



Supporting Information

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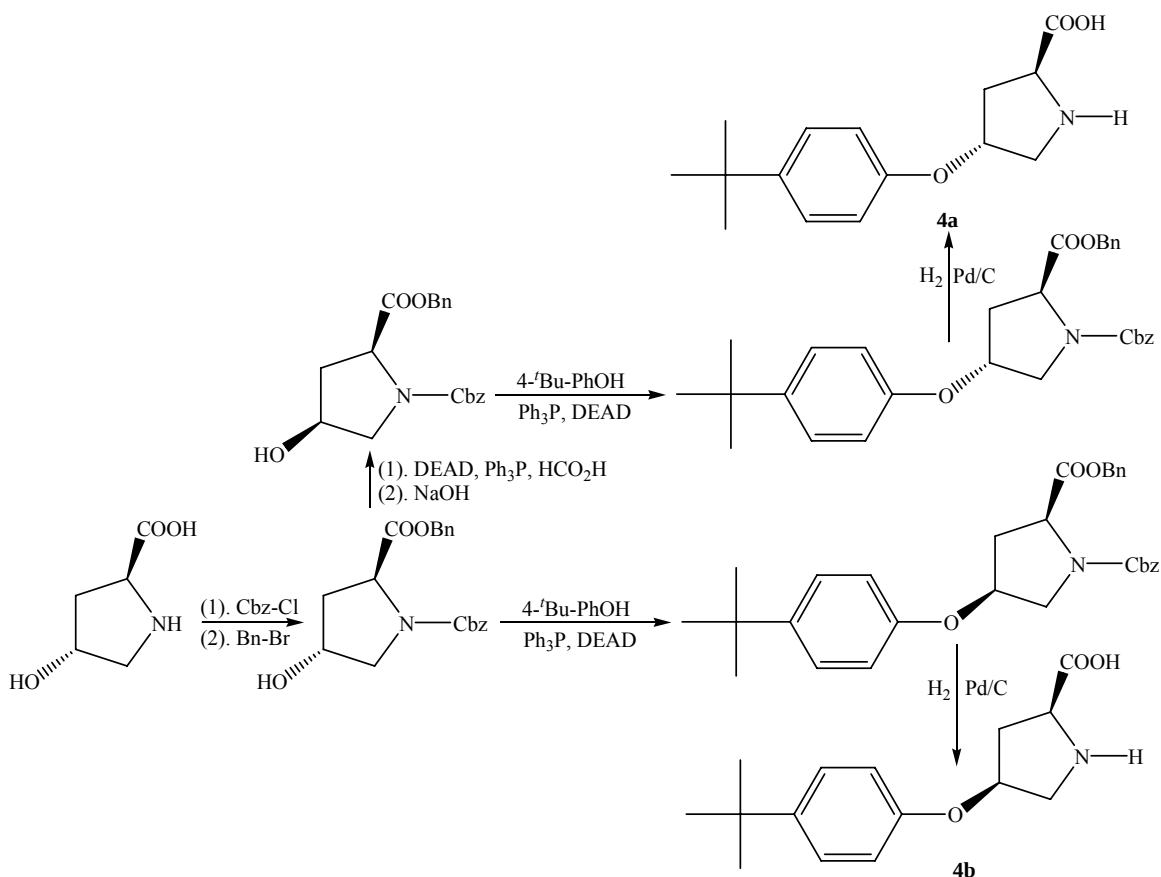
Highly Efficient Asymmetric Direct Stoichiometric Aldol Reactions on/in Water

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General Information: All commercial chemicals were used as received unless otherwise noted. For thin-layer chromatography (TLC), silica gel plates (Merk 60 F₂₅₄) were used and compounds were visualized by irradiation with UV light and/or by treatment with a solution of phosphomolybdic acid in ethanol followed by heating. Flash column chromatography was performed using standard grade silica gel (60 Å porosity, 40-63 µm particle size, and 500-600 m²/g surface area) from Sorbent Technologies (Atlanta, USA). ¹H NMR and ¹³C NMR spectra were recorded on JEOL ECX spectrometer (500 MHz for ¹H NMR and 125 MHz for ¹³C NMR) at ambient temperature. Chemical shifts are given in parts per million (ppm) as δ relative to tetramethylsilane (TMS). The coupling constants, J , are reported in Hz. TMS served as internal standard ($\delta = 0$ ppm) for ¹H NMR and CDCl₃ was used as internal standard ($\delta = 77.0$ ppm) for ¹³C NMR. The following abbreviations were used to designate chemical shift multiplicities: s = singlet, d = doublet, t = triplet, q = quartet, p = pentet, m = multiplet, br = broad. All first-order splitting patterns were assigned on the basis of the appearance of the multiplet. Splitting patterns that could not be easily interpreted were designated as m (multiplet) or br (broad). HPLC was carried out using a Hewlett Packard 1050 system with quat. pump (Model 79852A), auto sampler (Model 79855A), UV detector (Model 79853C), and the software of HP ChemStations for LC. All aldol reactions were carried out under an atmosphere of air in a closed system at room temperature.



Scheme 1. Synthesis of *trans*-4-(4-*tert*-butylphenoxy)-L-proline **4a** and *cis*-4-(4-*tert*-butylphenoxy)-L-proline **4b**

Synthesis of organocatalysts **4a** and **4b**:

As shown in Scheme 1, the common, commercially available starting material in these syntheses was *trans*-4-hydroxy-L-proline (CAS: 51-35-4). Followed the same procedures previously described,^[1-4] protection of the α -nitrogen with benzyloxycarbonyl chloride (Cbz-Cl) afforded the N^α -Cbz-*trans*-4-hydroxy-L-proline (CAS: 13504-85-3) in an almost quantitative yield by treatment with Cbz-Cl and aqueous sodium hydroxide (Cbz-Cl, aq. NaOH, 0°C to room temperature, 5h; 100% yield, directly used in the next step without further purification). Further protection of the carboxylic acid group was accomplished with benzyl bromide (Bn-Br) and triethylamine in THF to give the N^α -Cbz-*trans*-4-hydroxy-L-proline benzyl ester (CAS: 13500-53-3) in 89% yield. Inversion of the hydroxyl group was then carried out using the Mitsunobu reaction to afford the N^α -

Cbz-*cis*-4-hydroxy-L-proline benzyl ester (CAS: 132592-07-5) in 87% yield [(1). EtOC(O)-N=N-C(O)OEt (DEAD), Ph₃P, HCO₂H, THF, 0°C to room temperature, 18h; (2). aq. NaOH, 1,4-dioxane, 0 °C, 0.25h].

trans-4-(4-*tert*-Butylphenoxy)-L-proline **4a** was prepared by the method previously described.^[5]

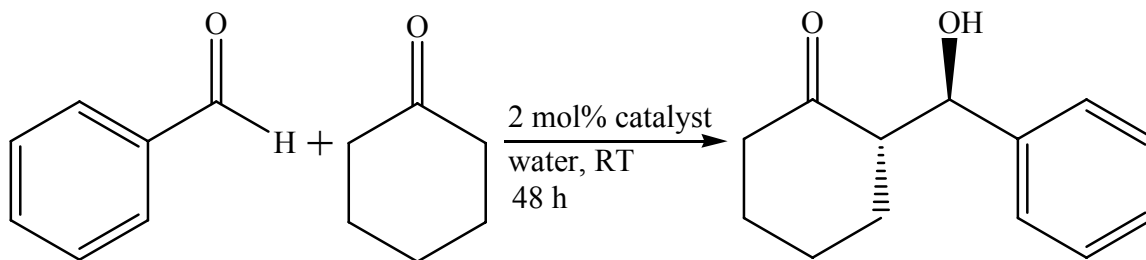
4-*tert*-Butylphenol (5.26 g, 35.0 mmol) and triphenylphosphine (9.3 g, 35.0 mmol) were added to the solution of *N*^α-Cbz-*cis*-4-hydroxy-L-proline benzyl ester (8.4 g, 24.0 mmol) in anhydrous THF (75 mL). This solution was cooled to 0°C and treated dropwise with DEAD (diethyl azodicarboxylate, 6.2 g, 35 mmol) over a period of 1 h. After stirring overnight at room temperature, the mixture was concentrated, and the residue was suspended in 100 mL of ether. The mixture was filtered, the filtrate was concentrated, and the residue was chromatographed on silica gel (1:1 ether/hexanes) to afford the *N*^α-Cbz-*trans*-4-(4-*tert*-Butylphenoxy)-L-proline benzyl ester in 71% yield. Hydrogenation (1 atm. H₂, Pd/C) of the intermediate (8.31 g, 17 mmol) in ethanol at room temperature gave **4a**, which was purified by the recrystallization from methanol/water. Yield: 3.36 g (75%). White solid, mp: 195 °C. ¹H NMR (CD₃OD, 500 MHz): δ 1.29 (9H, s), 2.26 (1H, m), 2.64 (1H, m), 3.49-3.62 (2H, m), 4.22 (1H, dd, *J* = 10.2, 7.9), 5.14 (1H, tbr, *J* = 3.9), 6.89 (2H, d, *J* = 8.8), 7.34 (2H, d, *J* = 8.8). ¹³C NMR (CD₃OD, 125 MHz): δ 30.6, 33.7, 35.3, 50.7, 60.2, 76.4, 115.2, 126.3, 144.6, 154.1, 172.2.

Followed above synthetic procedures using *N*^α-Cbz-*trans*-4-hydroxy-L-proline benzyl ester, *cis*-4-(4-*tert*-Butylphenoxy)-L-proline **4b** was obtained in 56% total yield, as a white solid. Mp: 207 °C. ¹H NMR (CD₃OD, 500 MHz): δ 1.27 (9H, s), 2.54 (2H, br), 3.45 (1H, br., dd, *J* = 12.0, 2.5), 3.67 (1H, br., d, *J* = 12.0), 4.09 (1H, br., t, *J* = 6.9), 5.06 (1H, br, s), 6.86 (2H, d, *J* = 8.1), 7.30 (2H, d, *J* = 8.1). ¹³C NMR (CD₃OD, 125 MHz): δ 30.6, 33.6, 34.6, 50.8, 60.0, 75.4, 115.5, 126.1, 144.5, 154.1, 172.1.

Organic substrates cyclohexanone (CAS: 108-94-1), benzaldehyde (CAS: 100-52-7), L-proline (CAS: 147-85-3), α,α-diphenyl-L-prolinol (CAS: 112068-01-6), *trans*-4-(*tert*-butoxy)-L-proline (CAS: 79775-07-8), 2-nitrobenzaldehyde (CAS: 552-89-6), 3-

nitrobenzaldehyde (CAS: 99-61-6), 4-nitrobenzaldehyde (CAS: 555-16-8), 4-chlorobenzaldehyde (CAS: 104-88-1), 4-bromobenzaldehyde (CAS: 1122-91-4), 4-trifluoromethylbenzaldehyde (CAS: 455-19-6), 4-methylbenzaldehyde (CAS: 104-87-0), 2-methylbenzaldehyde (CAS: 529-20-4), 2-furaldehyde (CAS: 98-01-1) were all commercially available and were used without any purification.

The general procedure for the aldol reaction on water:



To a mixture of cyclohexanone (0.52 mL, 5 mmol), organocatalyst (0.1 mmol, 2 mol%), and water or salt-water solution (2 mL or different amounts of water) was added benzaldehyde (0.50 mL, 5 mmol). After the resulting mixture was stirred at room temperature for 48 hours, it was extracted with ethyl acetate. The extracted mixture was filtered through silica gel to remove the catalyst. The solvent was removed in *vacuo* to afford the crude product, which was purified by flash chromatography on silica (hexanes and ethyl acetate). The anti:syn ratio (diastereoselectivity) and enantiomeric excess (enantioselectivity) were determined by ¹H NMR and chiral HPLC analysis. HPLC conditions: Chiralpak IB (15cm×4.6mm, Chiral Technologies, Inc., West Chester, PA, USA), 1% (V/V) *i*-PrOH in heptane as mobile phase, 1 mL/min flow rate, 213 nm UV detector.

Almost the same synthetic procedures were applied to aldol reactions using the ionic liquid of [BMIM]⁺[NTf₂]⁻ as solvents except that the reaction mixture was extracted with ethyl ether for the further purification by flash chromatography on silica gel. When the surfactants were involved, or cyclohexanone was used as solvent, the reaction workup was to apply reaction mixtures to silica gel and followed by flash chromatography on silica gel (hexanes and ethyl acetate) to afford aldol products. On solvent-free

conditions, racemic aldol products were obtained using pyrrolidine as catalyst for the reaction of cyclohexanone and benzaldehyde or other arylaldehydes.

Racemic *syn*-2-(hydroxyphenylmethyl)cyclohexan-1-one: ^1H NMR (CDCl_3 , 500 MHz): δ 1.45 (1H, m), 1.55-1.69 (3H, m), 1.76 (1H, m), 2.00 (1H, m), 2.26-2.39 (2H, m), 2.52 (1H, m), 2.97 (1H, d, $J = 3.0$), 5.31 (1H, t, $J = 3.0$), 7.15-7.28 (5H, m). ^{13}C NMR (CDCl_3 , 125 MHz): δ 25.0, 26.1, 28.0, 42.8, 57.3, 70.7, 125.9, 127.0, 128.2, 141.6. HPLC: tr (min.) = 9.2, 9.9.

Racemic *anti*-2-(hydroxyphenylmethyl)cyclohexan-1-one: ^1H NMR (CDCl_3 , 500 MHz): δ 1.29 (1H, m), 1.49-1.71 (3H, m), 1.77 (1H, m), 2.07 (1H, m), 2.31-2.49 (2H, m), 2.61 (1H, m), 3.96 (1H, d, $J = 2.7$), 4.78 (1H, dd, $J = 8.7, 2.7$), 7.25-7.35 (5H, m). ^{13}C NMR (CDCl_3 , 125 MHz): δ 24.8, 27.9, 30.9, 42.8, 57.5, 74.8, 127.1, 128.0, 128.5, 141.1. HPLC: tr (min.) = 13.9 (2*S*, 1'*R*), 15.8 (2*R*, 1'*S*). (2*S*, 1'*R*)-2-(Hydroxyphenylmethyl)-cyclohexan-1-one (CAS: 156039-16-6) is known compound, and the absolute stereochemistry is determined by the comparison with the literature data.^[6]

The general procedure for the aldol reaction in water mediated by sulfated β -cyclodextrin:

To a solution of organocatalyst (2 mol%, 0.1 mmol) and sulfated β -cyclodextrin (10 mol%) in water (2.0 mL) were added cyclohexanone (0.52 mL, 5 mmol) and arylaldehyde (5 mmol). After the resulting mixture was stirred at room temperature for 48 hours, the simple filtration or liquid phase separation followed by extraction with ethyl acetate to provide the crude product, which may further be purified by flash chromatography on silica (hexanes and ethyl acetate). The anti:syn ratio (diastereoselectivity) and enantiomeric excess (enantioselectivity) were determined by ^1H NMR and chiral HPLC analysis. HPLC conditions: Chiralpak IB (15cm $\times$ 4.6mm, Chiral Technologies, Inc., West Chester, PA, USA), 1% (V/V) *i*-PrOH in heptane as mobile phase, 1 mL/min flow rate, 213 nm UV detector.

(2*S*, 1'*R*)-2-(Hydroxy-2-nitrophenylmethyl)cyclohexan-1-one (CAS: 877032-08-1)
 [HPLC: tr (min.) = 13.6, 15.0; 23.6 (2*S*, 1'*R*), 25.1 (2*R*, 1'*S*).],
 (2*S*, 1'*R*)-2-(Hydroxy-3-nitrophenylmethyl)cyclohexan-1-one (CAS: 877032-07-0)
 [HPLC: tr (min.) = 27.9, 28.9; 35.3 (2*S*, 1'*R*), 42.1 (2*R*, 1'*S*).],
 (2*S*, 1'*R*)-2-(Hydroxy-4-nitrophenylmethyl)cyclohexan-1-one (CAS: 351533-35-2)
 [HPLC: tr (min.) = 34.2, 37.2; 44.1 (2*S*, 1'*R*), 52.8 (2*R*, 1'*S*).],
 (2*S*, 1'*R*)-2-(Hydroxy-4-chlorophenylmethyl)cyclohexan-1-one (CAS: 870630-97-0)
 [HPLC: tr (min.) = 10.2, 10.2; 14.7 (2*S*, 1'*R*), 17.4 (2*R*, 1'*S*).],
 (2*S*, 1'*R*)-2-(Hydroxy-4-bromophenylmethyl)cyclohexan-1-one (CAS: 281676-87-7)
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 (2*S*, 1'*R*)-2-(Hydroxy-4-trifluoromethylphenylmethyl)cyclohexan-1-one (CAS: 898542-87-5) [HPLC: tr (min.) = 9.7, 10.5; 13.8 (2*S*, 1'*R*), 15.6 (2*R*, 1'*S*).],
 (2*S*, 1'*R*)-2-(Hydroxy-4-methylphenylmethyl)cyclohexan-1-one (CAS: 898542-86-4)
 [HPLC: tr (min.) = 8.3, 8.8; 13.2 (2*S*, 1'*R*), 14.6 (2*R*, 1'*S*).],
 (2*S*, 1'*R*)-2-(Hydroxy-2-furylmethyl)cyclohexan-1-one (CAS: 882497-82-7) [HPLC: tr (min.) = 12.2, 13.2; 17.2 (2*S*, 1'*R*), 19.7 (2*R*, 1'*S*).] are known compounds.

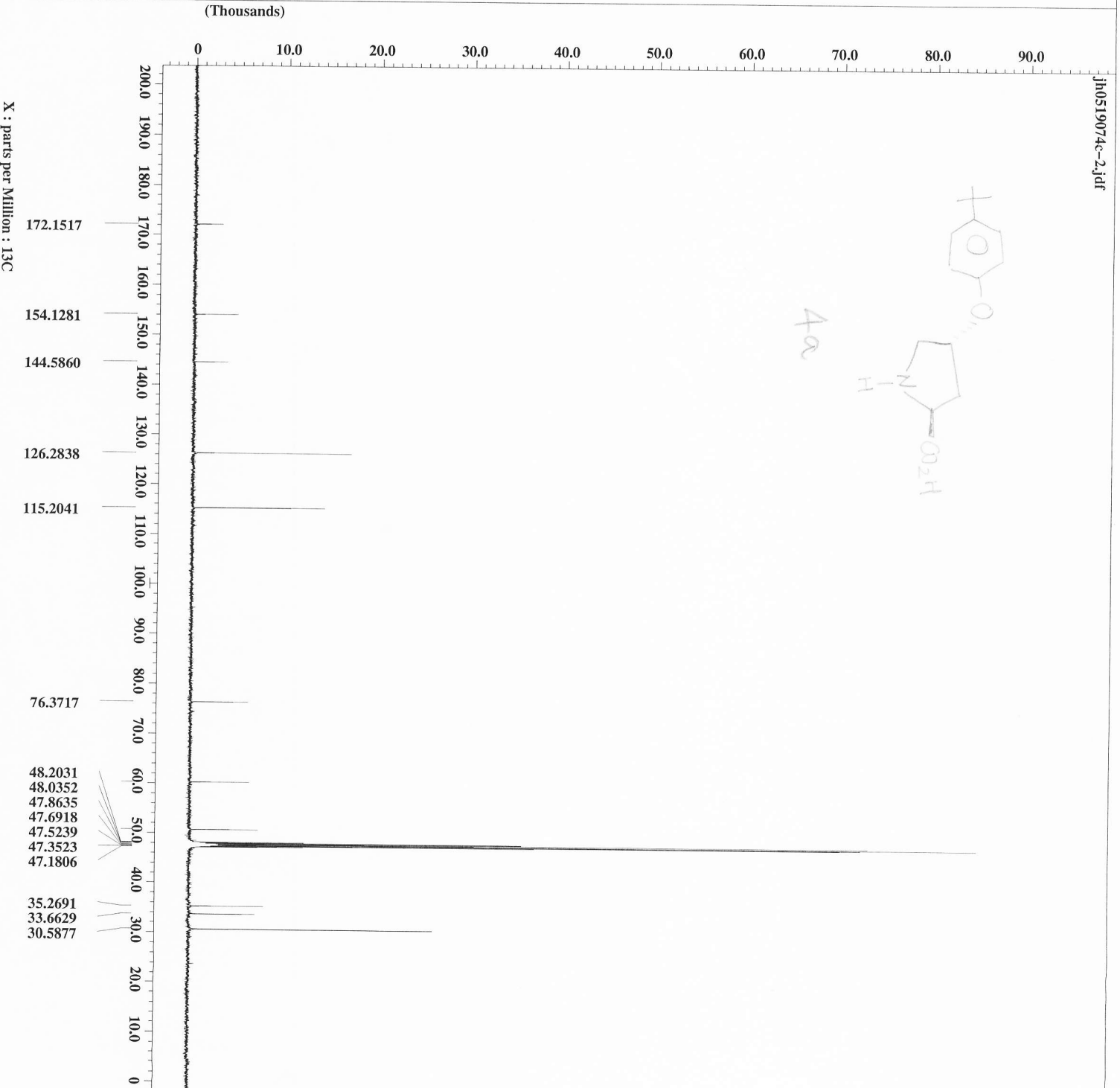
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- [1]. Ganorkar, R.; Natarajan, A.; Mamai, A.; Madalengoitia, J. S. *J. Org. Chem.* **2006**, *71*, 5004-5007.
- [2]. Tamaki, M.; Han, G.; Hruby, V. J. *J. Org. Chem.* **2001**, *66*, 1038-1042.
- [3]. Mitsunobu, O. *Synthesis* **1981**, 1-28.
- [4]. Brown, A. G.; Moss, S. F.; Southgate, R. *Tetrahedron Lett.* **1994**, *35*, 451-454.
- [5]. Krapcho, J.; Turk, C.; Cushman, D. W.; Powell, J. R.; DeForrest, J. M.; Spitzmiller, E. R.; Karanewsky, D. S.; Duggan, M.; Rovnvak, G.; Schwartz, J.; Natarajan, S.; Godfrey, J. D.; Ryono, D. E.; Neubeck, R.; Atwal, K. S.; Petrillo, E. W. Jr. *J. Med. Chem.* **1988**, *31*, 1148-1160.
- [6]. Hayashi, Y.; Sumiya, T.; Takahashi, J.; Gotoh, H.; Urushima, T.; Shoji, M. *Angew. Chem., Int. Ed.* **2006**, *45*, 958-961.

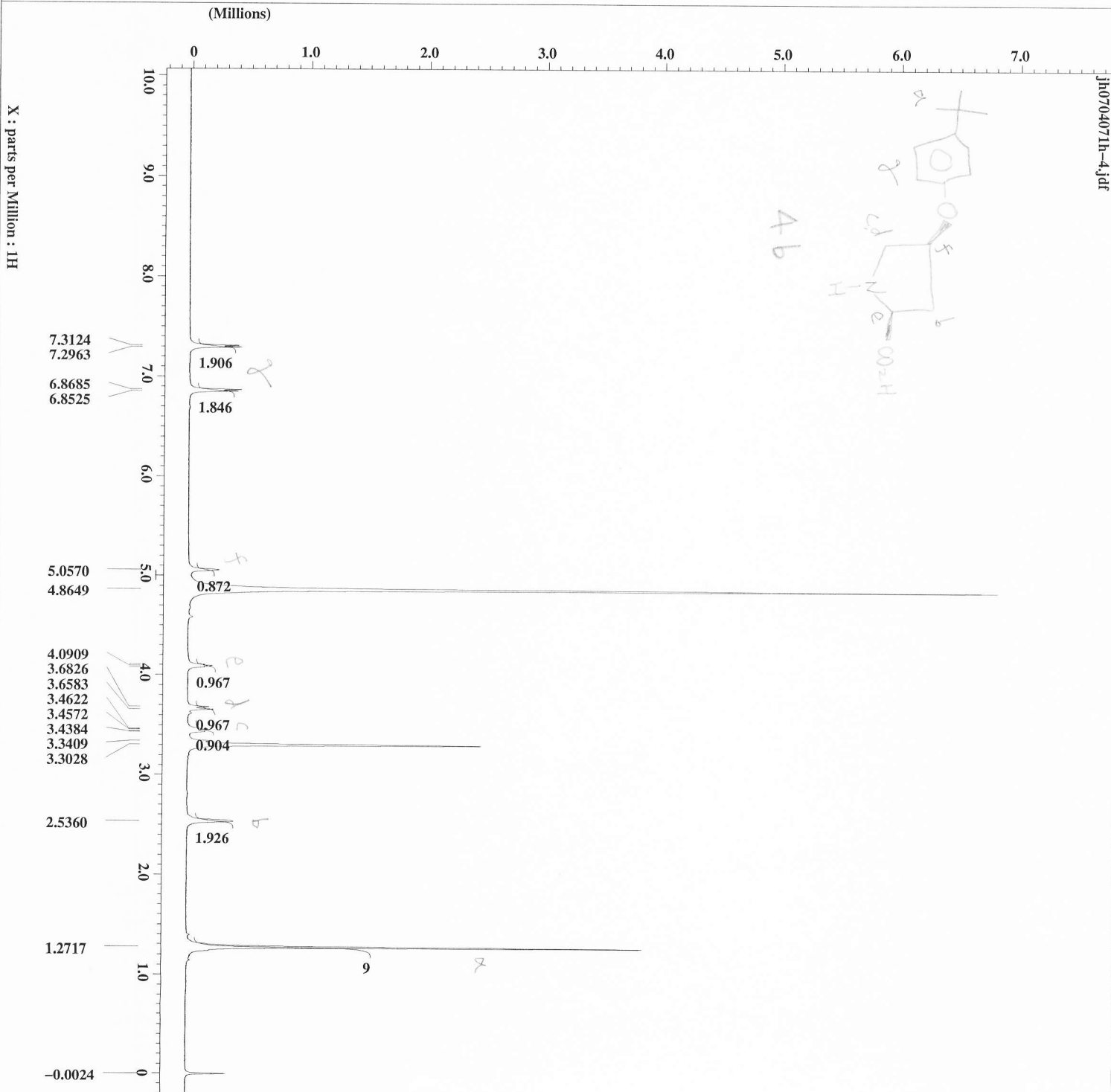
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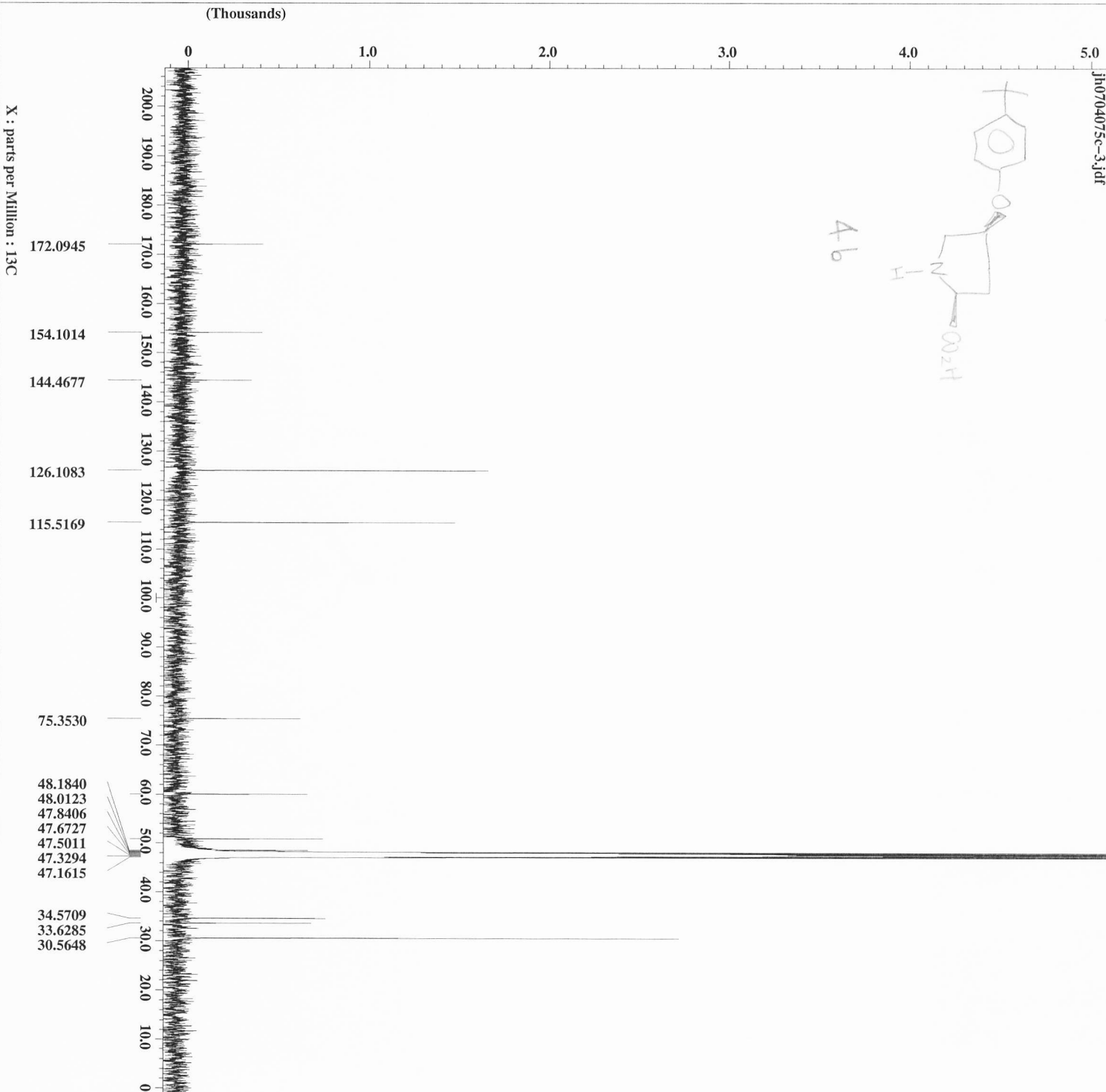
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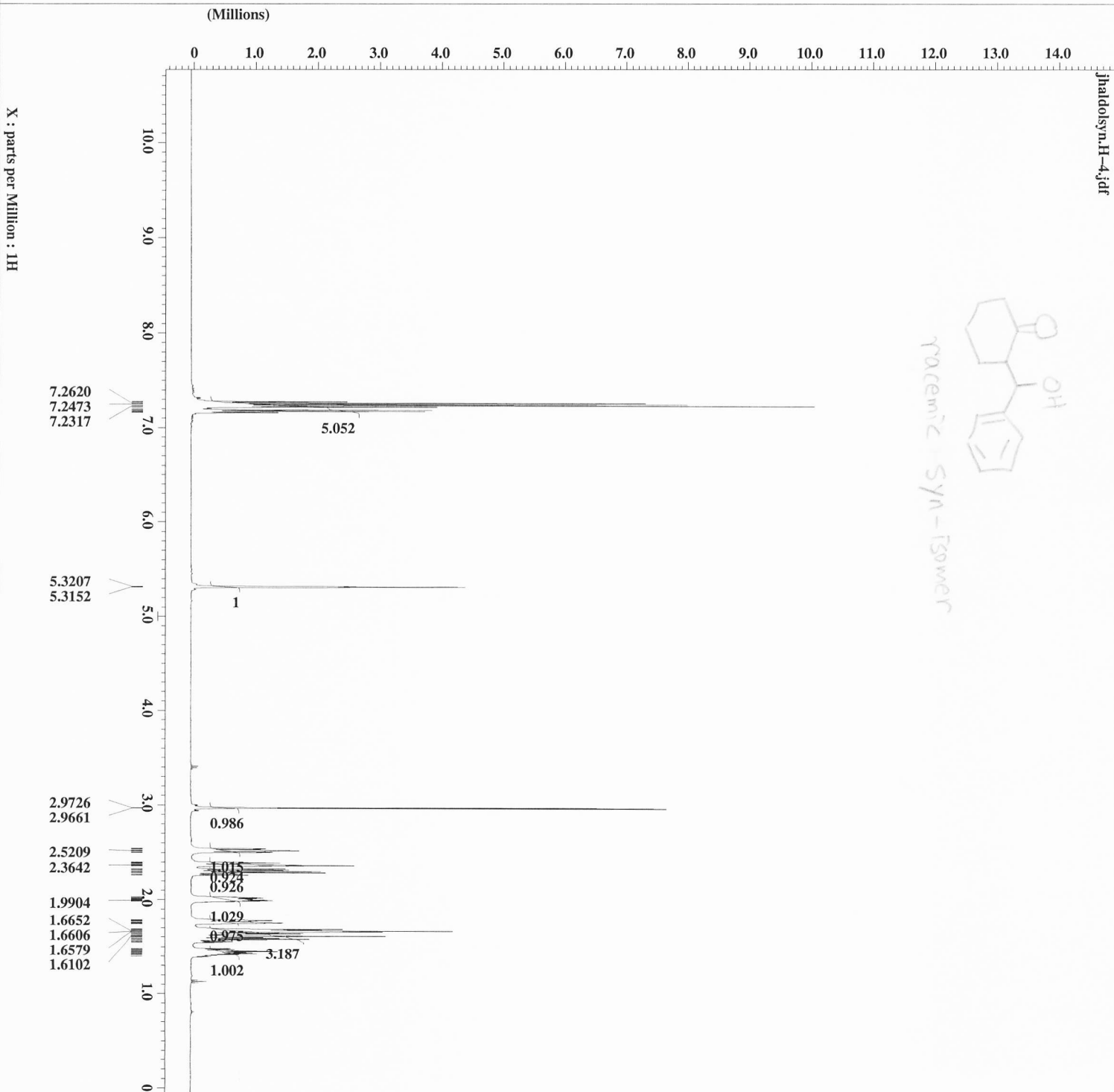
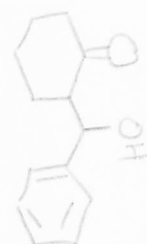
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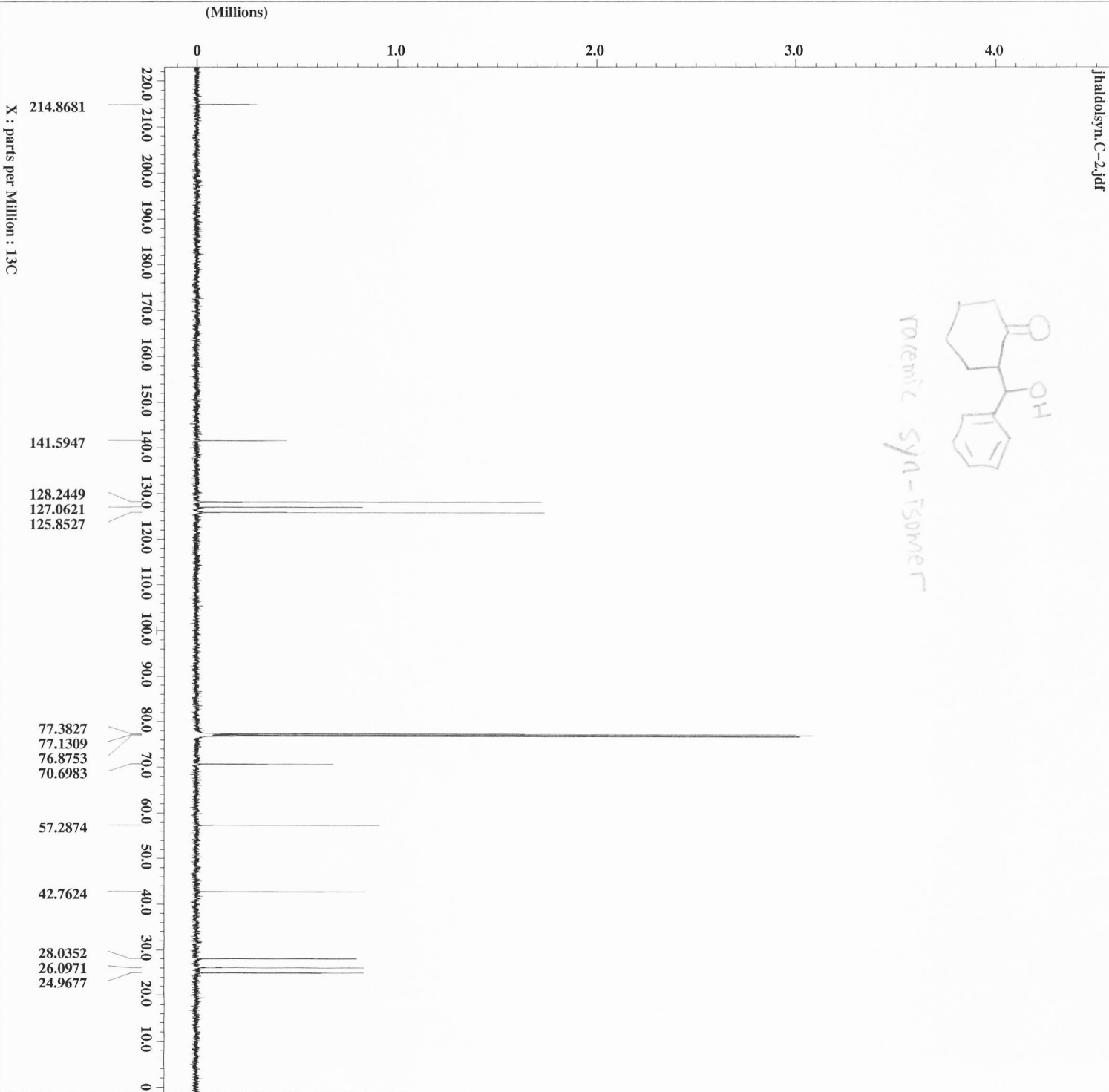
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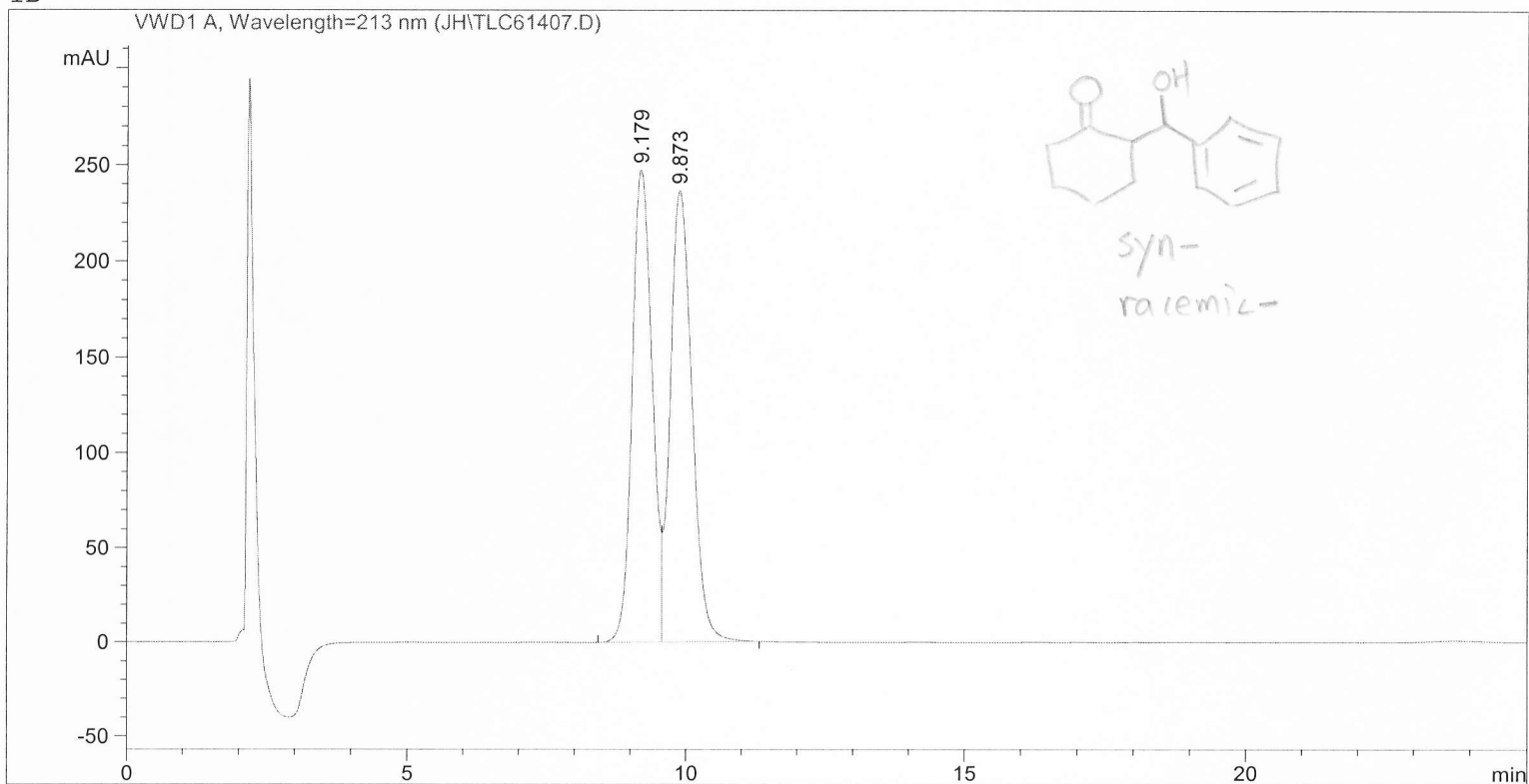
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Area Percent Report

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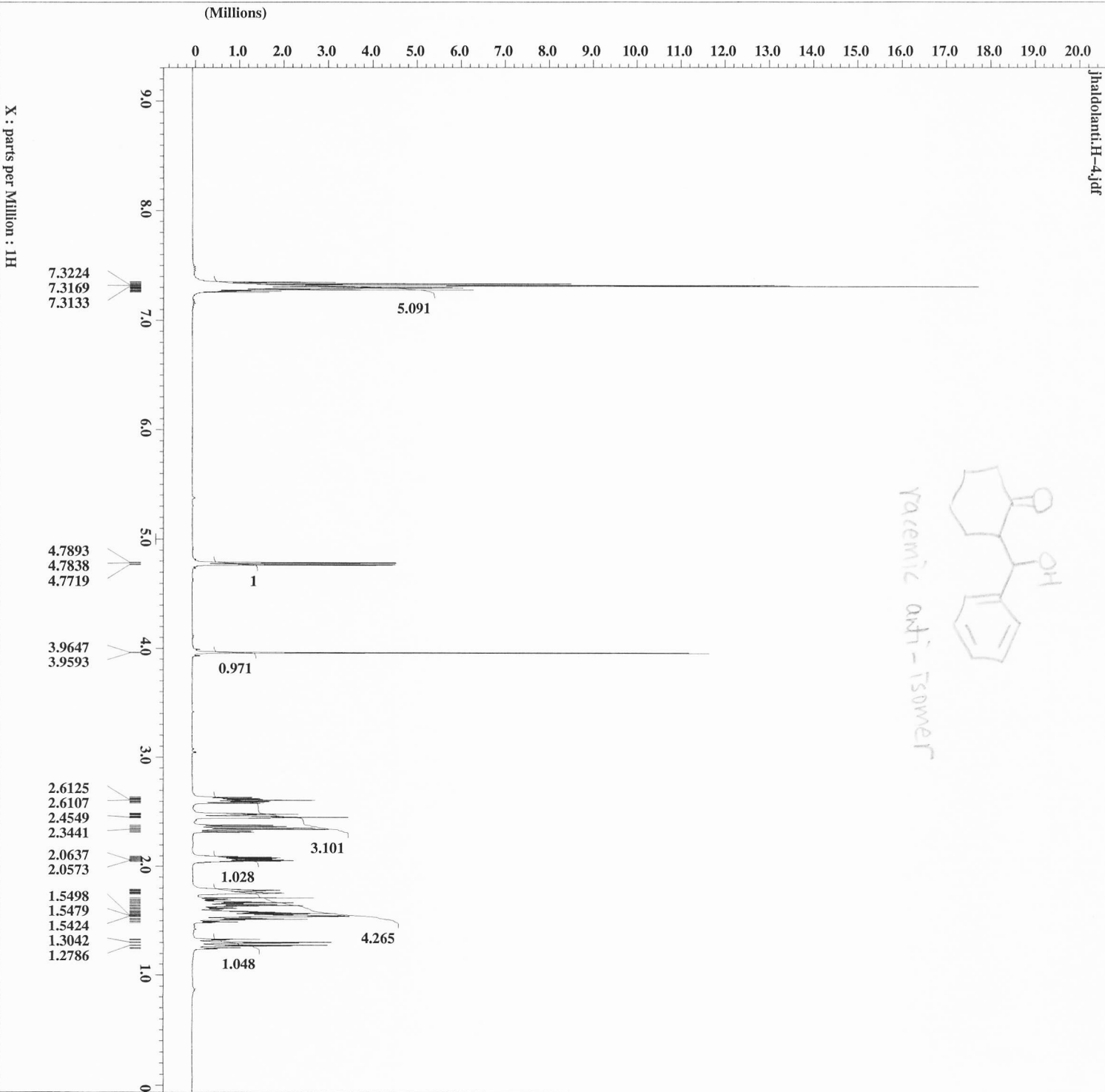
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Results obtained with enhanced integrator!

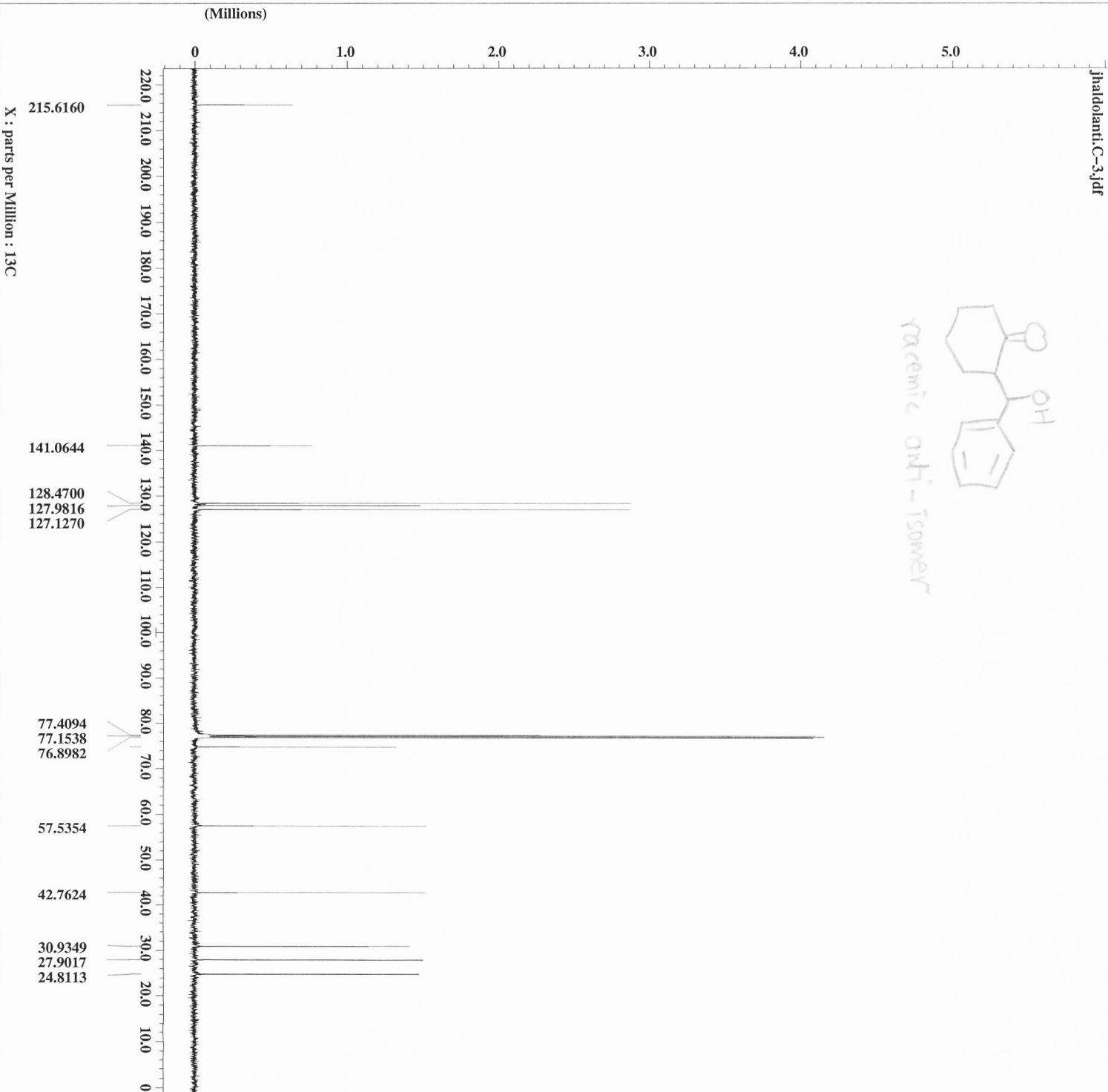
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 Revision_time = 12-MAY-2007 15:23:09
 Current_time = 12-MAY-2007 15:26:08
 Content = single pulse decouple
 Data_format = 1D COMPLEX
 Dim_size = 65536
 Dim_title = 13C
 Dim_units = [ppm]
 Dimensions = X
 Site = Eclipset 500
 Spectrometer = DELTA_NMR
 Field_strength = 11.7473579 [T] (500 [MH
 X_acq_duration = 2.0840448 [s]
 X_domain = 13C
 X_freq = 125.76529768 [MHz]
 X_offset = 100 [ppm]
 X_points = 65536
 X_prescans = 4
 X_resolution = 0.47983613 [Hz]
 X_sweep = 31.44654088 [kHz]
 Irr_domain = 1H
 Irr_freq = 500.15991521 [MHz]
 Irr_offset = 5 [ppm]
 Clipped = FALSE
 Mod_return = 10
 Scans = 500
 Total_scans = 500
 X_90_width = 14.2 [us]
 X_acq_time = 2.0840448 [s]
 X_angle = 30 [deg]
 X_pulse = 4.73333333 [us]
 Initial_wait = 1 [s]
 Noe_time = 1 [s]
 Phase_preset = 3 [us]
 Recvr_gain = 30
 Relaxation_delay = 2 [s]
 Temp_get = 26.3 [dC]
 Unblank_time = 2 [us]

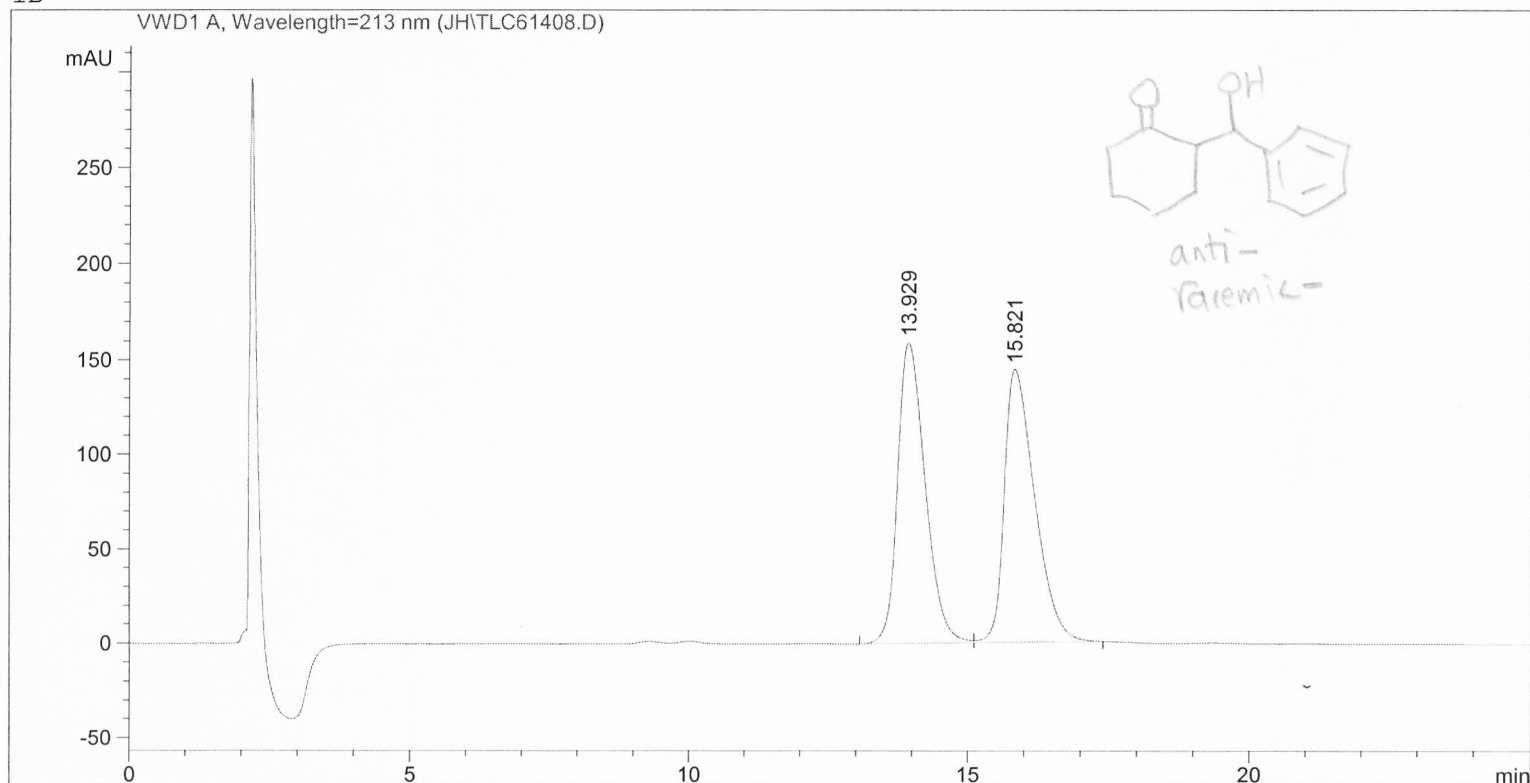


=====

Injection Date	: 6/14/2007 2:36:48 PM	Seq. Line	: 8
Sample Name	: anti	Vial	: 8
Acq. Operator	: JH	Inj	: 1

Inj Volume : 10 µl

Method : C:\HPCHEM\1\METHODS\JHIB.M
Last changed : 6/14/2007 9:38:06 AM by JH
IB



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

Sorted By : Signal
Multiplier : 1.0000
Dilution : 1.0000

Signal 1: VWD1 A, Wavelength=213 nm

Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	13.929	PV	0.4957	5445.26807	158.94400	50.0436
2	15.821	VB	0.5324	5435.77051	144.33235	49.9564

Totals : 1.08810e4 303.27635

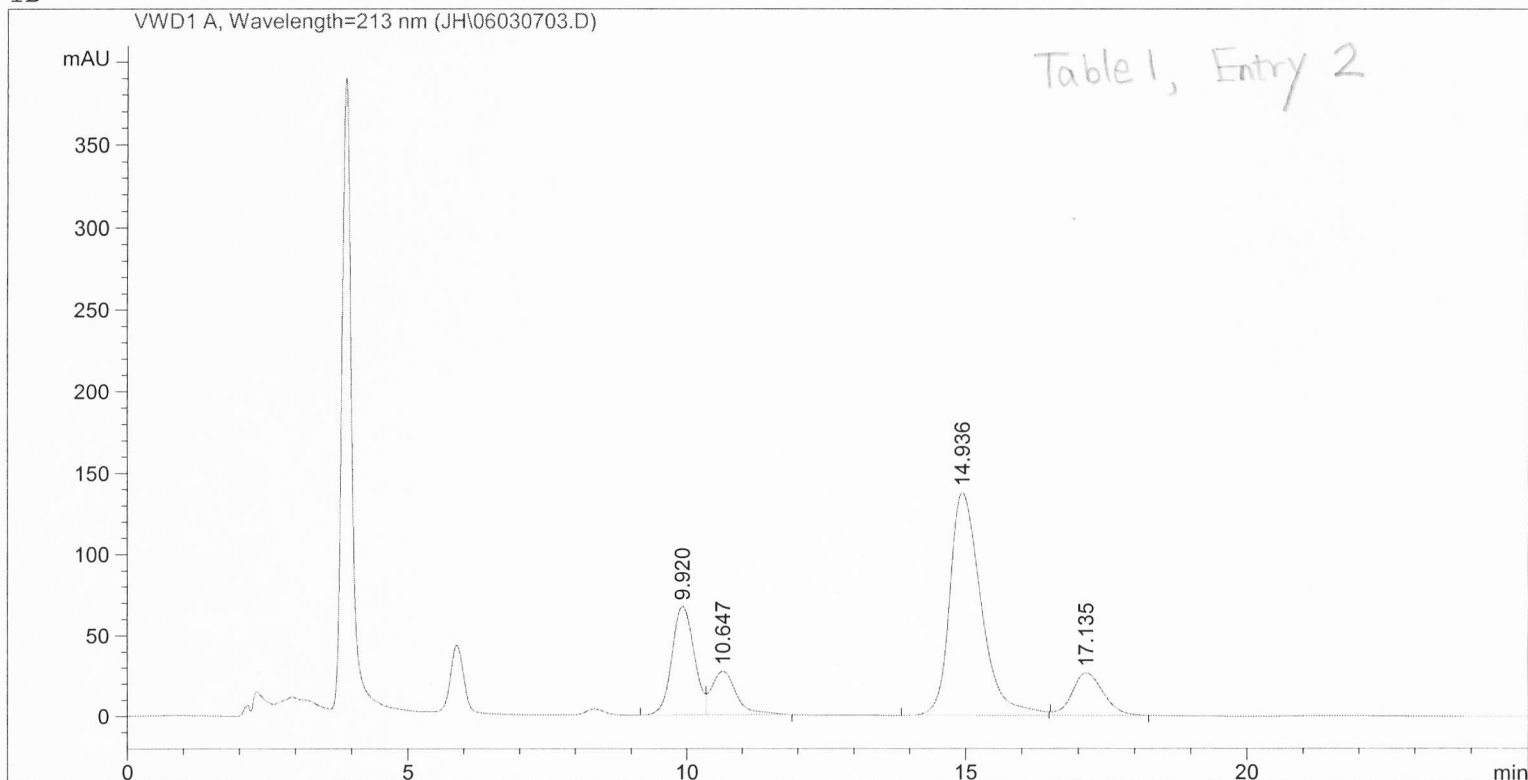
Results obtained with enhanced integrator!

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

```
=====
Injection Date   : 6/3/2007 11:13:23 AM      Seq. Line :    1
Sample Name      : Aldol-IL-Proline           Vial       :   18
Acq. Operator    : JH                        Inj        :    1
                                           Inj Volume : 10 µl

Acq. Method      : C:\HPCHEM\2\METHODS\JH-IB.M
Last changed     : 6/3/2007 11:12:32 AM by JH
Analysis Method  : C:\HPCHEM\1\METHODS\JHIB.M
Last changed     : 6/25/2007 9:55:09 AM by JH
                  (modified after loading)
=====
```

IB



Area Percent Report

```
Sorted By      : Signal
Multiplier     : 1.0000
Dilution       : 1.0000
```

Signal 1: VWD1 A, Wavelength=213 nm

Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %	
1	9.920	BV	0.4220	1883.87708	67.40957	20.6633	> syn-
2	10.647	VB	0.3953	847.88751	27.08067	9.3001	
3	14.936	PV	0.5532	5367.14551	137.56563	58.8696	> anti-
4	17.135	VB	0.4557	1018.09711	26.23730	11.1670	68% ee

Totals : 9117.00720 258.29317

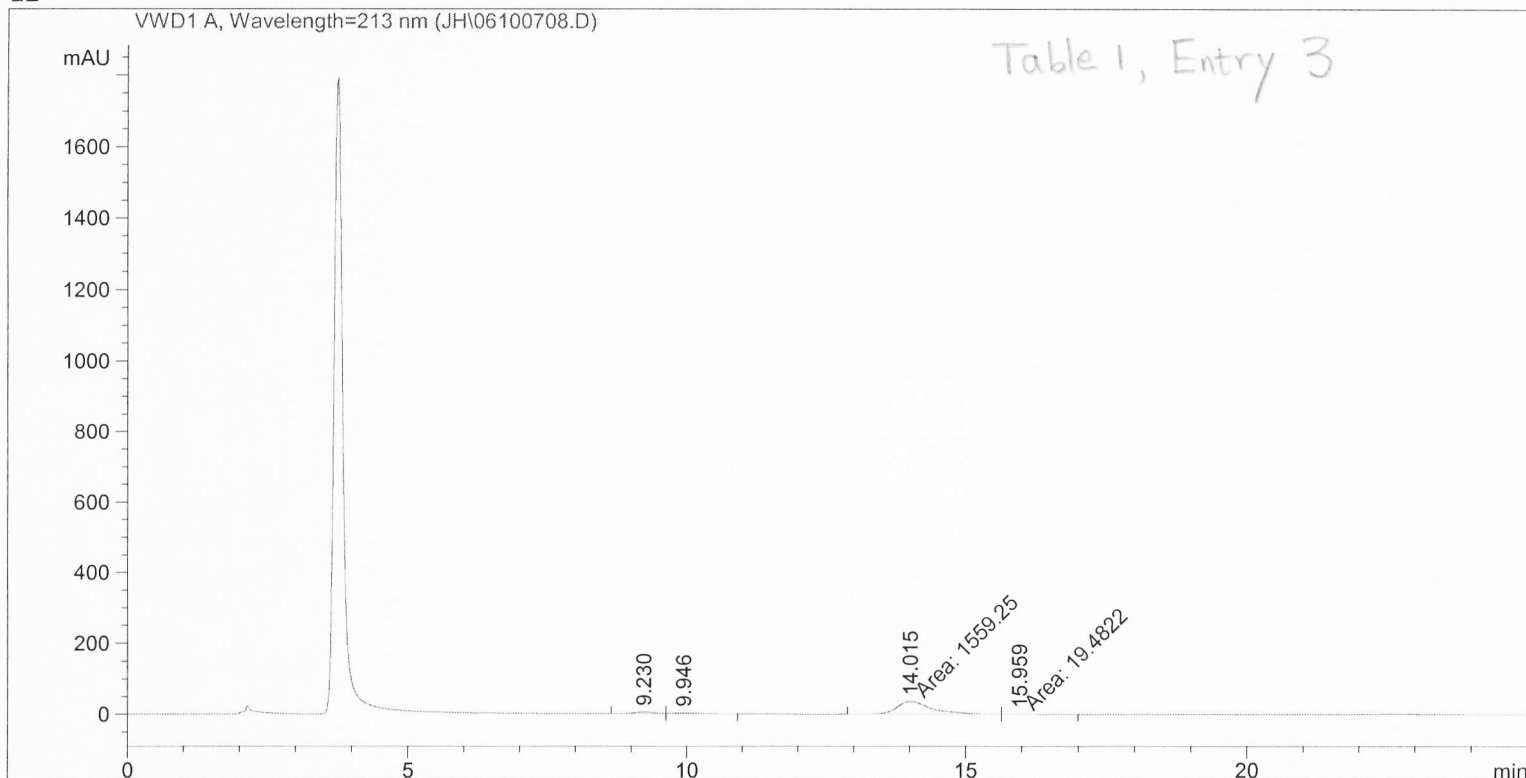
Results obtained with enhanced integrator!

*** End of Report ***

=====
Injection Date : 6/11/2007 2:41:33 PM Seq. Line : 1
Sample Name : aldol-tBuHyp-11 Vial : 11
Acq. Operator : JH Inj : 1
Inj Volume : 10 µl

Acq. Method : C:\HPCHEM\1\METHODS\JHIB.M
Last changed : 6/11/2007 8:58:27 AM by JH
Analysis Method : C:\HPCHEM\1\METHODS\JHIB.M
Last changed : 6/25/2007 9:55:09 AM by JH
(modified after loading)

IB



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

Sorted By : Signal
Multiplier : 1.0000
Dilution : 1.0000

Signal 1: VWD1 A, Wavelength=213 nm

Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	9.230	BV	0.3184	140.37030	5.25843	7.7194
2	9.946	VV	0.4073	99.29733	2.86557	5.4607
3	14.015	MF	0.7188	1559.24902	36.15213	85.7485
4	15.959	FM	0.7181	19.48218	4.52160e-1	1.0714

syn-
anti- 98% ee

Totals : 1818.39883 44.72830

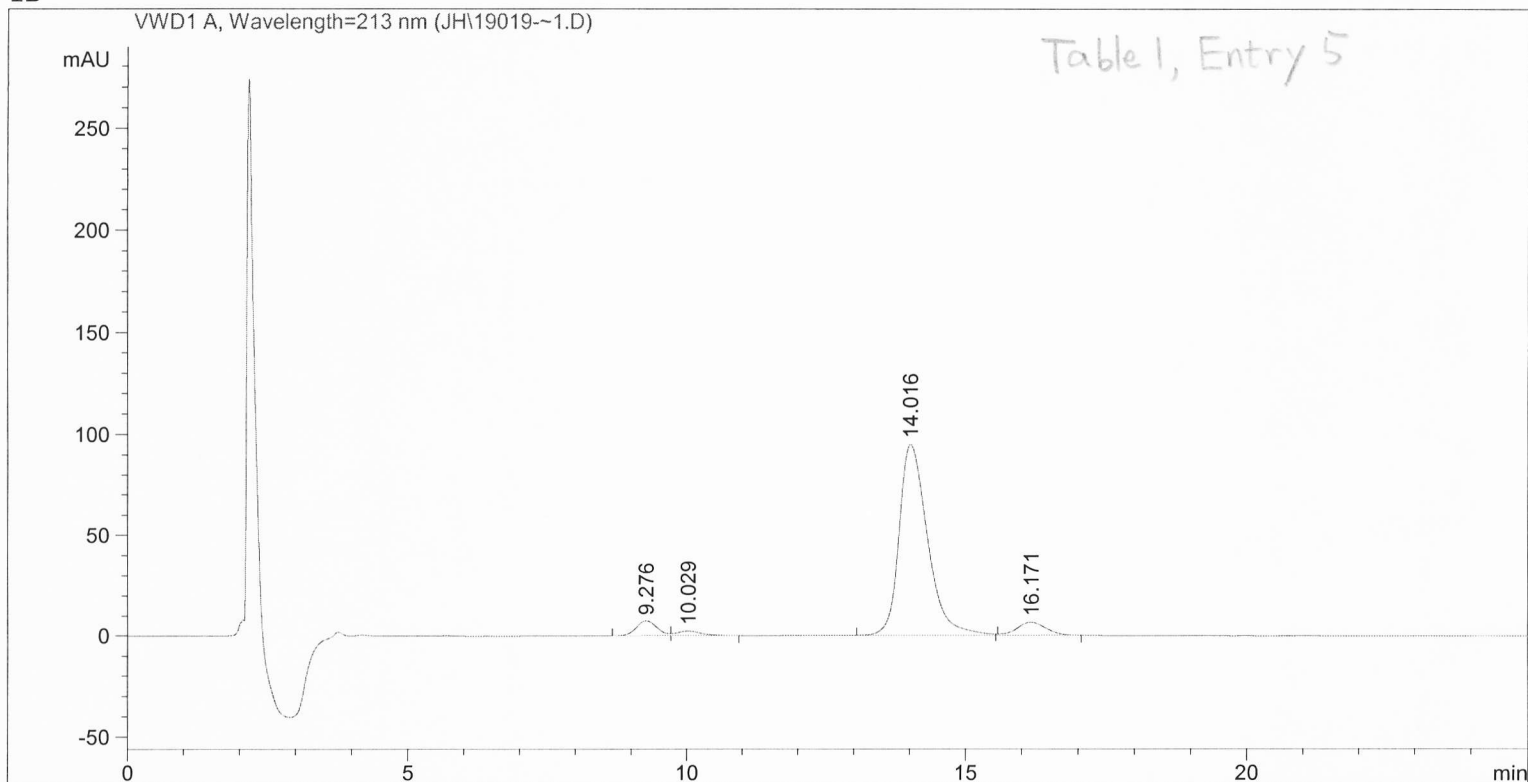
Results obtained with enhanced integrator!

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

```
=====
Injection Date   : 6/13/2007 7:08:47 AM      Seq. Line :   15
Sample Name      : tlc19                      Vial       :   19
Acq. Operator    : JH                        Inj        :    1
                                           Inj Volume : 10 µl

Acq. Method      : C:\HPCHEM\1\METHODS\JHIB.M
Last changed     : 6/12/2007 9:39:16 PM by JH
Analysis Method  : C:\HPCHEM\1\METHODS\JHIB.M
Last changed     : 6/13/2007 9:05:44 AM by JH
                  (modified after loading)
=====
```

IB



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

```
Sorted By      : Signal
Multiplier     : 1.0000
Dilution       : 1.0000
```

Signal 1: VWD1 A, Wavelength=213 nm

Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	9.276	VV	0.3084	194.15739	7.46686	5.0179
2	10.029	VB	0.3663	72.58356	2.34391	1.8759
3	14.016	VB	0.5227	3367.34473	94.72688	87.0268
4	16.171	BB	0.4233	235.23494	6.56137	6.0795

syn-
anti- 87% ee

Totals : 3869.32062 111.09903

Results obtained with enhanced integrator!

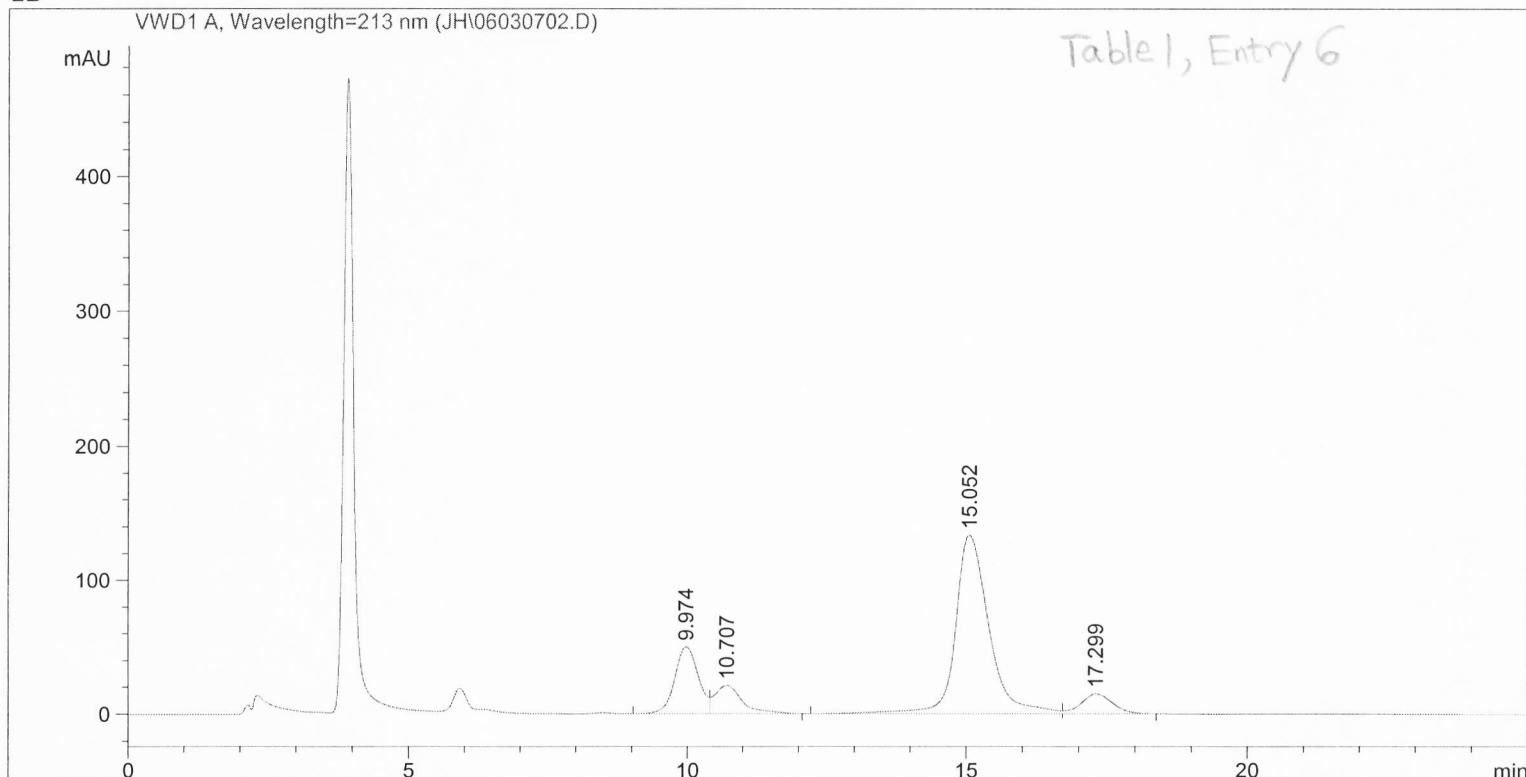
```
=====
*** End of Report ***
=====
```

```
=====
Injection Date   : 6/3/2007 10:30:36 AM      Seq. Line :    1
Sample Name     : Aldol-IL-cis              Vial      :   17
Acq. Operator   : JH                       Inj       :    1
                                           Inj Volume: 10 µl

Acq. Method     : C:\HPCHEM\2\METHODS\JH-IB.M
Last changed    : 6/3/2007 10:32:07 AM by JH
                  (modified after loading)

Analysis Method  : C:\HPCHEM\1\METHODS\JHIB.M
Last changed    : 6/25/2007 9:55:09 AM by JH
                  (modified after loading)
=====
```

IB



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

```
Sorted By      : Signal
Multiplier     : 1.0000
Dilution       : 1.0000
```

Signal 1: VWD1 A, Wavelength=213 nm

Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	9.974	BV	0.4196	1470.76599	49.78996	17.7604
2	10.707	VB	0.4071	714.46210	20.83512	8.6276
3	15.052	BB	0.5937	5524.46924	133.25592	66.7112
4	17.299	BB	0.4597	571.47168	14.63113	6.9009

syn-
anti- 81% ee

Totals : 8281.16901 218.51213

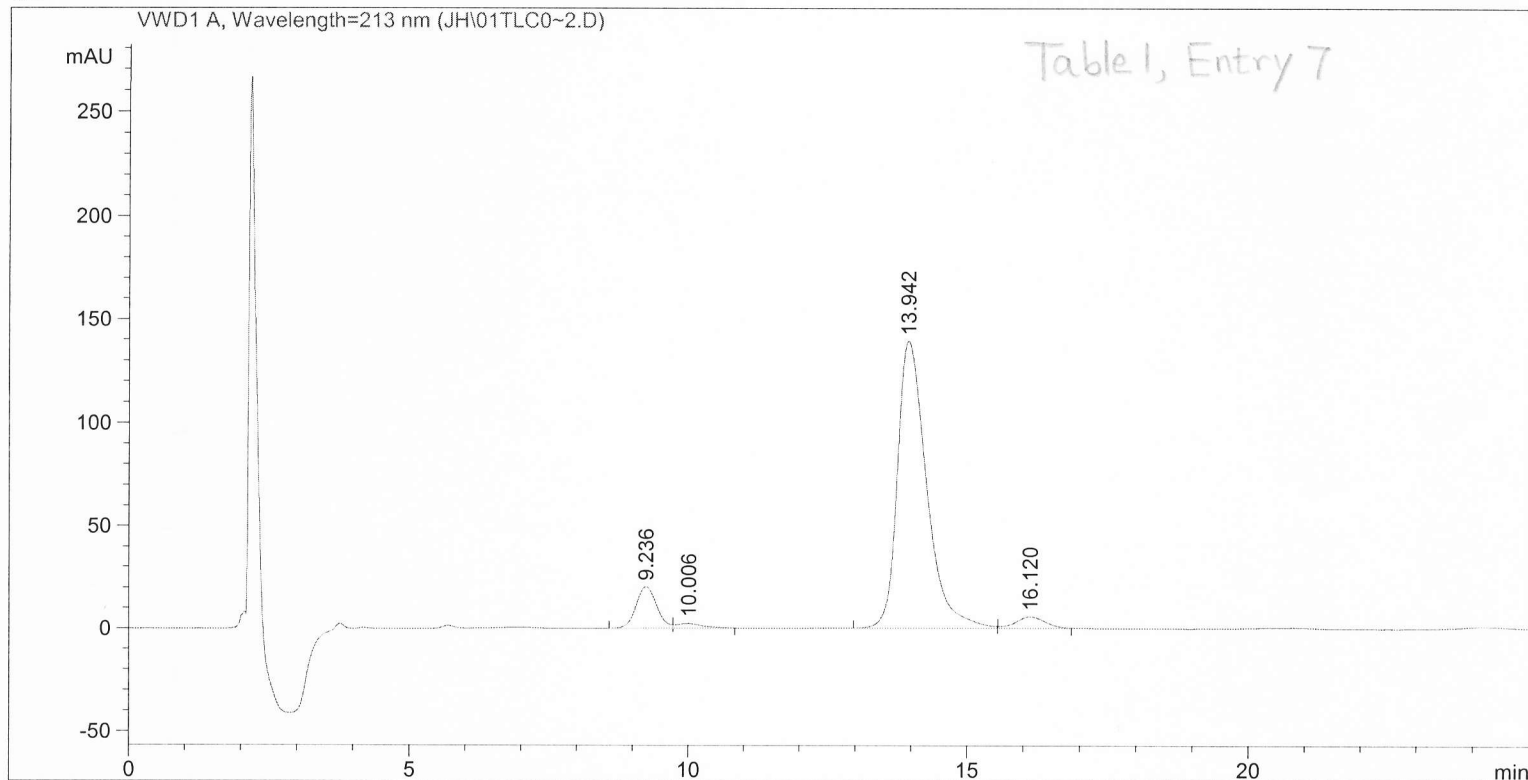
Results obtained with enhanced integrator!

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

```
=====
Injection Date   : 6/12/2007 9:40:02 PM      Seq. Line :    1
Sample Name      : tlc1                      Vial       :    1
Acq. Operator    : JH                       Inj        :    1
                                           Inj Volume : 10 µl

Acq. Method      : C:\HPCHEM\1\METHODS\JHIB.M
Last changed     : 6/12/2007 9:39:16 PM by JH
Analysis Method  : C:\HPCHEM\1\METHODS\JHIB.M
Last changed     : 6/13/2007 9:05:44 AM by JH
                  (modified after loading)
=====
```

IB



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

```
Sorted By      :      Signal
Multiplier     :      1.0000
Dilution       :      1.0000
```

Signal 1: VWD1 A, Wavelength=213 nm

Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	9.236	VV	0.3082	525.22052	20.27746	8.9225
2	10.006	VV	0.4072	80.31622	2.34703	1.3644
3	13.942	BB	0.5215	5074.60449	139.13498	86.2081
4	16.120	BV	0.4376	206.31732	5.55161	3.5049

Totals : 5886.45856 167.31108

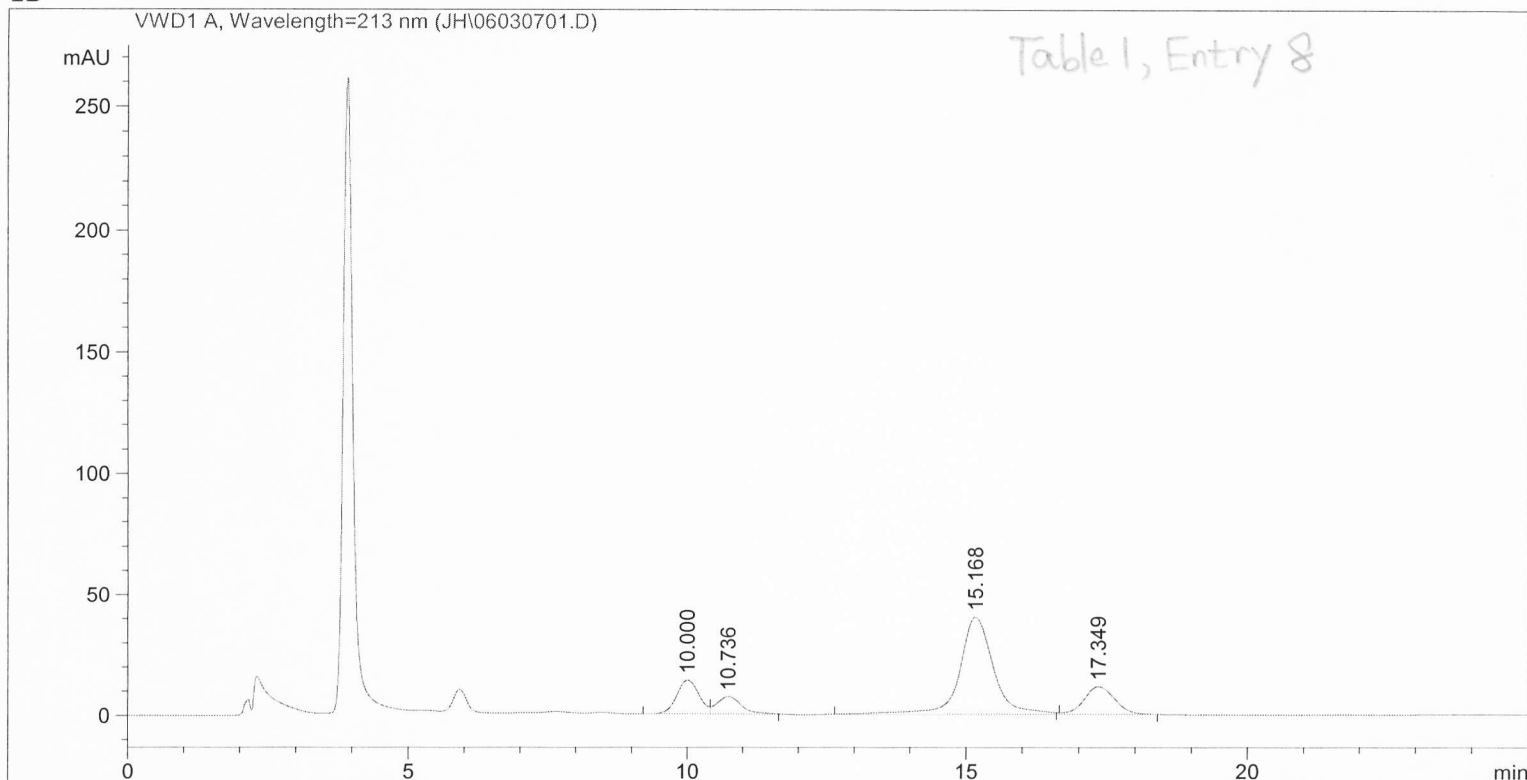
Results obtained with enhanced integrator!

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

```
=====
Injection Date   : 6/3/2007 10:03:54 AM      Seq. Line :    1
Sample Name      : Aldol-IL-trans             Vial       :   16
Acq. Operator    : JH                        Inj        :    1
                                           Inj Volume : 10 µl

Acq. Method      : C:\HPCHEM\2\METHODS\JH-IB.M
Last changed     : 5/31/2007 2:45:47 PM by JH
Analysis Method  : C:\HPCHEM\1\METHODS\JHIB.M
Last changed     : 6/25/2007 9:55:09 AM by JH
                  (modified after loading)
=====
```

IB



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

```
Sorted By      :      Signal
Multiplier     :      1.0000
Dilution       :      1.0000
```

Signal 1: VWD1 A, Wavelength=213 nm

Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	10.000	VV	0.3358	389.94791	14.00745	14.0840
2	10.736	VB	0.3611	219.48694	7.13046	7.9273
3	15.168	VB	0.5024	1719.85229	40.33974	62.1170
4	17.349	BB	0.4457	439.44391	11.55560	15.8717

Handwritten notes: } syn- (next to peak 1), } anti- 59% ee (next to peak 3)

```
Totals :                      2768.73105    73.03326
```

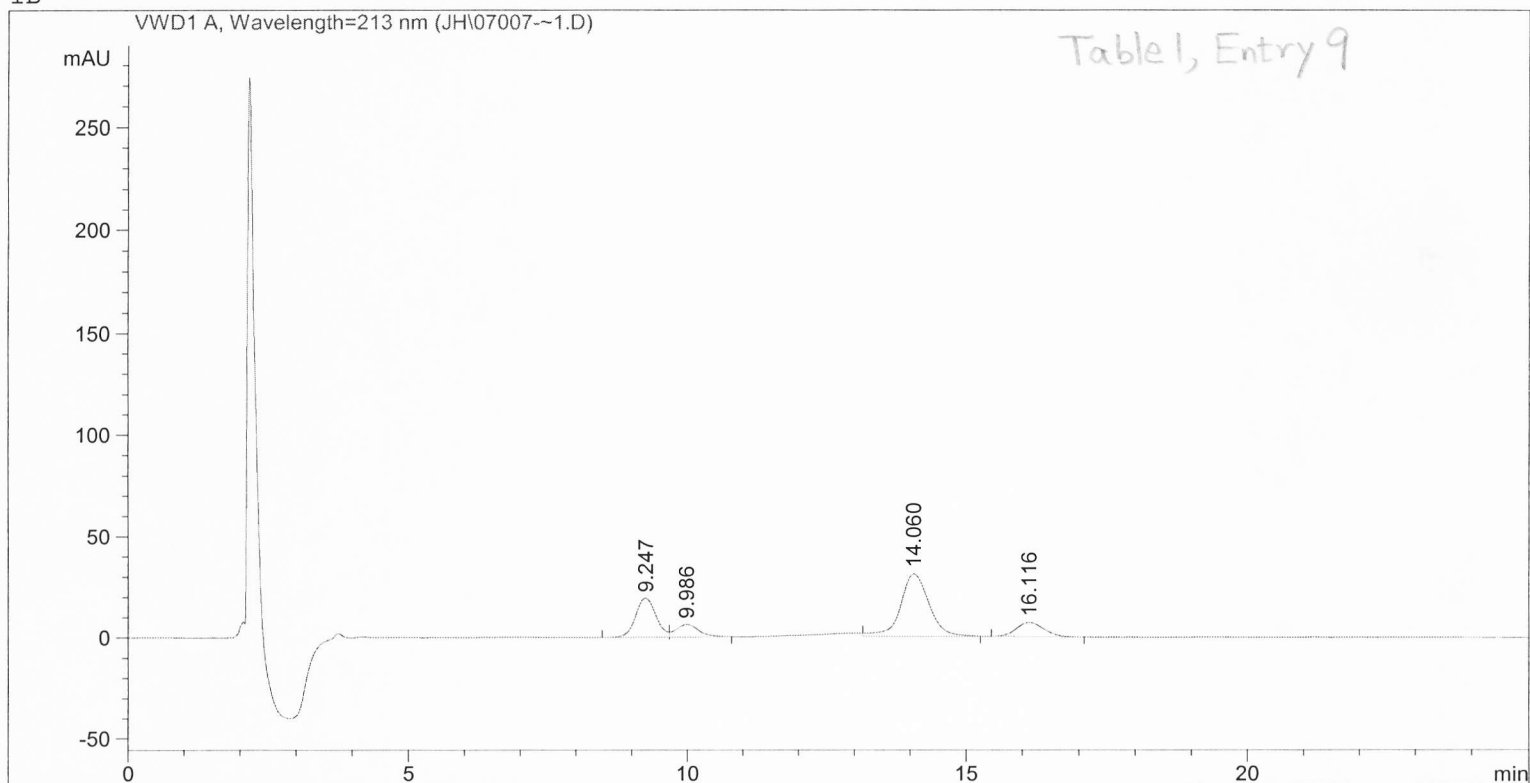
Results obtained with enhanced integrator!

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

=====

Injection Date	: 6/13/2007 9:49:09 AM	Seq. Line	: 1
Sample Name	: tlc7	Vial	: 7
Acq. Operator	: JH	Inj	: 1
		Inj Volume	: 10 µl

Method : C:\HPCHEM\1\METHODS\JHIB.M
Last changed : 6/13/2007 9:47:34 AM by JH
IB



=====

Area Percent Report

=====

Sorted By : Signal
Multiplier : 1.0000
Dilution : 1.0000

Signal 1: VWD1 A, Wavelength=213 nm

Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	9.247	BV	0.3196	499.84885	19.46296	24.4636
2	9.986	VB	0.3527	180.39488	6.28725	8.8289
3	14.060	BB	0.4469	1117.38354	31.19284	54.6870
4	16.116	BB	0.4066	245.60706	7.11700	12.0205

syn-
anti- 64% ee

Totals : 2043.23433 64.06006

Results obtained with enhanced integrator!

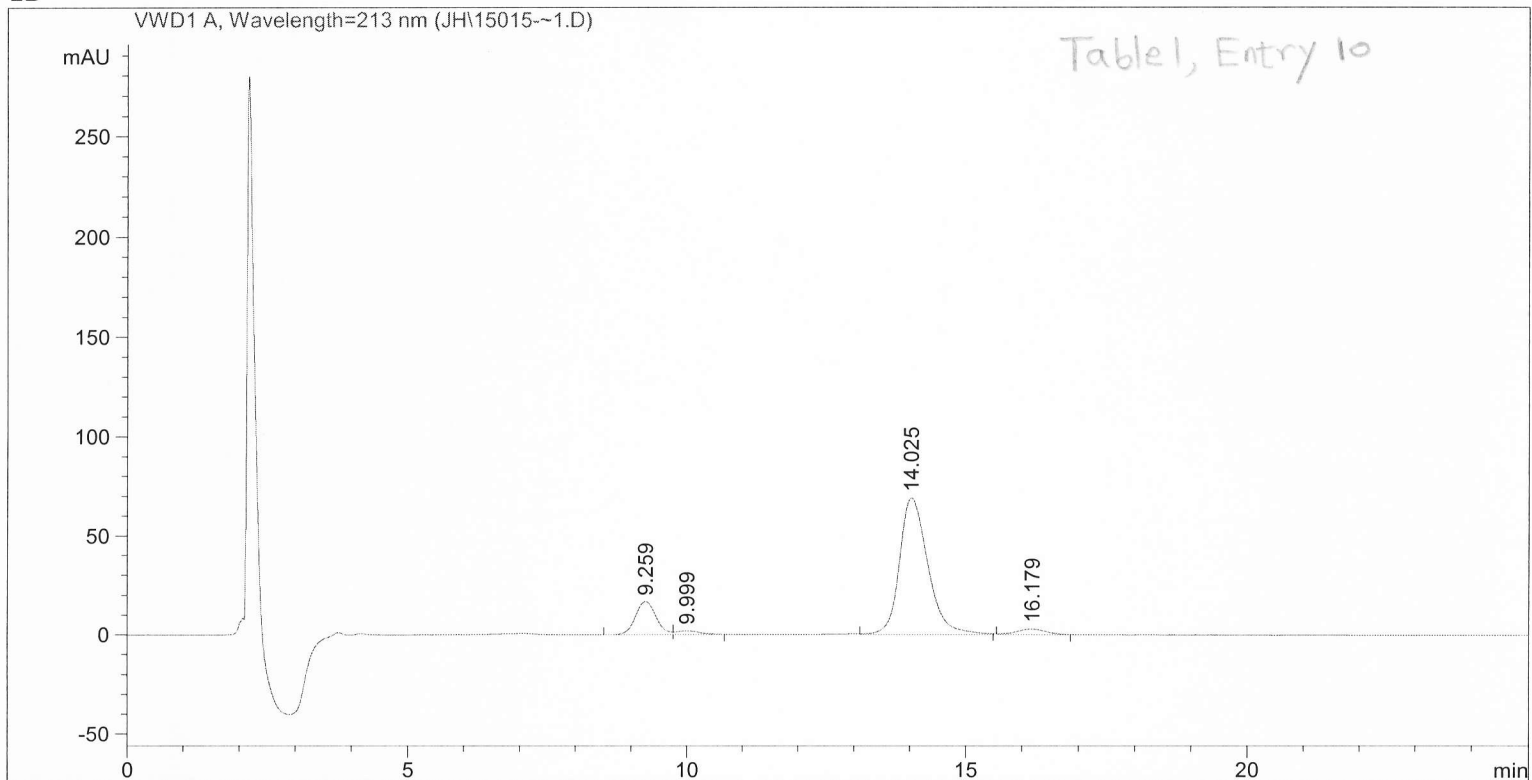
=====

*** End of Report ***

```
=====
Injection Date   : 6/13/2007 6:28:09 AM      Seq. Line :   14
Sample Name      : tlc15                      Vial       :   15
Acq. Operator    : JH                        Inj        :    1
                                           Inj Volume : 10 µl

Acq. Method      : C:\HPCHEM\1\METHODS\JHIB.M
Last changed     : 6/12/2007 9:39:16 PM by JH
Analysis Method  : C:\HPCHEM\1\METHODS\JHIB.M
Last changed     : 6/13/2007 9:05:44 AM by JH
                  (modified after loading)
=====
```

IB



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

```
Sorted By      :      Signal
Multiplier     :      1.0000
Dilution       :      1.0000
```

Signal 1: VWD1 A, Wavelength=213 nm

Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	9.259	PV	0.3139	431.66605	16.73863	14.1484
2	9.999	VV	0.3498	57.30017	1.95015	1.8781
3	14.025	VB	0.4933	2452.48828	69.06610	80.3831
4	16.179	BV	0.4449	109.54407	2.93211	3.5904

syn-
anti- 91% ee

```
Totals :                      3050.99856    90.68699
```

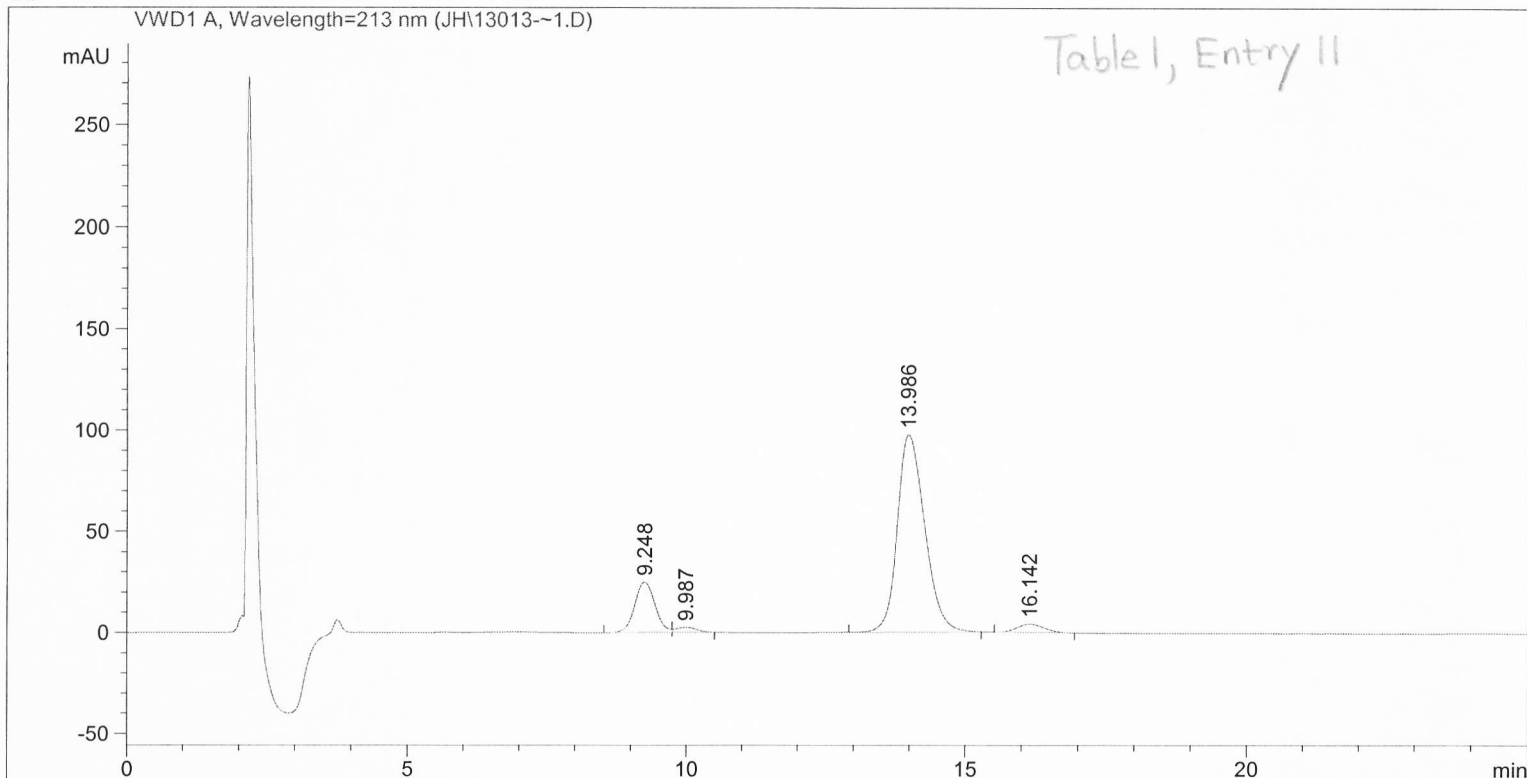
Results obtained with enhanced integrator!

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

```
=====
Injection Date   : 6/13/2007 5:06:51 AM      Seq. Line :   12
Sample Name      : tlc13                      Vial       :   13
Acq. Operator    : JH                        Inj        :    1
                                           Inj Volume : 10 µl

Acq. Method      : C:\HPCHEM\1\METHODS\JHIB.M
Last changed     : 6/12/2007 9:39:16 PM by JH
Analysis Method  : C:\HPCHEM\1\METHODS\JHIB.M
Last changed     : 6/13/2007 9:05:44 AM by JH
                  (modified after loading)
=====
```

IB



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

```
Sorted By      : Signal
Multiplier     : 1.0000
Dilution       : 1.0000
```

Signal 1: VWD1 A, Wavelength=213 nm

Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	9.248	BV	0.3314	636.86768	24.97942	15.2543
2	9.987	VV	0.3037	66.73459	2.58959	1.5984
3	13.986	VB	0.4900	3334.50073	97.50840	79.8681
4	16.142	PP	0.3943	136.90570	4.07112	3.2792

syn-
anti- 92% ee

Totals : 4175.00870 129.14854

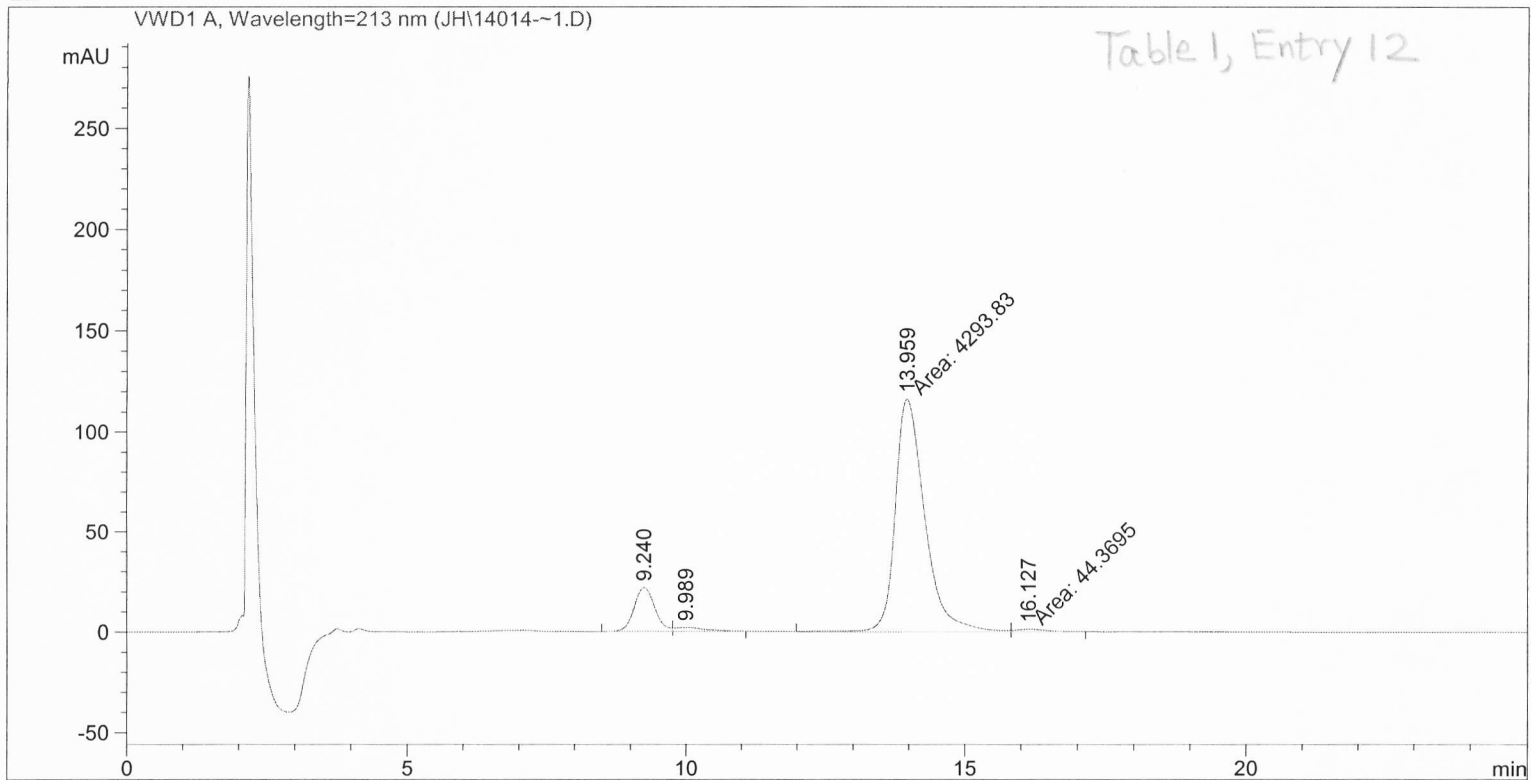
Results obtained with enhanced integrator!

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

=====
Injection Date : 6/13/2007 5:47:30 AM Seq. Line : 13
Sample Name : tlc14 Vial : 14
Acq. Operator : JH Inj : 1
Inj Volume : 10 µl

Acq. Method : C:\HPCHEM\1\METHODS\JHIB.M
Last changed : 6/12/2007 9:39:16 PM by JH
Analysis Method : C:\HPCHEM\1\METHODS\JHIB.M
Last changed : 6/13/2007 9:05:44 AM by JH
(modified after loading)

IB



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

Sorted By : Signal
Multiplier : 1.0000
Dilution : 1.0000

Signal 1: VWD1 A, Wavelength=213 nm

Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	9.240	VV	0.3376	568.23584	21.83707	11.4010
2	9.989	VV	0.4461	77.67443	2.04993	1.5584
3	13.959	MF	0.6147	4293.82861	116.41840	86.1504
4	16.127	FM	0.5587	44.36951	1.32355	0.8902

syn-
anti- 98% ee

Totals : 4984.10839 141.62895

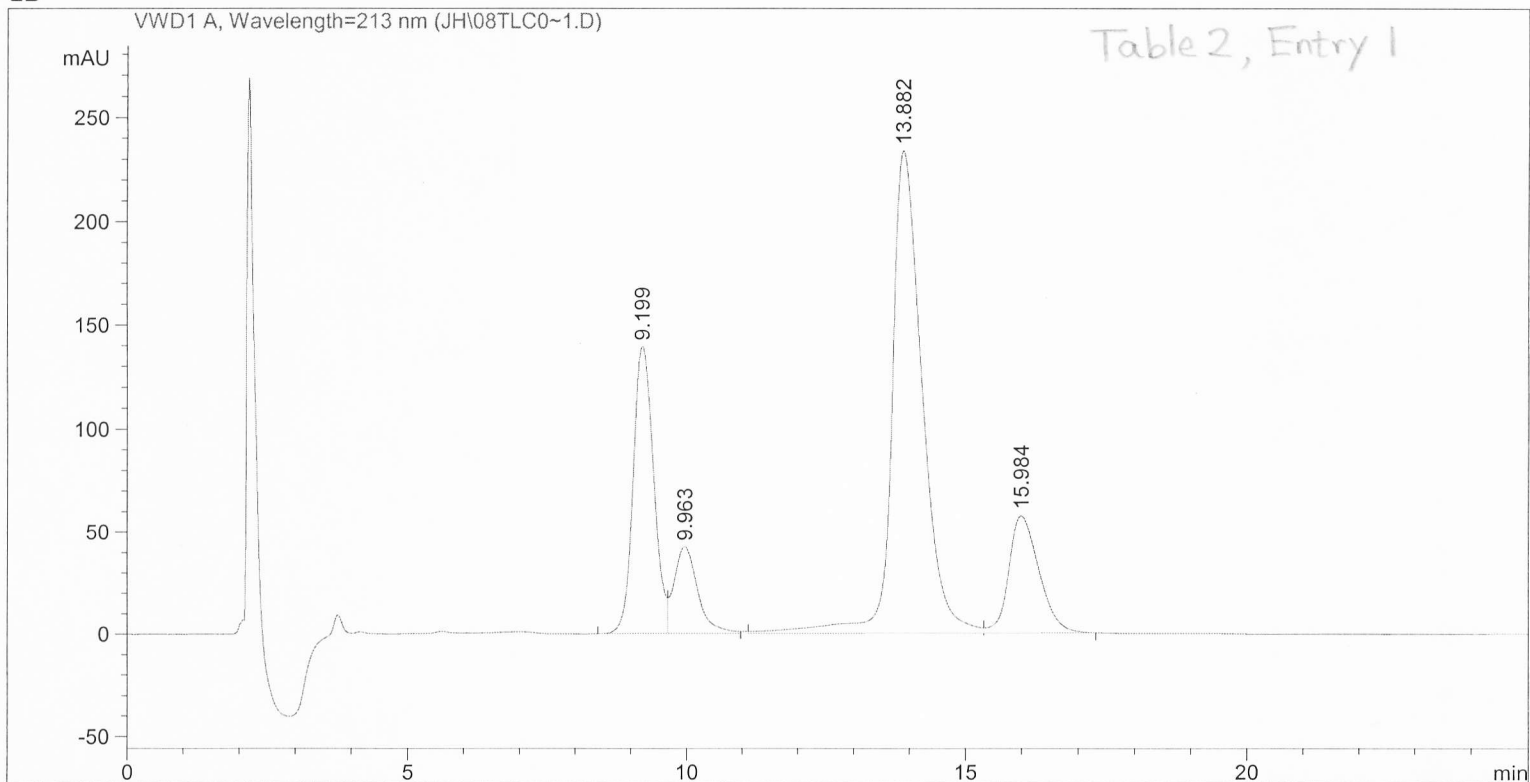
Results obtained with enhanced integrator!

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

```
=====
Injection Date   : 6/13/2007 1:43:42 AM      Seq. Line :    7
Sample Name     : tlc8                      Vial      :    8
Acq. Operator   : JH                       Inj       :    1
                                           Inj Volume: 10 µl

Acq. Method     : C:\HPCHEM\1\METHODS\JHIB.M
Last changed    : 6/12/2007 9:39:16 PM by JH
Analysis Method : C:\HPCHEM\1\METHODS\JHIB.M
Last changed    : 7/25/2007 1:08:57 PM by JH
                  (modified after loading)
=====
```

IB



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

```
Sorted By      : Signal
Multiplier     : 1.0000
Dilution       : 1.0000
```

Signal 1: VWD1 A, Wavelength=213 nm

Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	9.199	BV	0.3977	3590.66992	139.32495	22.5934
2	9.963	VB	0.4006	1267.77429	42.67249	7.9772
3	13.882	BV	0.5554	8874.08301	233.49774	55.8380
4	15.984	VB	0.5129	2160.02002	57.55324	13.5914

syn-
anti- 61% ee

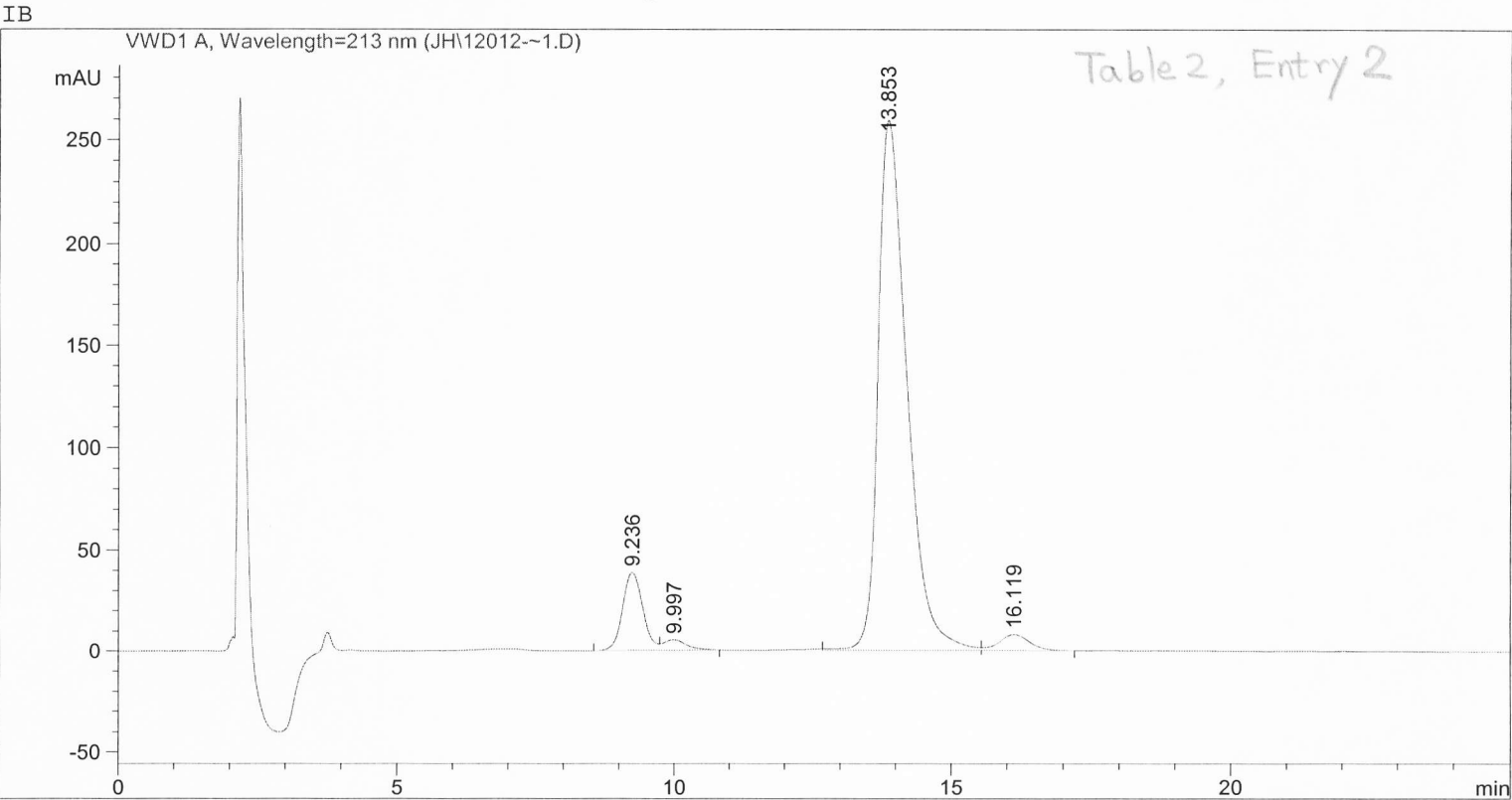
Totals : 1.58925e4 473.04842

Results obtained with enhanced integrator!

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

=====

Injection Date	: 6/13/2007 4:26:13 AM	Seq. Line	: 11
Sample Name	: tlc12	Vial	: 12
Acq. Operator	: JH	Inj	: 1
		Inj Volume	: 10 µl
Acq. Method	: C:\HPCHEM\1\METHODS\JHIB.M		
Last changed	: 6/12/2007 9:39:16 PM by JH		
Analysis Method	: C:\HPCHEM\1\METHODS\JHIB.M		
Last changed	: 6/13/2007 9:05:44 AM by JH		
	(modified after loading)		



=====

Area Percent Report

=====

Sorted By : Signal
Multiplier : 1.0000
Dilution : 1.0000

Signal 1: VWD1 A, Wavelength=213 nm

Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	9.236	PV	0.3510	990.37805	38.77875	9.1203
2	9.997	VB	0.3563	160.58249	5.39504	1.4788
3	13.853	VV	0.5261	9396.13184	259.06302	86.5278
4	16.119	VB	0.4498	311.99582	8.16514	2.8731

syn-
anti- 94% ee

Totals : 1.08591e4 311.40195

Results obtained with enhanced integrator!

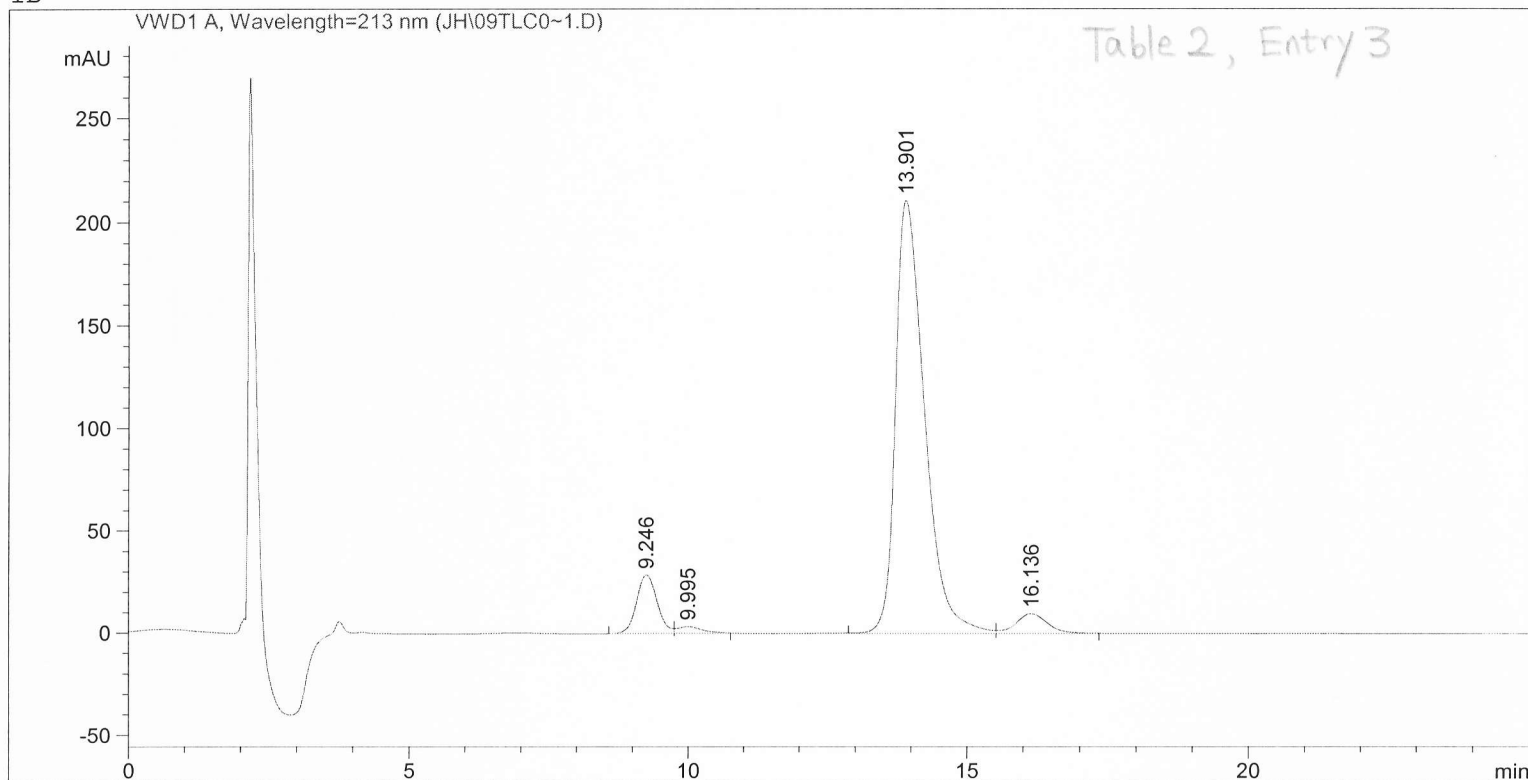
=====

*** End of Report ***

```
=====
Injection Date   : 6/13/2007 2:24:20 AM      Seq. Line :    8
Sample Name      : tlc9                      Vial       :    9
Acq. Operator    : JH                       Inj        :    1
                                           Inj Volume : 10 µl

Acq. Method      : C:\HPCHEM\1\METHODS\JHIB.M
Last changed     : 6/12/2007 9:39:16 PM by JH
Analysis Method  : C:\HPCHEM\1\METHODS\JHIB.M
Last changed     : 6/13/2007 9:05:44 AM by JH
                  (modified after loading)
=====
```

IB



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

```
Sorted By      :      Signal
Multiplier     :      1.0000
Dilution       :      1.0000
```

Signal 1: VWD1 A, Wavelength=213 nm

Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	9.246	BV	0.3385	737.27136	28.71904	8.3512
2	9.995	VB	0.3681	102.83286	3.30443	1.1648
3	13.901	VV	0.5251	7610.04492	210.81584	86.2007
4	16.136	VB	0.4635	378.13351	9.62169	4.2832

syn-
anti- 91% ee

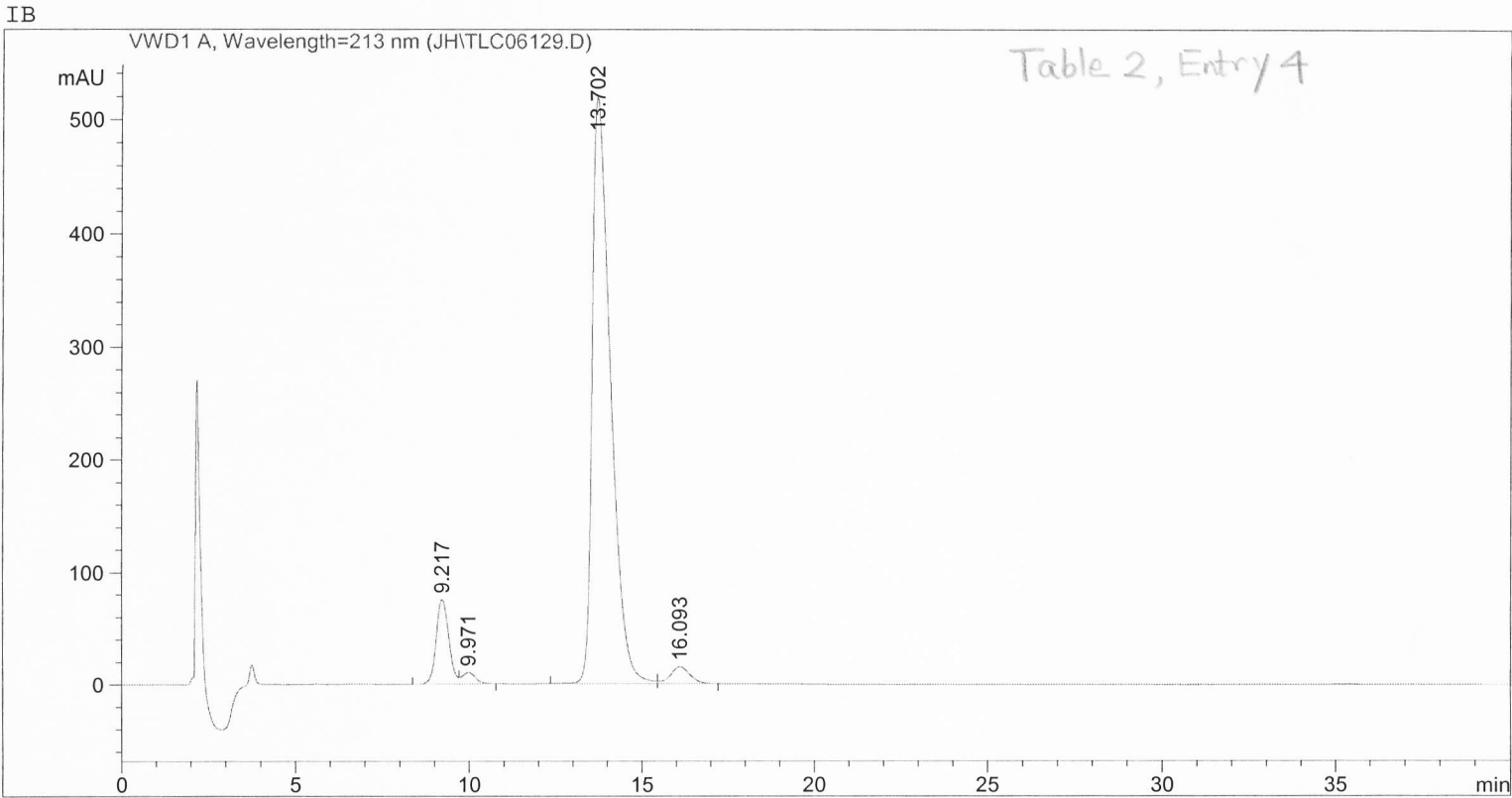
```
Totals :                      8828.28265  252.46100
```

Results obtained with enhanced integrator!

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

=====

Injection Date	: 6/13/2007 3:04:57 AM	Seq. Line	: 9
Sample Name	: tlc10	Vial	: 10
Acq. Operator	: JH	Inj	: 1
		Inj Volume	: 10 µl
Acq. Method	: C:\HPCHEM\1\METHODS\JHIB.M		
Last changed	: 6/12/2007 9:39:16 PM by JH		
Analysis Method	: C:\HPCHEM\1\METHODS\JHIB.M		
Last changed	: 6/13/2007 8:27:01 AM by JH		
	(modified after loading)		



=====

Area Percent Report

=====

Sorted By : Signal
Multiplier : 1.0000
Dilution : 1.0000

Signal 1: VWD1 A, Wavelength=213 nm

Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	9.217	PV	0.3929	1921.96436	75.51656	8.6897
2	9.971	VB	0.3223	287.14145	10.49002	1.2982
3	13.702	VV	0.5303	1.92965e4	518.39069	87.2443
4	16.093	VV	0.4642	612.18164	15.48508	2.7678

syn-
anti- 94% ee

Totals : 2.21178e4 619.88234

Results obtained with enhanced integrator!

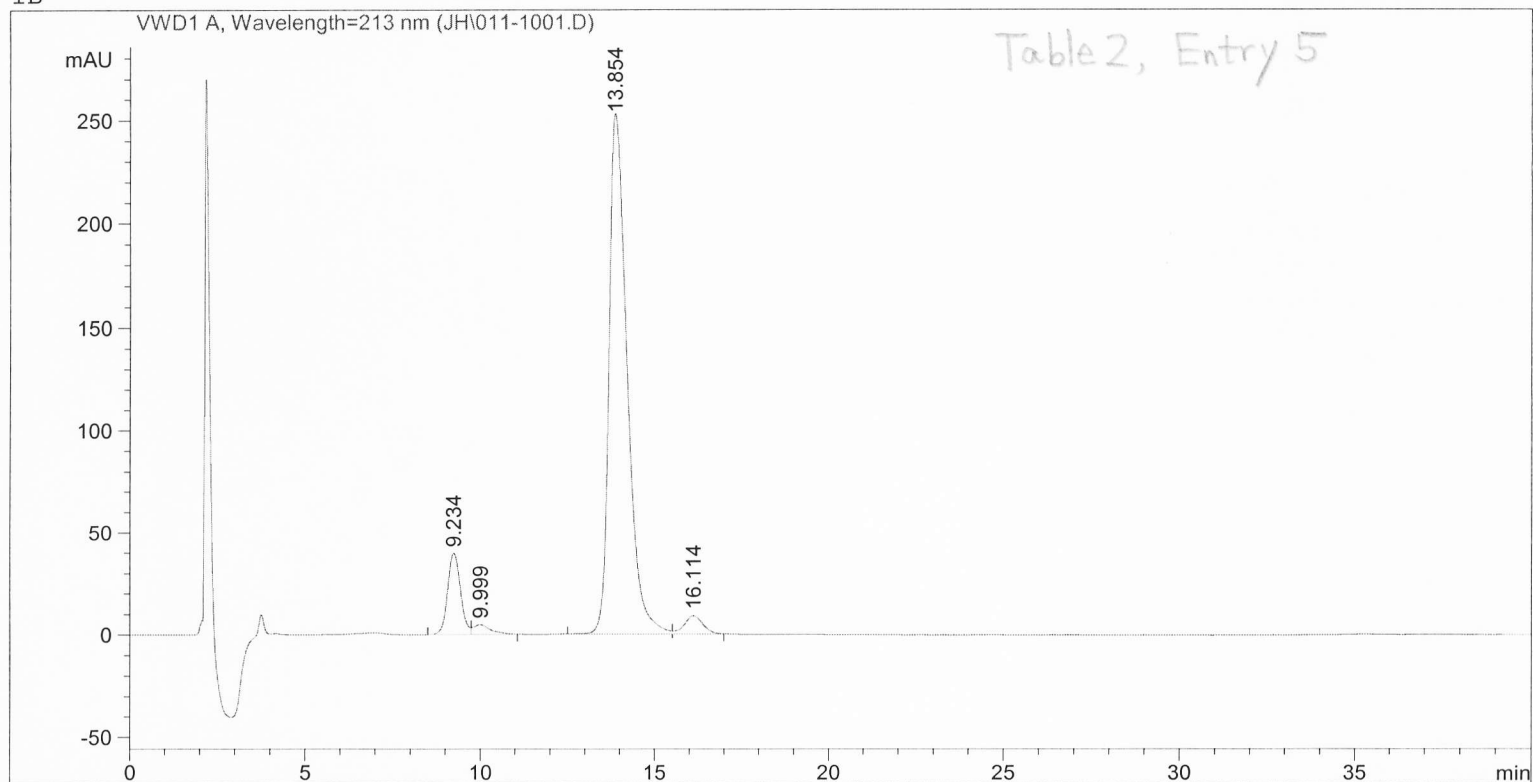
=====

*** End of Report ***

```
=====
Injection Date   : 6/13/2007 3:45:35 AM      Seq. Line :   10
Sample Name      : tlc11                     Vial       :   11
Acq. Operator    : JH                       Inj        :    1
                                           Inj Volume : 10 µl

Acq. Method      : C:\HPCHEM\1\METHODS\JHIB.M
Last changed     : 6/12/2007 9:39:16 PM by JH
Analysis Method  : C:\HPCHEM\1\METHODS\JHIB.M
Last changed     : 6/13/2007 8:27:01 AM by JH
                  (modified after loading)
=====
```

IB



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

```
Sorted By      :      Signal
Multiplier     :      1.0000
Dilution       :      1.0000
```

Signal 1: VWD1 A, Wavelength=213 nm

Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	9.234	BV	0.3768	1031.19336	39.86065	9.6055
2	9.999	VV	0.4152	176.29030	5.01416	1.6421
3	13.854	VV	0.5292	9184.75586	253.20328	85.5554
4	16.114	VV	0.4450	343.20578	9.10018	3.1969

syn-
anti- 93% ee

```
Totals :                      1.07354e4   307.17828
```

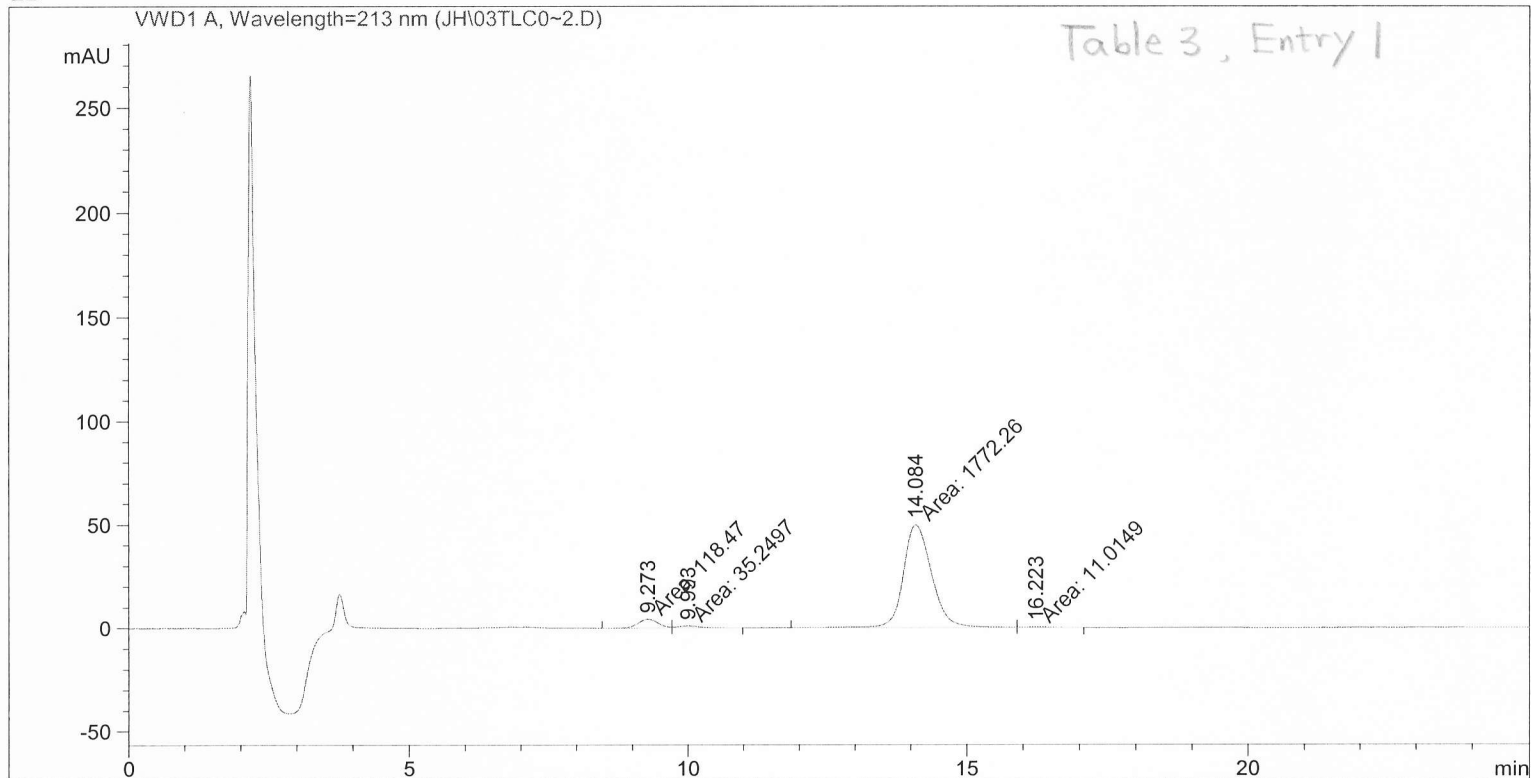
Results obtained with enhanced integrator!

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

=====
Injection Date : 6/12/2007 11:01:15 PM Seq. Line : 3
Sample Name : tlc3 Vial : 3
Acq. Operator : JH Inj : 1
Inj Volume : 10 µl

Acq. Method : C:\HPCHEM\1\METHODS\JHIB.M
Last changed : 6/12/2007 9:39:16 PM by JH
Analysis Method : C:\HPCHEM\1\METHODS\JHIB.M
Last changed : 6/13/2007 9:05:44 AM by JH
(modified after loading)

IB



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

Sorted By : Signal
Multiplier : 1.0000
Dilution : 1.0000

Signal 1: VWD1 A, Wavelength=213 nm

Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	9.273	MF	0.4449	118.46976	4.43796	6.1162
2	9.993	FM	0.5185	35.24970	1.13305	1.8198
3	14.084	MF	0.5929	1772.26172	49.81992	91.4954
4	16.223	FM	0.5439	11.01489	3.37559e-1	0.5687

syn-
anti- 99% ee

Totals : 1936.99607 55.72849

Results obtained with enhanced integrator!

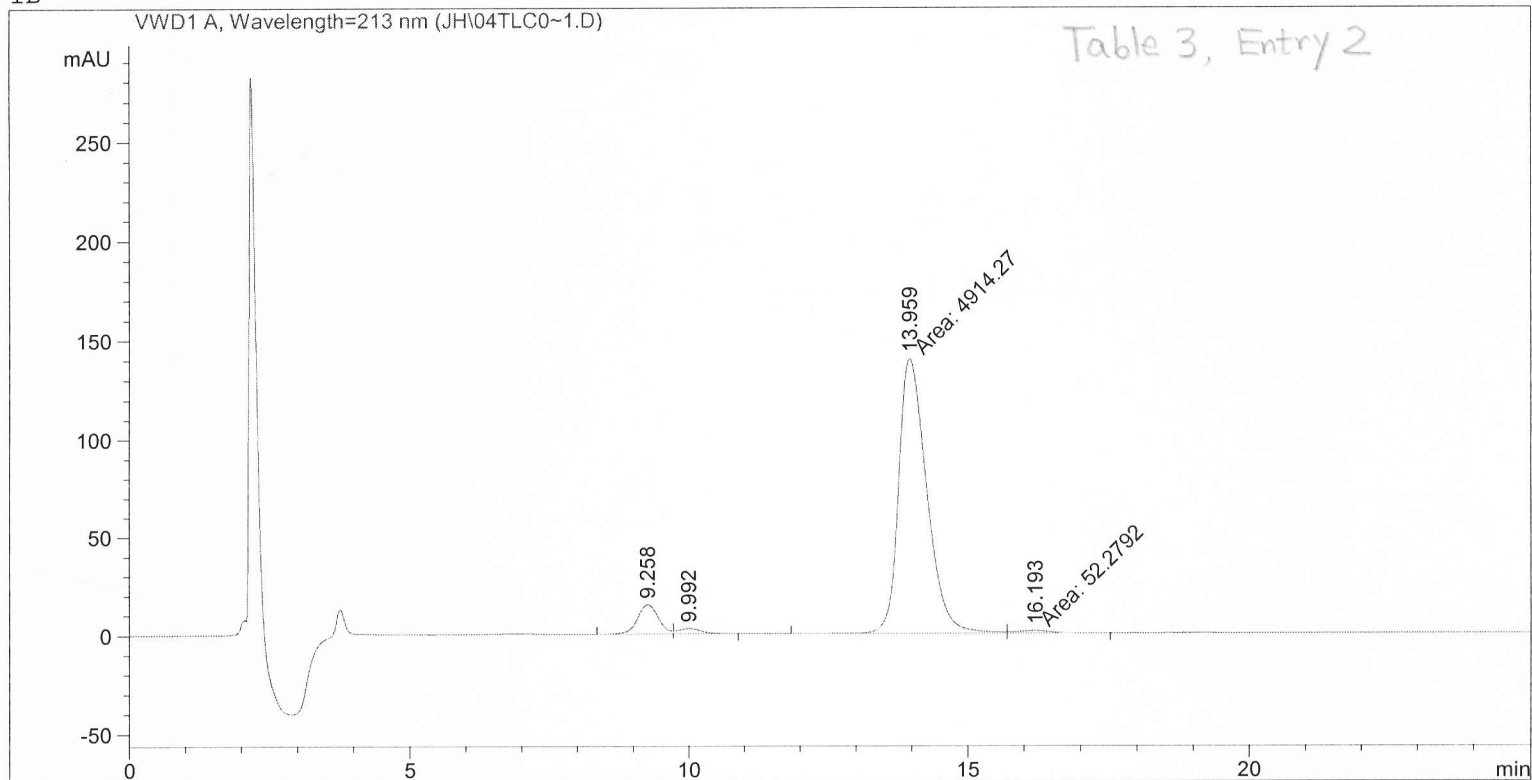
=====
*** End of Report ***

```

=====
Injection Date   : 6/12/2007 11:41:51 PM      Seq. Line :    4
Sample Name     : tlc4                      Vial      :    4
Acq. Operator   : JH                        Inj       :    1
                                           Inj Volume: 10 µl

Acq. Method     : C:\HPCHEM\1\METHODS\JHIB.M
Last changed    : 6/12/2007 9:39:16 PM by JH
Analysis Method : C:\HPCHEM\1\METHODS\JHIB.M
Last changed    : 6/13/2007 9:05:44 AM by JH
                  (modified after loading)
    
```

IB



Area Percent Report

```

Sorted By      : Signal
Multiplier     : 1.0000
Dilution       : 1.0000
    
```

Signal 1: VWD1 A, Wavelength=213 nm

Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	9.258	VV	0.3150	391.22202	14.96450	7.1904
2	9.992	VV	0.3579	83.09549	2.72377	1.5272
3	13.959	MF	0.5859	4914.27002	139.79242	90.3215
4	16.193	FM	0.6825	52.27922	1.27664	0.9609

Handwritten notes:) Syn-
) anti- 98% ee

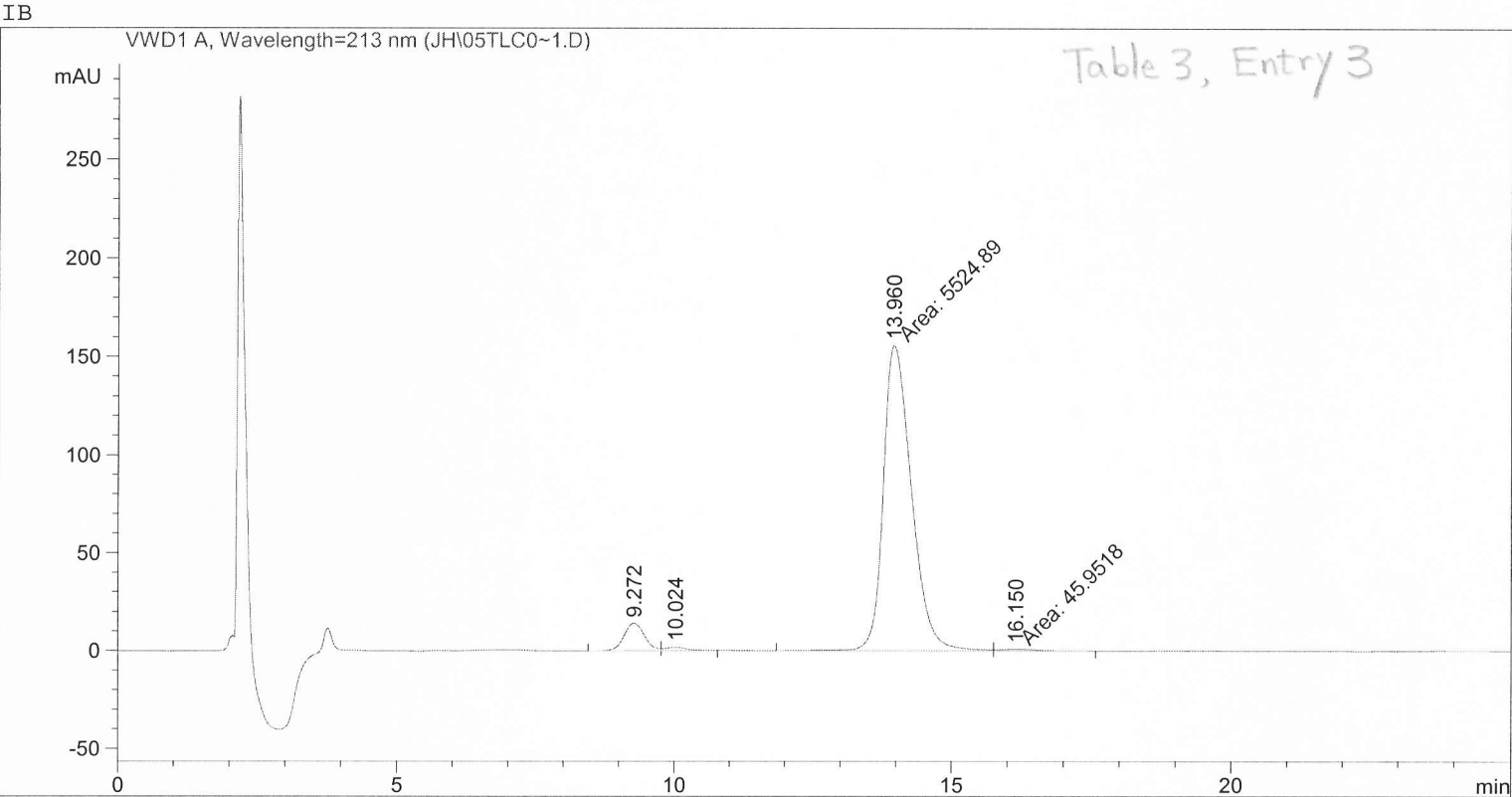
Totals : 5440.86674 158.75733

Results obtained with enhanced integrator!

*** End of Report ***

=====
Injection Date : 6/13/2007 12:22:28 AM Seq. Line : 5
Sample Name : tlc5 Vial : 5
Acq. Operator : JH Inj : 1
 Inj Volume : 10 µl

Acq. Method : C:\HPCHEM\1\METHODS\JHIB.M
Last changed : 6/12/2007 9:39:16 PM by JH
Analysis Method : C:\HPCHEM\1\METHODS\JHIB.M
Last changed : 6/13/2007 9:05:44 AM by JH
 (modified after loading)



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

Sorted By : Signal
Multiplier : 1.0000
Dilution : 1.0000

Signal 1: VWD1 A, Wavelength=213 nm

Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	9.272	BV	0.3061	364.64780	14.12889	6.0894
2	10.024	VB	0.3445	52.71150	1.80057	0.8803
3	13.960	MF	0.5912	5524.89111	155.75851	92.2629
4	16.150	FM	0.7684	45.95183	9.96708e-1	0.7674

Handwritten notes: } syn- (next to peak 2), } anti- 98% ee (next to peak 3)

Totals : 5988.20224 172.68469

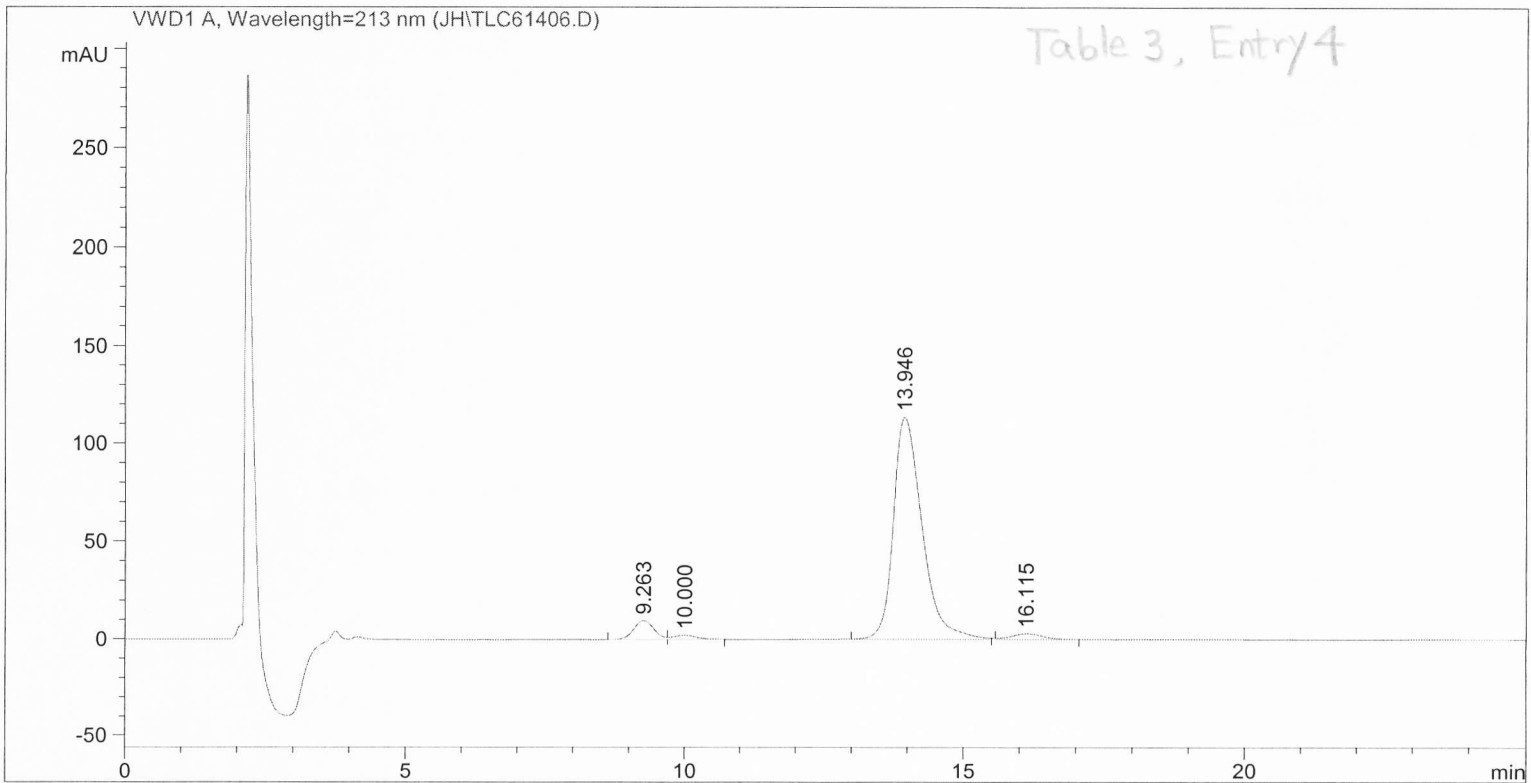
Results obtained with enhanced integrator!

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

=====

Injection Date	: 6/14/2007 1:15:34 PM	Seq. Line	: 6
Sample Name	: tlcf	Vial	: 6
Acq. Operator	: JH	Inj	: 1
		Inj Volume	: 10 µl

Method : C:\HPCHEM\1\METHODS\JHIB.M
Last changed : 6/14/2007 9:38:06 AM by JH
IB



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

Sorted By : Signal
Multiplier : 1.0000
Dilution : 1.0000

Signal 1: VWD1 A, Wavelength=213 nm

Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	9.263	VV	0.3030	256.22812	9.99705	5.6355
2	10.000	VB	0.3578	70.55688	2.31388	1.5518
3	13.946	VB	0.5182	4097.42139	113.49512	90.1182
4	16.115	BV	0.4572	122.51202	3.16055	2.6945

syn-
anti- 94% ee

Totals : 4546.71840 128.96660

Results obtained with enhanced integrator!

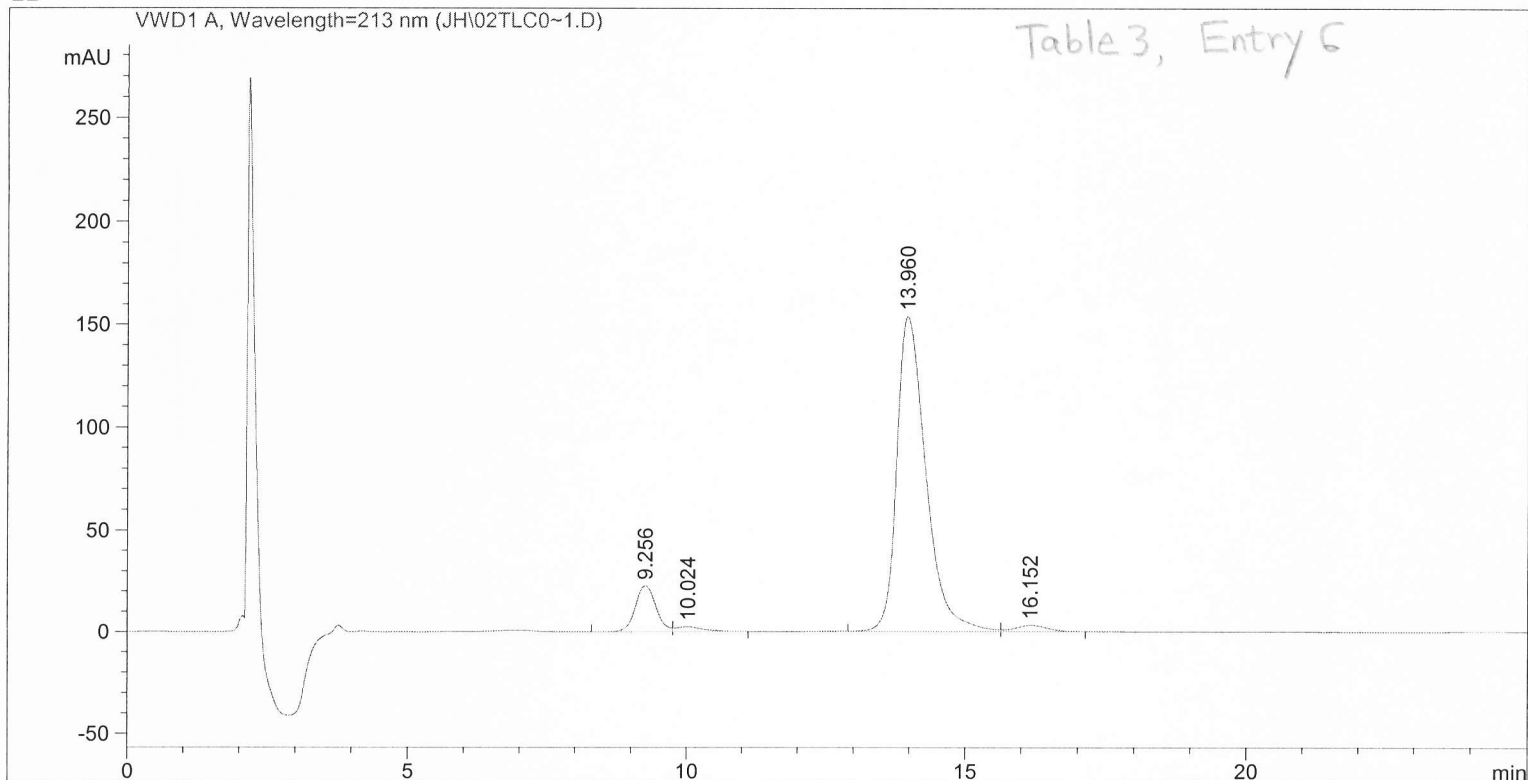
=====
*** End of Report ***

=====

Injection Date	: 6/12/2007 10:20:39 PM	Seq. Line	: 2
Sample Name	: tlc2	Vial	: 2
Acq. Operator	: JH	Inj	: 1
		Inj Volume	: 10 µl

Acq. Method : C:\HPCHEM\1\METHODS\JHIB.M
Last changed : 6/12/2007 9:39:16 PM by JH
Analysis Method : C:\HPCHEM\1\METHODS\JHIB.M
Last changed : 6/13/2007 9:05:44 AM by JH
(modified after loading)

IB



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

Sorted By : Signal
Multiplier : 1.0000
Dilution : 1.0000

Signal 1: VWD1 A, Wavelength=213 nm

Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	9.256	VV	0.3264	588.15607	22.61528	9.1928
2	10.024	VB	0.4289	87.16246	2.46293	1.3623
3	13.960	VB	0.5274	5597.13965	153.49051	87.4828
4	16.152	BB	0.4631	125.52850	3.17598	1.9620

) syn-
) anti- 96% ee

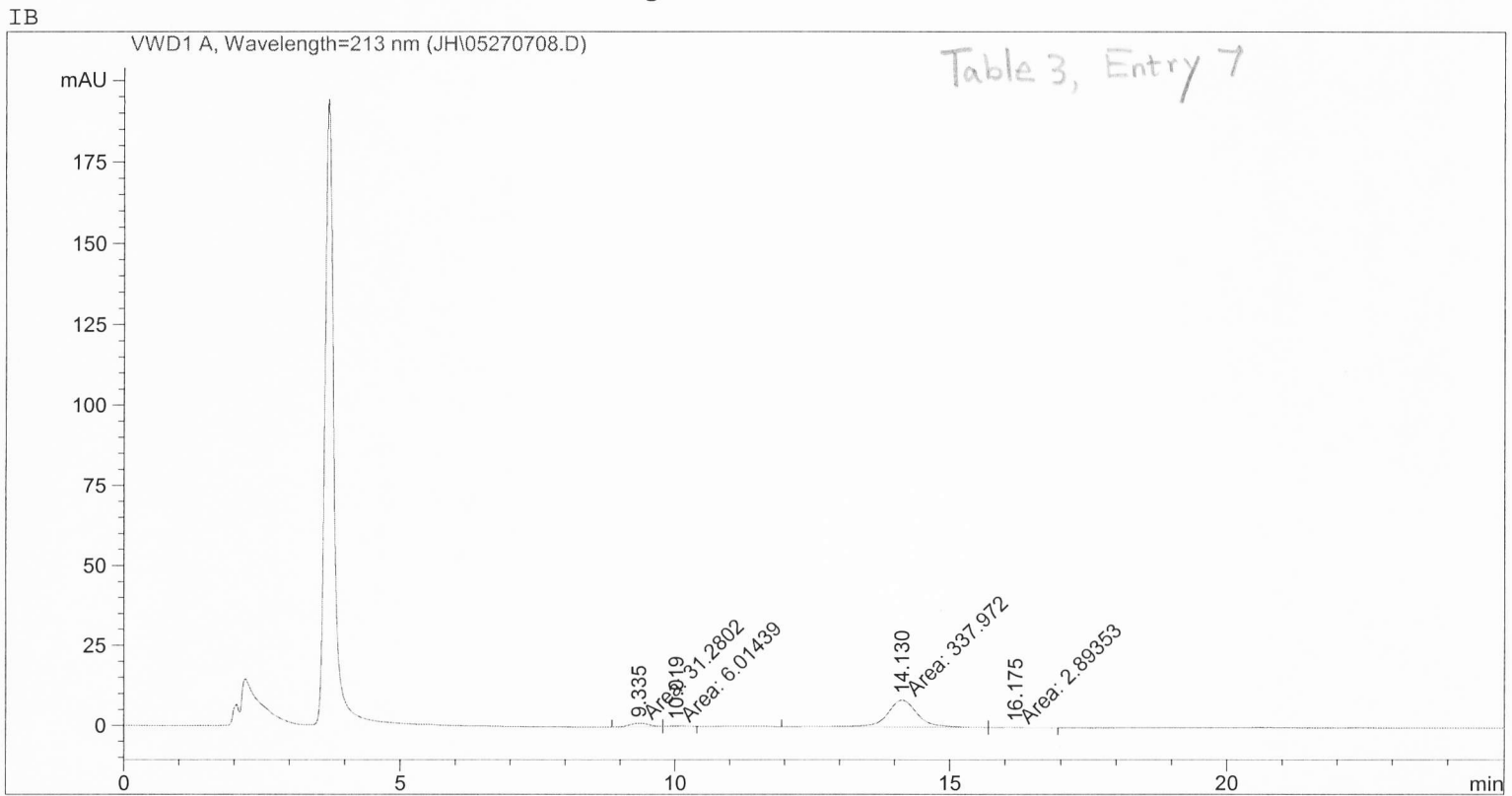
Totals : 6397.98668 181.74470

Results obtained with enhanced integrator!

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

=====
Injection Date : 5/27/2007 5:54:43 PM Seq. Line : 1
Sample Name : aldol-CD/H2O-1P Vial : 21
Acq. Operator : JH Inj : 1
 Inj Volume : 10 µl

Acq. Method : C:\HPCHEM\2\METHODS\JH-IB.M
Last changed : 5/27/2007 1:32:08 PM by JH
Analysis Method : C:\HPCHEM\1\METHODS\JHIB.M
Last changed : 6/25/2007 3:50:37 PM by JH
 (modified after loading)



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

Sorted By : Signal
Multiplier : 1.0000
Dilution : 1.0000

Signal 1: VWD1 A, Wavelength=213 nm

Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	9.335	MF	0.4350	31.28016	1.19839	8.2717
2	10.019	FM	0.3873	6.01439	2.58788e-1	1.5904
3	14.130	MF	0.6546	337.97223	8.60551	89.3727
4	16.175	FM	0.5818	2.89353	8.28877e-2	0.7652

syn-
anti- 98% ee

Totals : 378.16031 10.14558

Results obtained with enhanced integrator!

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

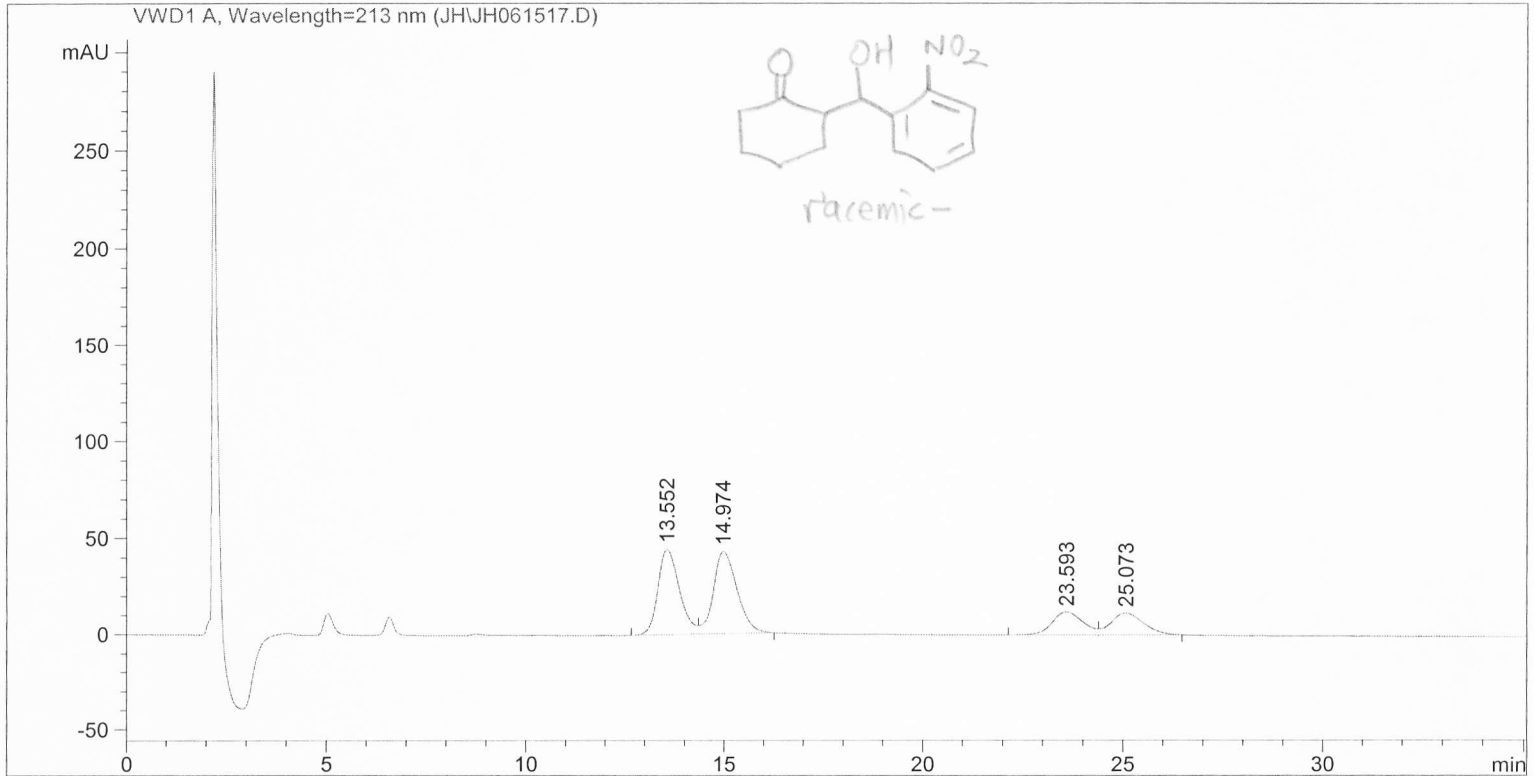
IB

=====
Injection Date : 6/16/2007 9:14:25 PM
Sample Name : 2-NO₂/aldol-rac-
Acq. Operator : JH

Vial : 17

Inj Volume : 10 µl

Acq. Method : C:\HPCHEM\1\METHODS\JHIB.M
Last changed : 6/16/2007 1:55:02 PM by JH
(modified after loading)
Analysis Method : C:\HPCHEM\1\METHODS\JHIB.M
Last changed : 6/19/2007 9:03:45 AM by JH
IB

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

Sorted By : Signal
Multiplier : 1.0000
Dilution : 1.0000
Sample Amount : 10.00000 [ng/ul] (not used in calc.)

Signal 1: WVD1 A, Wavelength=213 nm

Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	13.552	VV	0.4908	1679.82654	44.45554	35.2498
2	14.974	VB	0.5199	1796.72351	42.96290	37.7027
3	23.593	BV	0.6431	643.11835	11.86938	13.4953
4	25.073	VV	0.6719	645.83026	11.33212	13.5522

syn-
anti-

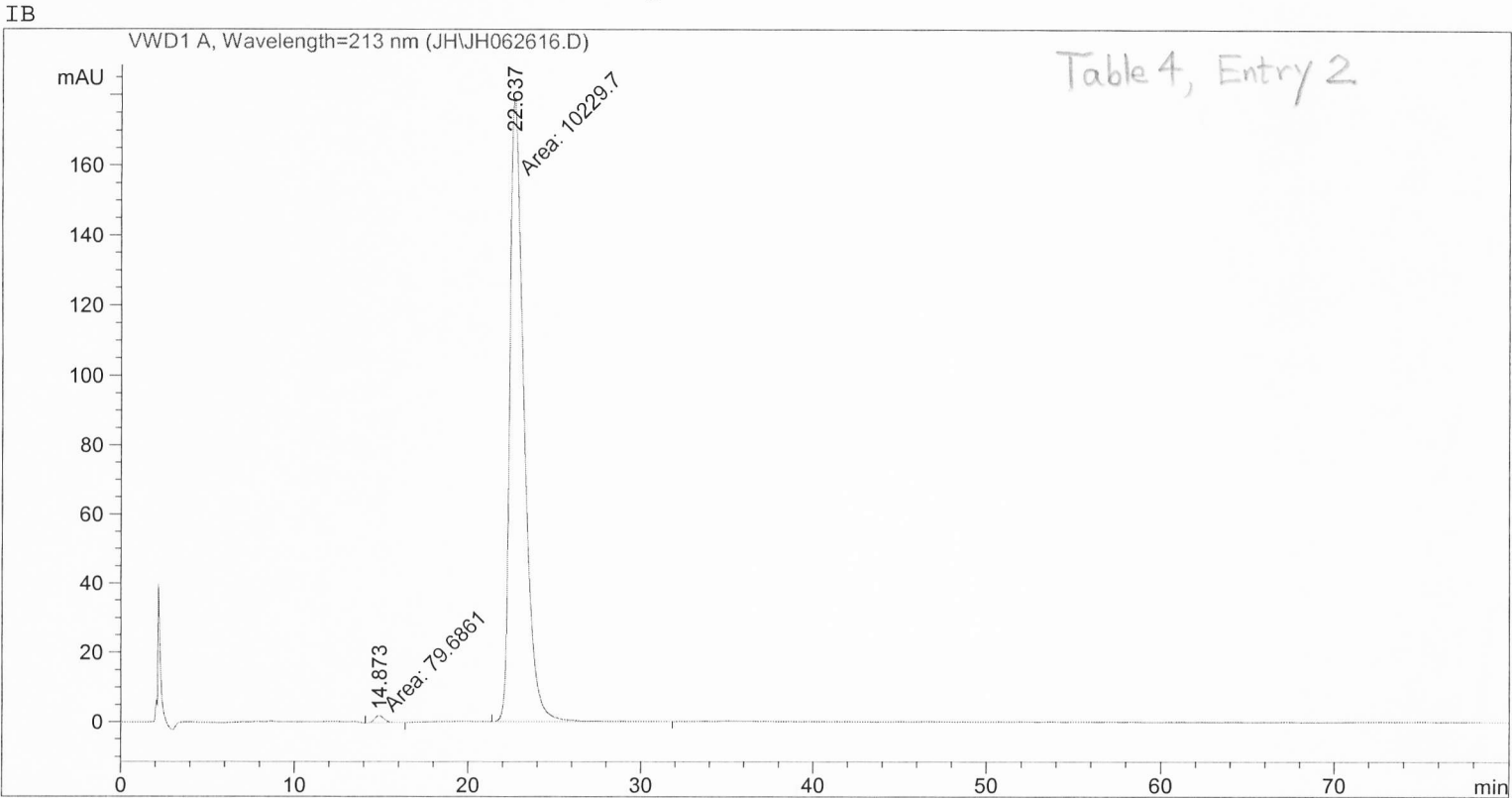
Totals : 4765.49866 110.61994

Results obtained with enhanced integrator!

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

=====

Injection Date	: 6/27/2007 8:22:32 AM	Seq. Line	: 16
Sample Name	: 2-NO2Ph	Vial	: 2
Acq. Operator	: JH	Inj	: 1
		Inj Volume	: 10 µl
Acq. Method	: C:\HPCHEM\1\METHODS\JHIB100.M		
Last changed	: 6/26/2007 4:29:55 PM by JH		
Analysis Method	: C:\HPCHEM\1\METHODS\JHIB100.M		
Last changed	: 6/27/2007 4:20:37 PM by JH		
	(modified after loading)		



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

Sorted By : Signal
Multiplier : 1.0000
Dilution : 1.0000

Signal 1: VWD1 A, Wavelength=213 nm

Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	14.873	MM	0.6460	79.68615	2.05604	0.7730
2	22.637	MM	0.9519	1.02297e4	179.11179	99.2270

Totals : 1.03094e4 181.16782

syn-
anti- >99% ee

Results obtained with enhanced integrator!

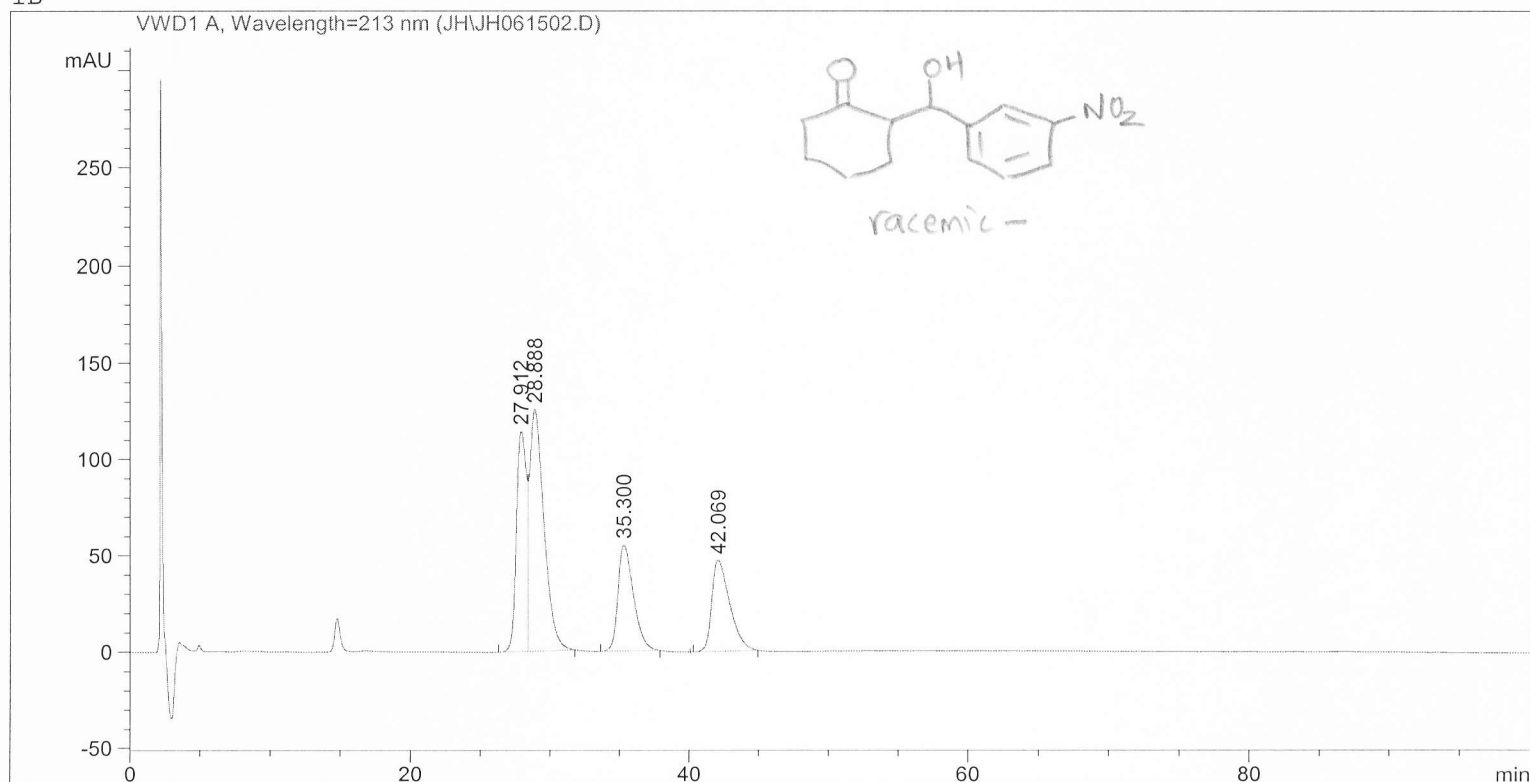
=====
*** End of Report ***

=====

Injection Date	: 6/15/2007 1:47:53 PM	Seq. Line	: 2
Sample Name	: 3-NO2Ph	Vial	: 2
Acq. Operator	: JH	Inj	: 1
		Inj Volume	: 10 µl

Acq. Method : C:\HPCHEM\1\METHODS\JHIB.M
Last changed : 6/15/2007 11:32:35 AM by JH
Analysis Method : C:\HPCHEM\1\METHODS\JHIB.M
Last changed : 8/3/2007 10:10:03 AM by JH
(modified after loading)

IB



=====

Area Percent Report

=====

Sorted By : Signal
Multiplier : 1.0000
Dilution : 1.0000

Signal 1: VWD1 A, Wavelength=213 nm

Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	27.912	VV	0.6213	5728.86865	114.58624	24.6029
2	28.888	VB	0.8506	9006.95898	125.75539	38.6807
3	35.300	PB	0.9132	4288.47070	55.15206	18.4170
4	42.069	VB	1.0564	4261.08154	47.23880	18.2994

syn- (peaks 1 and 2)
anti- (peaks 3 and 4)

Totals : 2.32854e4 342.73249

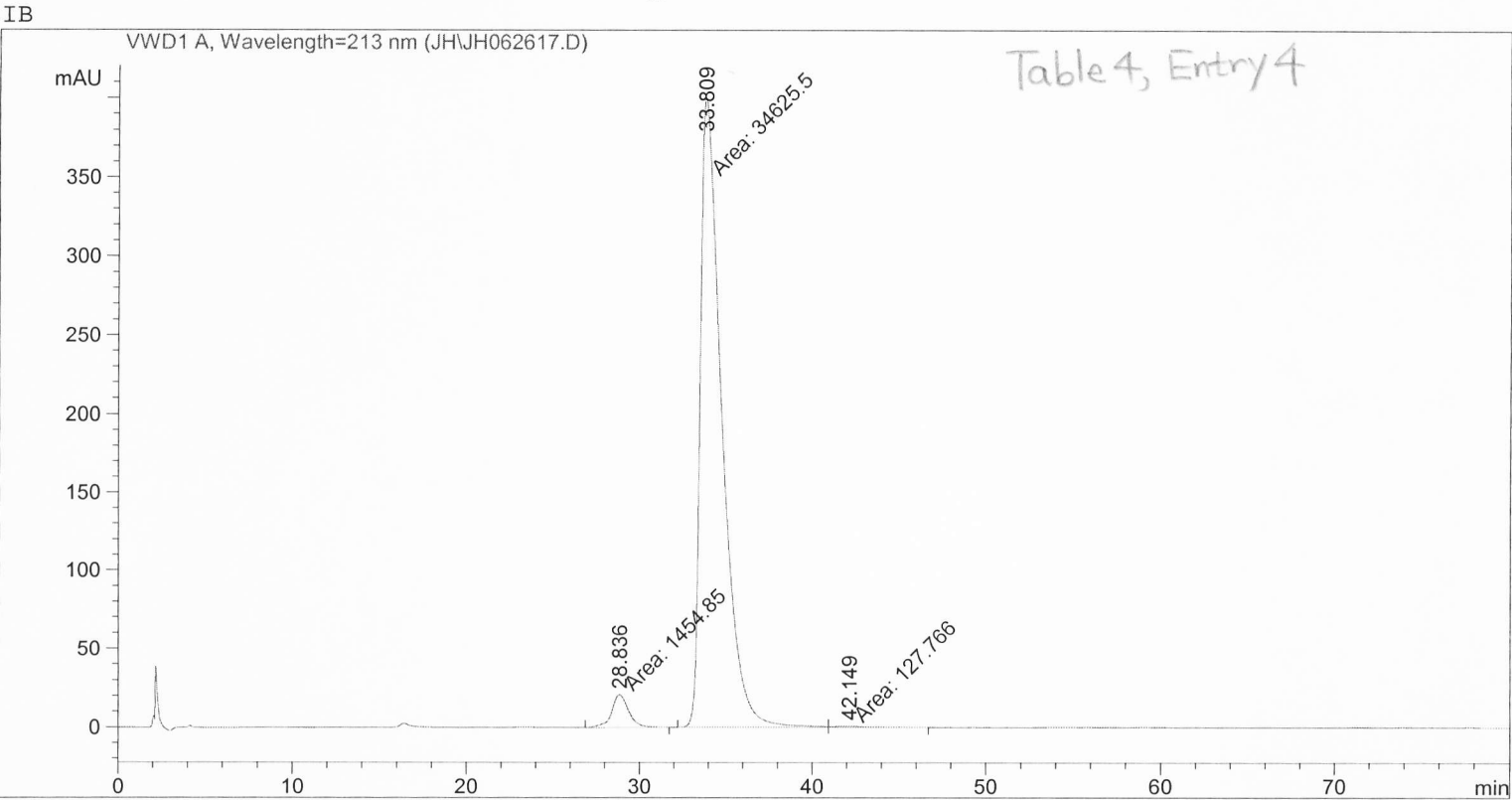
Results obtained with enhanced integrator!

=====

*** End of Report ***

=====

Injection Date	: 6/27/2007 10:03:09 AM	Seq. Line	: 17
Sample Name	: 3-NO2Ph	Vial	: 3
Acq. Operator	: JH	Inj	: 1
		Inj Volume	: 10 µl
Acq. Method	: C:\HPCHEM\1\METHODS\JHIB100.M		
Last changed	: 6/26/2007 4:29:55 PM by JH		
Analysis Method	: C:\HPCHEM\1\METHODS\JHIB100.M		
Last changed	: 6/27/2007 4:20:37 PM by JH		
	(modified after loading)		



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

Sorted By : Signal
Multiplier : 1.0000
Dilution : 1.0000

Signal 1: VWD1 A, Wavelength=213 nm

Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %	
1	28.836	MM	1.1640	1454.84631	20.83167	4.0180	syn-
2	33.809	MF	1.4439	3.46255e4	399.66989	95.6291	
3	42.149	FM	2.5995	127.76598	8.19161e-1	0.3529	anti- >99% ee
Totals :				3.62081e4	421.32072		

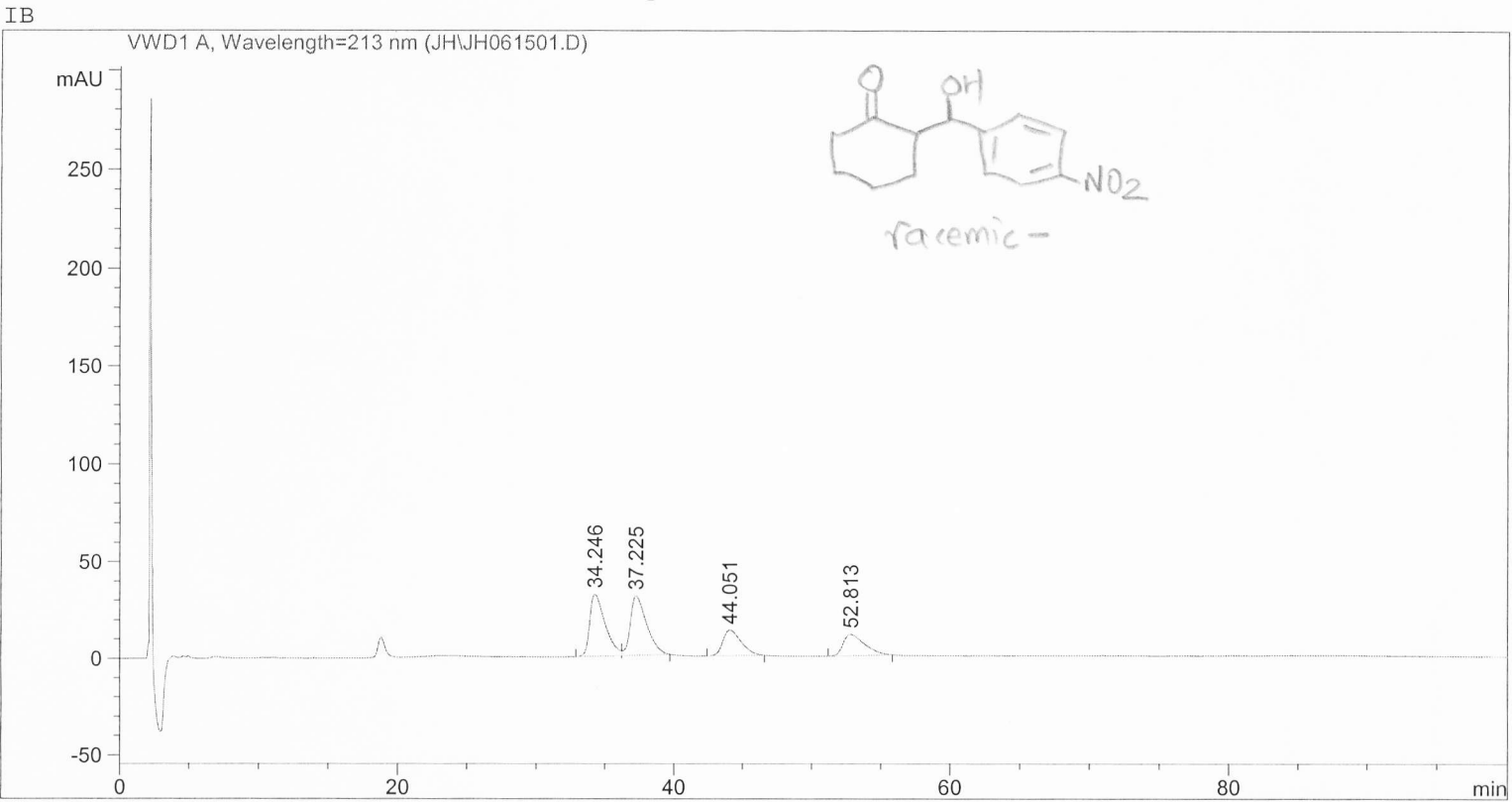
Results obtained with enhanced integrator!

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

=====

Injection Date	: 6/15/2007 11:47:16 AM	Seq. Line	: 1
Sample Name	: 4-NO2Ph	Vial	: 1
Acq. Operator	: JH	Inj	: 1
		Inj Volume	: 10 µl

Acq. Method : C:\HPCHEM\1\METHODS\JHIB.M
Last changed : 6/15/2007 11:32:35 AM by JH
Analysis Method : C:\HPCHEM\1\METHODS\JHIB.M
Last changed : 8/3/2007 10:10:03 AM by JH
(modified after loading)



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

Sorted By : Signal
Multiplier : 1.0000
Dilution : 1.0000

Signal 1: VWD1 A, Wavelength=213 nm

Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	34.246	PV	0.9125	2488.58447	32.02866	33.4118
2	37.225	VB	0.9689	2532.33911	30.61888	33.9992
3	44.051	VB	1.0871	1230.06177	13.24970	16.5148
4	52.813	BV	1.2762	1197.24512	10.97066	16.0742

syn-
anti-

Totals : 7448.23047 86.86789

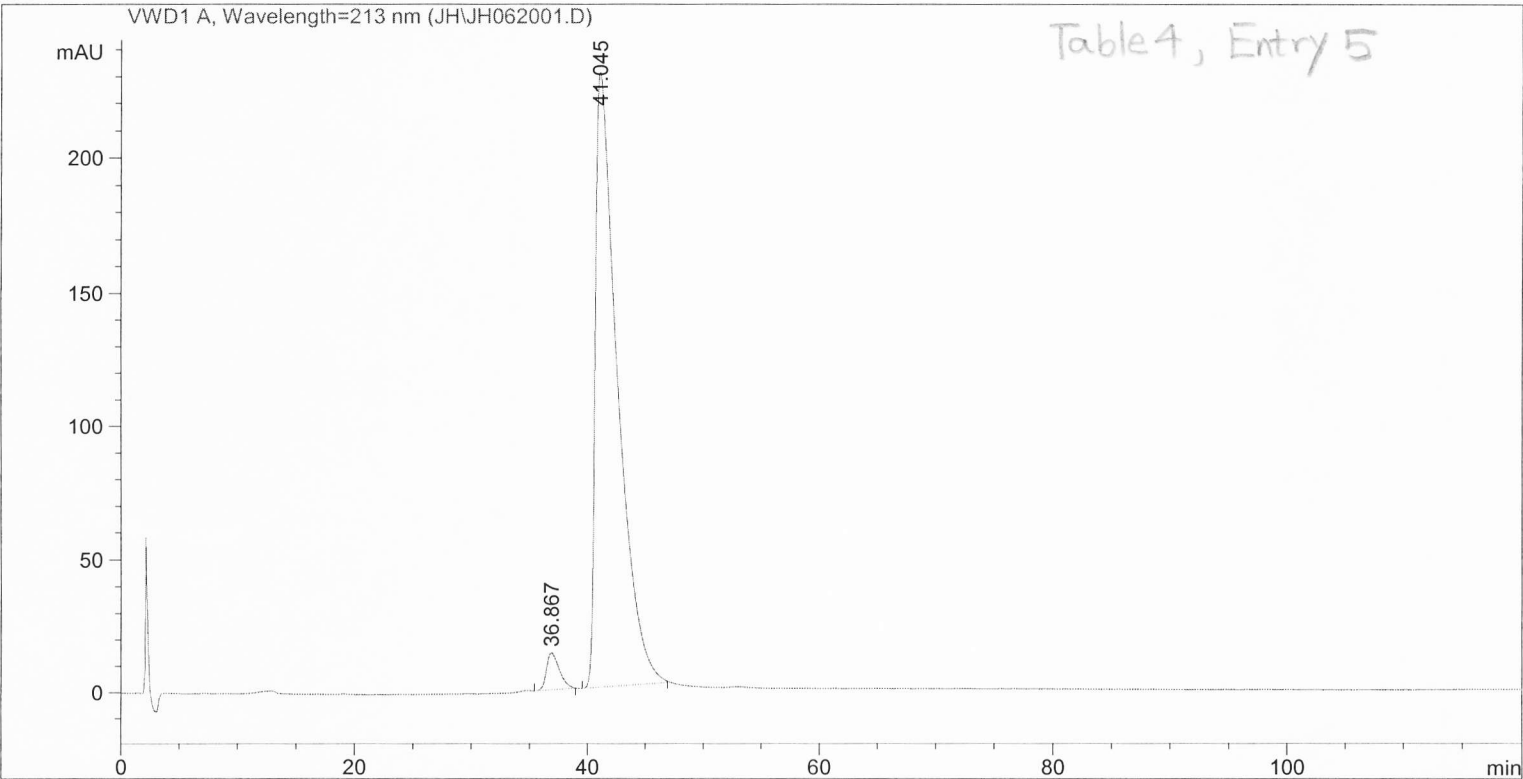
Results obtained with enhanced integrator!

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

=====

Injection Date	: 6/20/2007 10:51:06 AM	Seq. Line	: 1
Sample Name	: 4-NO2Ph	Vial	: 1
Acq. Operator	: JH	Inj	: 1
		Inj Volume	: 10 µl

Method : C:\HPCHEM\1\METHODS\JHIB.M
Last changed : 6/20/2007 10:47:58 AM by JH
IB



=====

Area Percent Report

=====

Sorted By : Signal
Multiplier : 1.0000
Dilution : 1.0000

Signal 1: VWD1 A, Wavelength=213 nm

Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	36.867	PV	0.9008	1081.30798	14.05144	3.4220
2	41.045	BV	1.5611	3.05174e4	229.68040	96.5780
Totals :				3.15987e4	243.73184	

Handwritten notes: "Syn-" with an arrow pointing to peak 1, and "anti- >99% ee" with an arrow pointing to peak 2.

Results obtained with enhanced integrator!

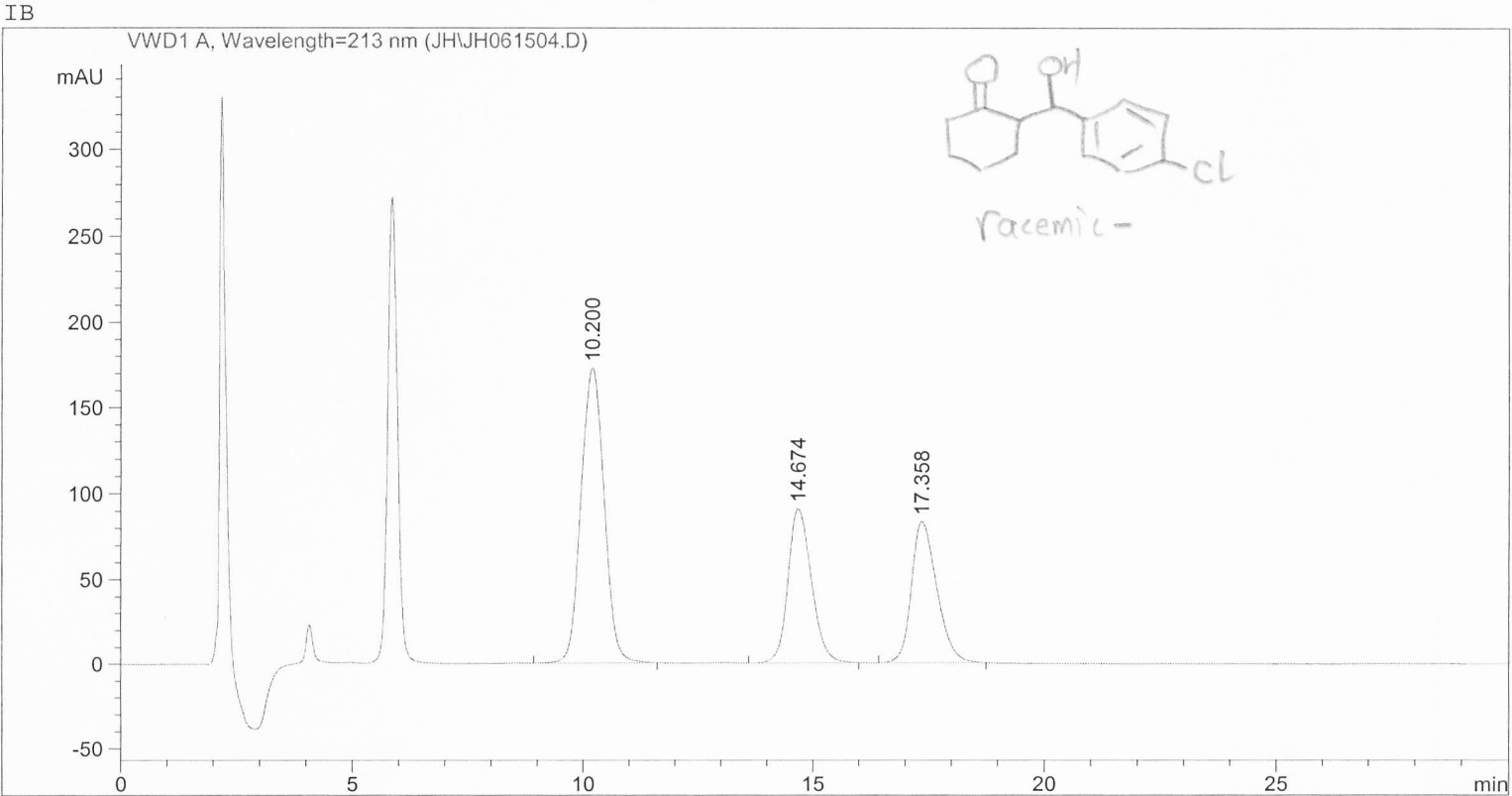
=====

*** End of Report ***

=====

Injection Date	: 6/15/2007 5:49:08 PM	Seq. Line	: 4
Sample Name	: 4-ClPh	Vial	: 4
Acq. Operator	: JH	Inj	: 1
		Inj Volume	: 10 µl

Acq. Method : C:\HPCHEM\1\METHODS\JHIB.M
Last changed : 6/15/2007 5:48:37 PM by JH
(modified after loading)
Analysis Method : C:\HPCHEM\1\METHODS\JHIB.M
Last changed : 8/3/2007 10:11:28 AM by JH
(modified after loading)



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

Sorted By : Signal
Multiplier : 1.0000
Dilution : 1.0000

Signal 1: VWD1 A, Wavelength=213 nm

Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	10.200	VB	0.5575	6092.19629	172.73659	48.6205
2	14.674	VB	0.4995	3236.54907	90.88459	25.8302
3	17.358	PB	0.5299	3201.36475	83.38853	25.5494

Syn-
anti-

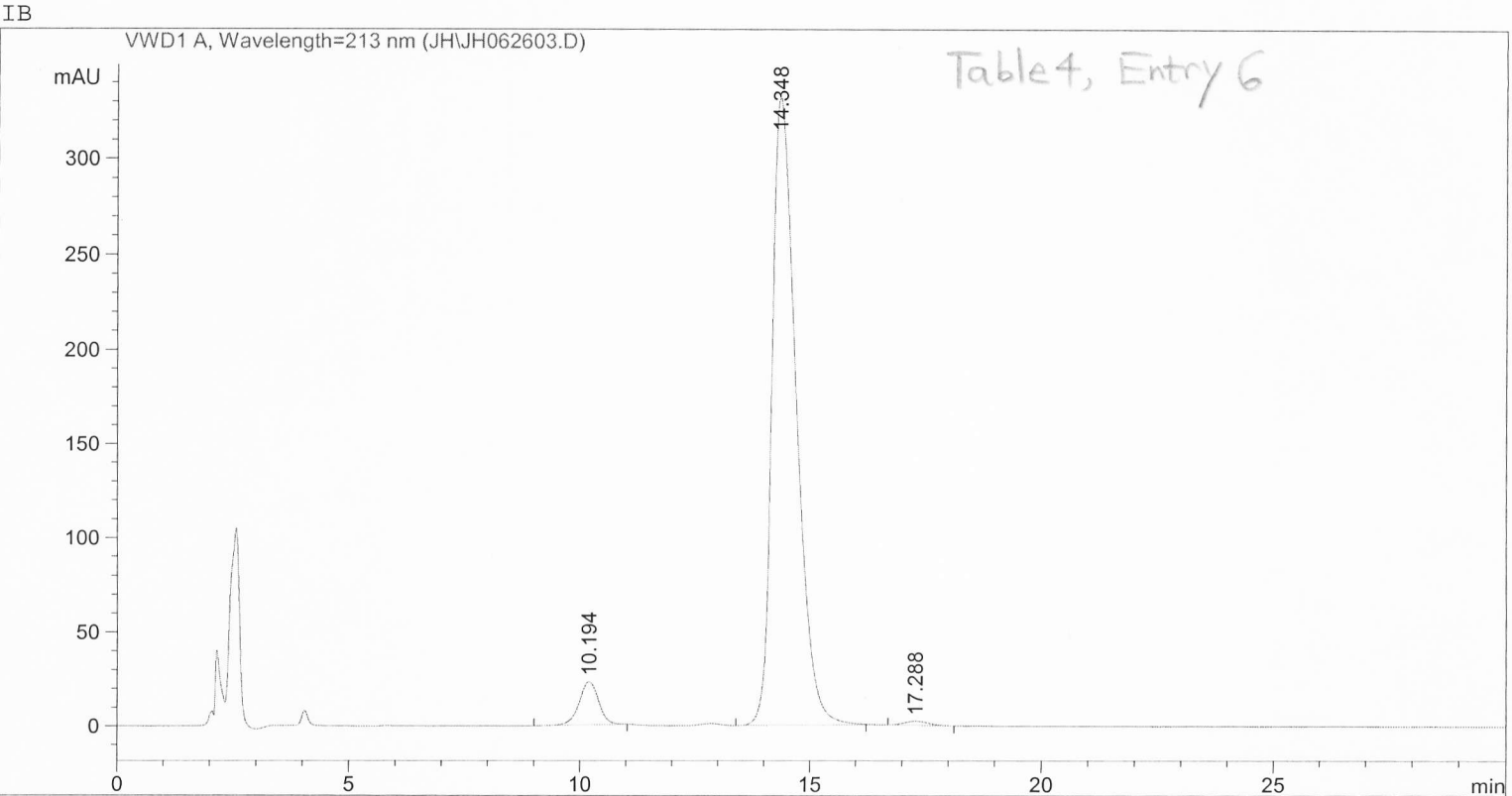
Totals : 1.25301e4 347.00971

Results obtained with enhanced integrator!

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

```
=====
Injection Date   : 6/26/2007 6:34:12 PM      Seq. Line :    3
Sample Name      : 4-ClPh                    Vial      :    7
Acq. Operator    : JH                       Inj       :    1
                                           Inj Volume : 10 µl

Acq. Method      : C:\HPCHEM\1\METHODS\JHIB.M
Last changed     : 6/26/2007 4:30:58 PM by JH
Analysis Method  : C:\HPCHEM\1\METHODS\JHIB100.M
Last changed     : 6/27/2007 12:28:00 PM by JH
                  (modified after loading)
=====
```



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

Sorted By : Signal
Multiplier : 1.0000
Dilution : 1.0000

Signal 1: VWD1 A, Wavelength=213 nm

Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	10.194	VB	0.3565	694.77362	23.05804	5.3692
2	14.348	VB	0.5498	1.21663e4	331.78983	94.0202
3	17.288	BP	0.4182	79.02077	2.23651	0.6107
Totals :				1.29401e4	357.08437	

Handwritten notes: "Syn" with an arrow pointing to peak 1, and "anti- 99% ee" with an arrow pointing to peak 3.

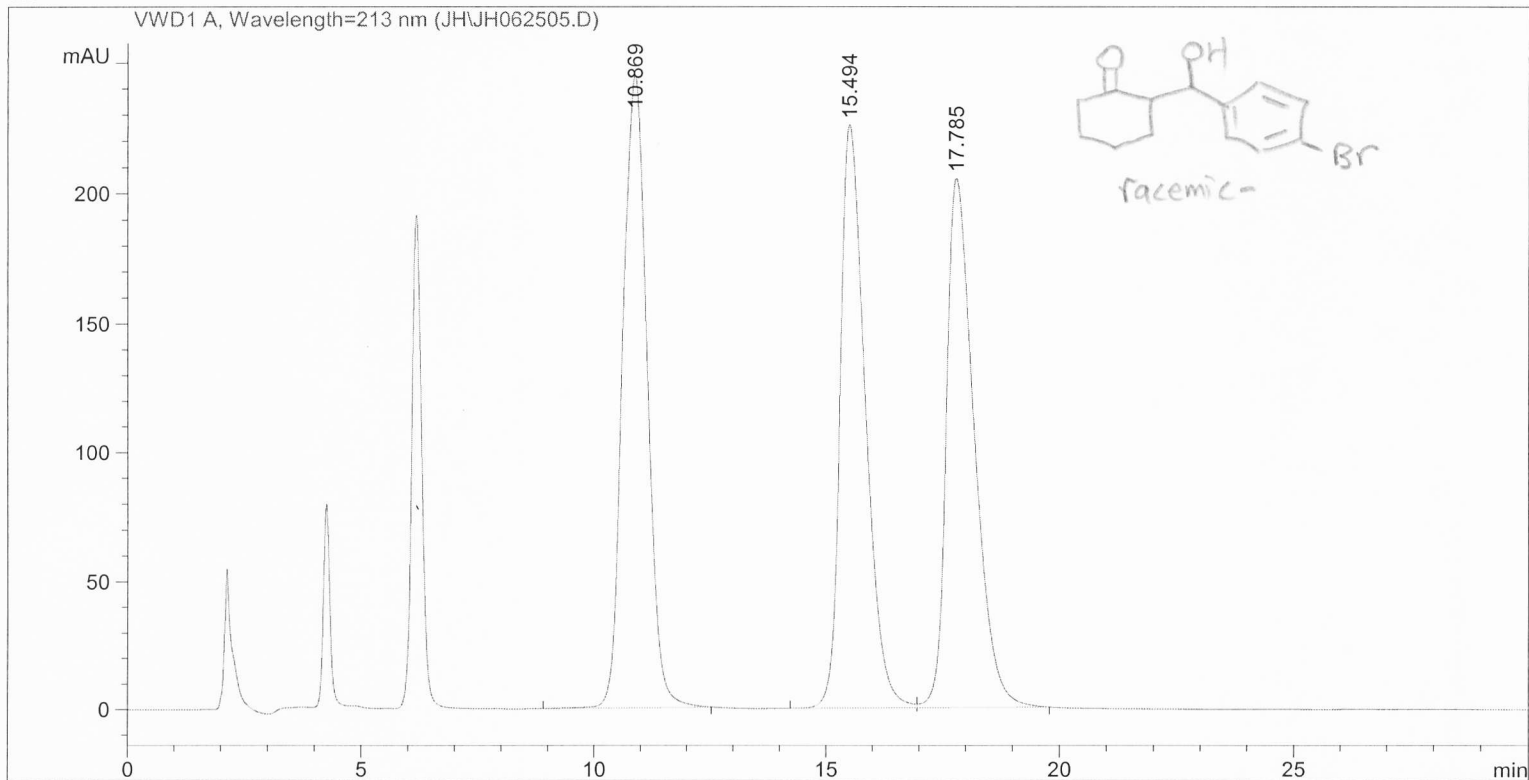
Results obtained with enhanced integrator!

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

=====
Injection Date : 6/25/2007 1:49:50 PM Seq. Line : 5
Sample Name : 4-Br-rac Vial : 5
Acq. Operator : JH Inj : 1
Inj Volume : 10 µl

Acq. Method : C:\HPCHEM\1\METHODS\JHIB.M
Last changed : 6/25/2007 1:49:19 PM by JH
(modified after loading)
Analysis Method : C:\HPCHEM\1\METHODS\JHIB.M
Last changed : 8/3/2007 10:12:37 AM by JH
(modified after loading)

IB



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

Sorted By : Signal
Multiplier : 1.0000
Dilution : 1.0000

Signal 1: VWD1 A, Wavelength=213 nm

Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	10.869	BB	0.5404	9001.09766	244.58516	34.5351
2	15.494	BV	0.5437	8539.54980	225.54654	32.7643
3	17.785	VB	0.5929	8522.97266	205.06476	32.7006

syn-
anti-

Totals : 2.60636e4 675.19646

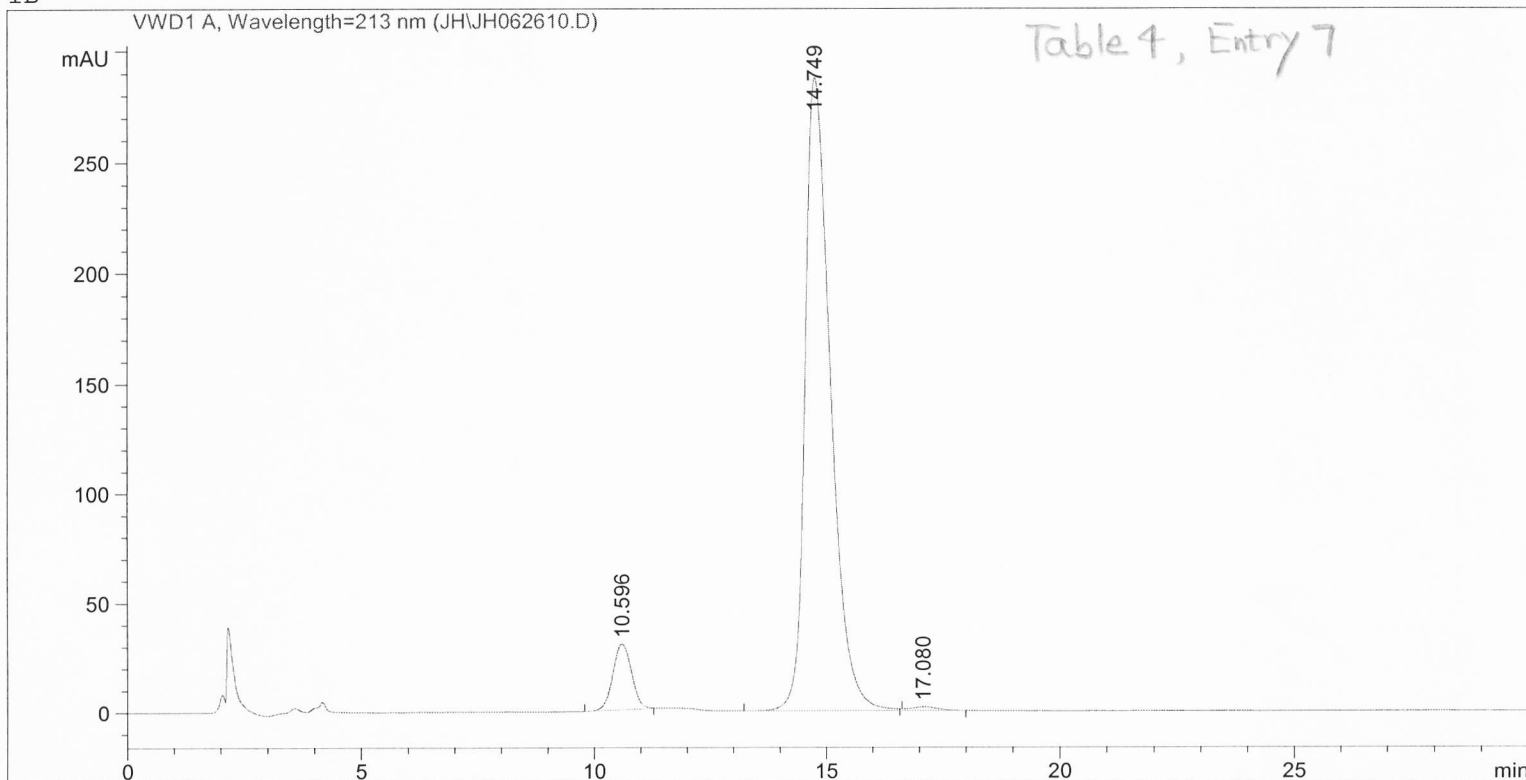
Results obtained with enhanced integrator!

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

=====
Injection Date : 6/27/2007 1:38:36 AM Seq. Line : 10
Sample Name : 4-BrPh Vial : 14
Acq. Operator : JH Inj : 1
Inj Volume : 10 µl

Acq. Method : C:\HPCHEM\1\METHODS\JHIB.M
Last changed : 6/26/2007 4:30:58 PM by JH
Analysis Method : C:\HPCHEM\1\METHODS\JHIB100.M
Last changed : 6/27/2007 12:28:00 PM by JH
(modified after loading)

IB



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

Sorted By : Signal
Multiplier : 1.0000
Dilution : 1.0000

Signal 1: VWD1 A, Wavelength=213 nm

Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	10.596	VV	0.3556	853.18439	30.11262	7.1620
2	14.749	VB	0.5680	1.09863e4	287.36319	92.2244
3	17.080	BV	0.4881	73.09187	1.76496	0.6136

Totals : 1.19126e4 319.24077

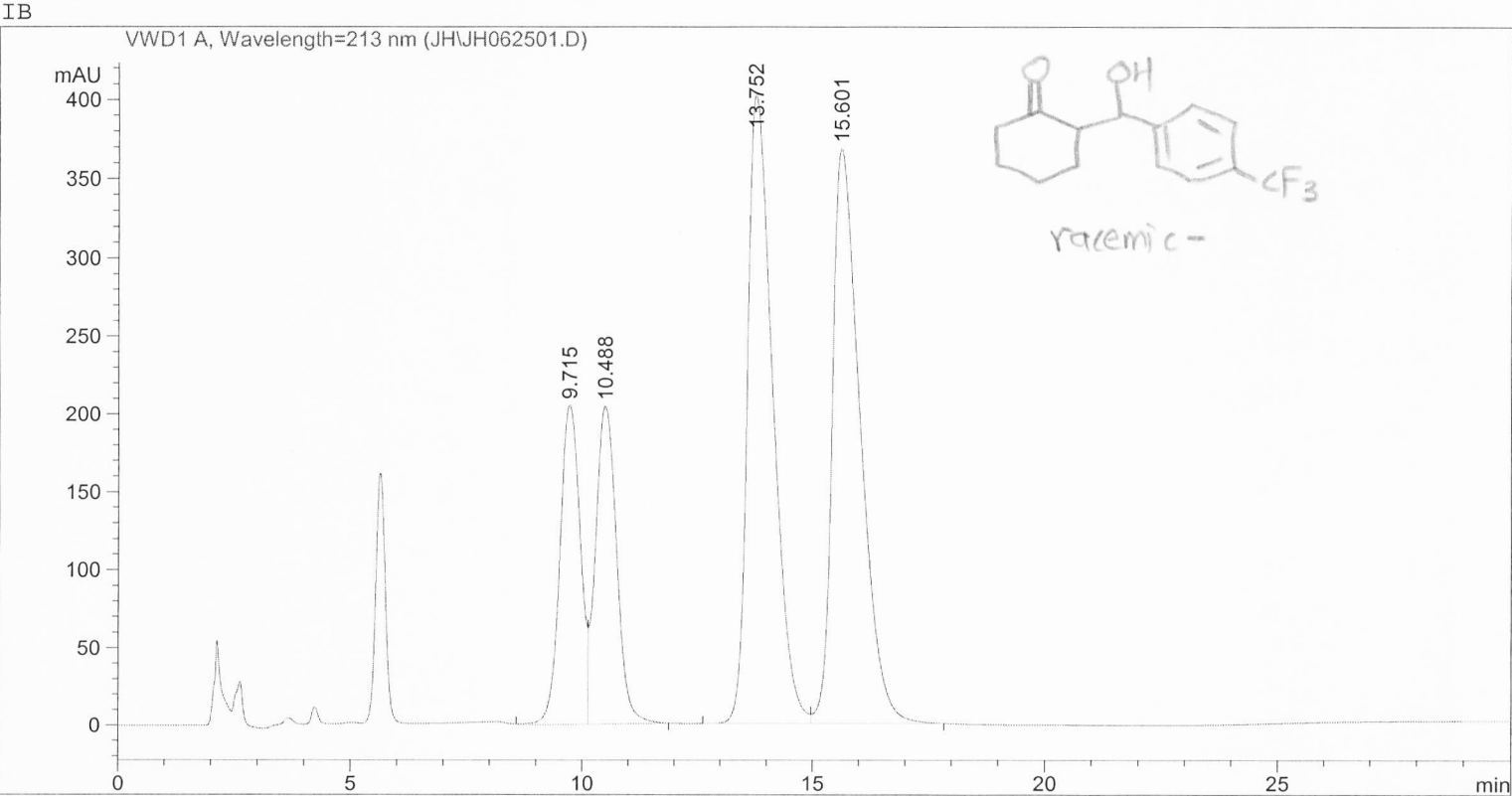
Results obtained with enhanced integrator!

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*** End of Report ***

=====

Injection Date	: 6/25/2007 9:47:24 AM	Seq. Line	: 1
Sample Name	: 4-CF3-rac	Vial	: 1
Acq. Operator	: JH	Inj	: 1
		Inj Volume	: 10 µl

Acq. Method : C:\HPCHEM\1\METHODS\JHIB.M
Last changed : 6/25/2007 9:55:09 AM by JH
(modified after loading)
Analysis Method : C:\HPCHEM\1\METHODS\JHIB.M
Last changed : 8/3/2007 10:12:37 AM by JH
(modified after loading)



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Area Percent Report
=====

Sorted By : Signal
Multiplier : 1.0000
Dilution : 1.0000

Signal 1: VWD1 A, Wavelength=213 nm

Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	9.715	VV	0.4755	6324.12744	205.25092	14.4610
2	10.488	VB	0.4785	6519.18799	204.20692	14.9070
3	13.752	BV	0.5452	1.53656e4	401.77390	35.1356
4	15.601	VB	0.6085	1.55234e4	367.73874	35.4964

syn-
anti-

Totals : 4.37323e4 1178.97047

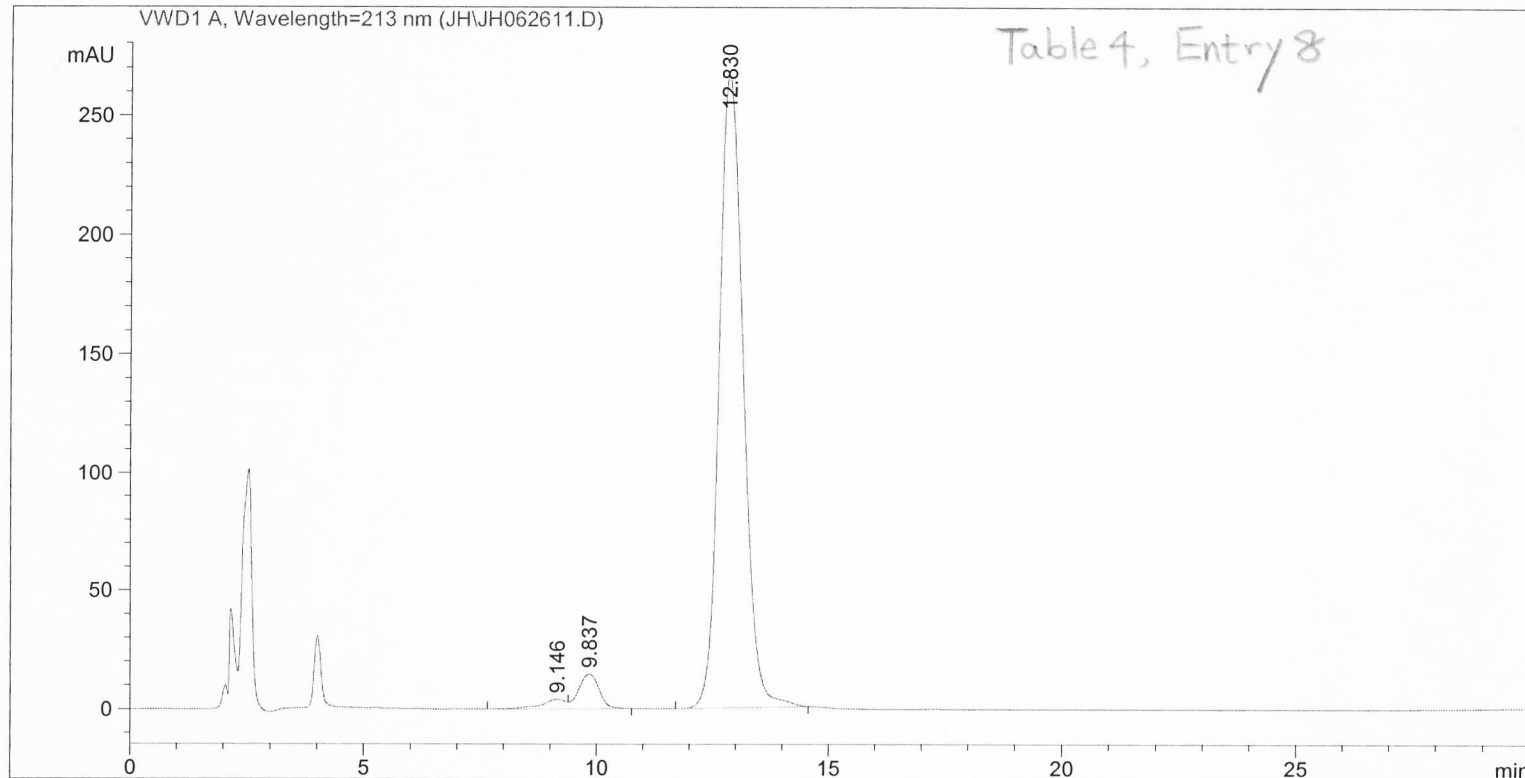
Results obtained with enhanced integrator!

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*** End of Report ***

```
=====
Injection Date   : 6/27/2007 2:39:14 AM      Seq. Line :   11
Sample Name      : 4-CF3Ph                   Vial       :   15
Acq. Operator    : JH                       Inj        :    1
                                           Inj Volume : 10 µl

Acq. Method      : C:\HPCHEM\1\METHODS\JHIB.M
Last changed     : 6/26/2007 4:30:58 PM by JH
Analysis Method  : C:\HPCHEM\1\METHODS\JHIB100.M
Last changed     : 6/27/2007 12:28:00 PM by JH
                  (modified after loading)
=====
```

IB



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

```
Sorted By      : Signal
Multiplier     : 1.0000
Dilution       : 1.0000
```

Signal 1: VWD1 A, Wavelength=213 nm

Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	9.146	BV	0.4383	153.24510	4.09759	1.4922
2	9.837	VB	0.3701	453.83362	14.50362	4.4193
3	12.830	VB	0.5489	9662.38770	265.93063	94.0885

Totals : 1.02695e4 284.53184

Results obtained with enhanced integrator!

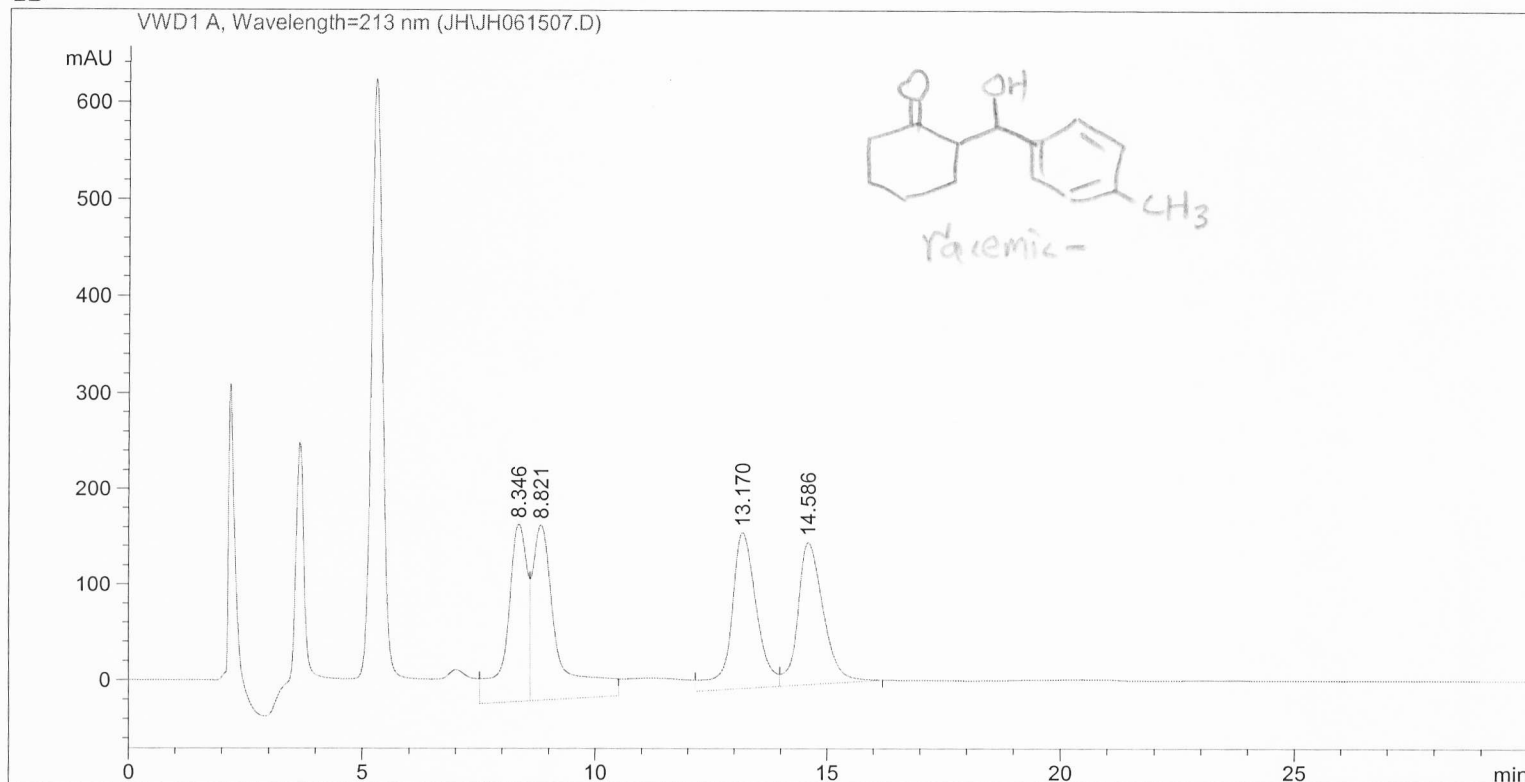
```
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*** End of Report ***
=====
```

syn-
anti- >99% ee

=====

Injection Date	: 6/15/2007 11:51:01 PM	Seq. Line	: 7
Sample Name	: 4-CH3PH	Vial	: 7
Acq. Operator	: JH	Inj	: 1
		Inj Volume	: 10 µl
Acq. Method	: C:\HPCHEM\1\METHODS\JHIB.M		
Last changed	: 6/15/2007 11:50:30 PM by JH		
	(modified after loading)		
Analysis Method	: C:\HPCHEM\1\METHODS\JHIB.M		
Last changed	: 8/3/2007 10:12:37 AM by JH		
	(modified after loading)		

IB



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Area Percent Report
=====

Sorted By : Signal
Multiplier : 1.0000
Dilution : 1.0000

Signal 1: VWD1 A, Wavelength=213 nm

Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	8.346	VV	0.4377	5550.06885	185.14629	23.1269
2	8.821	VB	0.5198	6671.09912	182.78503	27.7982
3	13.170	VV	0.5477	6125.69873	162.52901	25.5255
4	14.586	VB	0.5498	5651.44043	148.55087	23.5493

syn-
anti-

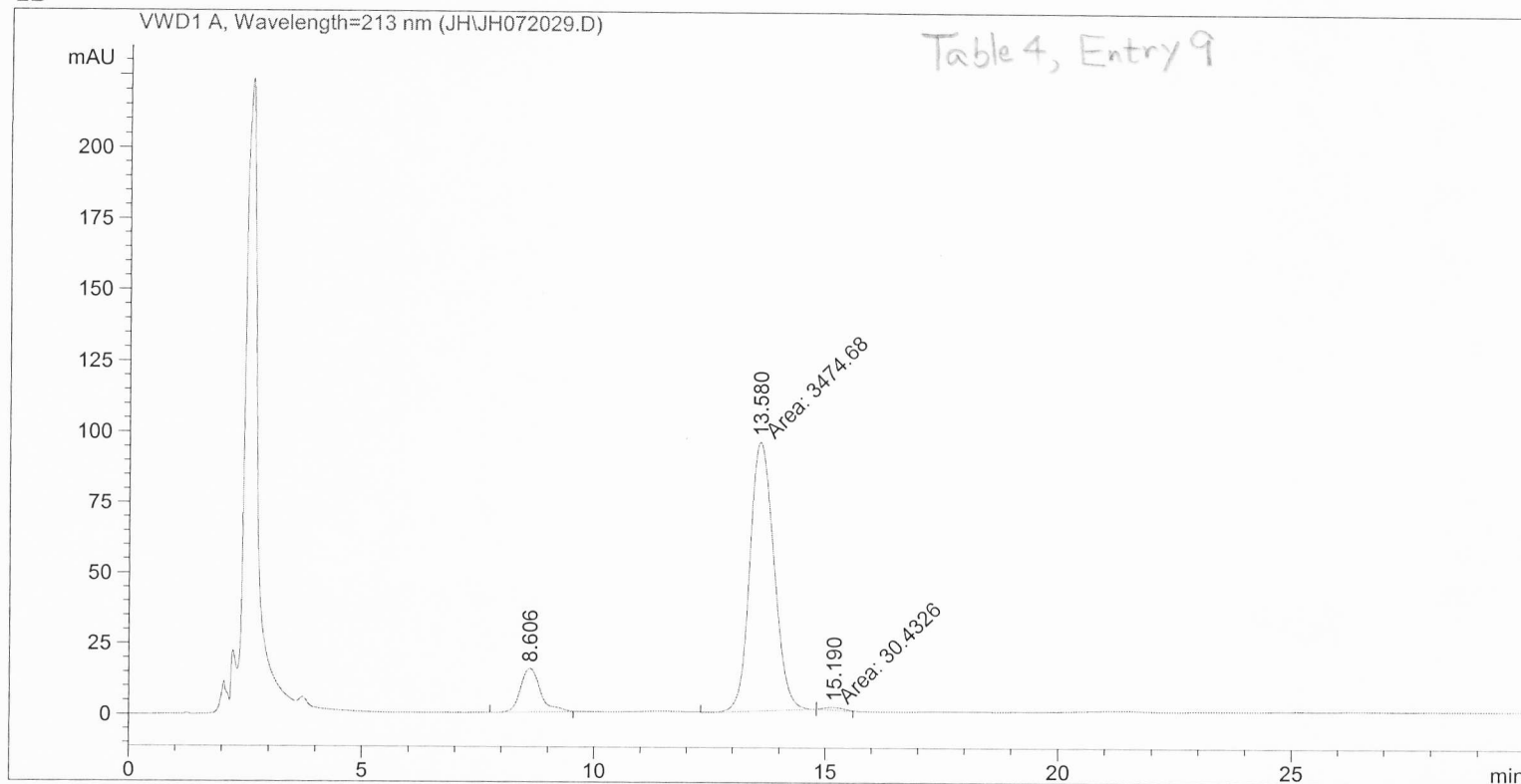
Totals : 2.39983e4 679.01120

Results obtained with enhanced integrator!

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*** End of Report ***

IB

=====
Injection Date : 7/26/2007 12:36:06 PM
Sample Name : 4-ch3-cd Vial : 6
Acq. Operator : JH Inj Volume : 10 µl
Method : C:\HPCHEM\1\METHODS\JHIB.M
Last changed : 7/23/2007 3:01:28 PM by JH
IB



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Area Percent Report
=====

Sorted By : Signal
Multiplier : 1.0000
Dilution : 1.0000
Sample Amount : 10.00000 [ng/ul] (not used in calc.)

Signal 1: VWD1 A, Wavelength=213 nm

Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	8.606	BB	0.3557	461.14053	15.47227	11.6266
2	13.580	MM	0.6070	3474.67944	95.40835	87.6061
3	15.190	MM	0.4907	30.43260	1.03374	0.7673

Totals : 3966.25258 111.91436

Results obtained with enhanced integrator!

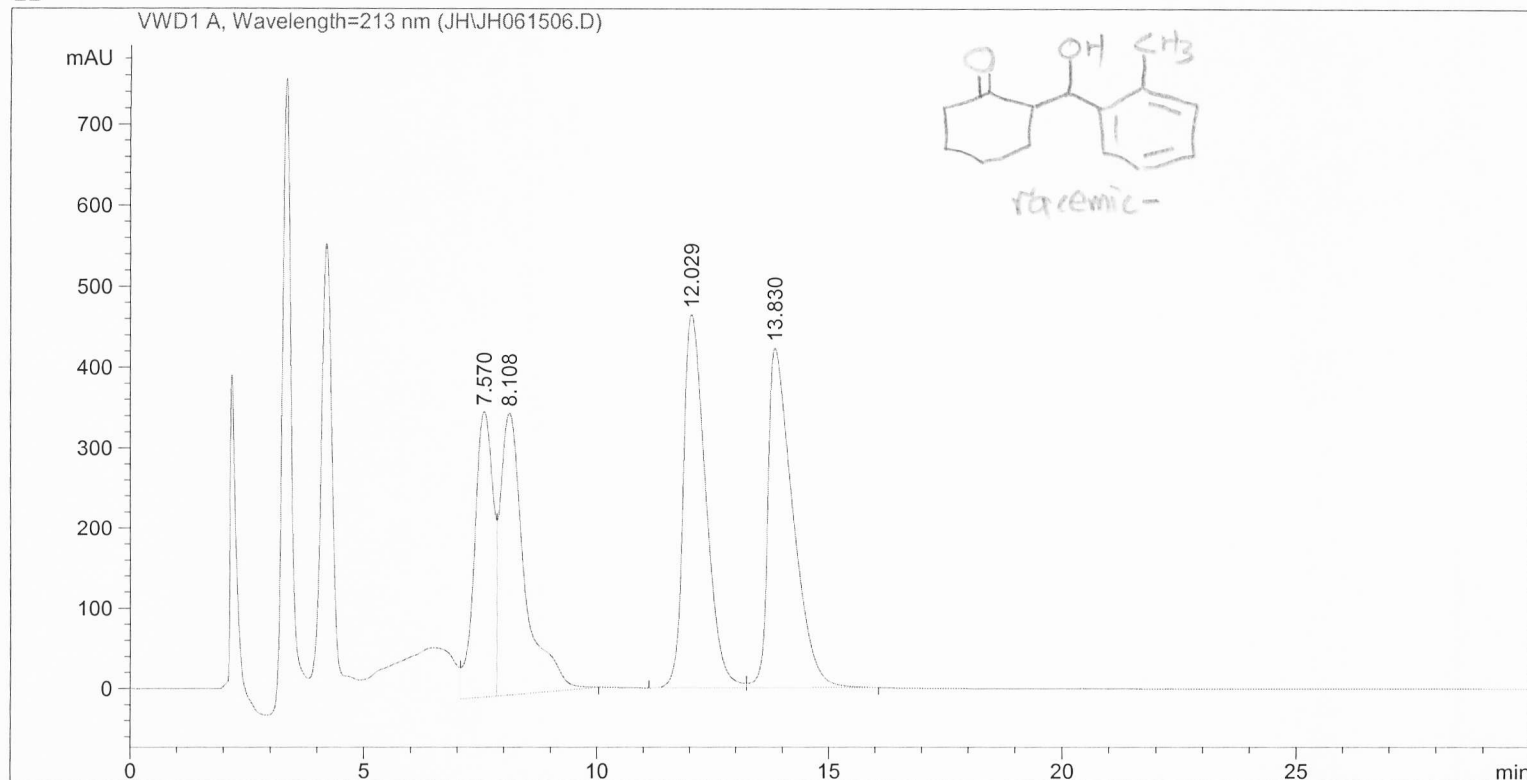
=====
*** End of Report ***

syn
anti- 98% ee

```
=====
Injection Date   : 6/15/2007 9:50:23 PM      Seq. Line :    6
Sample Name      : 2-CH3Ph                   Vial       :    6
Acq. Operator    : JH                        Inj        :    1
                                           Inj Volume : 10 µl

Acq. Method      : C:\HPCHEM\1\METHODS\JHIB.M
Last changed     : 6/15/2007 9:49:52 PM by JH
                  (modified after loading)
Analysis Method  : C:\HPCHEM\1\METHODS\JHIB.M
Last changed     : 8/3/2007 10:12:37 AM by JH
                  (modified after loading)
=====
```

IB



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

```
Sorted By      : Signal
Multiplier     : 1.0000
Dilution       : 1.0000
```

Signal 1: VWD1 A, Wavelength=213 nm

Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	7.570	VV	0.4244	9952.05762	355.66888	18.4016
2	8.108	VB	0.5273	1.28079e4	351.32321	23.6821
3	12.029	PV	0.4920	1.55411e4	463.75635	28.7359
4	13.830	VB	0.5319	1.57815e4	422.41766	29.1804

syn-
anti-

Totals : 5.40826e4 1593.16611

Results obtained with enhanced integrator!

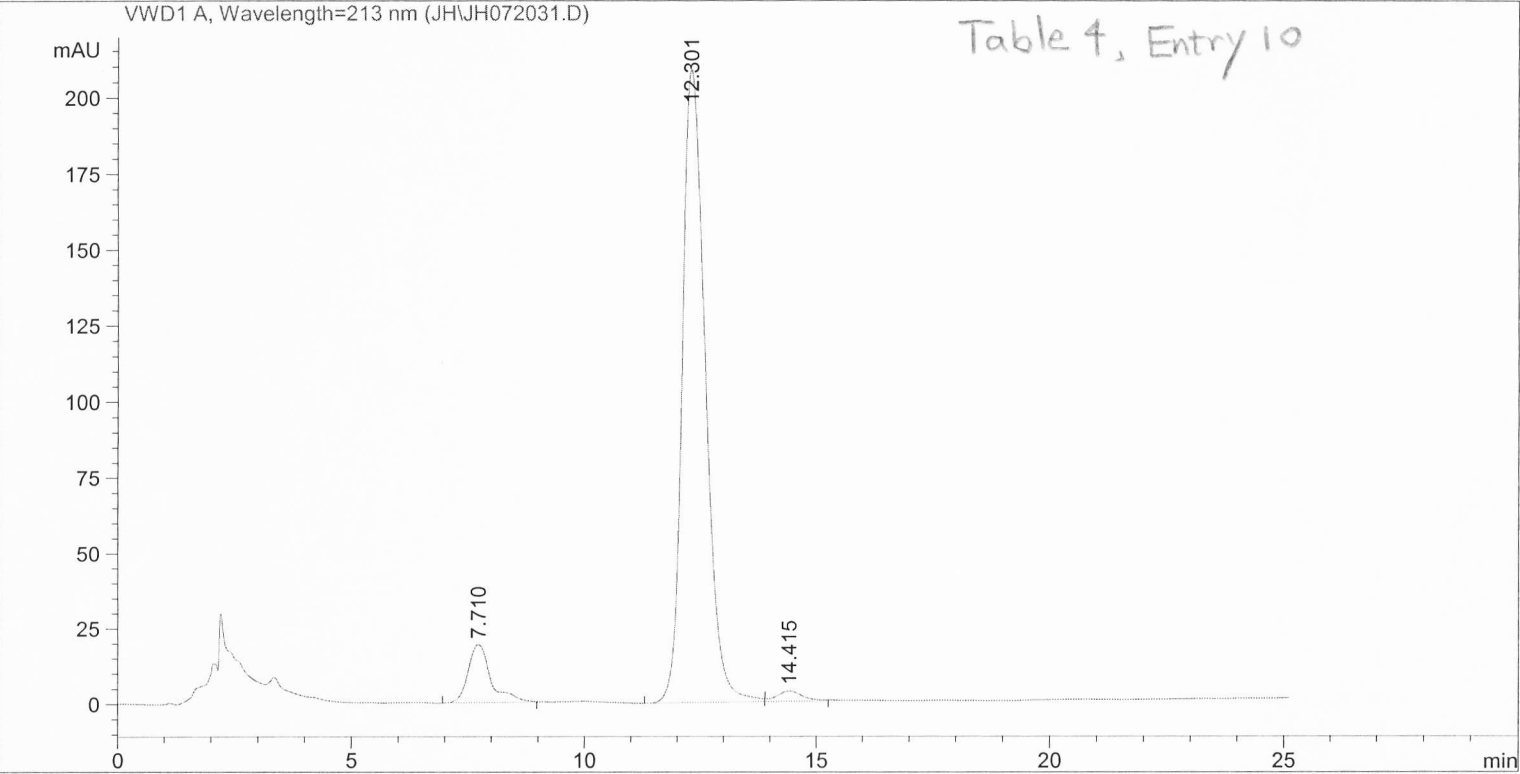
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*** End of Report ***
```

IB

```
=====
Injection Date   : 7/27/2007 12:08:42 AM
Sample Name      : 2-ch3-cd
Acq. Operator    : JH
Vial             : 12
Inj Volume       : 10 µl

Acq. Method      : C:\HPCHEM\1\METHODS\JHIB.M
Last changed     : 7/27/2007 12:07:40 AM by JH
                  (modified after loading)
Analysis Method  : C:\HPCHEM\1\METHODS\JHIB.M
Last changed     : 8/3/2007 11:01:01 AM by JH
                  (modified after loading)
=====
```

IB



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

```
Sorted By      : Signal
Multiplier     : 1.0000
Dilution       : 1.0000
Sample Amount  : 10.00000 [ng/ul] (not used in calc.)
```

Signal 1: VWD1 A, Wavelength=213 nm

Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	7.710	PB	0.4081	664.28845	19.27153	8.2570
2	12.301	VB	0.5297	7239.81299	208.71938	89.9898
3	14.415	BV	0.4673	141.04956	3.54417	1.7532
Totals :				8045.15100	231.53508	

syn
anti- 96% ee

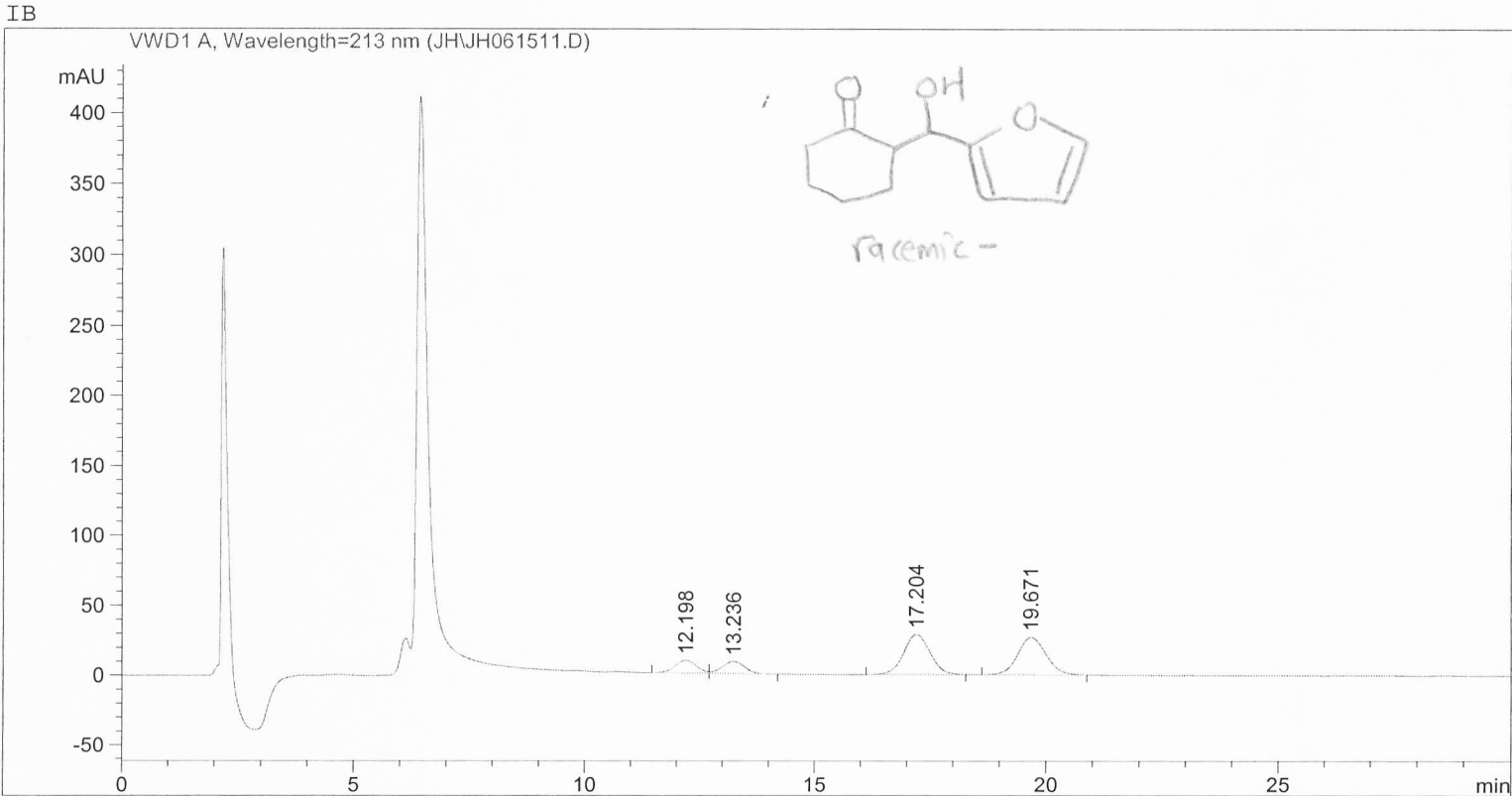
Results obtained with enhanced integrator!

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

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Injection Date	: 6/16/2007 7:53:34 AM	Seq. Line	: 11
Sample Name	: 2-FUR	Vial	: 13
Acq. Operator	: JH	Inj	: 1
		Inj Volume	: 10 µl

Acq. Method : C:\HPCHEM\1\METHODS\JHIB.M
Last changed : 6/16/2007 7:53:02 AM by JH
(modified after loading)
Analysis Method : C:\HPCHEM\1\METHODS\JHIB.M
Last changed : 8/3/2007 10:12:37 AM by JH
(modified after loading)



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Area Percent Report
=====

Sorted By : Signal
Multiplier : 1.0000
Dilution : 1.0000

Signal 1: VWD1 A, Wavelength=213 nm

Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	12.198	BV	0.3869	294.69061	9.00258	10.2374
2	13.236	VP	0.4018	291.12589	8.56023	10.1136
3	17.204	PB	0.4725	1146.82690	28.80232	39.8402
4	19.671	BB	0.4992	1145.92078	27.05389	39.8088

syn-
anti-

Totals : 2878.56418 73.41902

Results obtained with enhanced integrator!

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

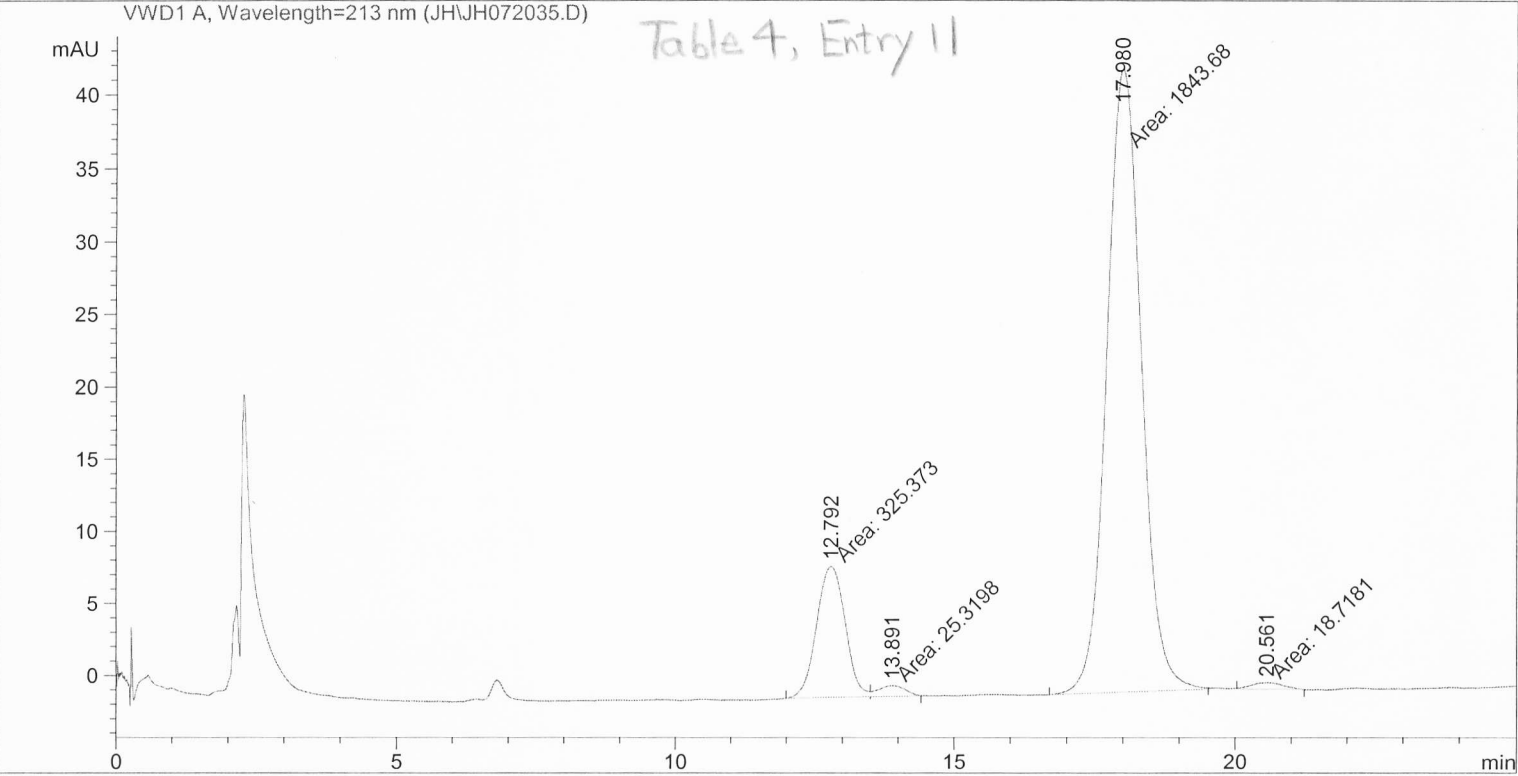
IB

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Injection Date	: 7/27/2007 1:31:14 AM	
Sample Name	: 2-fur-cd	Vial : 14
Acq. Operator	: JH	
		Inj Volume : 10 µl
Acq. Method	: C:\HPCHEM\1\METHODS\JHIB.M	
Last changed	: 7/27/2007 1:30:23 AM by JH (modified after loading)	
Analysis Method	: C:\HPCHEM\1\METHODS\JHIB.M	
Last changed	: 7/27/2007 1:57:06 AM by JH (modified after loading)	

anti: syn ee
83: 17 99%

IB



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Area Percent Report
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Sorted By	:	Signal	
Multiplier	:	1.0000	
Dilution	:	1.0000	
Sample Amount	:	10.00000 [ng/ul]	(not used in calc.)

Signal 1: VWD1 A, Wavelength=213 nm

Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	12.792	MF	0.5951	325.37341	9.11331	14.7022
2	13.891	FM	0.5613	25.31980	7.51773e-1	1.1441
3	17.980	MM	0.7156	1843.68457	42.94325	83.3079
4	20.561	MM	0.6493	18.71813	4.80443e-1	0.8458

syn-
anti- 98% ee

Totals : 2213.09591 53.28878

Results obtained with enhanced integrator!

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*** End of Report ***