

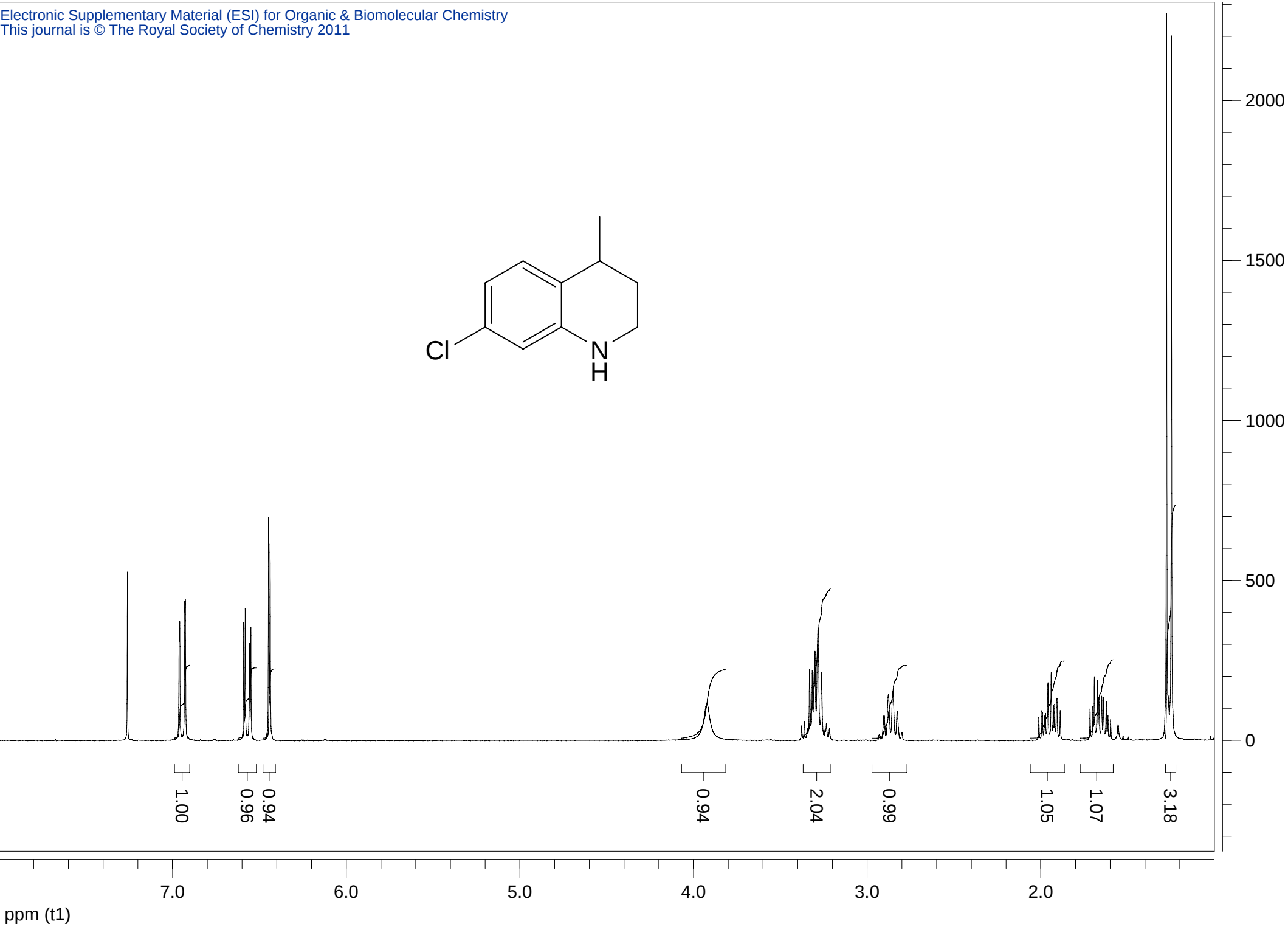
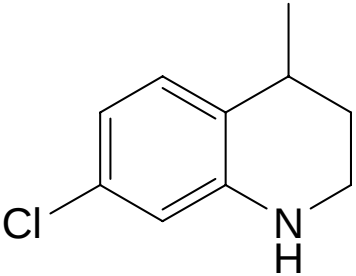
Direct Enantioselective Access to 4-Substituted Tetrahydroquinolines by Catalytic Asymmetric Transfer Hydrogenation of Quinolines

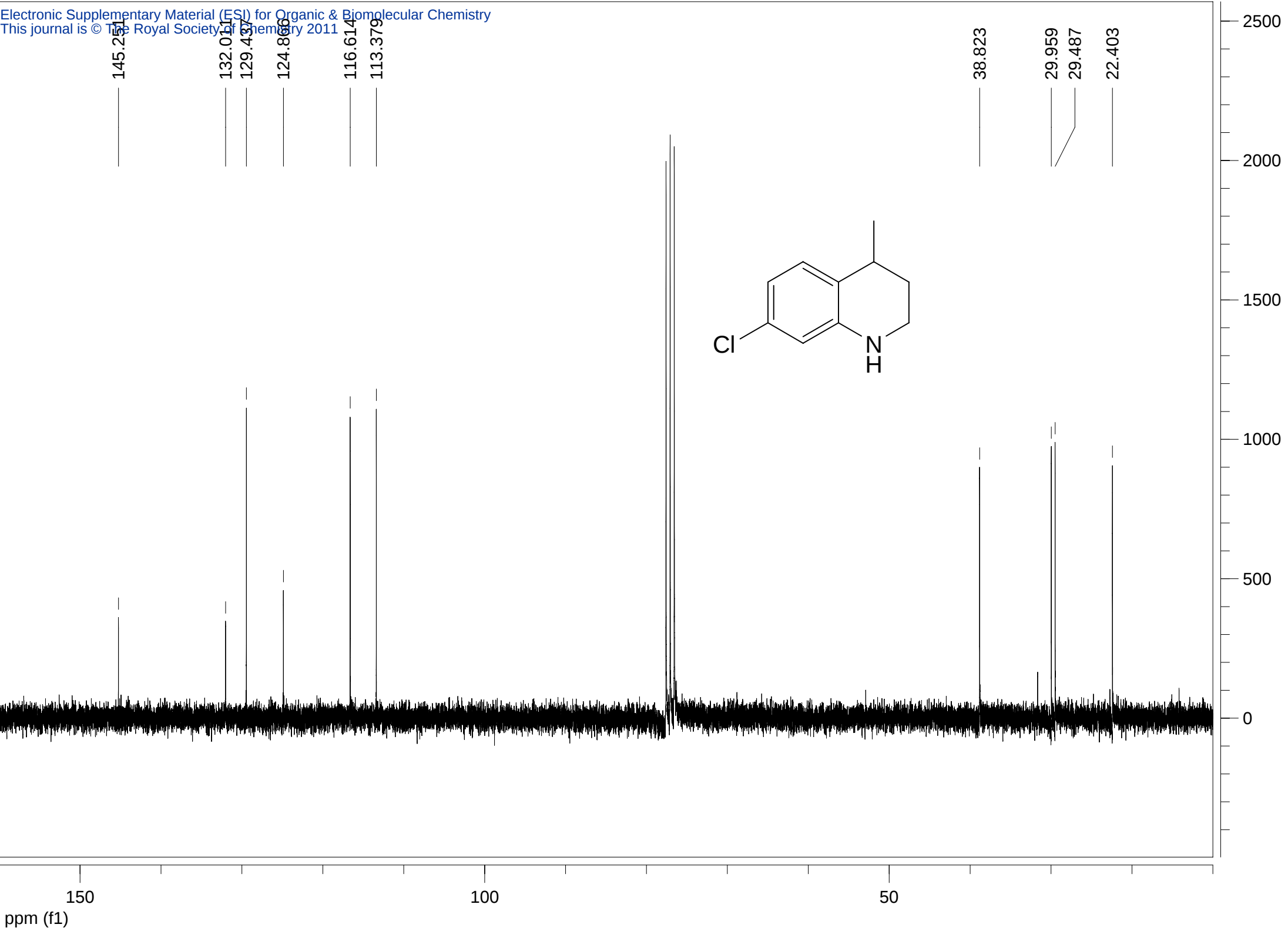
Magnus Rueping, Thomas Theissmann, Mirjam Stöckel and Andrey P. Antonchick

Supporting Information

^1H - and ^{13}C -NMR are available for all compounds.

HPLC chromatograms are provided for all racemic and enantiomerically enriched synthesized compounds.



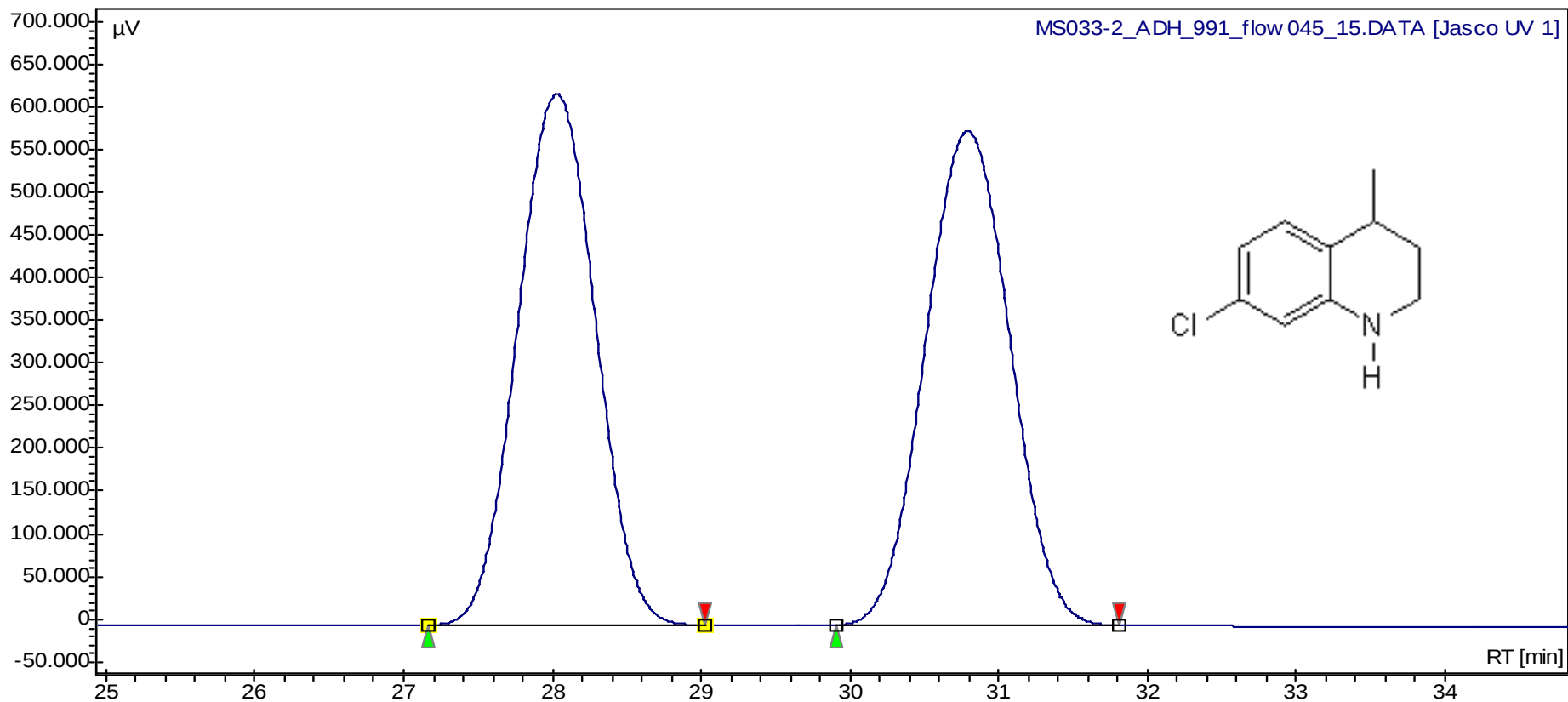


Chromatogram : MS033-2_ADH_991_flow045_15

Data file: MS033-2_ADH_991_flow045_15.DATA

Method: ADH_991_flow045_acq50

Date: 02.05.2006 10:39:46



MS033-2_ADH_991_flow045_15.DATA [Jasco UV 1]

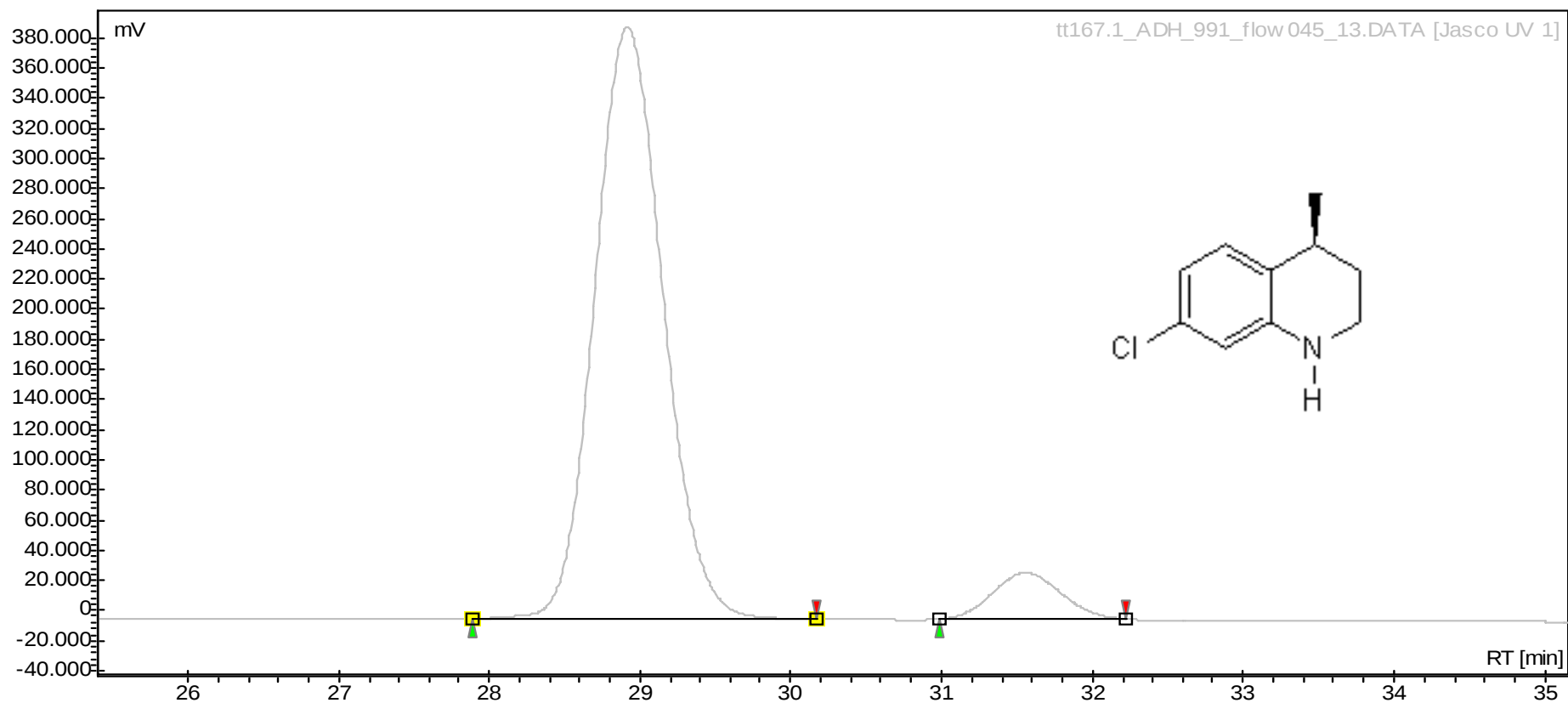
Index	Start	Time	End	Area %
	[Min]	[Min]	[Min]	[%]
1	27,169	28,025	29,029	49,636
2	29,907	30,792	31,818	50,364
Total				100,000

Chromatogram : tt167.1_ADH_991_flow045_13

Data file: tt167.1_ADH_991_flow045_13.DATA

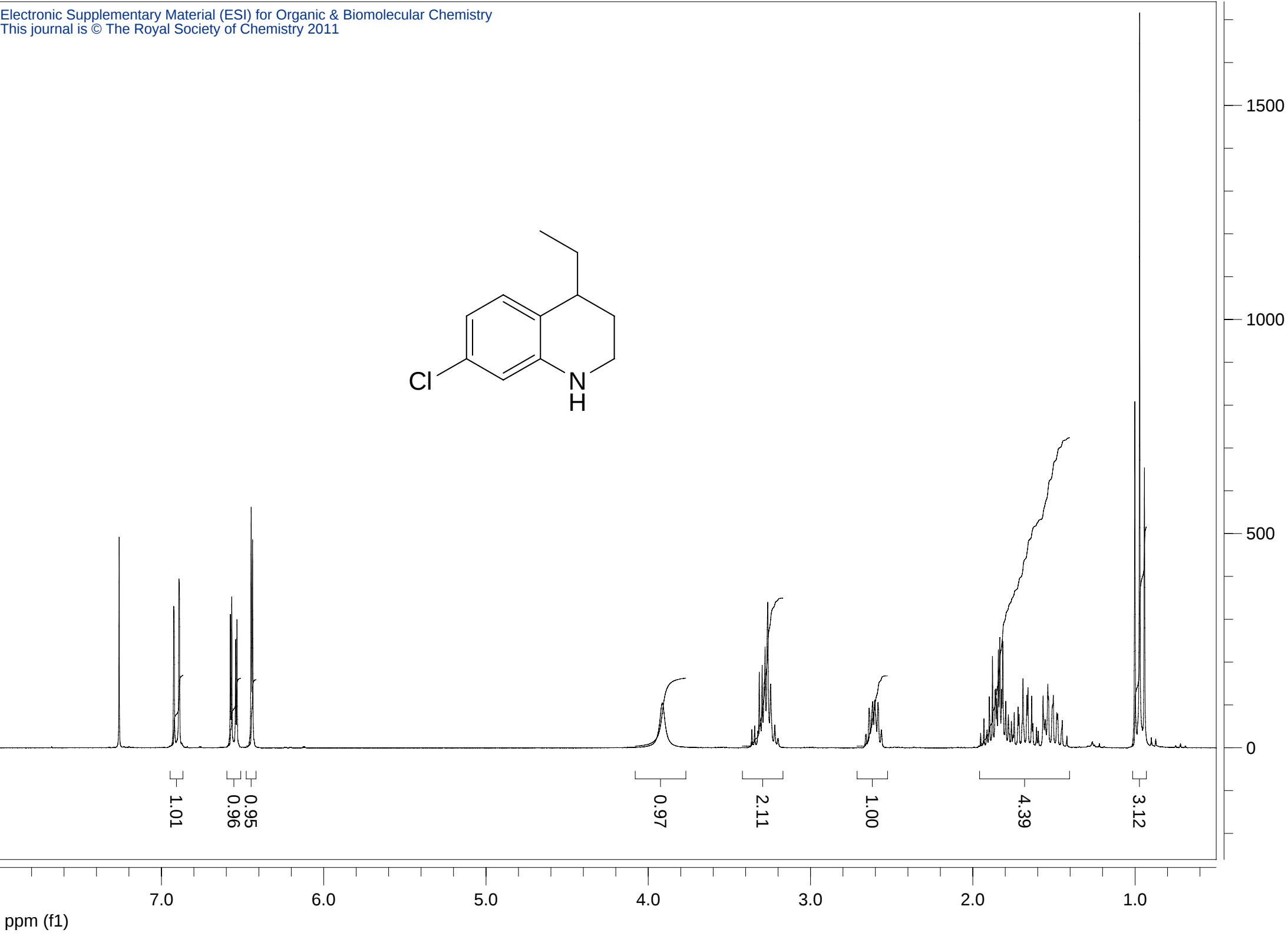
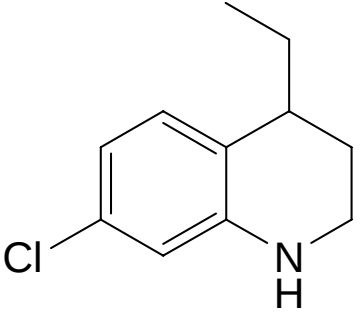
Method: HPLC2_ADH_991_flow045_acq40

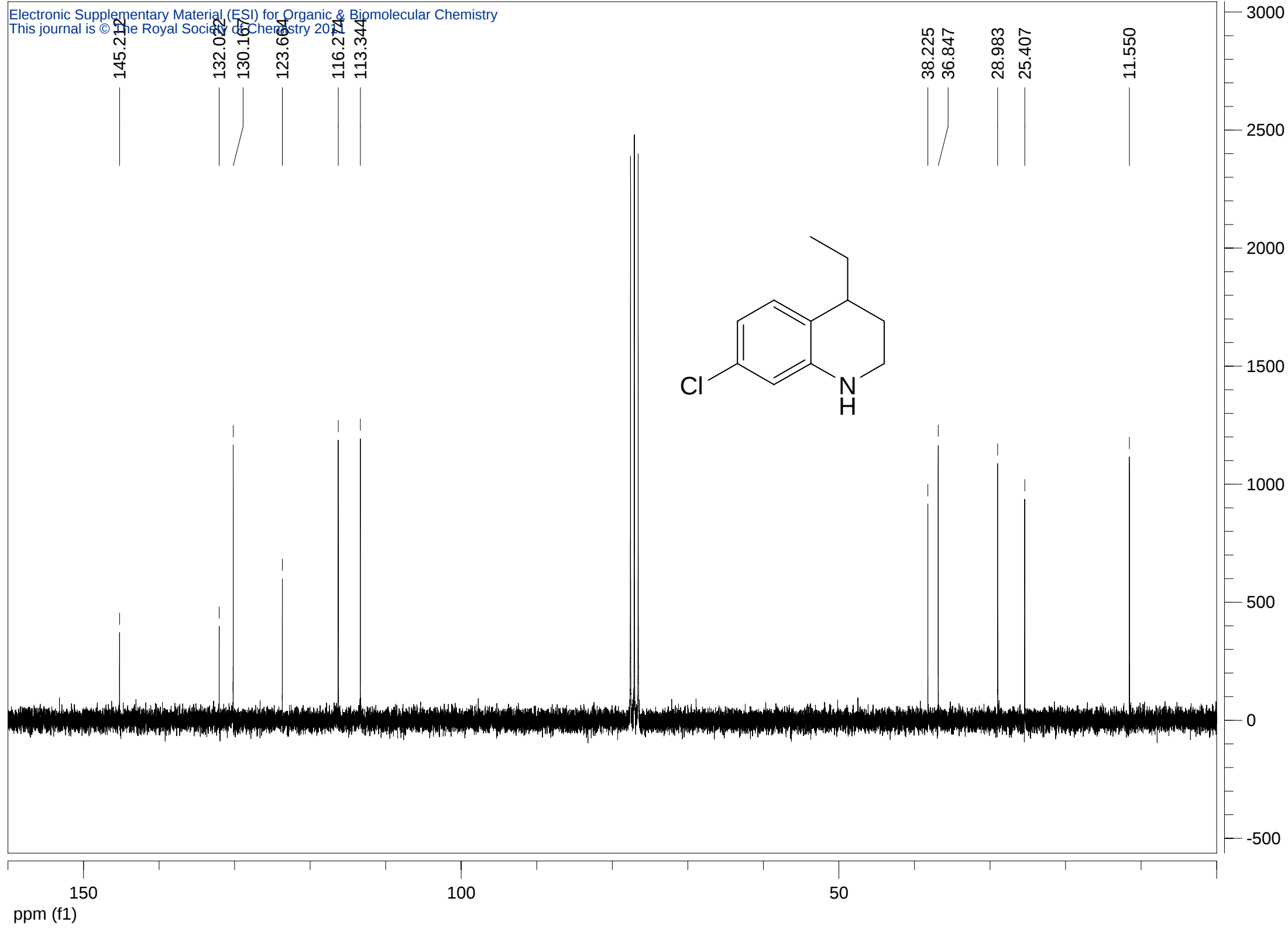
Date: 13.02.2007 01:37:32



tt167.1_ADH_991_flow045_13.DATA [Jasco UV 1]

Index	Start	Time	End	Area %
	[Min]	[Min]	[Min]	[%]
1	27,882	28,917	30,168	92,679
2	30,980	31,558	32,224	7,321
Total				100,000



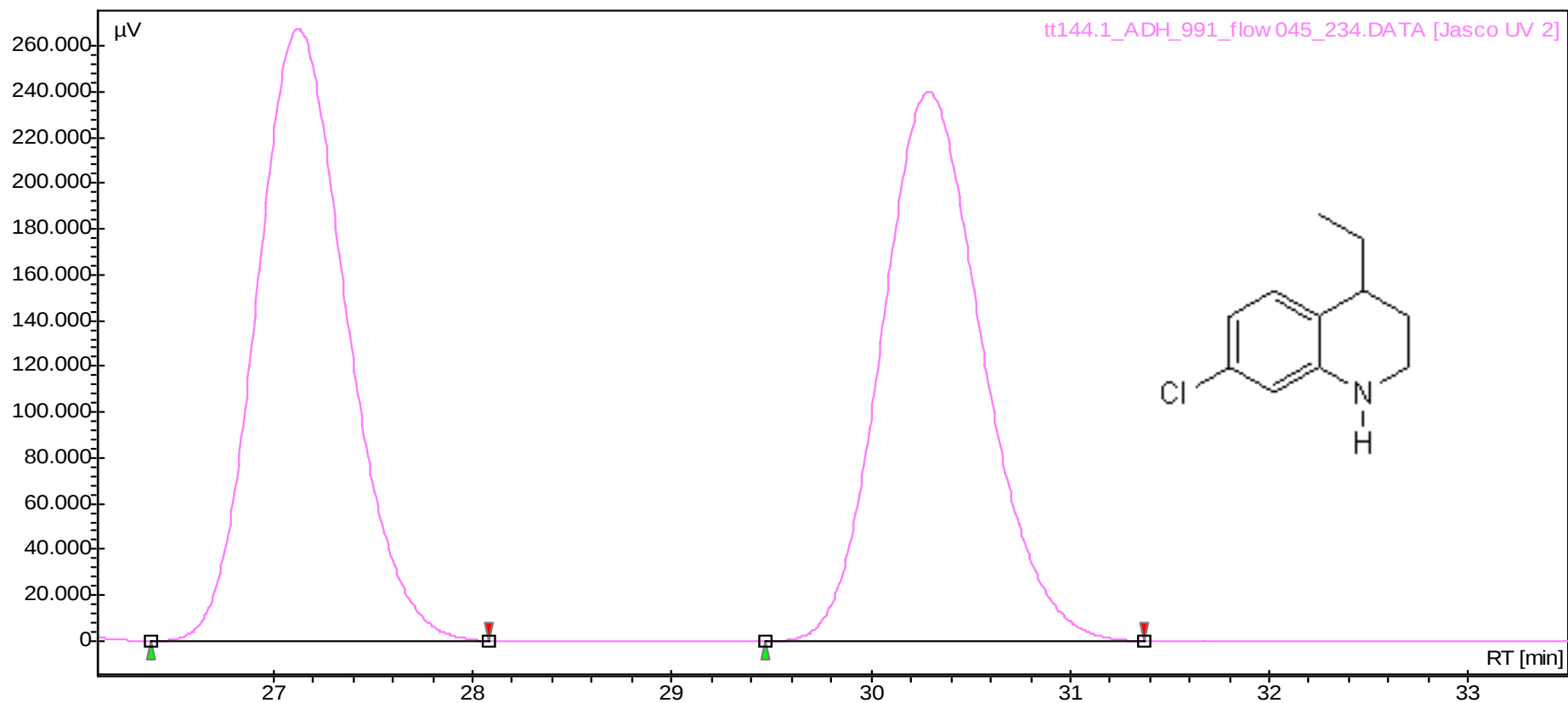


Chromatogram : tt144.1_ADH_991_flow045_234

Data file: tt144.1_ADH_991_flow045_234.DAT

Method: HPLC1_ADH_991_flow045_acq_40

Date: 19.01.2007 15:31:12



tt144.1_ADH_991_flow045_234.DAT [Jasco UV 2]

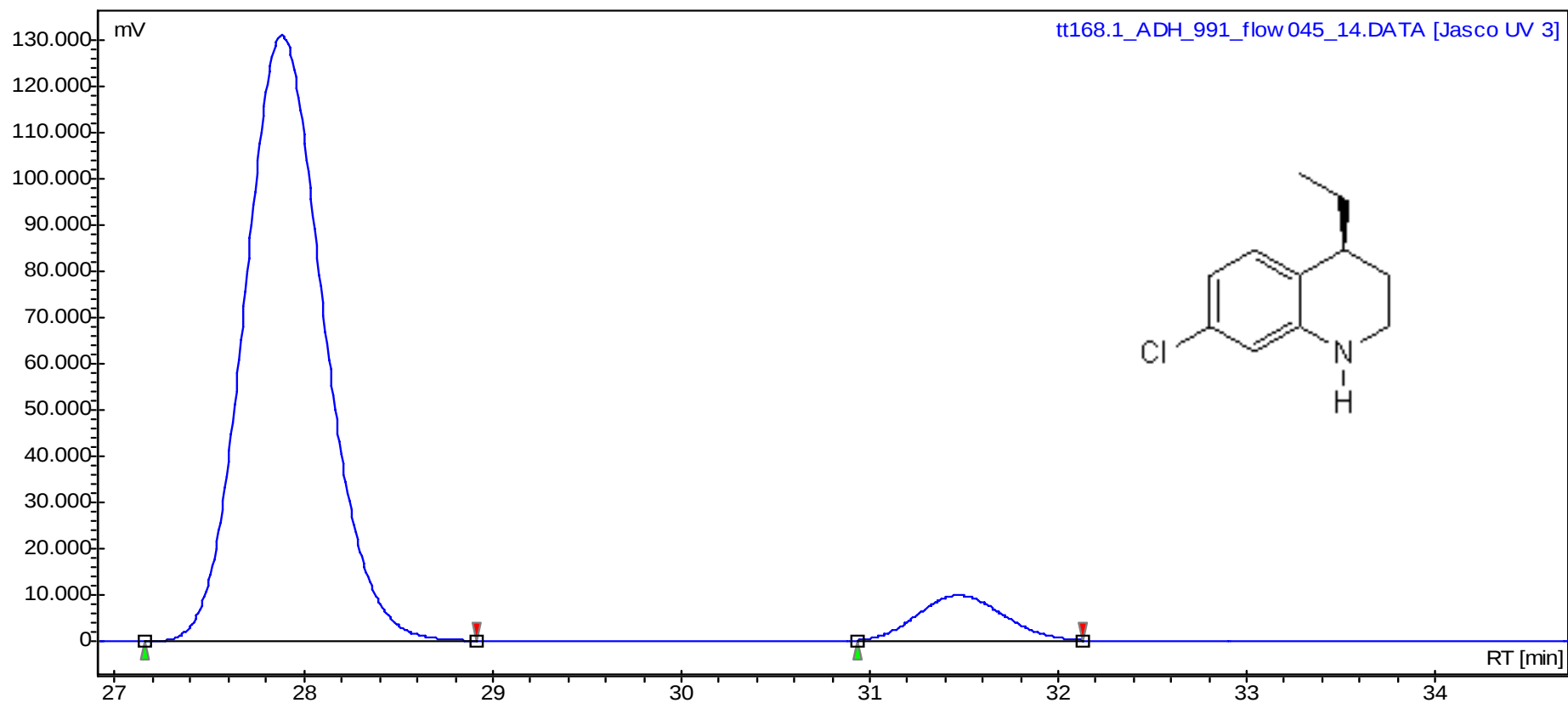
Index	Start	Time	End	Area %
	[Min]	[Min]	[Min]	[%]
1	26,388	27,125	28,083	49,861
2	29,470	30,292	31,372	50,139
Total				100,000

Chromatogram : tt168.1_ADH_991_flow045_14

Data file: tt168.1_ADH_991_flow045_14.DATA

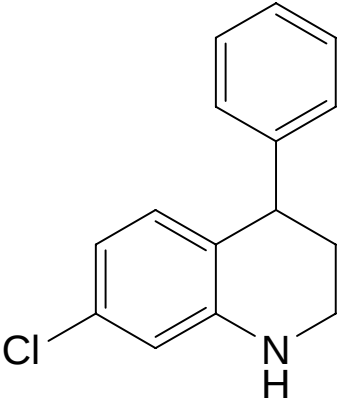
Method: HPLC2_ADH_991_flow045_acq40

Date: 13.02.2007 02:20:10



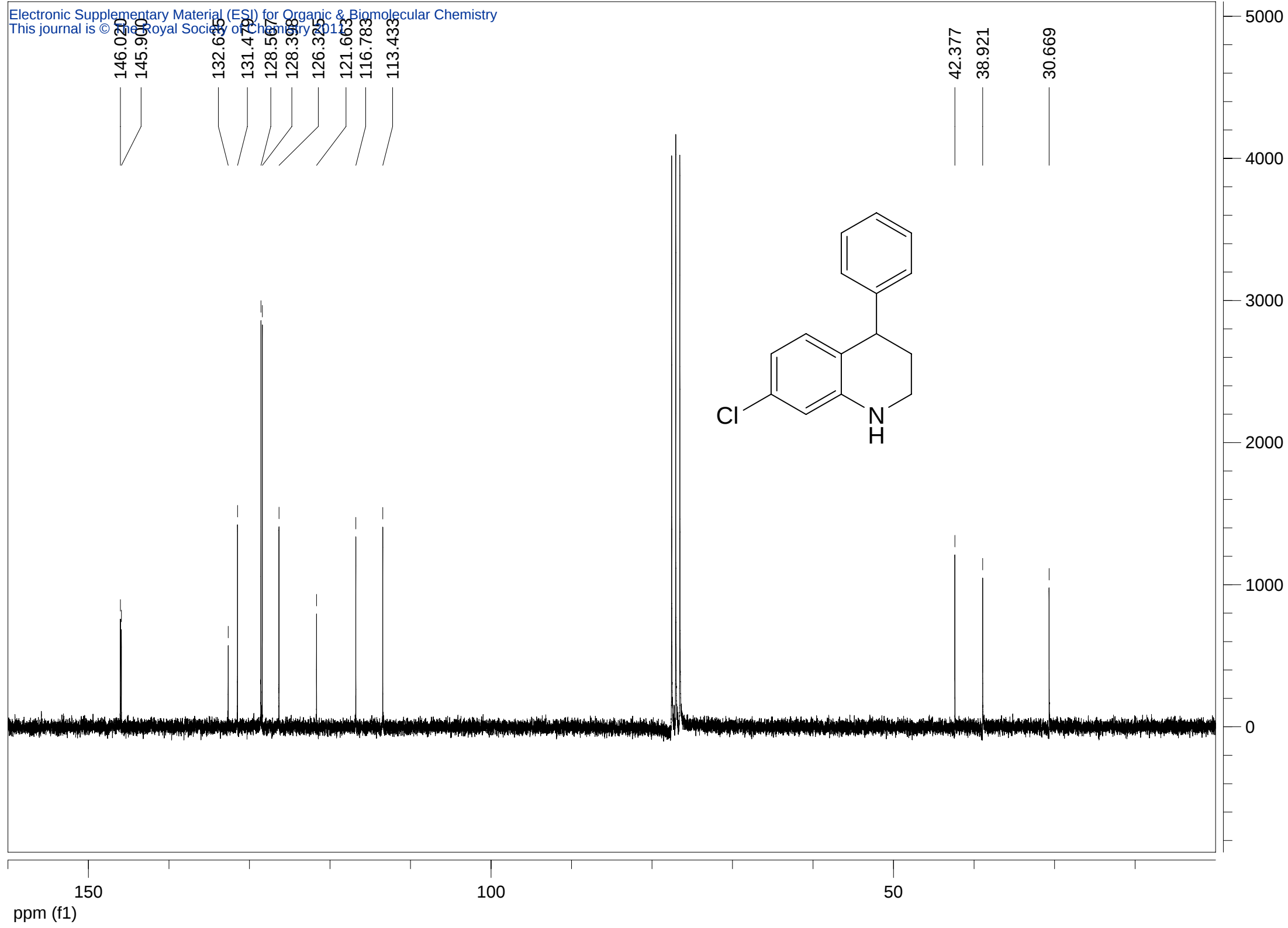
tt168.1_ADH_991_flow045_14.DATA [Jasco UV 3]

Index	Start	Time	End	Area %
	[Min]	[Min]	[Min]	[%]
1	27,158	27,883	28,918	92,637
2	30,938	31,475	32,133	7,363
Total				100,000



3.49 2.02 1.00 1.97 1.08 0.93 2.14 1.02 1.12

ppm (f1)

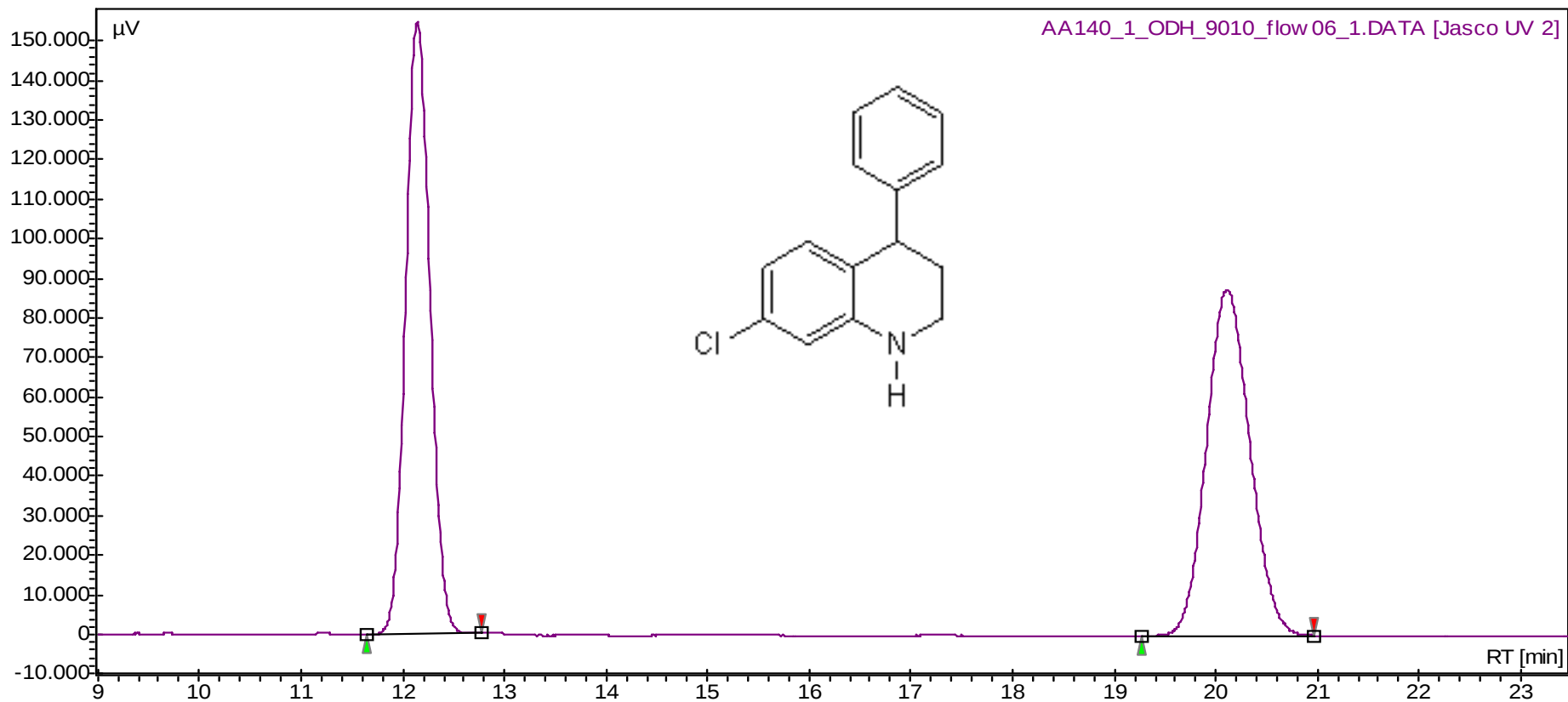


Chromatogram : AA140_1_ODH_9010_flow06_1

Data file: AA140_1_ODH_9010_flow06_1.DATA

Method: ODH_9010_flow06_acq50

Date: 10.11.2005 21:43:20



AA140_1_ODH_9010_flow06_1.DATA [Jasco UV 2]

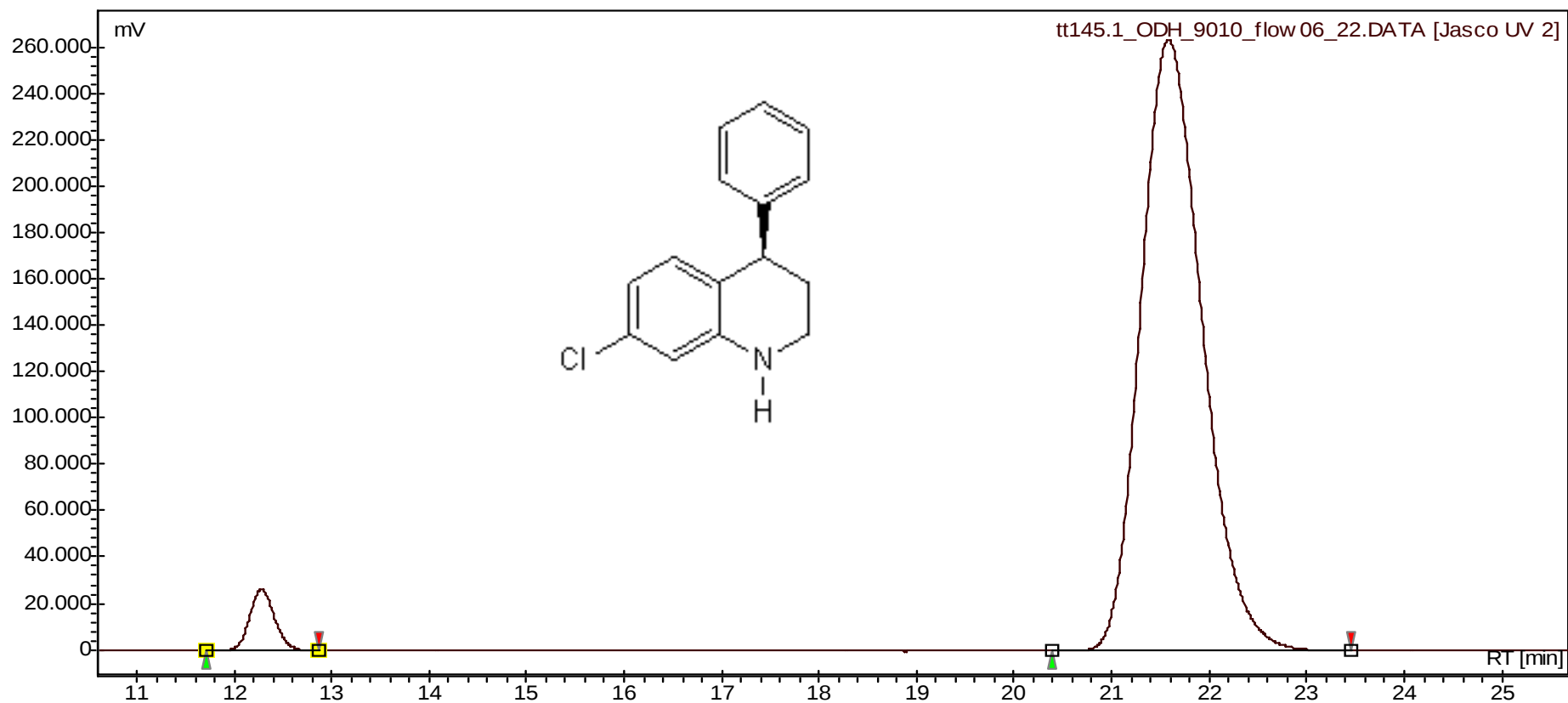
Index	Start	Time	End	Area %
	[Min]	[Min]	[Min]	[%]
2	11,638	12,142	12,772	49,836
1	19,267	20,108	20,971	50,164
Total				100,000

Chromatogram : tt145.1_ODH_9010_flow06_22

Data file: tt145.1_ODH_9010_flow06_22.DATA

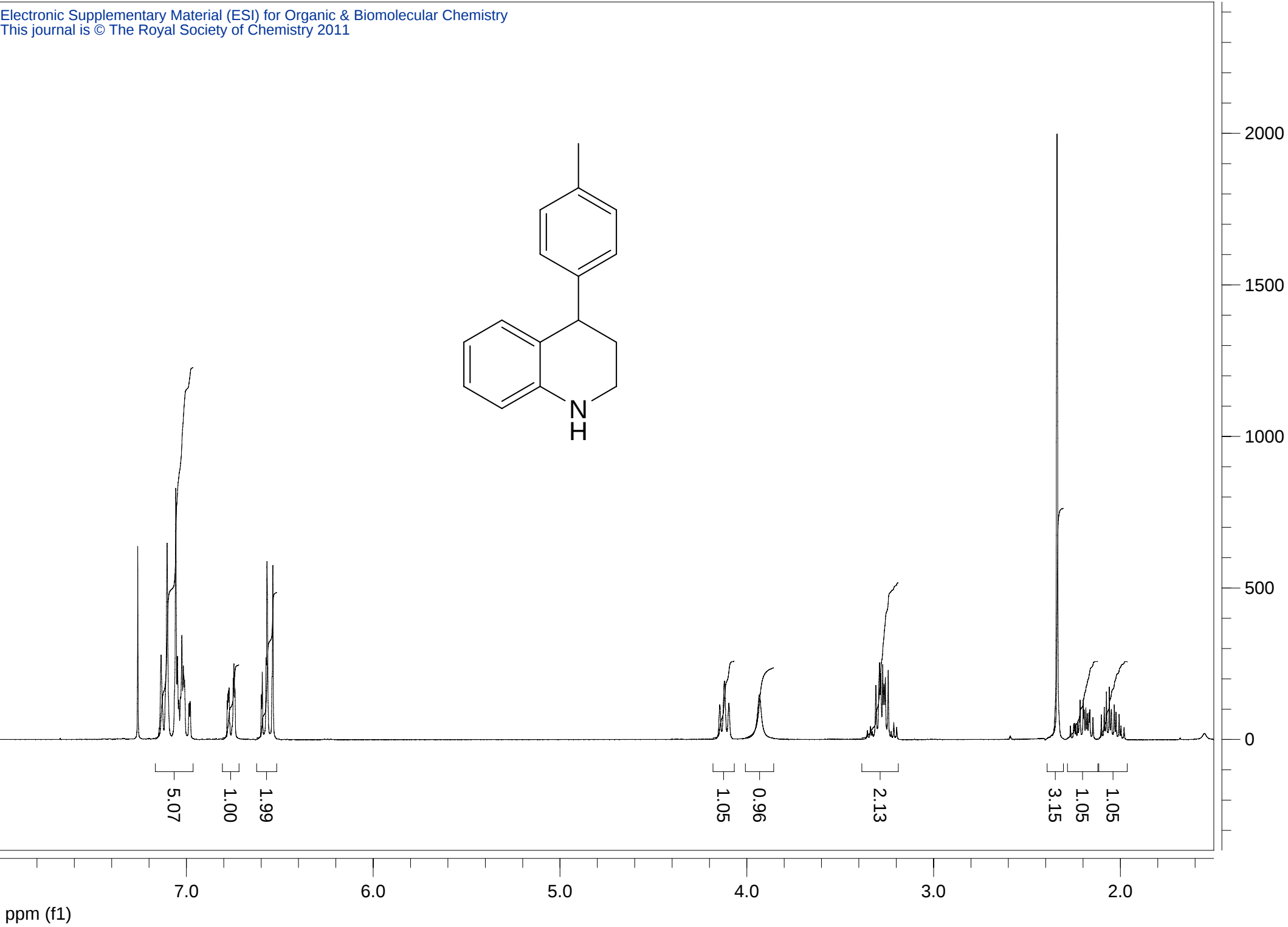
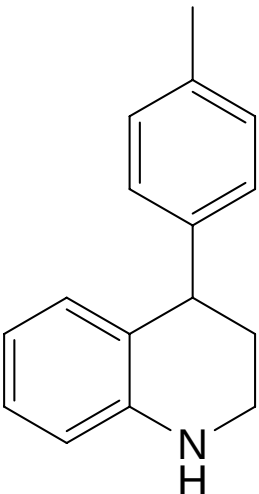
Method: HPLC2_ODH_9010_flow06_acq30

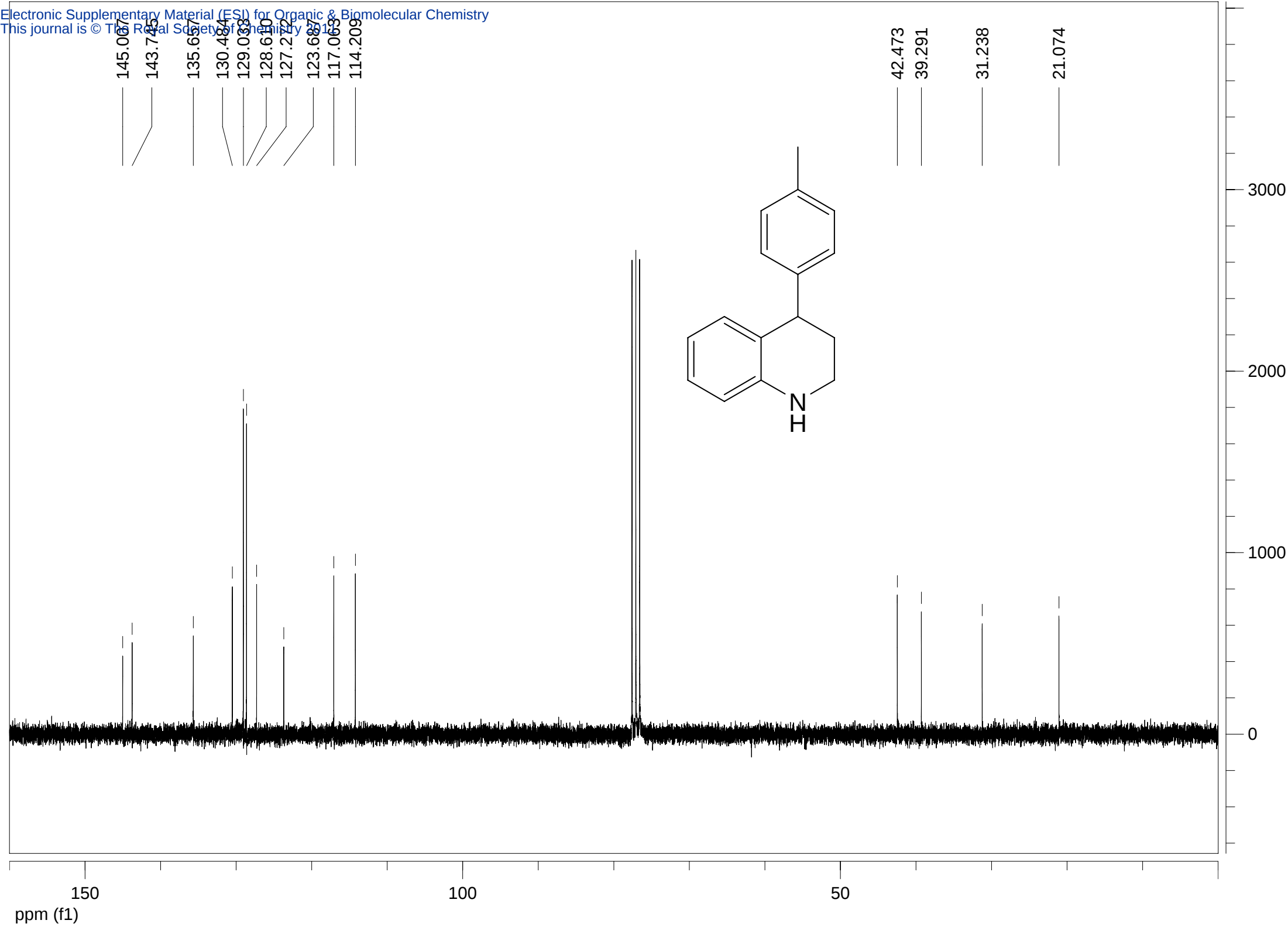
Date: 23.01.2007 16:23:21



tt145.1_ODH_9010_flow06_22.DATA [Jasco UV 2]

Index	Start	Time	End	Area %
	[Min]	[Min]	[Min]	[%]
1	11,719	12,283	12,880	3,963
2	20,398	21,583	23,450	96,037
Total				100,000



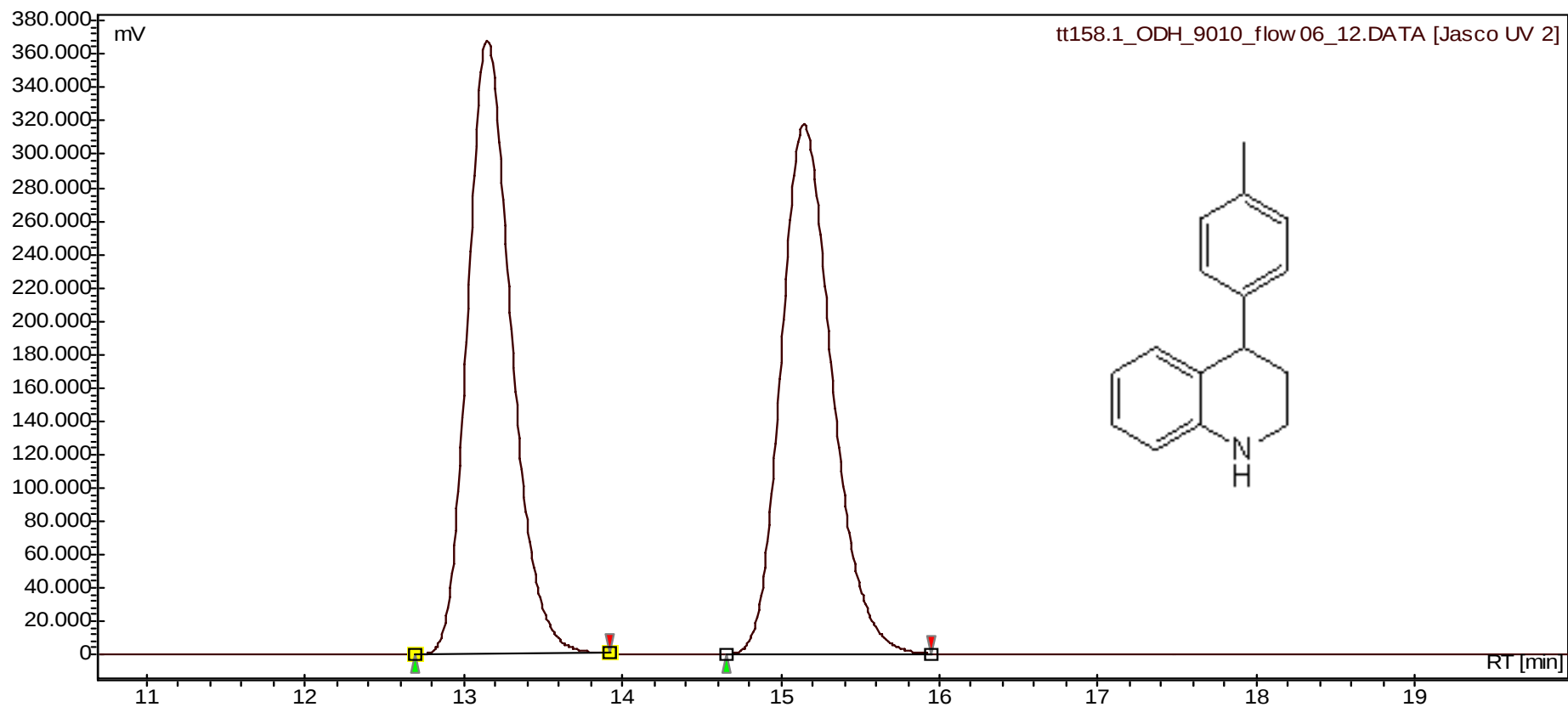


Chromatogram : tt158.1_ODH_9010_flow06_12

Data file: tt158.1_ODH_9010_flow06_12.DATA

Method: HPLC2_ODH_9010_flow06_acq45

Date: 01.02.2007 12:12:31



tt158.1_ODH_9010_flow06_12.DATA [Jasco UV 2]

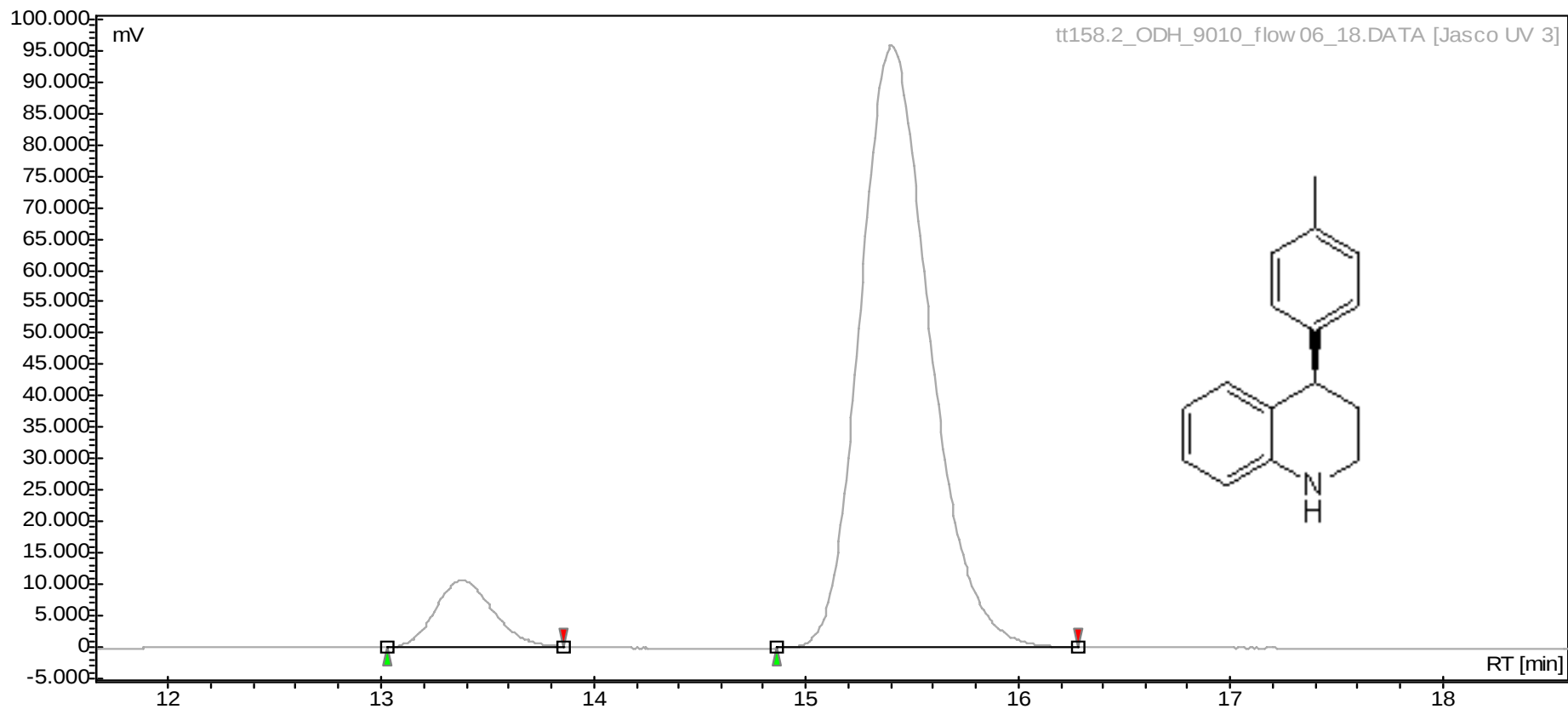
Index	Start	Time	End	Area %
	[Min]	[Min]	[Min]	[%]
1	12,698	13,150	13,919	49,789
2	14,662	15,150	15,949	50,211
Total				100,000

Chromatogram : tt158.2_ODH_9010_flow06_18

Data file: tt158.2_ODH_9010_flow06_18.DATA

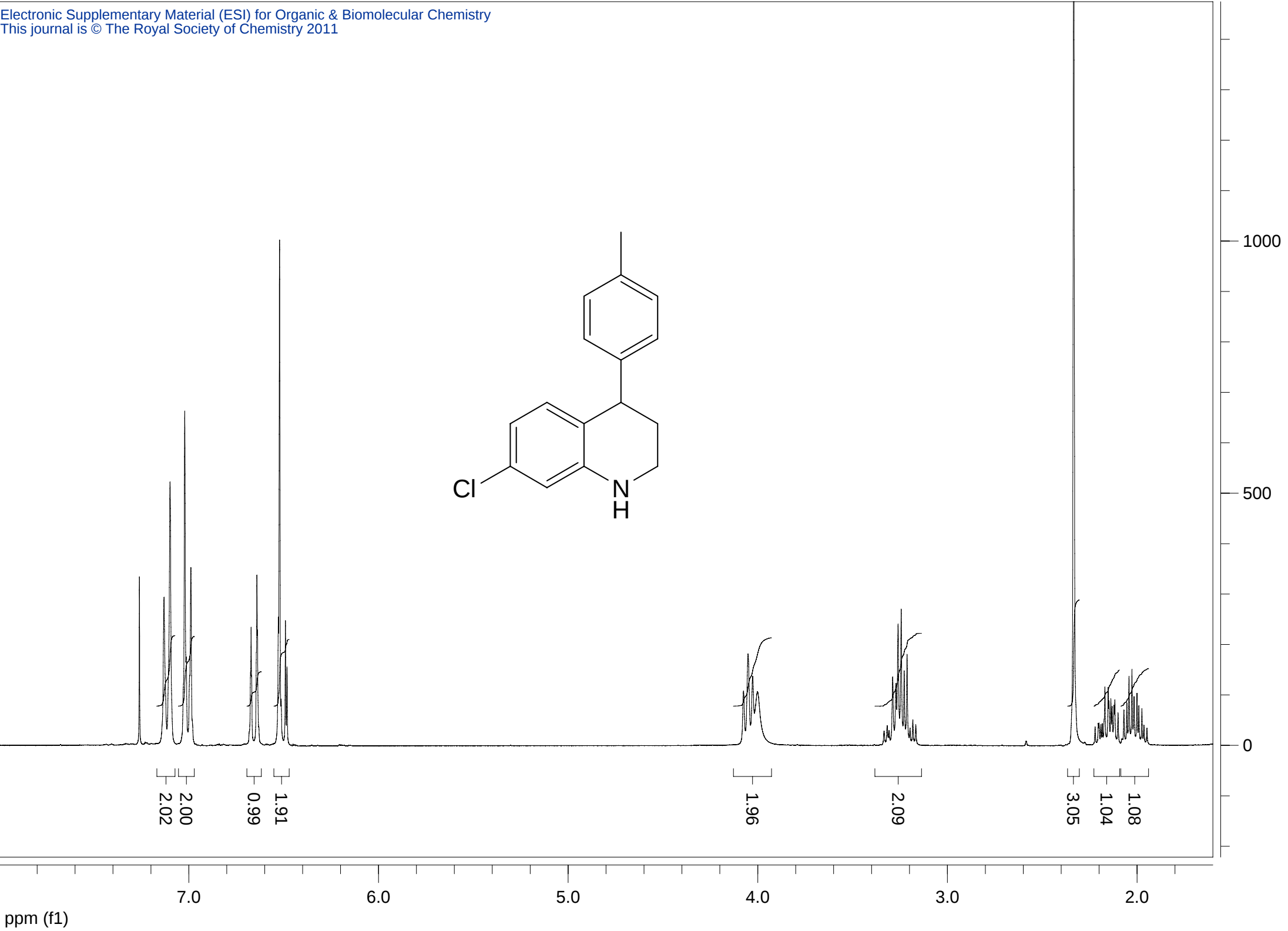
Method: HPLC2_ODH_9010_flow06_acq30

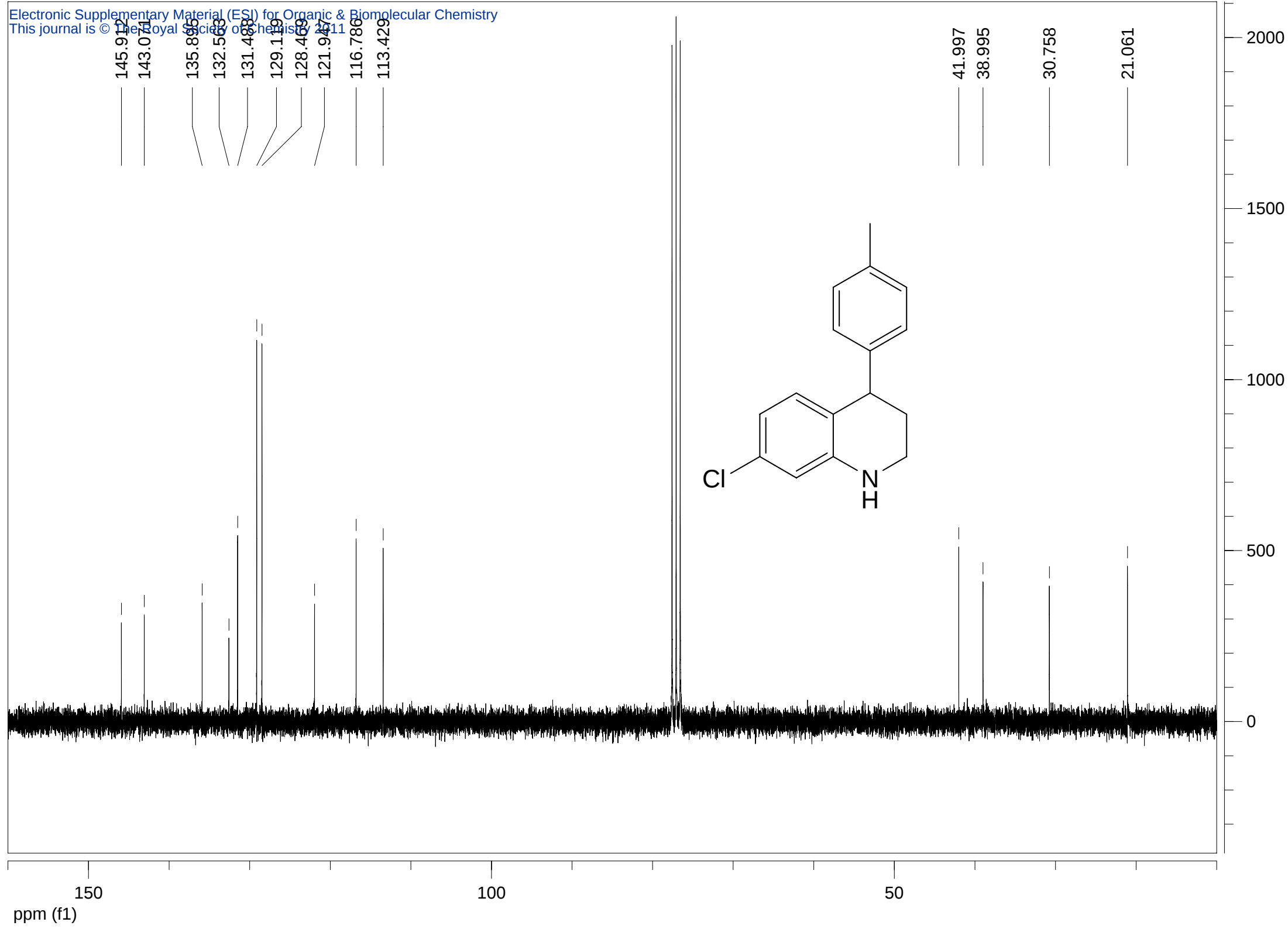
Date: 05.02.2007 23:34:37



tt158.2_ODH_9010_flow06_18.DATA [Jasco UV 3]

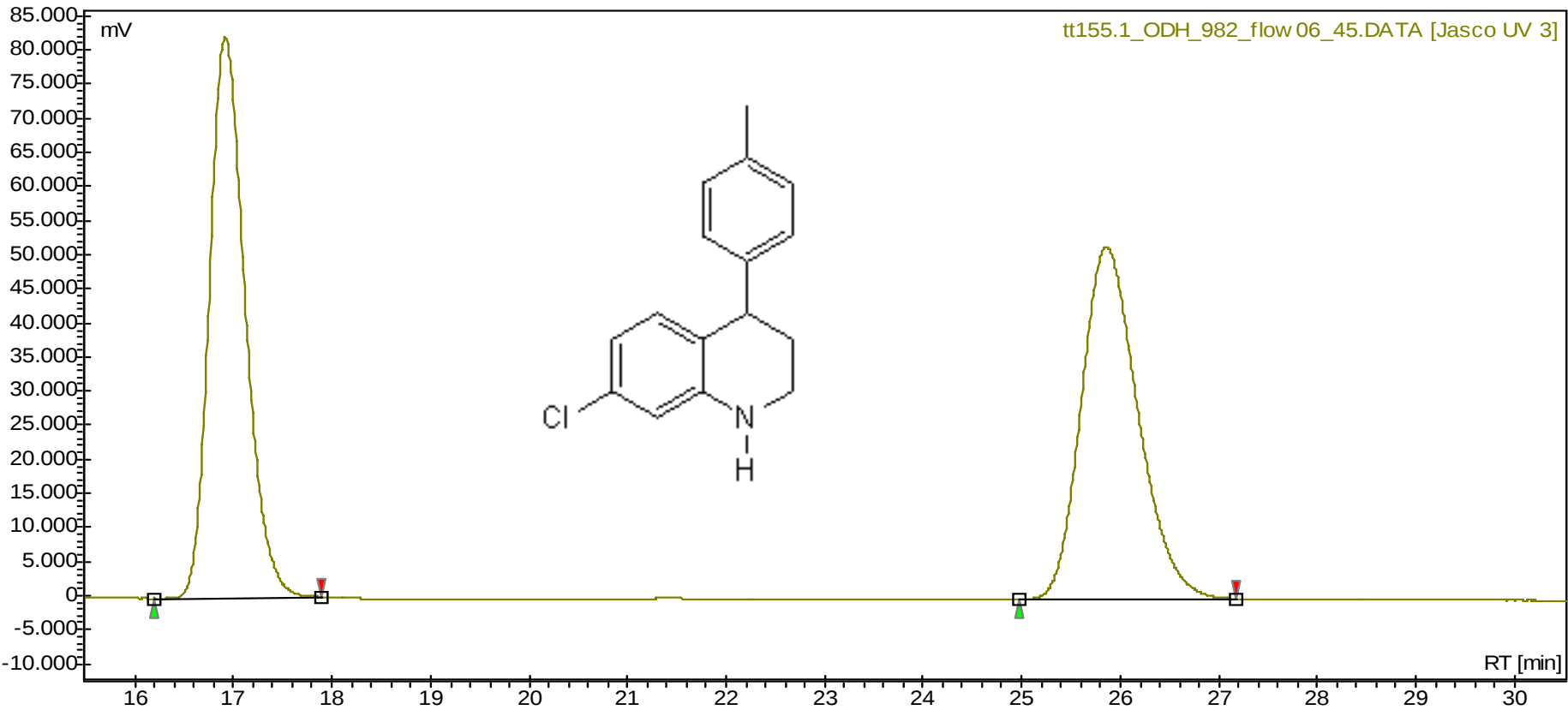
Index	Start	Time	End	Area %
	[Min]	[Min]	[Min]	[%]
1	13,029	13,383	13,856	8,419
2	14,869	15,408	16,286	91,581
Total				100,000





Chromatogram : tt155.1_ODH_982_flow06_45

Data file: tt155.1_ODH_982_flow06_45.DATA
Method: HPLC2_ODH_982_flow06_acq60
Date: 01.02.2007 13:27:28



tt155.1_ODH_982_flow06_45.DATA [Jasco UV 3]

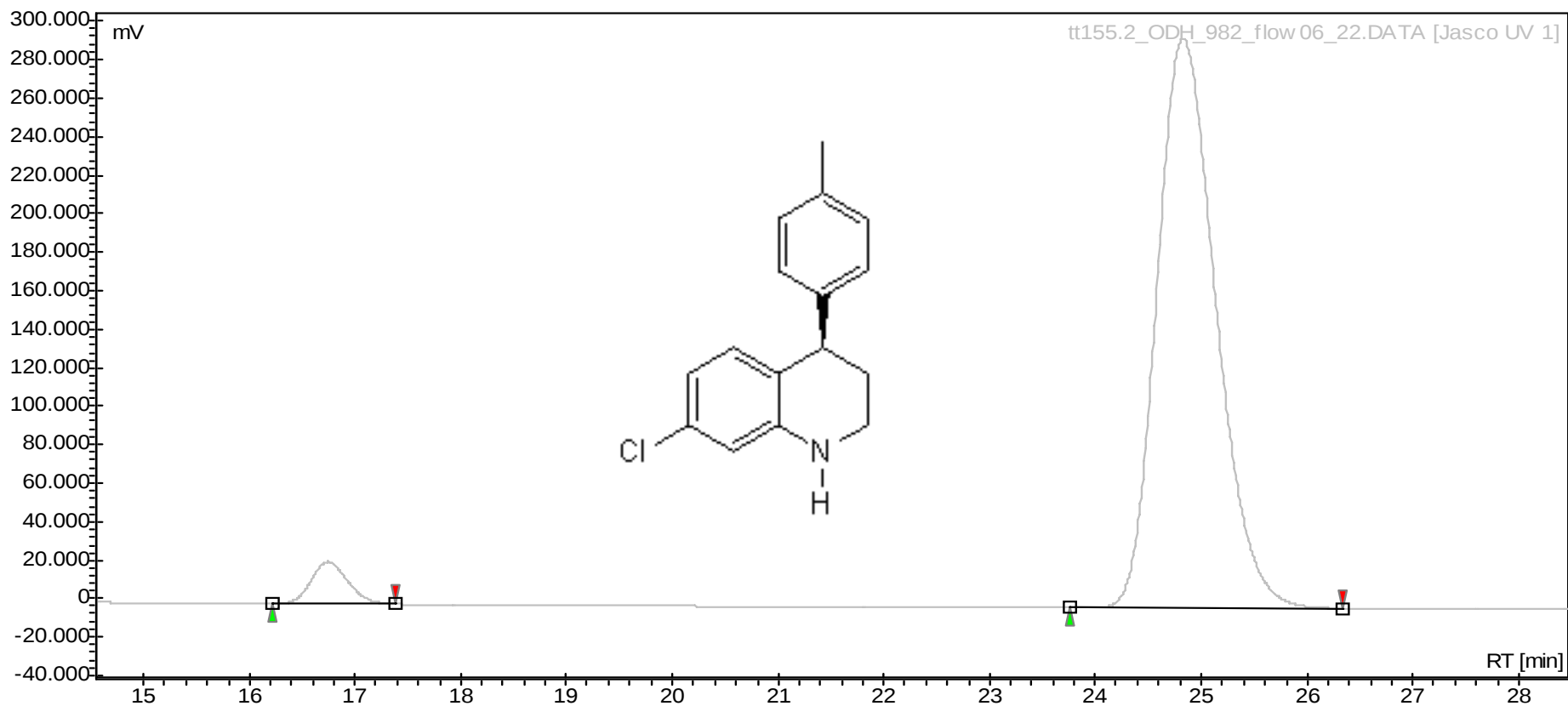
Index	Start	Time	End	Area %
	[Min]	[Min]	[Min]	[%]
1	16,195	16,917	17,892	49,921
2	24,976	25,858	27,177	50,079
Total				100,000

Chromatogram : tt155.2_ODH_982_flow06_22

Data file: tt155.2_ODH_982_flow06_22.DATA

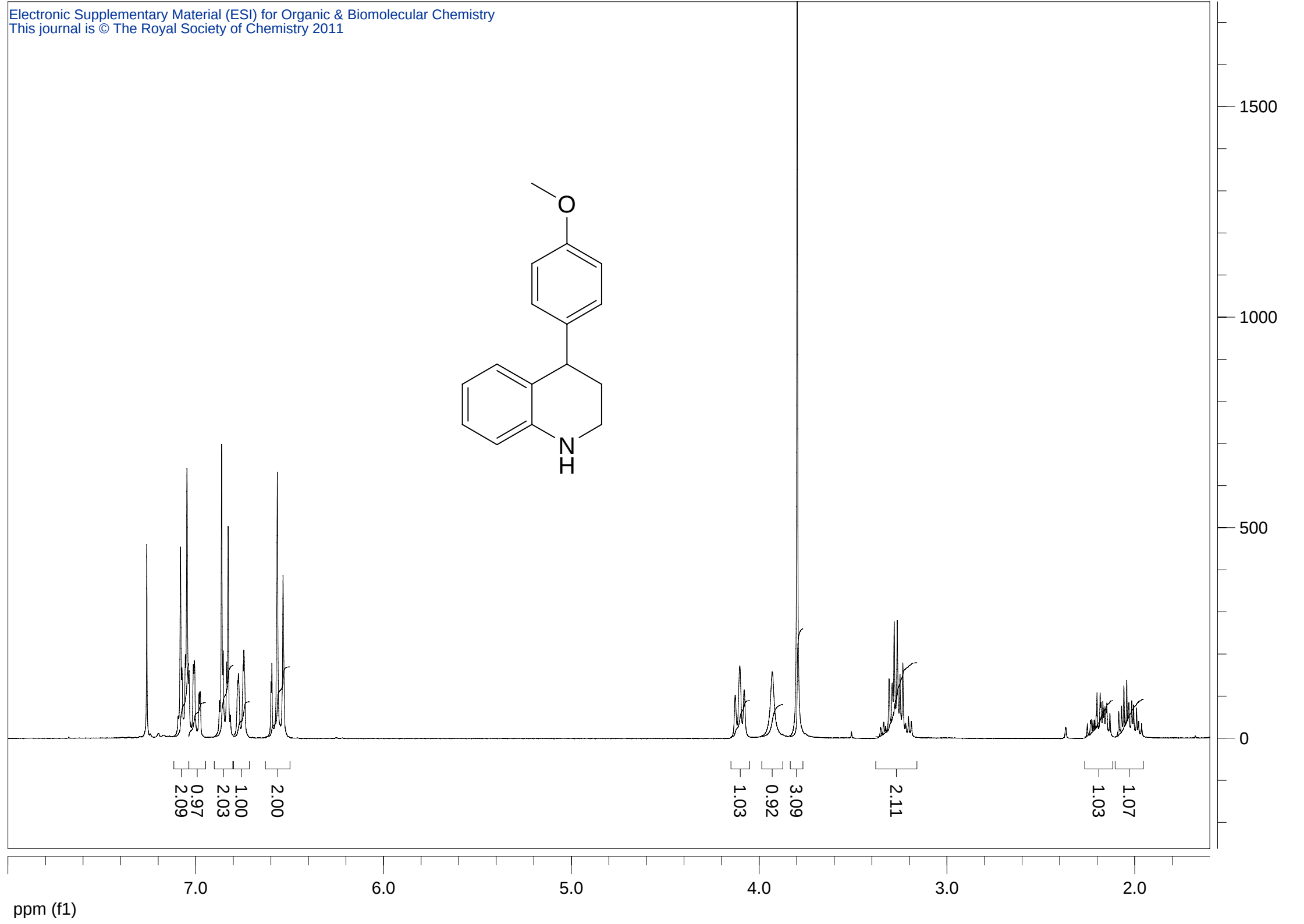
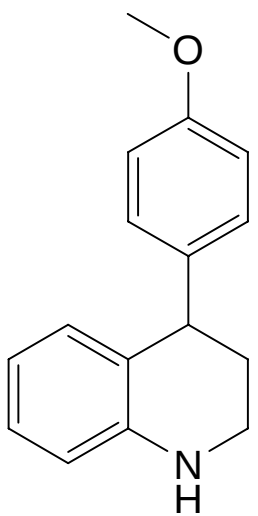
Method: HPLC2_ODH_982_flow06_acq30

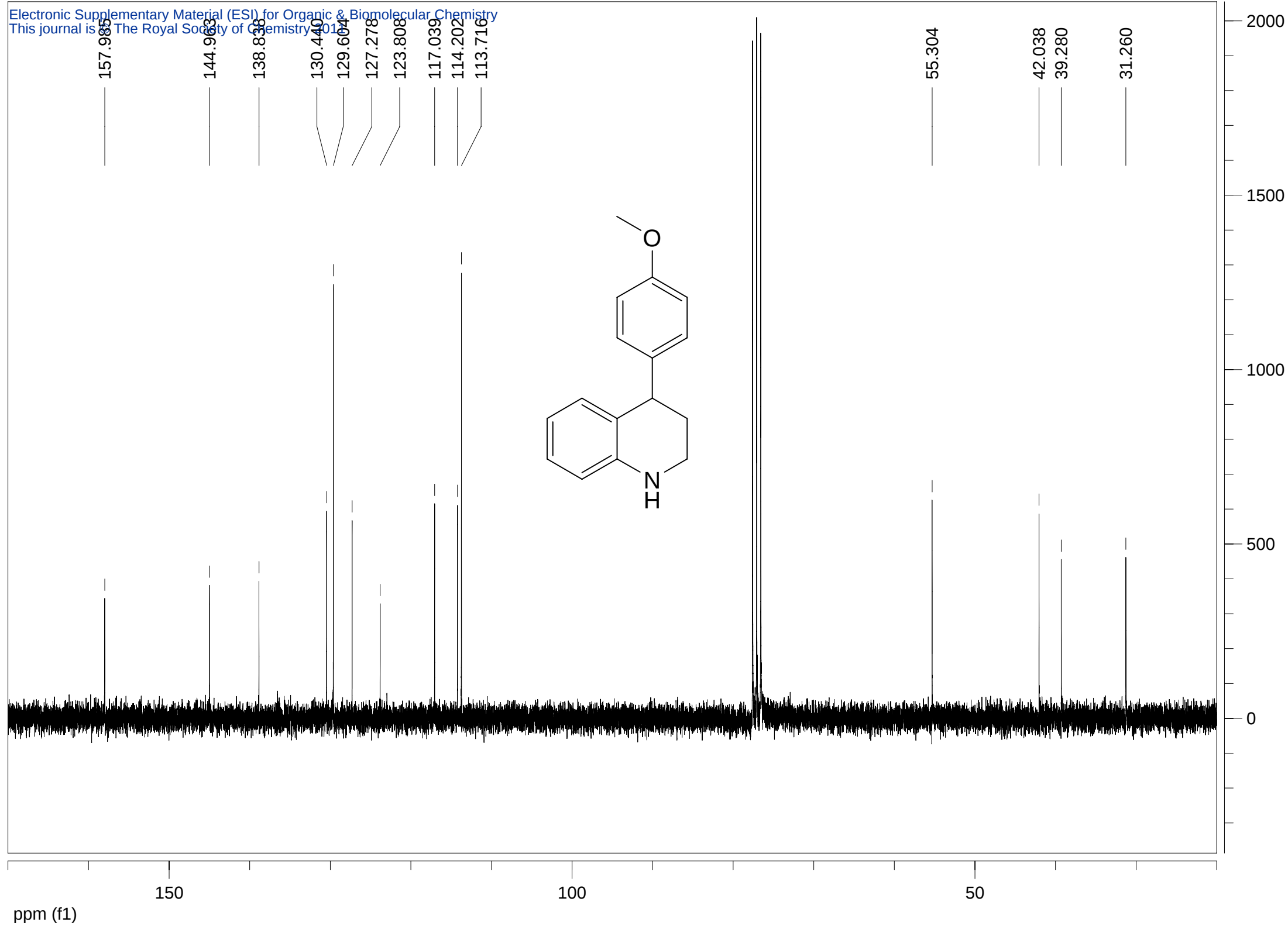
Date: 06.02.2007 01:45:04



tt155.2_ODH_982_flow06_22.DATA [Jasco UV 1]

Index	Start	Time	End	Area %
	[Min]	[Min]	[Min]	[%]
1	16,213	16,750	17,391	4,409
2	23,760	24,833	26,331	95,591
Total				100,000



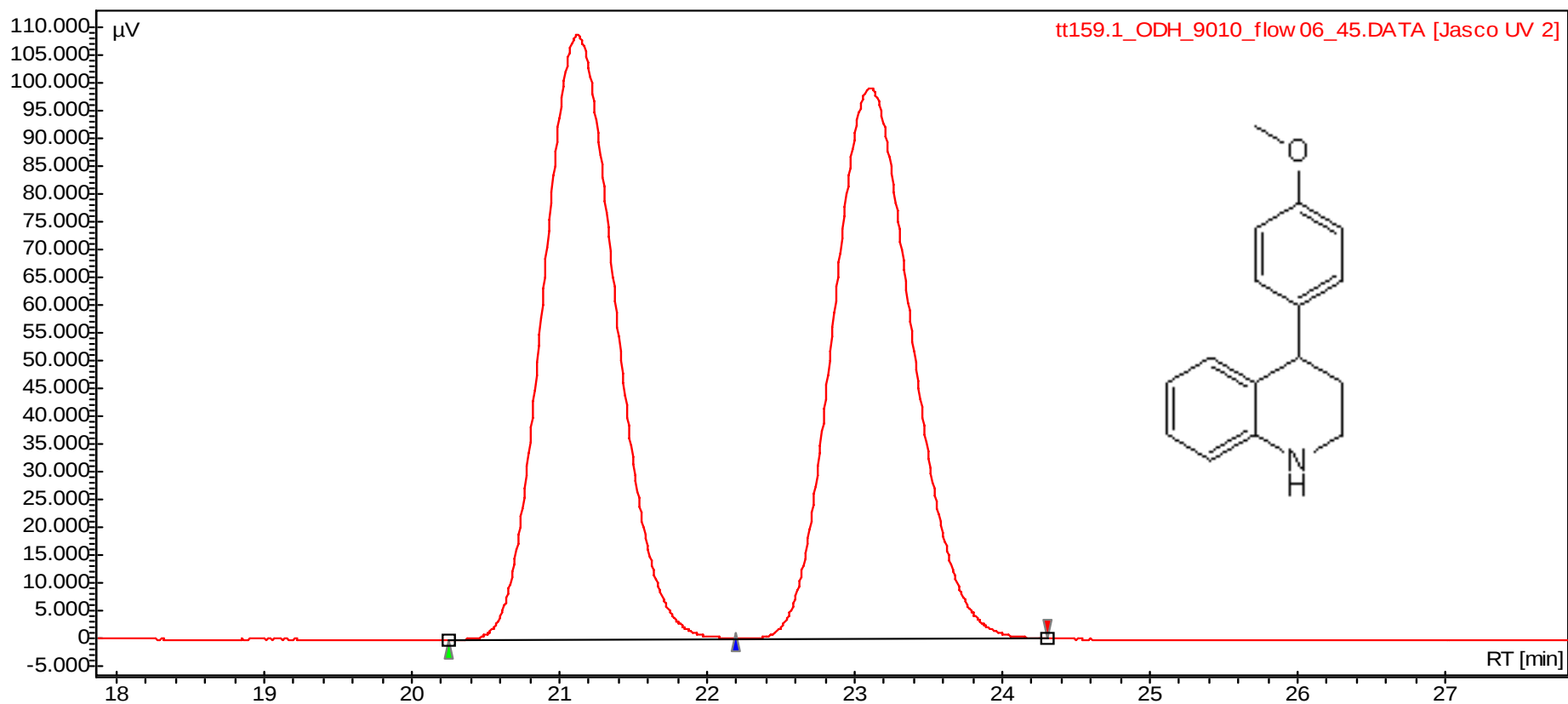


Chromatogram : tt159.1_ODH_9010_flow06_45

Data file: tt159.1_ODH_9010_flow06_45.DATA

Method: HPLC1_ODH_9010_flow06_acq_45

Date: 01.02.2007 19:45:45



tt159.1_ODH_9010_flow06_45.DATA [Jasco UV 2]

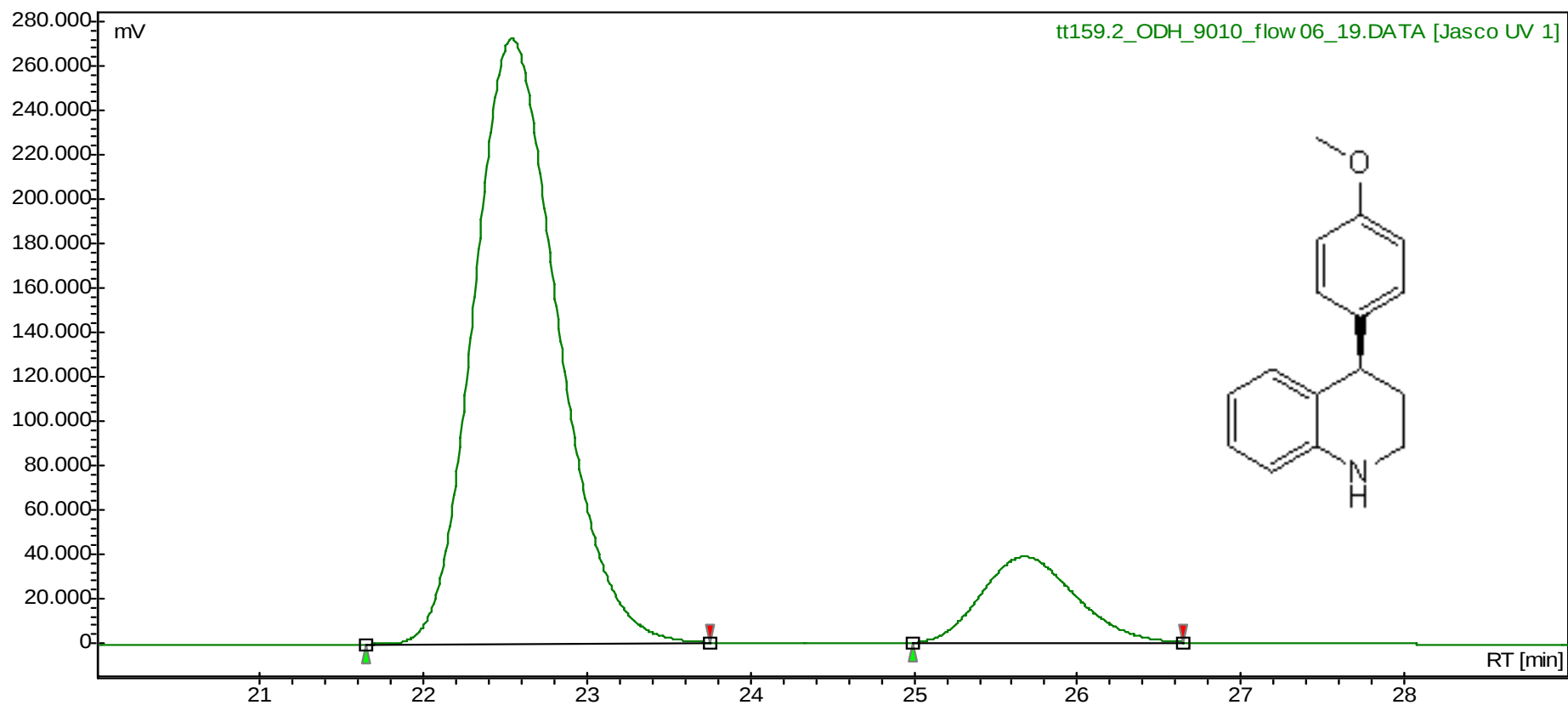
Index	Start	Time	End	Area %
	[Min]	[Min]	[Min]	[%]
1	20,249	21,125	22,192	50,028
2	22,192	23,100	24,302	49,972
Total				100,000

Chromatogram : tt159.2_ODH_9010_flow06_19

Data file: tt159.2_ODH_9010_flow06_19.DATA

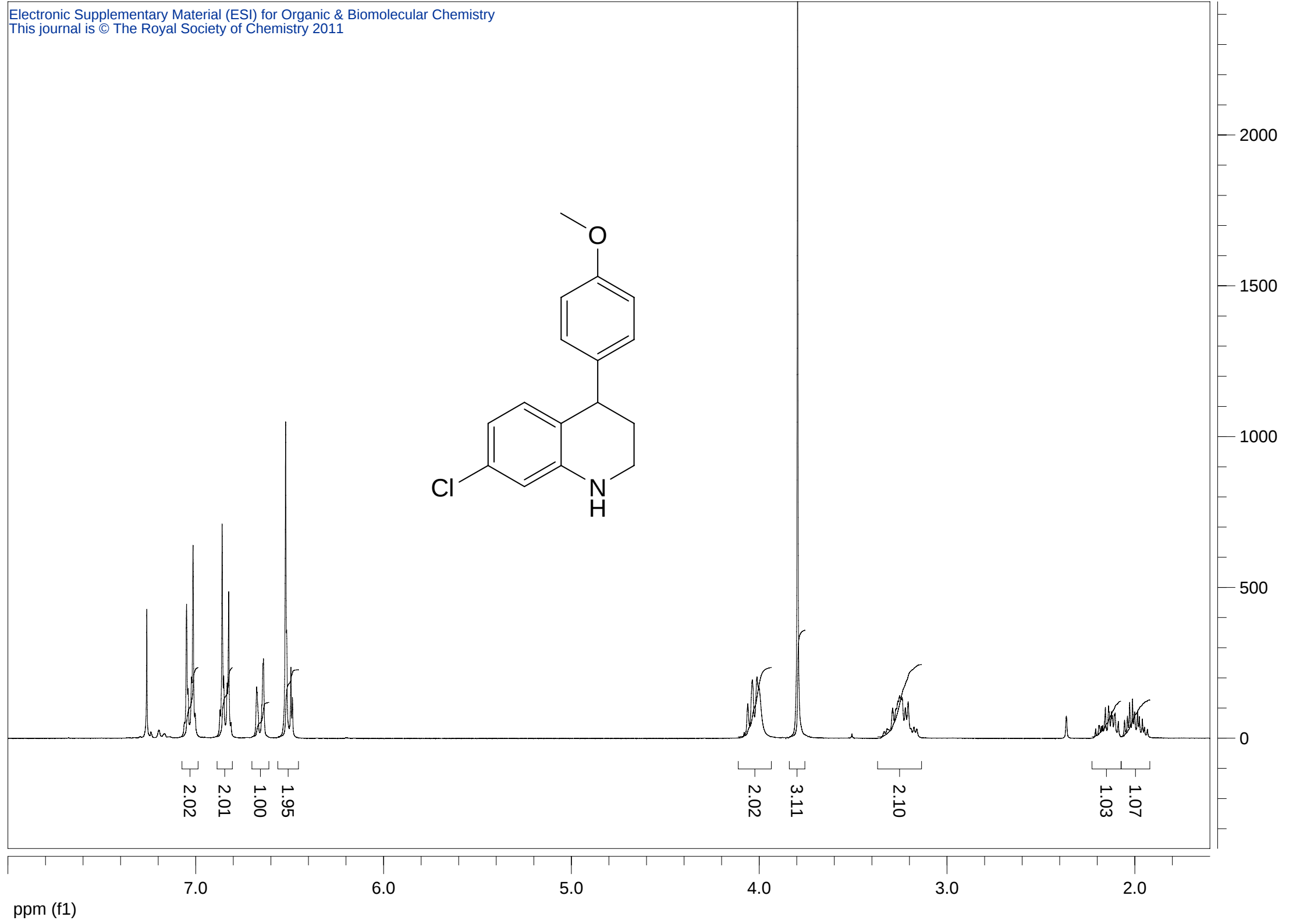
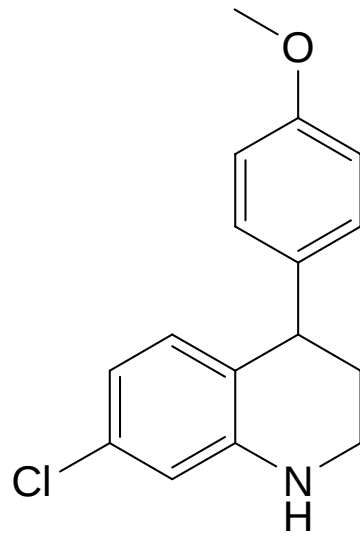
Method: HPLC2_ODH_9010_flow06_acq30

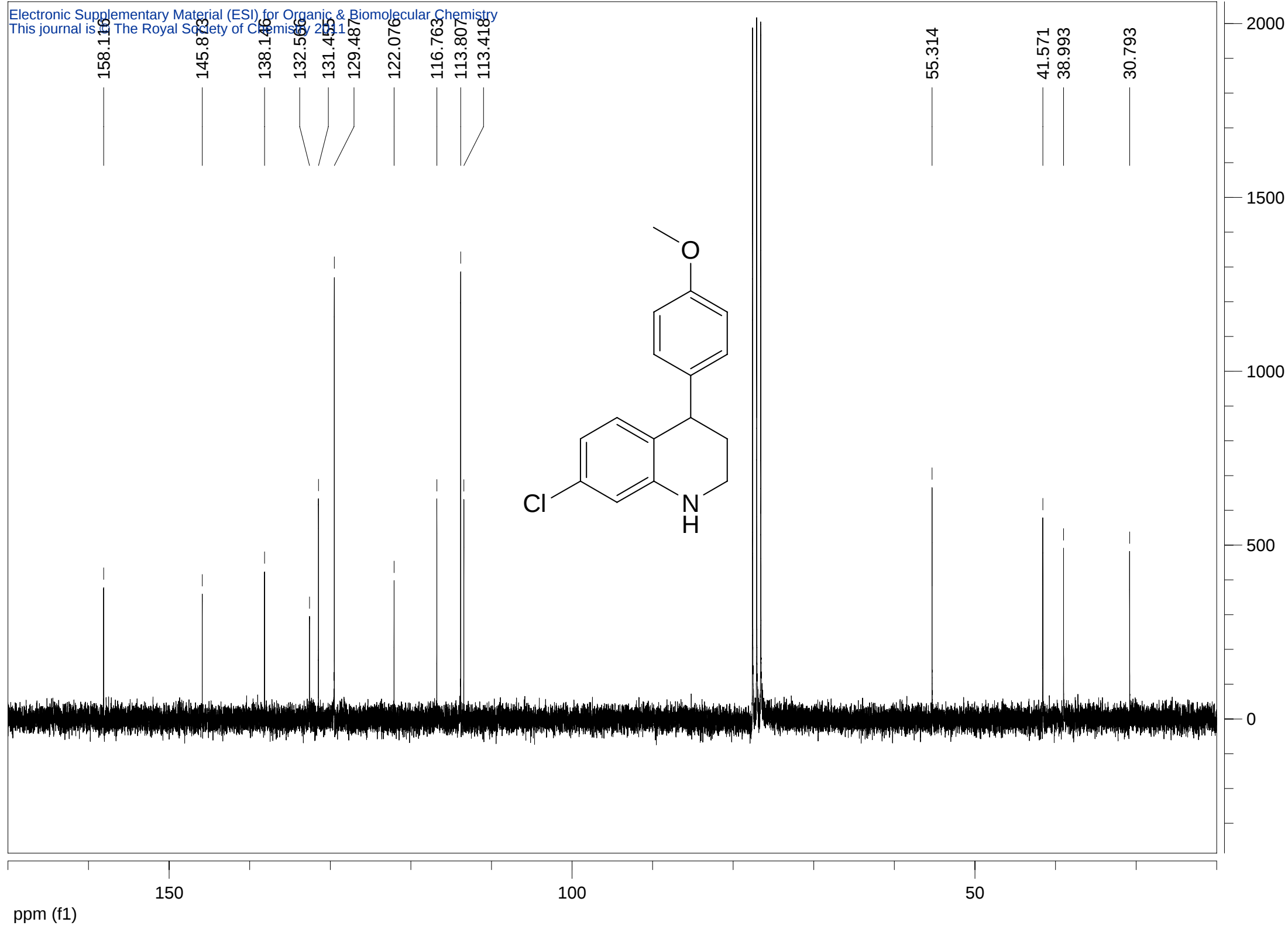
Date: 06.02.2007 00:07:15



tt159.2_ODH_9010_flow06_19.DATA [Jasco UV 1]

Index	Start	Time	End	Area %
	[Min]	[Min]	[Min]	[%]
1	21,653	22,542	23,755	86,367
2	24,994	25,675	26,645	13,633
Total				100,000



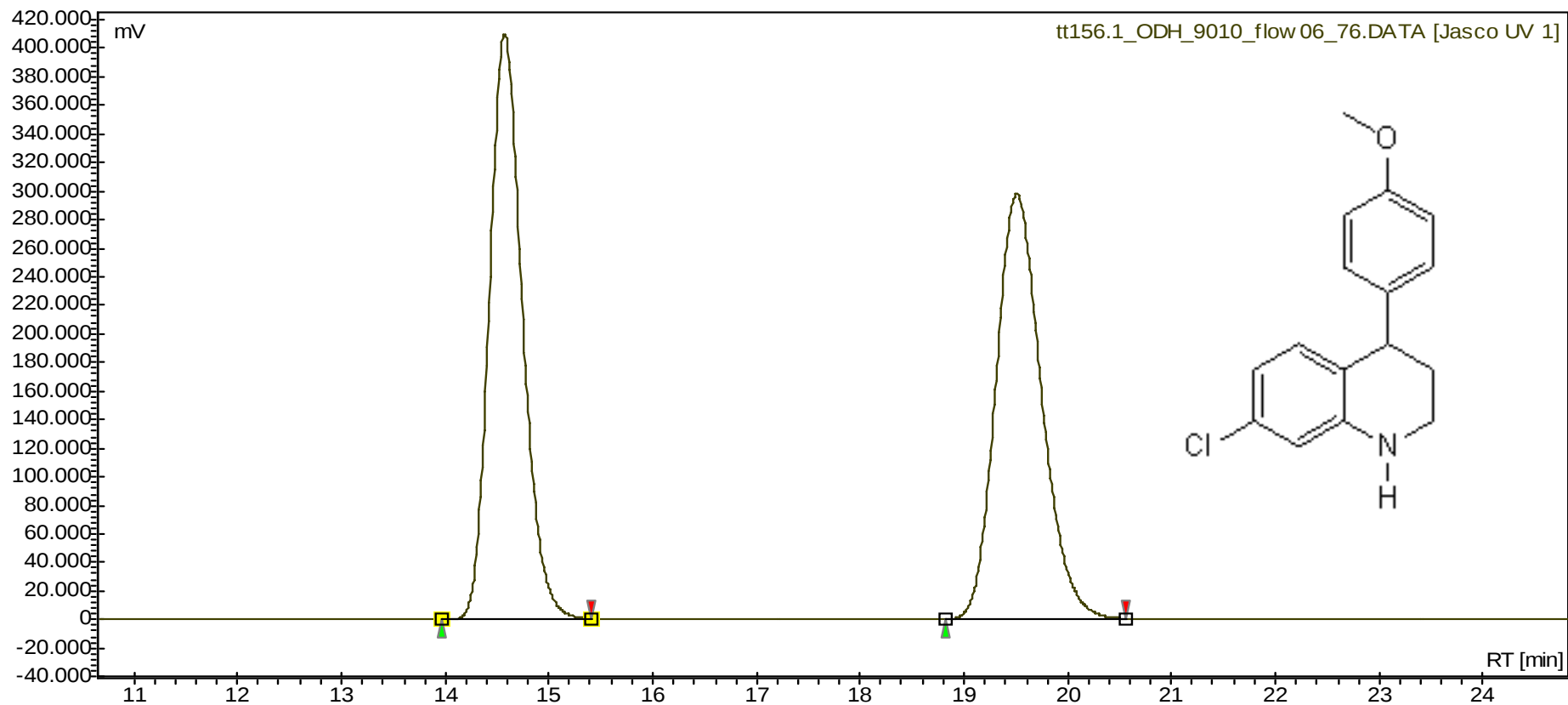


Chromatogram : tt156.1_ODH_9010_flow06_76

Data file: tt156.1_ODH_9010_flow06_76.DATA

Method: HPLC2_ODH_9010_flow06_acq45

Date: 01.02.2007 10:36:02

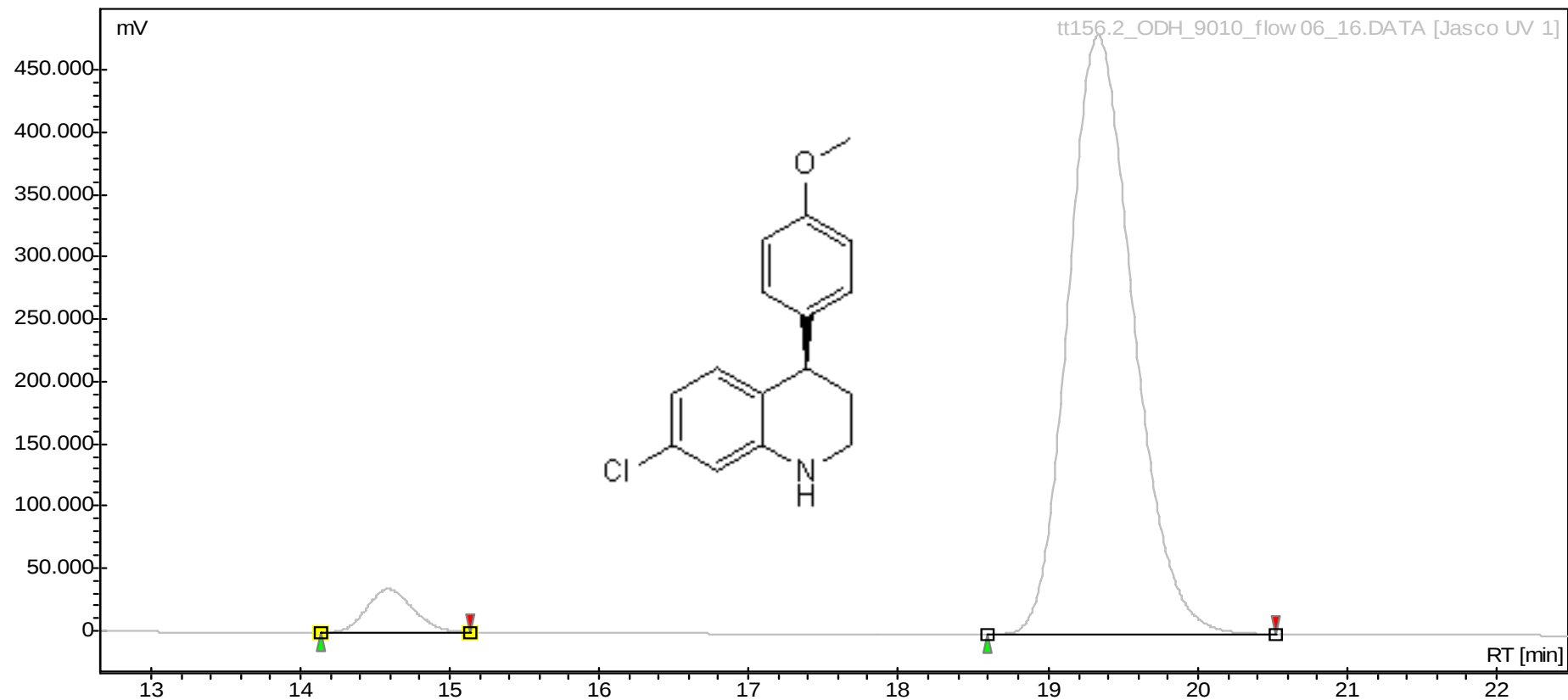


tt156.1_ODH_9010_flow06_76.DATA [Jasco UV 1]

Index	Start	Time	End	Area %
	[Min]	[Min]	[Min]	[%]
1	13,975	14,575	15,418	49,875
2	18,815	19,508	20,555	50,125
Total				100,000

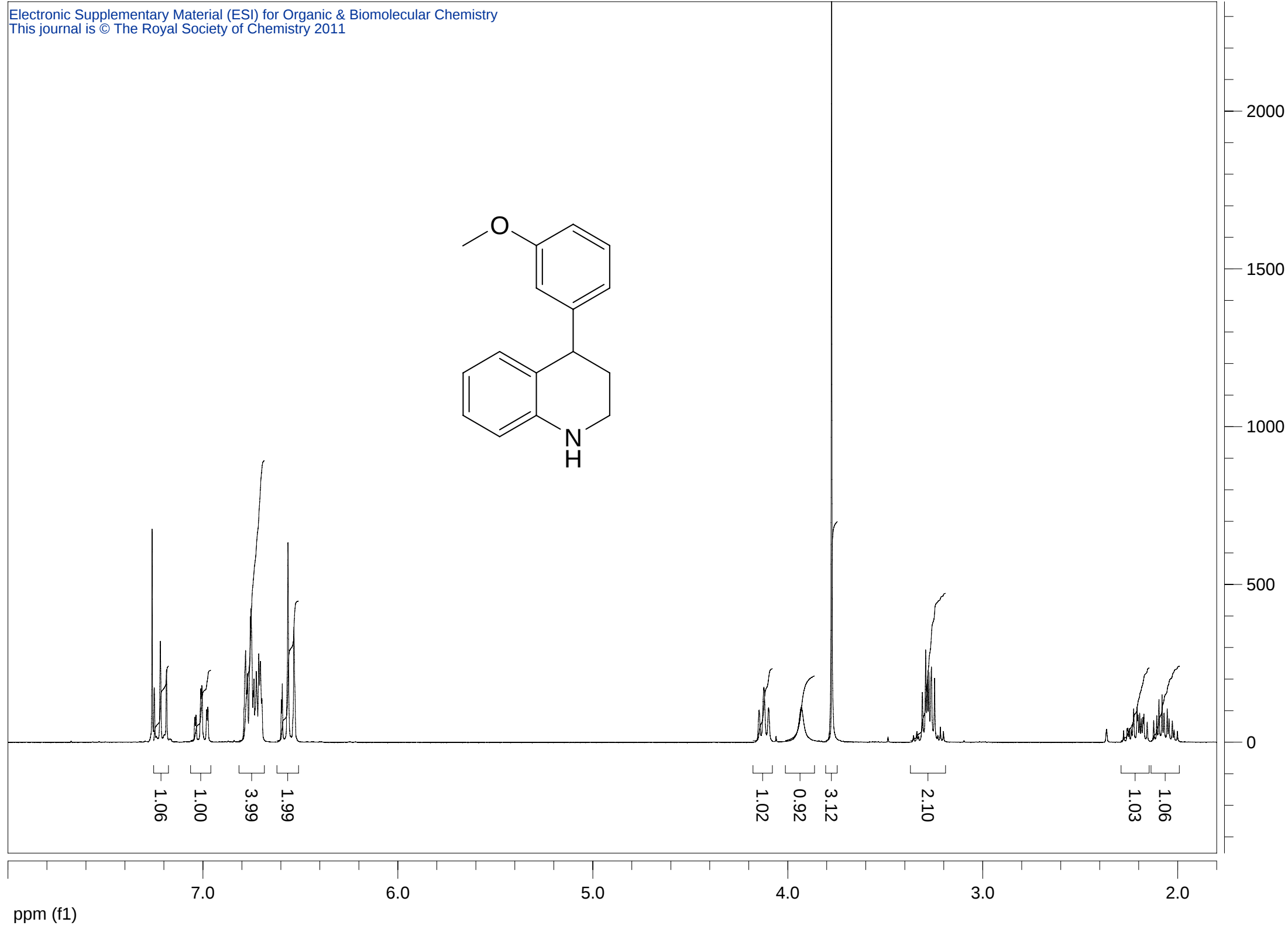
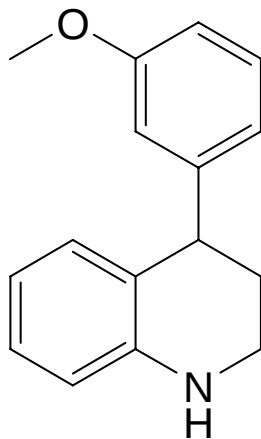
Chromatogram : tt156.2_ODH_9010_flow06_16

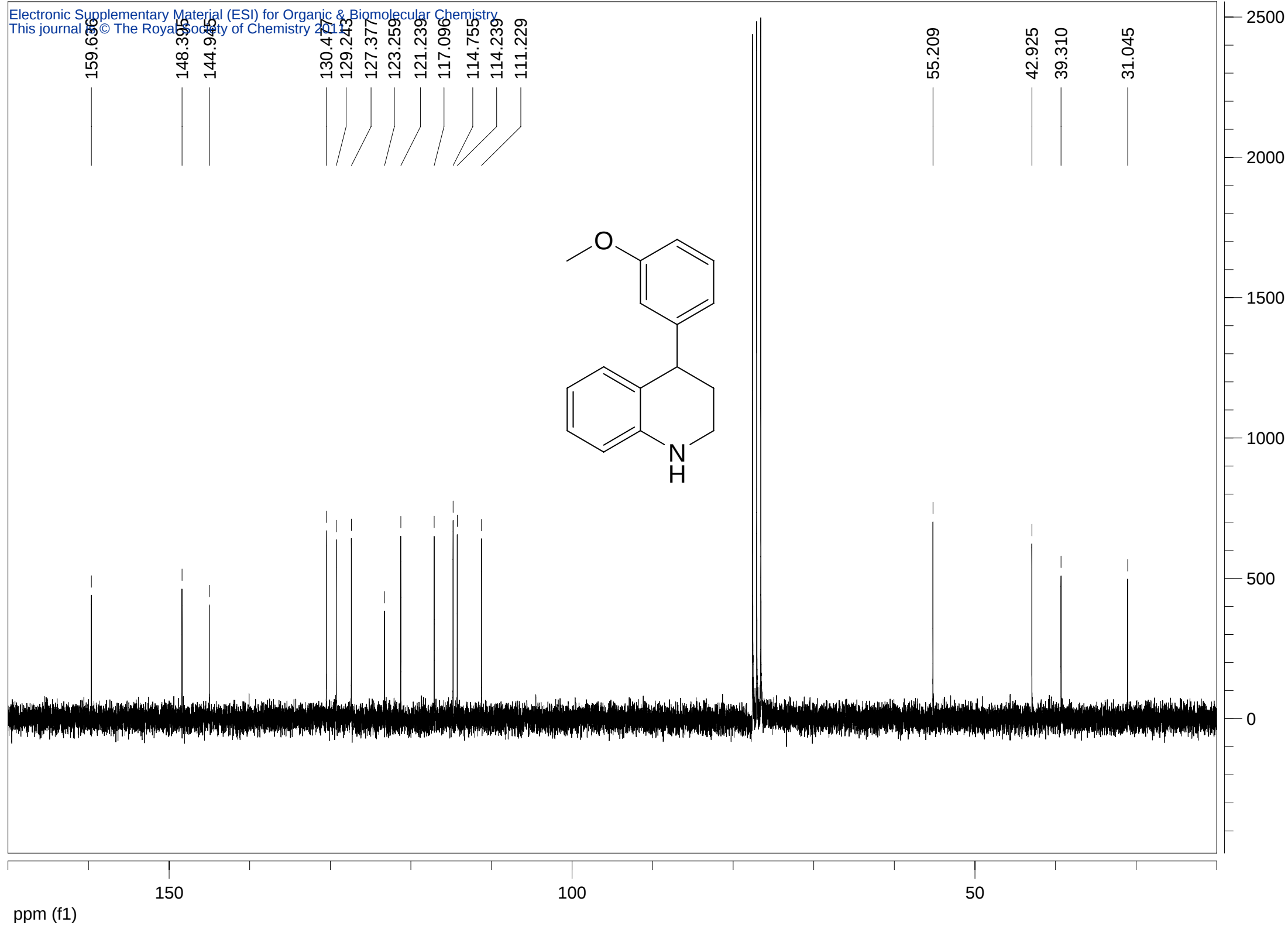
Data file: tt156.2_ODH_9010_flow06_16.DATA
Method: HPLC2_ODH_9010_flow06_acq30
Date: 05.02.2007 22:14:24



tt156.2_ODH_9010_flow06_16.DATA [Jasco UV 1]

Index	Start	Time	End	Area %
	[Min]	[Min]	[Min]	[%]
1	14,138	14,583	15,129	4,931
2	18,595	19,333	20,522	95,069
Total				100,000



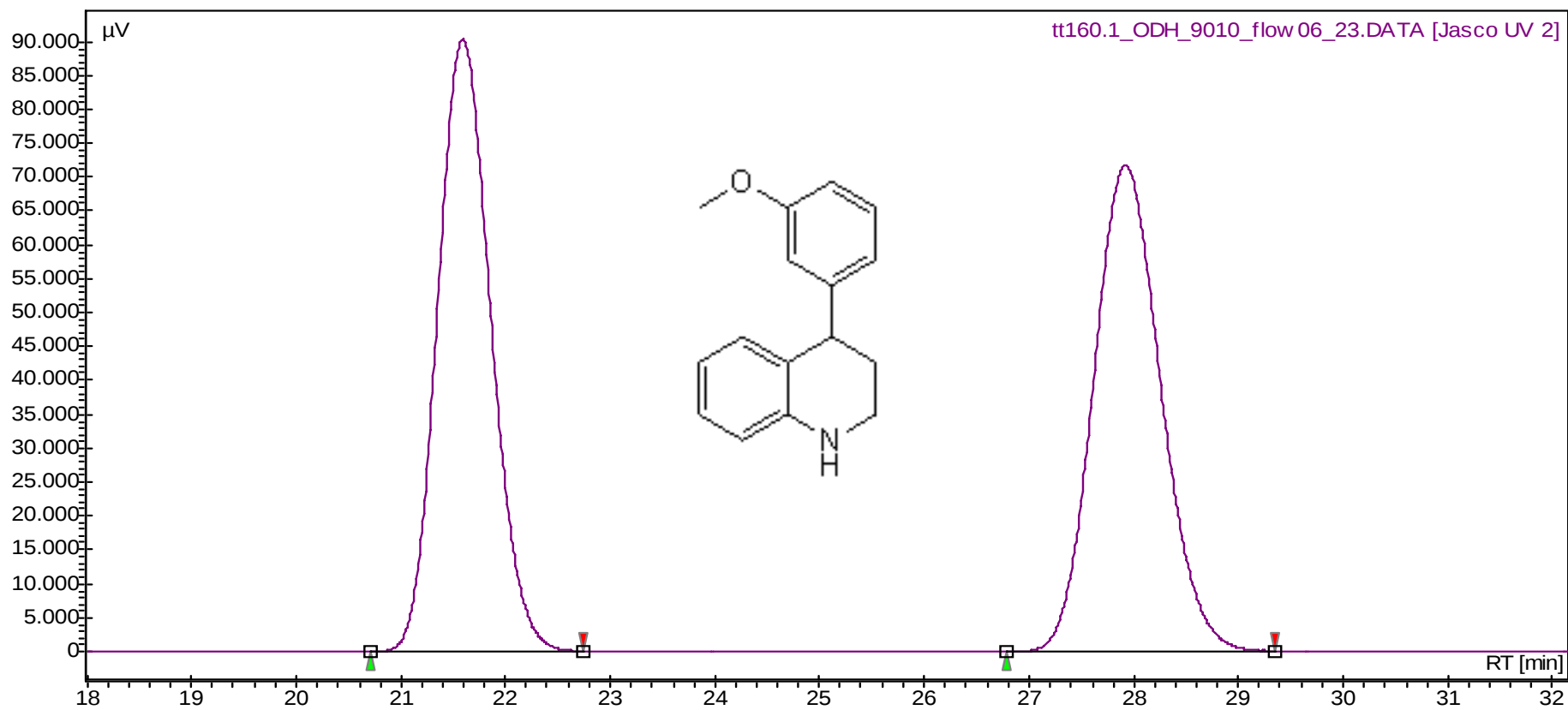


Chromatogram : tt160.1_ODH_9010_flow06_23

Data file: tt160.1_ODH_9010_flow06_23.DATA

Method: HPLC1_ODH_9010_flow06_acq_45

Date: 01.02.2007 20:33:28



tt160.1_ODH_9010_flow06_23.DATA [Jasco UV 2]

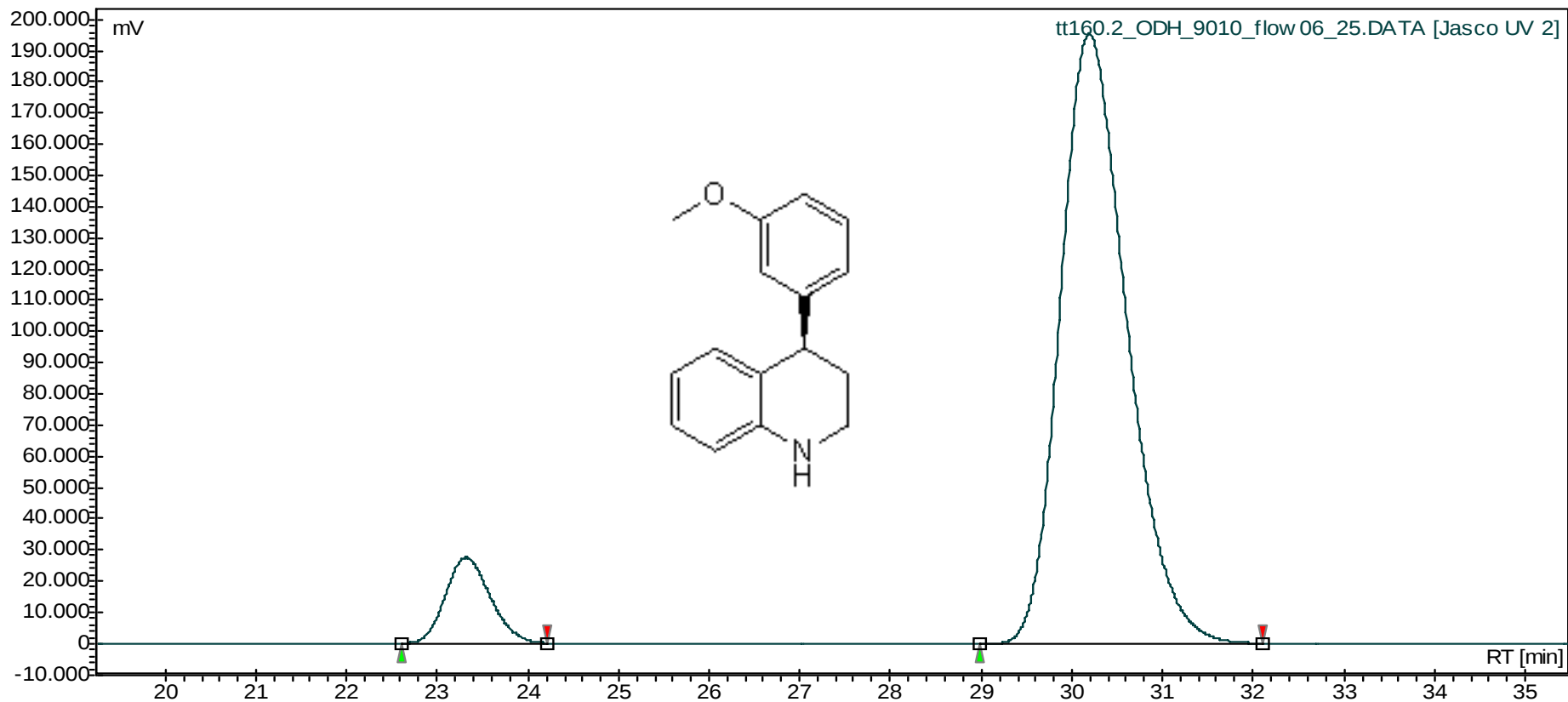
Index	Start	Time	End	Area %
	[Min]	[Min]	[Min]	[%]
1	20,710	21,592	22,742	49,954
2	26,786	27,917	29,351	50,046
Total				100,000

Chromatogram : tt160.2_ODH_9010_flow06_25

Data file: tt160.2_ODH_9010_flow06_25.DATA

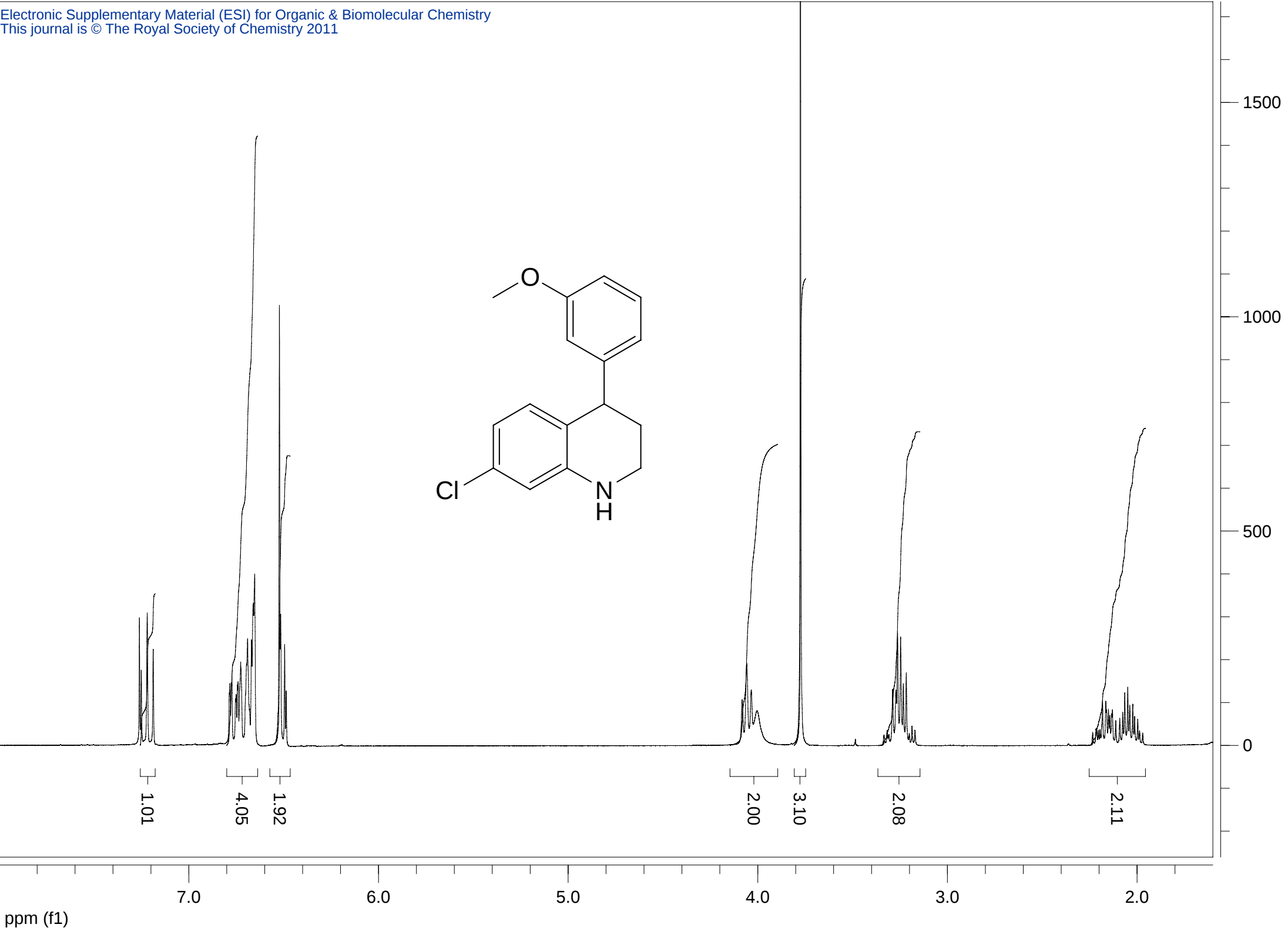
Method: HPLC2_ODH_9010_flow06_acq45

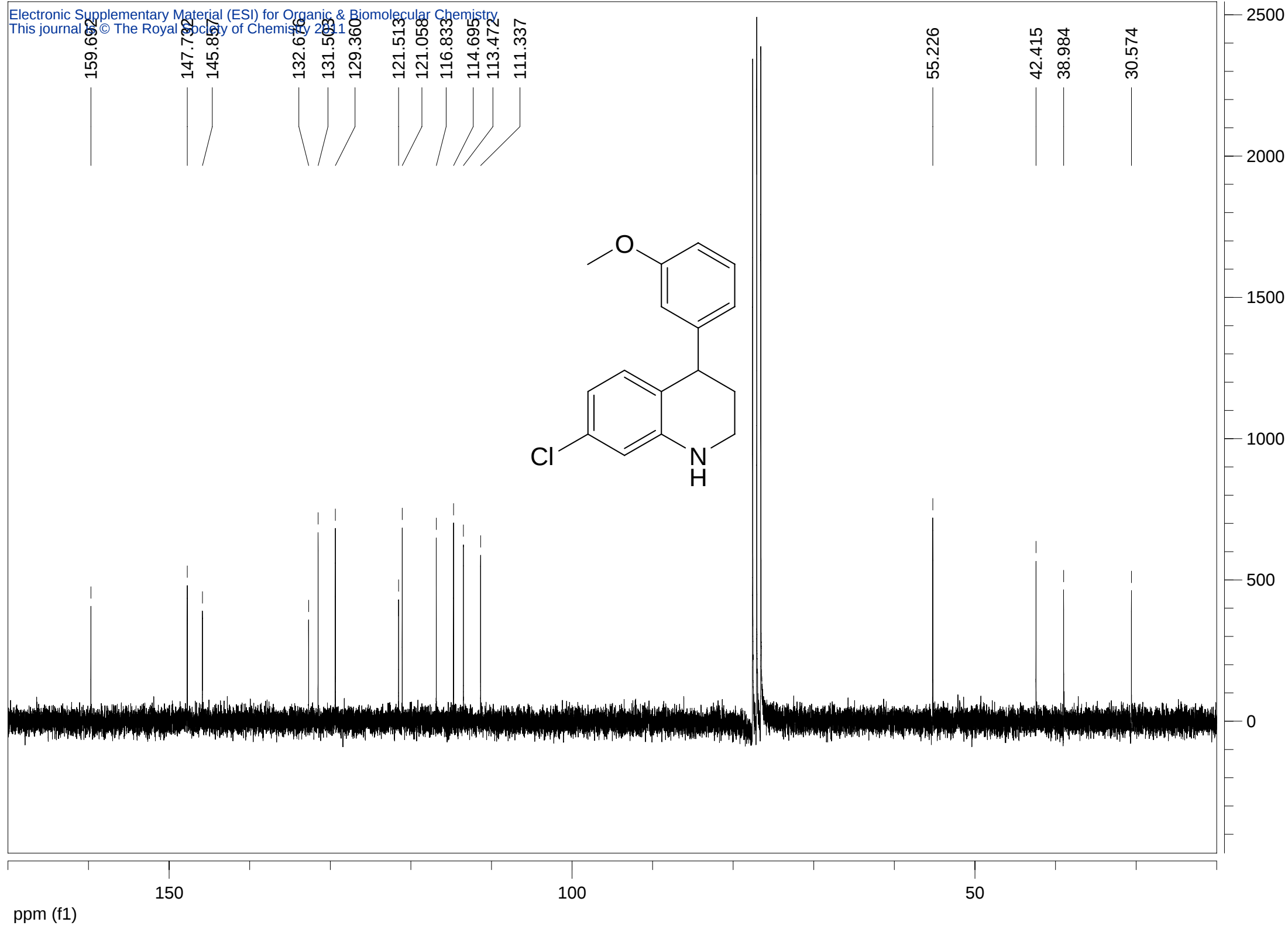
Date: 06.02.2007 10:49:46



tt160.2_ODH_9010_flow06_25.DATA [Jasco UV 2]

Index	Start	Time	End	Area %
	[Min]	[Min]	[Min]	[%]
1	22,610	23,317	24,215	8,688
2	28,985	30,192	32,105	91,312
Total				100,000



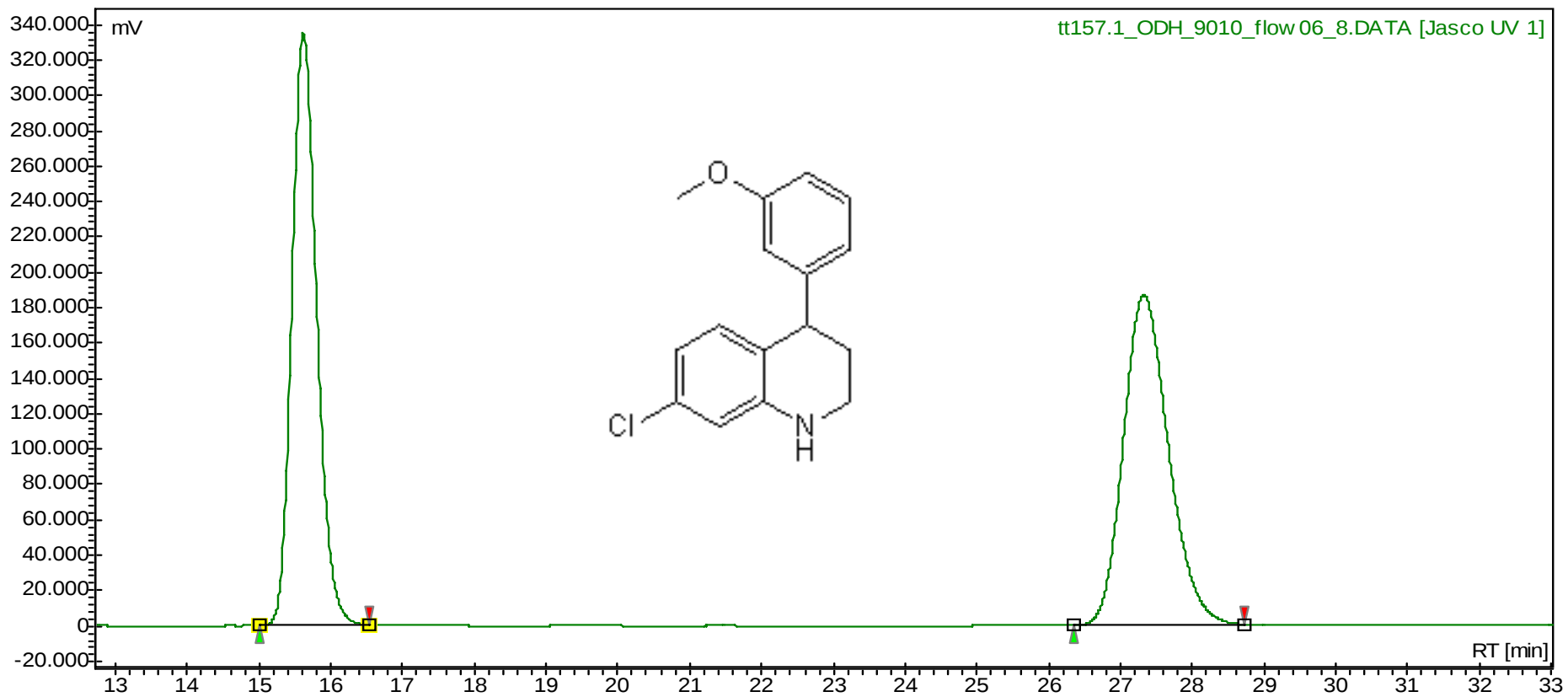


Chromatogram : tt157.1_ODH_9010_flow06_8

Data file: tt157.1_ODH_9010_flow06_8.DATA

Method: HPLC2_ODH_9010_flow06_acq45

Date: 01.02.2007 11:23:40



tt157.1_ODH_9010_flow06_8.DATA [Jasco UV 1]

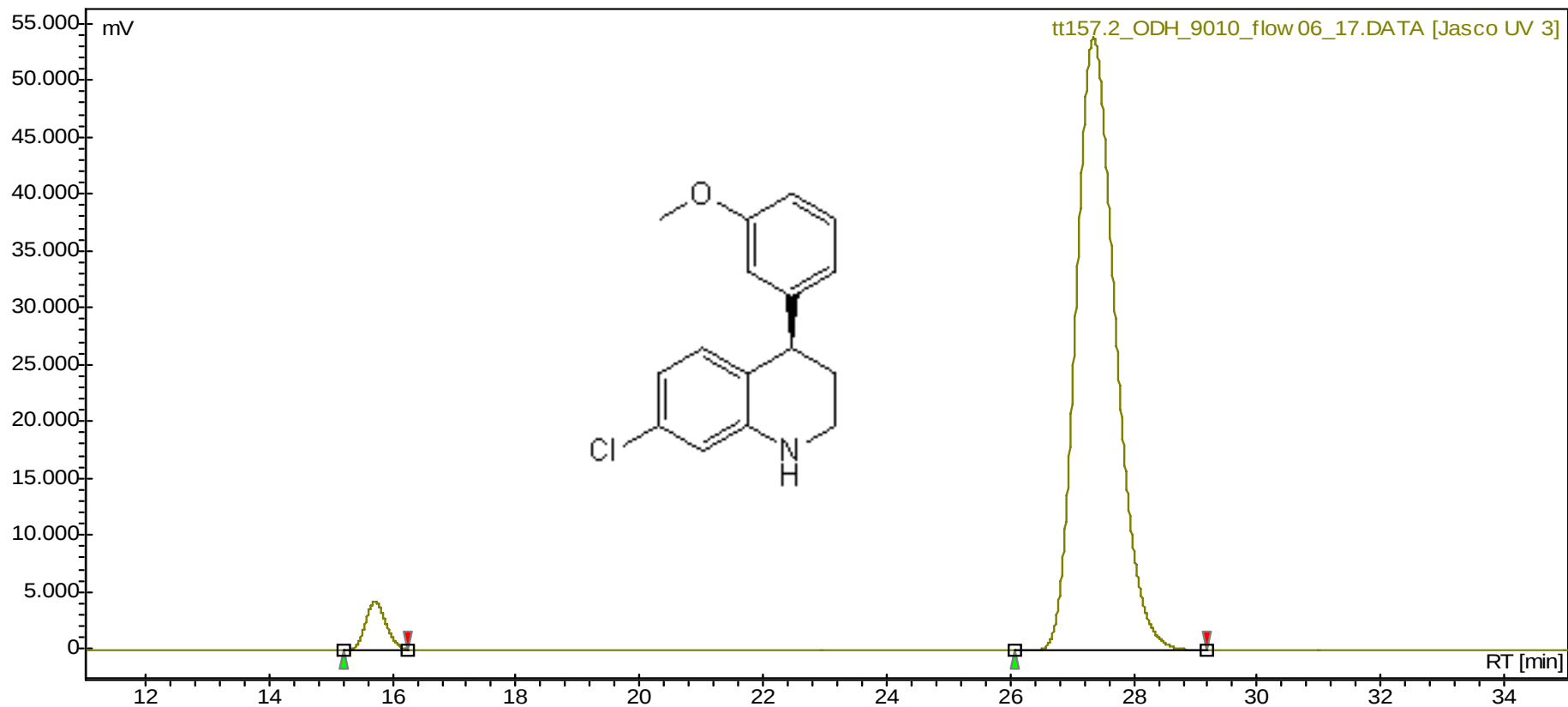
Index	Start	Time	End	Area %
	[Min]	[Min]	[Min]	[%]
1	14,997	15,617	16,538	49,659
2	26,363	27,325	28,733	50,341
Total				100,000

Chromatogram : tt157.2_ODH_9010_flow06_17

Data file: tt157.2_ODH_9010_flow06_17.DATA

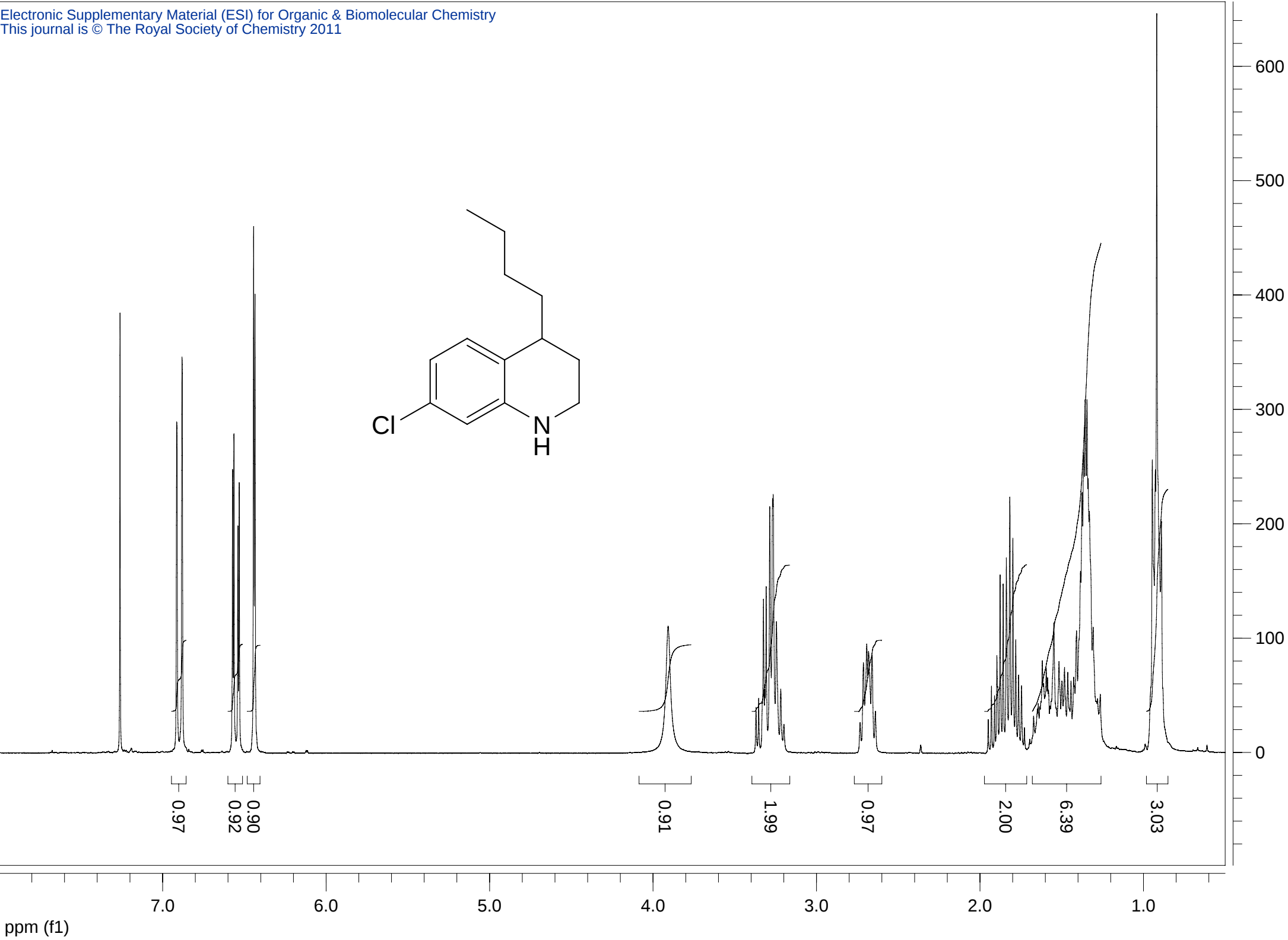
Method: HPLC2_ODH_9010_flow06_acq45

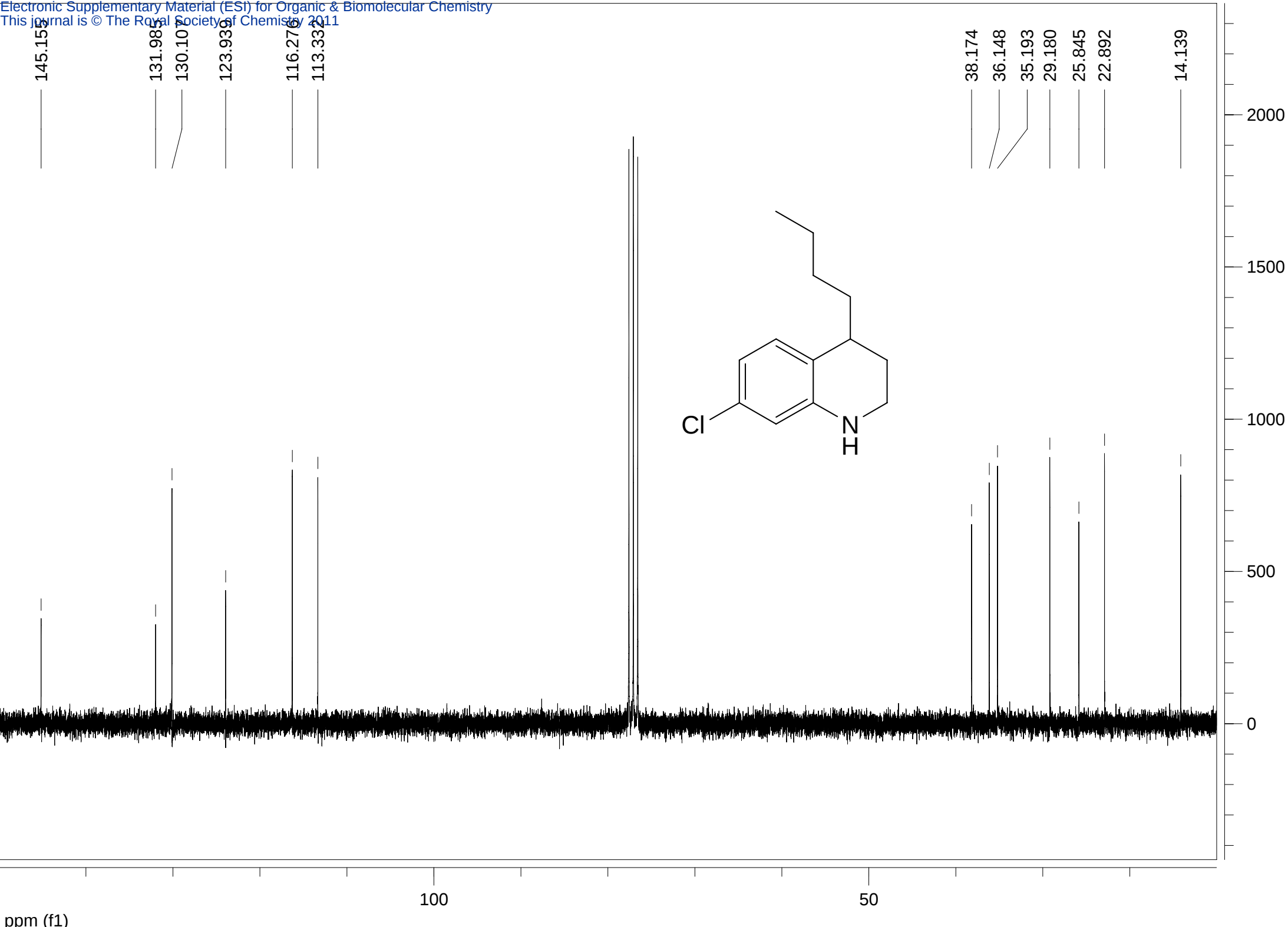
Date: 05.02.2007 22:46:59



tt157.2_ODH_9010_flow06_17.DATA [Jasco UV 3]

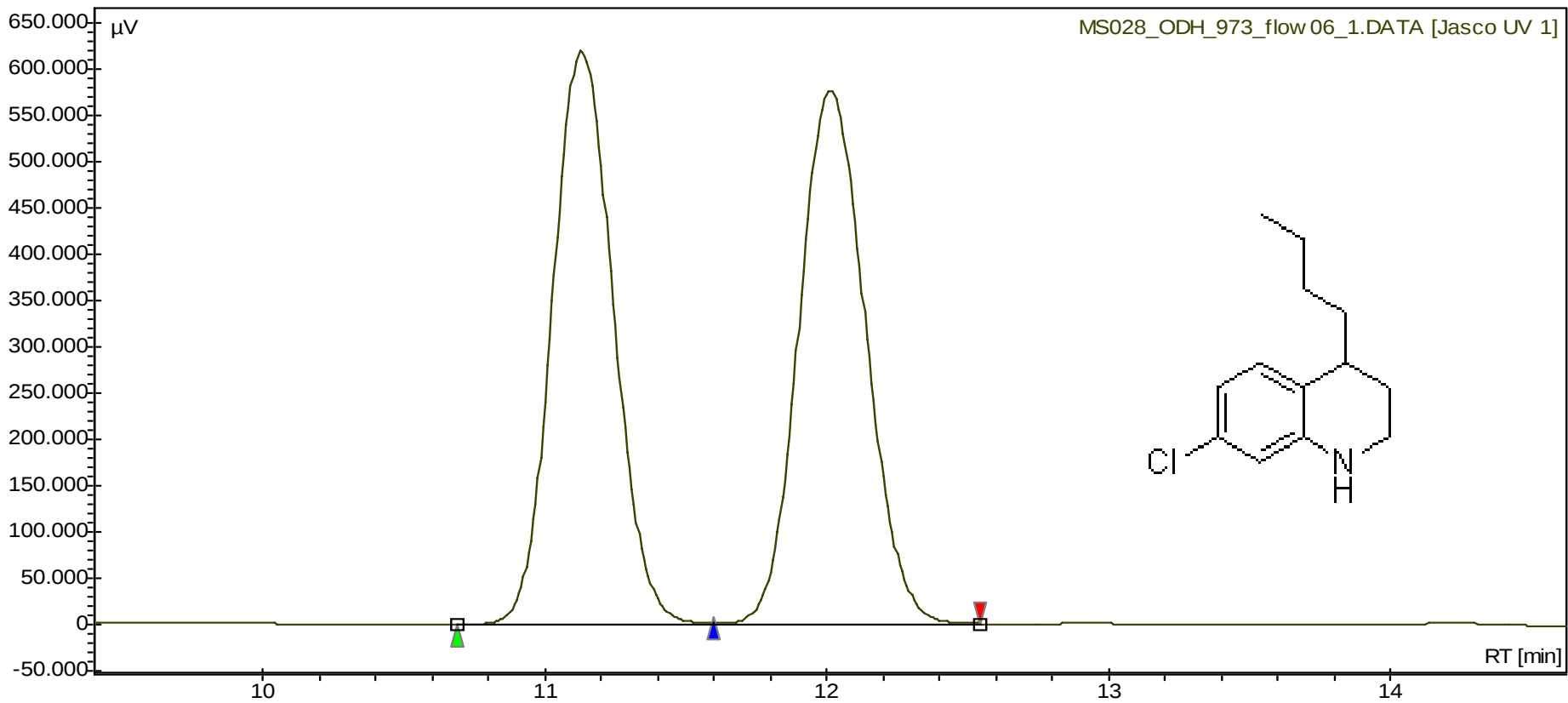
Index	Start	Time	End	Area %
	[Min]	[Min]	[Min]	[%]
2	15,210	15,717	16,246	3,938
1	26,075	27,350	29,184	96,062
Total				100,000





Chromatogram : MS028_ODH_973_flow06_1

Data file: MS028_ODH_973_flow06_1.DATA
Method: ODH_973_flow06_acq60
Date: 21.04.2006 22:05:59

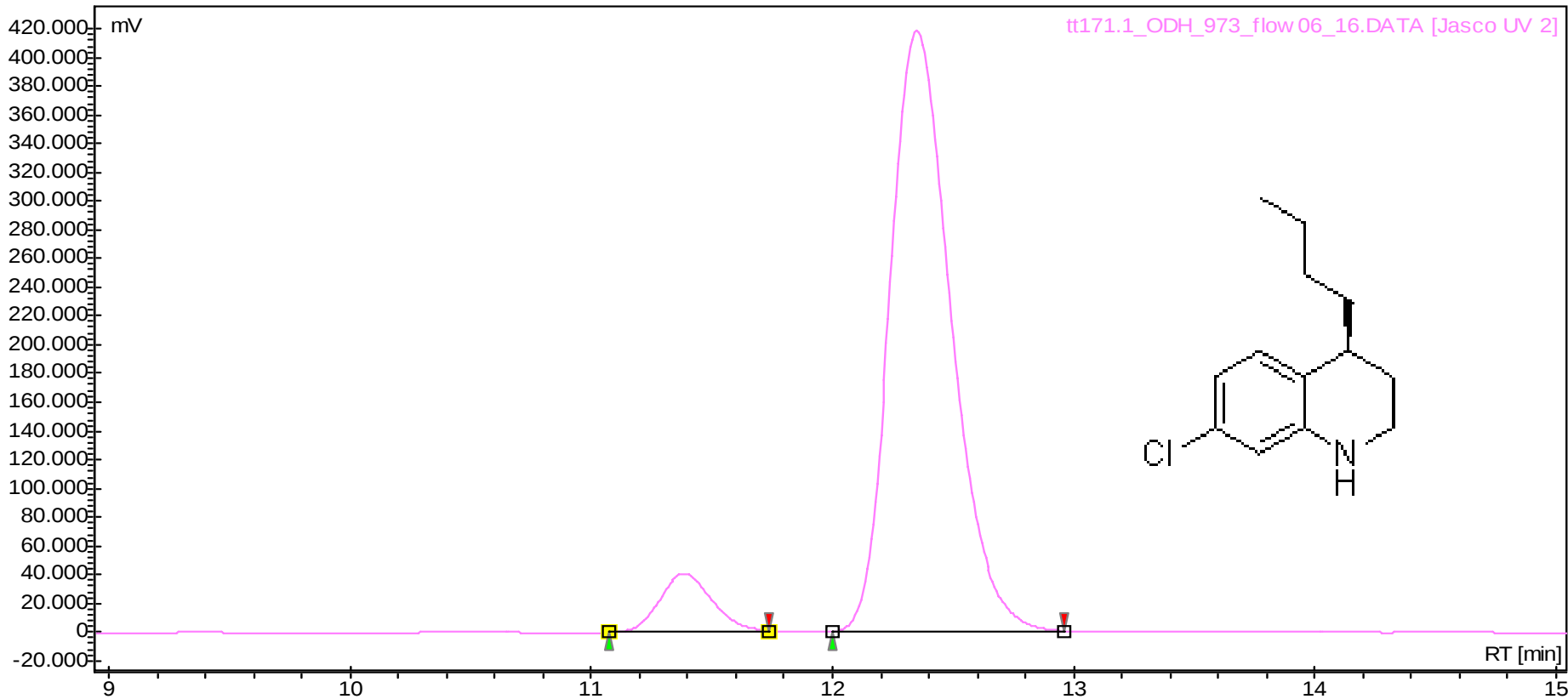


MS028_ODH_973_flow06_1.DATA [Jasco UV 1]

Index	Start	Time	End	Area %
	[Min]	[Min]	[Min]	[%]
1	10,689	11,125	11,598	49,591
2	11,598	12,008	12,544	50,409
Total				100,000

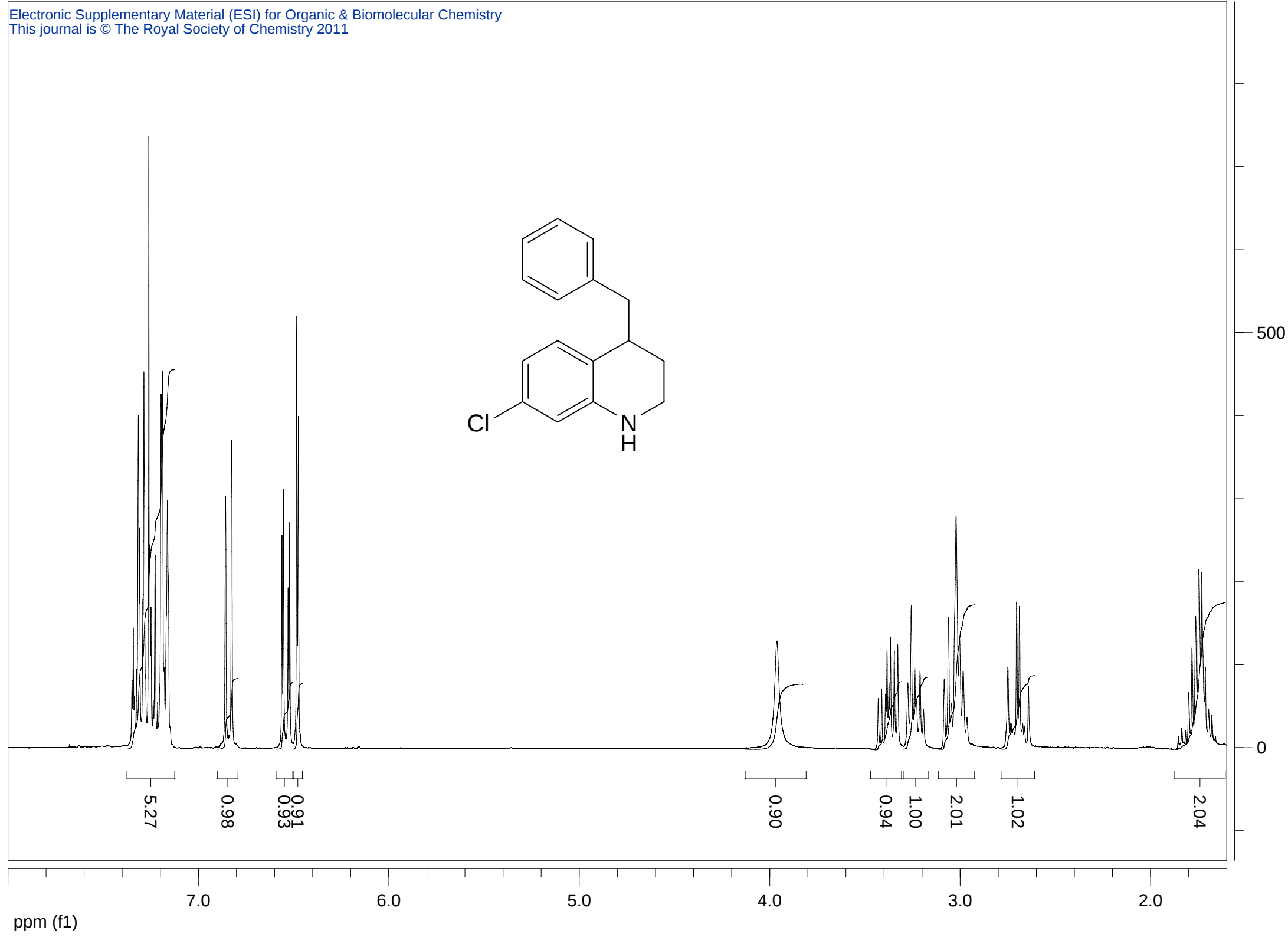
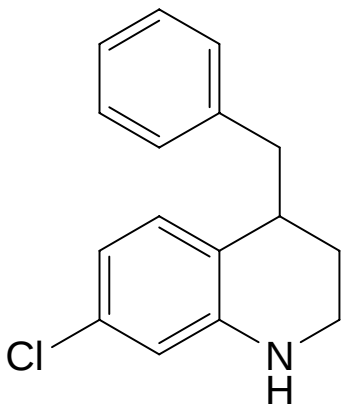
Chromatogram : tt171.1_ODH_973_flow06_16

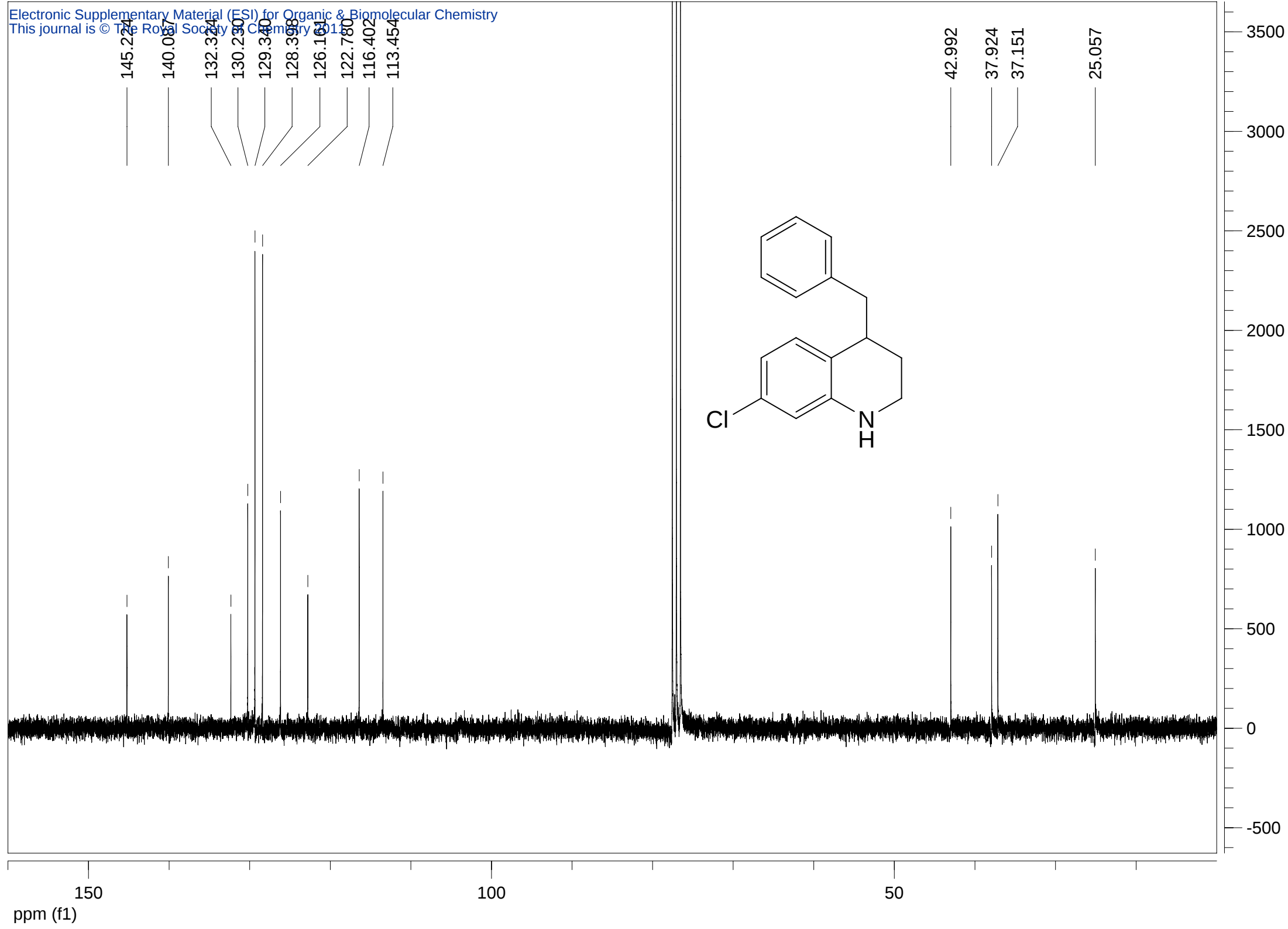
Data file: tt171.1_ODH_973_flow06_16.DATA
Method: HPLC2_ODH_973_flow06_acq30
Date: 13.02.2007 05:38:04



tt171.1_ODH_973_flow06_16.DATA [Jasco UV 2]

Index	Start	Time	End	Area %
	[Min]	[Min]	[Min]	[%]
1	11,073	11,383	11,735	7,733
2	11,997	12,350	12,961	92,267
Total				100,000



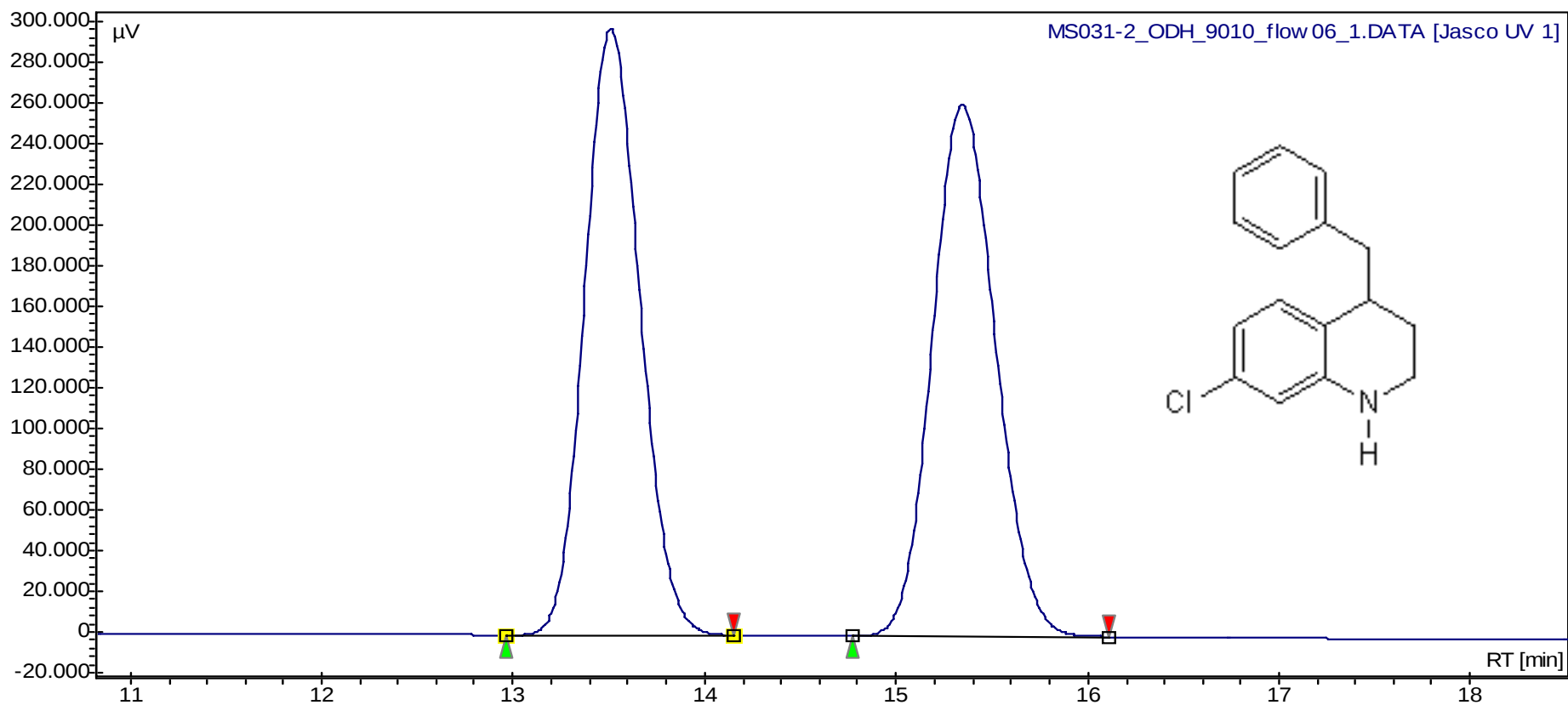


Chromatogram : MS031-2_ODH_9010_flow06_1

Data file: MS031-2_ODH_9010_flow06_1.DATA

Method: ODH_9010_flow06_acq50

Date: 26.04.2006 12:39:33



MS031-2_ODH_9010_flow06_1.DATA [Jasco UV 1]

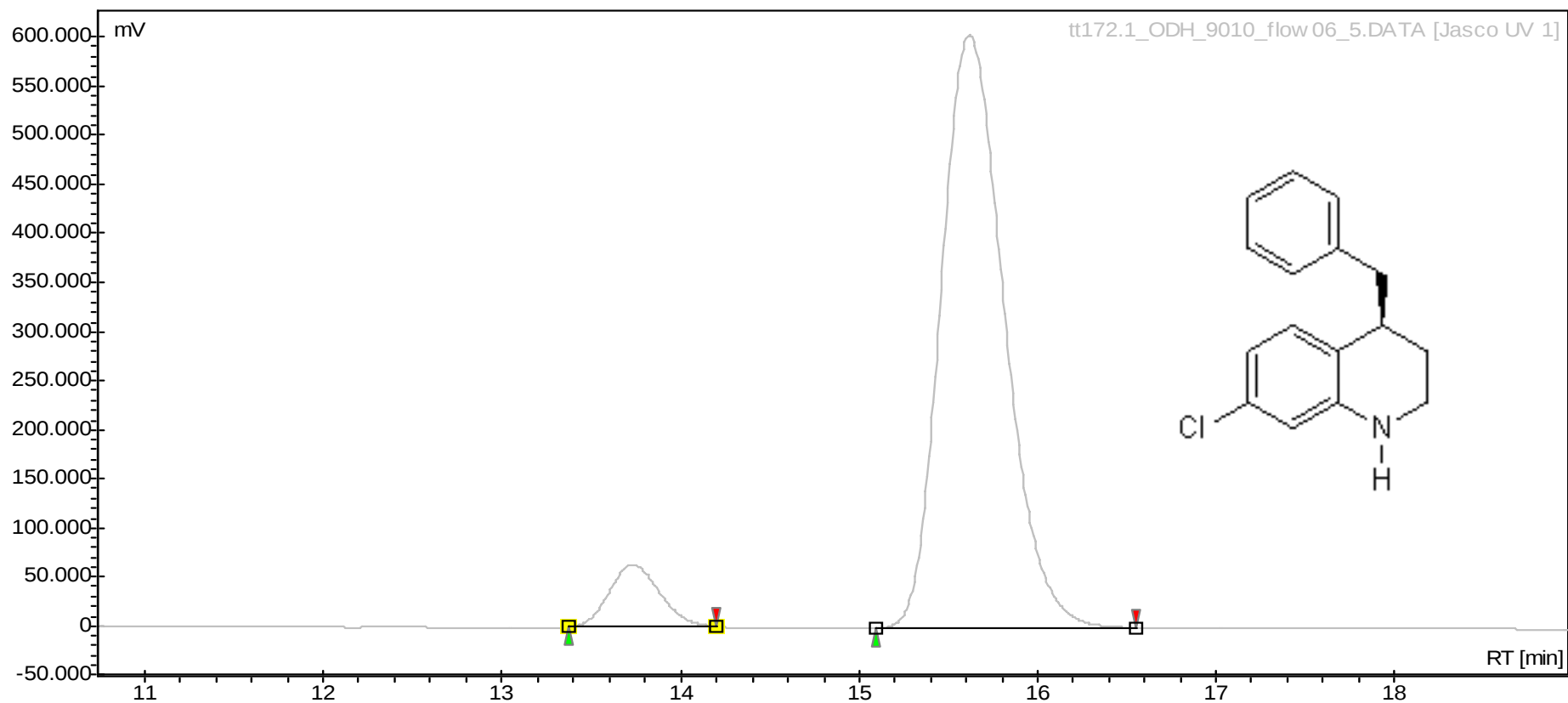
Index	Start	Time	End	Area %
	[Min]	[Min]	[Min]	[%]
1	12,965	13,508	14,153	49,957
2	14,773	15,342	16,116	50,043
Total				100,000

Chromatogram : tt172.1_ODH_9010_flow06_5

Data file: tt172.1_ODH_9010_flow06_5.DATA

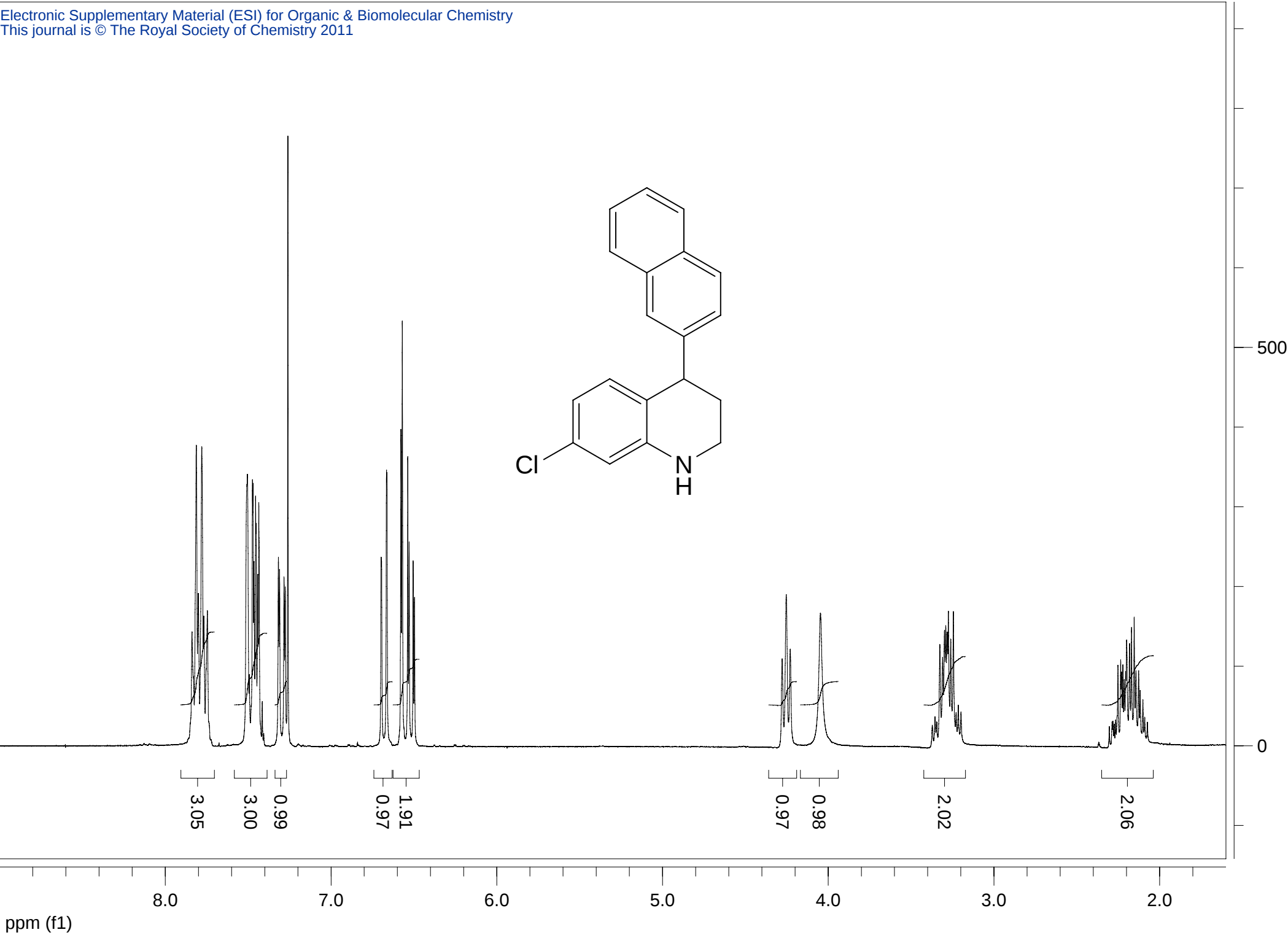
Method: HPLC2_ODH_9010_flow06_acq30

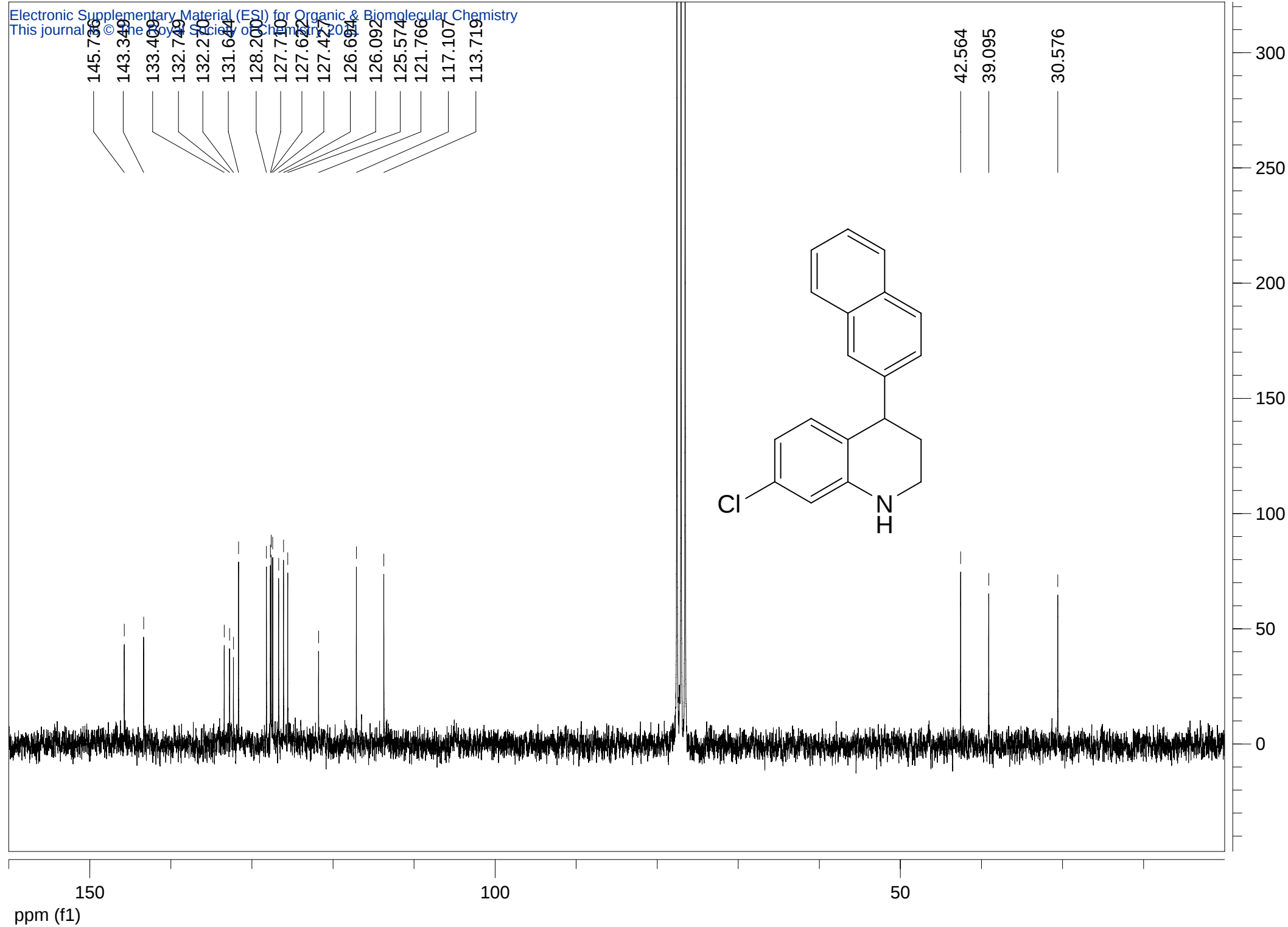
Date: 12.02.2007 22:54:25



tt172.1_ODH_9010_flow06_5.DATA [Jasco UV 1]

Index	Start	Time	End	Area %
	[Min]	[Min]	[Min]	[%]
1	13,377	13,733	14,201	7,718
2	15,095	15,617	16,547	92,282
Total				100,000



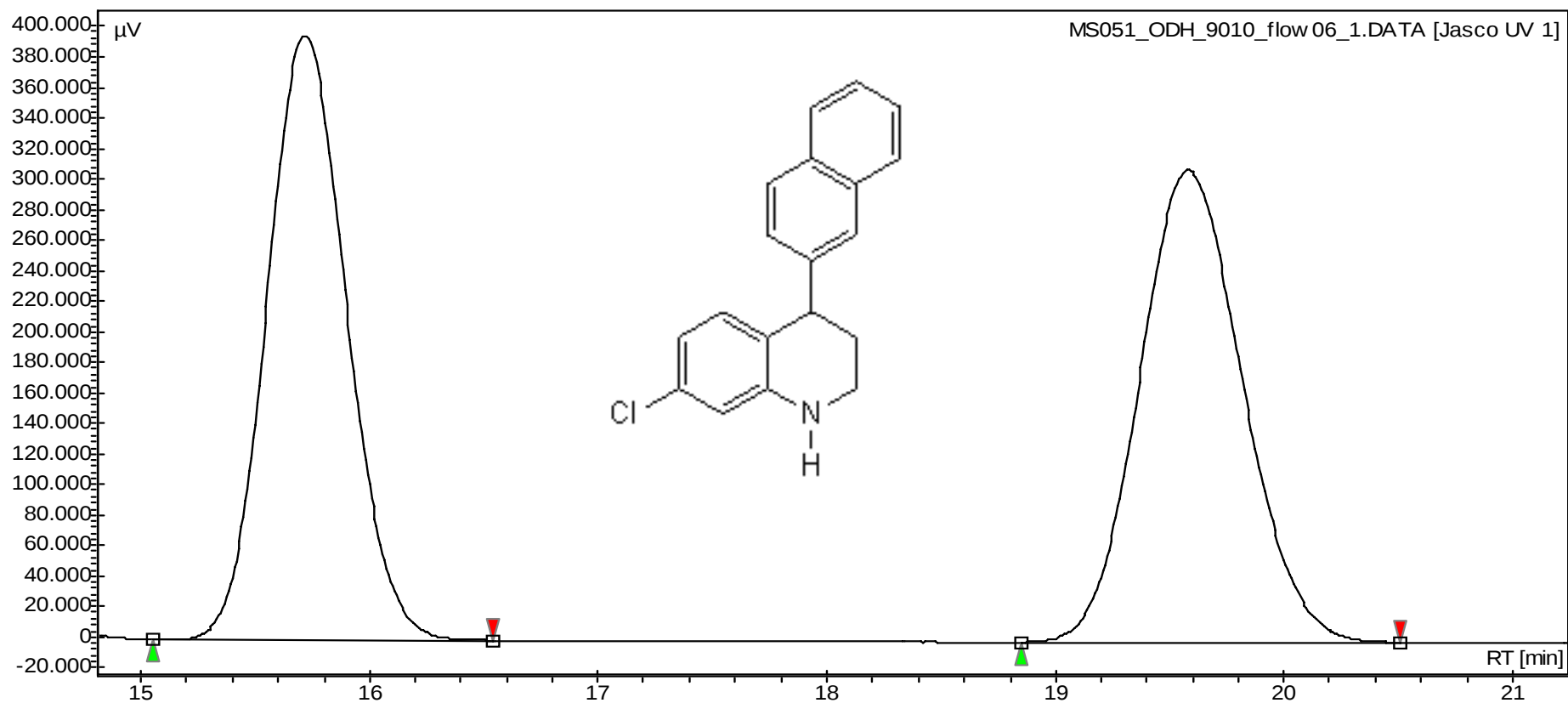


Chromatogram : MS051_ODH_9010_flow06_1

Data file: MS051_ODH_9010_flow06_1.DATA

Method: ODH_9010_flow06_acq50

Date: 08.06.2006 15:27:43



MS051_ODH_9010_flow06_1.DATA [Jasco UV 1]

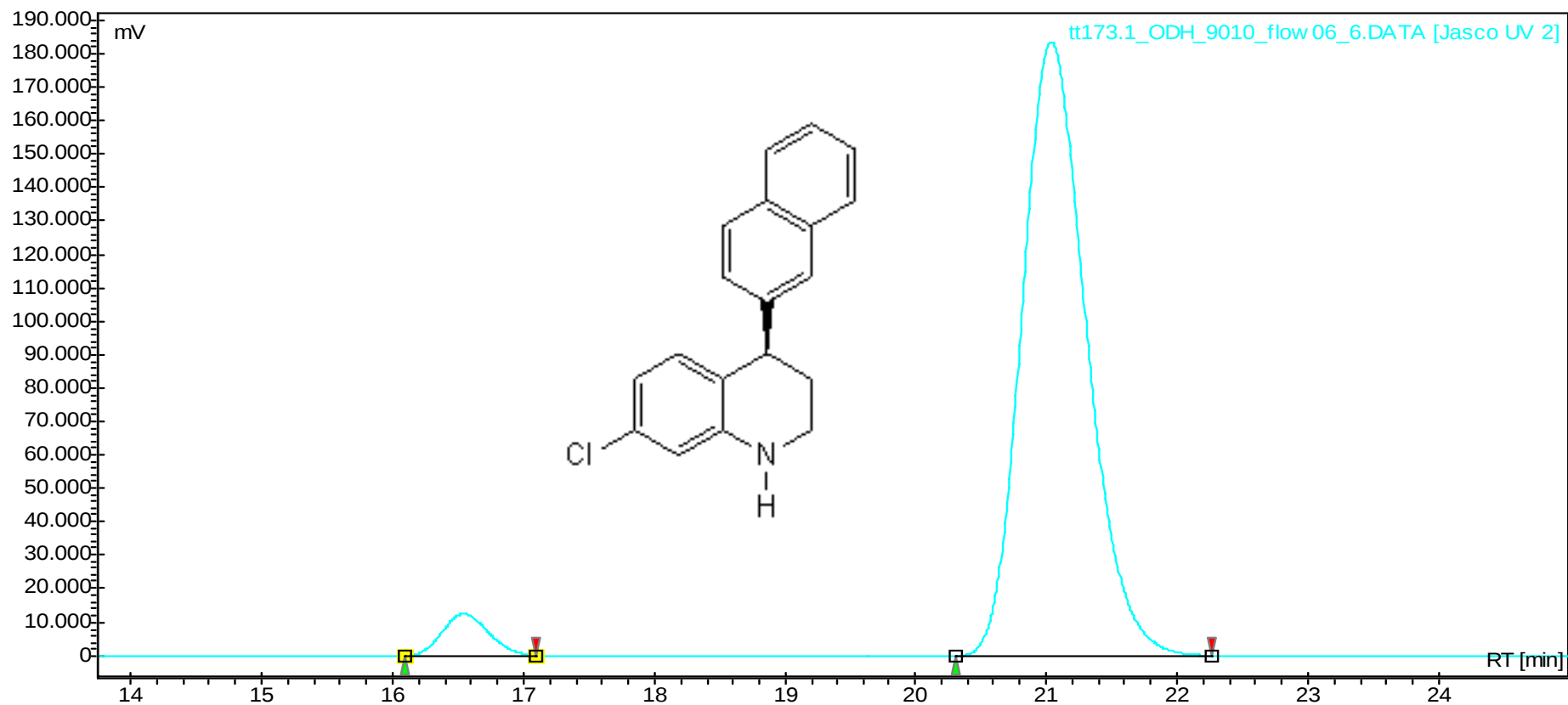
Index	Start	Time	End	Area %
	[Min]	[Min]	[Min]	[%]
2	15,053	15,717	16,540	49,827
1	18,853	19,583	20,506	50,173
Total				100,000

Chromatogram : tt173.1_ODH_9010_flow06_6

Data file: tt173.1_ODH_9010_flow06_6.DATA

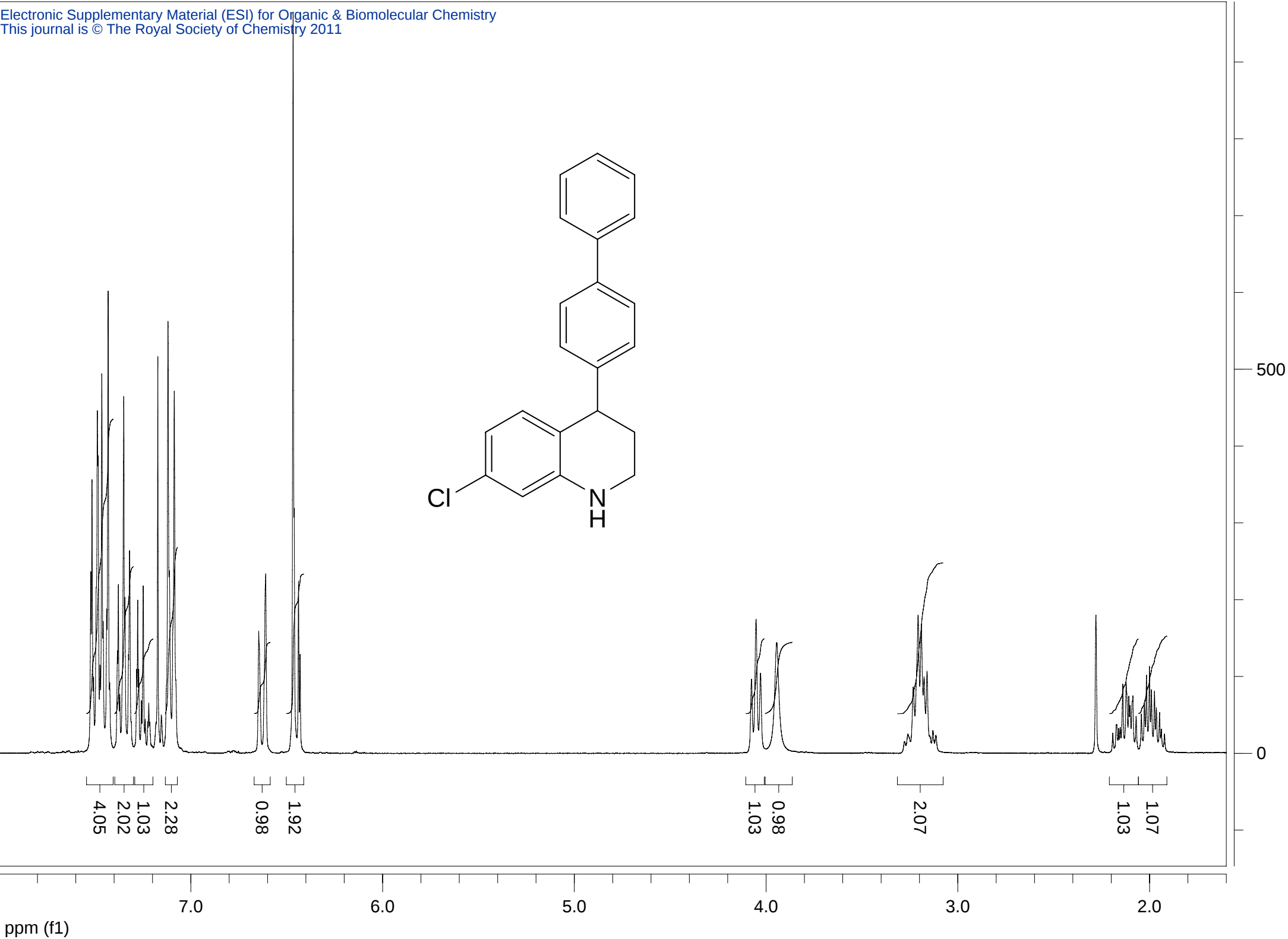
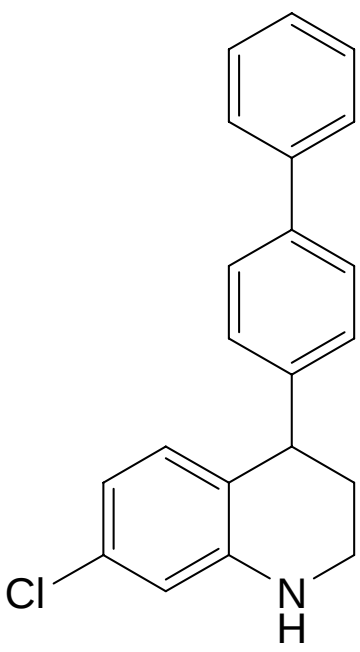
Method: HPLC2_ODH_9010_flow06_acq30

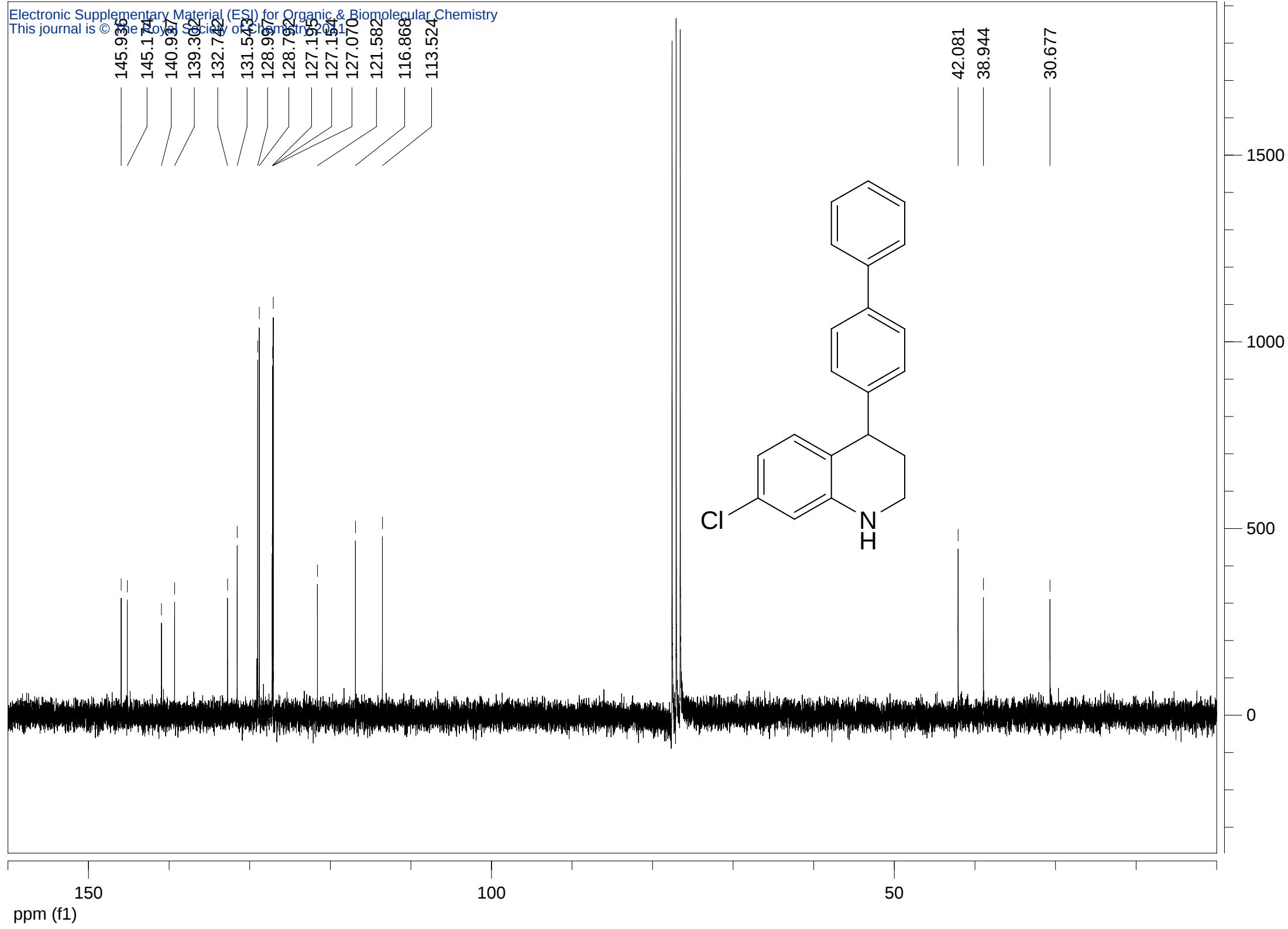
Date: 12.02.2007 23:27:03



tt173.1_ODH_9010_flow06_6.DATA [Jasco UV 2]

Index	Start	Time	End	Area %
	[Min]	[Min]	[Min]	[%]
1	16,096	16,542	17,098	4,730
2	20,299	21,033	22,268	95,270
Total				100,000



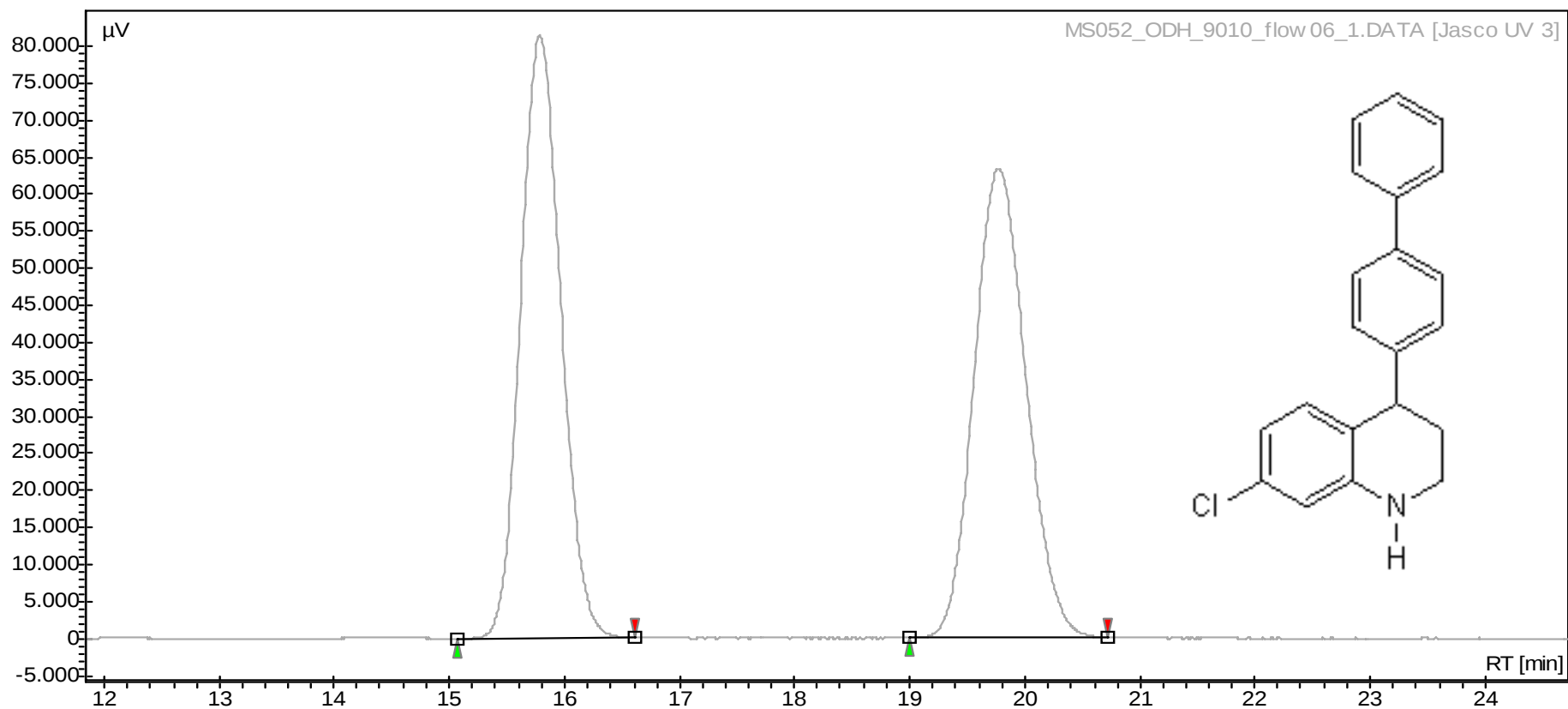


Chromatogram : MS052_ODH_9010_flow06_1

Data file: MS052_ODH_9010_flow06_1.DATA

Method: ODH_9010_flow06_acq50

Date: 17.05.2006 19:07:03



MS052_ODH_9010_flow06_1.DATA [Jasco UV 3]

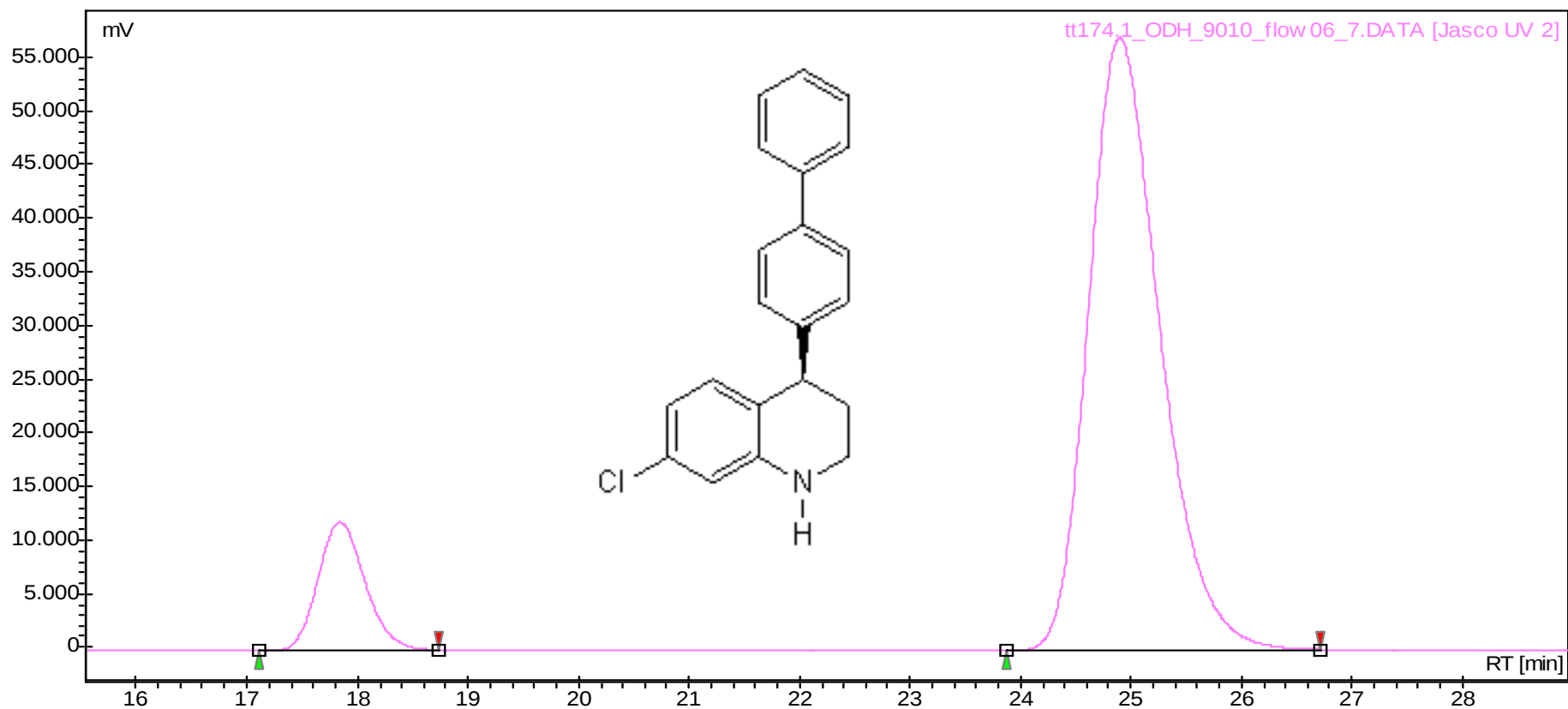
Index	Start	Time	End	Area %
	[Min]	[Min]	[Min]	[%]
1	15,068	15,783	16,611	49,953
2	18,998	19,767	20,720	50,047
Total				100,000

Chromatogram : tt174.1_ODH_9010_flow06_7

Data file: tt174.1_ODH_9010_flow06_7.DATA

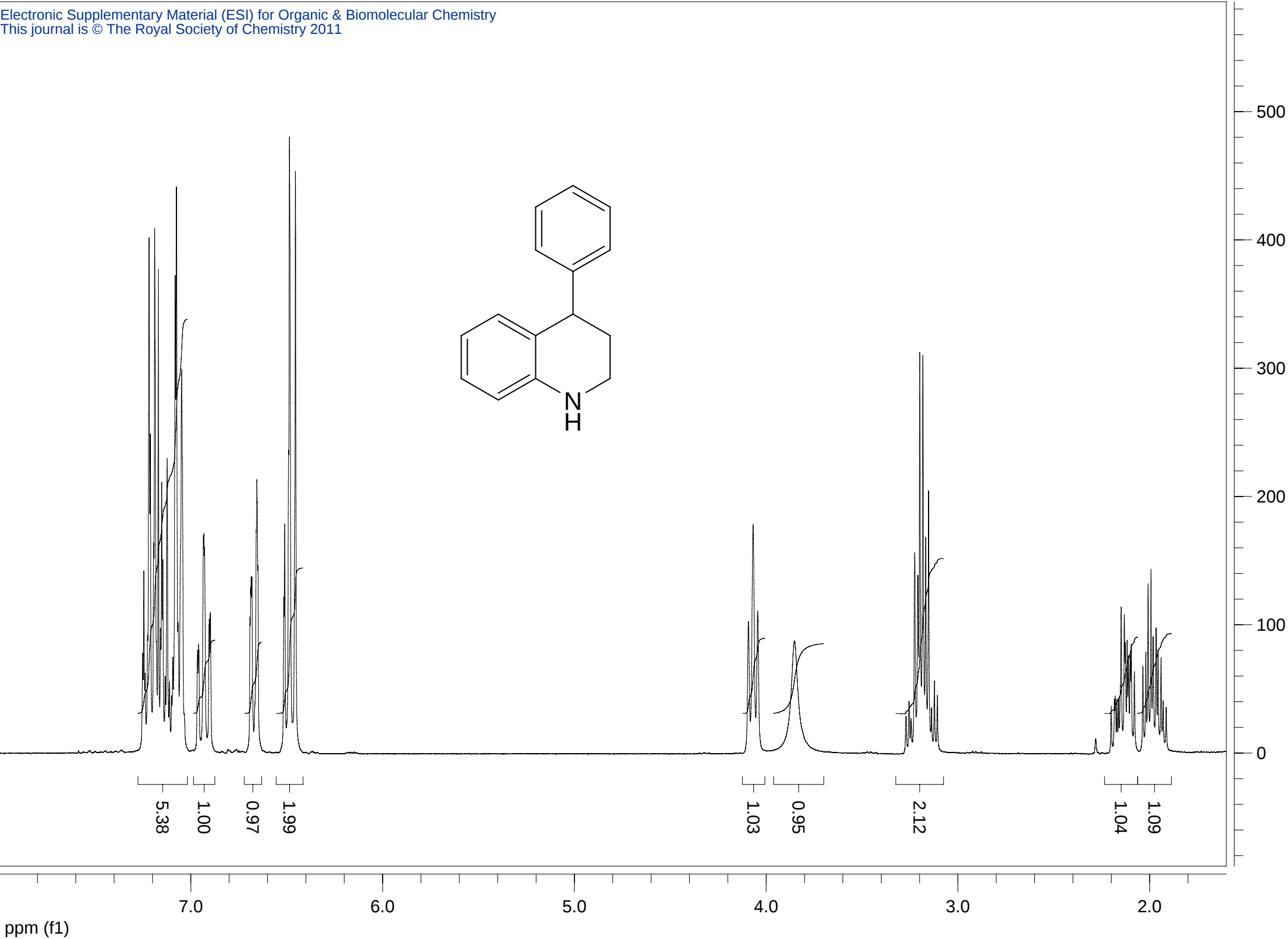
Method: HPLC2_ODH_9010_flow06_acq30

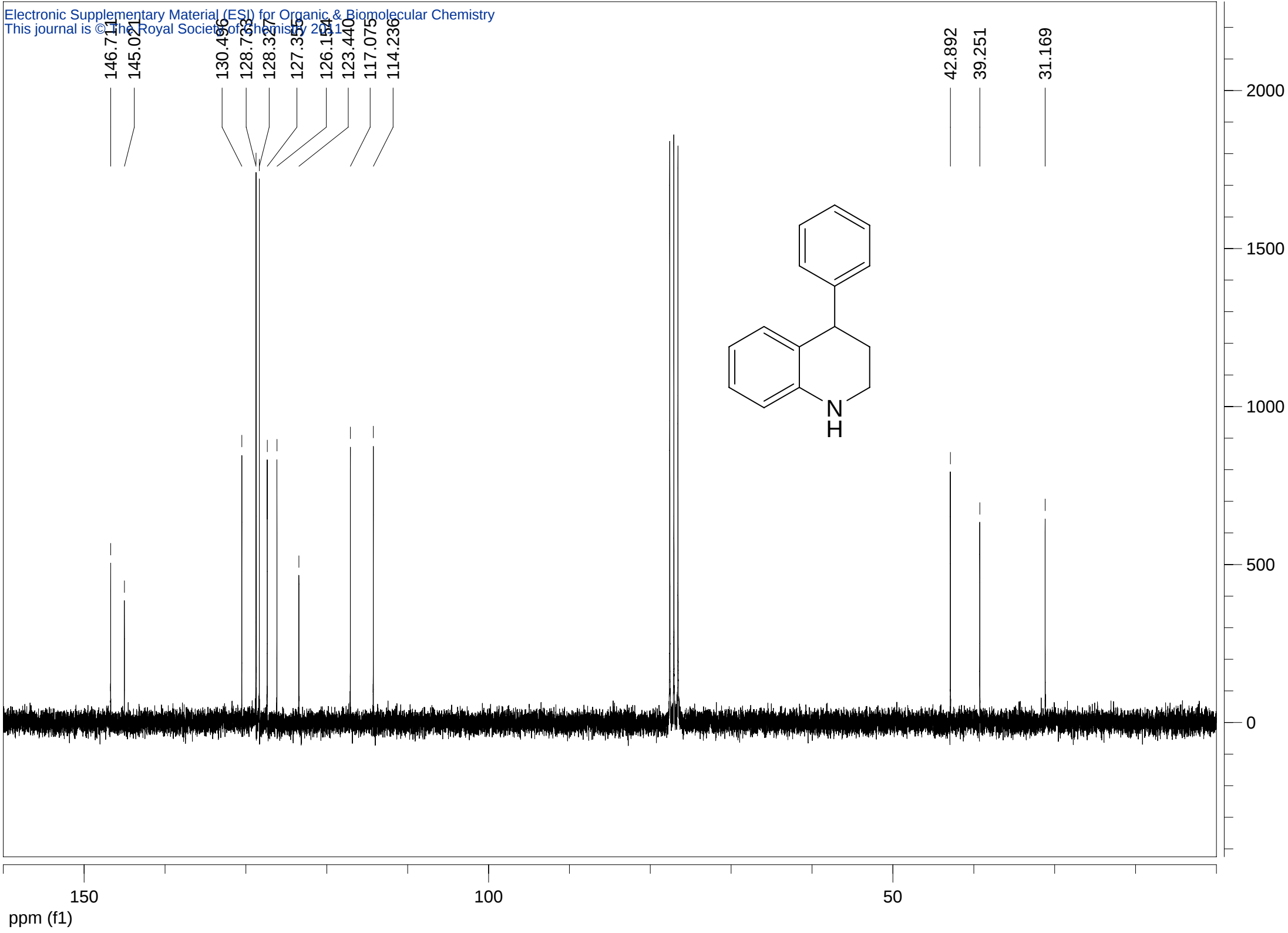
Date: 12.02.2007 23:59:41



tt174.1_ODH_9010_flow06_7.DATA [Jasco UV 2]

Index	Start	Time	End	Area %
	[Min]	[Min]	[Min]	[%]
1	17,112	17,842	18,737	12,132
2	23,874	24,900	26,714	87,868
Total				100,000



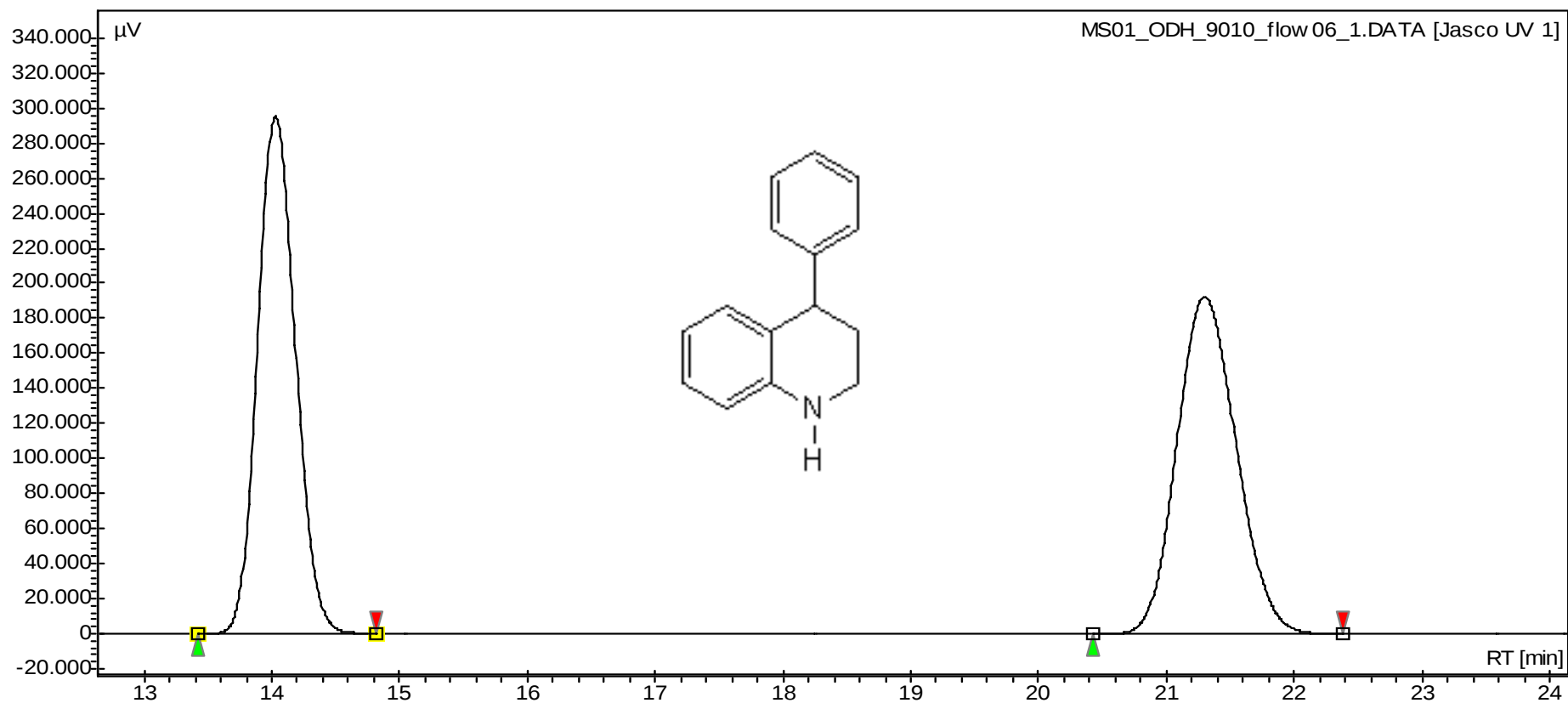


Chromatogram : MS01_ODH_9010_flow06_1

Data file: MS01_ODH_9010_flow06_1.DATA

Method: ODH_9010_flow06_acq30

Date: 08.04.2006 01:18:32



MS01_ODH_9010_flow06_1.DATA [Jasco UV 1]

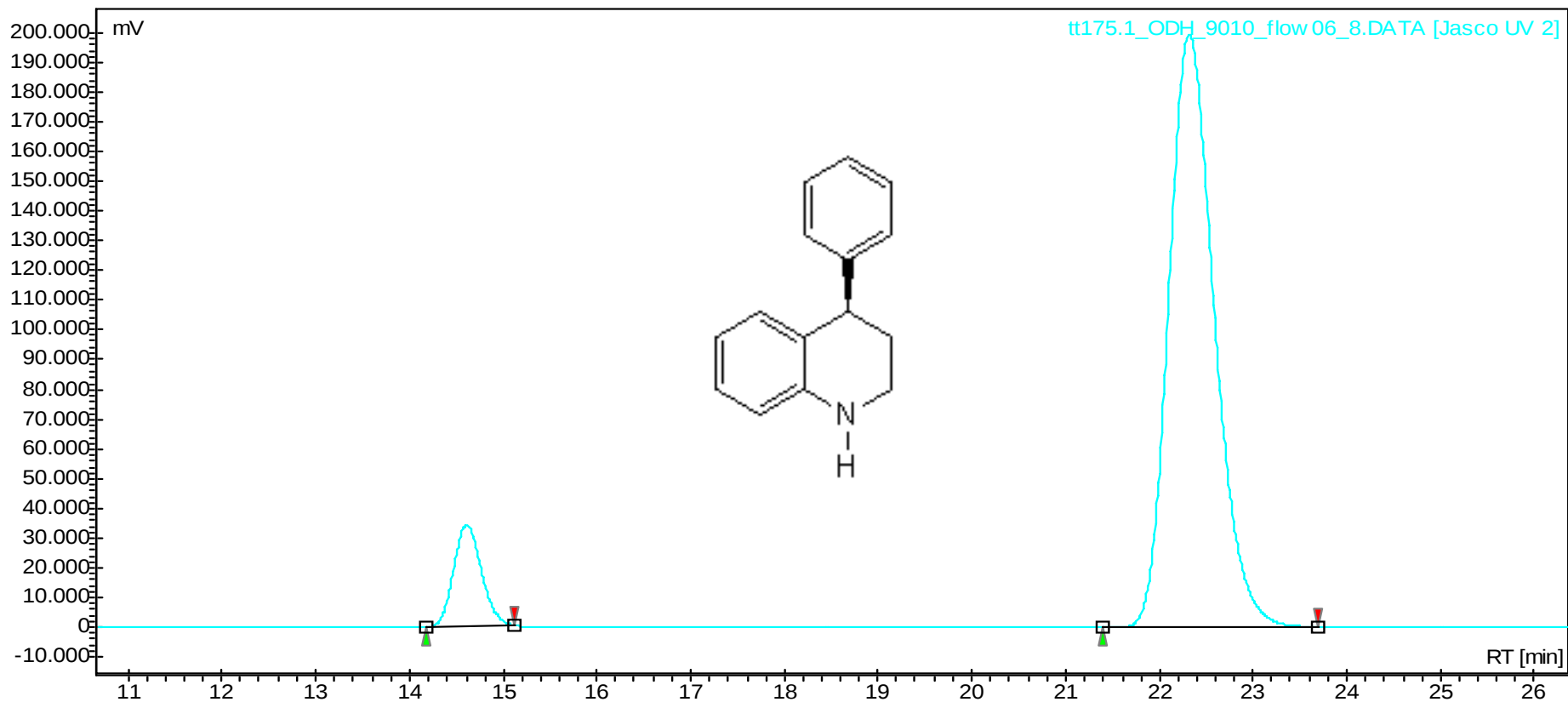
Index	Start	Time	End	Area %
	[Min]	[Min]	[Min]	[%]
1	13,419	14,025	14,814	49,460
2	20,424	21,300	22,376	50,540
Total				100,000

Chromatogram : tt175.1_ODH_9010_flow06_8

Data file: tt175.1_ODH_9010_flow06_8.DATA

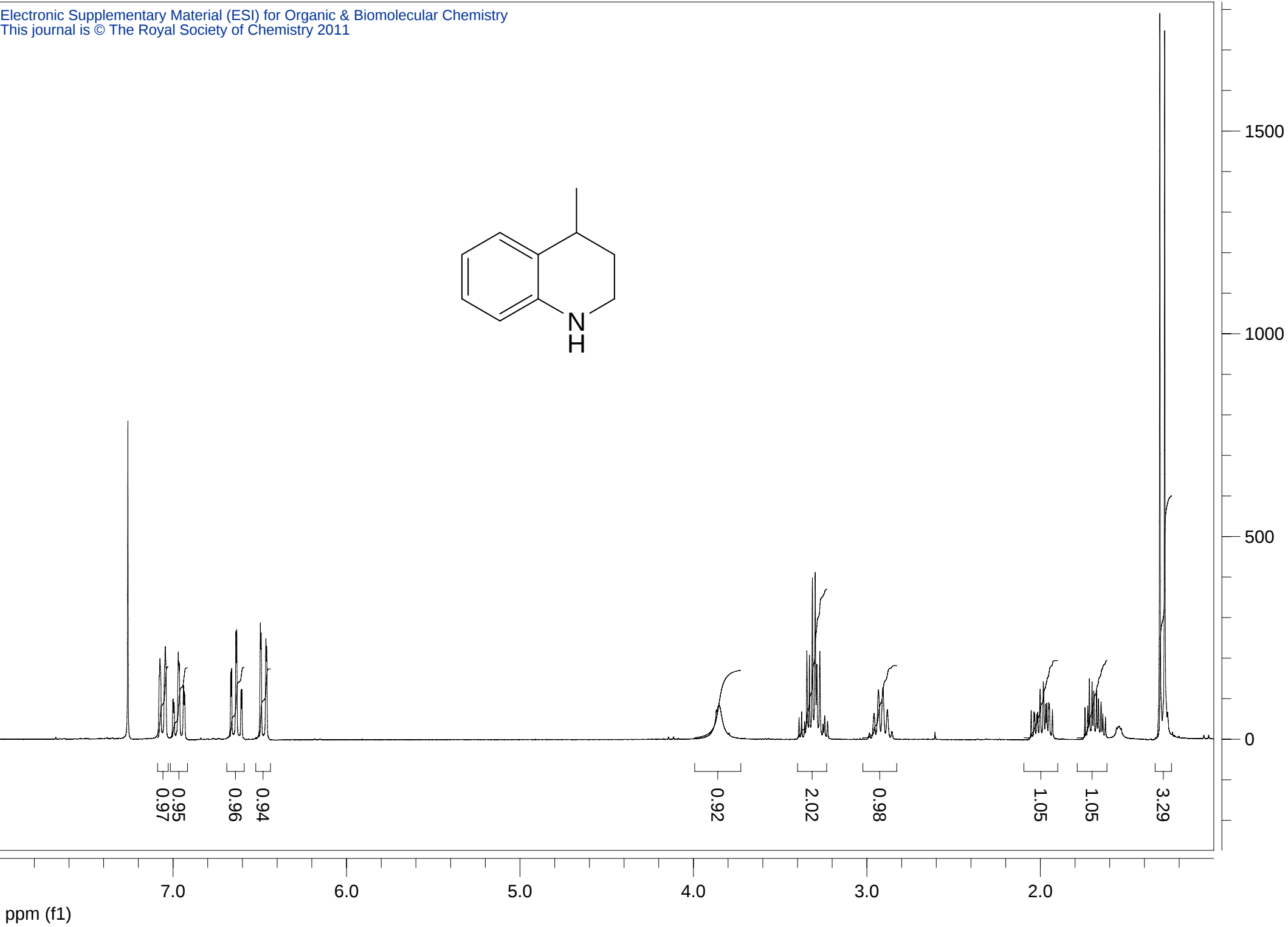
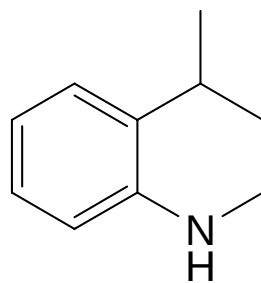
Method: HPLC2_ODH_9010_flow06_acq30

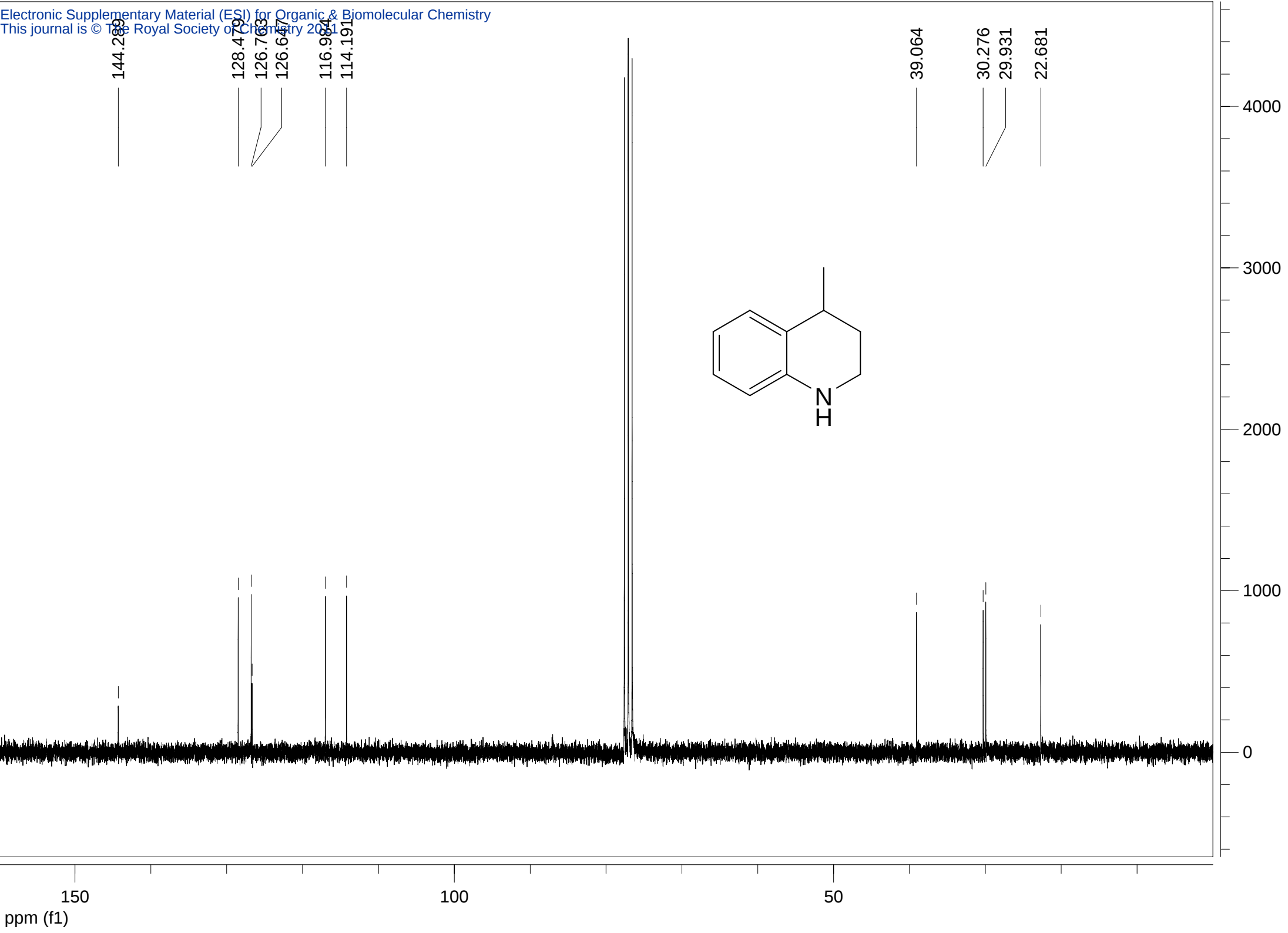
Date: 13.02.2007 00:32:18



tt175.1_ODH_9010_flow06_8.DATA [Jasco UV 2]

Index	Start	Time	End	Area %
	[Min]	[Min]	[Min]	[%]
2	14,180	14,608	15,110	9,456
1	21,390	22,317	23,704	90,544
Total				100,000



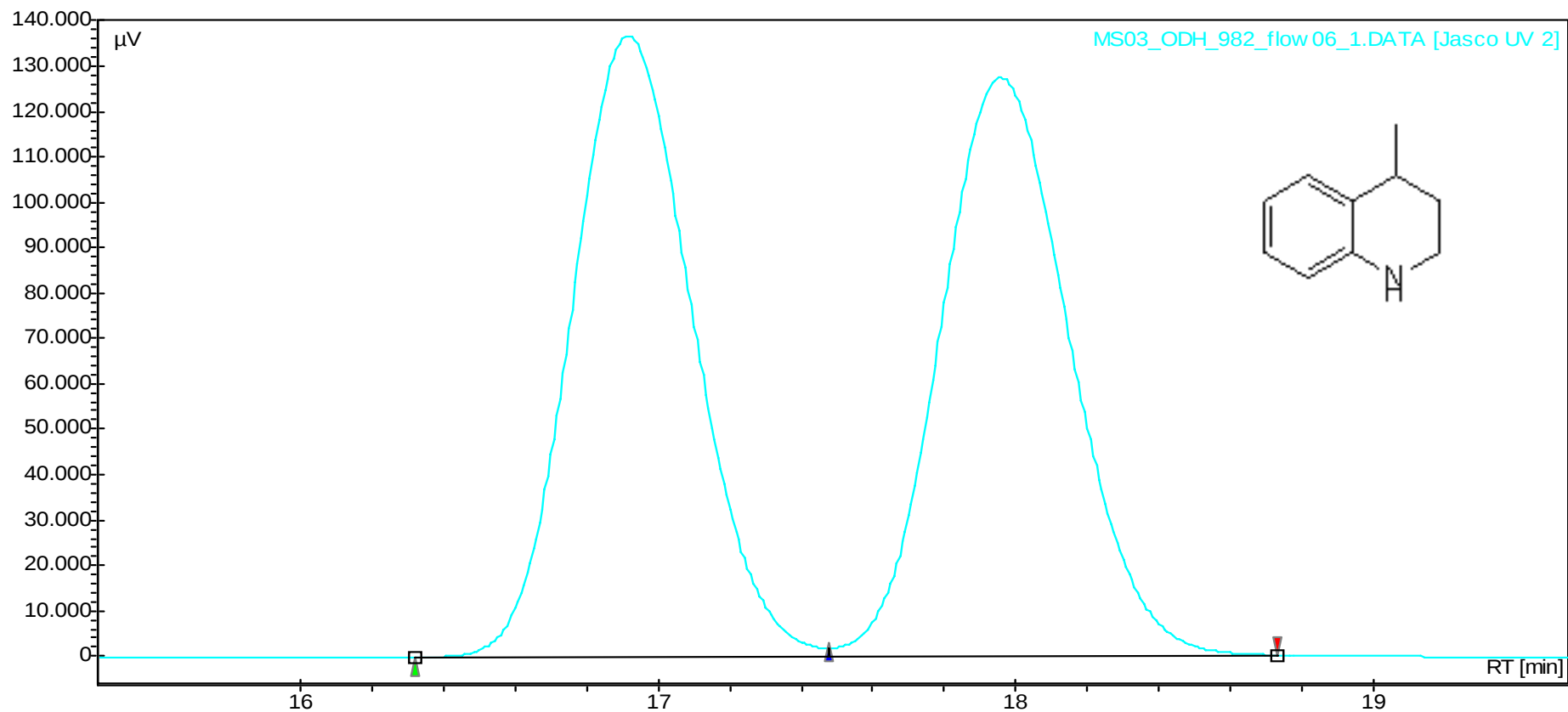


Chromatogram : MS03_ODH_982_flow06_1

Data file: MS03_ODH_982_flow06_1.DATA

Method: ODH_982_flow06_acq30

Date: 07.04.2006 16:05:03



MS03_ODH_982_flow06_1.DATA [Jasco UV 2]

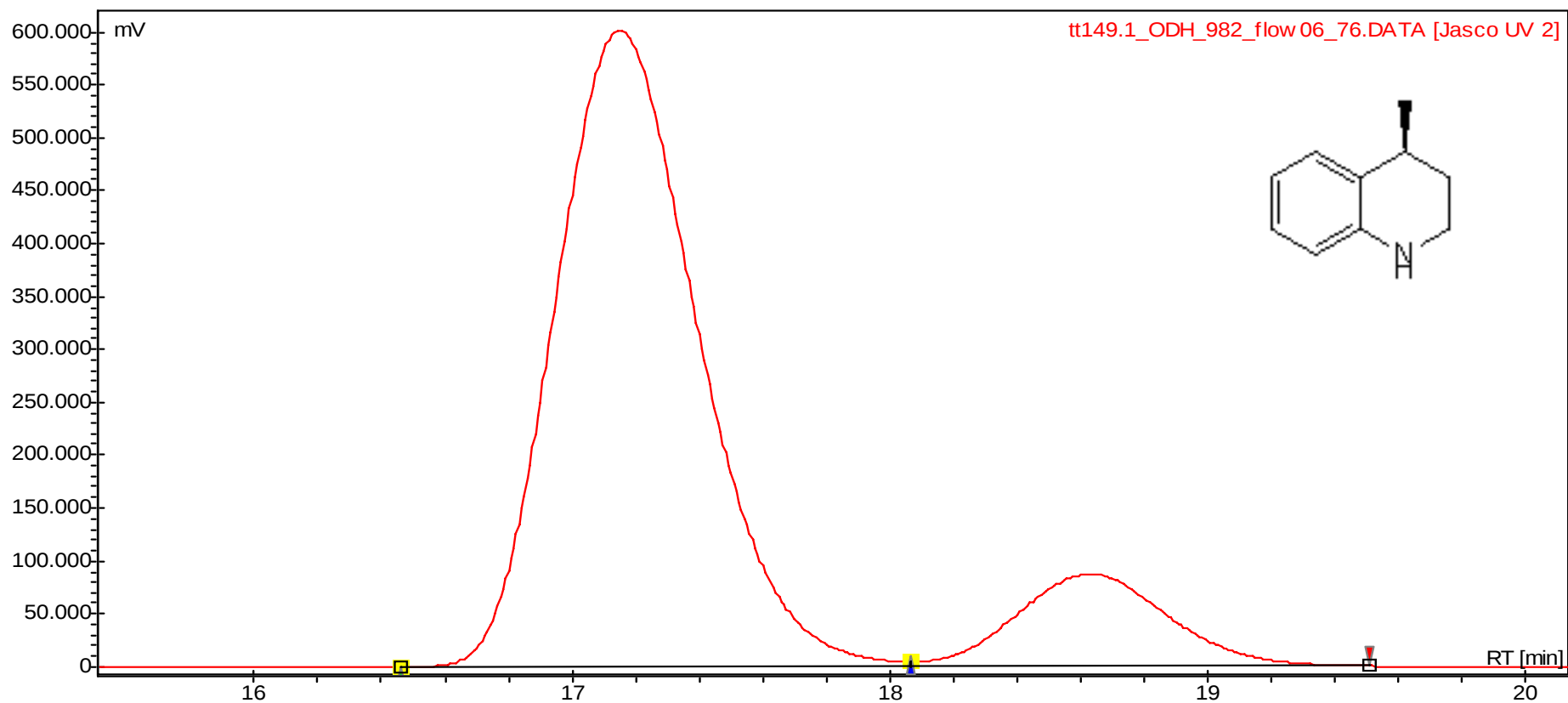
Index	Start	Time	End	Area %
	[Min]	[Min]	[Min]	[%]
1	16,320	16,917	17,477	50,042
2	17,477	17,958	18,732	49,958
Total				100,000

Chromatogram : tt149.1_ODH_982_flow06_76

Data file: tt149.1_ODH_982_flow06_76.DATA

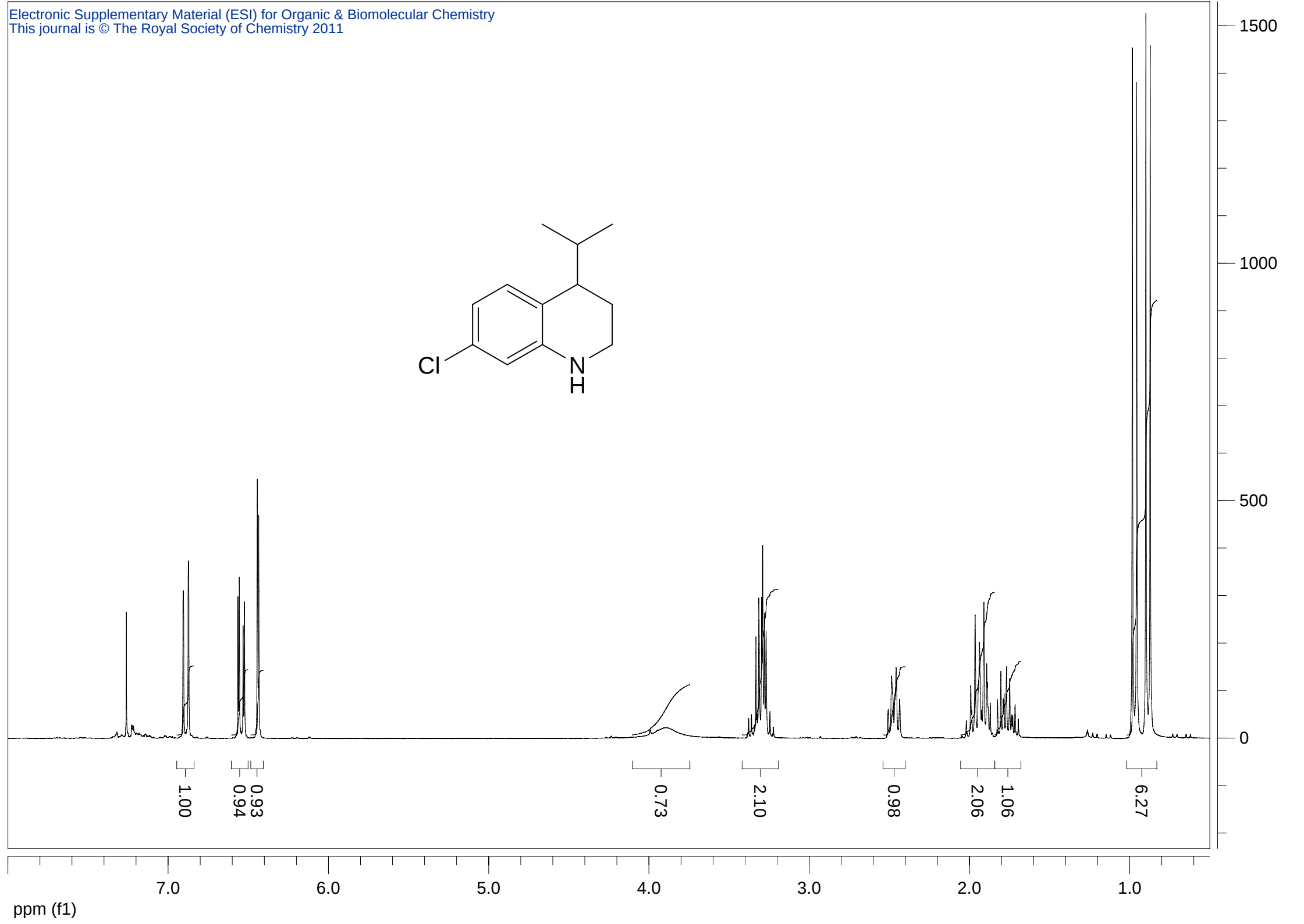
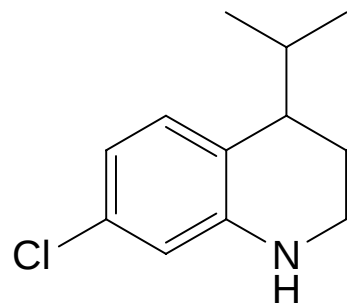
Method: HPLC2_ODH_982_flow06_acq30

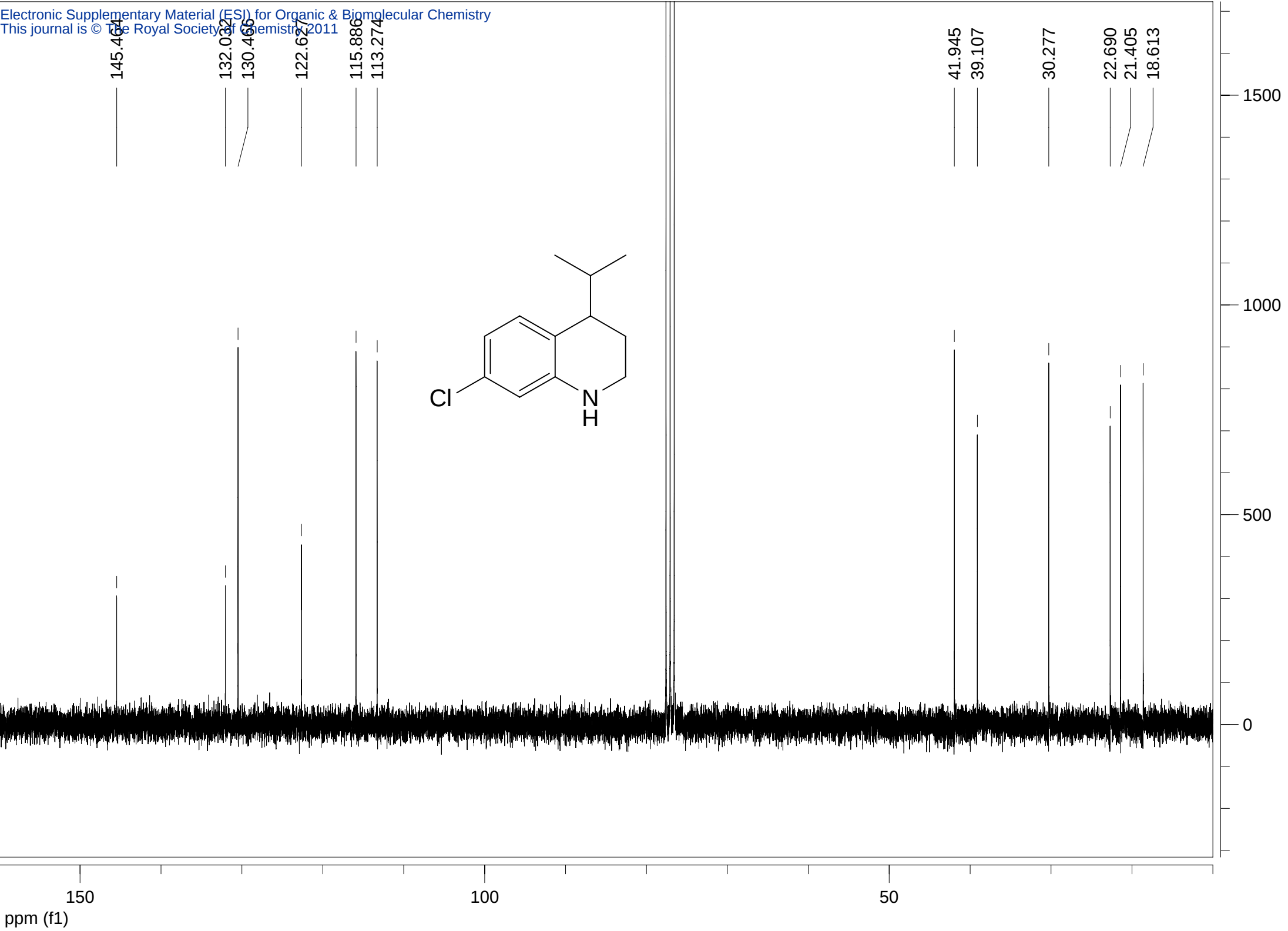
Date: 24.01.2007 19:06:12



tt149.1_ODH_982_flow06_76.DATA [Jasco UV 2]

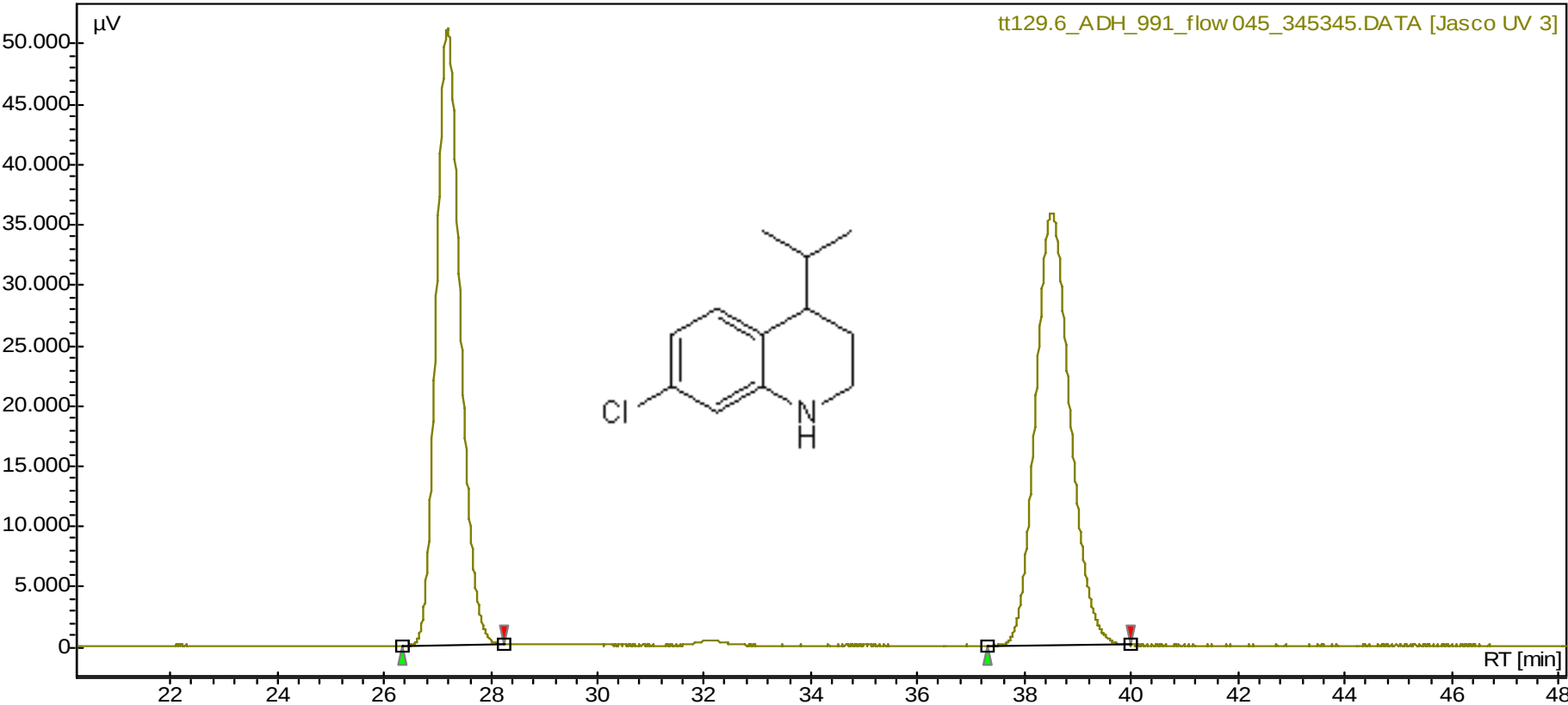
Index	Start	Time	End	Area %
	[Min]	[Min]	[Min]	[%]
1	16,458	17,150	18,067	86,619
2	18,067	18,633	19,507	13,381
Total				100,000





Chromatogram : tt129.6_ADH_991_flow045_345345

Data file: tt129.6_ADH_991_flow045_345345.DATA
Method: HPLC1_ADH_991_flow045_acq_60
Date: 13.12.2006 21:38:10



tt129.6_ADH_991_flow045_345345.DATA [Jasco UV 3]

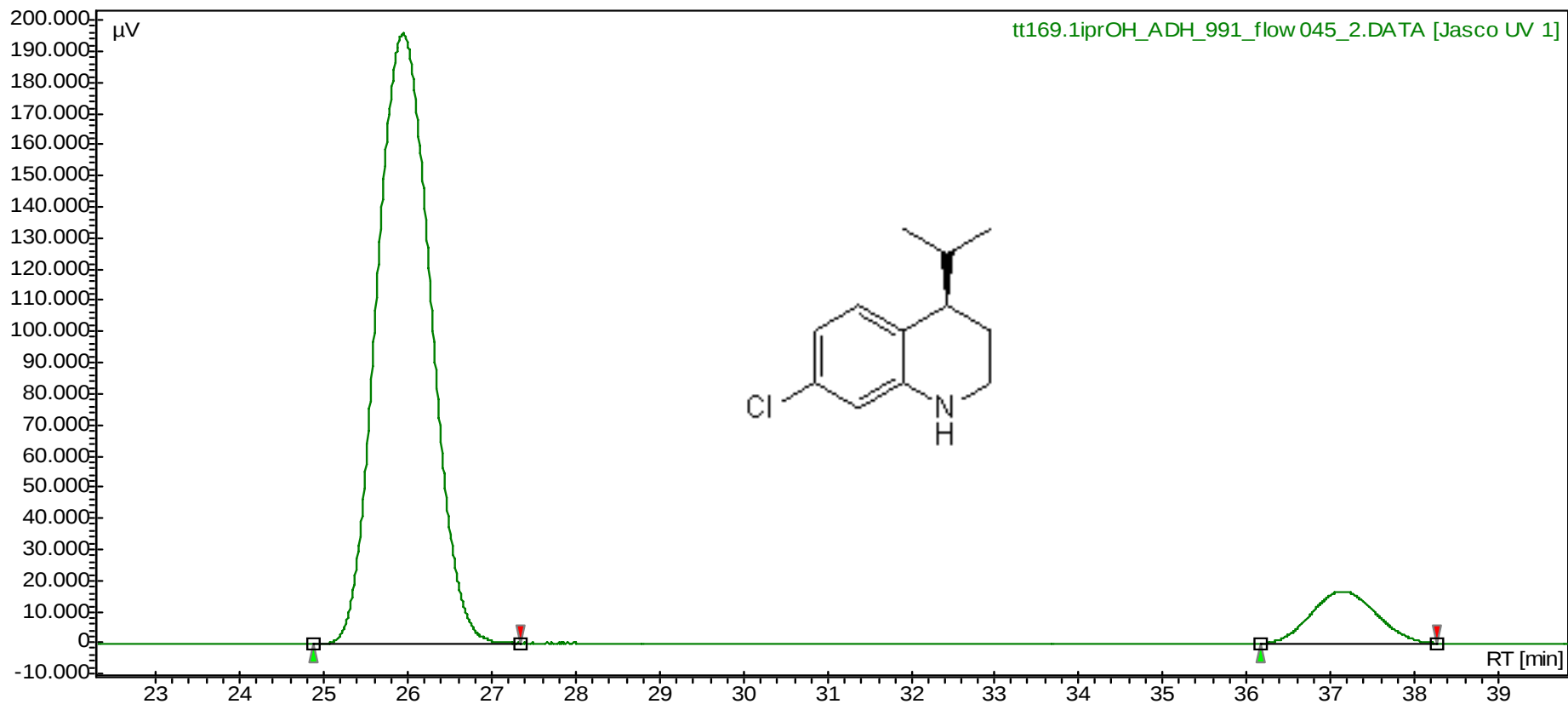
Index	Start	Time	End	Area %
	[Min]	[Min]	[Min]	[%]
1	26,361	27,192	28,268	49,831
2	37,296	38,508	40,007	50,169
Total				100,000

Chromatogram : tt169.1iprOH_ADH_991_flow045_2

Data file: tt169.1iprOH_ADH_991_flow045_2.DATA

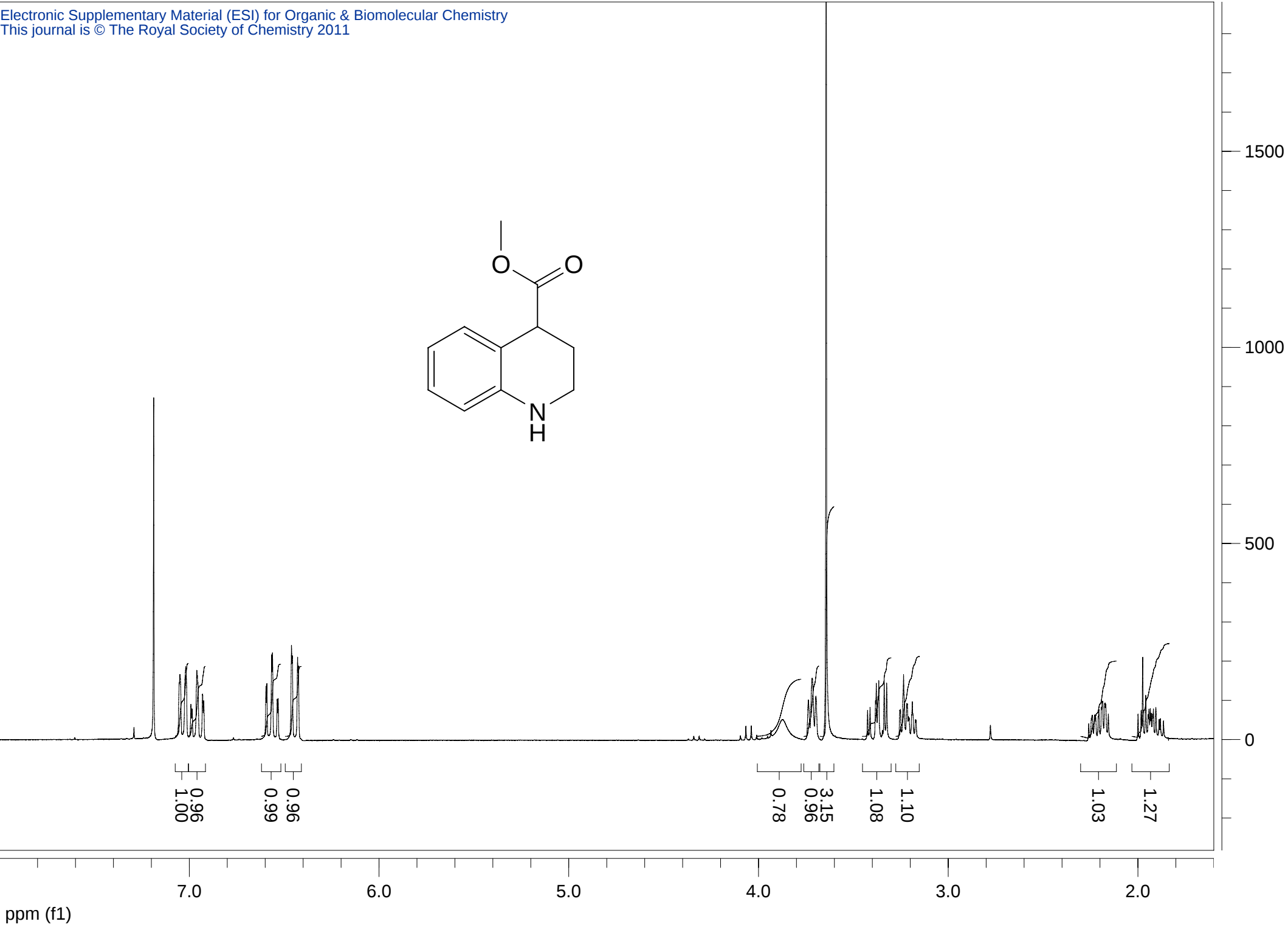
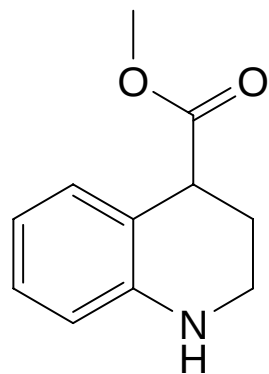
Method: HPLC1_ADH_991_flow045_acq_40

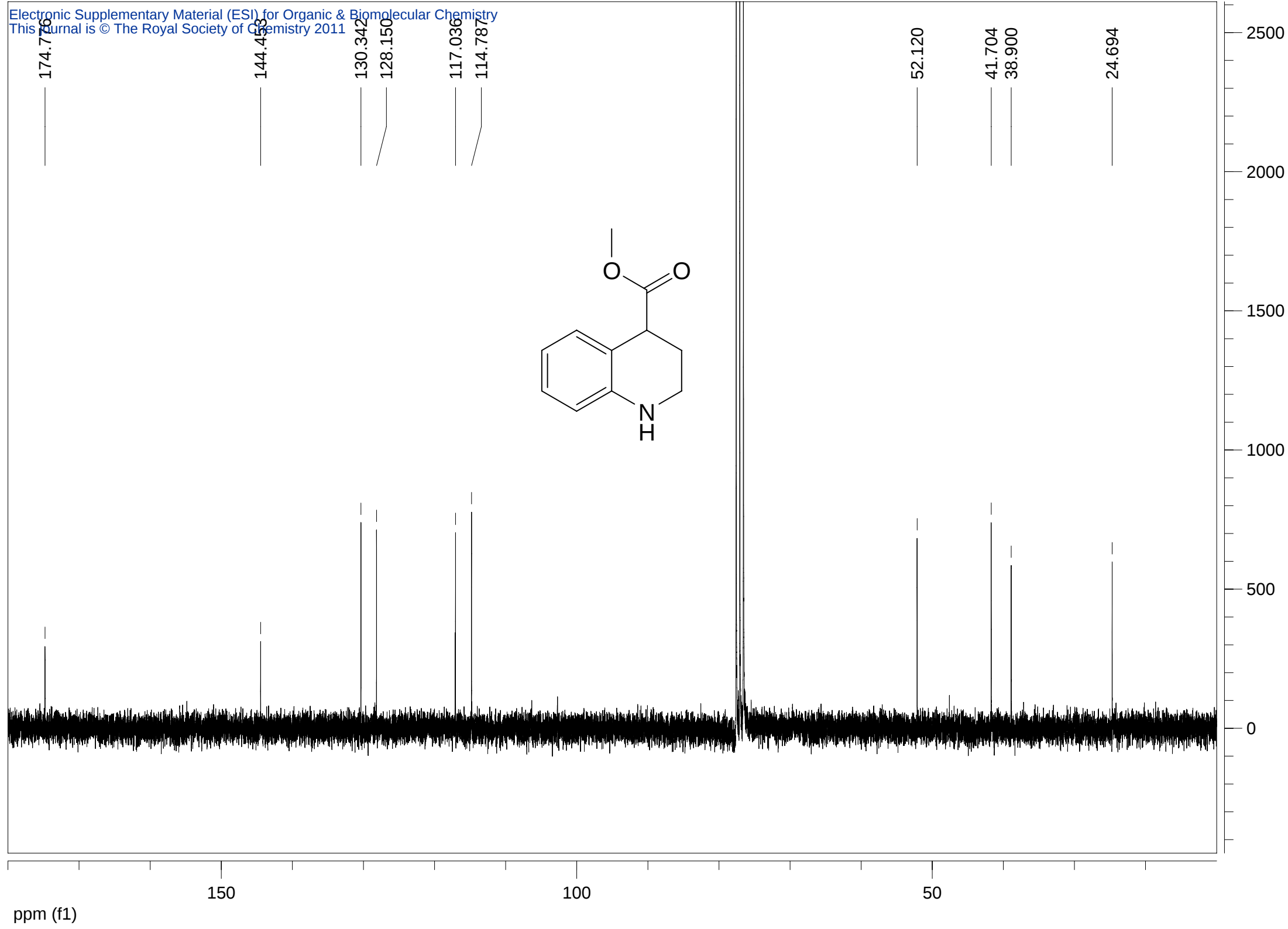
Date: 17.02.2007 01:44:13



tt169.1iprOH_ADH_991_flow045_2.DATA [Jasco UV 1]

Index	Start	Time	End	Area %
	[Min]	[Min]	[Min]	[%]
1	24,875	25,942	27,343	90,616
2	36,167	37,142	38,269	9,384
Total				100,000



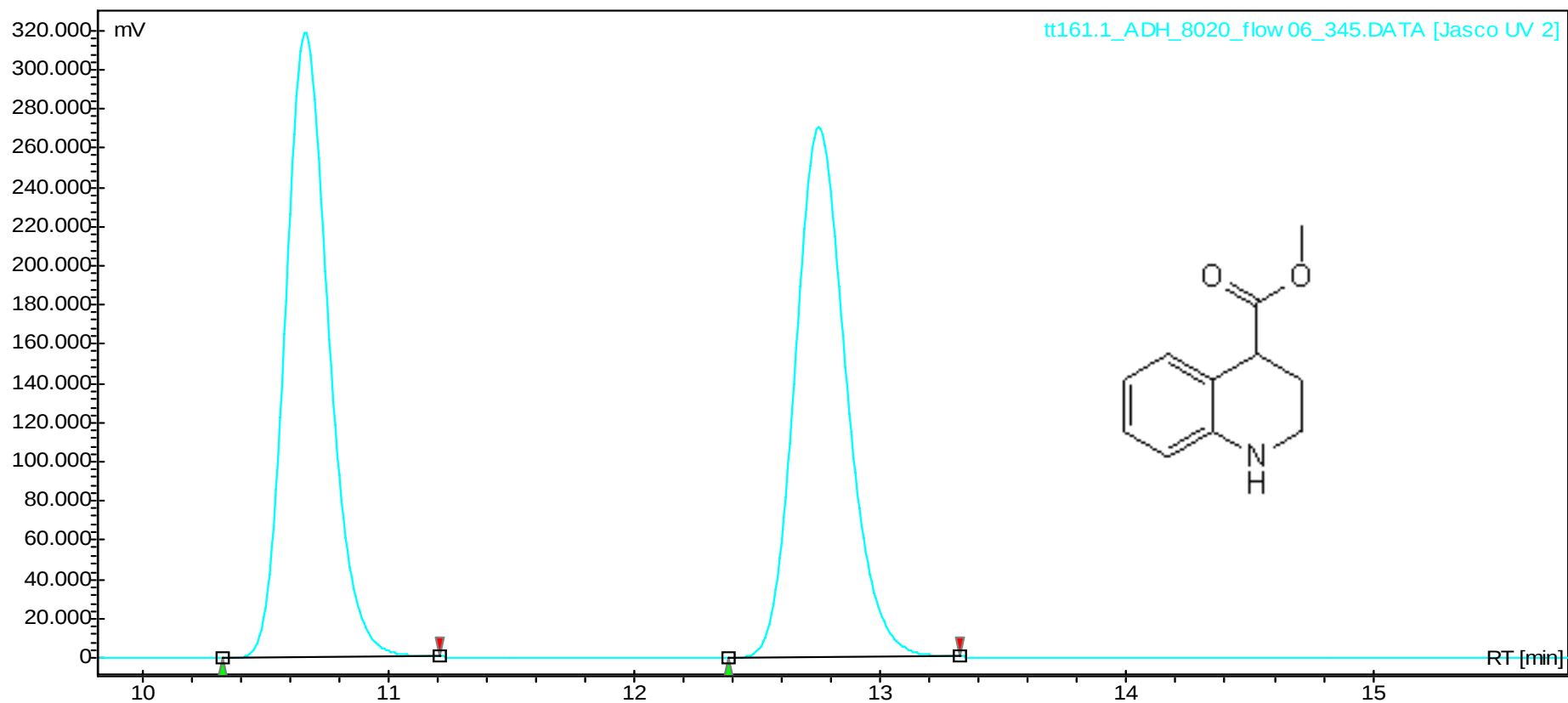


Chromatogram : tt161.1_ADH_8020_flow06_345

Data file: tt161.1_ADH_8020_flow06_345.DATA

Method: HPLC2_ADH_8020_flow06_acq30

Date: 02.02.2007 17:16:05



tt161.1_ADH_8020_flow06_345.DATA [Jasco UV 2]

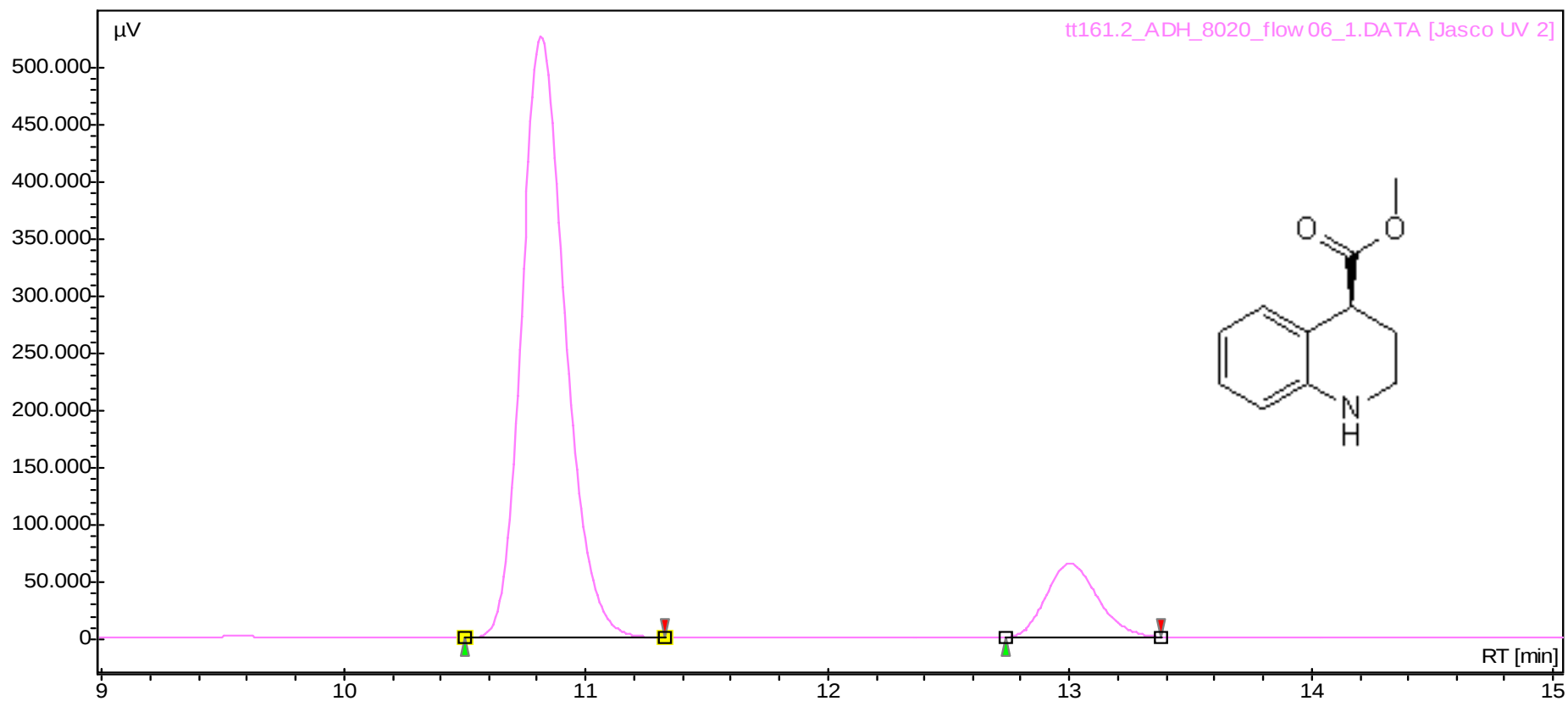
Index	Start	Time	End	Area %
	[Min]	[Min]	[Min]	[%]
1	10,327	10,658	11,209	49,975
2	12,382	12,750	13,322	50,025
Total				100,000

Chromatogram : tt161.2_ADH_8020_flow06_1

Data file: tt161.2_ADH_8020_flow06_1.DATA

Method: HPLC1_ADH_8020_flow06_acq_30

Date: 09.02.2007 10:41:25



tt161.2_ADH_8020_flow06_1.DATA [Jasco UV 2]

Index	Start	Time	End	Area %
	[Min]	[Min]	[Min]	[%]
1	10,497	10,817	11,326	87,630
2	12,734	13,008	13,377	12,370
Total				100,000