

## Supporting Information

# Organocatalyzed Enantioselective Michael Additions of Nitroalkanes to Enones by Using Primary–Secondary Diamine Catalysts

Ying-Quan Yang,<sup>[a]</sup> Xin-Kuan Chen,<sup>[b]</sup> Hua Xiao,<sup>[a]</sup> Wen Liu,<sup>[a]</sup> Gang Zhao<sup>[a, b]</sup>

[a] Department of Chemistry, University of Science and Technology of China, Hefei, Anhui 230026, People's Republic of China;

[b] Key Laboratory of Synthetic Chemistry of Natural Substances, Shanghai Institute of Organic Chemistry, Chinese Academy of Sciences, 345 Lingling Lu, Shanghai 200032, People's Republic of China.

[zhaog@mail.sioc.ac.cn](mailto:zhaog@mail.sioc.ac.cn)

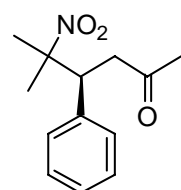
**General Information:** Unless otherwise indicated, all compounds and reagents were purchased from commercial suppliers and used without further purification. Proton nuclear magnetic resonance spectra are recorded at 300 MHz. All chemical shifts ( $\delta$ ) are given in ppm. NMR spectra were recorded on Varian EM-360A, Varian EM90 or Bruker AMX-300 NMR spectrometer. IR spectra were recorded on a Perkin-Elmer 983G instrument. MS or HRMS was recorded on a HP-5989A spectrometer. Melting points were determined on a METTLER-TOLEDO FP62 melting point apparatus and are uncorrected. HPLC analysis was carried out on WATERS equipment.

All Catalysts were prepared from our reported literature.<sup>1-3</sup>

### General procedure for the Michael reaction.

To a mixture of enone **2** (0.5 mmol), catalyst **3i** (0.1mmol) and 4-nitrophenol (0.1 mmol) in CH<sub>2</sub>Cl<sub>2</sub> (1.0 mL) was added nitroalkne (1.0 mL) at ambient temperature. After 24 h of stirring, the reaction mixture was quenched with 1 M aqueous HCl solution, extracted with EtOAc. The combined organic layer was dried over Na<sub>2</sub>SO<sub>4</sub>, filtered, and concentrated to afford the corresponding Michael adduct **4** after flash column chromatography on silica gel (petroleum ether/Et<sub>2</sub>O as eluant).

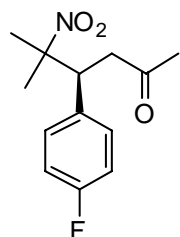
### 4aa: (S)-5-methyl-5-nitro-4-phenylhexan-2-one<sup>4</sup>



White solid;  $[\alpha]_D^{22}$  -30.9 (*c* 1.0, CHCl<sub>3</sub>); m.p. 92-94°C; <sup>1</sup>H NMR (300MHz, CDCl<sub>3</sub>)  $\delta$  1.45 (s, 3H), 1.53 (s, 3H), 1.99 (s, 3H), 2.68 (dd, *J* = 3.6, 17.1 Hz, 1H), 3.09 (dd, *J* = 10.2, 17.1 Hz, 1H), 3.92 (dd, *J* =

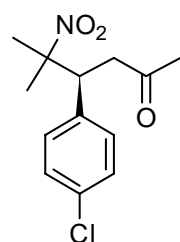
3.3, 10.5 Hz, 1H), 7.17-7.31 (m, 5H); Enantiomeric excess: 88%, determined by HPLC (Chiralpak OD column, hexane/*i*-PrOH 95:5, flow rate 0.7 mL/min,  $t_{\text{major}} = 31.4$  min,  $t_{\text{minor}} = 33.3$  min,  $\lambda = 214$  nm).

**4ab: (S)-4-(4-fluorophenyl)-5-methyl-5-nitrohexan-2-one**



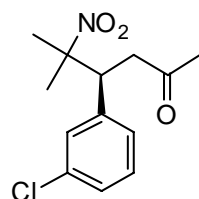
Colorless oil;  $[\alpha]_{\text{D}}^{22} -32.7$  ( $c$  1.0,  $\text{CHCl}_3$ );  $^1\text{H NMR}$  (300MHz,  $\text{CDCl}_3$ )  $\delta$  1.44 (s, 3H), 1.51 (s, 3H), 2.00 (s, 3H), 2.70 (dd,  $J = 3.3, 17.1$  Hz, 1H), 3.03 (dd,  $J = 10.5, 17.1$  Hz, 1H), 3.89 (dd,  $J = 2.7, 10.2$  Hz, 1H), 6.93-6.99 (m, 2H), 7.12-7.17 (m, 2H);  $^{13}\text{C NMR}$  ( $\text{CDCl}_3$ , 100MHz)  $\delta$  22.9, 25.5, 30.5, 44.2, 48.2, 91.1, 115.7 (d,  $^2J_{\text{CF}} = 21.0\text{Hz}$ ), 130.9 (d,  $^3J_{\text{CF}} = 8.1\text{Hz}$ ), 133.7 (d,  $^4J_{\text{CF}} = 3.6\text{Hz}$ ), 162.4 (d,  $^1J_{\text{CF}} = 245.8\text{Hz}$ ), 205.2; IR (neat): 3046, 2995, 2950, 1720, 1605, 1535, 1511, 1229, 1163, 848, 819  $\text{cm}^{-1}$ ; HRMS calc.  $\text{C}_{13}\text{H}_{16}\text{O}_3\text{NF}$  ( $\text{M}^+$ ): 253.1114. Found: 253.1115. Enantiomeric excess: 91%, determined by HPLC (Chiralpak AD column, hexane/*i*-PrOH 100:1, flow rate 1.00 mL/min,  $t_{\text{major}} = 34.5$  min,  $t_{\text{minor}} = 32.0$  min,  $\lambda = 254$  nm).

**4ac: (S)-4-(4-chlorophenyl)-5-methyl-5-nitrohexan-2-one<sup>4</sup>**



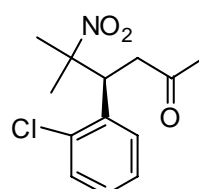
Colorless oil;  $[\alpha]_{\text{D}}^{18} -35.2$  ( $c$  1.0,  $\text{CHCl}_3$ );  $^1\text{H NMR}$  (300MHz,  $\text{CDCl}_3$ )  $\delta$  1.48 (s, 3H), 1.54 (s, 3H), 2.05 (s, 3H), 2.74 (dd,  $J = 3.3, 17.1$  Hz, 1H), 3.04 (dd,  $J = 10.5, 17.1$  Hz, 1H), 3.90 (dd,  $J = 3.6, 10.8$  Hz, 1H), 7.13 (d,  $J = 8.1$  Hz, 2H), 7.28 (d,  $J = 9.3$  Hz, 2H); Enantiomeric excess: 90%, determined by HPLC (Chiralpak AD column, hexane/*i*-PrOH 90:10, flow rate 1.00 mL/min,  $t_{\text{major}} = 11.8$  min,  $t_{\text{minor}} = 10.7$  min,  $\lambda = 254$  nm).

**4ad: (S)-4-(3-chlorophenyl)-5-methyl-5-nitrohexan-2-one**



Colorless oil;  $[\alpha]_{\text{D}}^{18} -33.1$  ( $c$  1.0,  $\text{CHCl}_3$ );  $^1\text{H NMR}$  (300MHz,  $\text{CDCl}_3$ )  $\delta$  1.45 (s, 3H), 1.52 (s, 3H), 2.02 (s, 3H), 2.70 (dd,  $J = 3.3, 17.7$  Hz, 1H), 3.05 (dd,  $J = 10.5, 17.4$  Hz, 1H), 3.89 (dd,  $J = 2.7, 10.8$  Hz, 1H), 7.05-7.08 (m, 1H), 7.16 (s, 1H), 7.20-7.22 (m, 2H);  $^{13}\text{C NMR}$  ( $\text{CDCl}_3$ , 100MHz)  $\delta$  22.9, 25.7, 30.6, 44.0, 48.5, 91.0, 127.7, 128.3, 129.4, 130.0, 134.5, 140.2, 204.9; IR (neat): 3651, 3422, 2994, 2951, 1715, 1596, 1537, 1471, 1373, 1164, 1084, 851, 780, 700  $\text{cm}^{-1}$ ; HRMS calc.  $\text{C}_{13}\text{H}_{16}\text{O}_3\text{NCl}$  ( $\text{M}^+$ ): 269.0819. Found: 269.0818. Enantiomeric excess: 87%, determined by HPLC (Chiralpak AD column, hexane/*i*-PrOH 100:1, flow rate 1.00 mL/min,  $t_{\text{major}} = 24.8$  min,  $t_{\text{minor}} = 22.2$  min,  $\lambda = 254$  nm).

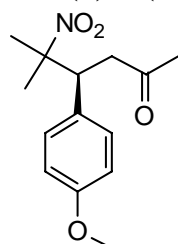
**4ae: (S)-4-(2-chlorophenyl)-5-methyl-5-nitrohexan-2-one**



Colorless oil;  $[\alpha]_{\text{D}}^{22} -42.0$  ( $c$  1.0,  $\text{CHCl}_3$ );  $^1\text{H NMR}$  (300MHz,

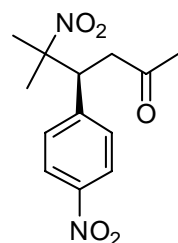
CDCl<sub>3</sub>)  $\delta$  1.52 (s, 3H), 1.54 (s, 3H), 2.00 (s, 3H), 2.81 (dd,  $J = 3.6, 17.1$  Hz, 1H), 3.02 (dd,  $J = 10.8, 17.1$  Hz, 1H), 4.62 (dd,  $J = 3.3, 10.5$  Hz, 1H), 7.08-7.11 (m, 1H), 7.16-7.20 (m, 2H), 7.37-7.40 (m, 1H); <sup>13</sup>C NMR (CDCl<sub>3</sub>, 100MHz)  $\delta$  22.2, 26.3, 30.2, 43.3, 44.9, 91.5, 127.3, 128.4, 129.1, 130.4, 136.2, 136.3, 205.2; IR (neat): 3067, 2994, 2950, 2870, 1714, 1571, 1536, 1472, 1438, 1164, 1036, 850, 757, 685 cm<sup>-1</sup>; HRMS calc. C<sub>13</sub>H<sub>16</sub>O<sub>3</sub>NCl (M<sup>+</sup>): 269.0819. Found: 269.0824. Enantiomeric excess: 86%, determined by HPLC (Chiralpak AD column, hexane/*i*-PrOH 90:10, flow rate 1.00 mL/min,  $t_{\text{major}} = 8.0$  min,  $t_{\text{minor}} = 8.4$  min,  $\lambda = 254$  nm).

**4af: (S)-4-(4-methoxyphenyl)-5-methyl-5-nitrohexan-2-one**



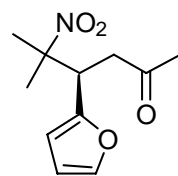
Colorless oil;  $[\alpha]_{\text{D}}^{22} -22.7$  ( $c$  1.0, CHCl<sub>3</sub>); <sup>1</sup>H NMR (300MHz, CDCl<sub>3</sub>)  $\delta$  1.43 (s, 3H), 1.51 (s, 3H), 1.98 (s, 3H), 2.63 (dd,  $J = 3.3, 17.1$  Hz, 1H), 3.02 (dd,  $J = 10.5, 16.5$  Hz, 1H), 3.73 (s, 3H), 3.85 (dd,  $J = 3.6, 10.8$  Hz, 1H), 6.79 (d,  $J = 8.4$  Hz, 2H), 7.08 (d,  $J = 8.7$  Hz, 2H); <sup>13</sup>C NMR (CDCl<sub>3</sub>, 100MHz)  $\delta$  22.6, 25.7, 30.5, 44.2, 48.4, 55.4, 91.5, 114.1, 129.6, 130.4, 159.3, 205.7; IR (neat): 3668, 3647, 3420, 3038, 2996, 2955, 2839, 1705, 1612, 1583, 1538, 1515, 1470, 1241, 834 cm<sup>-1</sup>; HRMS calc. C<sub>14</sub>H<sub>19</sub>O<sub>4</sub>N (M<sup>+</sup>): 265.1314. Found: 265.1311. Enantiomeric excess: 91%, determined by HPLC (Chiralpak AD column, hexane/*i*-PrOH 100:1, flow rate 1.00 mL/min,  $t_{\text{major}} = 61.5$  min,  $t_{\text{minor}} = 75.3$  min,  $\lambda = 254$  nm).

**4ag: (S)-5-methyl-5-nitro-4-(4-nitrophenyl)hexan-2-one**<sup>4</sup>



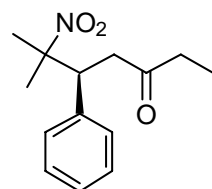
White solid;  $[\alpha]_{\text{D}}^{22} -43.0$  ( $c$  1.0, CHCl<sub>3</sub>); m.p. 89-91°C; <sup>1</sup>H NMR (300MHz, CDCl<sub>3</sub>)  $\delta$  1.48 (s, 3H), 1.55 (s, 3H), 2.05 (s, 3H), 2.84 (dd,  $J = 3.0, 17.7$  Hz, 1H), 3.13 (dd,  $J = 10.8, 18.0$  Hz, 1H), 4.01 (dd,  $J = 3.0, 10.8$  Hz, 1H), 7.37 (d,  $J = 9.0$  Hz, 2H), 8.12 (d,  $J = 8.4$  Hz, 2H); Enantiomeric excess: 91%, determined by HPLC (Chiralpak AD column, hexane/*i*-PrOH 90:10, flow rate 1.00 mL/min,  $t_{\text{major}} = 53.2$  min,  $t_{\text{minor}} = 34.3$  min,  $\lambda = 254$  nm).

**4ah: (R)-4-(furan-2-yl)-5-methyl-5-nitrohexan-2-one**<sup>4</sup>



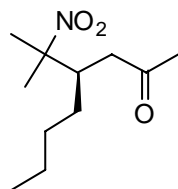
Colorless oil;  $[\alpha]_{\text{D}}^{22} -28.3$  ( $c$  1.0, CHCl<sub>3</sub>); <sup>1</sup>H NMR (300MHz, CDCl<sub>3</sub>)  $\delta$  1.47 (s, 3H), 1.54 (s, 3H), 2.05 (s, 3H), 2.50 (dd,  $J = 2.7, 16.8$  Hz, 1H), 3.07 (dd,  $J = 11.4, 17.1$  Hz, 1H), 4.09 (dd,  $J = 3.0, 10.8$  Hz, 1H), 6.15 (d,  $J = 3.0$  Hz, 1H), 6.26-6.27 (m, 1H), 7.29-7.30 (m, 1H); Enantiomeric excess: 88%, determined by HPLC (Chiralpak AD-H column, hexane/*i*-PrOH 80:20, flow rate 0.60 mL/min,  $t_{\text{major}} = 9.1$  min,  $t_{\text{minor}} = 8.8$  min,  $\lambda = 254$  nm).

**4ai: (S)-6-methyl-6-nitro-5-phenylheptan-3-one**<sup>4</sup>



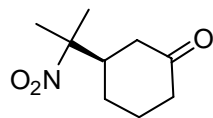
Colorless oil;  $[\alpha]_D^{22}$  -17.7 (*c* 1.0, CHCl<sub>3</sub>); <sup>1</sup>H NMR (300MHz, CDCl<sub>3</sub>) δ 0.87 (t, *J* = 7.2 Hz), 1.45 (s, 3H), 1.54 (s, 3H), 2.14-2.43 (m, 2H), 2.65 (dd, *J* = 2.4, 17.1 Hz, 1H), 3.08 (dd, *J* = 10.5, 16.5 Hz, 1H), 3.92-3.96 (m, 1H), 7.16-7.27 (m, 5H); Enantiomeric excess: 90%, determined by HPLC (Chiralpak AD-H column, hexane/*i*-PrOH 80:20, flow rate 0.60 mL/min, *t*<sub>major</sub> = 8.6 min, *t*<sub>minor</sub> = 9.1 min, λ = 220 nm).

**4aj: (R)-4-(2-nitropropan-2-yl)octan-2-one**<sup>4</sup>



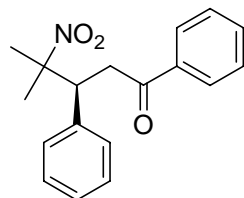
Colorless oil;  $[\alpha]_D^{26}$  -20.7 (*c* 1.0, CHCl<sub>3</sub>); <sup>1</sup>H NMR (300MHz, CDCl<sub>3</sub>) δ 0.82 (t, *J* = 6.9 Hz, 3H), 0.99-1.31 (m, 6H), 1.47 (s, 3H), 1.49 (s, 3H), 2.14 (s, 3H), 2.27-2.52 (m, 2H), 2.68-2.76 (m, 1H); Enantiomeric excess: 91%, determined by HPLC (Chiralpak AS-H column, hexane/*i*-PrOH 90:10, flow rate 0.70 mL/min, *t*<sub>major</sub> = 9.5 min, *t*<sub>minor</sub> = 8.8 min, λ = 220 nm).

**4ak: (R)-3-(2-nitropropan-2-yl)cyclohexanone**<sup>4</sup>



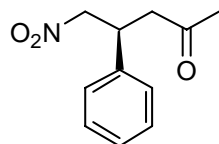
White solid;  $[\alpha]_D^{26}$  -13.7 (*c* 1.0, CHCl<sub>3</sub>); m.p. 61-63°C; <sup>1</sup>H NMR (300MHz, CDCl<sub>3</sub>) δ 1.30-1.45 (m, 1H), 1.50 (s, 3H), 1.52 (s, 3H), 1.55-1.64 (m, 1H), 1.72-1.77 (m, 1H), 2.02-2.40 (m, 6H); Enantiomeric excess: 60%, determined by GC (HP chiral 20% Permethyated B-Cyclodextrin, flow rate 2.0 mL/min, 10°C/min from 110°C to 200°C *t*<sub>major</sub> = 149.9 min, *t*<sub>minor</sub> = 154.6 min).

**4al: (S)-4-methyl-4-nitro-1,3-diphenylpentan-1-one**<sup>5</sup>



White solid;  $[\alpha]_D^{24}$  -77.5 (*c* 1.0, CHCl<sub>3</sub>); m.p. 147-149°C; <sup>1</sup>H NMR (400MHz, CDCl<sub>3</sub>) δ 1.54 (s, 3H), 1.63 (s, 3H), 3.27 (dd, *J* = 3.2, 17.2 Hz, 1H), 3.68 (dd, *J* = 10.4, 17.6 Hz, 1H), 4.15 (dd, *J* = 3.2, 10.0 Hz, 1H), 7.22-7.27 (m, 5H), 7.42 (t, *J* = 8.0 Hz, 2H), 7.53 (t, *J* = 7.2 Hz, 1H), 7.86 (d, *J* = 7.6 Hz, 2H); Enantiomeric excess: 92%, determined by HPLC (Chiralpak AD-H column, hexane/*i*-PrOH 90:10, flow rate 0.80 mL/min, *t*<sub>major</sub> = 15.4 min, *t*<sub>minor</sub> = 17.6 min, λ = 254 nm).

**4ba: (S)-5-nitro-4-phenylpentan-2-one**<sup>4</sup>



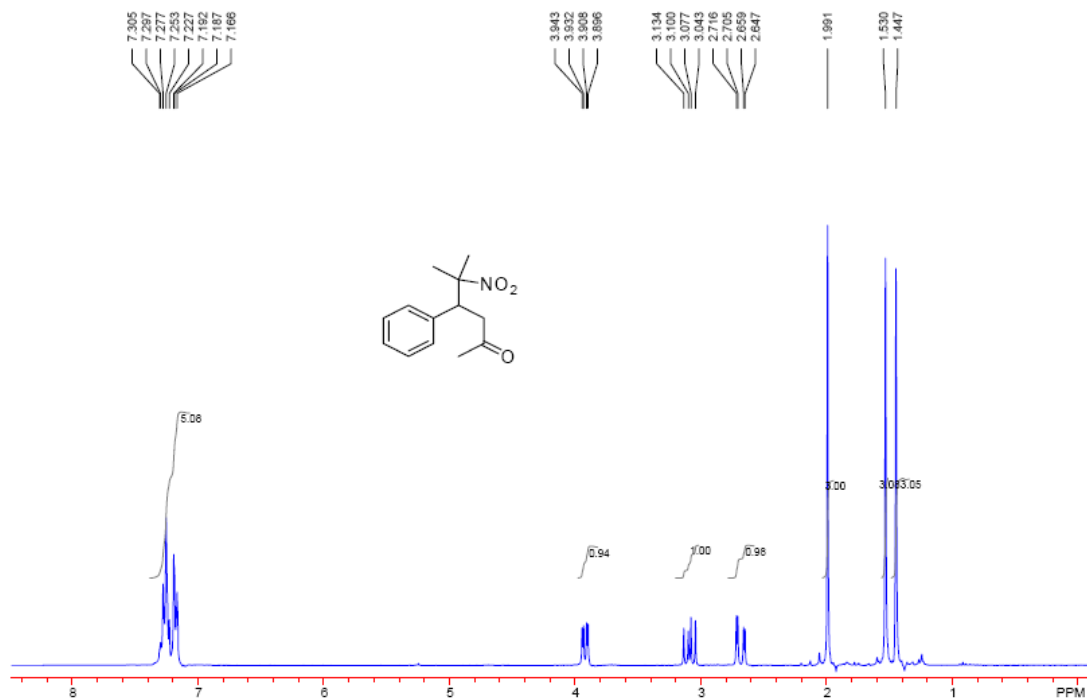
White solid;  $[\alpha]_D^{18}$  3.3 (*c* 1.0, CHCl<sub>3</sub>); m.p. 109-111°C; <sup>1</sup>H NMR (300MHz, CDCl<sub>3</sub>) δ 3.14 (s, 3H), 2.92 (d, *J* = 6.9 Hz, 2H), 3.96-4.06 (m, 1H), 4.57-4.73 (m, 2H), 7.20-7.36 (m, 5H); Enantiomeric excess: 91%, determined by HPLC (Chiralpak AD column, hexane/*i*-PrOH 90:10, flow rate 1.0 mL/min, *t*<sub>major</sub> = 13.7 min, *t*<sub>minor</sub> = 14.5 min, λ = 254 nm).

## References

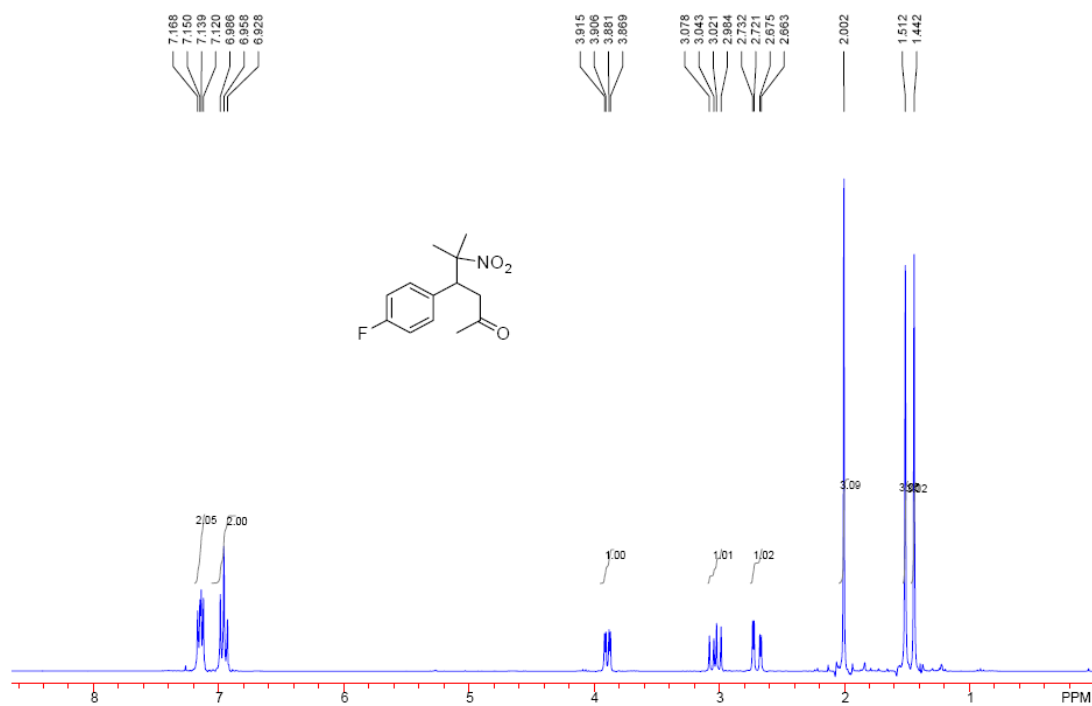
1. Y.-Q. Yang and G. Zhao, *Chem. Eur. J.* 2008, **14**, 10888.
2. Y.-Q. Yang, Z. Chai, H.-F. Wang, X.-K. Chen, H.-F. Cui, C.-W. Zheng, H. Xiao, P. Li and G. Zhao, *Chem. Eur. J.* 2009, **15**, 13295.
3. H.-F. Cui, Y.-Q. Yang, Z. Chai, P. Li, C.-W. Zheng, S.-Z. Zhu, and G. Zhao *J. Org. Chem.* 2010, **75**, 117.
4. N. Halland, R. G. Hazell and K. A. Jørgensen, *J. Org. Chem.* 2002, **67**, 8331.
5. D. Y. Kim and S. C. Huh, *Tetrahedron*. **2001**, *57*, 8933.

## NMR spectra for compounds 4

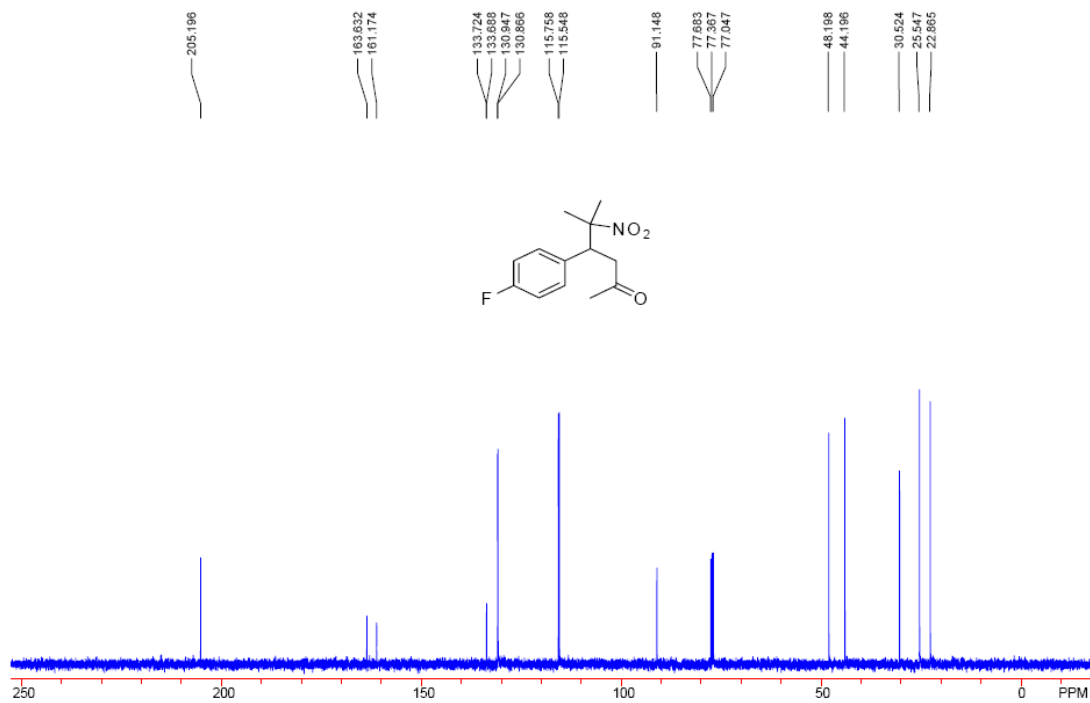
### 4aa (<sup>1</sup>H NMR)



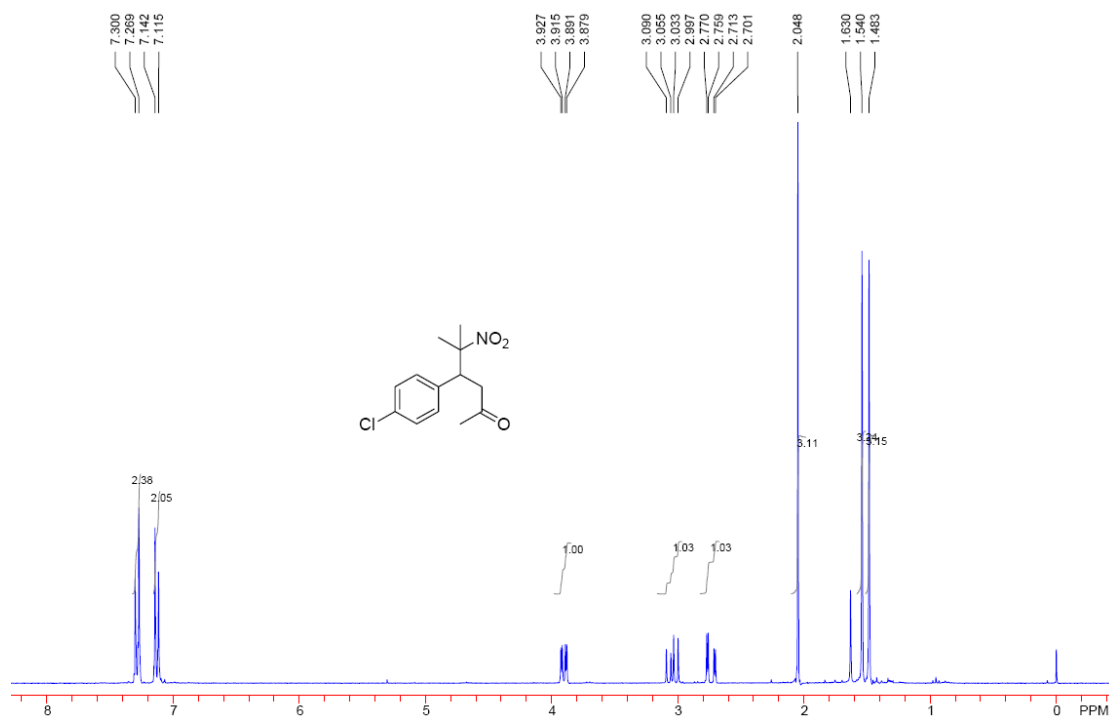
### 4ab (<sup>1</sup>H NMR)



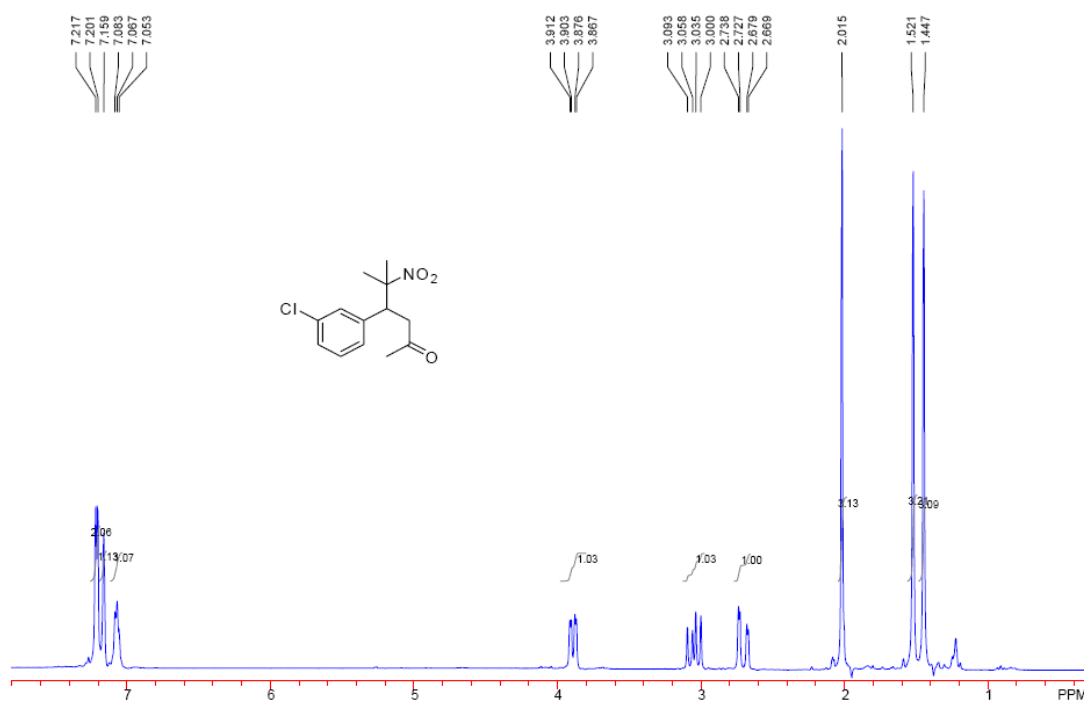
### 4ab (<sup>13</sup>C NMR)



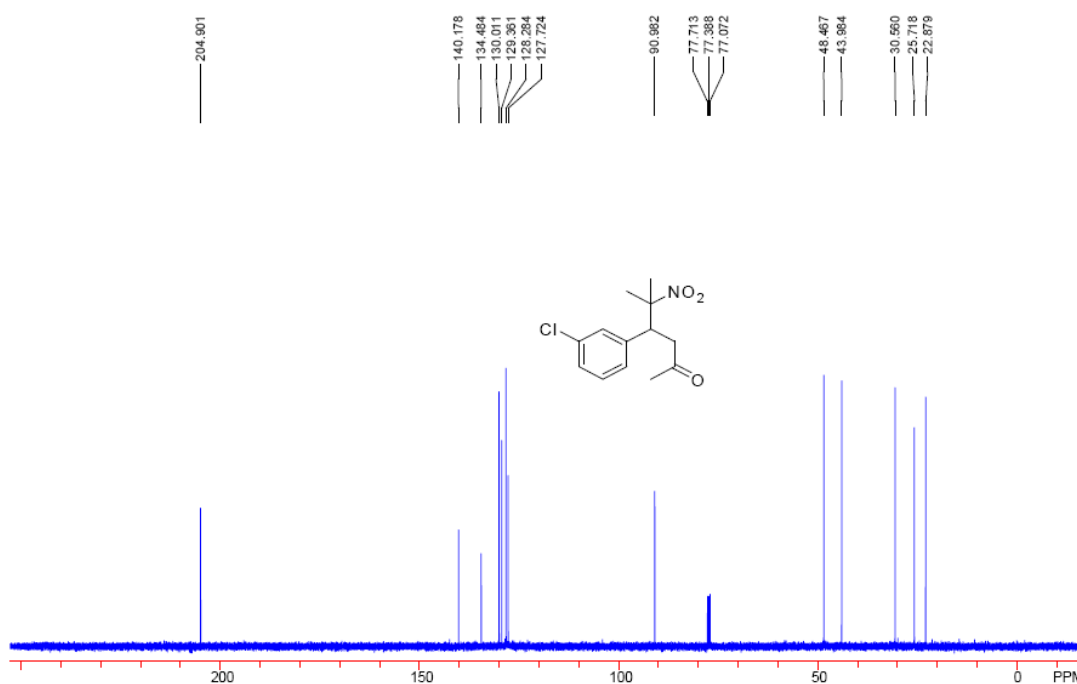
### 4ac (<sup>1</sup>H NMR)



### 4ad (<sup>1</sup>H NMR)

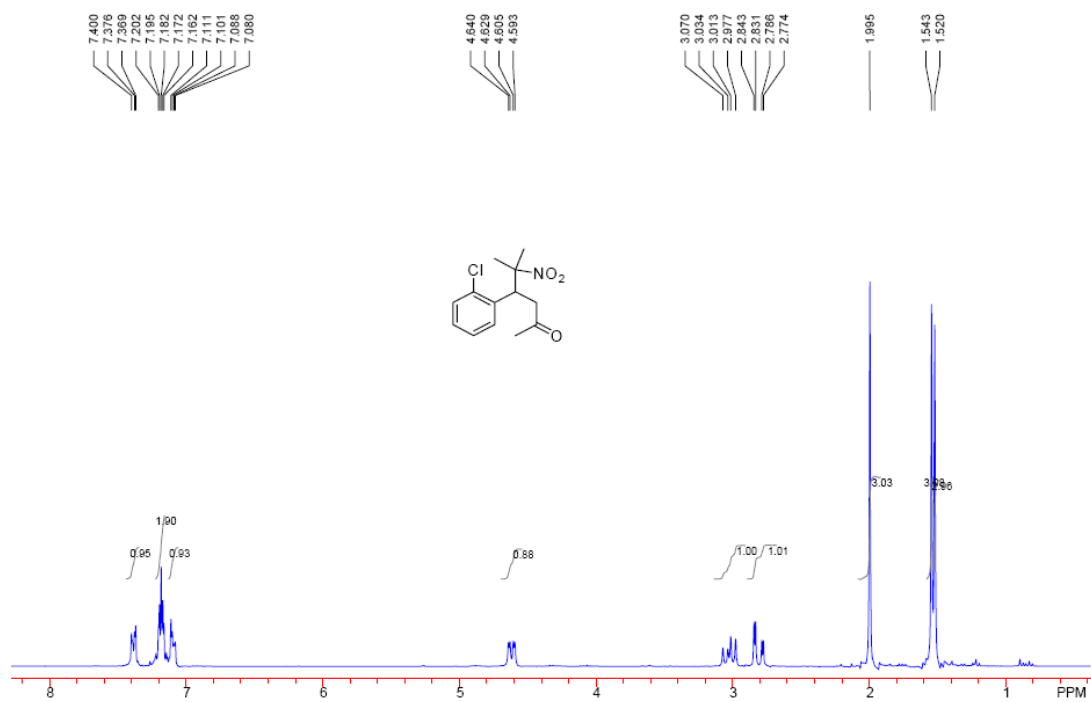


### 4ad (<sup>13</sup>C NMR)

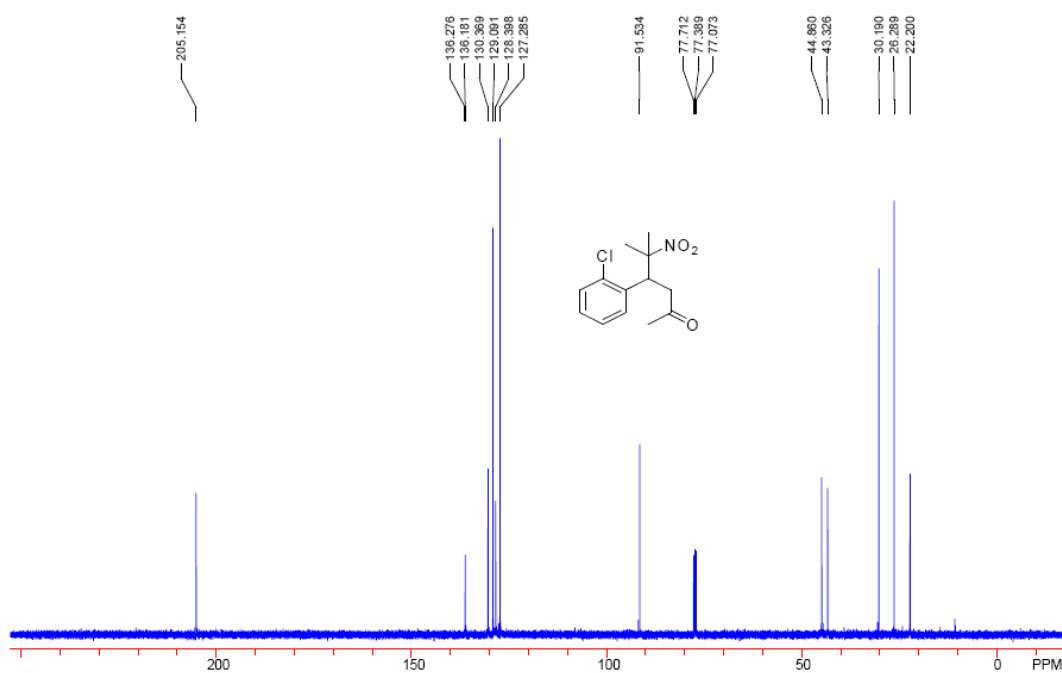




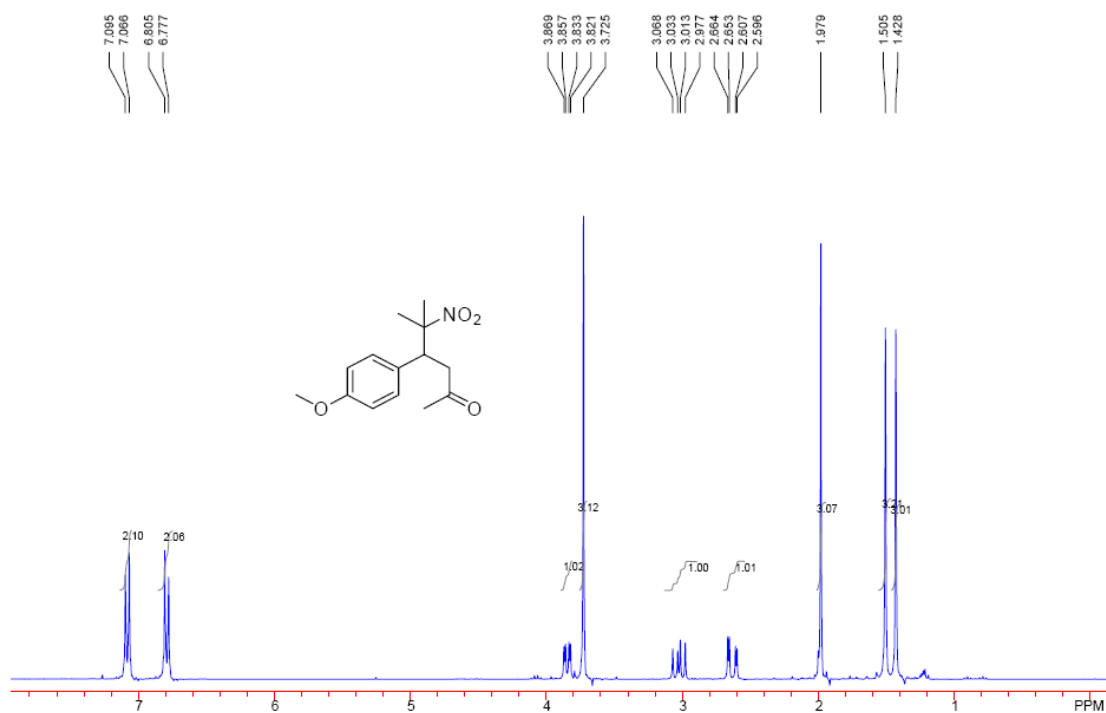
### 4ae (<sup>1</sup>H NMR)



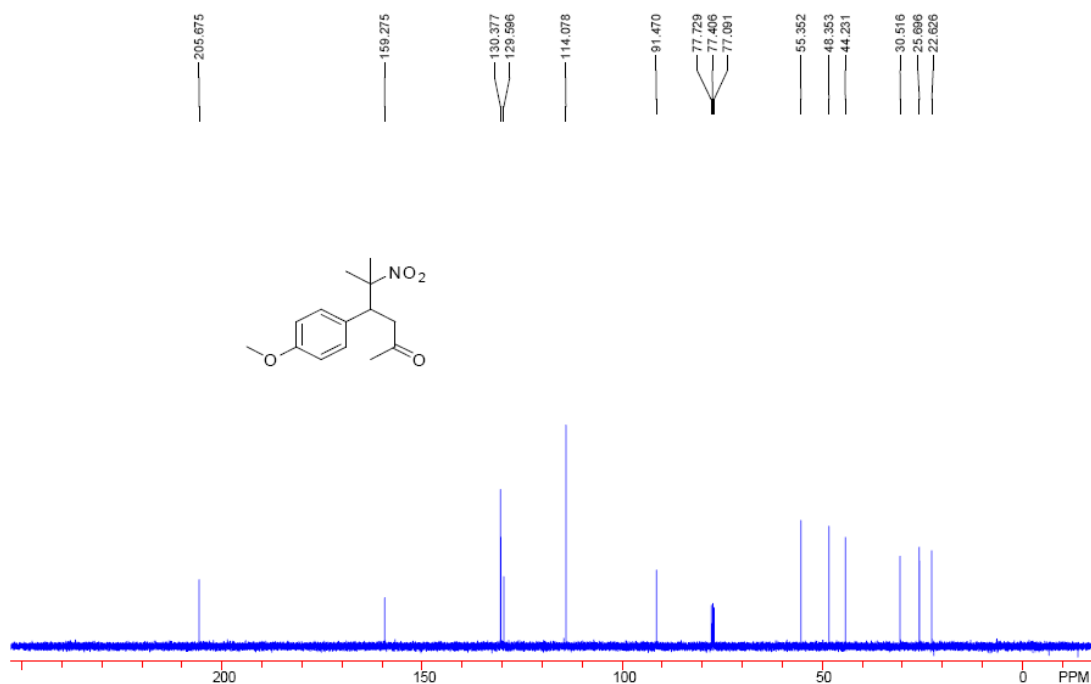
### 4ae (<sup>13</sup>C NMR)



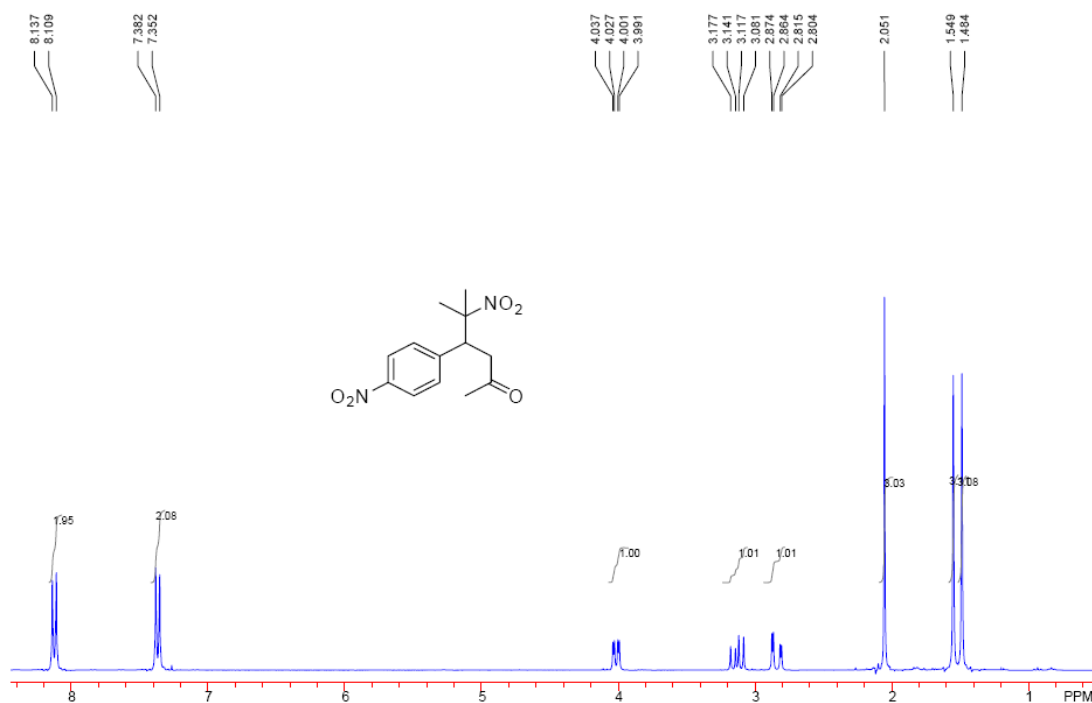
### 4af (<sup>1</sup>H NMR)



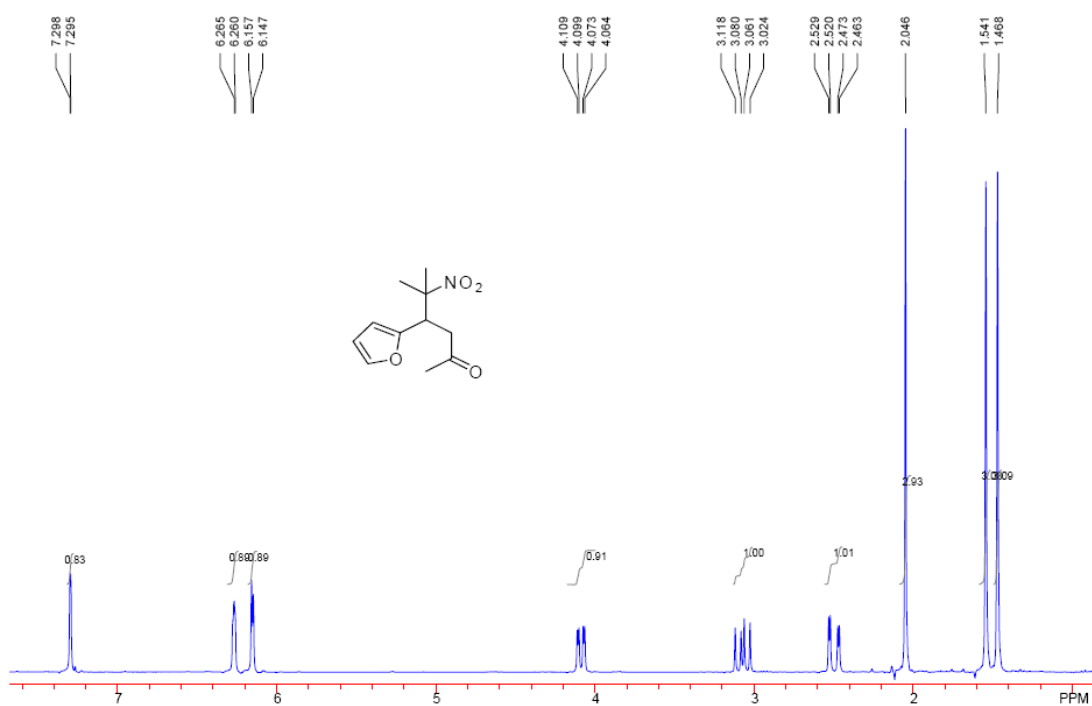
### 4af (<sup>13</sup>C NMR)



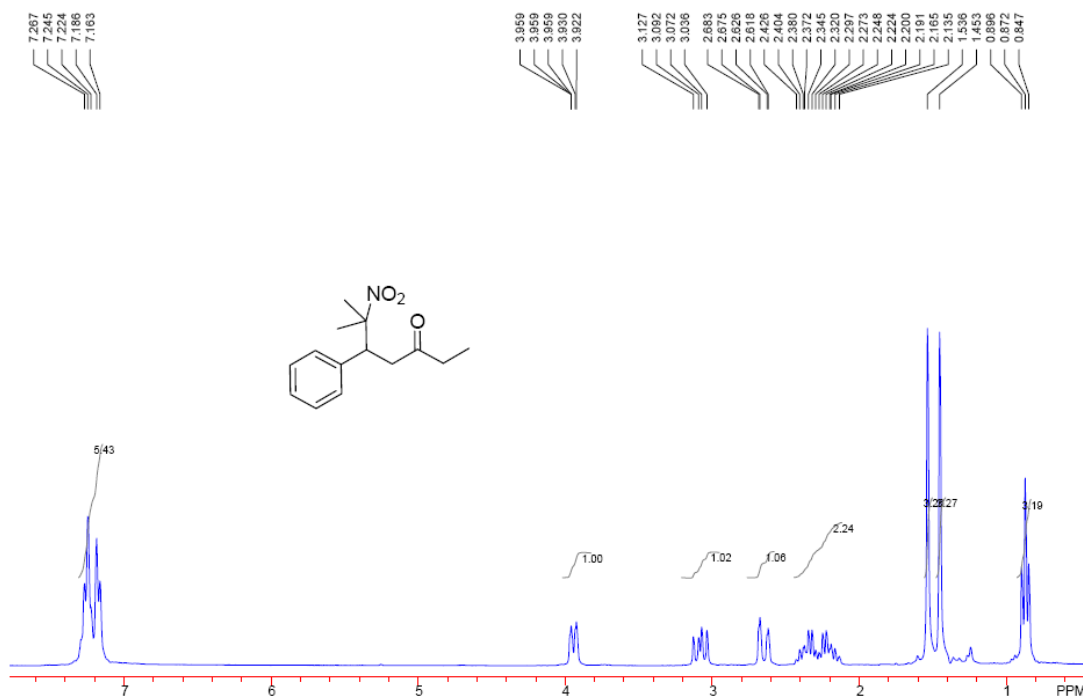
### 4ag (<sup>1</sup>H NMR)



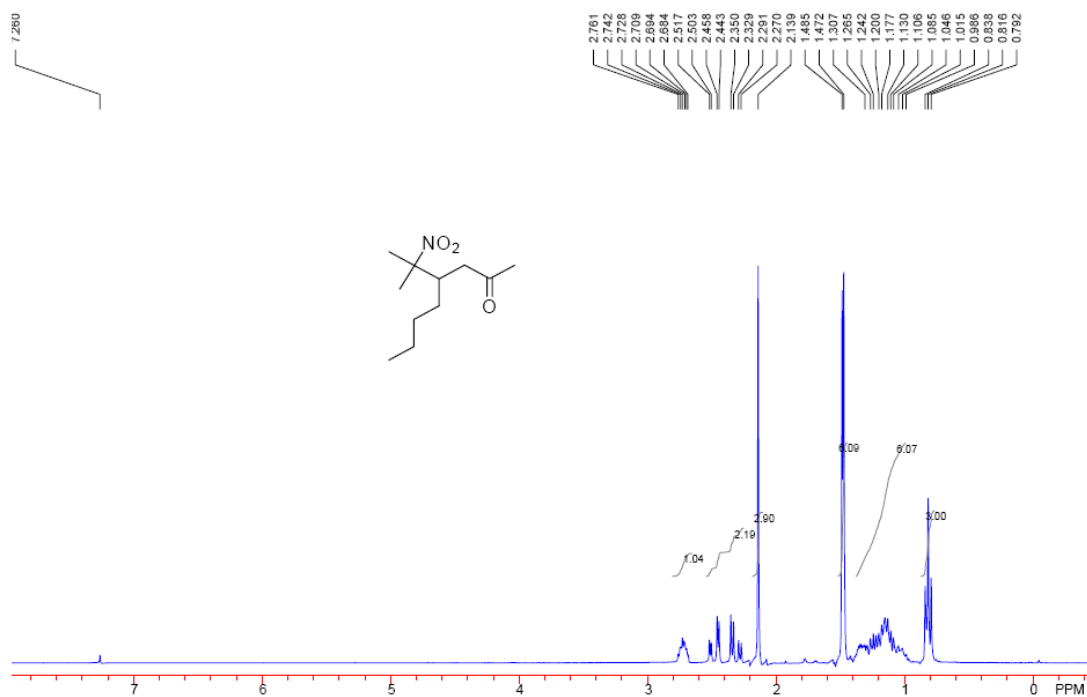
### 4ah (<sup>1</sup>H NMR)



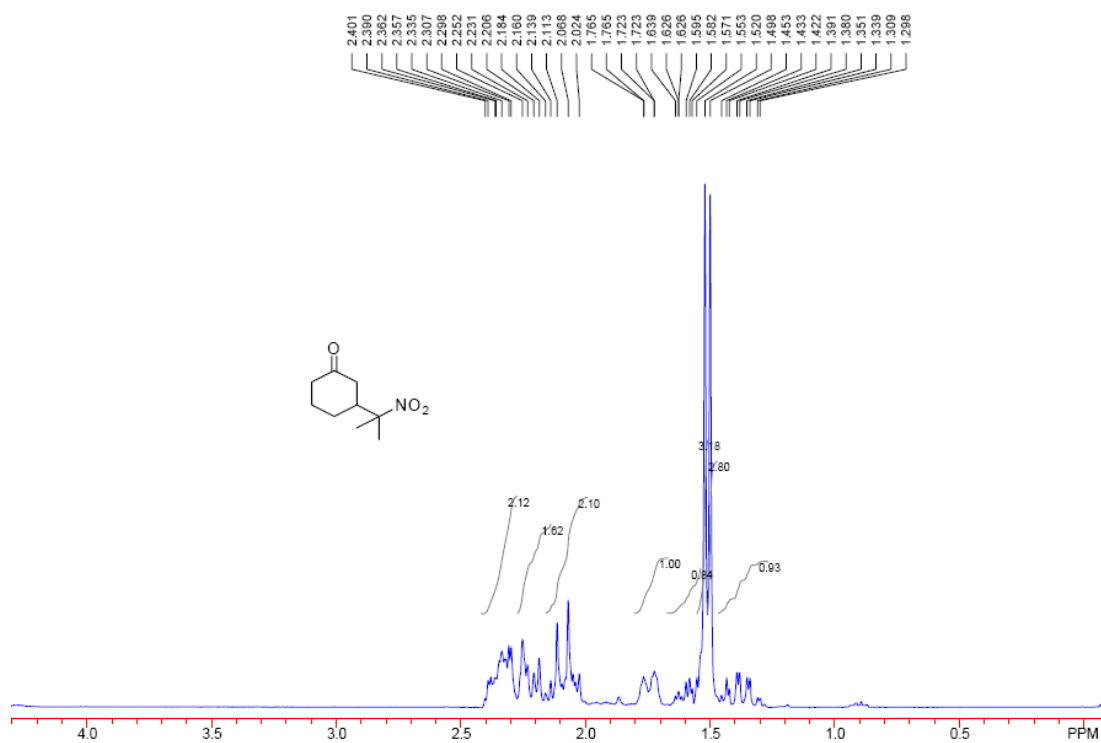
### 4ai (<sup>1</sup>H NMR)



### 4aj (<sup>1</sup>H NMR)



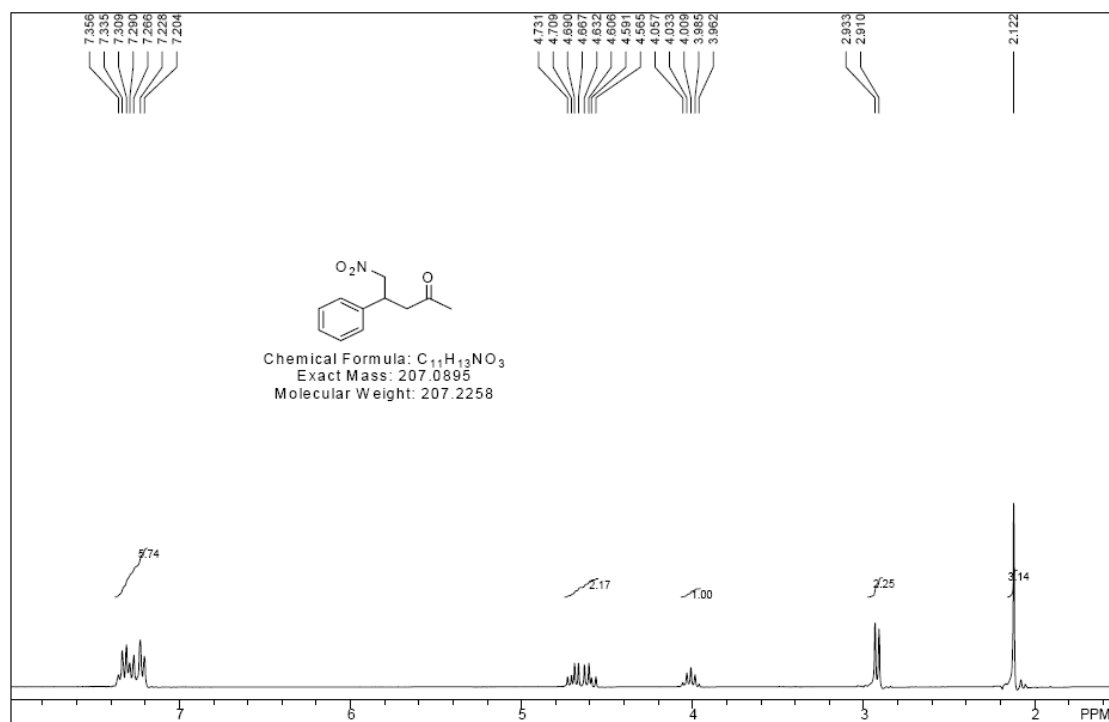
### 4ak (<sup>1</sup>H NMR)



### 4al (<sup>1</sup>H NMR)



### 4ba (<sup>1</sup>H NMR)



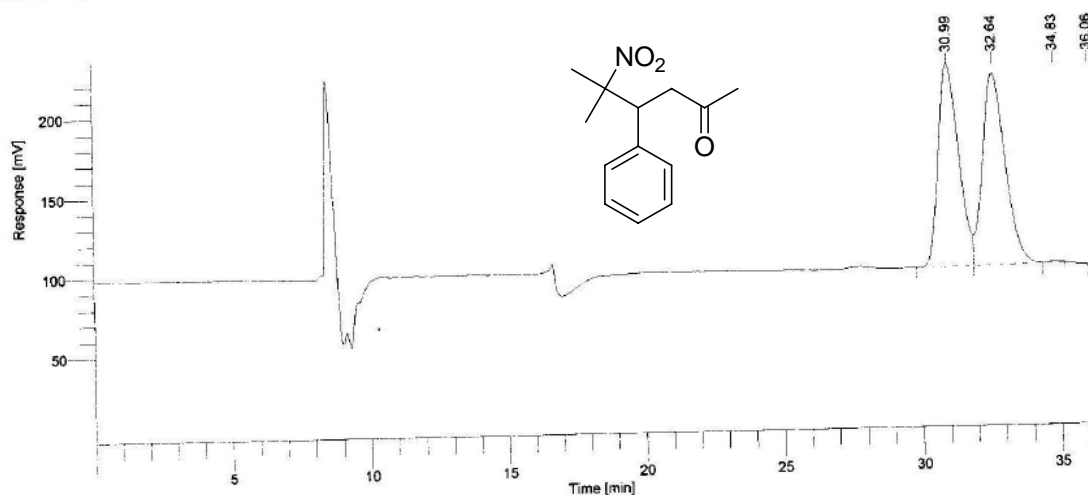
## HPLC spectra for compounds 4

### 4aa

Software Version : 6.3.1.0504  
Sample Name : Y6-16-A+-  
Instrument Name : NCI901  
Rack/Vial : 0/0  
Sample Amount : 1.000000  
Cycle : 1

Date : 2009-6-1 14:20:33  
Data Acquisition Time : 2009-6-1 13:40:27  
Channel : A  
Operator : manager  
Dilution Factor : 1.000000

Result File :  
Sequence File : D:\200090601-.seq



### HPLC REPORT

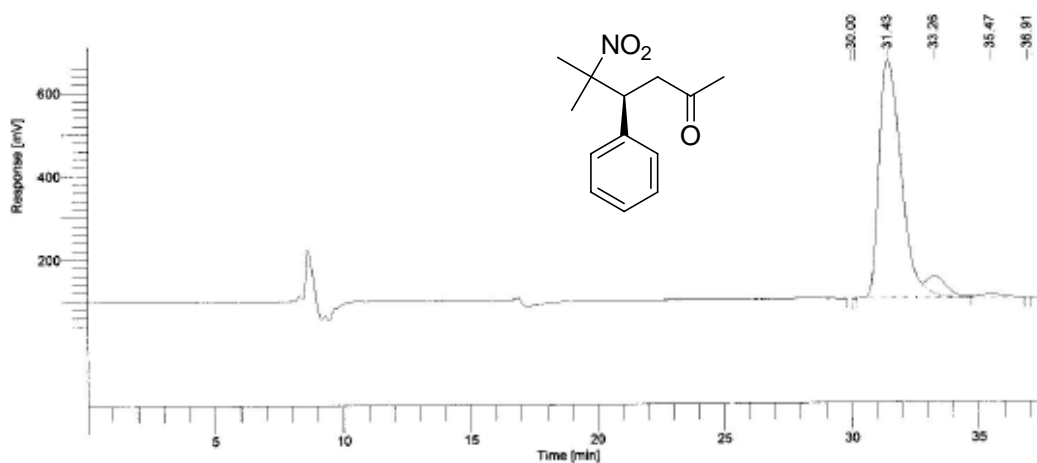
Peak #	Component Name	Time [min]	Area [uV*sec]	Height [uV]	Area [%]	BL
1		30.993	6575756.38	127246.97	48.989	BV
2		32.636	6825369.73	120799.93	50.849	VV
3		34.833	20332.42	715.36	0.151	VB
4		36.061	801.18	91.63	0.006	BB
5		36.493	673.59	103.14	0.005	BB

1.34e+07 248957.03 1e+02

Software Version : 6.3.1.0504  
 Sample Name : Y6-22-A  
 Instrument Name : NCI901  
 Rack/Vial : 0/0  
 Sample Amount : 1.000000  
 Cycle : 1

Date : 2009-6-1 14:58:23  
 Data Acquisition Time : 2009-6-1 14:19:26  
 Channel : A  
 Operator : manager  
 Dilution Factor : 1.000000

Result File :  
 Sequence File : D:\200090601-.seq



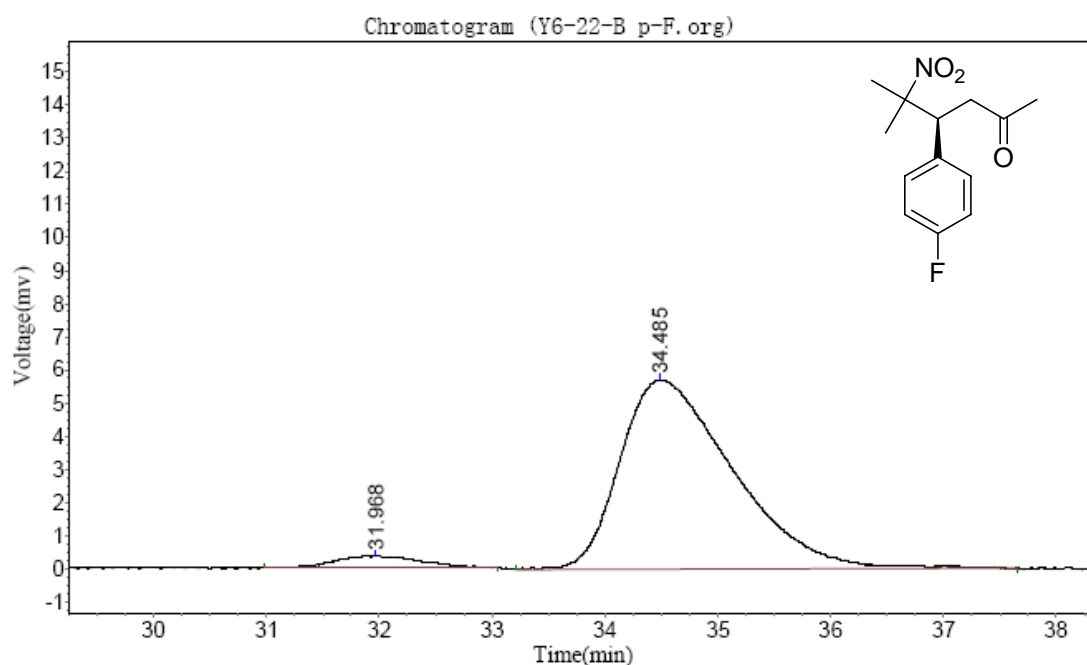
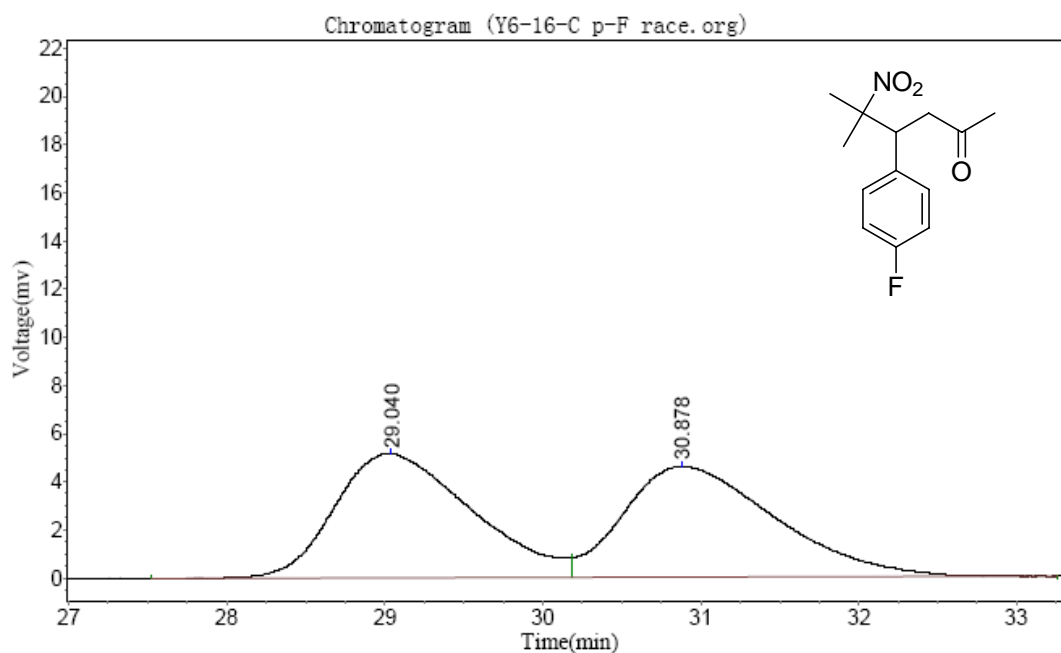
### HPLC REPORT

Peak #	Component Name	Time [min]	Area [uV*sec]	Height [uV]	Area [%]	BL
1		30.001	515.56	46.47	0.001	BV
2		30.145	129.89	32.73	3e-04	VV
3		31.430	3.50e+07	571868.10	92.751	VE
4		33.264	2247075.10	41892.25	5.946	EV
5		35.470	490786.92	8289.21	1.299	VB
6		36.908	562.31	64.67	0.001	BB
7		37.101	356.44	55.24	9e-04	BB

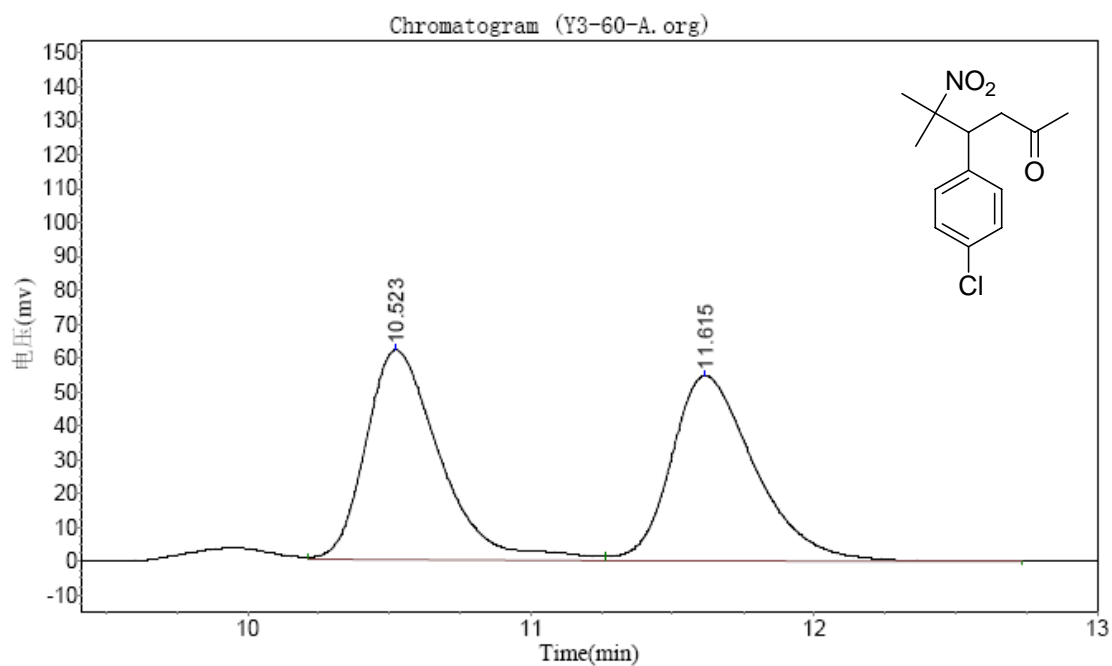
3.78e+07 622248.67 1e+02



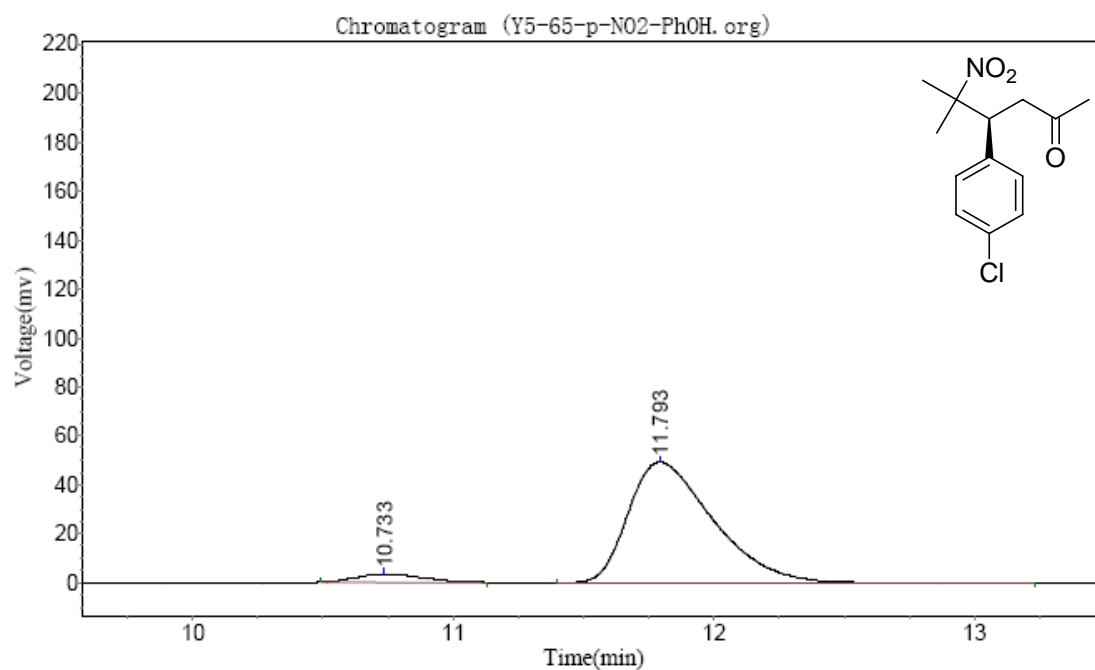
## 4ab



## 4ac

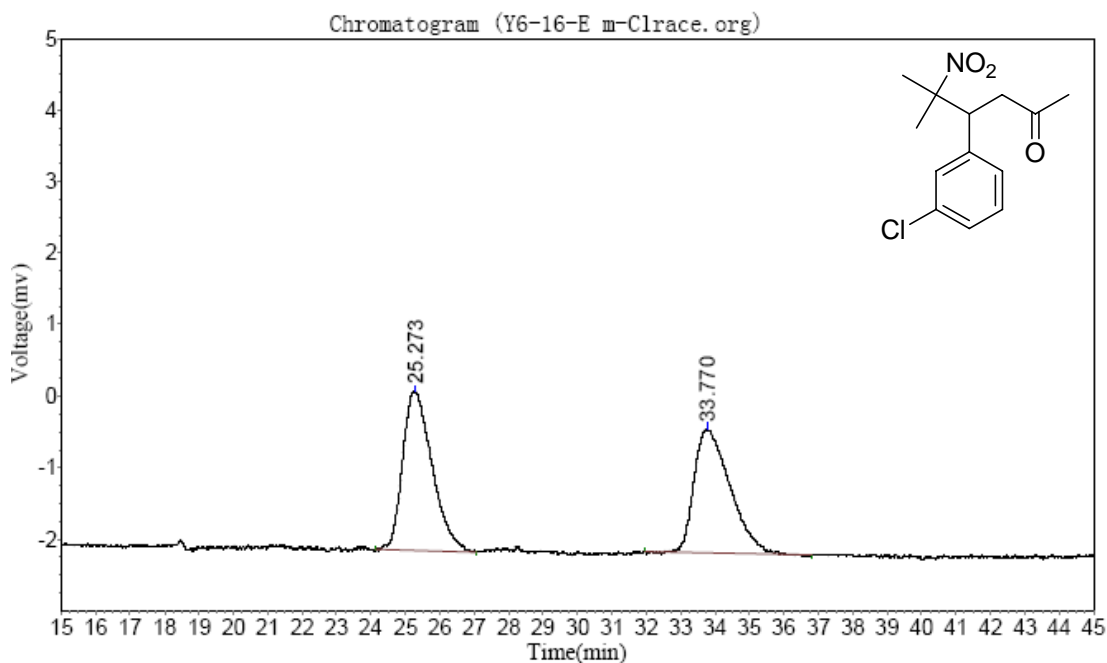


Peak No.	Peak ID	Ret Time	Height	Area	Conc.
1		10.523	61637.637	1123288.250	50.2146
2		11.615	54552.043	1113686.000	49.7854
Total			116189.680	2236974.250	100.0000

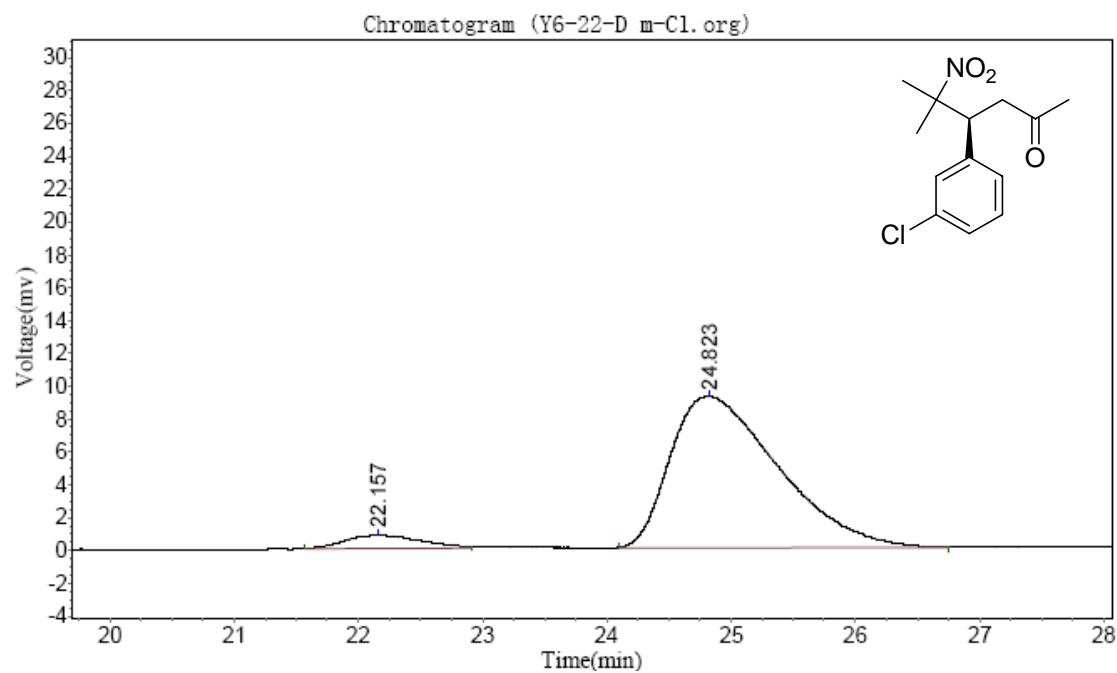


Peak No.	Peak ID	Ret Time	Height	Area	Conc.
1		10.733	3290.935	60339.797	5.0800
2		11.793	49423.652	1127447.625	94.9200
Total			52714.587	1187787.422	100.0000

## 4ad

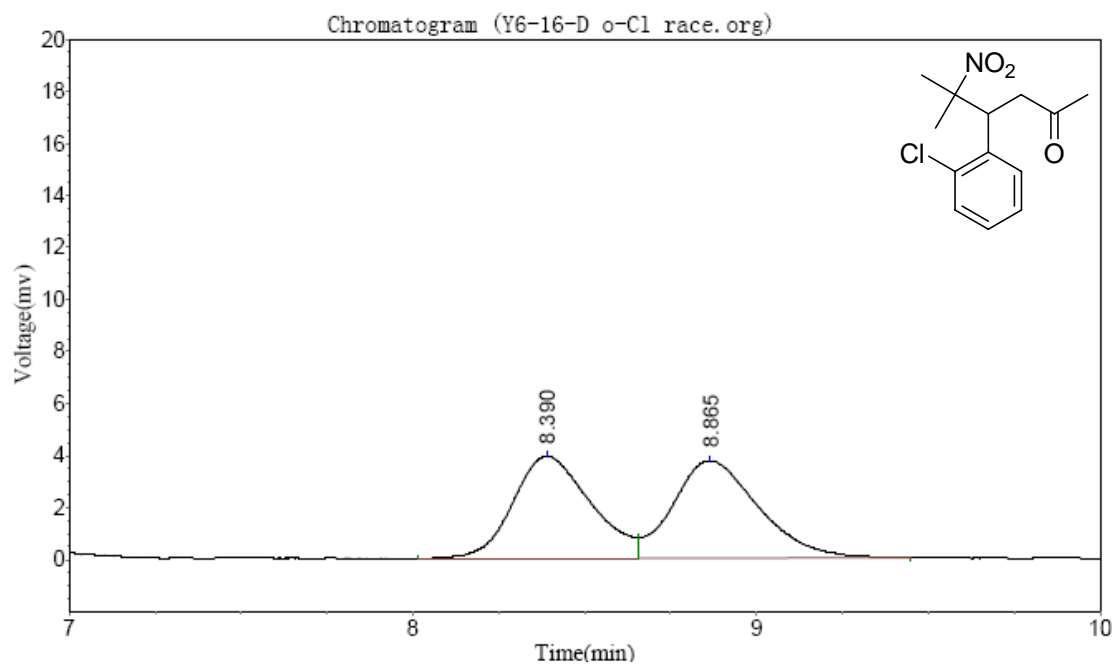


Peak No.	Peak ID	Ret Time	Height	Area	Conc.
1		25.273	2237.406	133312.656	51.6640
2		33.770	1739.753	124725.125	48.3360
Total			3977.160	258037.781	100.0000

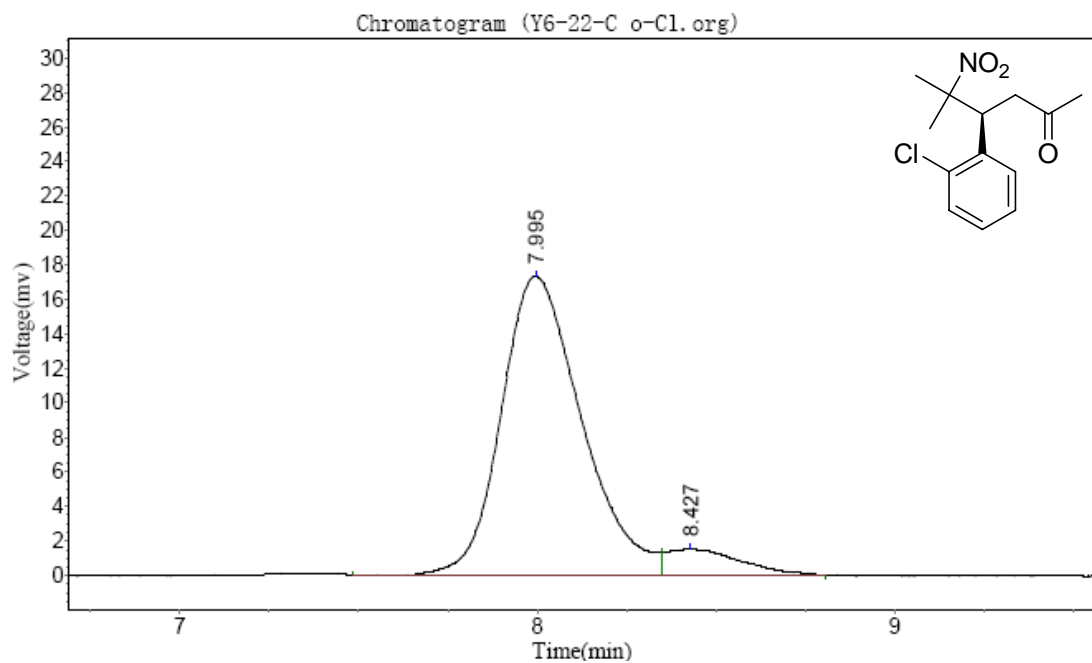


Peak No.	Peak ID	Ret Time	Height	Area	Conc.
1		22.157	893.243	39679.715	6.4778
2		24.823	9317.081	572868.063	93.5222
Total			10210.324	612547.777	100.0000

## 4ae

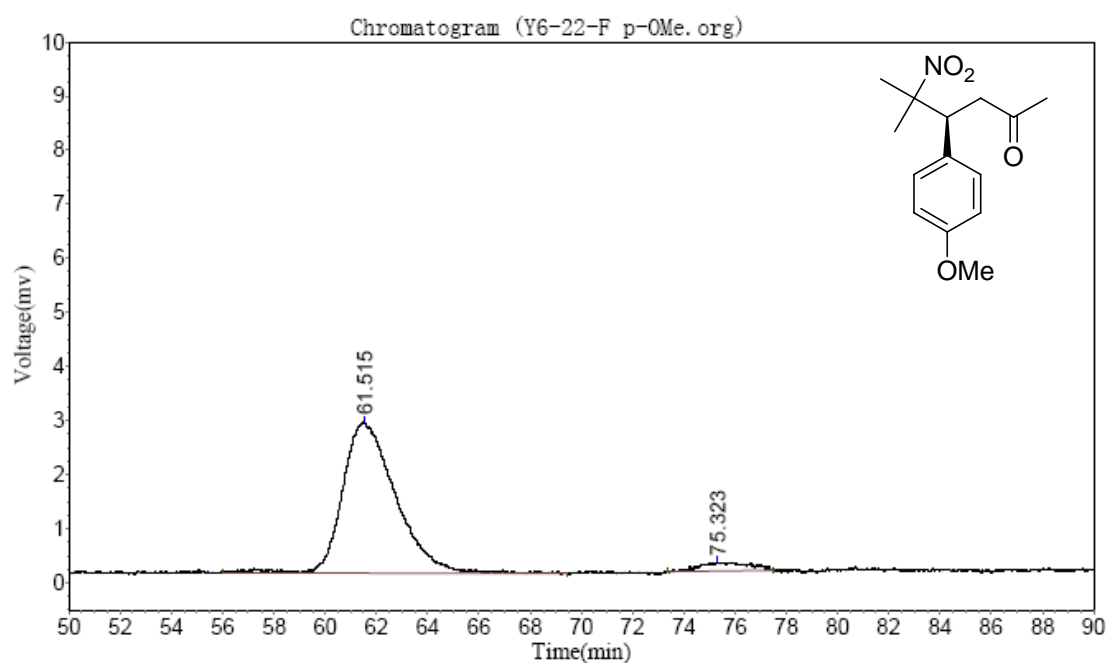
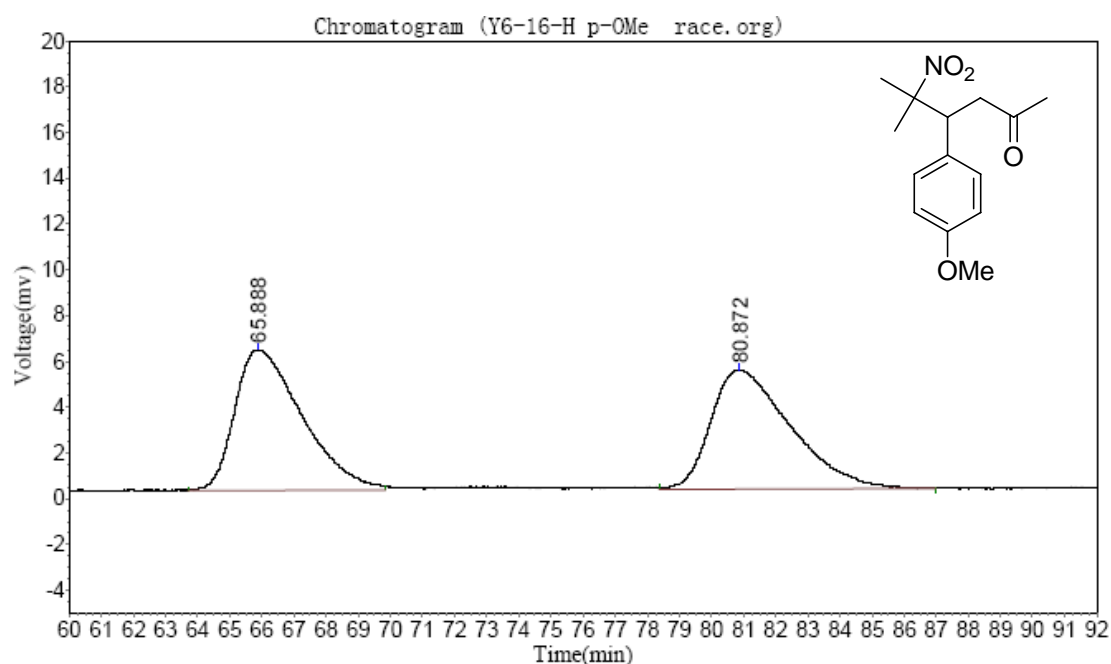


Peak No.	Peak ID	Ret Time	Height	Area	Conc.
1		8.390	3913.012	61670.156	48.9554
2		8.865	3731.093	64301.844	51.0446
Total			7644.105	125972.000	100.0000

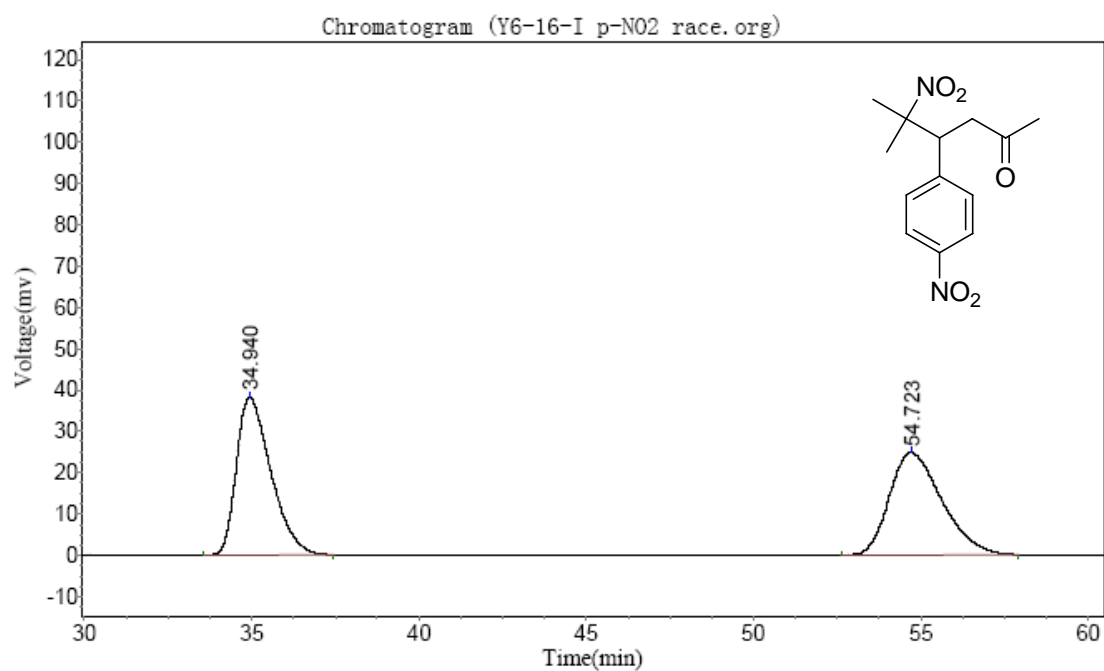


Peak No.	Peak ID	Ret Time	Height	Area	Conc.
1		7.995	17311.387	268510.031	92.7827
2		8.427	1477.714	20886.615	7.2173
Total			18789.100	289396.646	100.0000

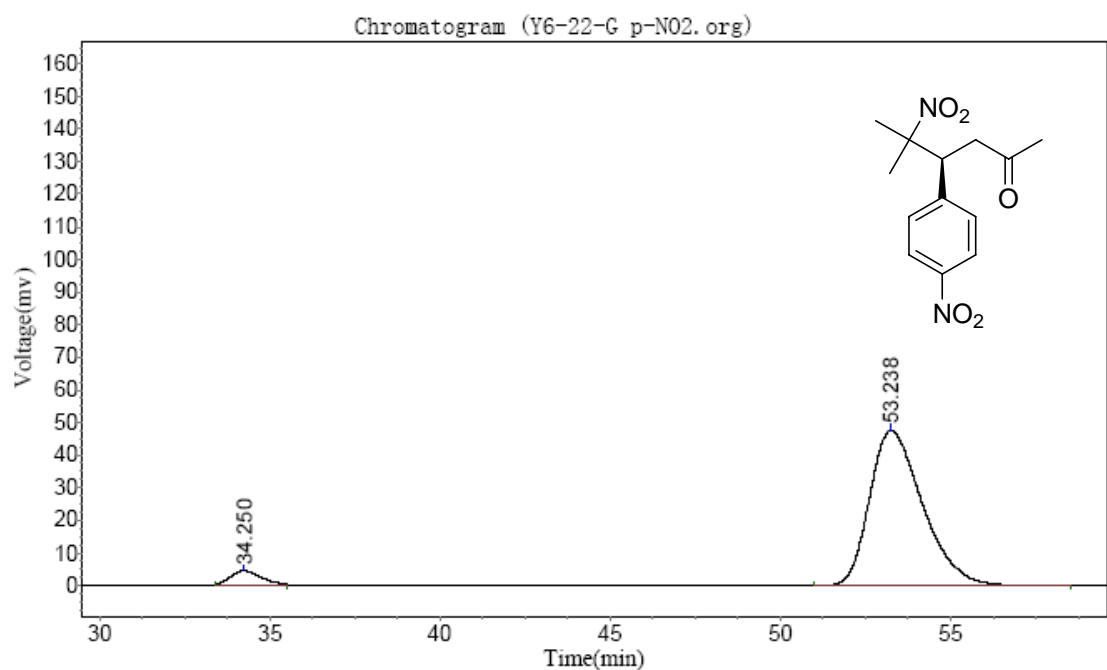
## 4af



## 4ag

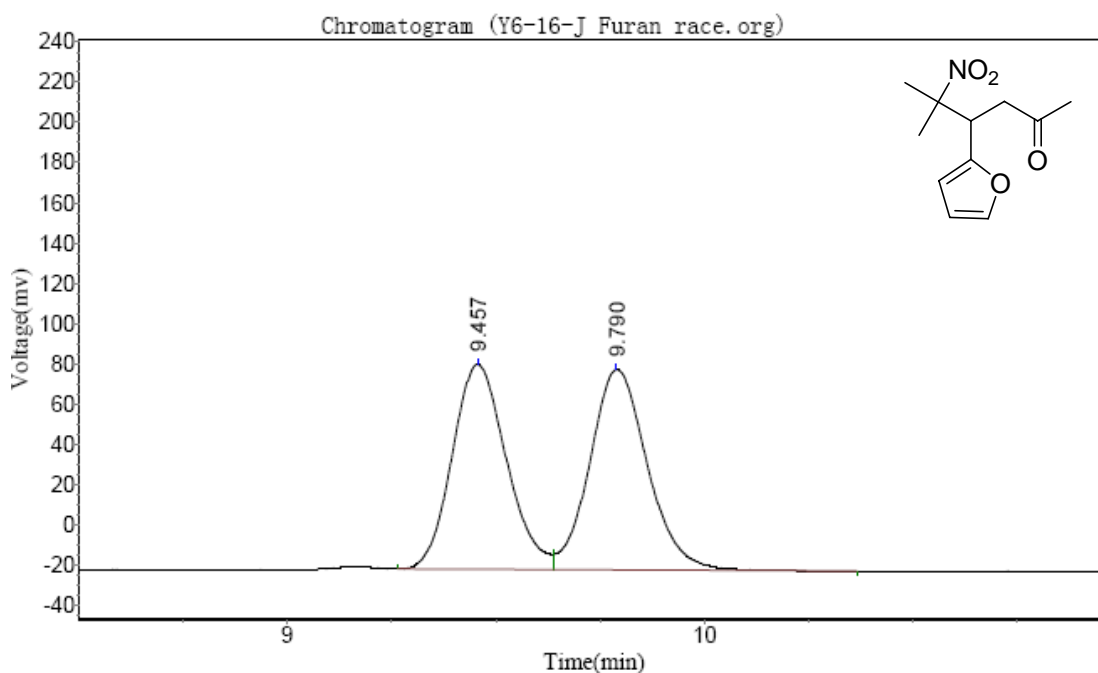


Peak No.	Peak ID	Ret Time	Height	Area	Conc.
1		34.940	38230.551	2740491.750	50.0407
2		54.723	24885.682	2736037.250	49.9593
Total			63116.232	5476529.000	100.0000

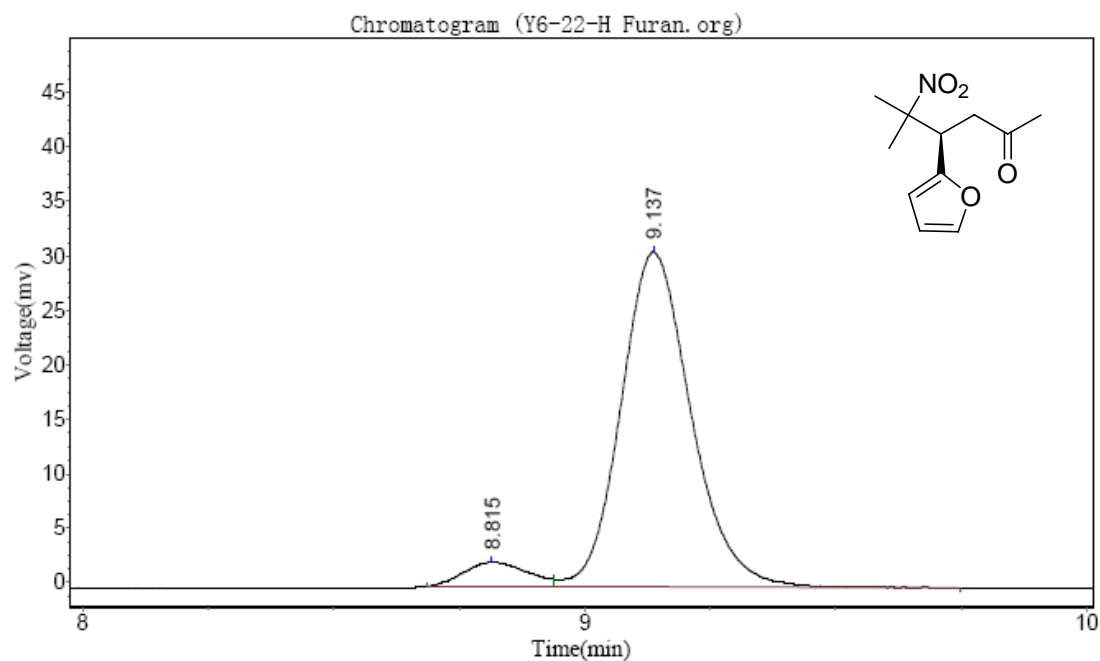


Peak No.	Peak ID	Ret Time	Height	Area	Conc.
1		34.250	4069.791	250771.234	4.6345
2		53.238	47759.324	5160162.000	95.3655
Total			51829.115	5410933.234	100.0000

### 4ah

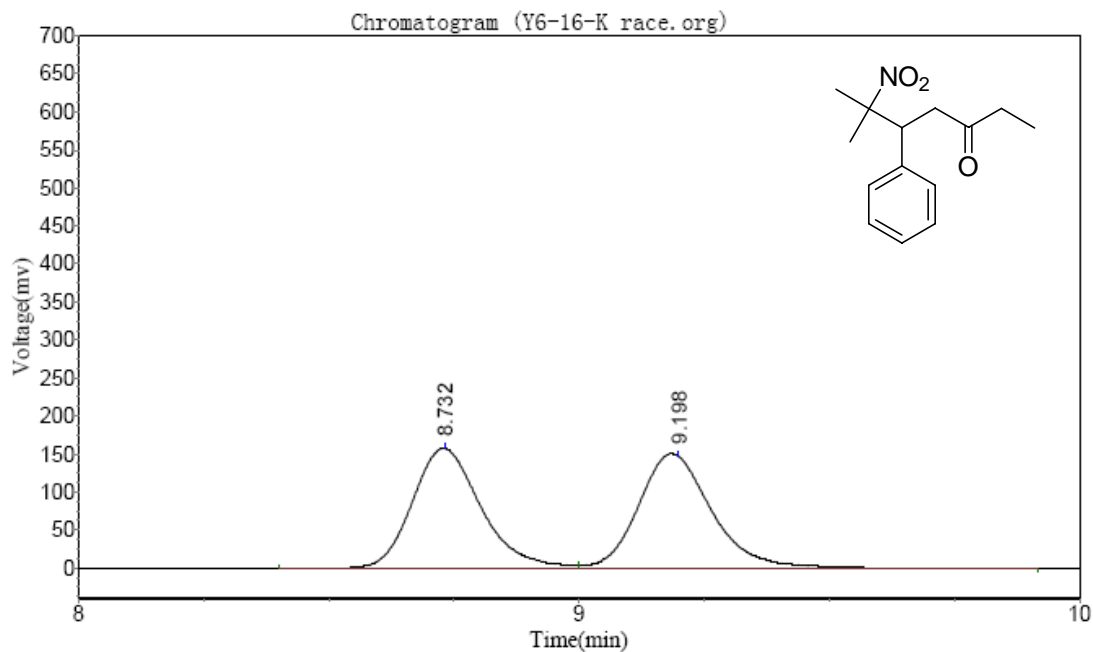


Peak No.	Peak ID	Ret Time	Height	Area	Conc.
1		9.457	101871.625	920656.125	49.1550
2		9.790	99495.633	952309.313	50.8450
<b>Total</b>			201367.258	1872965.438	100.0000

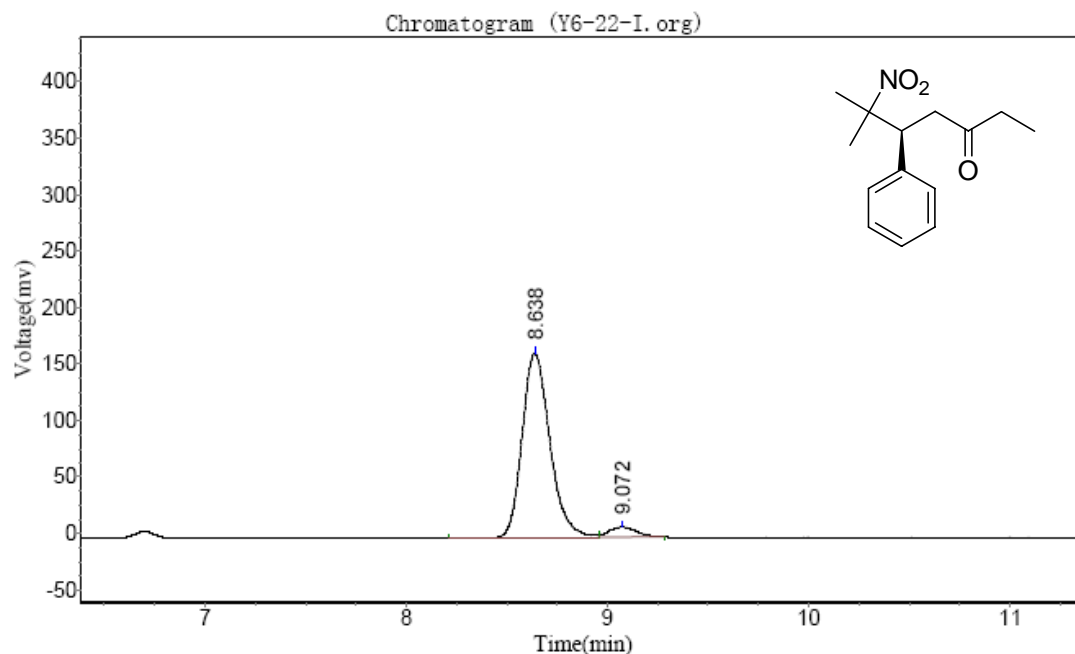


Peak No.	Peak ID	Ret Time	Height	Area	Conc.
1		8.815	2225.078	19412.451	6.0916
2		9.137	30728.779	299261.156	93.9084
<b>Total</b>			32953.857	318673.607	100.0000

## 4ai



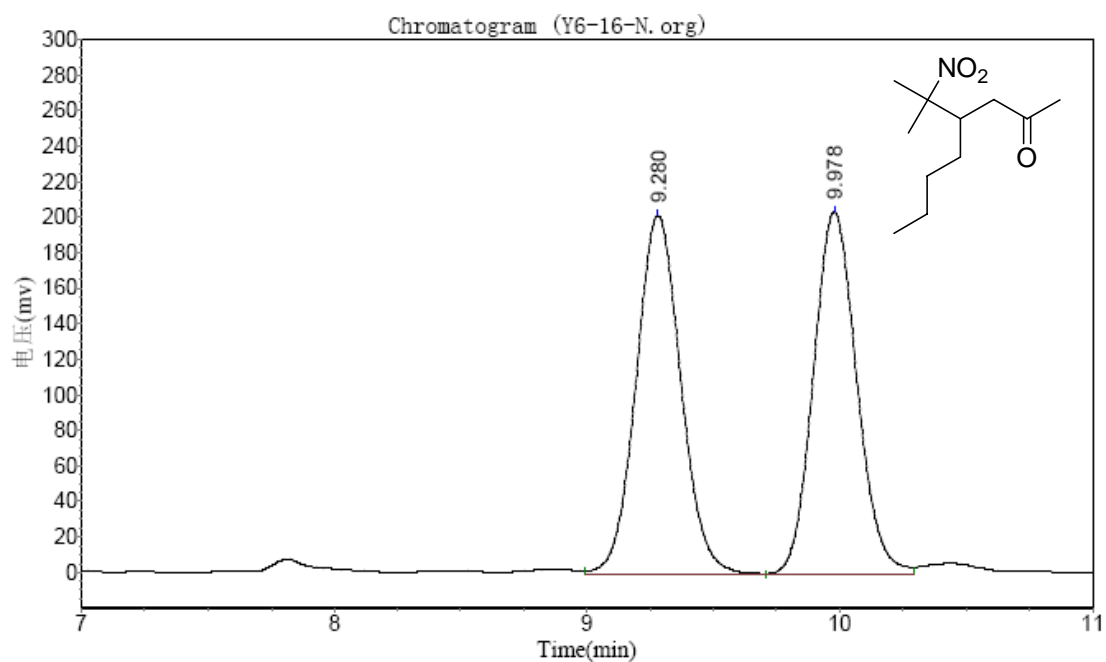
Peak No.	Peak ID	Ret Time	Height	Area	Conc.
1		8.732	156666.266	1510784.250	49.6703
2		9.198	149715.281	1530839.000	50.3297
<b>Total</b>			306381.547	3041623.250	100.0000



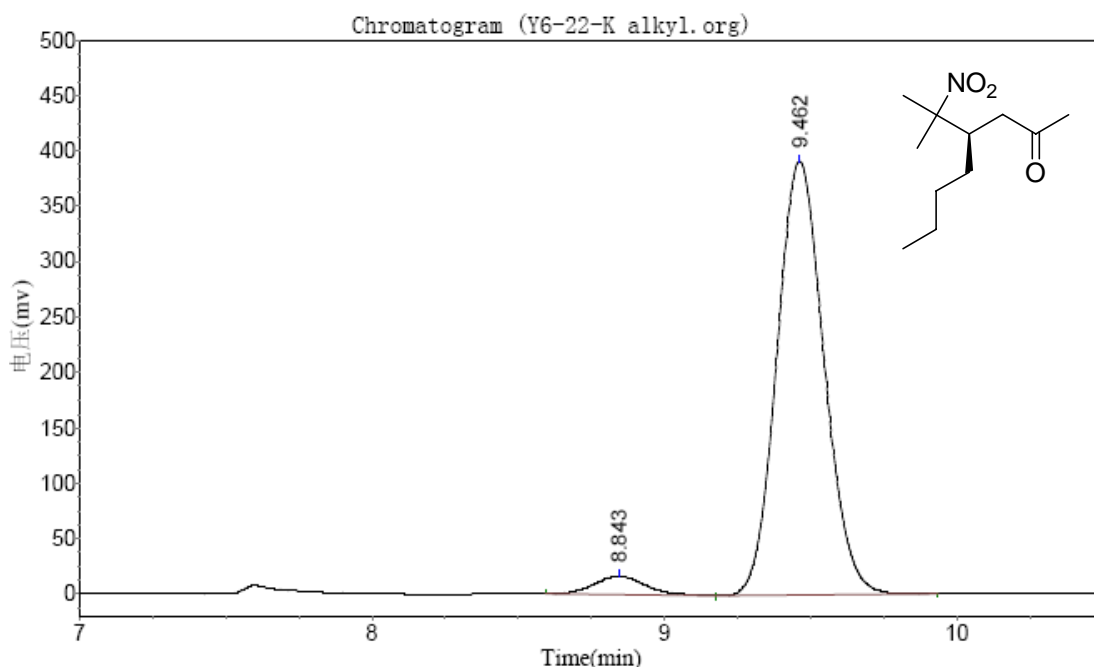
Peak No.	Peak ID	Ret Time	Height	Area	Conc.
1		8.638	163166.828	1549814.500	94.8703
2		9.072	8953.341	83799.563	5.1297
<b>Total</b>			172120.169	1633614.063	100.0000



## 4aj



Peak No.	Peak ID	Ret Time	Height	Area	Conc.
1		9.280	201848.047	2484437.000	50.6034
2		9.978	203718.000	2425183.750	49.3966
<b>Total</b>			405566.047	4909620.750	100.0000



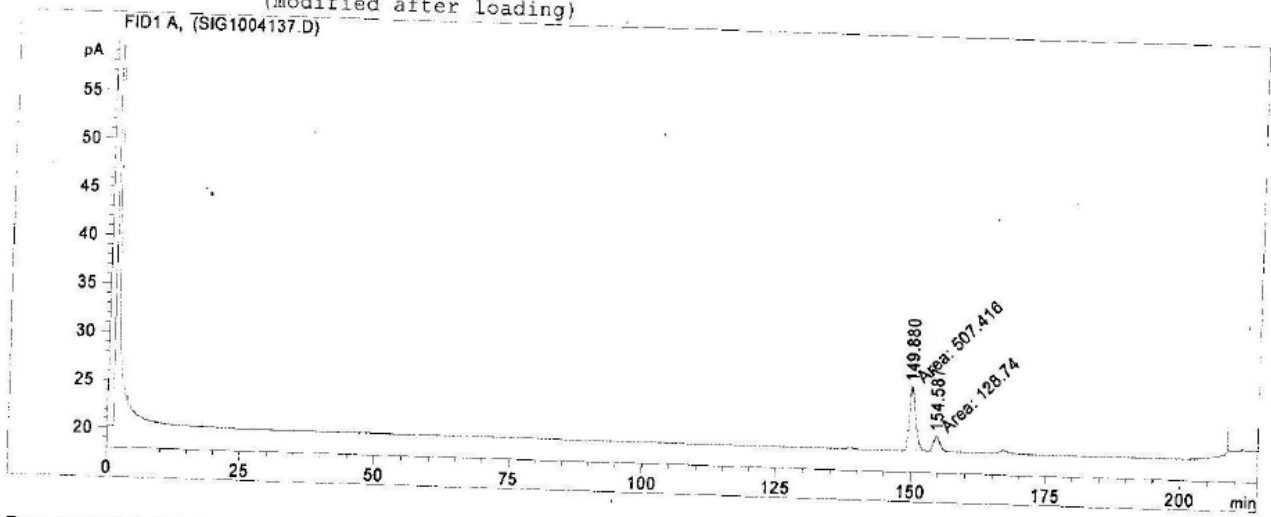
Peak No.	Peak ID	Ret Time	Height	Area	Conc.
1		8.843	16802.285	208198.391	4.5271
2		9.462	391813.219	4390733.500	95.4729
<b>Total</b>			408615.504	4598931.891	100.0000



```

=====
Acq. Operator   : lx1
Acq. Instrument : Instrument 2
Injection Date  : 4/30/2009 2:01:07 PM
Location       : Vial 1
Inj            : 1
Inj Volume     : External

Acq. Method    : C:\CHEM32\2\DATA\TEST.M
Last changed   : 4/30/2009 1:37:55 PM by lx1
                (modified after loading)
Analysis Method : C:\CHEM32\2\DATA\TEST.M
Last changed   : 4/30/2009 5:55:37 PM by lx1
                (modified after loading)
    
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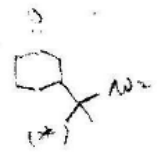
Area Percent Report

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=====
Sorted By      : Signal
Multiplier     : 1.0000
Dilution       : 1.0000
Use Multiplier & Dilution Factor with ISTDs
    
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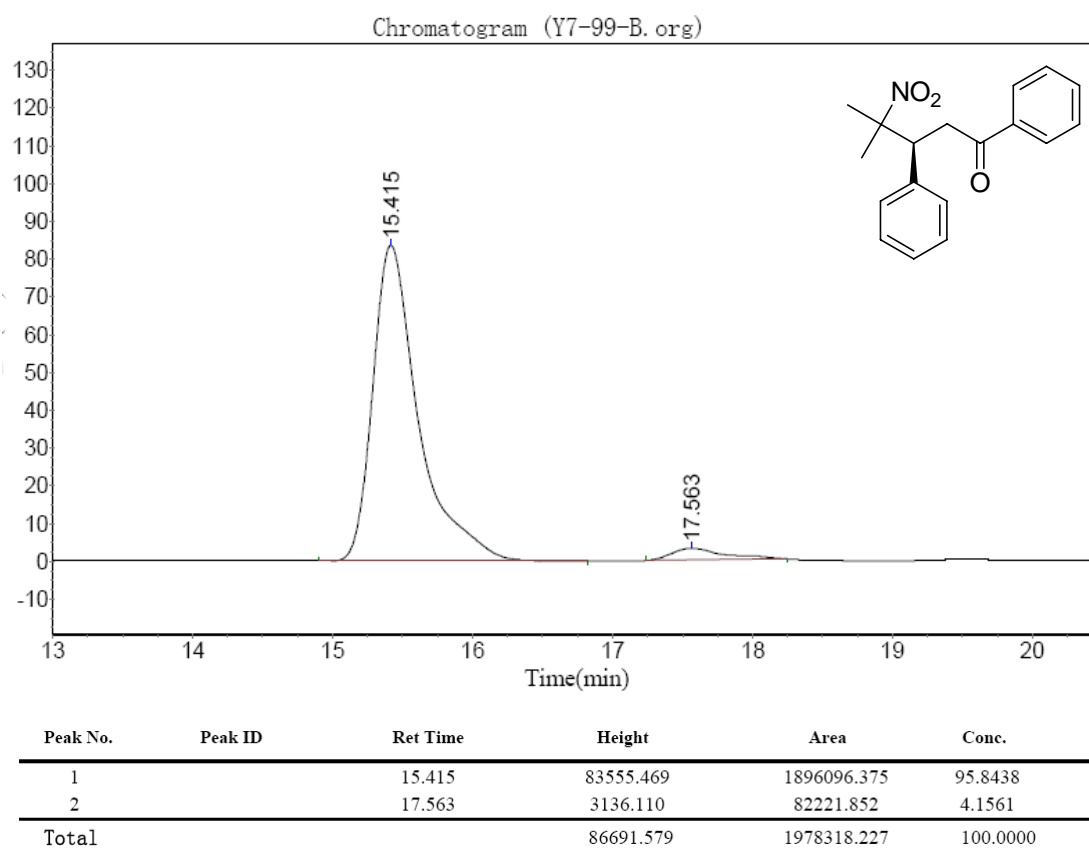
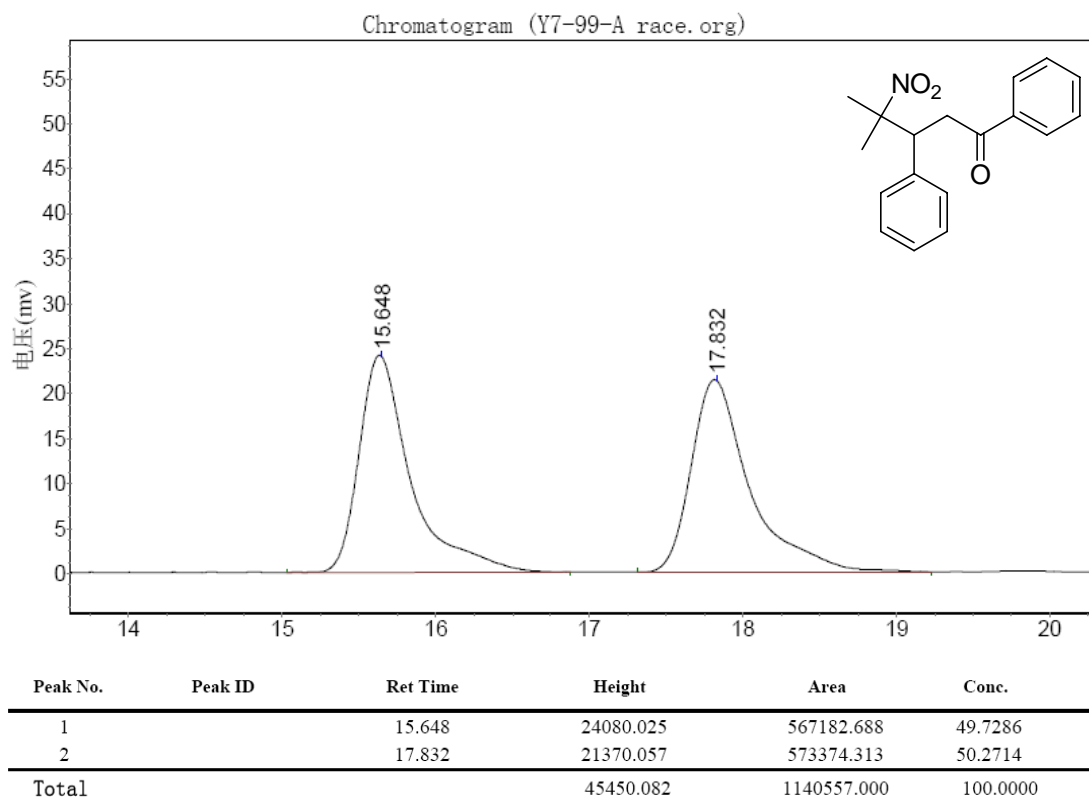
Signal 1: FID1 A,

Peak #	RetTime [min]	Type	Width [min]	Area [pA*s]	Height [pA]	Area %
1	149.880	MM	1.2830	507.41629	6.59174	79.76288
2	154.587	MM	1.3706	128.73961	1.56551	20.23712
Totals :				636.15590	8.15725	

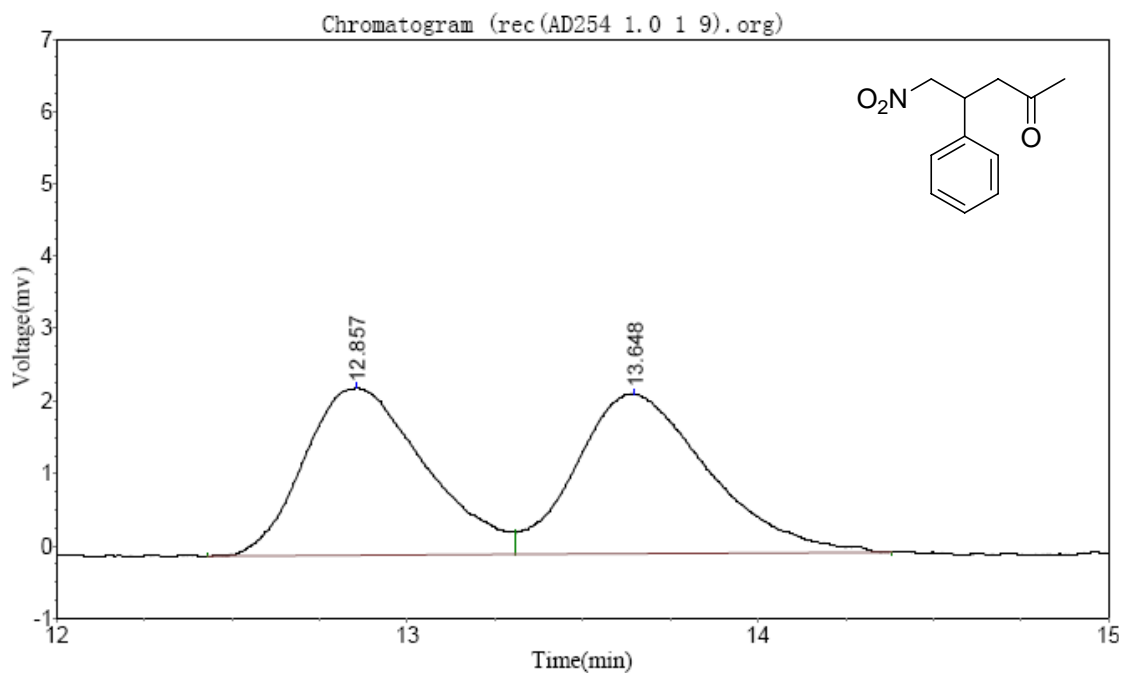


\*\*\* End of Report \*\*\*

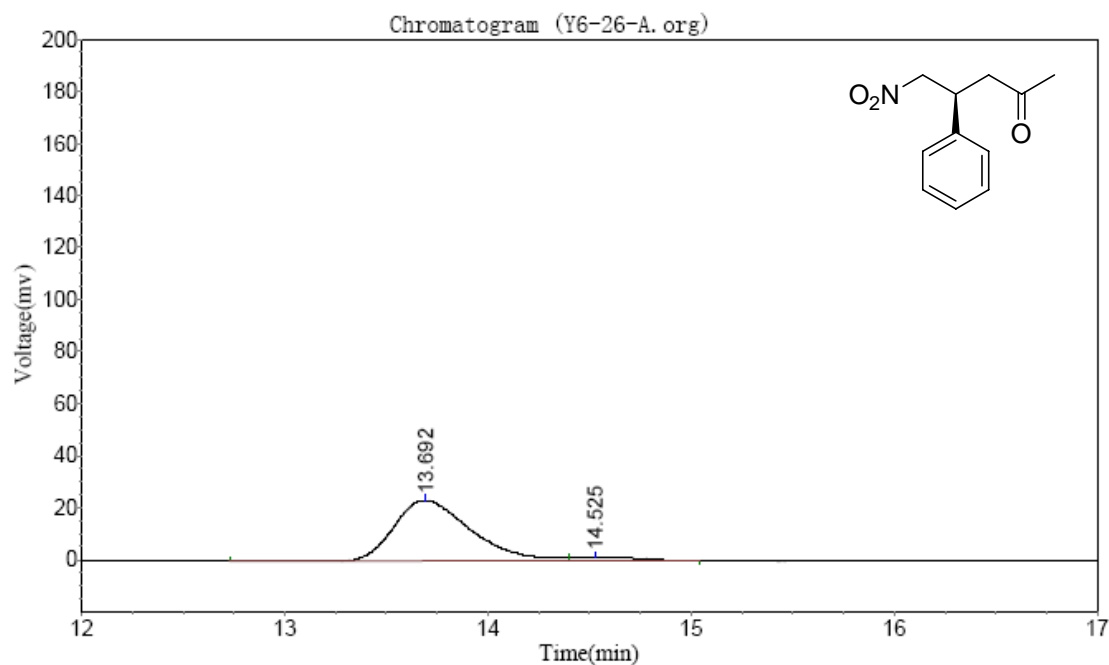
## 4al



## 4ba



Peak No.	Peak ID	Ret Time	Height	Area	Conc.
1		12.857	2310.487	55648.910	49.0598
2		13.648	2204.316	57781.789	50.9402
Total			4514.803	113430.699	100.0000



Peak No.	Peak ID	Ret Time	Height	Area	Conc.
1		13.692	23241.574	603658.750	95.3009
2		14.525	1318.313	29765.469	4.6991
Total			24559.887	633424.219	100.0000