

**Ag(I)/TF-BiphamPhos catalyzed Asymmetric 1,3-Dipolar
Cycloaddition of *N*-Unprotected 2-Oxoindolin-3-ylidene Derivatives
and Azomethine Ylides for the Construction of
Spirooxindole-Pyrrolidines**

Tang-Lin Liu, Zhi-Yong Xue, Hai-Yan Tao, and Chun-Jiang Wang*

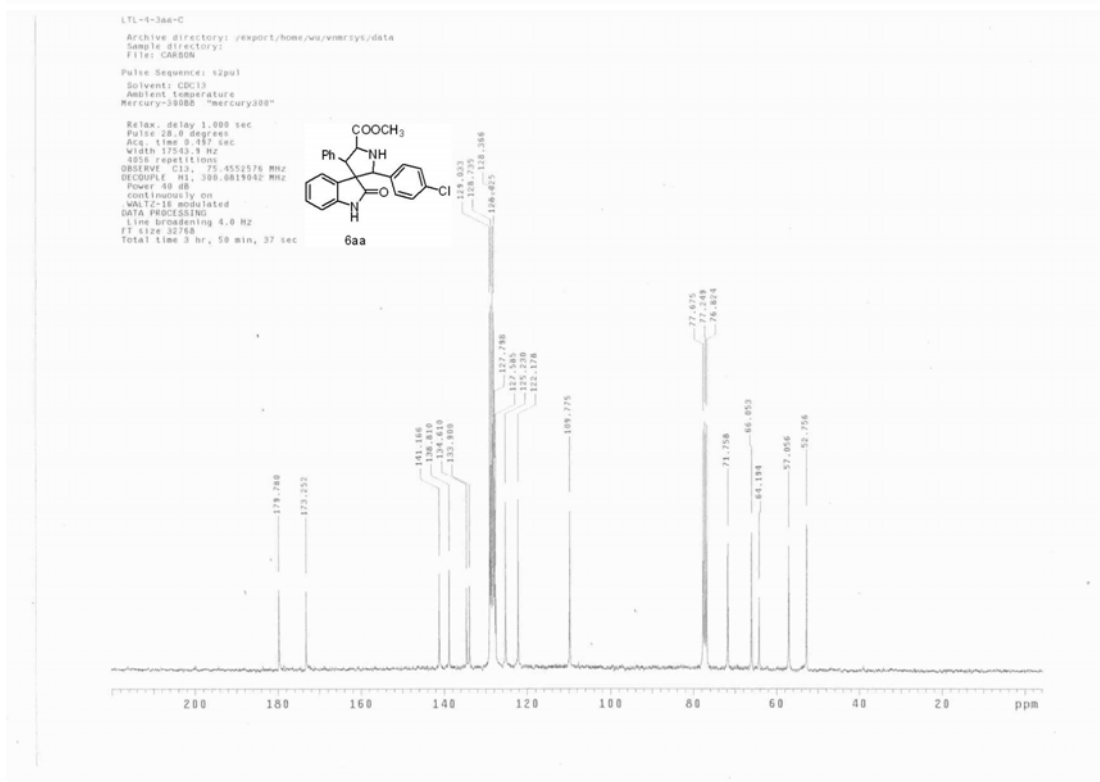
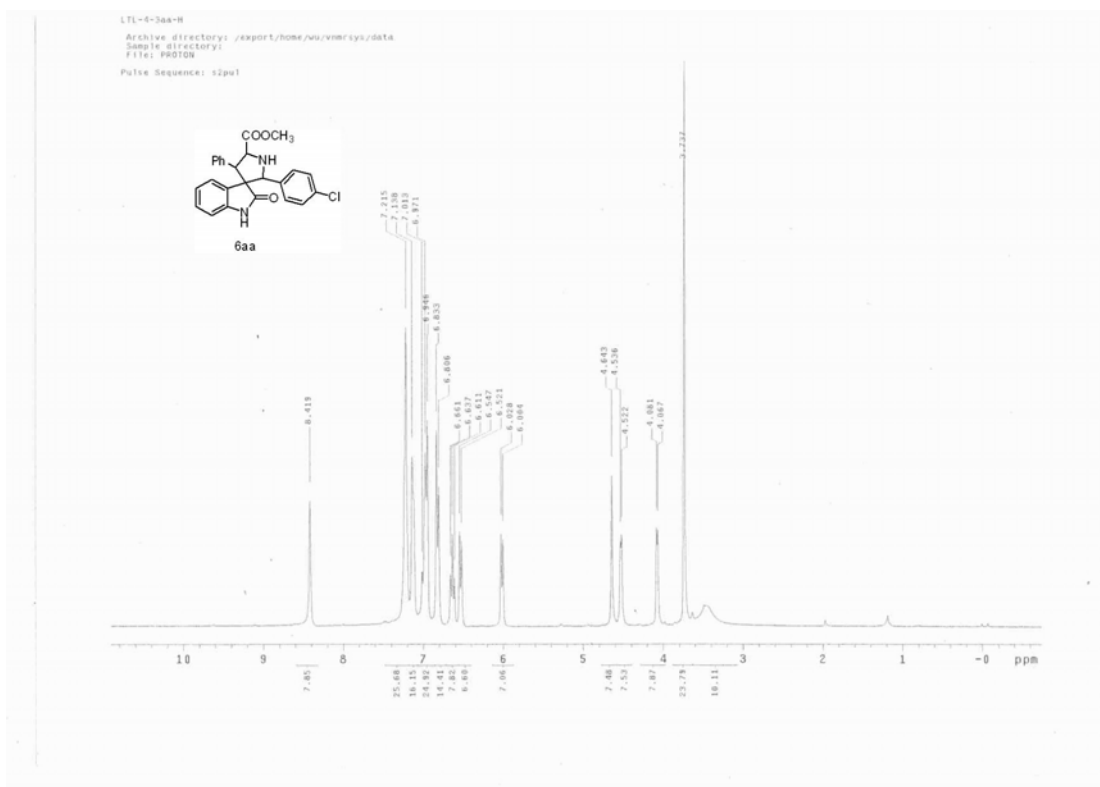
College of Chemistry and Molecular Sciences, Wuhan University, 430072, China

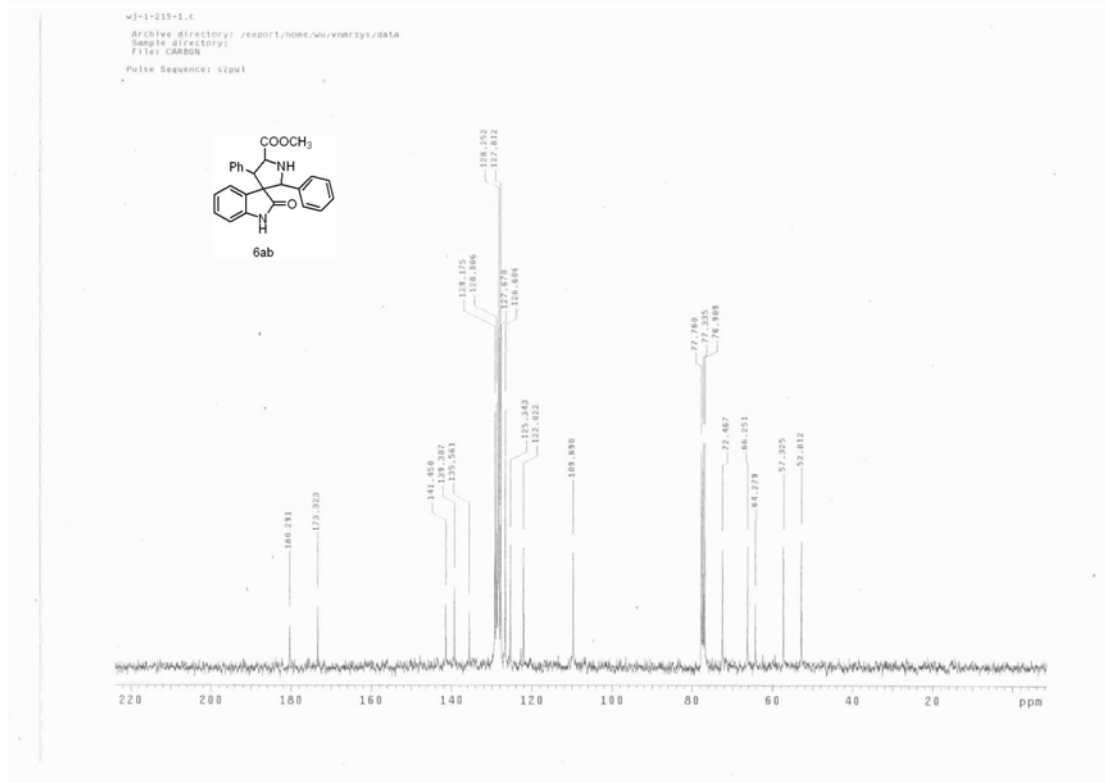
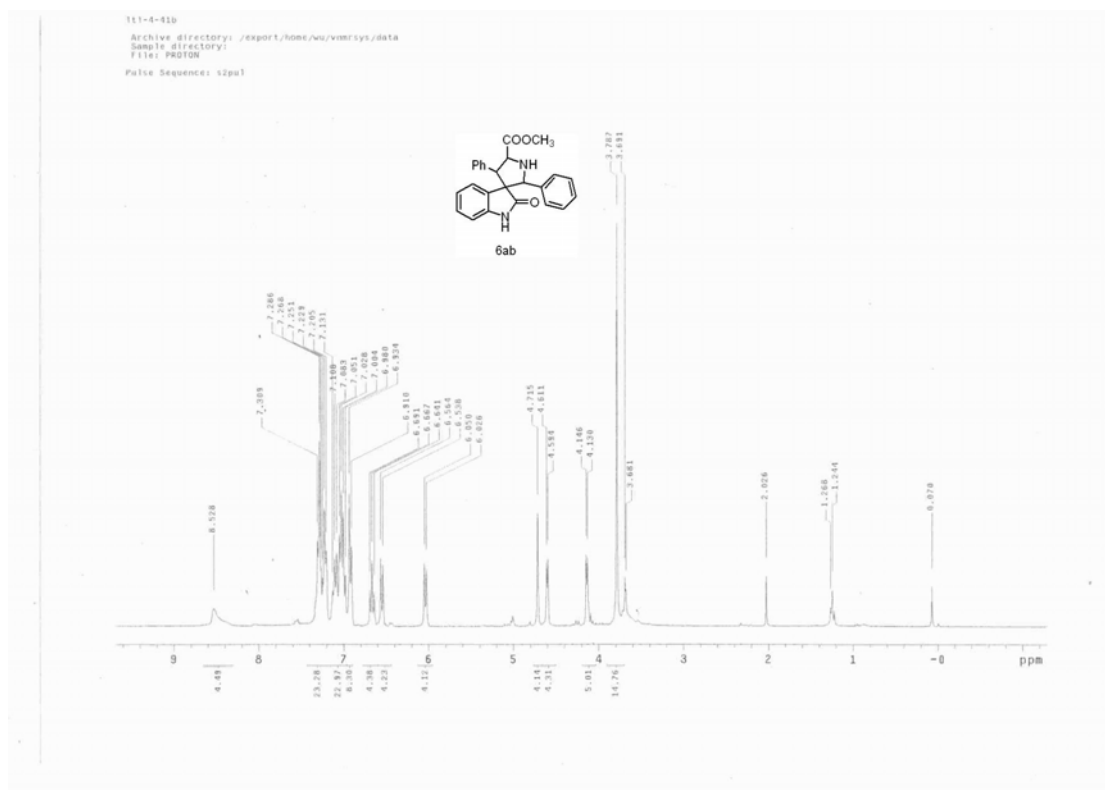
E-mail: cjwang@whu.edu.cn

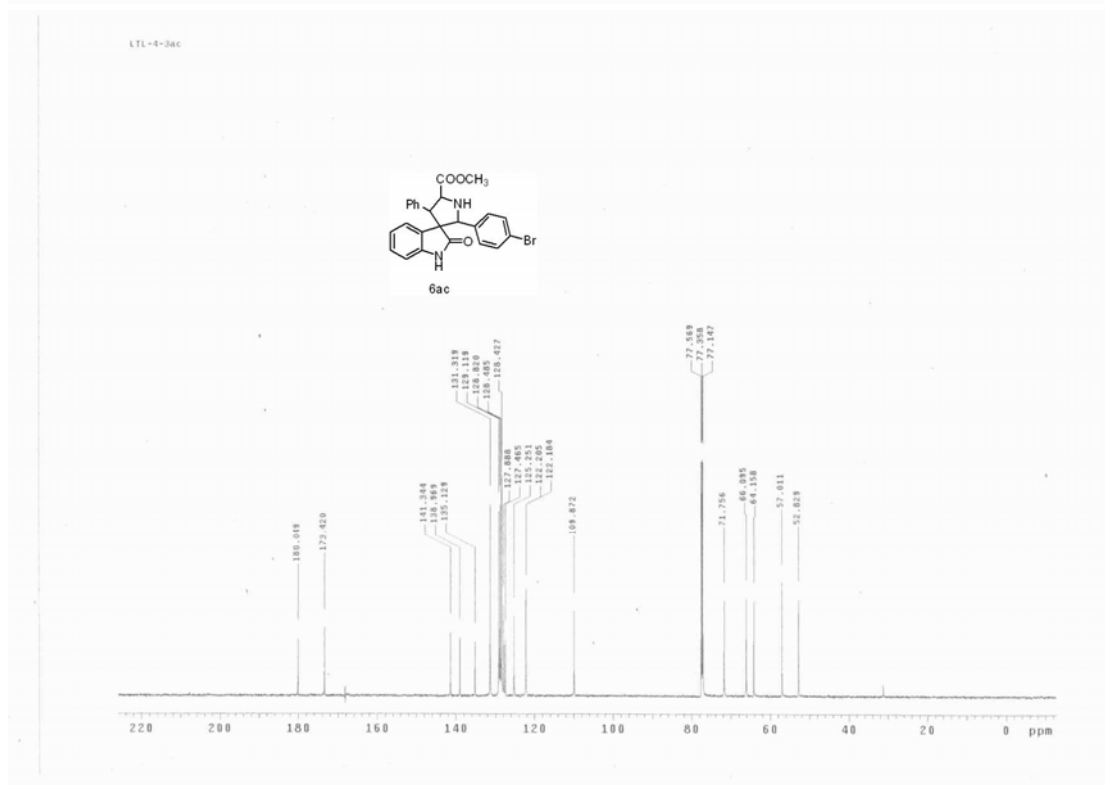
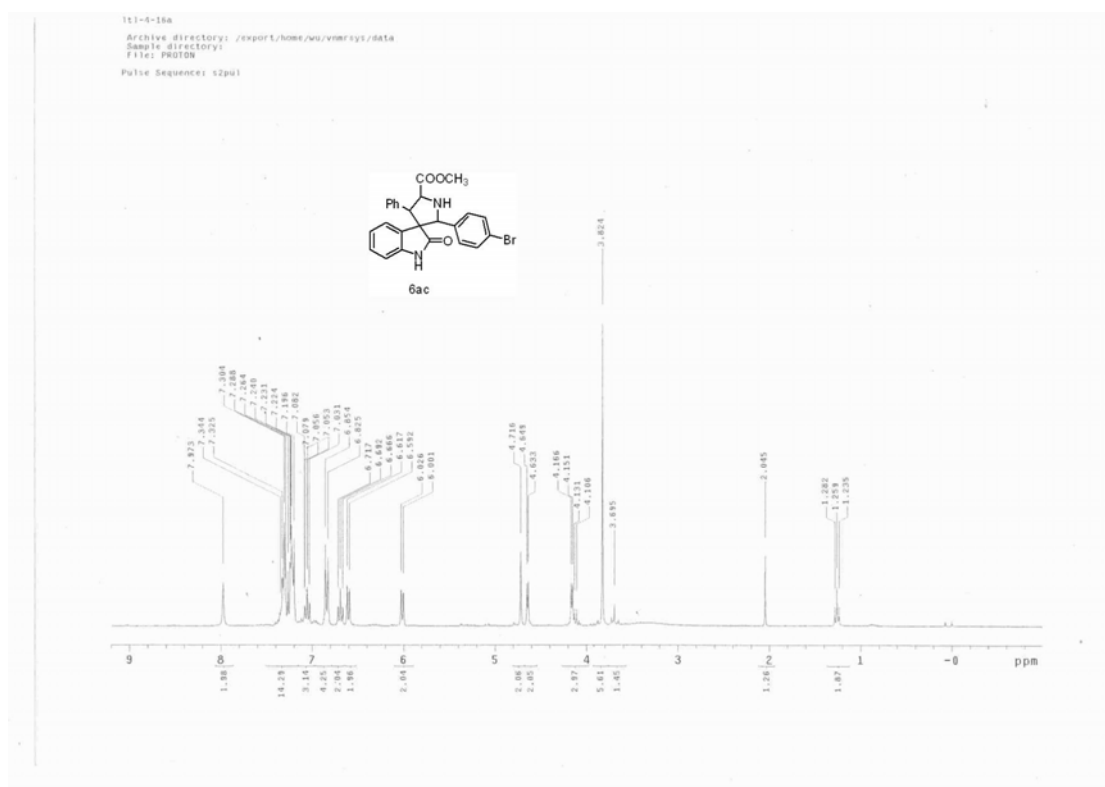
Supporting Information

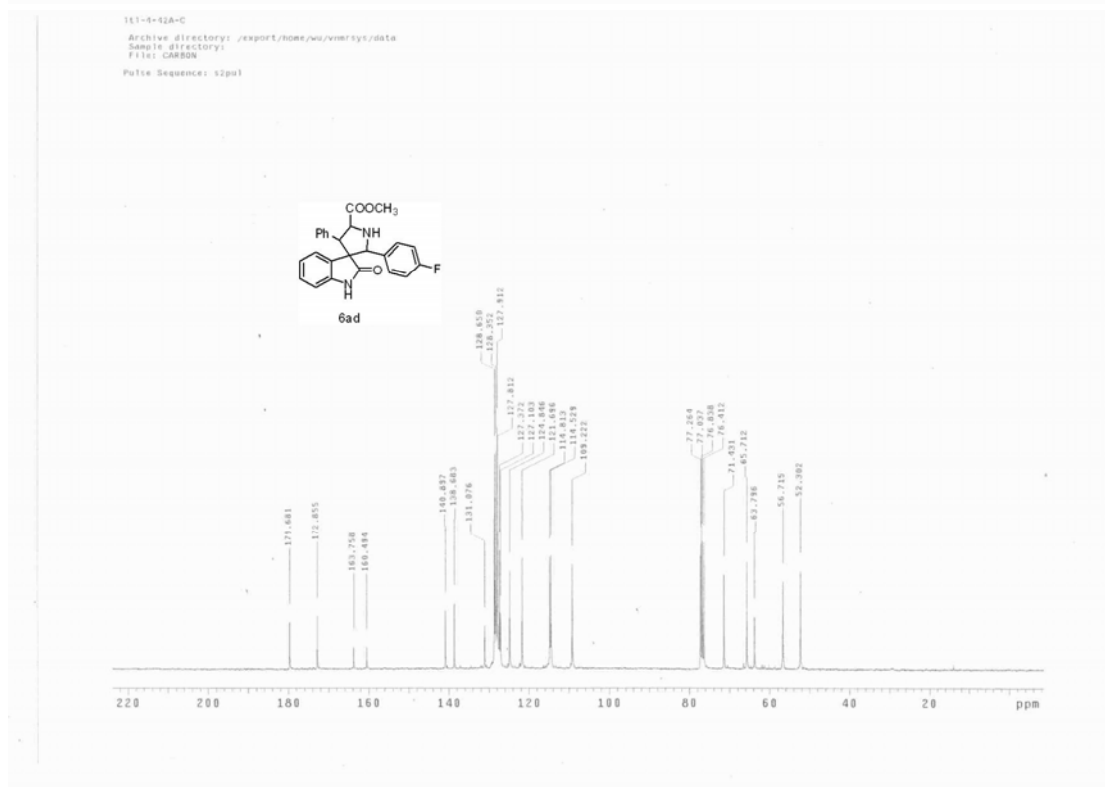
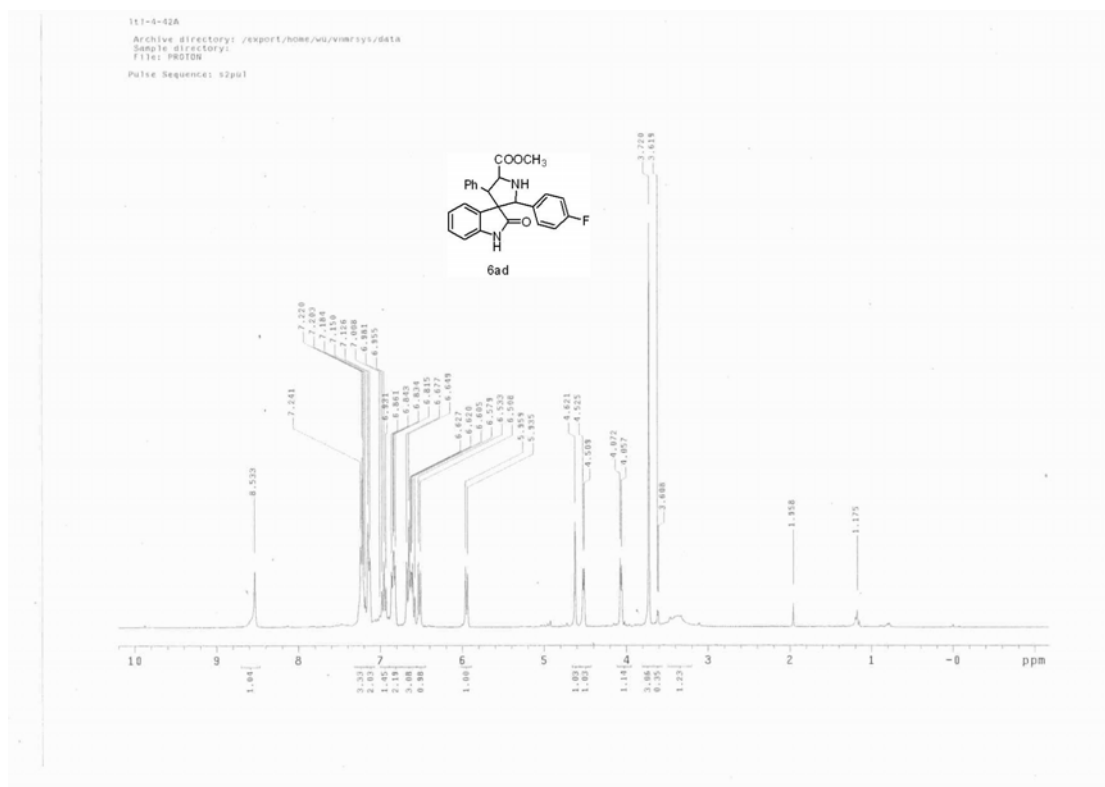
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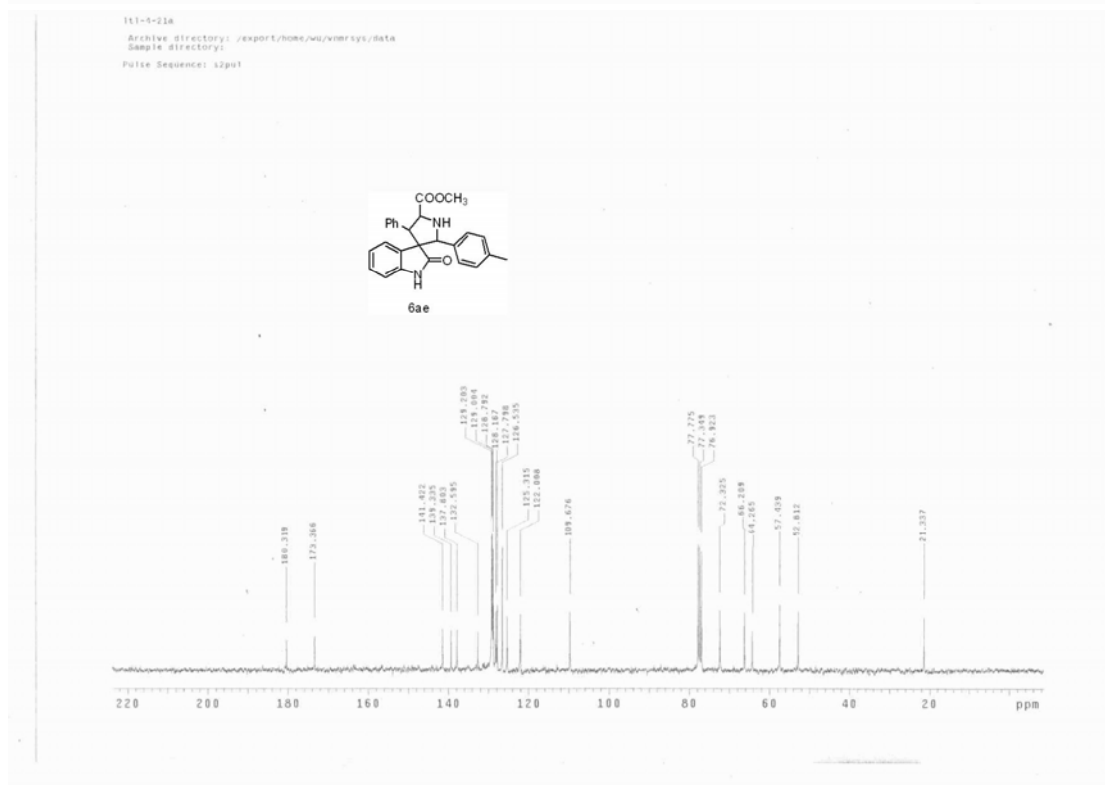
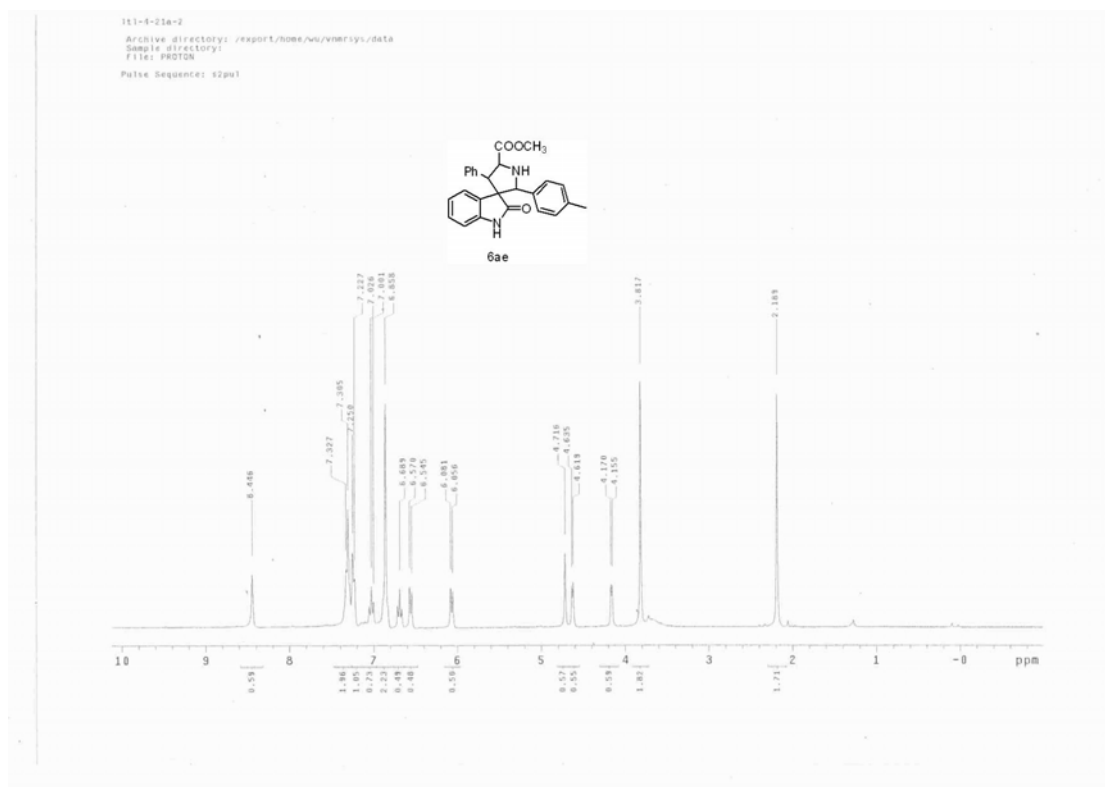
I.	¹ H NMR and ¹³ C NMR Spectra	1-16
II.	HPLC Chromatograms	17-46

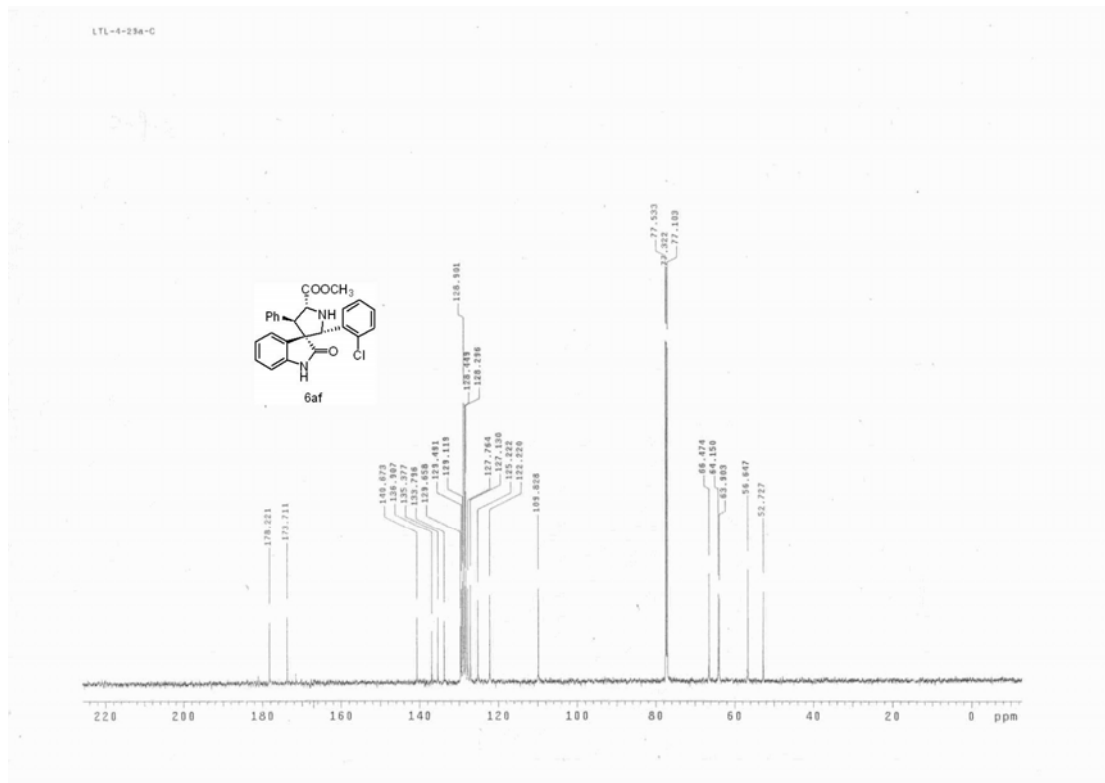
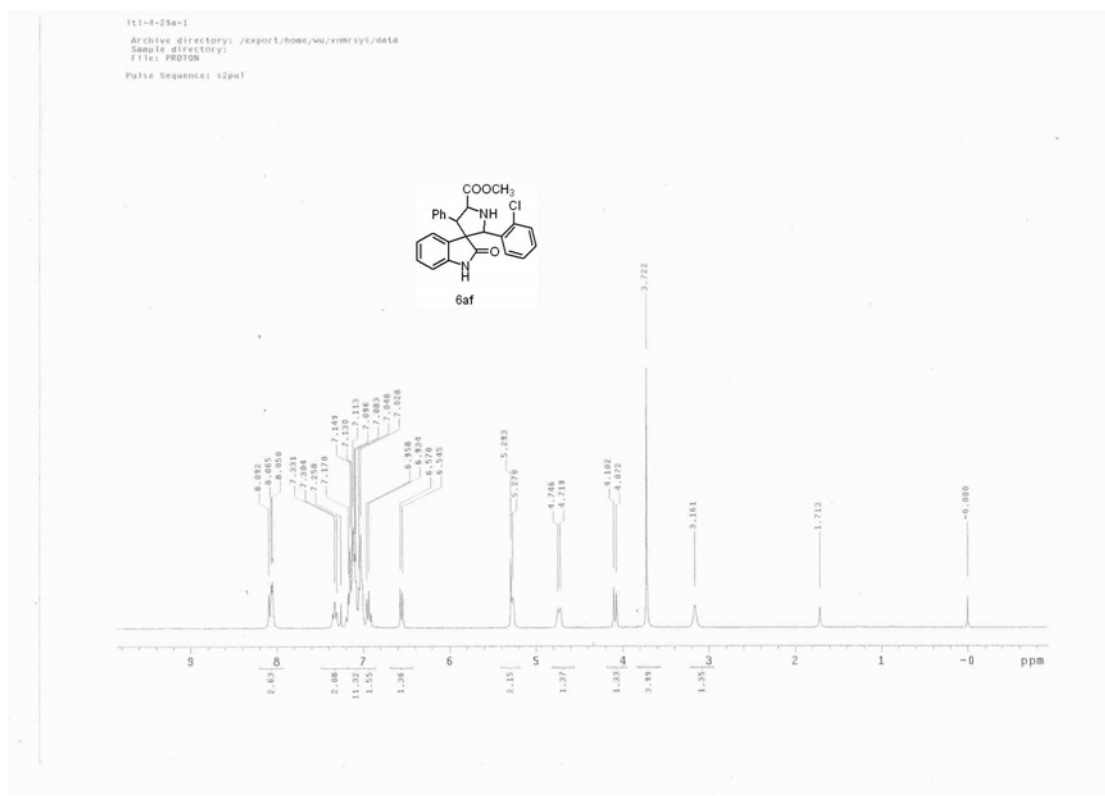


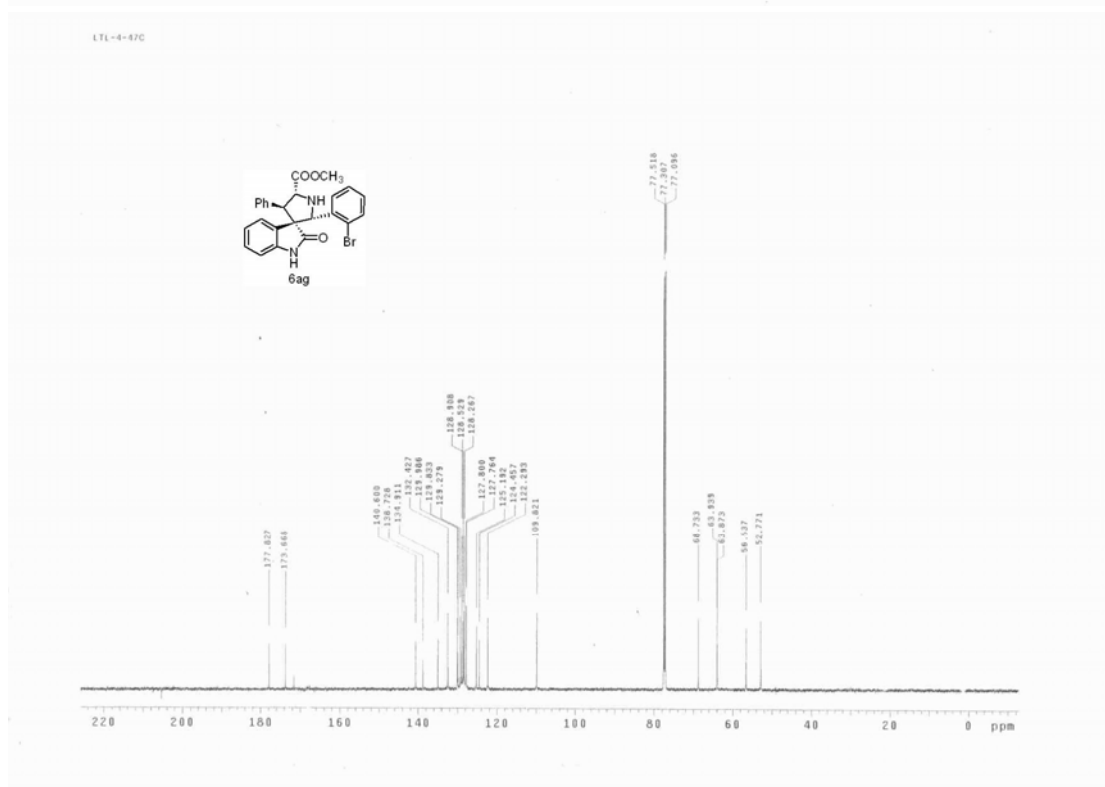
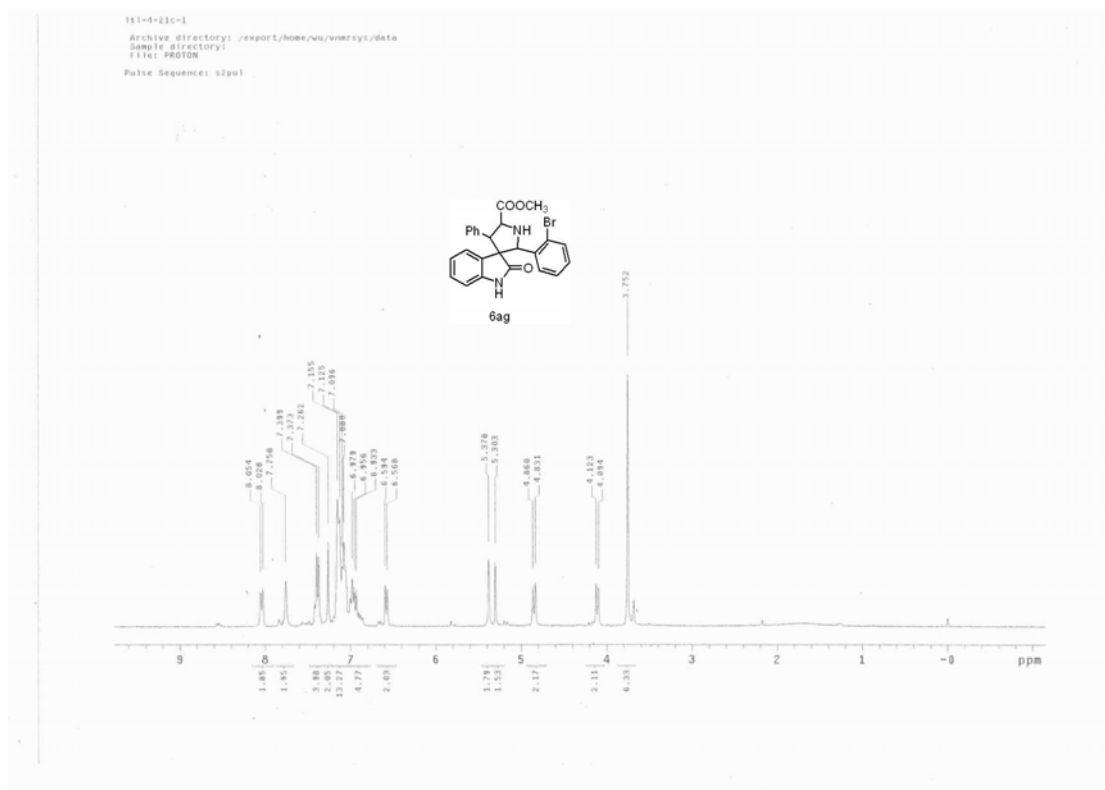


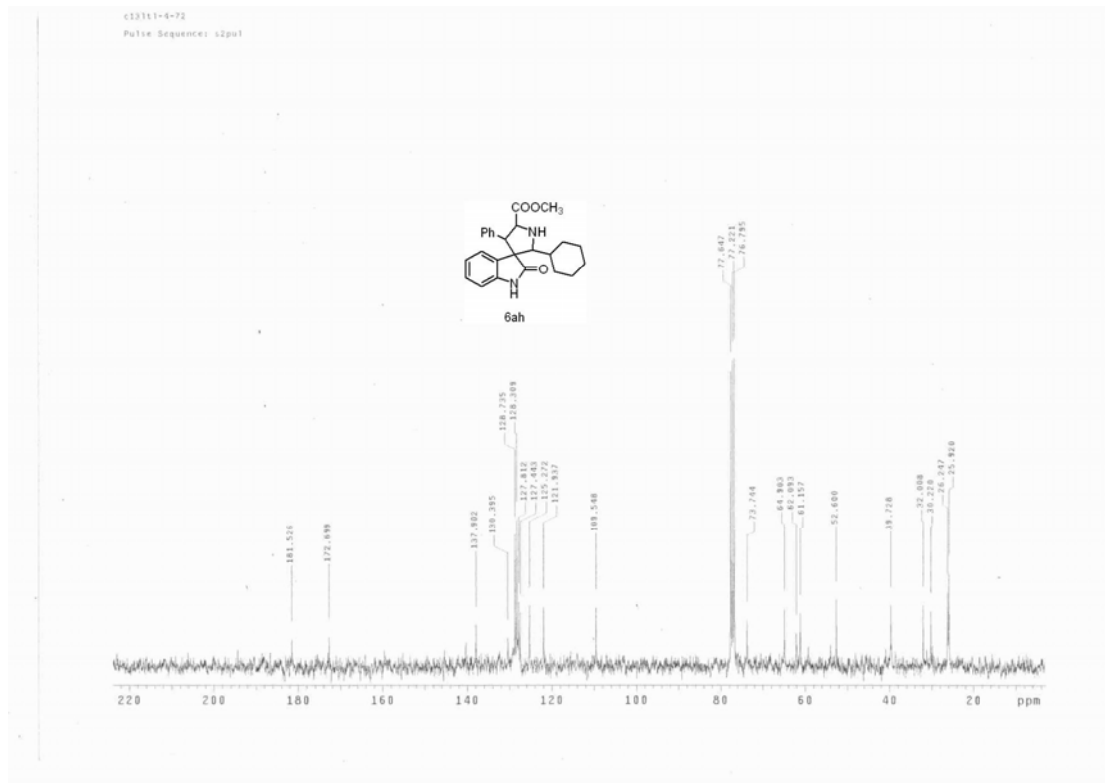
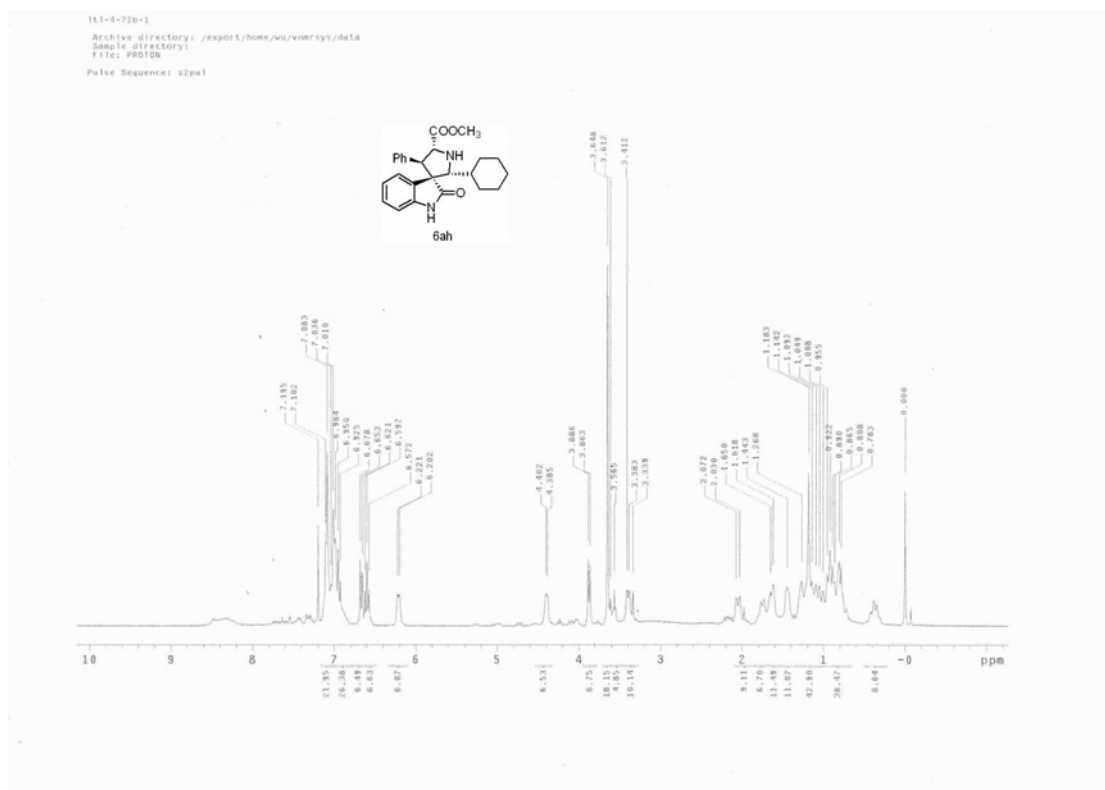


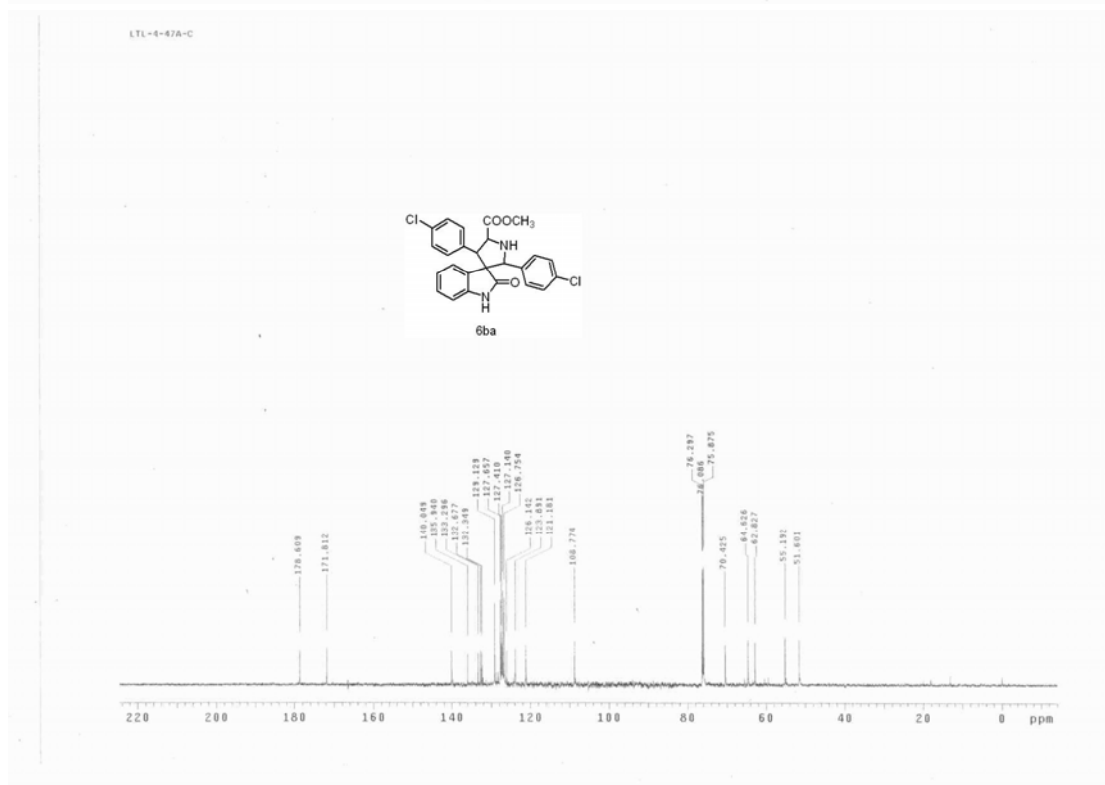
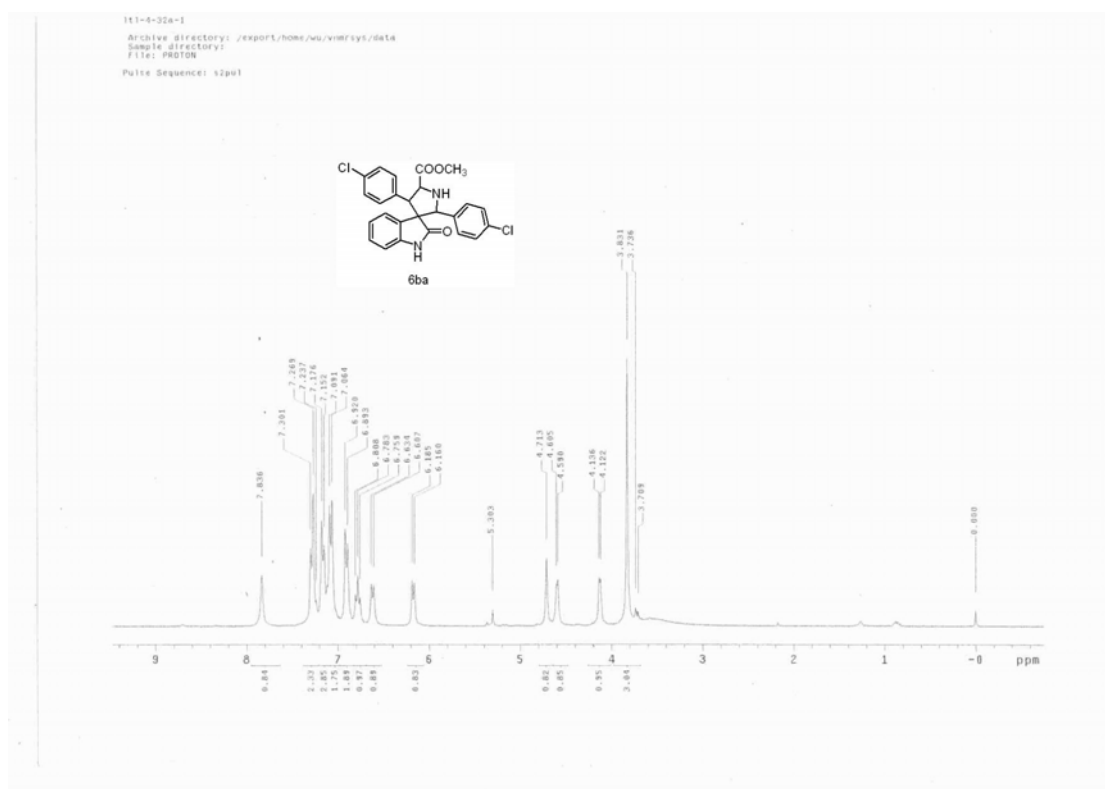


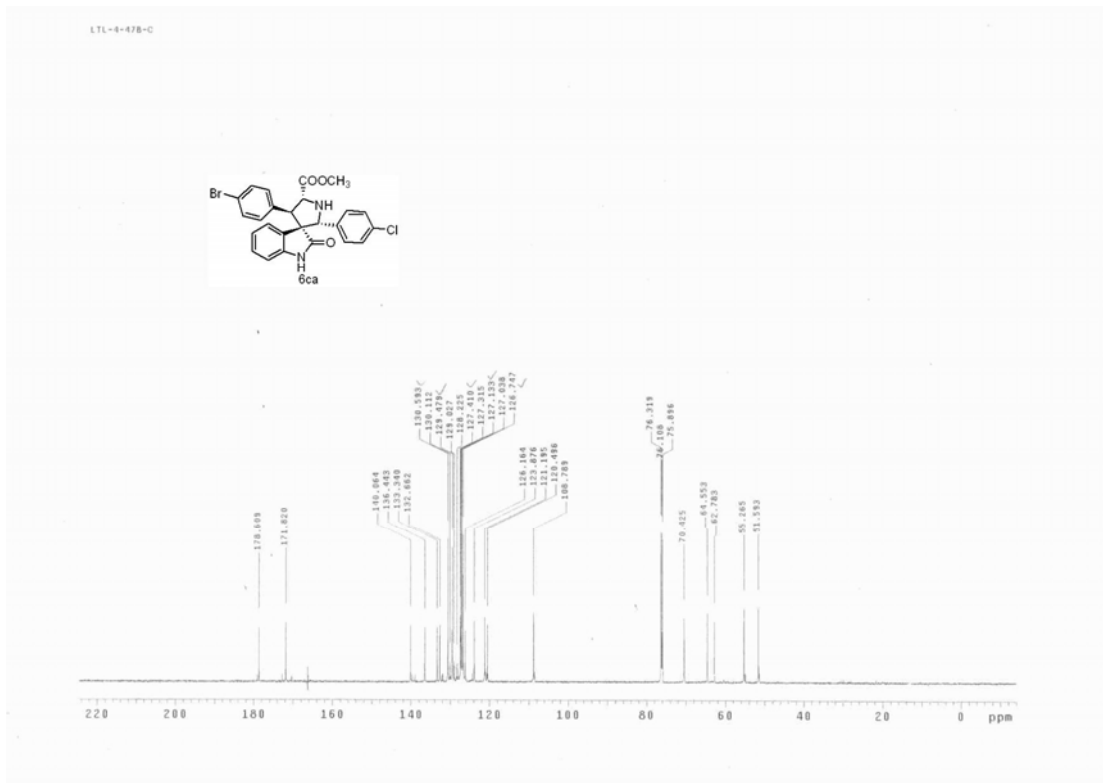
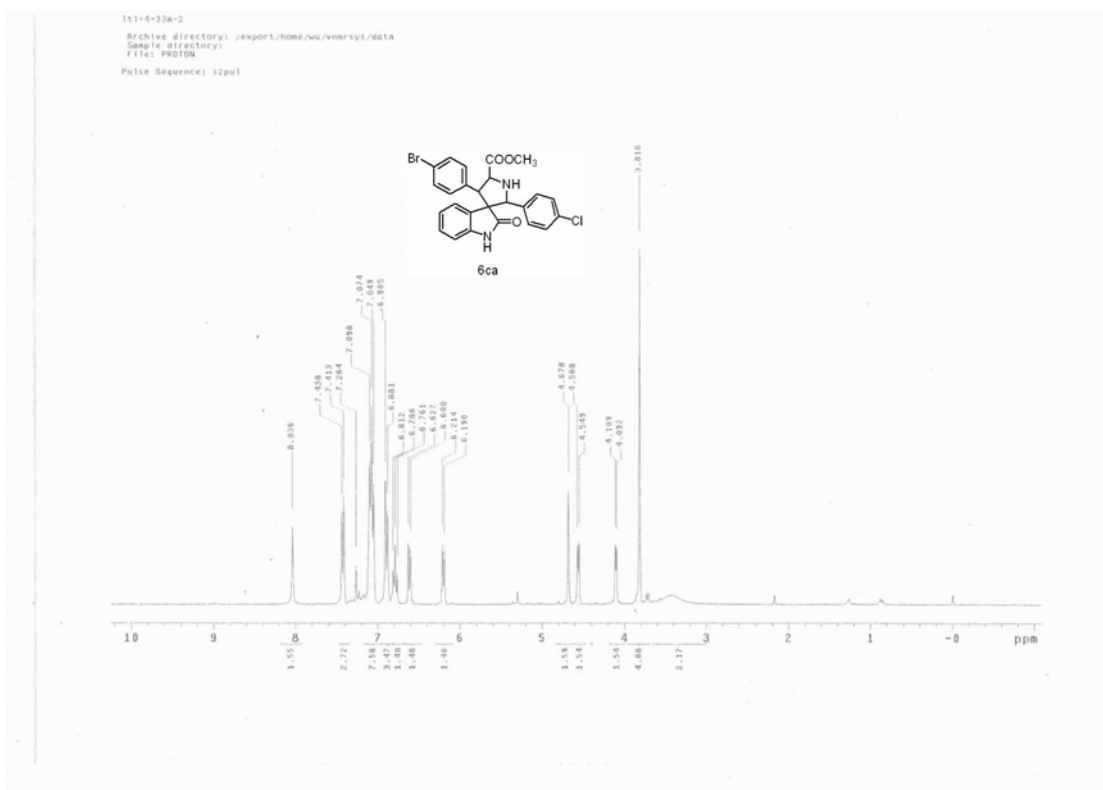


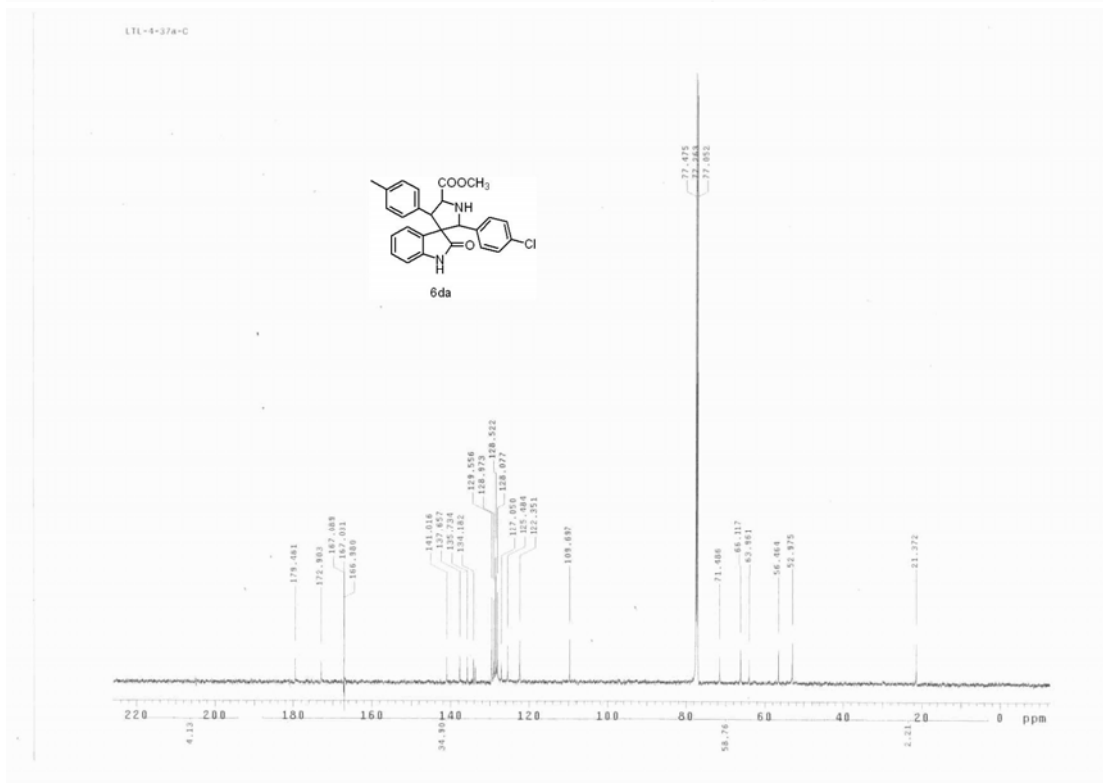
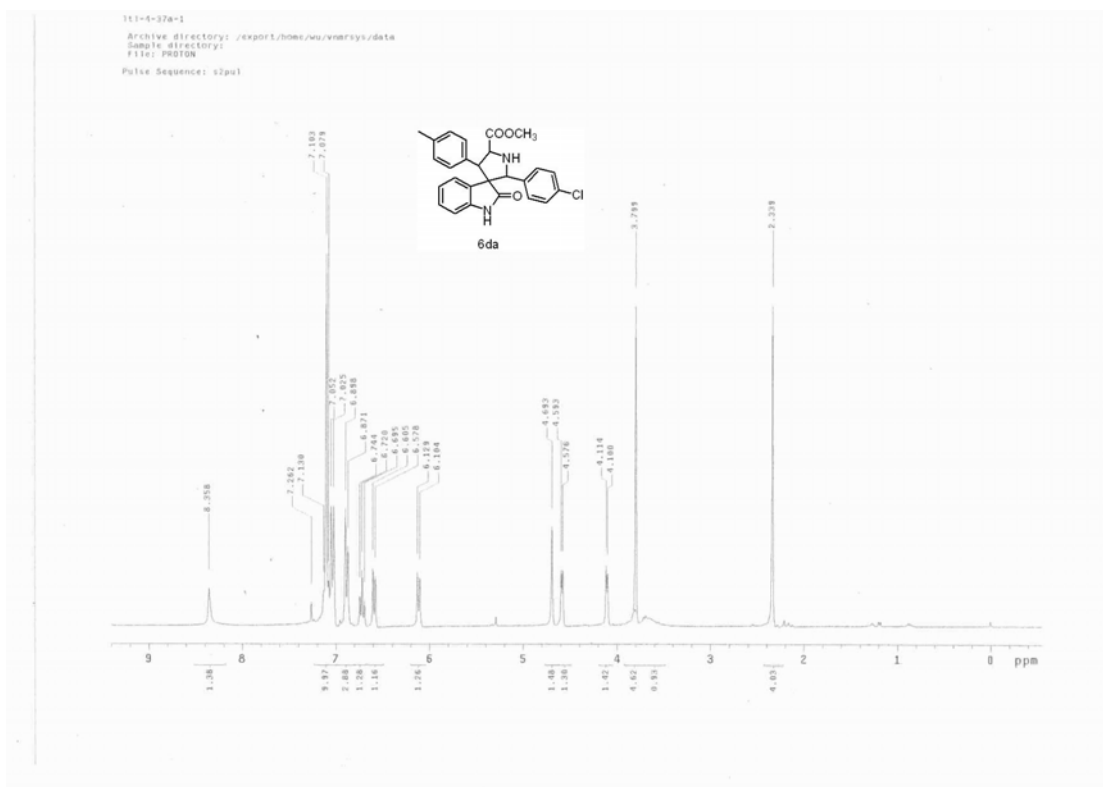


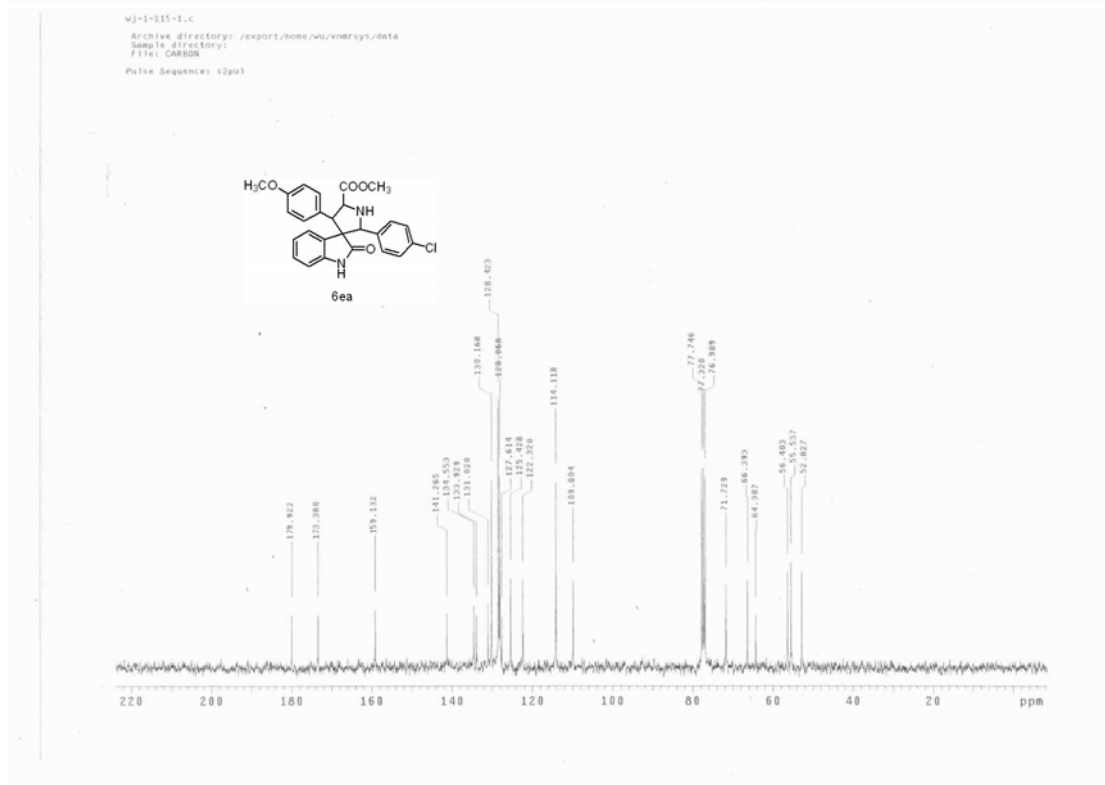
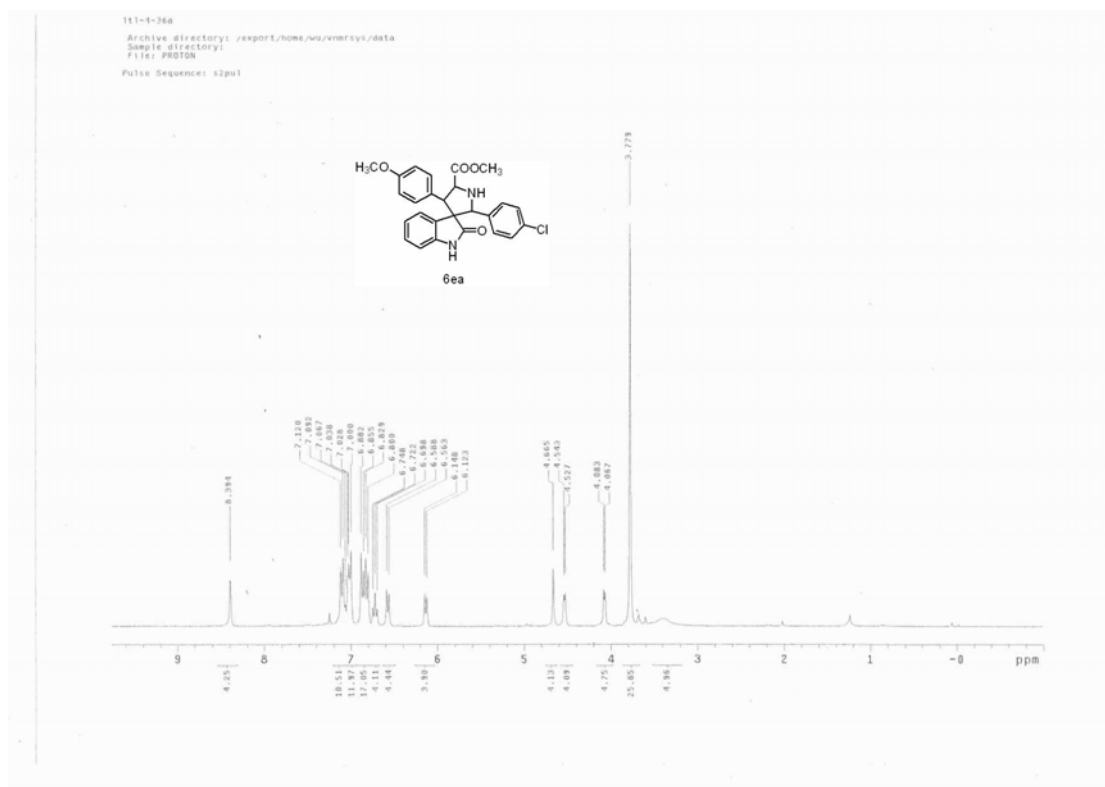


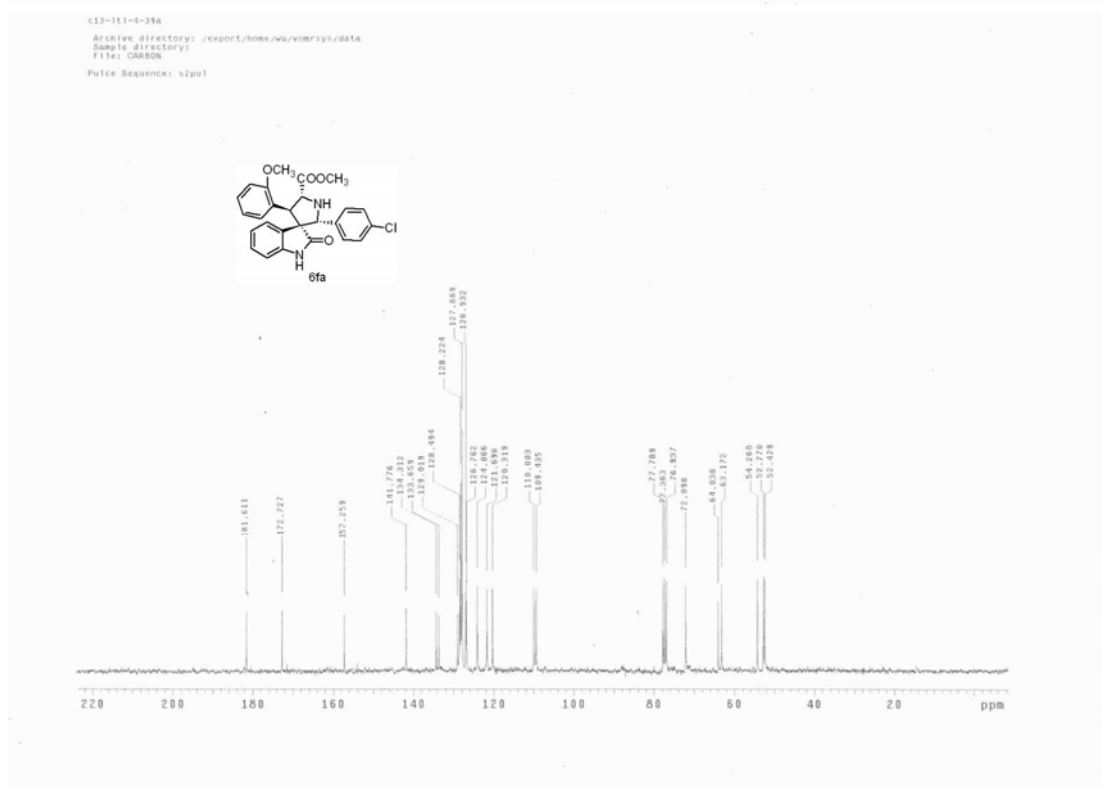
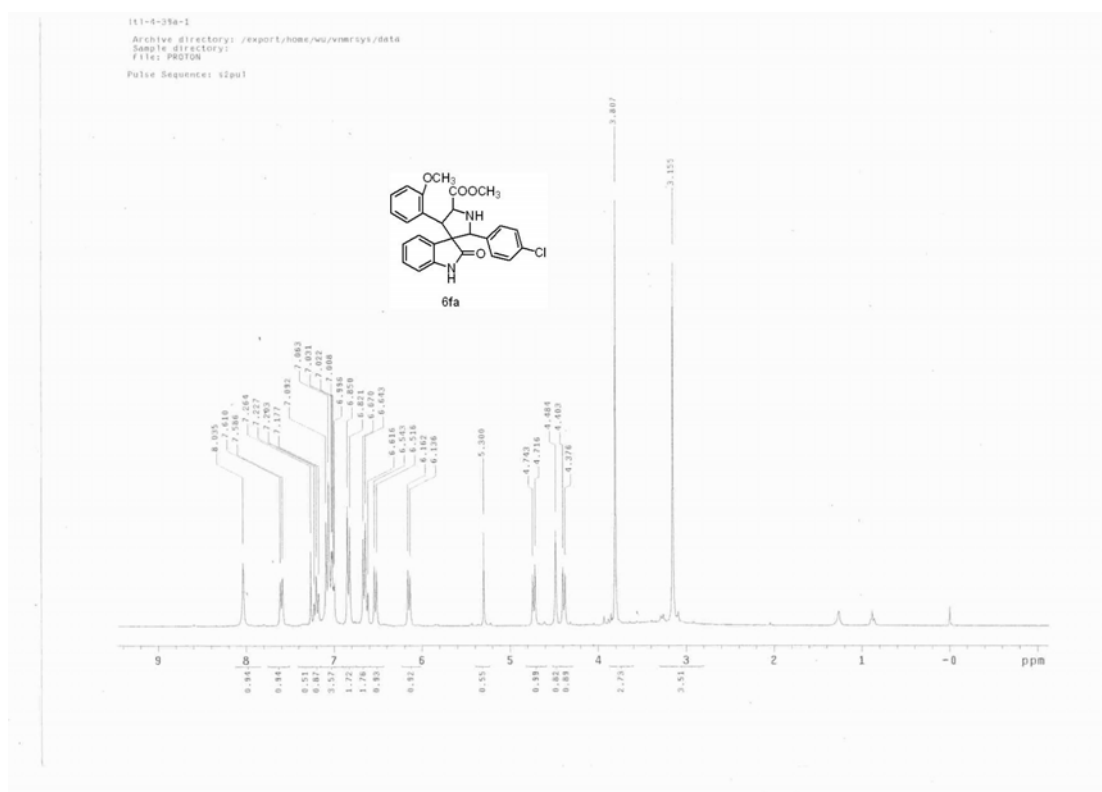


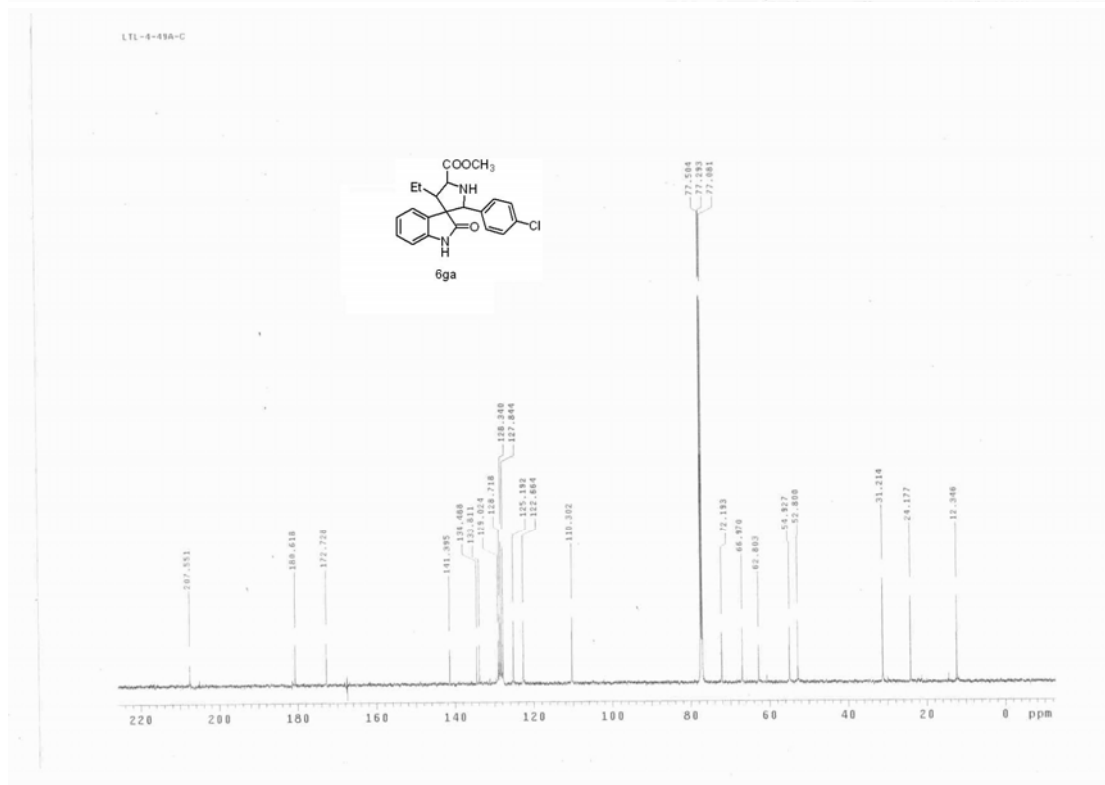
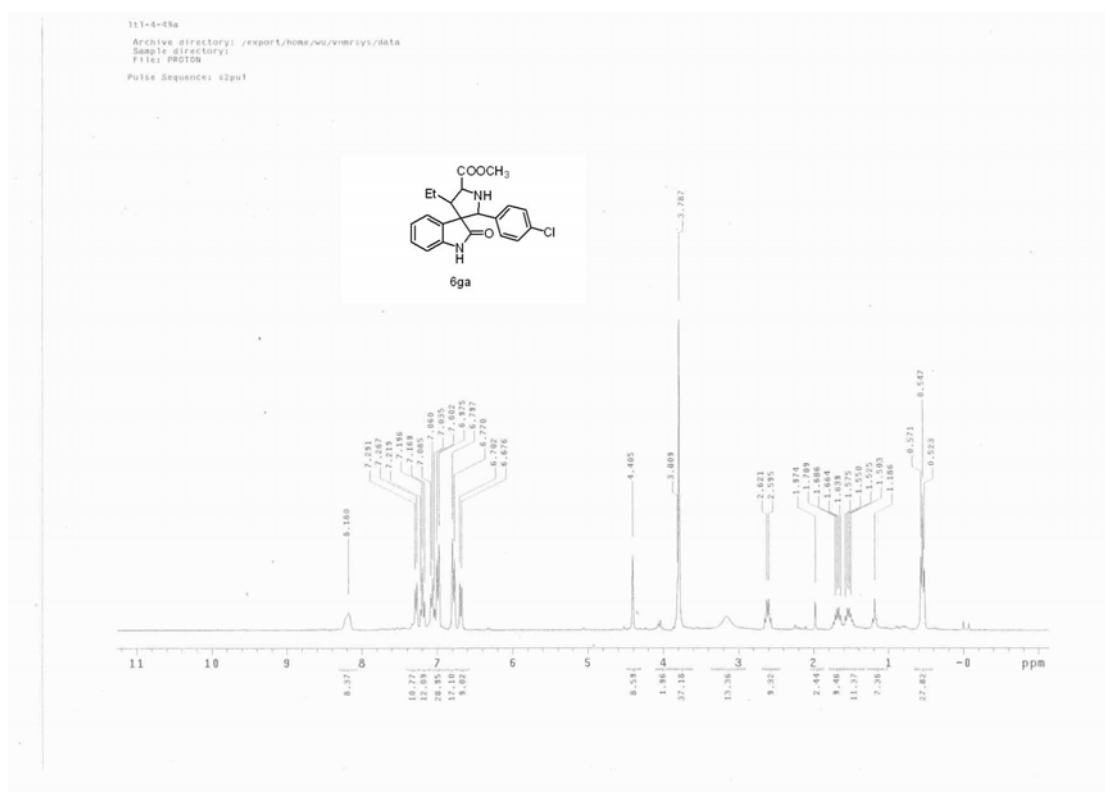


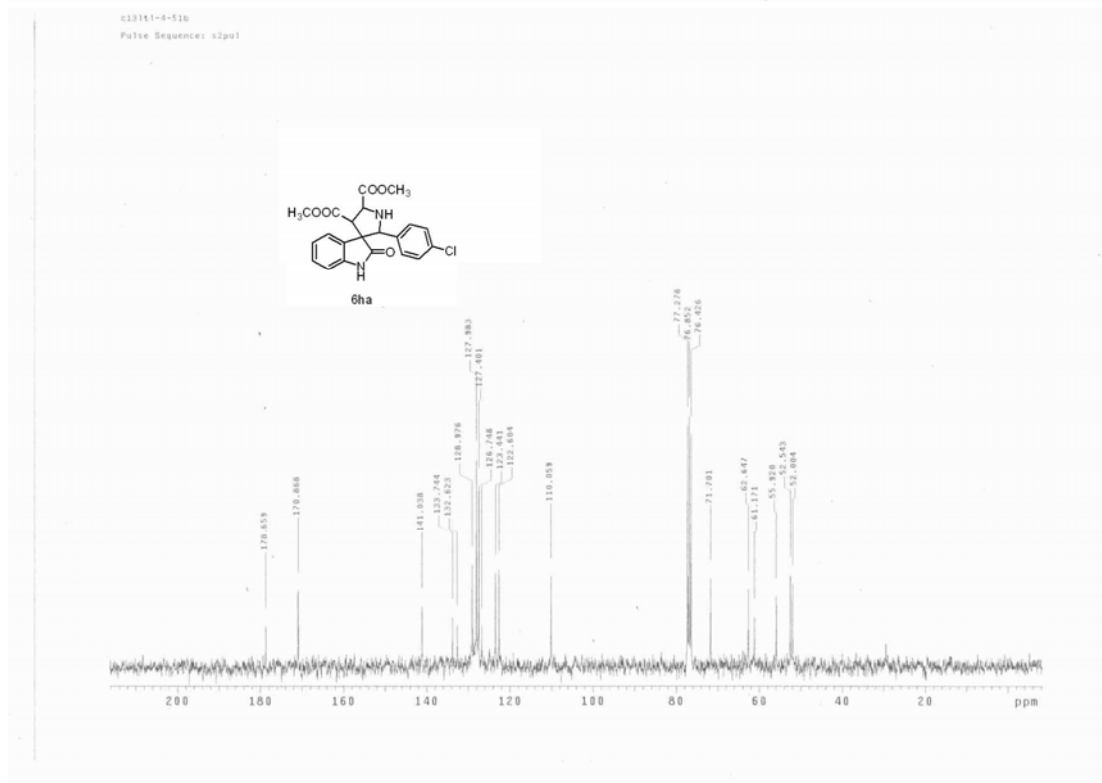
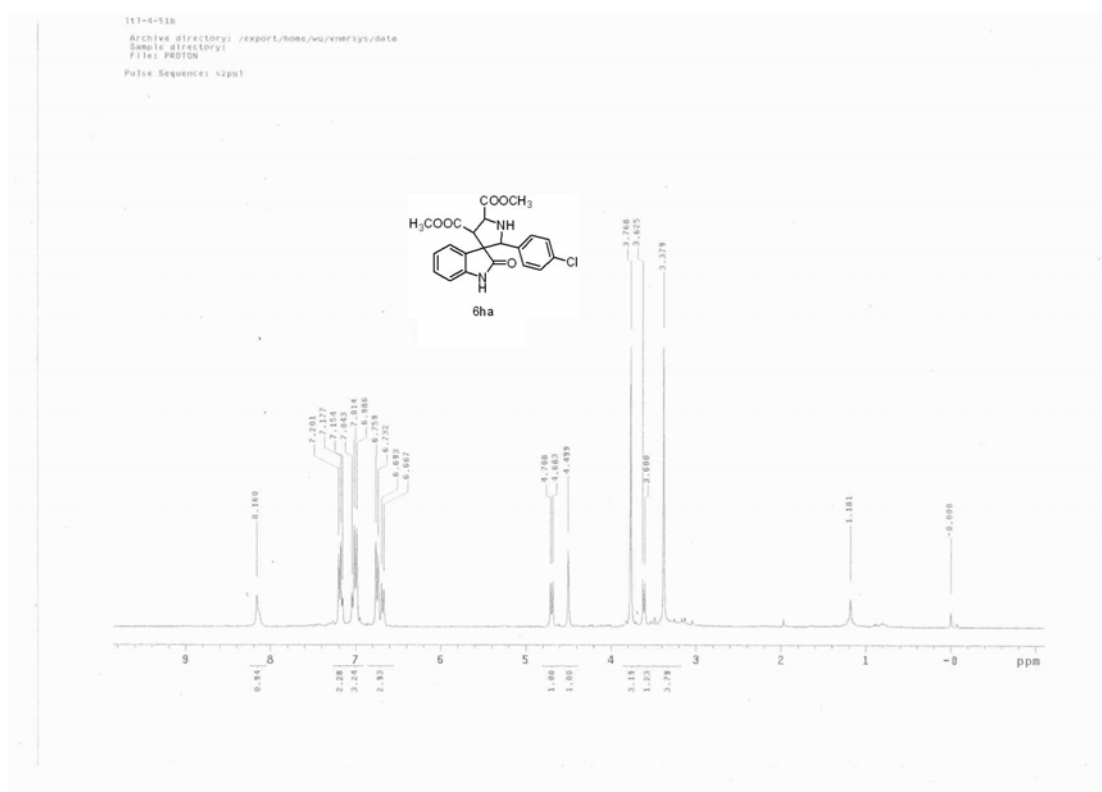








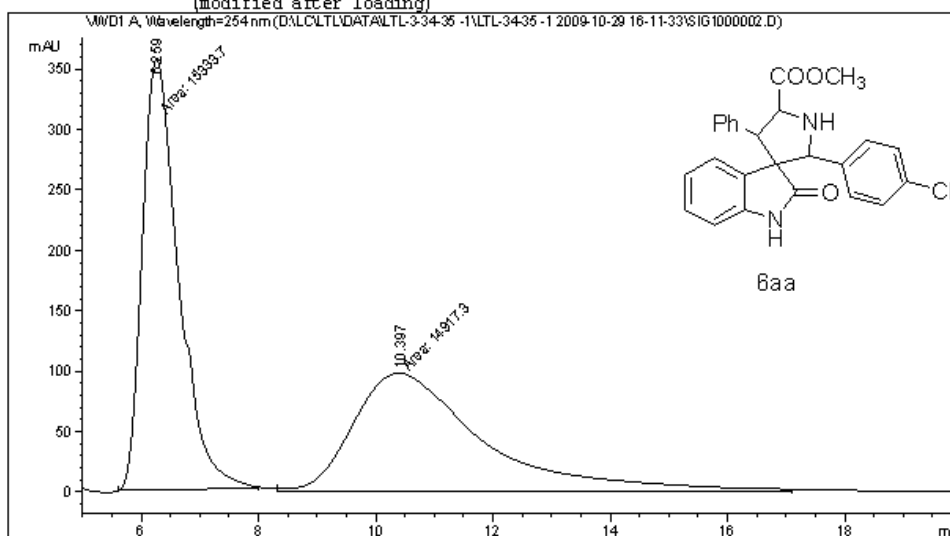




Data File D:\LC\LTL\DATA\LTL-3-34-35 -1\LTL-34-35 -1 2009-10-29 16-11-33\SIG1000002.D
 Sample Name: LTL-3-34

```

=====
Acq. Operator   : LTL                               Seq. Line :    2
Acq. Instrument : Instrument 1                       Location  : Vial 44
Injection Date  : 10/29/2009 4:23:56 PM             Inj       :    1
                                                    Inj Volume: 5 µl
Acq. Method     : D:\LC\LTL\data\LTL-3-34-35 -1\LTL-34-35 -1 2009-10-29 16-11-33\ASH-30-70-
10ML-254NM-20MIN.M
Last changed    : 9/14/2009 7:03:23 PM by LTL
Analysis Method : D:\LC\LTL\DATA\LTL-3-34-35 -1\LTL-34-35 -1 2009-10-29 16-11-33\SIG1000002.D
D\DA.M (ASH-30-70-10ML-254NM-20MIN.M)
Last changed    : 3/4/2010 9:12:59 AM by dxq
(modified after loading)
    
```



Area Percent Report

```

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

Signal 1: WMD1 A, Wavelength=254 nm

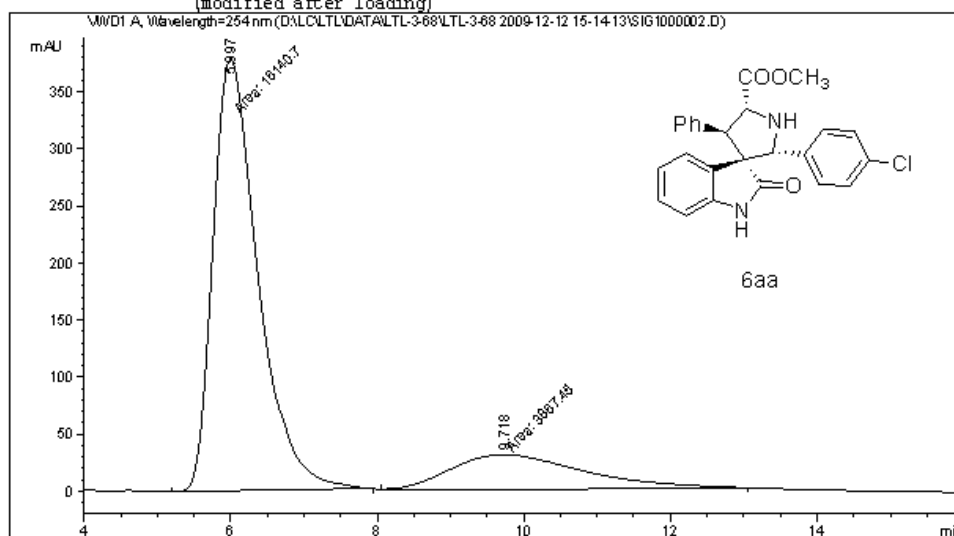
Peak #	RetTime [min]	Type	Width [min]	Area mAU *s	Height [mAU]	Area %
1	6.259	MM	0.7169	1.53337e4	356.48831	50.6882
2	10.397	MM	2.5392	1.49173e4	97.91241	49.3118

Totals : 3.02510e4 454.40073

Data File D:\LC\LTL\DATA\LTL-3-68\LTL-3-68 2009-12-12 15-14-13\SIG1000002.D
 Sample Name: LTL-3-68

```

=====
Acq. Operator   : LTL                               Seq. Line :    2
Acq. Instrument : Instrument 1                       Location  : Vial 62
Injection Date  : 12/12/2009 3:26:37 PM            Inj       :    1
                                                    Inj Volume: 5 µl
Acq. Method     : D:\LC\LTL\data\LTL-3-68\LTL-3-68 2009-12-12 15-14-13\ASH-30-70-10ML-254NM-
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Last changed    : 9/14/2009 7:03:23 PM by LTL
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Last changed    : 3/8/2010 7:35:16 PM by zzh
(modified after loading)
    
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Area Percent Report

```

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

Signal 1: VMD1 A, Wavelength=254 nm

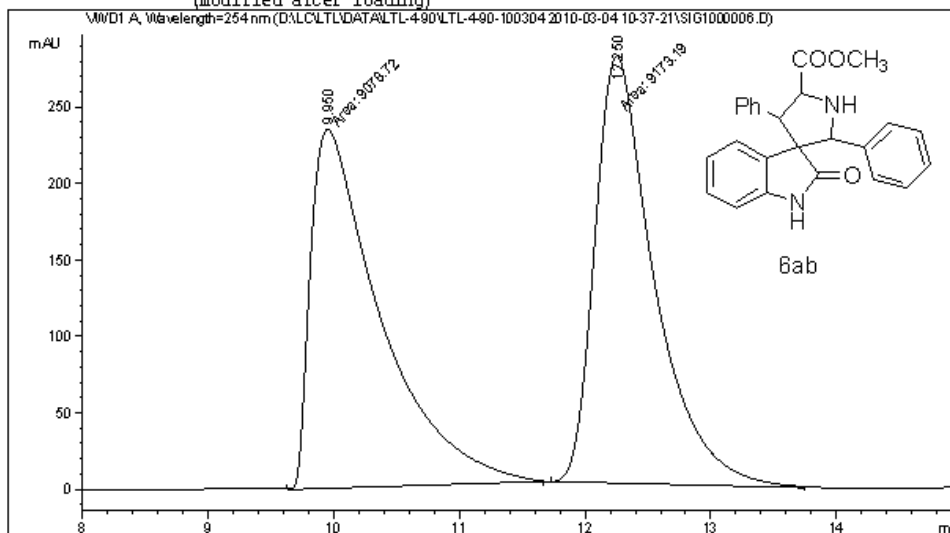
Peak #	RetTime [min]	Type	Width [min]	Area mAU	Height [mAU]	Area %
1	5.997	MM	0.7109	1.61407e4	378.41553	80.6707
2	9.718	MM	2.1250	3867.44727	30.33322	19.3293

Totals : 2.00082e4 408.74874

Data File D:\LC\LTL\DATA\LTL-4-90\LTL-4-90-100304 2010-03-04 10-37-21\SIG1000006.D
 Sample Name: LTL-4-41B

```

=====
Acq. Operator   : LTL                               Seq. Line :    6
Acq. Instrument : Instrument 1                       Location  : Vial 75
Injection Date  : 3/4/2010 12:33:17 PM              Inj       :    1
                                                    Inj Volume: 5 µl
Acq. Method     : D:\LC\LTL\data\LTL-4-90\LTL-4-90-100304 2010-03-04 10-37-21\ADH-20-80-
10ML-254NM-25MIN.M
Last changed    : 1/11/2010 8:51:22 PM by LTL
Analysis Method : D:\LC\LTL\DATA\LTL-4-90\LTL-4-90-100304 2010-03-04 10-37-21\SIG1000006.D\
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Last changed    : 3/4/2010 2:43:53 PM by LTL
(modified after loading)
    
```



Area Percent Report

```

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

Signal 1: WVD1 A, Wavelength=254 nm

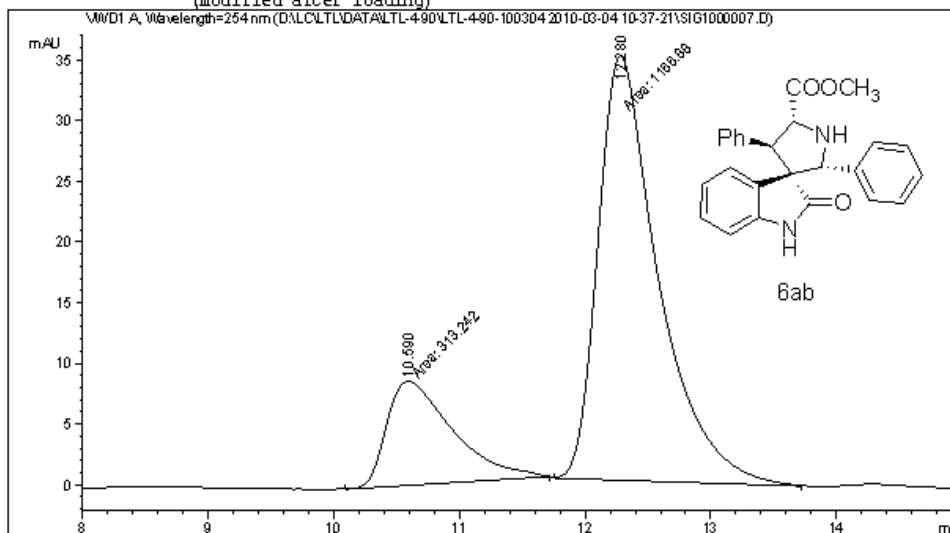
Peak #	RetTime [min]	Type	Width [min]	Area mAU *s	Height [mAU]	Area %
1	9.950	MM	0.6437	9078.72461	235.05524	49.7412
2	12.250	MM	0.5471	9173.19043	279.42413	50.2588

Totals : 1.82519e4 514.47937

Data File D:\LC\LTL\DATA\LTL-4-90\LTL-4-90-100304 2010-03-04 10-37-21\SIG1000007.D
 Sample Name: LTL-4-41C

```

=====
Acq. Operator   : LTL                               Seq. Line :    7
Acq. Instrument : Instrument 1                       Location  : Vial 76
Injection Date  : 3/4/2010 12:59:15 PM              Inj       :    1
                                                    Inj Volume: 5 µl
Acq. Method    : D:\LC\LTL\data\LTL-4-90\LTL-4-90-100304 2010-03-04 10-37-21\ADH-20-80-
                10ML-254NM-25MIN.M
Last changed   : 1/11/2010 8:51:22 PM by LTL
Analysis Method : D:\LC\LTL\DATA\LTL-4-90\LTL-4-90-100304 2010-03-04 10-37-21\SIG1000007.D\
                DA.M (ADH-20-80-10ML-254NM-25MIN.M)
Last changed   : 3/4/2010 2:45:00 PM by LTL
                (modified after loading)
    
```



Area Percent Report

```

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

Signal 1: WVD1 A, Wavelength=254 nm

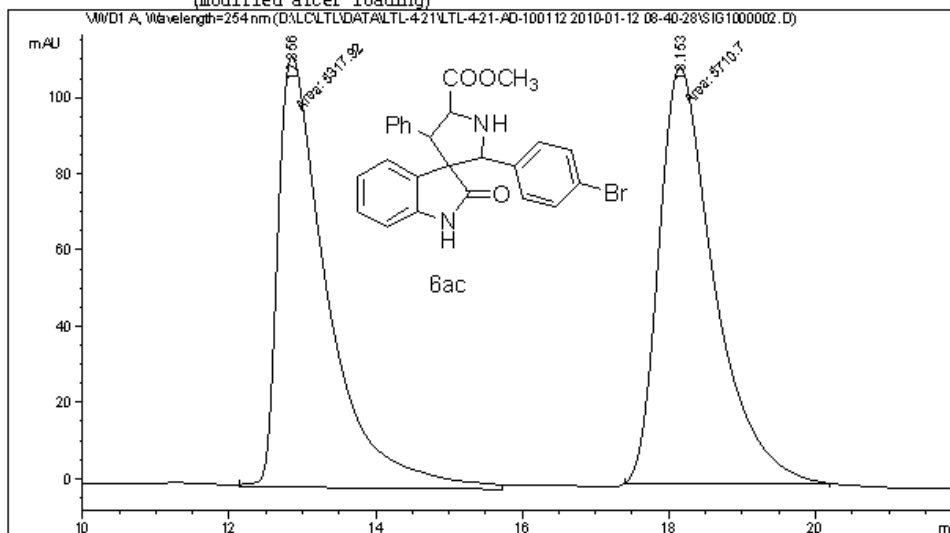
Peak #	RetTime [min]	Type	Width [min]	Area mAU	Height [mAU]	Area %
1	10.590	MM	0.6089	313.24179	8.57329	21.1633
2	12.280	MM	0.5561	1166.87500	34.97038	78.8367

Totals : 1480.11679 43.54366

Data File D:\LC\LTL\DATA\LTL-4-21\LTL-4-21-AD-100112 2010-01-12 08-40-28\SIG1000002.D
 Sample Name: LTL-4-7E-1

```

=====
Acq. Operator   : LTL                               Seq. Line :    2
Acq. Instrument : Instrument 1                       Location  : Vial 43
Injection Date  : 1/12/2010 8:52:21 AM              Inj       :    1
                                                    Inj Volume: 5 µl
Acq. Method    : D:\LC\LTL\data\LTL-4-21\LTL-4-21-AD-100112 2010-01-12 08-40-28\ADH-20-80-
10ML-254NM-25MIN.M
Last changed   : 1/11/2010 8:51:22 PM by LTL
Analysis Method : D:\LC\LTL\DATA\LTL-4-21\LTL-4-21-AD-100112 2010-01-12 08-40-28\SIG1000002.D
D\DA.M (ADH-20-80-10ML-254NM-25MIN.M)
Last changed   : 3/4/2010 9:28:38 AM by dxq
                (modified after loading)
    
```



Area Percent Report

```

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

Signal 1: WVD1 A, Wavelength=254 nm

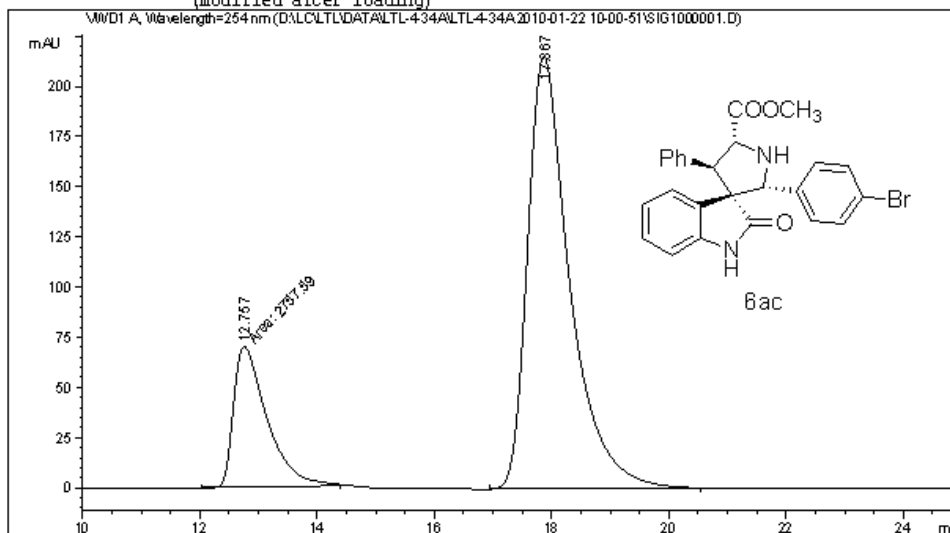
Peak #	RetTime [min]	Type	Width [min]	Area mAU *s	Height [mAU]	Area %
1	12.856	MM	0.7833	5317.91553	113.15076	48.2193
2	18.153	MM	0.8710	5710.69531	109.27671	51.7807

Totals : 1.10286e4 222.42747

Data File D:\LC\LTL\DATA\LTL-4-34A\LTL-4-34A 2010-01-22 10-00-51\SIG1000001.D
 Sample Name: LTL-4-34A

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=====
Acq. Operator   : LTL                               Seq. Line :    1
Acq. Instrument : Instrument 1                       Location  : Vial 94
Injection Date  : 1/22/2010 10:01:47 AM            Inj       :    1
                                                    Inj Volume: 5 µl
Acq. Method    : D:\LC\LTL\data\LTL-4-34A\LTL-4-34A 2010-01-22 10-00-51\ADH-20-80-10ML-
                254NM-25MIN.M
Last changed   : 1/11/2010 8:51:22 PM by LTL
Analysis Method: D:\LC\LTL\DATA\LTL-4-34A\LTL-4-34A 2010-01-22 10-00-51\SIG1000001.D\DA.M (
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Last changed   : 3/3/2010 4:38:29 PM by dxq
                (modified after loading)
    
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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
    
```

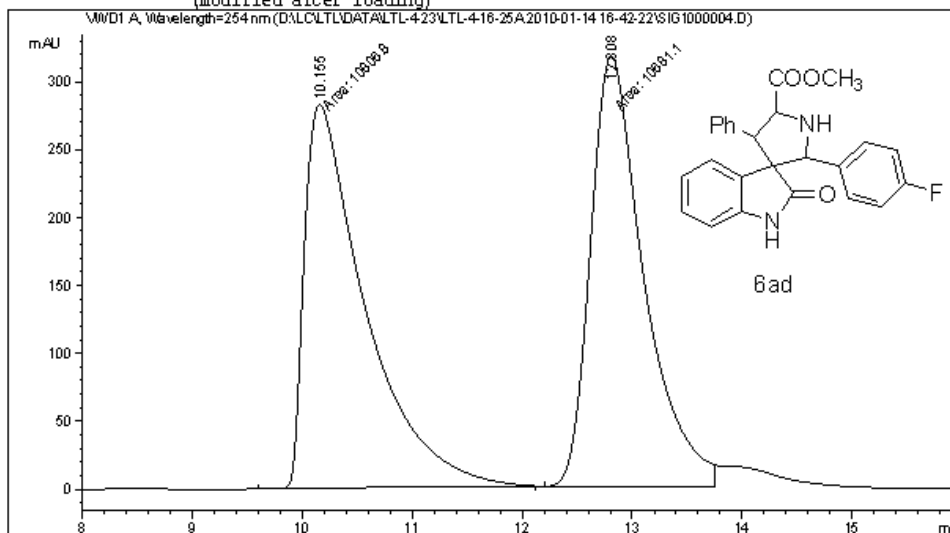
Signal 1: WMD1 A, Wavelength=254 nm

Peak #	RetTime [min]	Type	Width [min]	Area mAU *s	Height [mAU]	Area %
1	12.757	MM	0.6582	2757.58960	69.82346	20.3527
2	17.867	EB	0.7425	1.07914e4	215.66219	79.6473
Totals :				1.35490e4	285.48565	

Data File D:\LC\LTL\DATA\LTL-4-23\LTL-4-16-25A 2010-01-14 16-42-22\SIG1000004.D
 Sample Name: LTL-4-23A

```

=====
Acq. Operator   : LTL                      Seq. Line :    4
Acq. Instrument : Instrument 1              Location  : Vial 44
Injection Date  : 1/14/2010 5:46:16 PM     Inj       :    1
                                           Inj Volume: 5 µl
Acq. Method    : D:\LC\LTL\data\LTL-4-23\LTL-4-16-25A 2010-01-14 16-42-22\ADH-20-80-10ML-
                254NM-50MIN.M
Last changed   : 1/11/2010 8:52:24 PM by LTL
Analysis Method: D:\LC\LTL\DATA\LTL-4-23\LTL-4-16-25A 2010-01-14 16-42-22\SIG1000004.D\DA.M
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Last changed   : 3/3/2010 5:03:28 PM by dxq
                (modified after loading)
    
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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
    
```

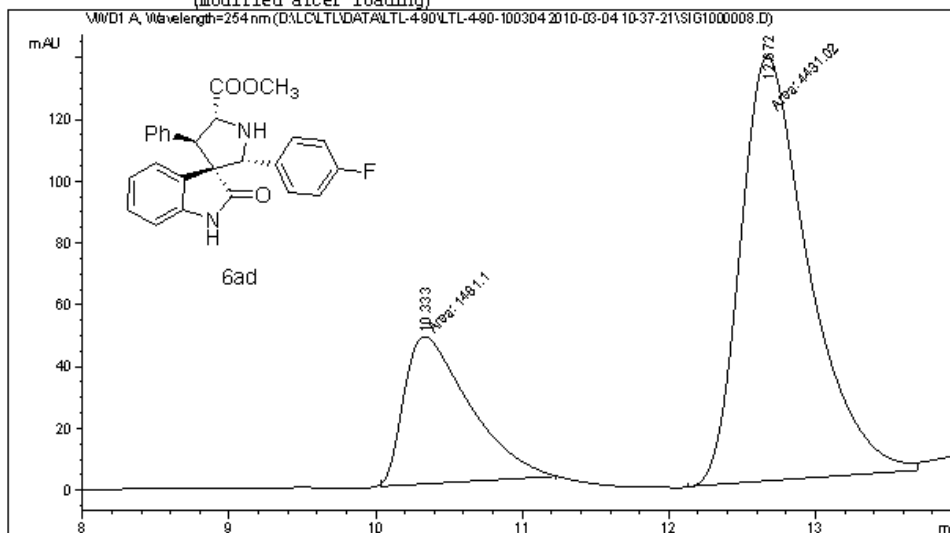
Signal 1: WMD1 A, Wavelength=254 nm

Peak #	RetTime [min]	Type	Width [min]	Area mAU *s	Height [mAU]	Area %
1	10.155	MM	0.6380	1.08068e4	282.29733	50.2925
2	12.808	MF	0.5620	1.06811e4	316.76315	49.7075
Totals :				2.14880e4	599.06049	

Data File D:\LC\LTL\DATA\LTL-4-90\LTL-4-90-100304 2010-03-04 10-37-21\SIG1000008.D
 Sample Name: LTL-4-25B

```

=====
Acq. Operator   : LTL                               Seq. Line :    8
Acq. Instrument : Instrument 1                       Location  : Vial 77
Injection Date  : 3/4/2010 1:25:17 PM              Inj       :    1
                                                    Inj Volume: 5 µl
Acq. Method     : D:\LC\LTL\data\LTL-4-90\LTL-4-90-100304 2010-03-04 10-37-21\ADH-20-80-
10ML-254NM-25MIN.M
Last changed    : 1/11/2010 8:51:22 PM by LTL
Analysis Method : D:\LC\LTL\DATA\LTL-4-90\LTL-4-90-100304 2010-03-04 10-37-21\SIG1000008.D\
D\M (ADH-20-80-10ML-254NM-25MIN.M)
Last changed    : 3/4/2010 2:47:38 PM by LTL
(modified after loading)
    
```



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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: WMD1 A, Wavelength=254 nm

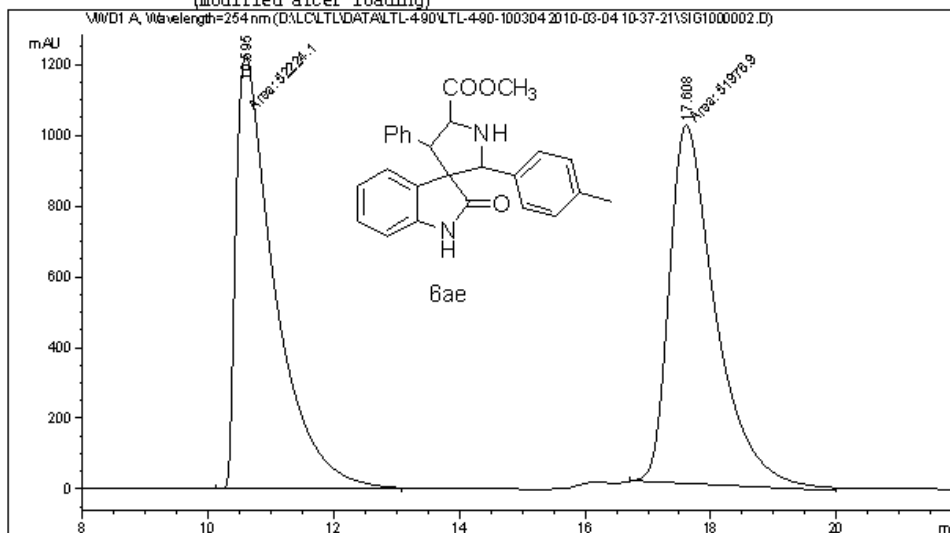
Peak #	RetTime [min]	Type	Width [min]	Area mAU	Height [mAU]	Area %
1	10.333	MM	0.5180	1481.09888	47.65464	25.0519
2	12.672	MM	0.5373	4431.02197	137.44360	74.9481

Totals : 5912.12085 185.09824

Data File D:\LC\LTL\DATA\LTL-4-90\LTL-4-90-100304 2010-03-04 10-37-21\SIG1000002.D
 Sample Name: LTL-4-21A

```

=====
Acq. Operator   : LTL                               Seq. Line :    2
Acq. Instrument : Instrument 1                       Location  : Vial 71
Injection Date  : 3/4/2010 10:49:10 AM              Inj       :    1
                                                    Inj Volume: 5 µl
Acq. Method     : D:\LC\LTL\data\LTL-4-90\LTL-4-90-100304 2010-03-04 10-37-21\ADH-20-80-
                  10ML-254NM-25MIN.M
Last changed    : 1/11/2010 8:51:22 PM by LTL
Analysis Method : D:\LC\LTL\DATA\LTL-4-90\LTL-4-90-100304 2010-03-04 10-37-21\SIG1000002.D\
                  DA.M (ADH-20-80-10ML-254NM-25MIN.M)
Last changed    : 3/4/2010 2:37:07 PM by LTL
                  (modified after loading)
    
```



Area Percent Report

```

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

Signal 1: WMD1 A, Wavelength=254 nm

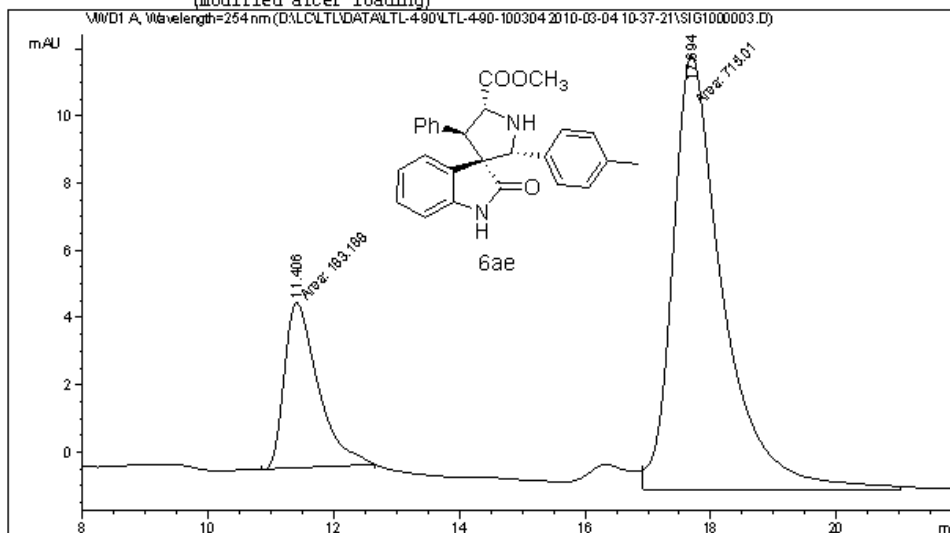
Peak #	RetTime [min]	Type	Width [min]	Area mAU *s	Height [mAU]	Area %
1	10.595	MM	0.7113	5.22241e4	1223.61377	50.1186
2	17.608	MM	0.8547	5.19769e4	1013.55743	49.8814

Totals : 1.04201e5 2237.17120

Data File D:\LC\LTL\DATA\LTL-4-90\LTL-4-90-100304 2010-03-04 10-37-21\SIG1000003.D
 Sample Name: LTL-4-5B

```

=====
Acq. Operator   : LTL                               Seq. Line :    3
Acq. Instrument : Instrument 1                       Location  : Vial 72
Injection Date  : 3/4/2010 11:15:06 AM              Inj       :    1
                                                    Inj Volume: 5 µl
Acq. Method     : D:\LC\LTL\data\LTL-4-90\LTL-4-90-100304 2010-03-04 10-37-21\ADH-20-80-
                10ML-254NM-25MIN.M
Last changed    : 1/11/2010 8:51:22 PM by LTL
Analysis Method : D:\LC\LTL\DATA\LTL-4-90\LTL-4-90-100304 2010-03-04 10-37-21\SIG1000003.D\
                DA.M (ADH-20-80-10ML-254NM-25MIN.M)
Last changed    : 3/4/2010 2:41:25 PM by LTL
                (modified after loading)
    
```



Area Percent Report

```

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

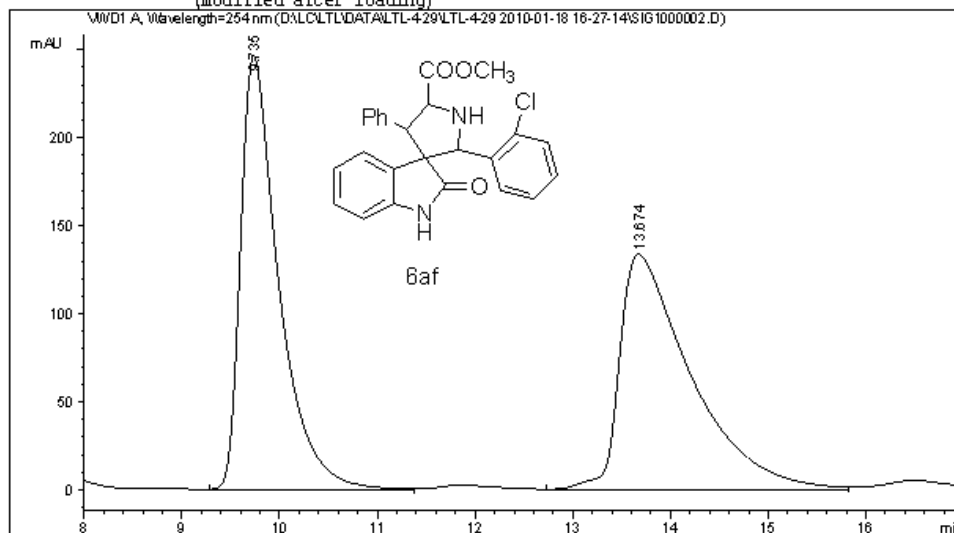
Signal 1: WMD1 A, Wavelength=254 nm

Peak #	RetTime [min]	Type	Width [min]	Area mAU *s	Height [mAU]	Area %
1	11.406	MM	0.6214	183.18816	4.91349	20.3951
2	17.694	MM	0.9239	715.01031	12.89780	79.6049

Totals : 898.19847 17.81129

Data File D:\LC\LTL\DATA\LTL-4-29\LTL-4-29 2010-01-18 16-27-14\SIG1000002.D
Sample Name: LTL-4-29A

```
=====
Acq. Operator   : LTL                               Seq. Line :    2
Acq. Instrument : Instrument 1                       Location  : Vial 64
Injection Date  : 1/18/2010 4:39:07 PM              Inj       :    1
                                                    Inj Volume: 5 µl
Acq. Method     : D:\LC\LTL\data\LTL-4-29\LTL-4-29 2010-01-18 16-27-14\ADH-20-80-10ML-254NM-
25MIN.M
Last changed    : 1/11/2010 8:51:22 PM by LTL
Analysis Method : D:\LC\LTL\DATA\LTL-4-29\LTL-4-29 2010-01-18 16-27-14\SIG1000002.D\DA.M (
ADH-20-80-10ML-254NM-25MIN.M)
Last changed    : 3/3/2010 4:48:19 PM by dxq
(modified after loading)
```



=====
Area Percent Report
=====

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

Signal 1: VMD1 A, Wavelength=254 nm

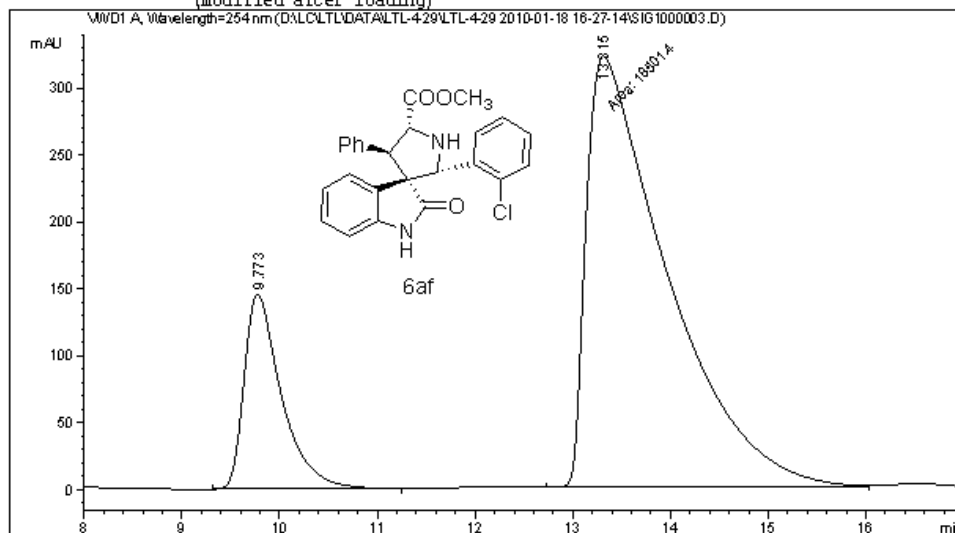
Peak #	RetTime [min]	Type	Width [min]	Area mAU	Height [mAU]	Area %
1	9.735	EB	0.4005	6665.88379	246.09087	49.6555
2	13.674	VB	0.7316	6758.36670	133.56250	50.3445

Totals : 1.34243e4 379.65337

Data File D:\LC\LTL\DATA\LTL-4-29\LTL-4-29 2010-01-18 16-27-14\SIG1000003.D
 Sample Name: LTL-4-29B

```

=====
Acq. Operator   : LTL                               Seq. Line :    3
Acq. Instrument : Instrument 1                       Location  : Vial 65
Injection Date  : 1/18/2010 5:05:06 PM              Inj       :    1
                                                    Inj Volume: 5 µl
Acq. Method     : D:\LC\LTL\data\LTL-4-29\LTL-4-29 2010-01-18 16-27-14\ADH-20-80-10ML-254NM-
                25MIN.M
Last changed    : 1/11/2010 8:51:22 PM by LTL
Analysis Method : D:\LC\LTL\DATA\LTL-4-29\LTL-4-29 2010-01-18 16-27-14\SIG1000003.D\DA.M (
                ADH-20-80-10ML-254NM-25MIN.M)
Last changed    : 3/3/2010 4:48:49 PM by dxq
                (modified after loading)
    
```



Area Percent Report

```

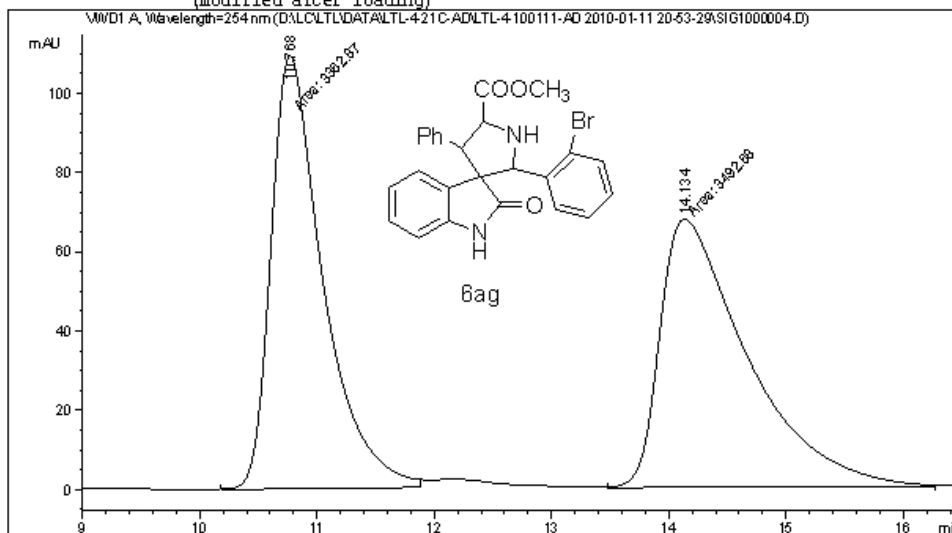
Sorted By       :      Signal
Multiplier      :      1.0000
Dilution        :      1.0000
Use Multiplier & Dilution Factor with ISTDs
    
```

Signal 1: VMD1 A, Wavelength=254 nm

Peak #	RetTime [min]	Type	Width [min]	Area mAU	Height [mAU]	Area %
1	9.773	BB	0.3912	3874.22656	145.97577	17.3145
2	13.315	MM	0.9577	1.85014e4	321.97354	82.6855
Totals :				2.23757e4	467.94931	

Data File D:\LC\LTL\DATA\LTL-4-21C-AD\LTL-4-100111-AD 2010-01-11 20-53-29\SIG1000004.D
Sample Name: LTL-4-21C

=====
Acq. Operator : LTL Seq. Line : 4
Acq. Instrument : Instrument 1 Location : Vial 53
Injection Date : 1/11/2010 10:22:17 PM Inj : 1
Inj Volume : 5 µl
Acq. Method : D:\LC\LTL\data\LTL-4-21C-AD\LTL-4-100111-AD 2010-01-11 20-53-29\ADH-20-80-
10ML-254NM-50MIN.M
Last changed : 1/11/2010 8:52:24 PM by LTL
Analysis Method : D:\LC\LTL\DATA\LTL-4-21C-AD\LTL-4-100111-AD 2010-01-11 20-53-29\
SIG1000004.D\DA.M (ADH-20-80-10ML-254NM-50MIN.M)
Last changed : 3/3/2010 5:05:53 PM by dxq
(modified after loading)



=====
Area Percent Report
=====

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

Signal 1: WVD1 A, Wavelength=254 nm

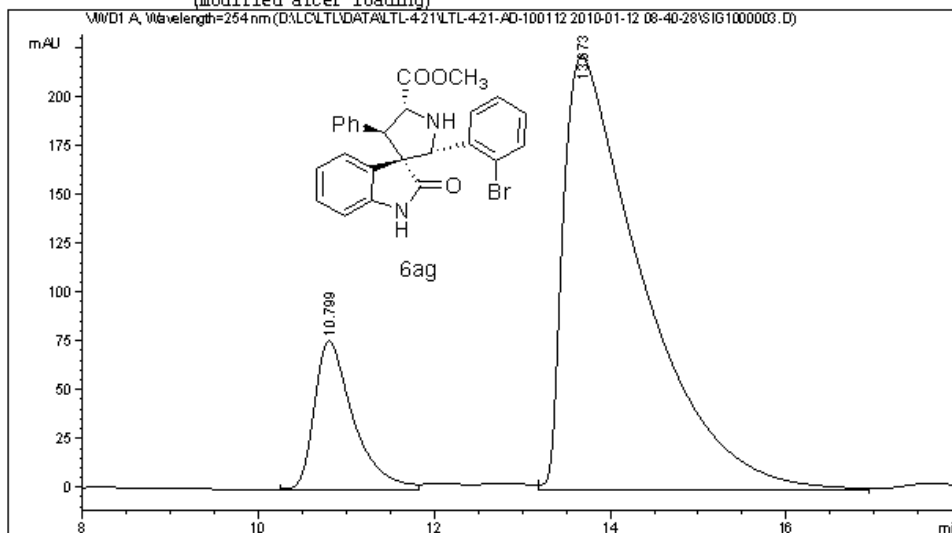
Peak #	RetTime [min]	Type	Width [min]	Area mAU	Height [mAU]	Area %
1	10.768	MM	0.5132	3362.87061	109.21862	49.0532
2	14.134	MM	0.8591	3492.68457	67.75979	50.9468

Totals : 6855.55518 176.97841

Data File D:\LC\LTL\DATA\LTL-4-21\LTL-4-21-AD-100112 2010-01-12 08-40-28\SIG1000003.D
 Sample Name: LTL-4-21C

```

=====
Acq. Operator   : LTL                               Seq. Line :    3
Acq. Instrument : Instrument 1                       Location  : Vial 54
Injection Date  : 1/12/2010 9:18:21 AM              Inj       :    1
                                                    Inj Volume: 5 µl
Acq. Method    : D:\LC\LTL\data\LTL-4-21\LTL-4-21-AD-100112 2010-01-12 08-40-28\ADH-20-80-
10ML-254NM-25MIN.M
Last changed   : 1/11/2010 8:51:22 PM by LTL
Analysis Method: D:\LC\LTL\DATA\LTL-4-21\LTL-4-21-AD-100112 2010-01-12 08-40-28\SIG1000003.D
D\DA.M (ADH-20-80-10ML-254NM-25MIN.M)
Last changed   : 3/3/2010 5:09:24 PM by dxq
                (modified after loading)
    
```



Area Percent Report

```

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

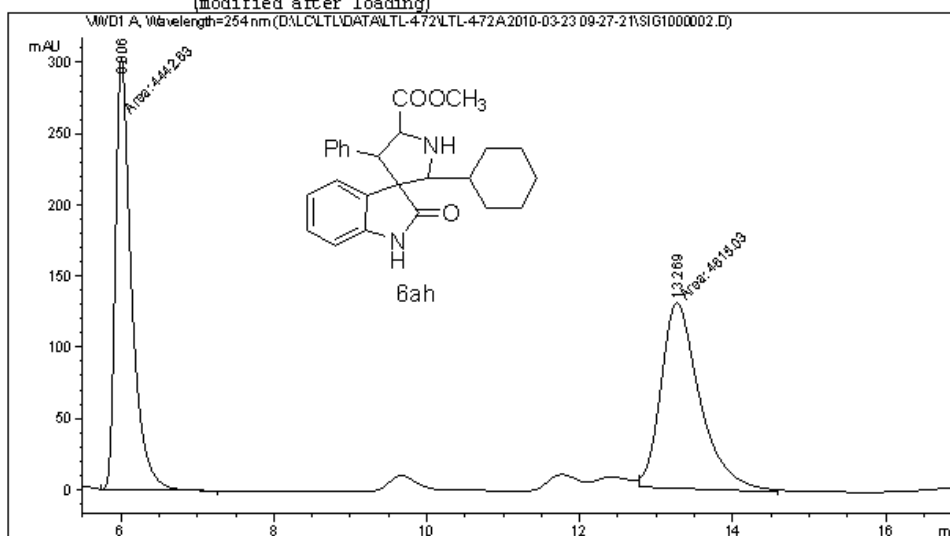
Signal 1: WMD1 A, Wavelength=254 nm

Peak #	RetTime [min]	Type	Width [min]	Area mAU *s	Height [mAU]	Area %
1	10.799	BV	0.4553	2333.16162	76.08574	14.4409
2	13.673	VB	0.8782	1.38235e4	221.89778	85.5591
Totals :				1.61566e4	297.98352	

Data File D:\LC\LTL\DATA\LTL-4-72\LTL-4-72A 2010-03-23 09-27-21\SIG1000002.D
 Sample Name: LTL-4-72A

```

=====
Acq. Operator   : LTL                               Seq. Line :    2
Acq. Instrument : Instrument 1                       Location  : Vial 54
Injection Date  : 3/23/2010 9:39:12 AM             Inj       :    1
                                                    Inj Volume: 5 µl
Acq. Method    : D:\LC\LTL\data\LTL-4-72\LTL-4-72A 2010-03-23 09-27-21\ADH-20-80-10ML-
                254NM-50MIN.M
Last changed   : 1/11/2010 8:52:24 PM by LTL
Analysis Method: D:\LC\LTL\DATA\LTL-4-72\LTL-4-72A 2010-03-23 09-27-21\SIG1000002.D\DA.M (
                ADH-20-80-10ML-254NM-50MIN.M)
Last changed   : 3/23/2010 10:20:30 AM by LTL
                (modified after loading)
    
```



=====
 Area Percent Report
 =====

```

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

Signal 1: WVD1 A, Wavelength=254 nm

Peak #	RetTime [min]	Type	Width [min]	Area mAU	Height [mAU]	Area %
1	6.006	MM	0.2447	4442.62744	302.64478	49.0483
2	13.269	MM	0.5906	4615.02783	130.22745	50.9517

Totals : 9057.65527 432.87222

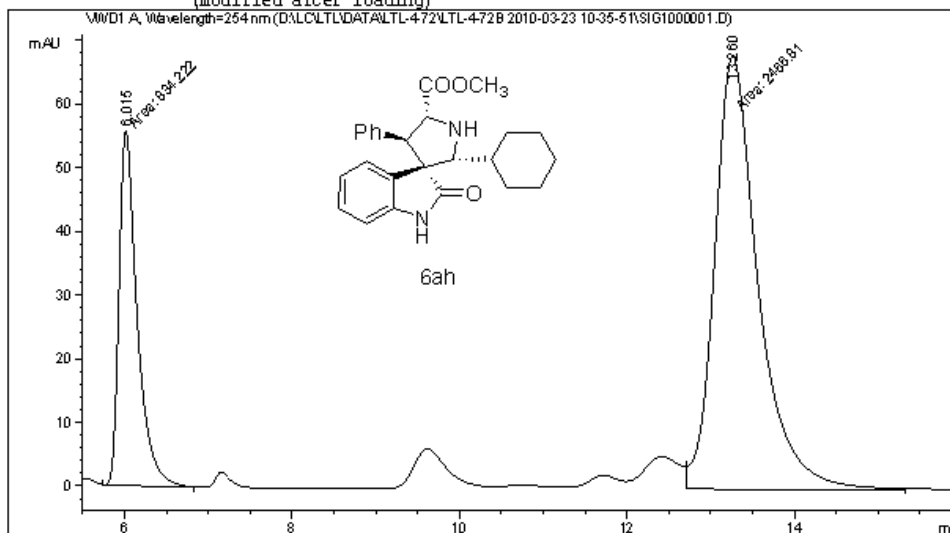
Instrument 1 3/23/2010 10:20:46 AM LTL

Page 1 of 1

Data File D:\LC\LTL\DATA\LTL-4-72\LTL-4-72B 2010-03-23 10-35-51\SIG1000001.D
 Sample Name: LTL-4-72B

```

=====
Acq. Operator   : LTL                      Seq. Line :    1
Acq. Instrument : Instrument 1              Location  : Vial 55
Injection Date  : 3/23/2010 10:36:42 AM    Inj       :    1
                                           Inj Volume: 5 µl
Acq. Method     : D:\LC\LTL\data\LTL-4-72\LTL-4-72B 2010-03-23 10-35-51\ADH-20-80-10ML-
254NM-25MIN.M
Last changed    : 1/11/2010 8:51:22 PM by LTL
Analysis Method : D:\LC\LTL\DATA\LTL-4-72\LTL-4-72B 2010-03-23 10-35-51\SIG1000001.D\DA.M (
ADH-20-80-10ML-254NM-25MIN.M)
Last changed    : 3/23/2010 11:02:32 AM by LTL
(modified after loading)
    
```



Area Percent Report

```

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

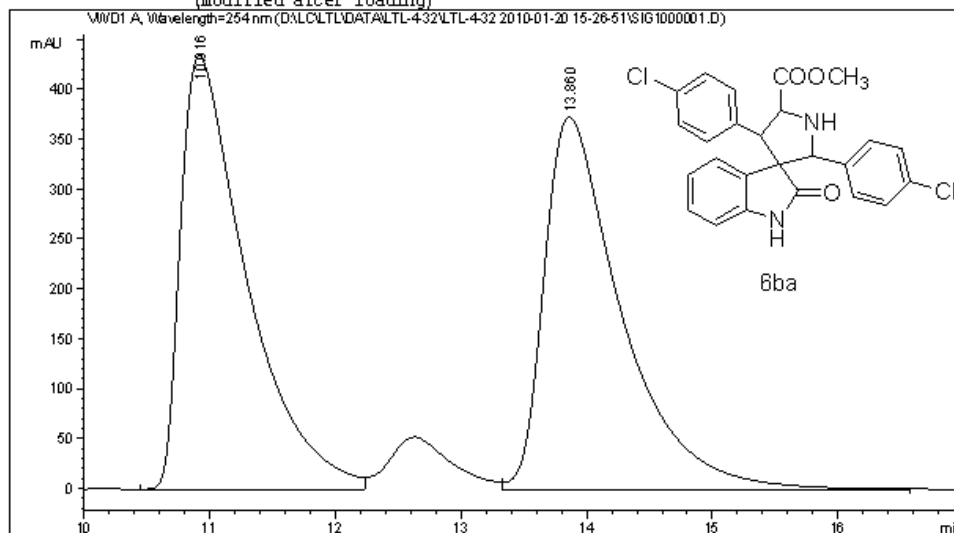
Signal 1: WVD1 A, Wavelength=254 nm

Peak #	RetTime [min]	Type	Width [min]	Area mAU	Height [mAU]	Area %
1	6.015	MM	0.2495	834.22235	55.73057	25.2715
2	13.260	MM	0.6041	2466.81128	68.05688	74.7285

Totals : 3301.03363 123.78745

Data File D:\LC\LTL\DATA\LTL-4-32\LTL-4-32 2010-01-20 15-26-51\SIG1000001.D
Sample Name: LTL-4-32A

```
=====
Acq. Operator   : LTL                               Seq. Line :    1
Acq. Instrument : Instrument 1                       Location  : Vial 46
Injection Date  : 1/20/2010 3:28:05 PM              Inj       :    1
                                                    Inj Volume: 5 µl
Acq. Method     : D:\LC\LTL\data\LTL-4-32\LTL-4-32 2010-01-20 15-26-51\ADH-20-80-10ML-254NM-
                25MIN.M
Last changed    : 1/11/2010 8:51:22 PM by LTL
Analysis Method : D:\LC\LTL\DATA\LTL-4-32\LTL-4-32 2010-01-20 15-26-51\SIG1000001.D\DA.M (
                ADH-20-80-10ML-254NM-25MIN.M)
Last changed    : 3/3/2010 4:45:05 PM by dxq
                (modified after loading)
=====
```



=====
Area Percent Report
=====

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

Signal 1: VMD1 A, Wavelength=254 nm

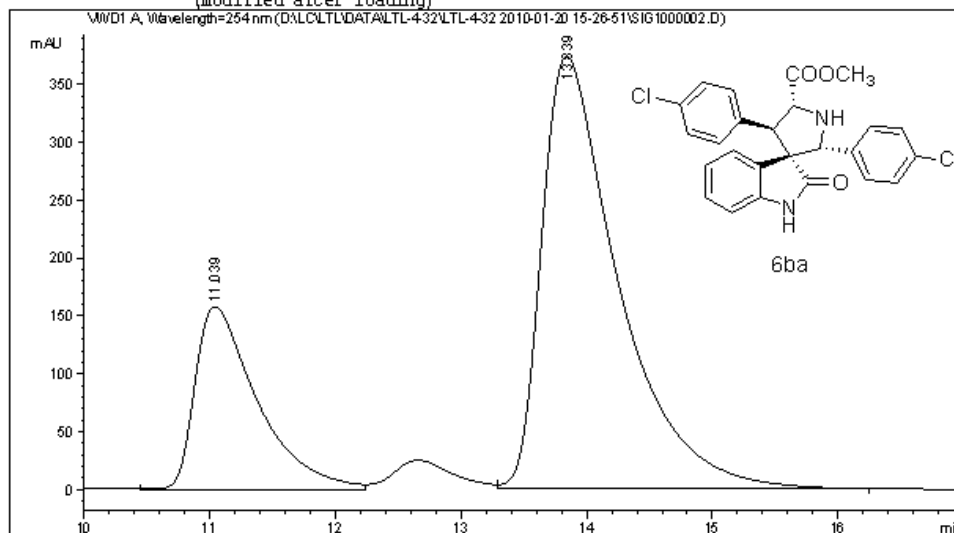
Peak #	RetTime [min]	Type	Width [min]	Area mAU	Height [mAU]	Area %
1	10.916	VV	0.5358	1.58258e4	434.29315	49.7897
2	13.860	VB	0.6297	1.59595e4	373.37299	50.2103

Totals : 3.17853e4 807.66614

Data File D:\LC\LTL\DATA\LTL-4-32\LTL-4-32 2010-01-20 15-26-51\SIG1000002.D
 Sample Name: LTL-4-32E

```

=====
Acq. Operator   : LTL                      Seq. Line :    2
Acq. Instrument : Instrument 1              Location  : Vial 47
Injection Date  : 1/20/2010 3:53:38 PM     Inj       :    1
                                           Inj Volume: 5 µl
Acq. Method     : D:\LC\LTL\data\LTL-4-32\LTL-4-32 2010-01-20 15-26-51\ADH-20-80-10ML-254NM-
25MIN.M
Last changed    : 1/11/2010 8:51:22 PM by LTL
Analysis Method : D:\LC\LTL\DATA\LTL-4-32\LTL-4-32 2010-01-20 15-26-51\SIG1000002.D\DA.M (
ADH-20-80-10ML-254NM-25MIN.M)
Last changed    : 3/3/2010 4:45:44 PM by dxq
(modified after loading)
    
```



=====
 Area Percent Report
 =====

```

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

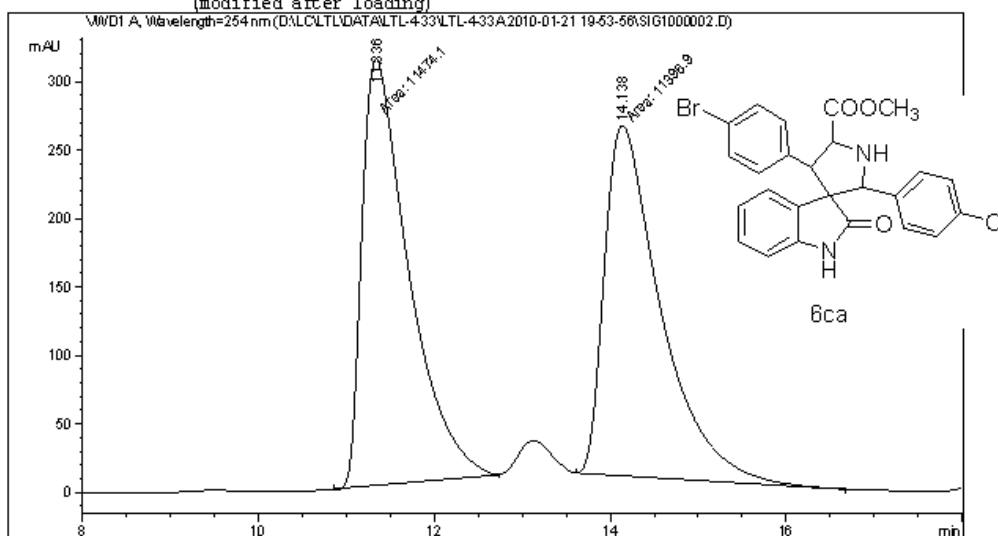
Signal 1: VMD1 A, Wavelength=254 nm

Peak #	RetTime [min]	Type	Width [min]	Area mAU	Area *s	Height [mAU]	Area %
1	11.039	VV	0.5074	5429.81299	157.92409	25.4595	
2	13.839	VB	0.6253	1.58974e4	374.12759	74.5405	
Totals :				2.13272e4	532.05168		

Data File D:\LC\LTL\DATA\LTL-4-33\LTL-4-33A 2010-01-21 19-53-56\SIG1000002.D
 Sample Name: LTL-4-33A

```

=====
Acq. Operator   : LTL                      Seq. Line :    2
Acq. Instrument : Instrument 1              Location  : Vial 92
Injection Date  : 1/21/2010 8:05:41 PM     Inj       :    1
                                           Inj Volume: 5 µl
Acq. Method     : D:\LC\LTL\data\LTL-4-33\LTL-4-33A 2010-01-21 19-53-56\ADH-20-80-10ML-
254NM-50MIN.M
Last changed    : 1/11/2010 8:52:24 PM by LTL
Analysis Method : D:\LC\LTL\DATA\LTL-4-33\LTL-4-33A 2010-01-21 19-53-56\SIG1000002.D\DA.M (
ADH-20-80-10ML-254NM-50MIN.M)
Last changed    : 3/3/2010 4:43:28 PM by dxq
(modified after loading)
    
```



Area Percent Report

```

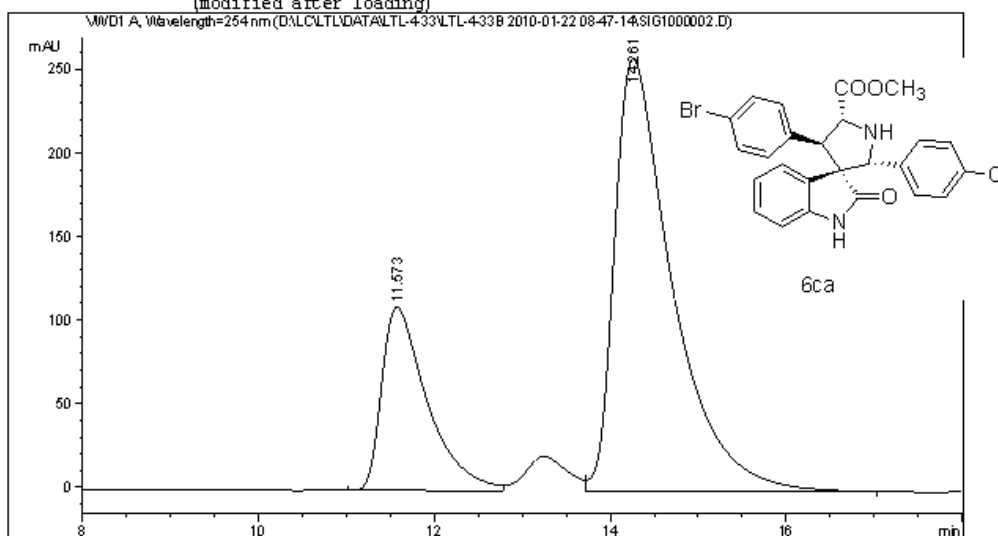
Sorted By      : Signal
Multiplier     : 1.0000
Dilution       : 1.0000
Use Multiplier & Dilution Factor with ISTDs
    
```

Signal 1: WVD1 A, Wavelength=254 nm

Peak #	RetTime [min]	Type	Width [min]	Area mAU *s	Height [mAU]	Area %
1	11.336	MM	0.6145	1.14741e4	311.19073	50.1688
2	14.138	MM	0.7426	1.13969e4	255.78433	49.8312
Totals :				2.28710e4	566.97507	

Data File D:\LC\LTL\DATA\LTL-4-33\LTL-4-33B 2010-01-22 08-47-14\SIG1000002.D
Sample Name: LTL-4-33B

```
=====
Acq. Operator   : LTL                               Seq. Line :    2
Acq. Instrument : Instrument 1                       Location  : Vial 93
Injection Date  : 1/22/2010 8:59:02 AM              Inj       :    1
                                                    Inj Volume: 5 µl
Acq. Method     : D:\LC\LTL\data\LTL-4-33\LTL-4-33B 2010-01-22 08-47-14\ADH-20-80-10ML-
254NM-25MIN.M
Last changed    : 1/11/2010 8:51:22 PM by LTL
Analysis Method : D:\LC\LTL\DATA\LTL-4-33\LTL-4-33B 2010-01-22 08-47-14\SIG1000002.D\DA.M (
ADH-20-80-10ML-254NM-25MIN.M)
Last changed    : 3/3/2010 4:41:55 PM by dxq
(modified after loading)
=====
```



=====
Area Percent Report
=====

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

Signal 1: WVD1 A, Wavelength=254 nm

Peak #	RetTime [min]	Type	Width [min]	Area mAU *s	Height [mAU]	Area %
1	11.573	EV	0.5335	3934.65186	109.68585	24.9949
2	14.261	VB	0.6774	1.18072e4	258.32312	75.0051

Totals : 1.57418e4 368.00897

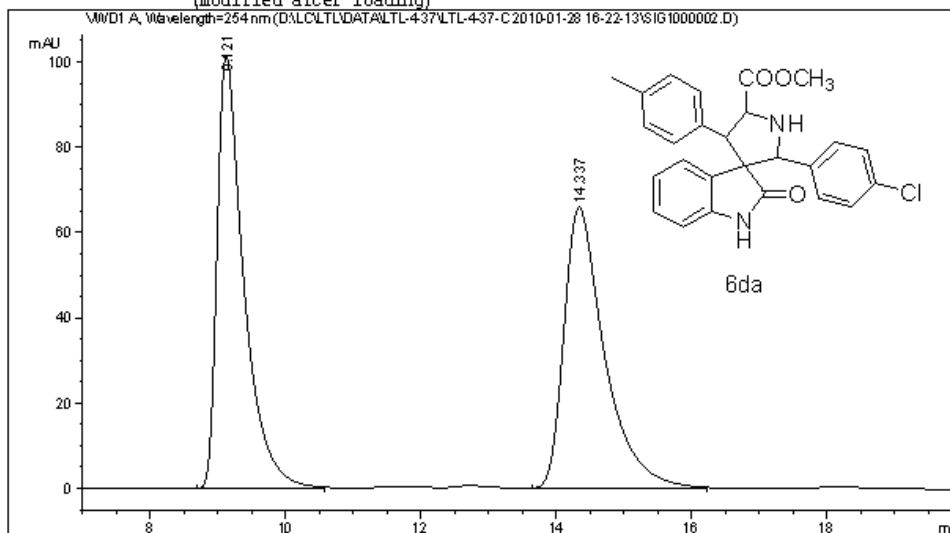
Instrument 1 3/3/2010 4:42:01 PM dxq

Page 1 of 1

Data File D:\LC\LTL\DATA\LTL-4-37\LTL-4-37-C 2010-01-28 16-22-13\SIG1000002.D
 Sample Name: LTL-4-37A

```

=====
Acq. Operator   : LTL                               Seq. Line :    2
Acq. Instrument : Instrument 1                       Location  : Vial 61
Injection Date  : 1/28/2010 4:34:16 PM              Inj       :    1
                                                    Inj Volume: 5 µl
Acq. Method     : D:\LC\LTL\data\LTL-4-37\LTL-4-37-C 2010-01-28 16-22-13\ADH-20-80-10ML-
                254NM-25MIN.M
Last changed    : 1/11/2010 8:51:22 PM by LTL
Analysis Method : D:\LC\LTL\DATA\LTL-4-37\LTL-4-37-C 2010-01-28 16-22-13\SIG1000002.D\DA.M (
                ADH-20-80-10ML-254NM-25MIN.M)
Last changed    : 3/3/2010 4:06:39 PM by dxq
                (modified after loading)
    
```



=====
 Area Percent Report
 =====

```

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

Signal 1: WVD1 A, Wavelength=254 nm

Peak #	RetTime [min]	Type	Width [min]	Area mAU *s	Height [mAU]	Area %
1	9.121	EB	0.4029	2767.35547	101.37668	50.2640
2	14.337	EB	0.6163	2738.28296	65.83073	49.7360

Totals : 5505.63843 167.20741

Data File D:\LC\LTL\DATA\LTL-4-37\LTL-4-37-C 2010-01-28 16-22-13\SIG1000004.D
 Sample Name: LTL-4-37B-1

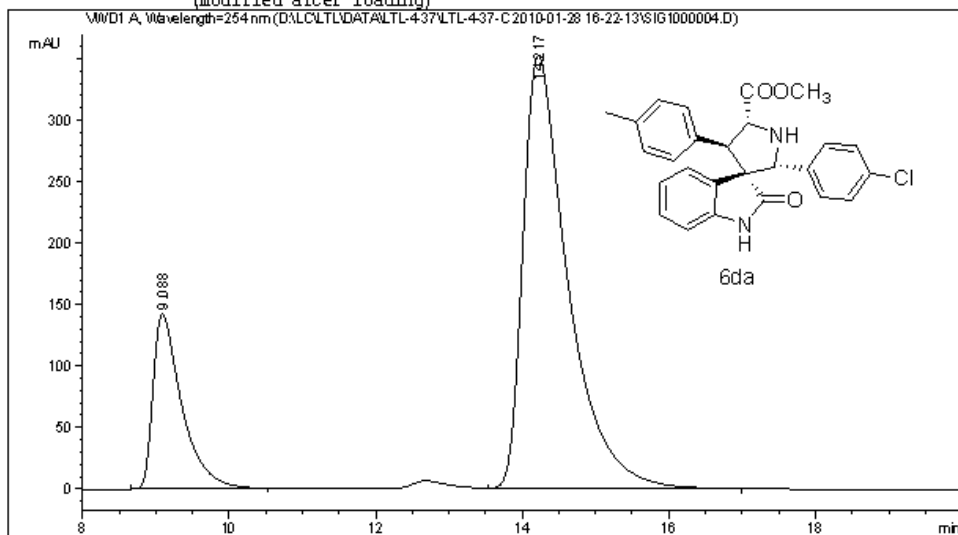
=====

Acq. Operator : LTL Seq. Line : 4
 Acq. Instrument : Instrument 1 Location : Vial 63
 Injection Date : 1/28/2010 5:26:06 PM Inj : 1
 Inj Volume : 5 µl

Acq. Method : D:\LC\LTL\data\LTL-4-37\LTL-4-37-C 2010-01-28 16-22-13\ADH-20-80-10ML-
 254NM-25MIN.M

Last changed : 1/11/2010 8:51:22 PM by LTL
 Analysis Method : D:\LC\LTL\DATA\LTL-4-37\LTL-4-37-C 2010-01-28 16-22-13\SIG1000004.D\DA.M (
 ADH-20-80-10ML-254NM-25MIN.M)

Last changed : 3/8/2010 7:32:47 PM by zzh
 (modified after loading)



=====
 Area Percent Report
 =====

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

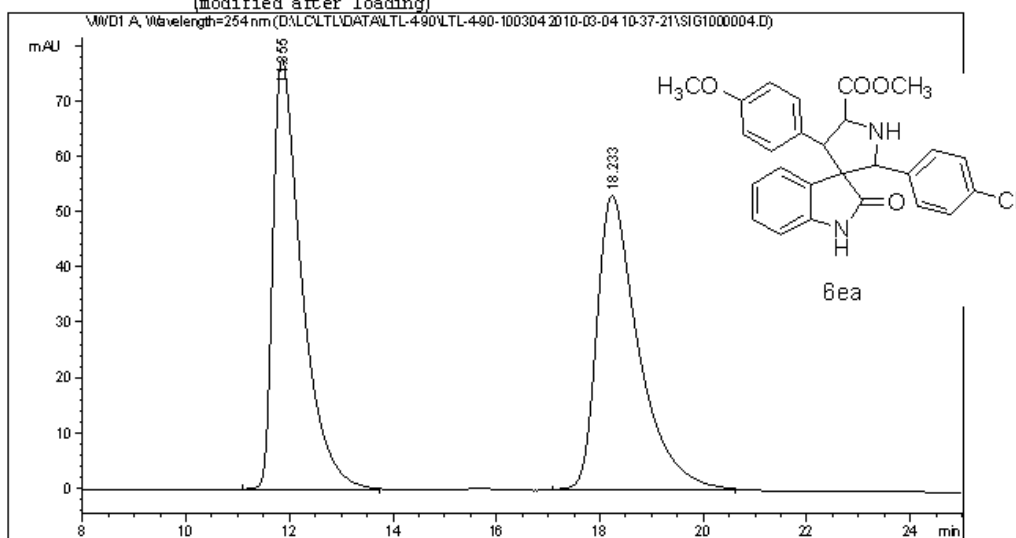
Signal 1: WVD1 A, Wavelength=254 nm

Peak #	RetTime [min]	Type	Width [min]	Area mAU *s	Height [mAU]	Area %
1	9.088	EB	0.4053	3921.87939	142.59384	20.6749
2	14.217	VB	0.6327	1.50474e4	352.00650	79.3251
Totals :				1.89693e4	494.60034	

Data File D:\LC\LTL\DATA\LTL-4-90\LTL-4-90-100304 2010-03-04 10-37-21\SIG1000004.D
 Sample Name: LTL-4-36A

```

=====
Acq. Operator   : LTL                      Seq. Line :    4
Acq. Instrument : Instrument 1              Location  : Vial 73
Injection Date  : 3/4/2010 11:41:05 AM     Inj       :    1
                                           Inj Volume: 5 µl
Acq. Method     : D:\LC\LTL\data\LTL-4-90\LTL-4-90-100304 2010-03-04 10-37-21\ADH-20-80-
                                           10ML-254NM-25MIN.M
Last changed    : 1/11/2010 8:51:22 PM by LTL
Analysis Method : D:\LC\LTL\DATA\LTL-4-90\LTL-4-90-100304 2010-03-04 10-37-21\SIG1000004.D\
                                           DA.M (ADH-20-80-10ML-254NM-25MIN.M)
Last changed    : 3/4/2010 2:42:09 PM by LTL
                                           (modified after loading)
    
```



Area Percent Report

```

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

Signal 1: WMD1 A, Wavelength=254 nm

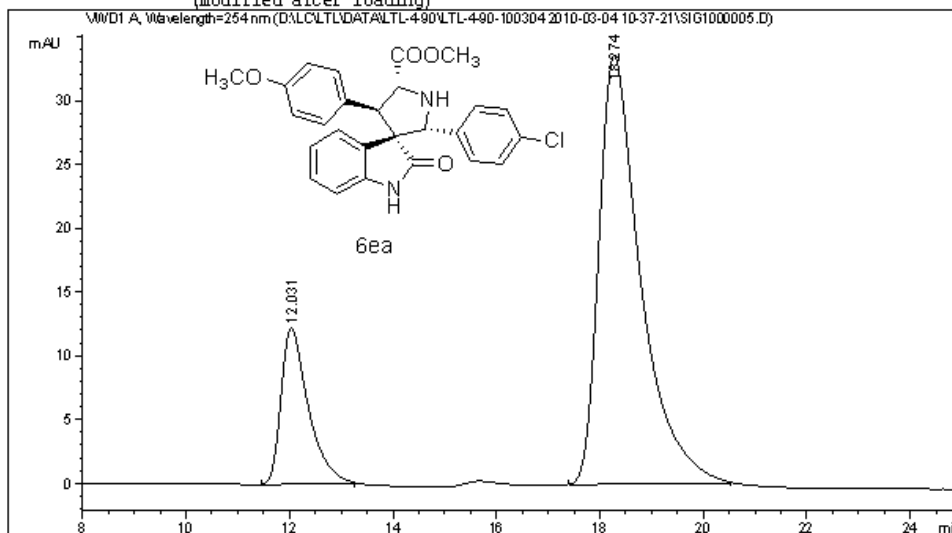
Peak #	RetTime [min]	Type	Width [min]	Area mAU	Height [mAU]	Area %
1	11.855	EB	0.5700	3003.93237	77.77954	50.1799
2	18.233	EB	0.8257	2982.39697	53.21284	49.8201

Totals : 5986.32935 130.99238

Data File D:\LC\LTL\DATA\LTL-4-90\LTL-4-90-100304 2010-03-04 10-37-21\SIG1000005.D
 Sample Name: LTL-4-36B

```

=====
Acq. Operator   : LTL                               Seq. Line :    5
Acq. Instrument : Instrument 1                       Location  : Vial 74
Injection Date  : 3/4/2010 12:07:11 PM             Inj       :    1
                                                    Inj Volume: 5 µl
Acq. Method     : D:\LC\LTL\data\LTL-4-90\LTL-4-90-100304 2010-03-04 10-37-21\ADH-20-80-
10ML-254NM-25MIN.M
Last changed    : 1/11/2010 8:51:22 PM by LTL
Analysis Method : D:\LC\LTL\DATA\LTL-4-90\LTL-4-90-100304 2010-03-04 10-37-21\SIG1000005.D\
D.M (ADH-20-80-10ML-254NM-25MIN.M)
Last changed    : 3/4/2010 2:42:58 PM by LTL
(modified after loading)
    
```



Area Percent Report

```

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

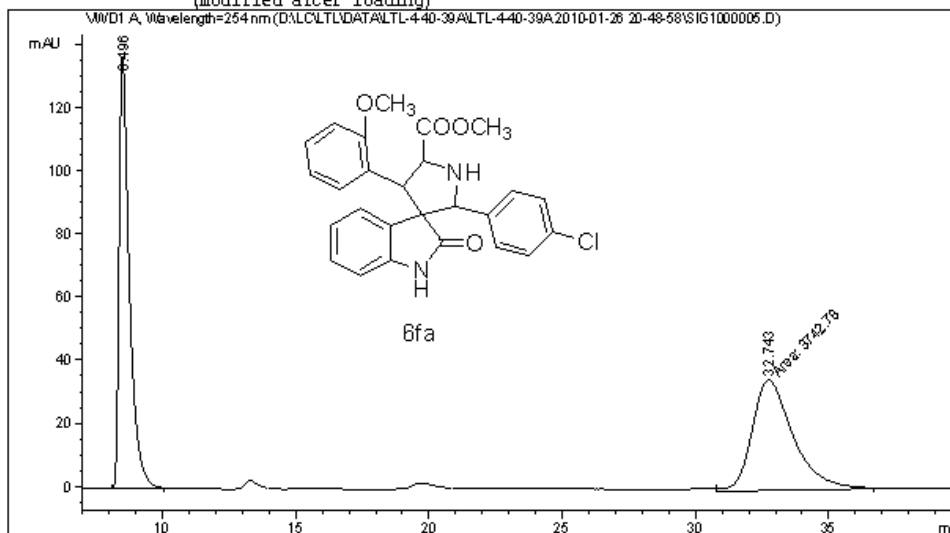
Signal 1: WMD1 A, Wavelength=254 nm

Peak #	RetTime [min]	Type	Width [min]	Area mAU	Area %	Height [mAU]
1	12.031	BB	0.5469	449.21252	19.2602	12.25998
2	18.274	BB	0.8305	1883.12451	80.7398	33.57640

Totals : 2332.33704 45.83638

Data File D:\LC\LTL\DATA\LTL-4-40-39A\LTL-4-40-39A 2010-01-26 20-48-58\SIG1000005.D
Sample Name: LTL-4-39A

```
=====
Acq. Operator   : LTL                               Seq. Line :    5
Acq. Instrument : Instrument 1                       Location  : Vial 23
Injection Date  : 1/26/2010 10:54:01 PM             Inj       :    1
                                                    Inj Volume: 5 µl
Acq. Method     : D:\LC\LTL\data\LTL-4-40-39A\LTL-4-40-39A 2010-01-26 20-48-58\ADH-30-70-
10ML-254NM-50MIN.M
Last changed    : 1/26/2010 8:46:17 PM by LTL
Analysis Method : D:\LC\LTL\DATA\LTL-4-40-39A\LTL-4-40-39A 2010-01-26 20-48-58\SIG1000005.D\
D.M (ADH-30-70-10ML-254NM-50MIN.M)
Last changed    : 3/3/2010 3:55:03 PM by dxq
(modified after loading)
=====
```



Area Percent Report

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

Signal 1: WMD1 A, Wavelength=254 nm

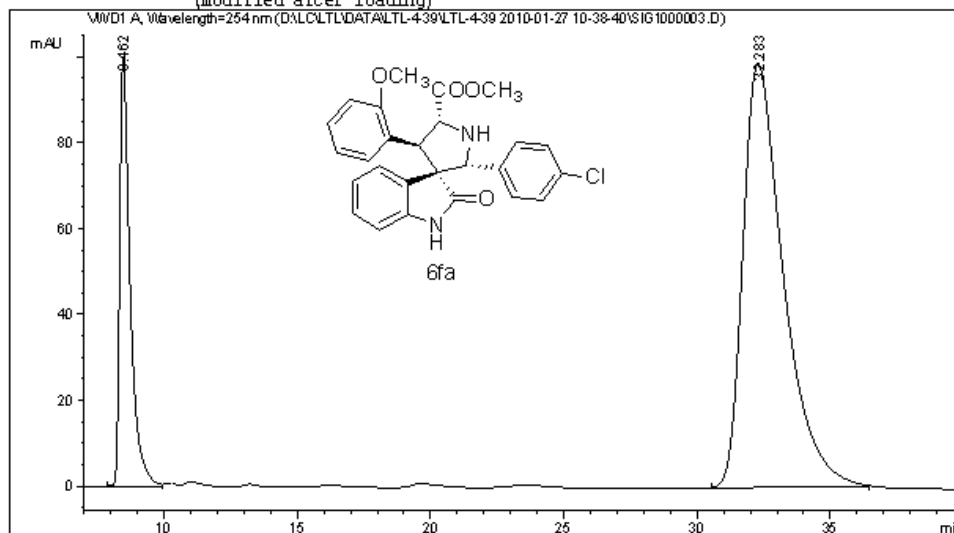
Peak #	RetTime [min]	Type	Width [min]	Area mAU	Height [mAU]	Area %
1	8.496	BE	0.3960	3675.00342	136.96068	49.5432
2	32.743	NM	1.7867	3742.77710	34.91352	50.4568

Totals : 7417.78052 171.87420

Data File D:\LC\LTL\DATA\LTL-4-39\LTL-4-39 2010-01-27 10-38-40\SIG1000003.D
 Sample Name: LTL-4-39B

```

=====
Acq. Operator   : LTL                      Seq. Line :    3
Acq. Instrument : Instrument 1              Location  : Vial 26
Injection Date  : 1/27/2010 11:41:31 AM    Inj       :    1
                                           Inj Volume: 5 µl
Acq. Method     : D:\LC\LTL\data\LTL-4-39\LTL-4-39 2010-01-27 10-38-40\ADH-30-70-10ML-254NM-
                    50MIN.M
Last changed    : 1/26/2010 8:46:17 PM by LTL
Analysis Method : D:\LC\LTL\DATA\LTL-4-39\LTL-4-39 2010-01-27 10-38-40\SIG1000003.D\DA.M (
                    ADH-30-70-10ML-254NM-50MIN.M)
Last changed    : 3/4/2010 9:37:56 AM by dxq
                    (modified after loading)
    
```



=====
 Area Percent Report
 =====

```

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

Signal 1: VMD1 A, Wavelength=254 nm

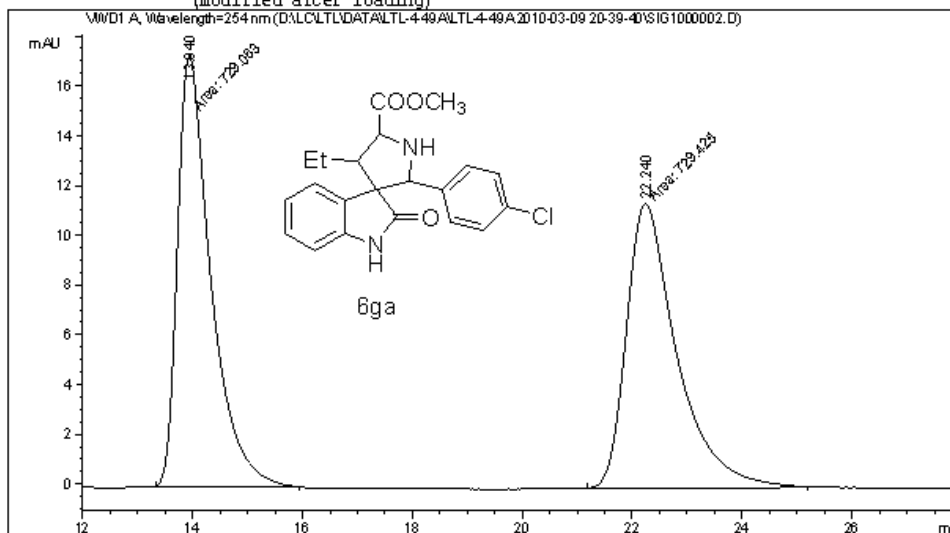
Peak #	RetTime [min]	Type	Width [min]	Area mAU	Height [mAU]	Area %
1	8.462	BB	0.3982	2721.05420	100.24361	20.7287
2	32.283	BB	1.5696	1.04060e4	98.78668	79.2713

Totals : 1.31270e4 199.03029

Data File D:\LC\LTL\DATA\LTL-4-49A\LTL-4-49A 2010-03-09 20-39-40\SIG1000002.D
 Sample Name: LTL-4-49A

```

=====
Acq. Operator   : LTL                               Seq. Line :    2
Acq. Instrument : Instrument 1                       Location  : Vial 11
Injection Date  : 3/9/2010 8:51:30 PM              Inj       :    1
                                                    Inj Volume: 5 µl
Acq. Method     : D:\LC\LTL\data\LTL-4-49A\LTL-4-49A 2010-03-09 20-39-40\ADH-20-80-10ML-
254NM-50MIN.M
Last changed    : 1/11/2010 8:52:24 PM by LTL
Analysis Method : D:\LC\LTL\DATA\LTL-4-49A\LTL-4-49A 2010-03-09 20-39-40\SIG1000002.D\DA.M (
ADH-20-80-10ML-254NM-50MIN.M)
Last changed    : 3/10/2010 8:19:51 AM by LTL
(modified after loading)
    
```



=====
 Area Percent Report
 =====

```

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

Signal 1: WMD1 A, Wavelength=254 nm

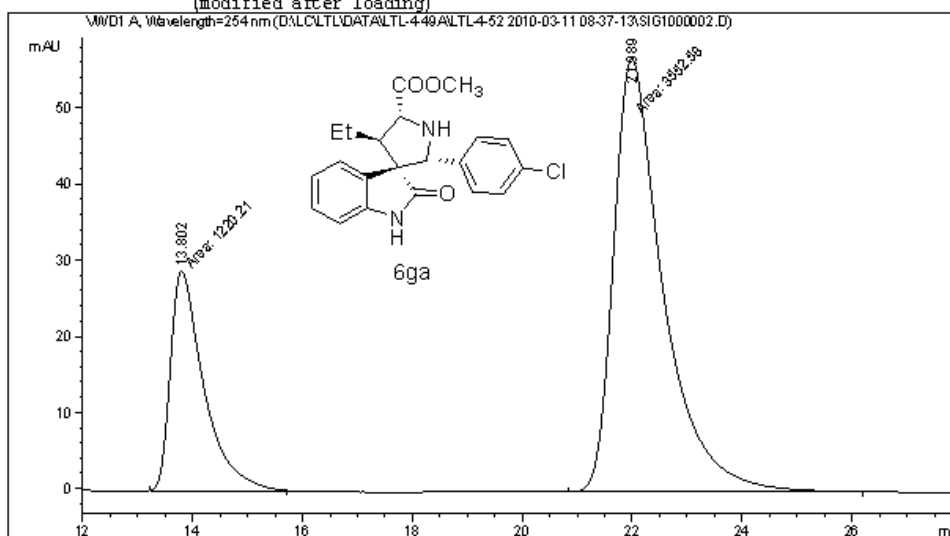
Peak #	RetTime [min]	Type	Width [min]	Area mAU *s	Height [mAU]	Area %
1	13.940	MM	0.7025	729.06317	17.29571	49.9876
2	22.240	MM	1.0617	729.42480	11.45091	50.0124

Totals : 1458.48798 28.74662

Data File D:\LC\LTL\DATA\LTL-4-49A\LTL-4-52 2010-03-11 08-37-13\SIG1000002.D
 Sample Name: LTL-4-52

```

=====
Acq. Operator   : LTL                               Seq. Line :    2
Acq. Instrument : Instrument 1                       Location  : Vial 12
Injection Date  : 3/11/2010 8:49:35 AM             Inj       :    1
                                                    Inj Volume: 5 µl
Acq. Method     : D:\LC\LTL\data\LTL-4-49A\LTL-4-52 2010-03-11 08-37-13\ADH-20-80-10ML-
254NM-30MIN.M
Last changed    : 3/11/2010 8:35:49 AM by LTL
Analysis Method : D:\LC\LTL\DATA\LTL-4-49A\LTL-4-52 2010-03-11 08-37-13\SIG1000002.D\A.M (
ADH-20-80-10ML-254NM-30MIN.M)
Last changed    : 3/11/2010 9:24:30 AM by LTL
(modified after loading)
    
```



=====
 Area Percent Report
 =====

```

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

Signal 1: WVD1 A, Wavelength=254 nm

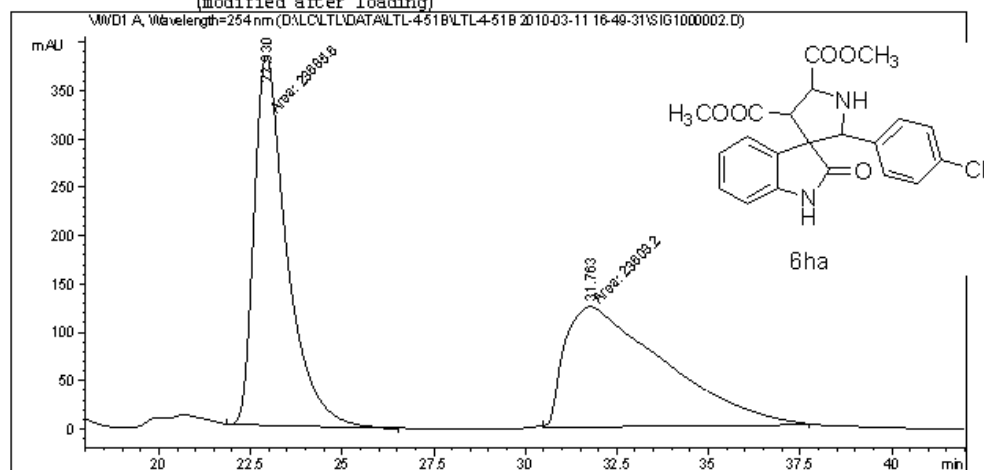
Peak #	RetTime [min]	Type	Width [min]	Area mAU	Height [mAU]	Area %
1	13.802	MM	0.7046	1220.20959	28.86379	25.5660
2	21.989	MM	1.0417	3552.58154	56.84047	74.4340

Totals : 4772.79114 85.70426

Data File D:\LC\LTL\DATA\LTL-4-51B\LTL-4-51B 2010-03-11 16-49-31\SIG1000002.D
 Sample Name: LTL-4-51B

```

=====
Acq. Operator   : LTL                      Seq. Line :    2
Acq. Instrument : Instrument 1              Location  : Vial 13
Injection Date  : 3/11/2010 5:01:19 PM     Inj       :    1
                                           Inj Volume: 5 µl
Acq. Method     : D:\LC\LTL\data\LTL-4-51B\LTL-4-51B 2010-03-11 16-49-31\ADH-20-80-10ML-
254NM.M
Last changed    : 3/11/2010 5:16:22 PM by LTL
                 (modified after loading)
Analysis Method : D:\LC\LTL\DATA\LTL-4-51B\LTL-4-51B 2010-03-11 16-49-31\SIG1000002.D\DA.M (
ADH-20-80-10ML-254NM.M)
Last changed    : 3/11/2010 6:24:44 PM by LTL
                 (modified after loading)
    
```



=====
 Area Percent Report
 =====

```

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

Signal 1: VMD1 A, Wavelength=254 nm

Peak #	RetTime [min]	Type	Width [min]	Area mAU	Height [mAU]	Area %
1	22.930	MM	1.0313	2.36856e4	382.79385	50.0871
2	31.763	MM	3.1485	2.36032e4	124.94584	49.9129

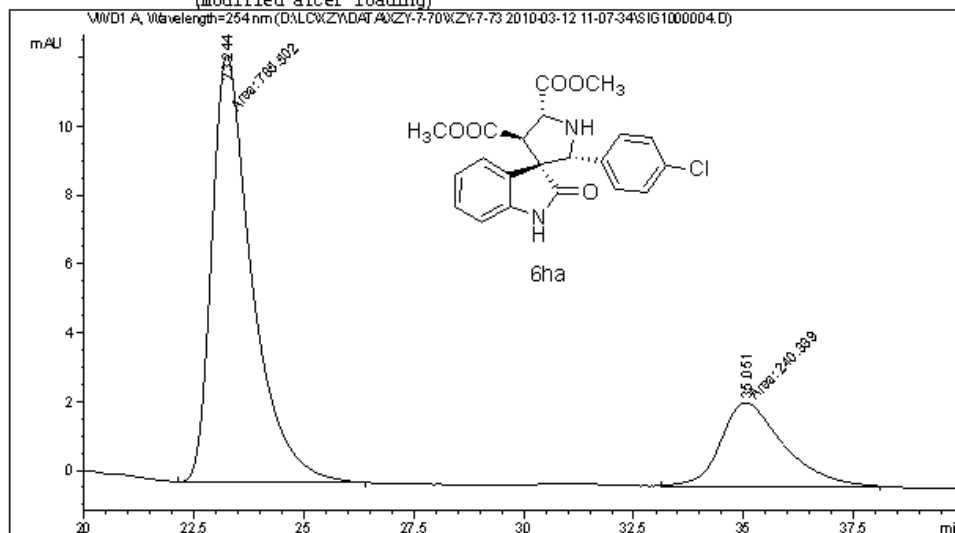
Totals : 4.72887e4 507.73969

=====
 *** End of Report ***

Data File D:\LC\XYZY\DATA\XYZY-7-70\XYZY-7-73 2010-03-12 11-07-34\SIG1000004.D
 Sample Name: LTL-4-53A

```

=====
Acq. Operator   : TMC                      Seq. Line :    4
Acq. Instrument : Instrument 1              Location  : Vial 31
Injection Date  : 3/12/2010 12:52:02 PM    Inj       :    1
                                           Inj Volume: 5 µl
Acq. Method     : D:\LC\XYZY\DATA\XYZY-7-70\XYZY-7-73 2010-03-12 11-07-34\ADH-20-80-10ML-254NM-
                    50MIN.M
Last changed    : 1/11/2010 8:52:24 PM by LTL
Analysis Method : D:\LC\XYZY\DATA\XYZY-7-70\XYZY-7-73 2010-03-12 11-07-34\SIG1000004.D\DA.M (
                    ADH-20-80-10ML-254NM-50MIN.M)
Last changed    : 4/24/2010 8:52:32 AM by LTL
                    (modified after loading)
    
```



Area Percent Report

```

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

Signal 1: VMD1 A, Wavelength=254 nm

Peak #	RetTime [min]	Type	Width [min]	Area mAU	Height [mAU]	Area %
1	23.244	MM	1.0578	785.50208	12.37609	76.5715
2	35.051	MM	1.6492	240.33896	2.42891	23.4285

Totals : 1025.84103 14.80500