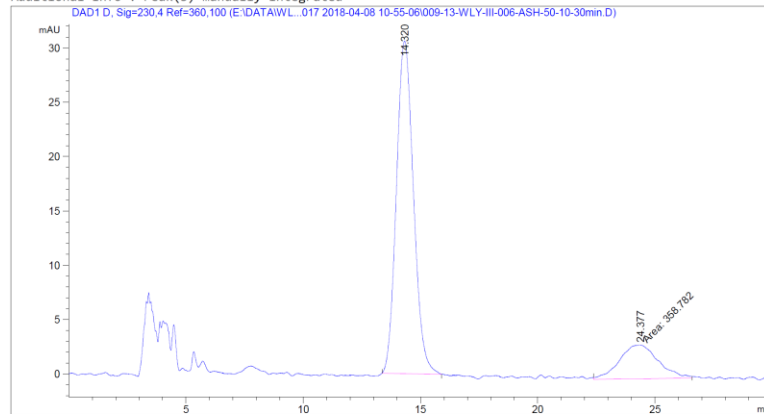
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Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: DAD1 D, Sig=230,4 Ref=360,100

Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	14.309	BB	0.7439	2.02275e4	400.07605	50.2202
2	23.823	BB	1.2303	2.00501e4	190.74997	49.7798

Additional Info : Peak(s) manually integrated

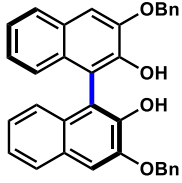


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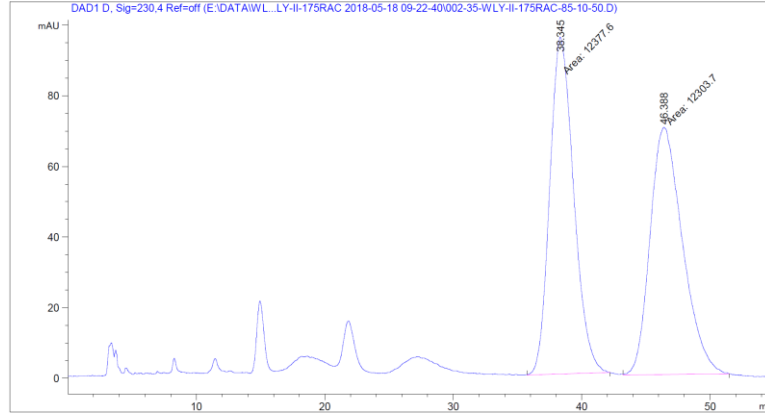
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Multiplier : 1.0000
Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: DAD1 D, Sig=230,4 Ref=360,100

Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	14.320	BB	0.5945	1552.13379	30.61634	81.2246
2	24.377	MM	1.9152	358.78198	3.12225	18.7754



Additional Info : Peak(s) manually integrated



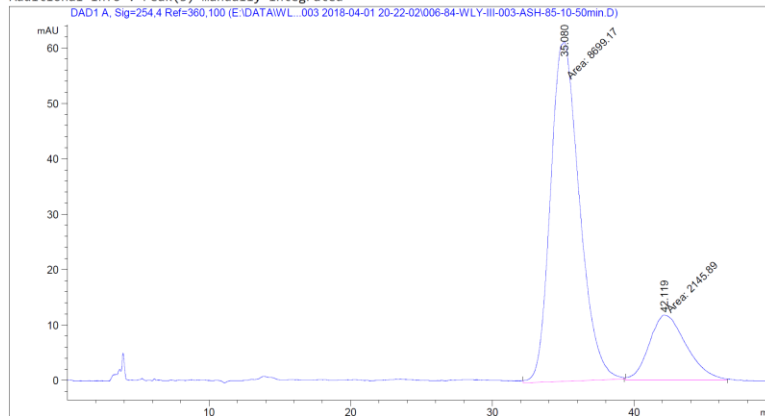
Area Percent Report

Sorted By : Signal
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Use Multiplier & Dilution Factor with ISTDs

Signal 1: DAD1 D, Sig=230,4 Ref=off

Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	38.345	MM	2.1614	1.23776e4	95.44270	50.1498
2	46.388	MM	2.9294	1.23037e4	70.00010	49.8502

Additional Info : Peak(s) manually integrated

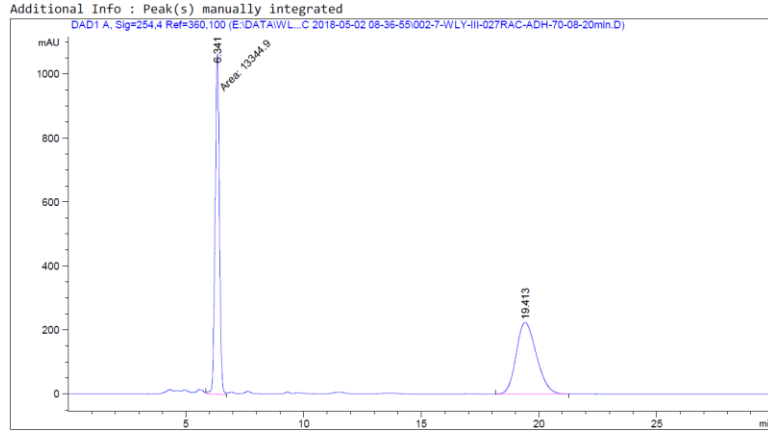
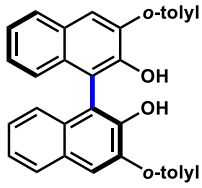


Area Percent Report

Sorted By : Signal
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Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: DAD1 A, Sig=254,4 Ref=360,100

Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	35.080	MM	2.3651	8699.16504	61.30151	80.2132
2	42.119	MM	3.0356	2145.89233	11.78163	19.7868

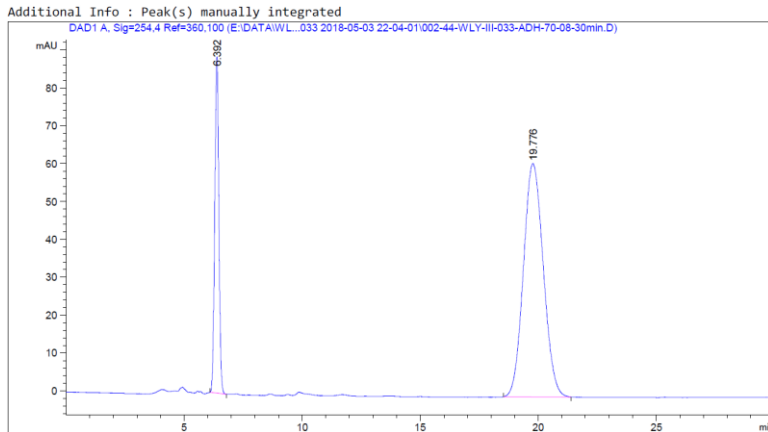


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 Area Percent Report
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Sorted By : Signal
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 Use Multiplier & Dilution Factor with ISTDs

Signal 1: DAD1 A, Sig=254,4 Ref=360,100

Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	6.341	MM	0.2090	1.33449e4	1064.25916	49.9964
2	19.413	BB	0.7036	1.33469e4	223.53136	50.0036

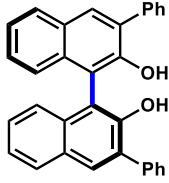


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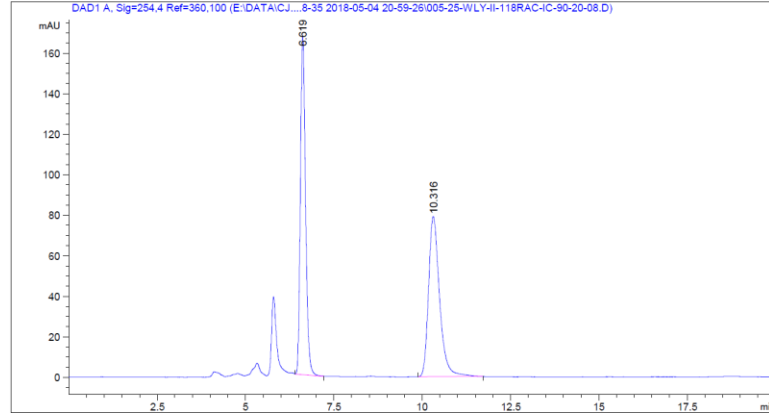
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 Use Multiplier & Dilution Factor with ISTDs

Signal 1: DAD1 A, Sig=254,4 Ref=360,100

Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	6.392	BB	0.1840	1069.56543	88.81834	22.9080
2	19.776	BB	0.6859	3599.39429	61.58450	77.0920



Additional Info : Peak(s) manually integrated



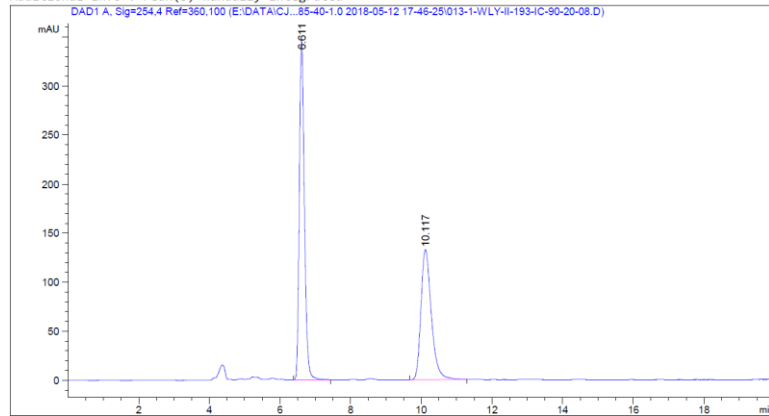
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Sorted By : Signal
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Use Multiplier & Dilution Factor with ISTDs

Signal 1: DAD1 A, Sig=254,4 Ref=360,100

Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	6.619	BB	0.1562	1695.65930	166.71983	49.7278
2	10.316	BB	0.3210	1714.22607	79.04620	50.2722

Additional Info : Peak(s) manually integrated

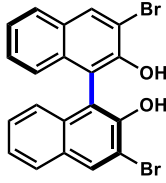


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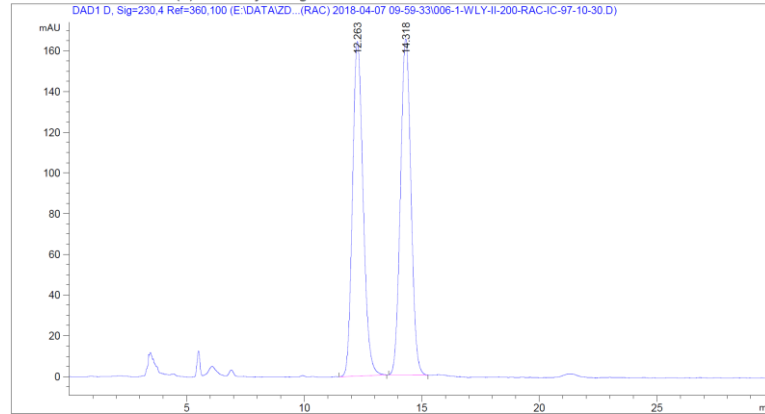
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Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: DAD1 A, Sig=254,4 Ref=360,100

Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	6.611	BB	0.1538	3463.72510	346.01978	56.1755
2	10.117	BB	0.3080	2702.16992	132.75162	43.8245



Additional Info : Peak(s) manually integrated



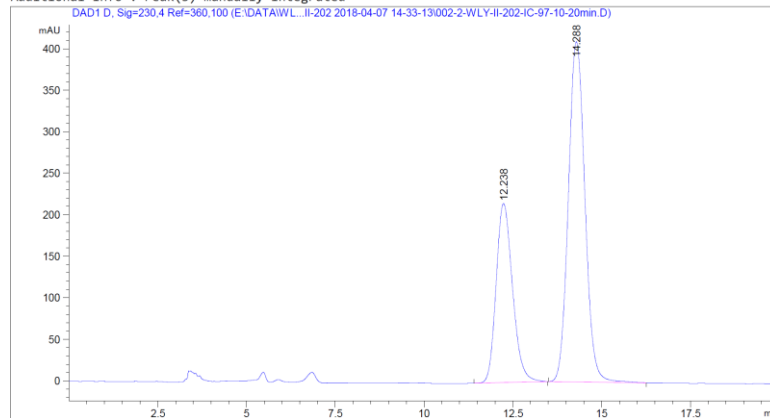
Area Percent Report

Sorted By : Signal
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Use Multiplier & Dilution Factor with ISTDs

Signal 1: DAD1 D, Sig=230,4 Ref=360,100

Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	12.263	BB	0.4789	5155.60742	164.36372	50.0762
2	14.318	BB	0.4743	5139.91748	165.07063	49.9238

Additional Info : Peak(s) manually integrated

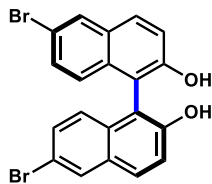


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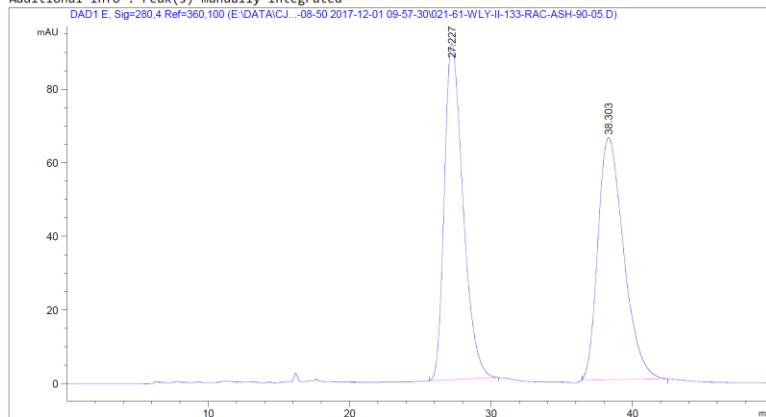
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Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: DAD1 D, Sig=230,4 Ref=360,100

Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	12.238	BB	0.4767	6913.74707	215.53433	34.2861
2	14.288	BB	0.4946	1.32511e4	409.40289	65.7139



Additional Info : Peak(s) manually integrated



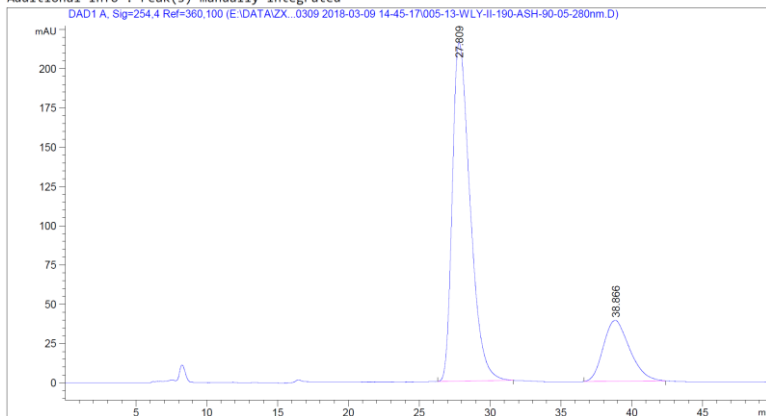
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Area Percent Report
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Sorted By : Signal
Multiplier : 1.0000
Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: DAD1 E, Sig=280,4 Ref=360,100

Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	27.227	BB	1.0748	8392.92383	91.40069	50.2802
2	38.303	BB	1.4814	8299.37695	65.71684	49.7198

Additional Info : Peak(s) manually integrated

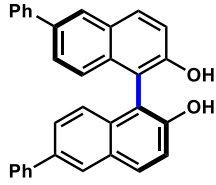


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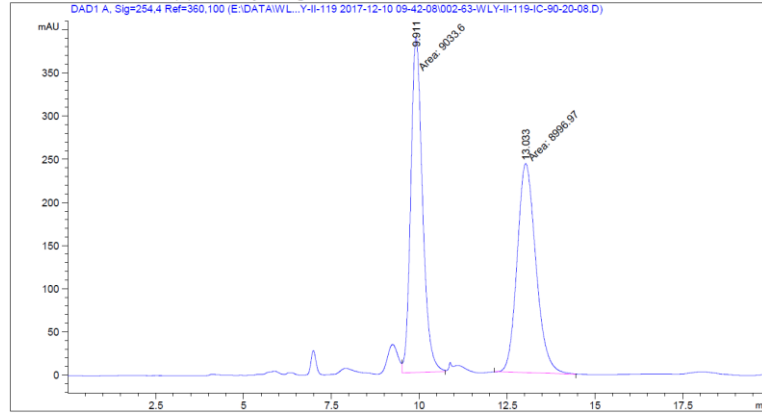
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Multiplier : 1.0000
Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: DAD1 A, Sig=254,4 Ref=360,100

Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	27.809	BB	1.0252	1.88863e4	215.54605	79.1298
2	38.866	BB	1.5017	4981.18848	38.80158	20.8702



Additional Info : Peak(s) manually integrated



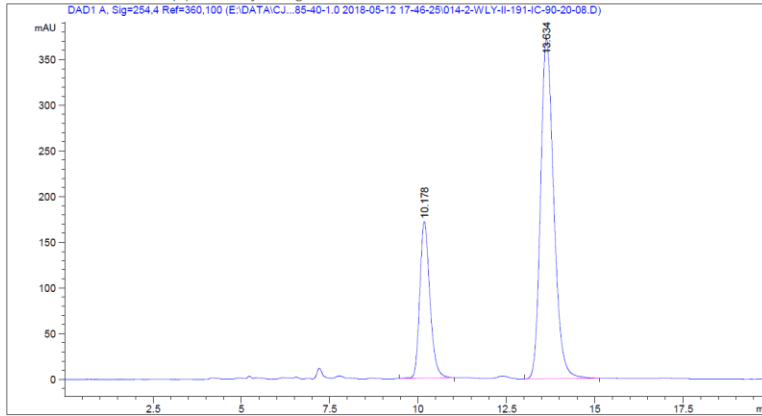
Area Percent Report

Sorted By : Signal
Multiplier : 1.0000
Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: DAD1 A, Sig=254,4 Ref=360,100

Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	9.911	MM T	0.3882	9033.59766	387.84766	50.1016
2	13.033	MM T	0.6191	8996.97168	242.20374	49.8984

Additional Info : Peak(s) manually integrated

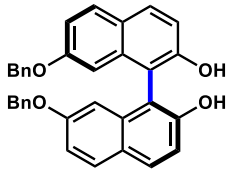


Area Percent Report

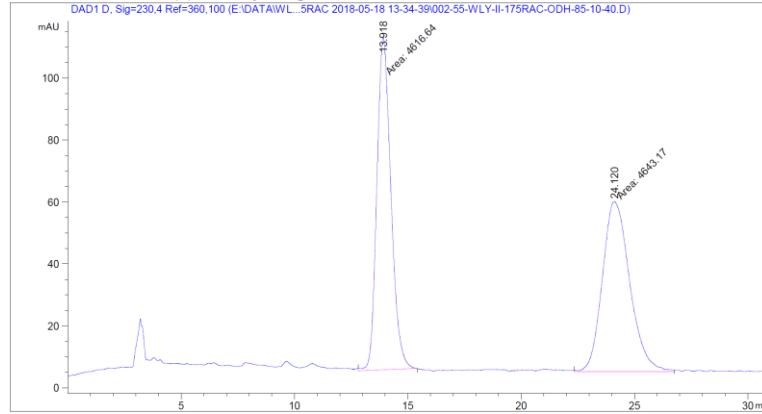
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Multiplier : 1.0000
Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: DAD1 A, Sig=254,4 Ref=360,100

Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	10.178	BB	0.3033	3404.15796	171.31363	26.0270
2	13.634	BB	0.3961	9675.18945	371.78561	73.9730



Additional Info : Peak(s) manually integrated



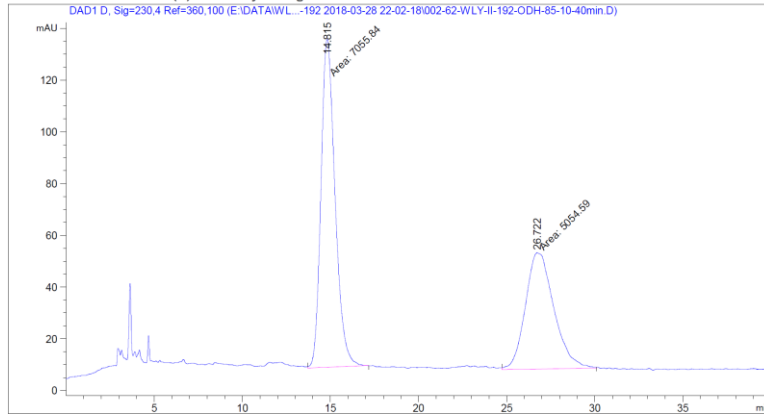
Area Percent Report

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Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: DAD1 D, Sig=230,4 Ref=360,100

Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	13.918	MM	0.7186	4616.64160	107.07887	49.8568
2	24.120	MM	1.4071	4643.16748	54.99638	50.1432

Additional Info : Peak(s) manually integrated

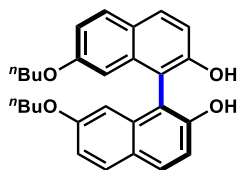


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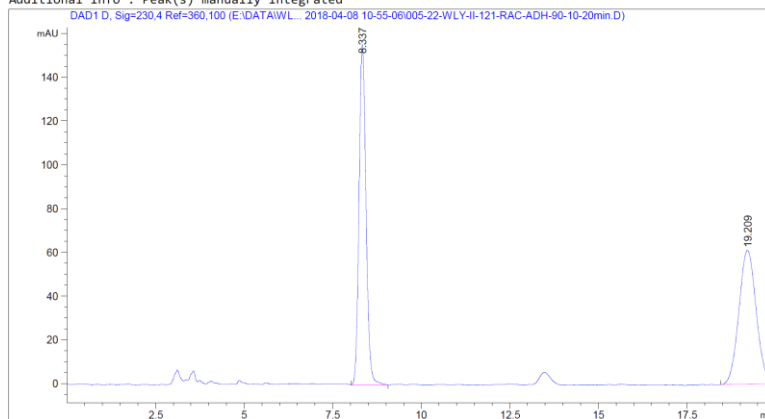
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Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: DAD1 D, Sig=230,4 Ref=360,100

Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	14.815	MM	0.9270	7055.84375	126.85791	58.2625
2	26.722	MM	1.8762	5054.59082	44.90165	41.7375



Additional Info : Peak(s) manually integrated



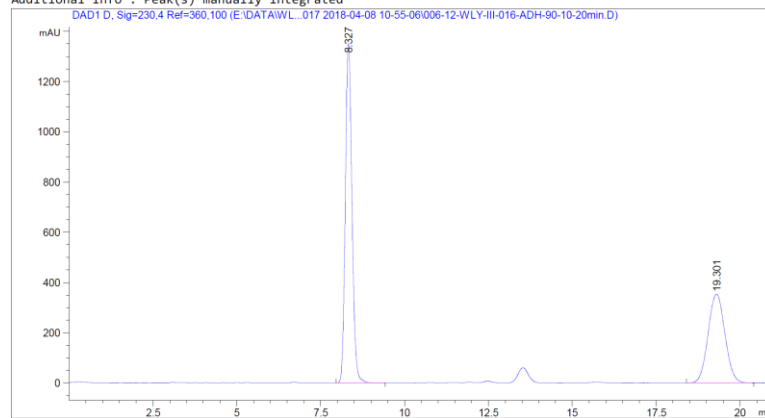
Area Percent Report

Sorted By : Signal
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Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: DAD1 D, Sig=230,4 Ref=360,100

Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	8.337	BB	0.2102	2129.50830	155.52692	50.7481
2	19.209	BBA	0.4113	2066.72485	61.15033	49.2519

Additional Info : Peak(s) manually integrated

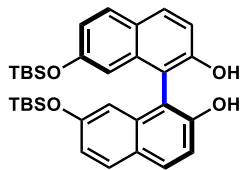


Area Percent Report

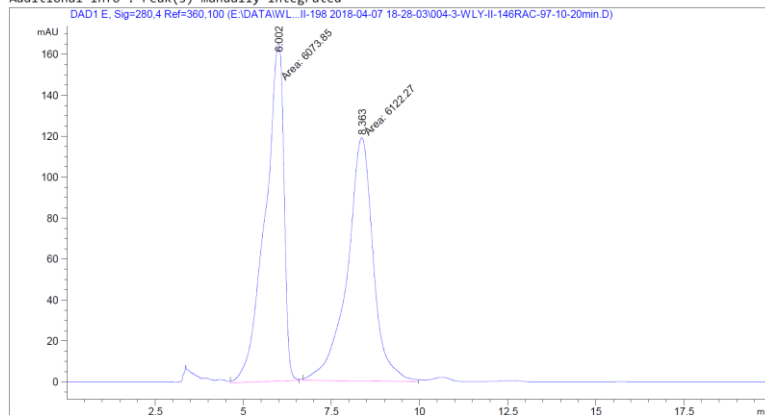
Sorted By : Signal
Multiplier : 1.0000
Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: DAD1 D, Sig=230,4 Ref=360,100

Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	8.327	BB	0.2136	1.85824e4	1349.92126	60.1806
2	19.301	BB	0.5348	1.22953e4	353.02341	39.8194



Additional Info : Peak(s) manually integrated



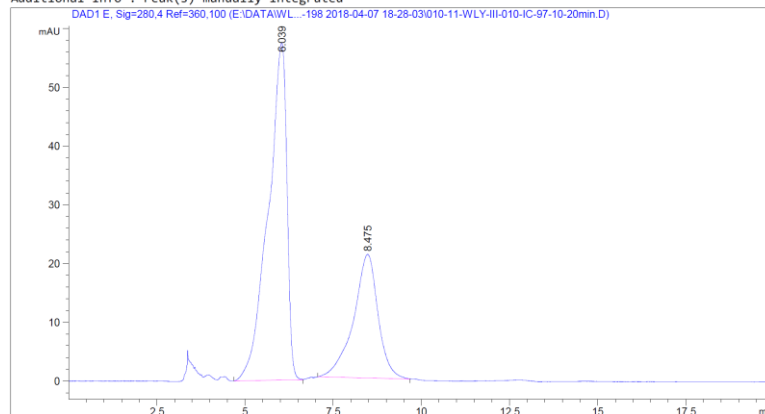
Area Percent Report

Sorted By : Signal
Multiplier : 1.0000
Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: DAD1 E, Sig=280,4 Ref=360,100

Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	6.002	MM	0.6131	6073.85254	165.12057	49.8015
2	8.363	MM	0.8591	6122.27441	118.77021	50.1985

Additional Info : Peak(s) manually integrated

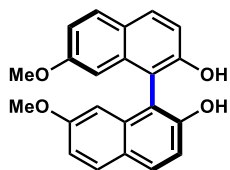


Area Percent Report

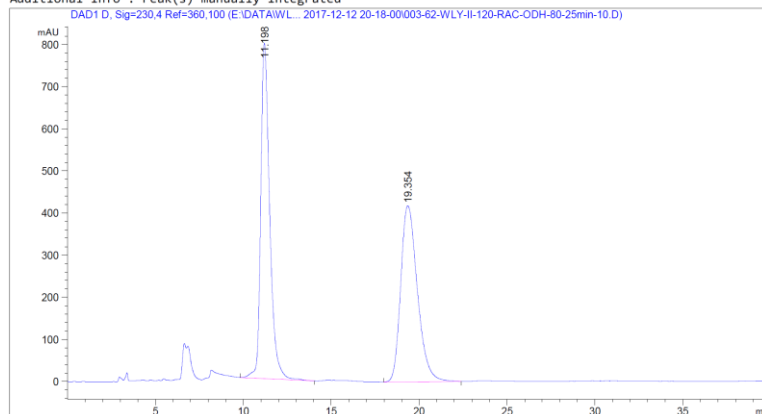
Sorted By : Signal
Multiplier : 1.0000
Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: DAD1 E, Sig=280,4 Ref=360,100

Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	6.039	BB	0.4912	2114.36255	57.40987	67.5320
2	8.475	BB	0.5674	1016.54102	21.05134	32.4680



Additional Info : Peak(s) manually integrated



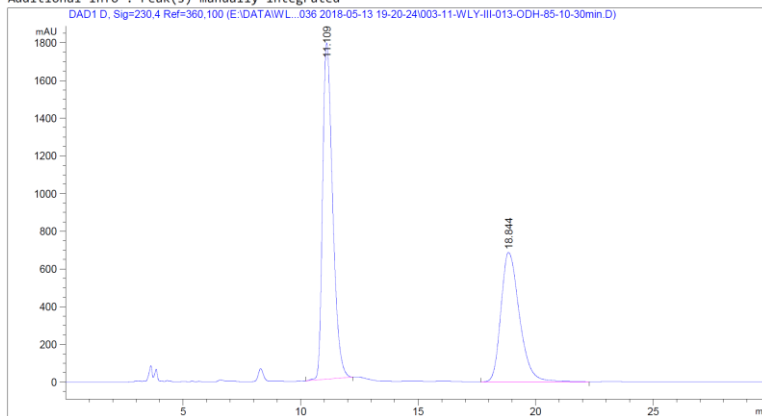
Area Percent Report

Sorted By : Signal
Multiplier : 1.0000
Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: DAD1 D, Sig=230,4 Ref=360,100

Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	11.198	BB	0.5319	2.80968e4	795.80017	50.5371
2	19.354	BB	0.9584	2.74996e4	418.07074	49.4629

Additional Info : Peak(s) manually integrated



Area Percent Report

Sorted By : Signal
Multiplier : 1.0000
Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: DAD1 D, Sig=230,4 Ref=360,100

Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	11.109	BB	0.4422	5.29766e4	1785.46069	58.5455
2	18.844	BB	0.7919	3.75114e4	687.09198	41.4545