

Supporting Information

Arginine Thioacid in Synthesis of Arginine Conjugates and Peptides

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Dennis Hall^{*a} and Alan R. Katritzky^{a,b}

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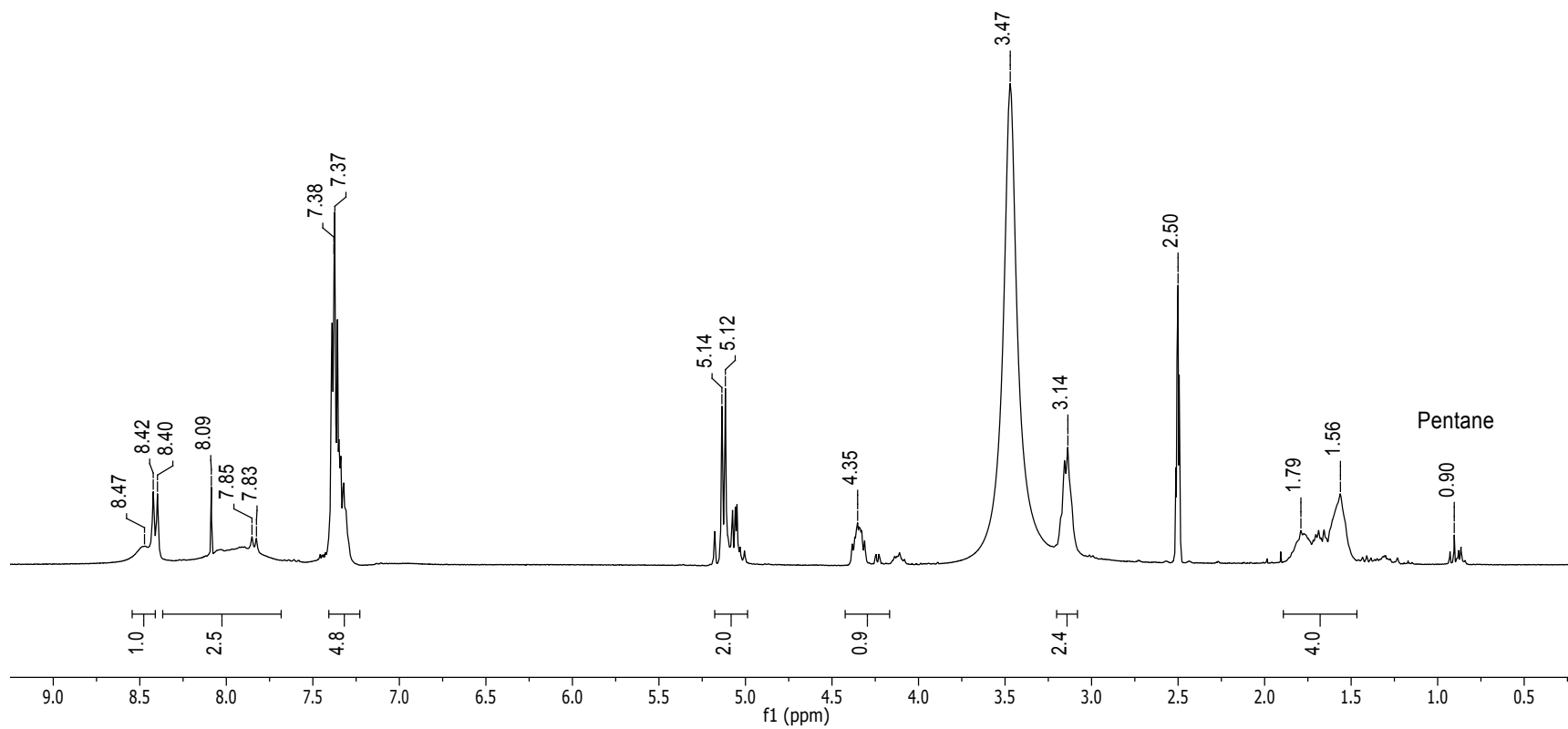
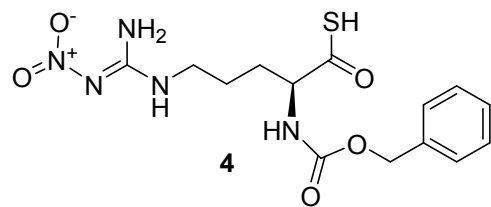
^bCenter of Excellence for Advanced Material Research, King Abdulaziz University, Jeddah,
21589, Saudi Arabia

^cDepartment of Chemistry, King Abdulaziz University, Jeddah, 21589, Saudi Arabia

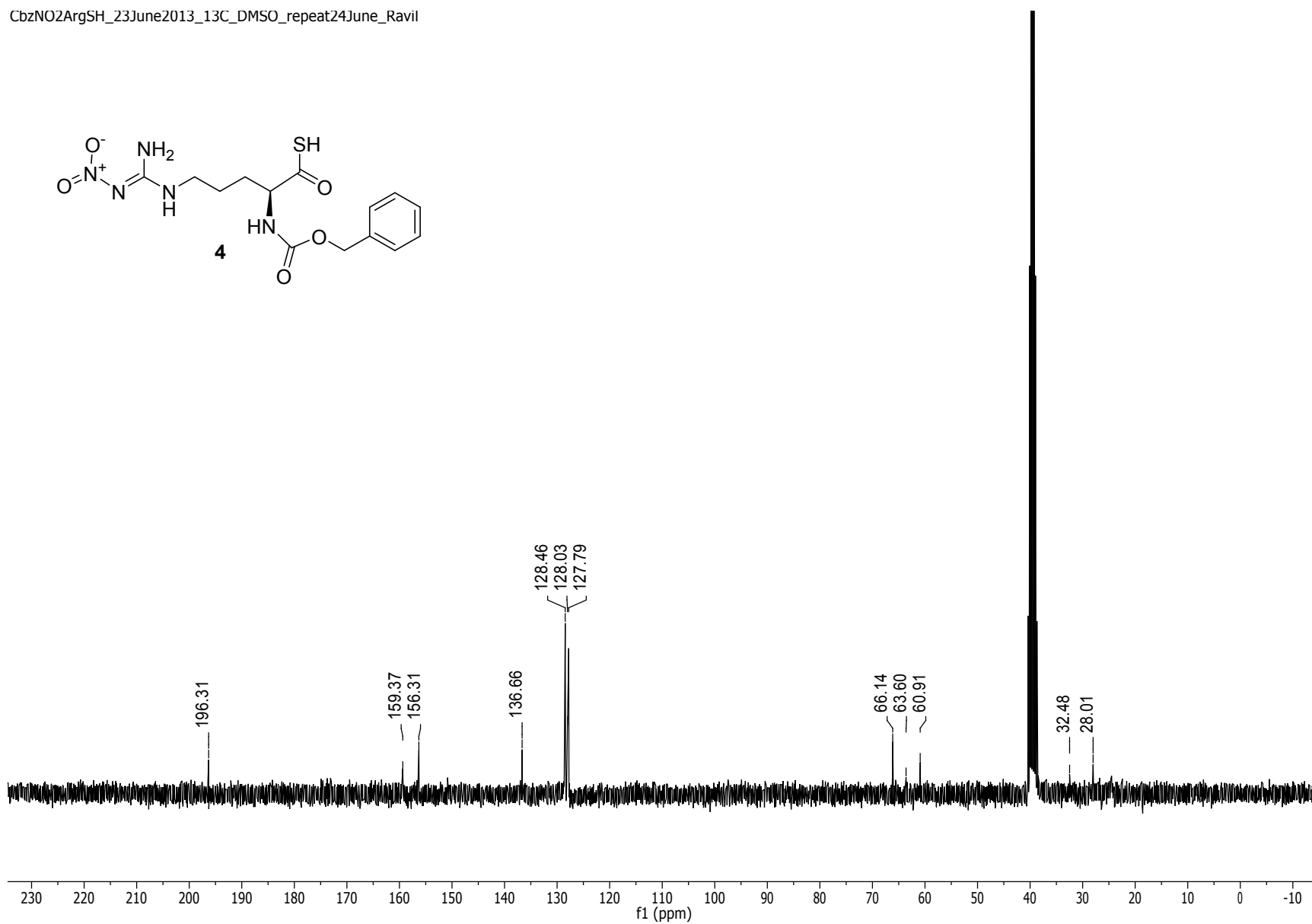
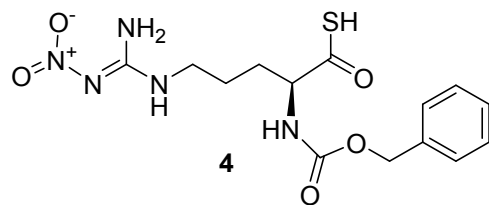
E-mail: ravilx84@gmail.com, charlesdennishall@gmail.com

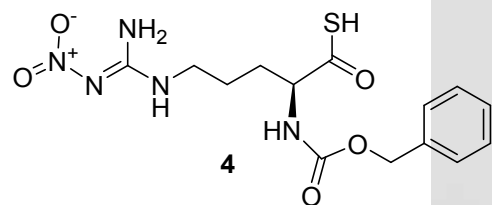
Contents

- | | |
|---|---------|
| 1. Copies of ¹ H NMR, ¹³ C NMR, CHN and HRMS of all the compounds | S2–S38 |
| 2. HPLC spectra of compound 5a–c | S39–S41 |



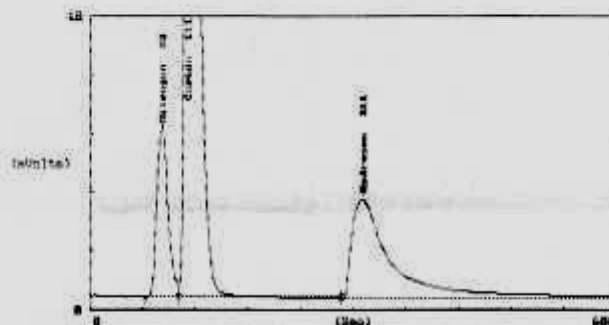
CbzNO2ArgSH_23June2013_13C_DMSO_repeat24June_Ravil





EAGER 200 Stripchart

Sample Ident. : 25 2195_ZNO2ArgSH Filename : 279325
 Analysed : 06-20-13 10:58:02 Printed : 06-20-2013 13:19:47



EAGER 200 Peak Integration Report

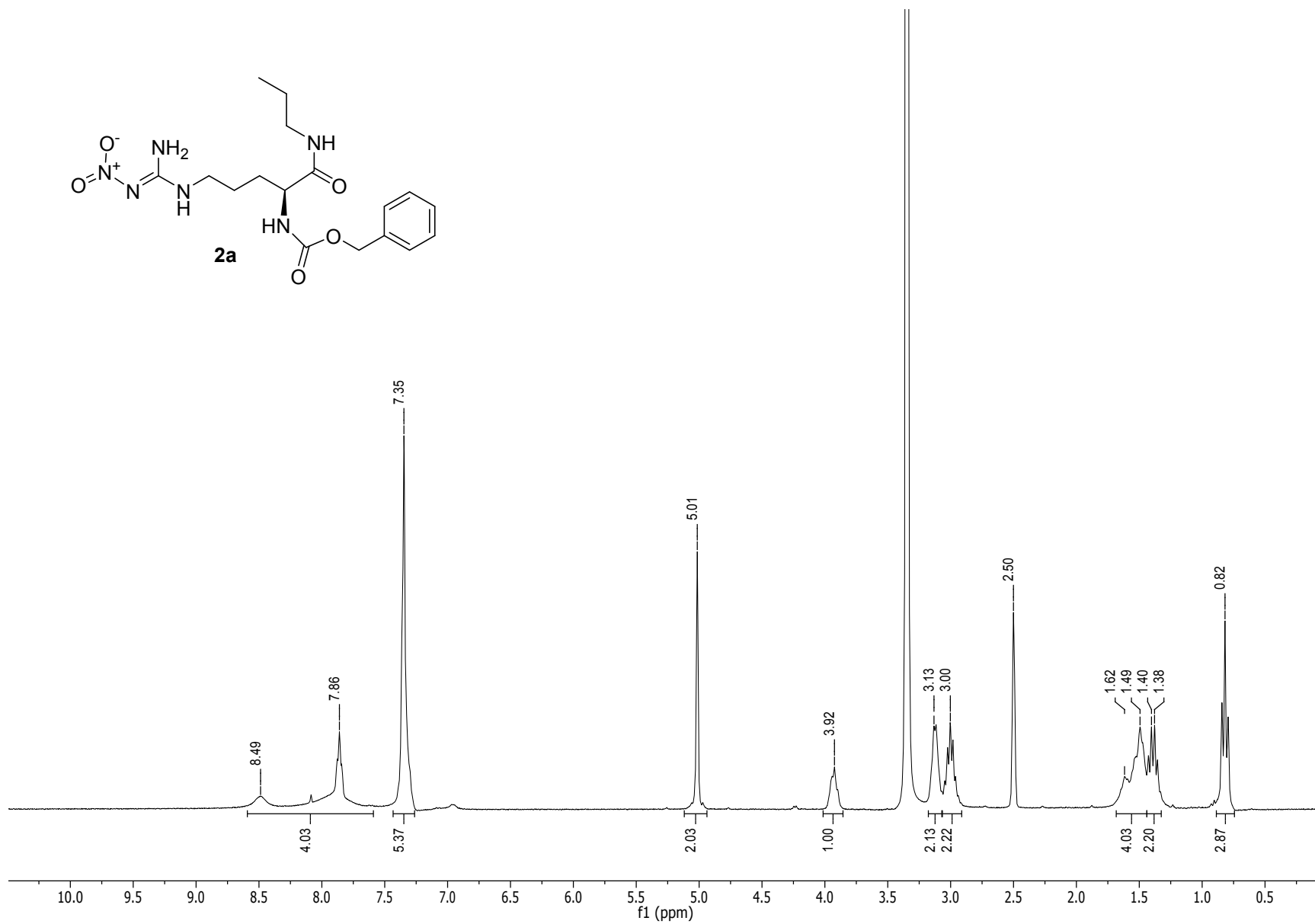
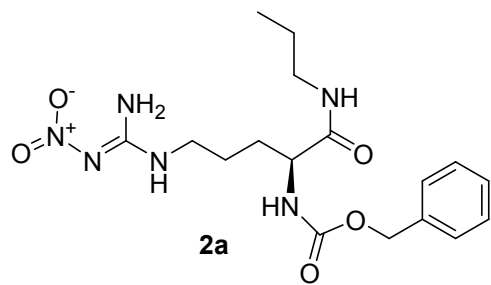
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 Company Name : U of Florida Operator Ident. : KOU
 Analysed : 06-20-13 10:58:02 Printed : 06-20-2013 13:19:48
 Sample Ident. : 25 2195_ZNO2ArgSH Filename : 279325
 Sample Weight : 2.139 Calc.method: using 'K. Factors'

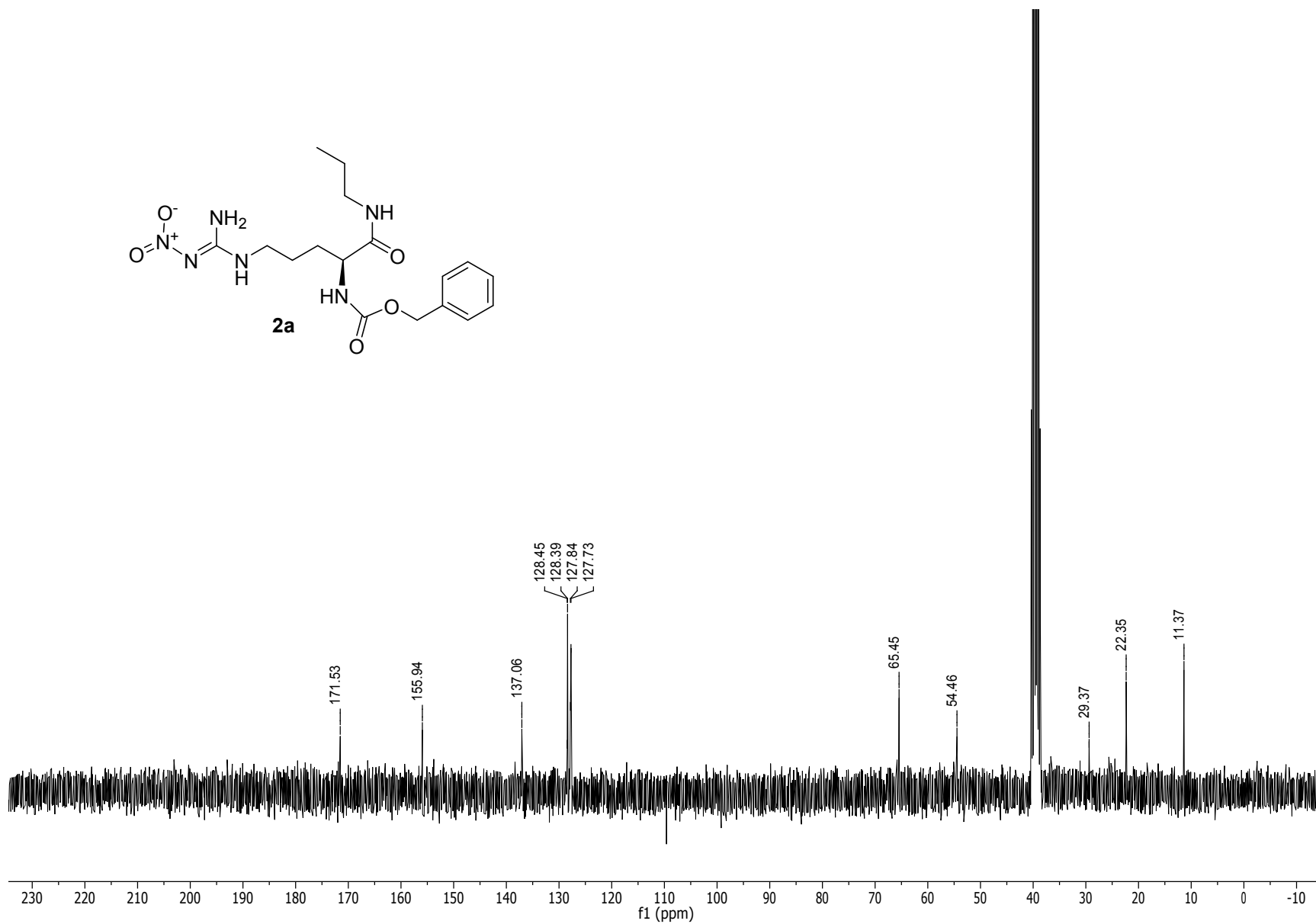
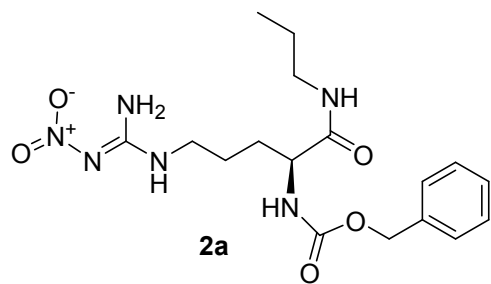
No. (#)	Type (#)	Start (Sec)	End (Sec)	Ret. Time (Sec)	Height (fV)	Area (fV*Sec)	Area % (%)	Name
1	FU	63	101	82	5660.0	79290	9.74	Nitrogen
2	FU	101	267	111	37507.7	563500	69.23	Carbon
3	RS	267	598	311	3327.9	171163	21.03	Hydrogen
813953							100.00	

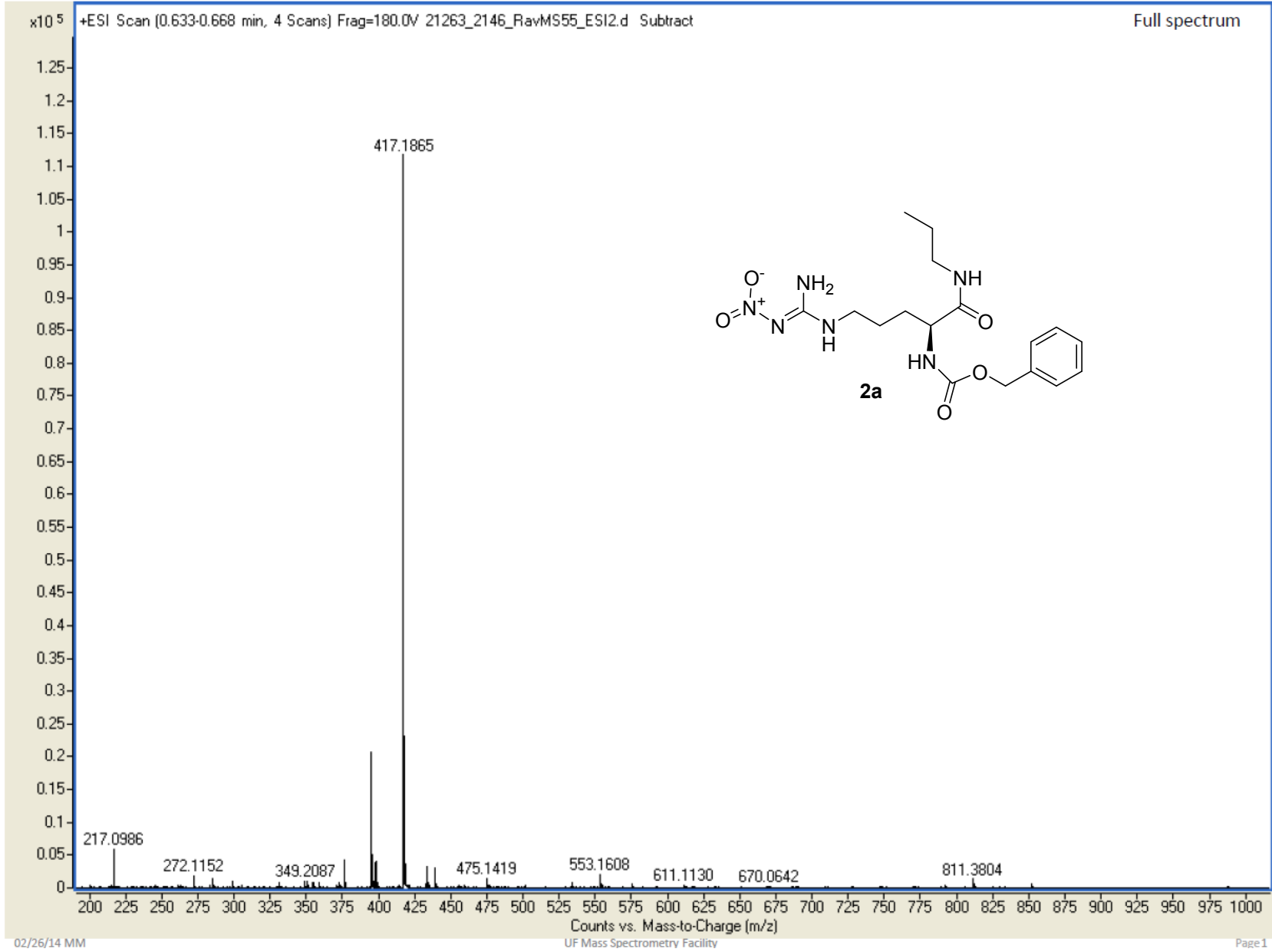
EAGER 200 Unk Report

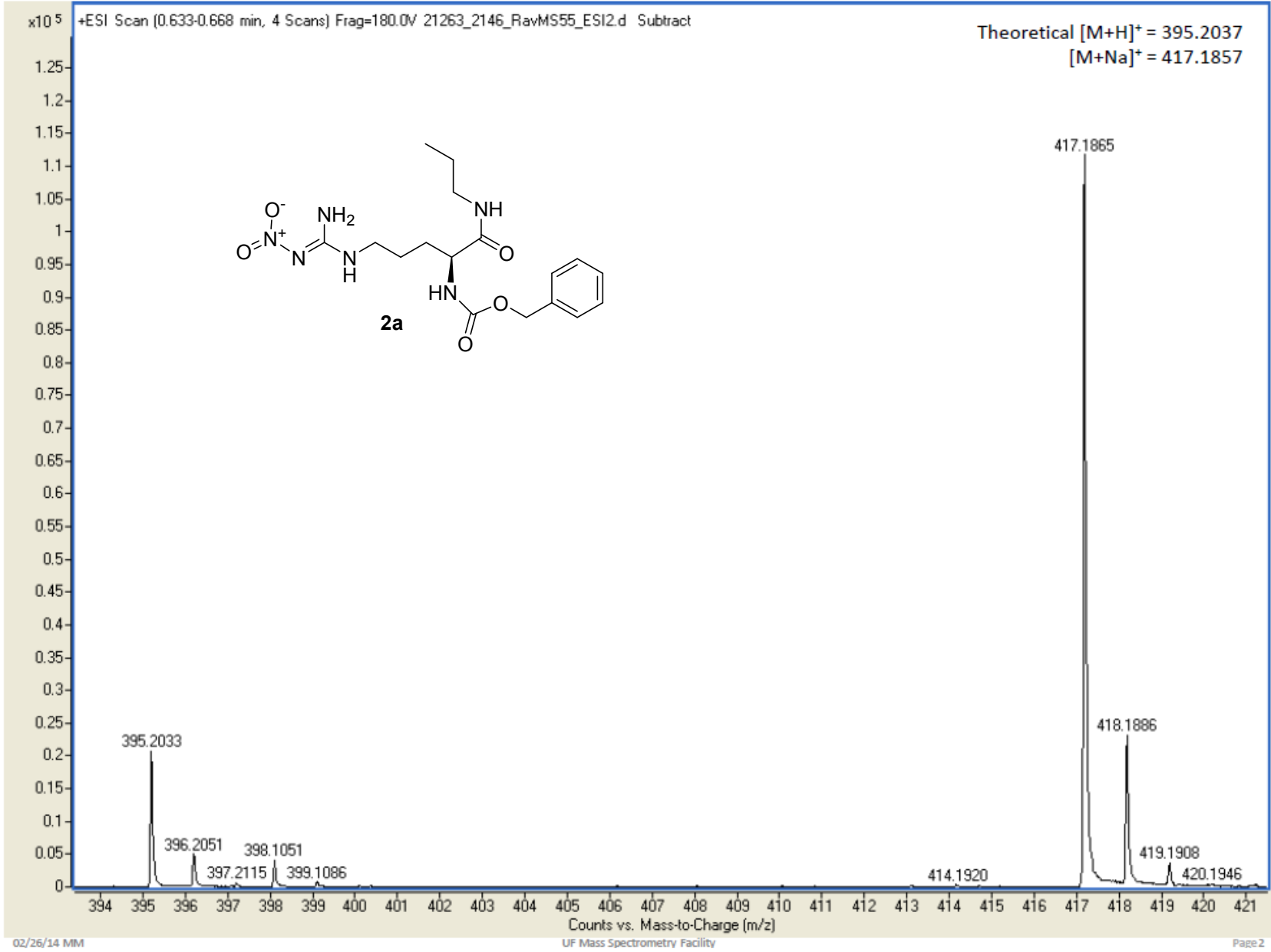
Instrument name : Instrument #1 Bline drift (fV): 2
 Company Name : U of Florida Operator Ident. : KOU
 Analysed : 06-20-13 10:58:02 Printed : 06-20-2013 13:19:48
 Sample Ident. : 25 2195_ZNO2ArgSH Filename : 279325
 Sample Weight : 2.139 Calc.method: using 'K. Factors'

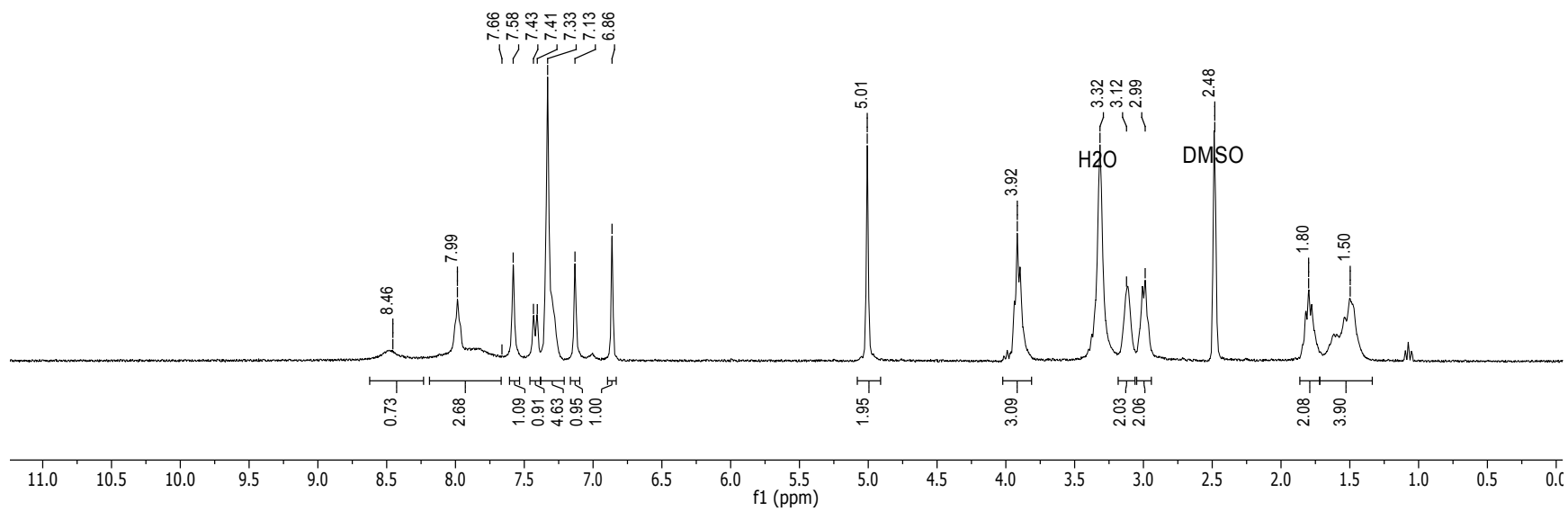
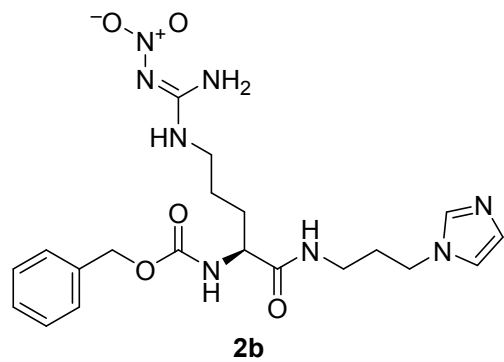
PK. (#)	Ret Time (Sec)	Area (fV*Sec)	Element % (%)	Area Ratio	Name
1	82	79290	18.617	.710680E+01	Nitrogen
2	111	563500	45.848	.100000E+01	Carbon
3	311	171163	5.147	.329218E+01	Hydrogen

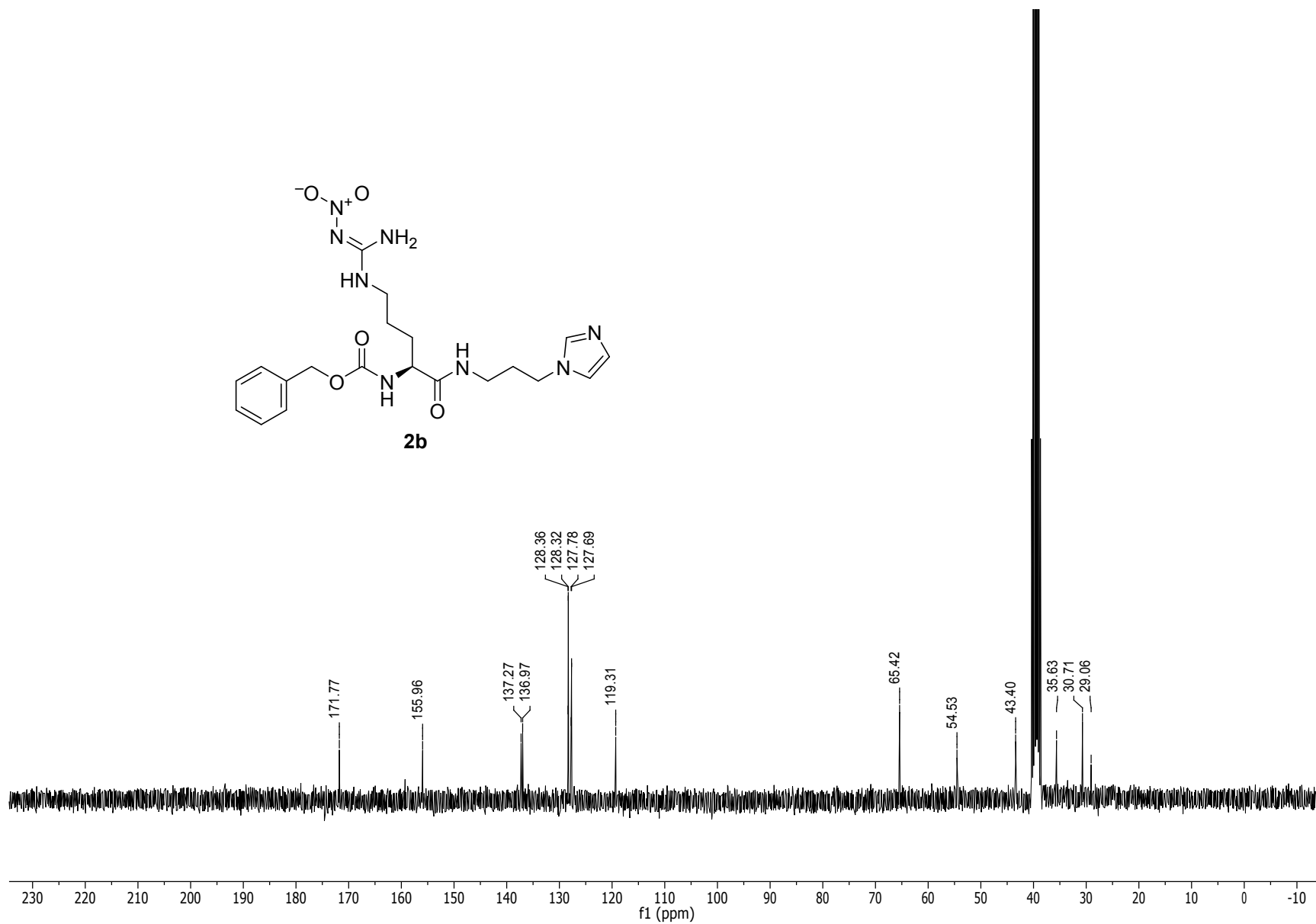
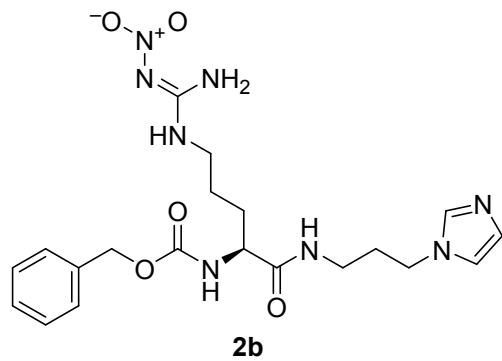






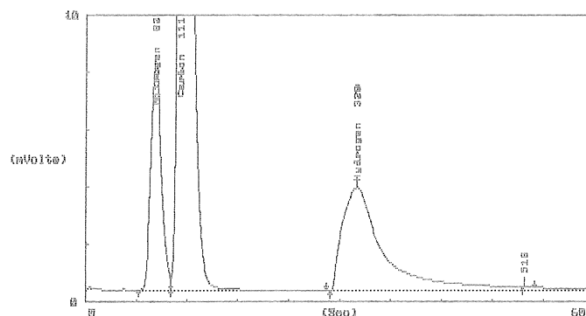
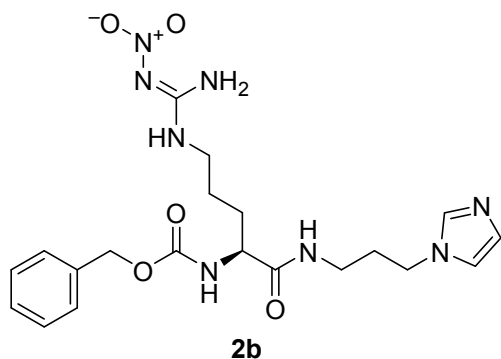






EAGER 200 Stripchart

Sample Ident. : 12 ArgPrImid Filename : 282412
 Analysed : 10-01-13 10:20:11 Printed : 10-01-2013 10:30:12



EAGER 200 Peak Integration Report

Instrument name : Instrument #1 Bline drift (fV): 34.4
 Company Name : U of Florida Operator Ident. : KOU
 Analysed : 10-01-13 10:20:11 Printed : 10-01-2013 10:30:13
 Sample Ident. : 12 ArgPrImid Filename : 282412
 Sample Weight : 2.153 Calc.method: using 'K. Factors'

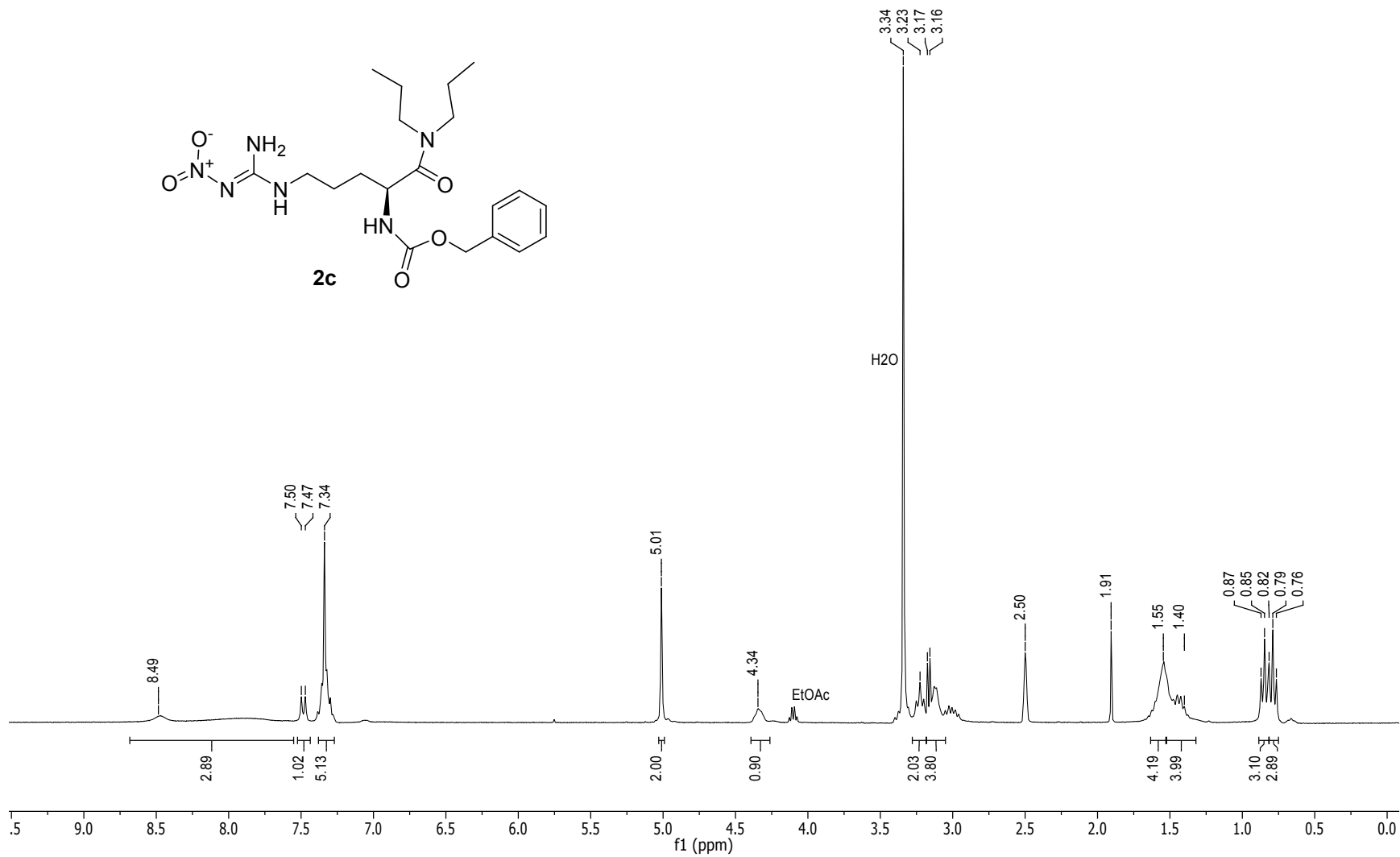
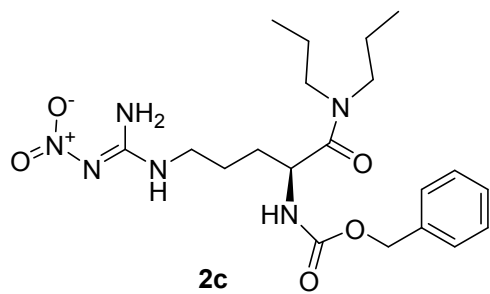
No. (#)	Type (#)	Start (Sec)	End (Sec)	Ret Time (Sec)	Height (fV)	Area (fV*Sec)	Area % (%)	Name
1	FU	63	101	82	7818.3	106724	11.19	Nitrogen
2	FU	101	284	111	43284.8	646486	67.81	Carbon
3	TL	289	598	320	3522.8	200115	20.99	Hydrogen
4	CR	516	530	518	2.5	20	0.00	

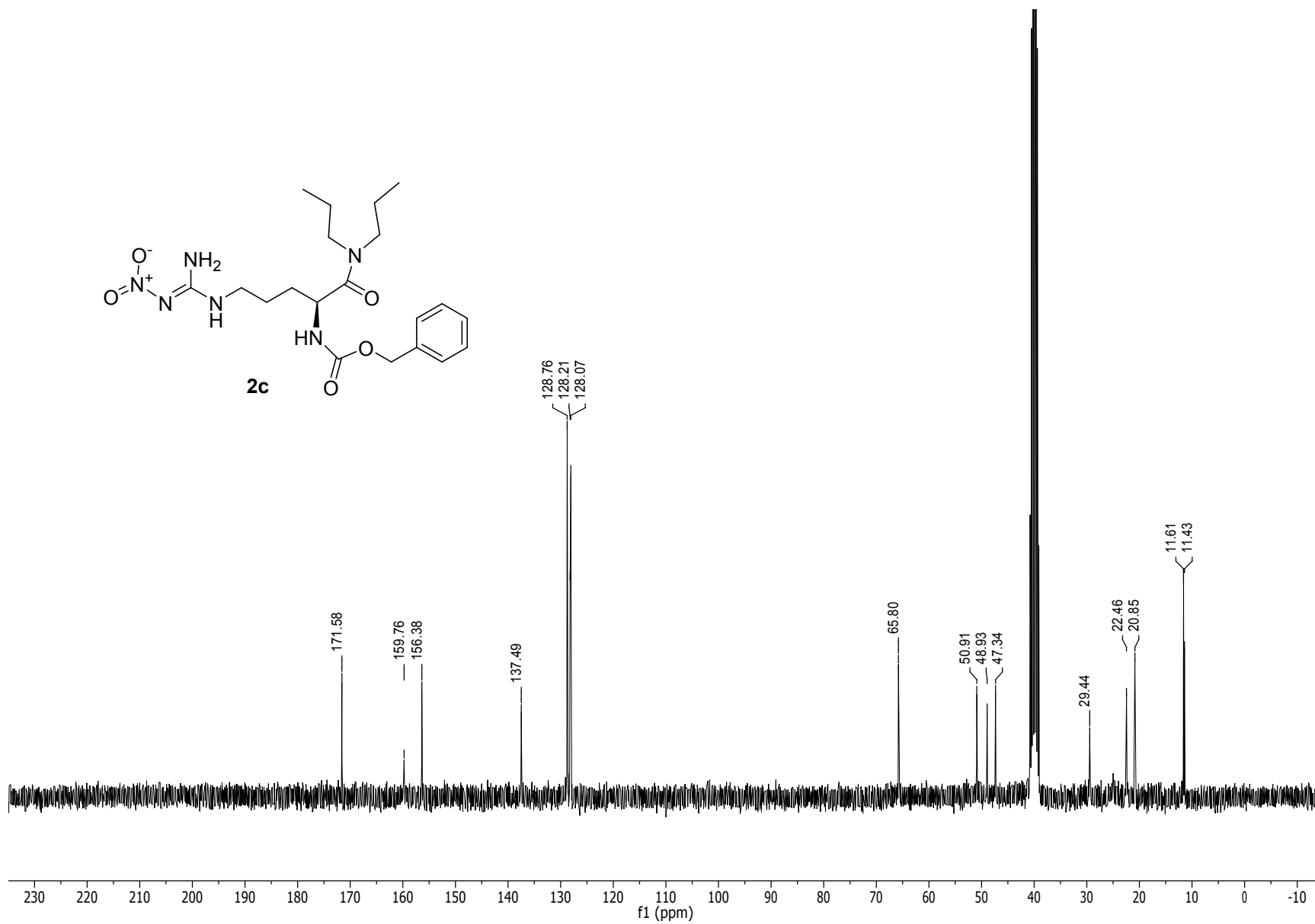
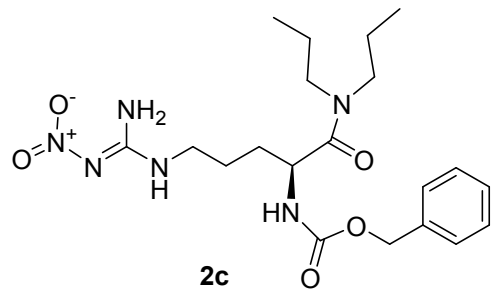
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EAGER 200 Unk Report

Instrument name : Instrument #1 Bline drift (fV): 34.4
 Company Name : U of Florida Operator Ident. : KOU
 Analysed : 10-01-13 10:20:11 Printed : 10-01-2013 10:30:13
 Sample Ident. : 12 ArgPrImid Filename : 282412
 Sample Weight : 2.153 Calc.method: using 'K. Factors'

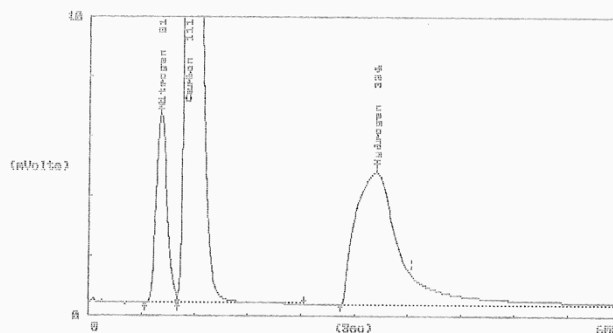
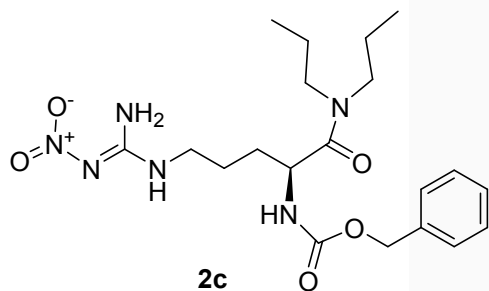
Pk. (#)	Ret Time (Sec)	Area (fV*Sec)	Element % (%)	Area Ratio	Name
1	82	106724	24.120	.605755E+01	Nitrogen
2	111	646486	52.254	.100000E+01	Carbon
3	320	200115	6.070	.323057E+01	Hydrogen





EAGER 200 Stripchart

Sample Ident. : 17 2146_DipRAM Filename : 284117
 Analysed : 12-06-13 12:07:30 Printed : 12-06-2013 15:34:29



EAGER 200 Peak Integration Report

Instrument name : Instrument #1 Bline drift (fV):-4.6
 Company Name : U of Florida Operator Ident. : KOU
 Analysed : 12-06-13 12:07:30 Printed : 12-06-2013 15:34:30
 Sample Ident. : 17 2146_DipRAM Filename : 284117
 Sample Weight : 2.127 Calc.method: using 'K. Factors'

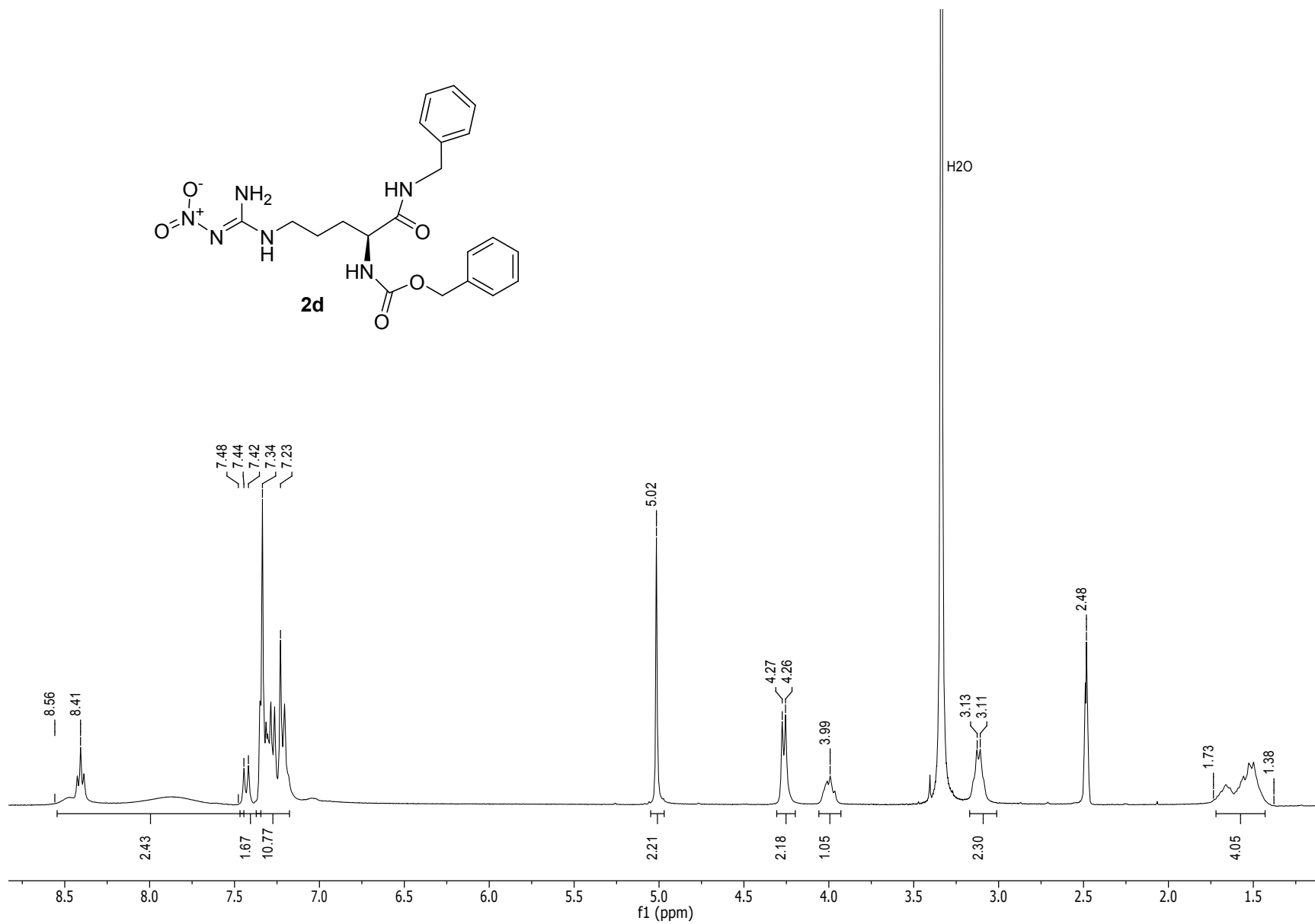
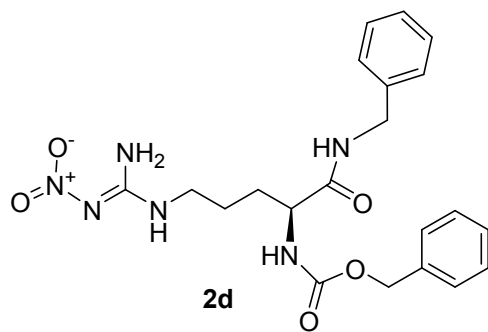
No. (#)	Type	Start (Sec)	End (Sec)	Ret Time (Sec)	Height (fV)	Area (fV*Sec)	Area % (%)	Name
1	FU	64	101	81	6243.9	83204	8.25	Nitrogen
2	FU	101	243	111	44754.9	666948	66.17	Carbon
3	RS	284	597	324	4362.1	257856	25.58	Hydrogen

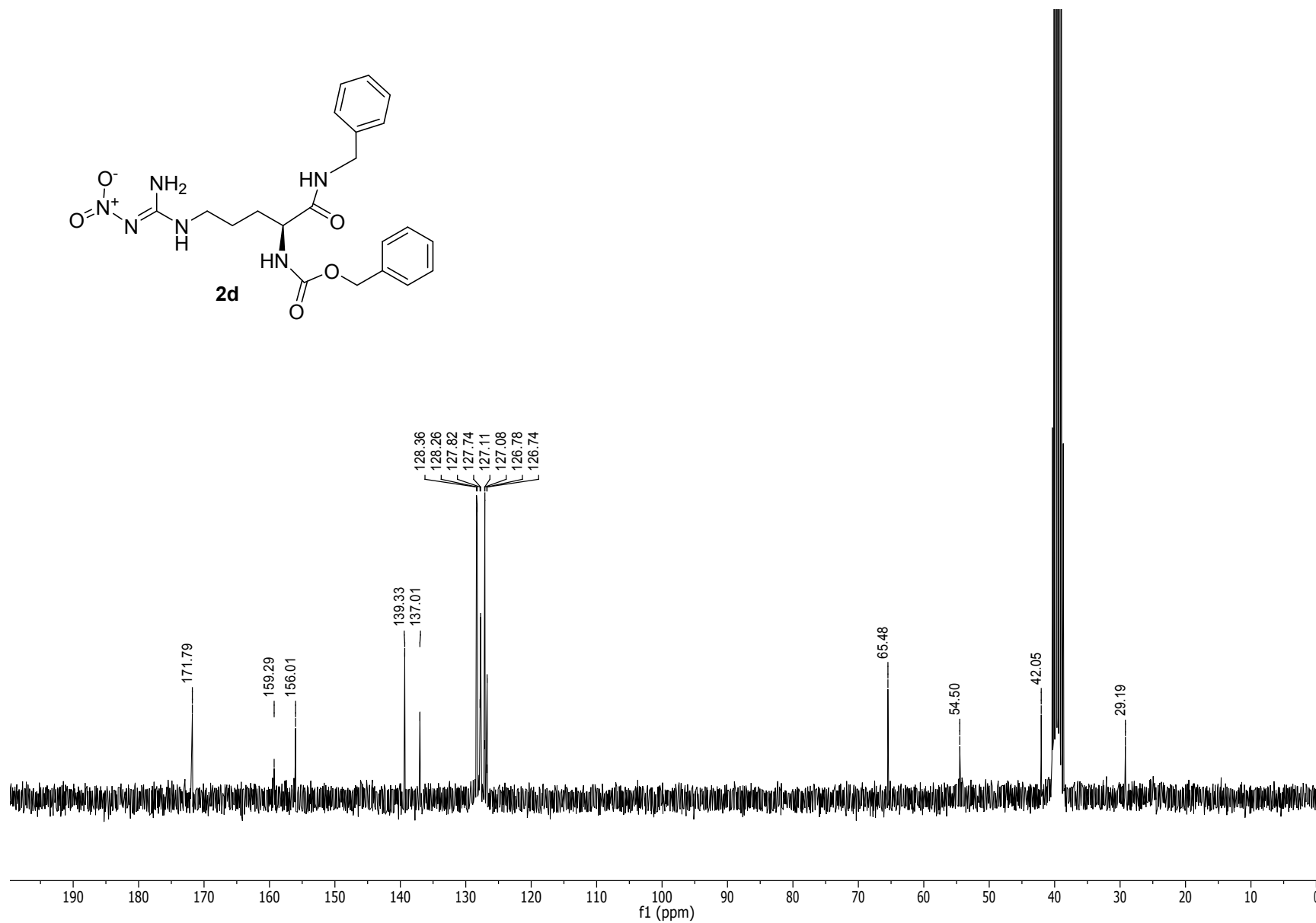
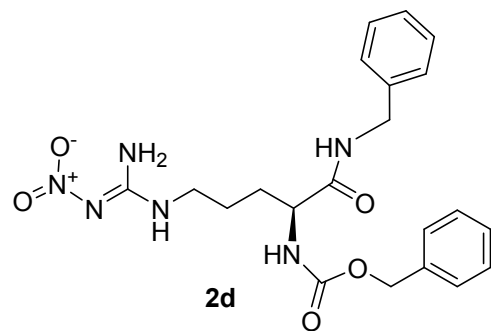
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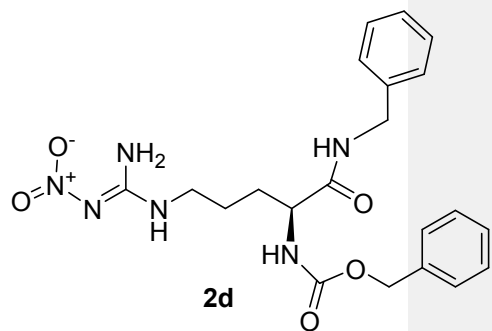
EAGER 200 Unk Report

Instrument name : Instrument #1 Bline drift (fV):-4.6
 Company Name : U of Florida Operator Ident. : KOU
 Analysed : 12-06-13 12:07:30 Printed : 12-06-2013 15:34:30
 Sample Ident. : 17 2146_DipRAM Filename : 284117
 Sample Weight : 2.127 Calc.method: using 'K. Factors'

Pk. (#)	Ret Time (Sec)	Area (fV*Sec)	Element % (%)	Area Ratio	Name
1	81	83204	19.119	.801586E+01	Nitrogen
2	111	666948	54.651	.100000E+01	Carbon
3	324	257856	7.796	.258652E+01	Hydrogen

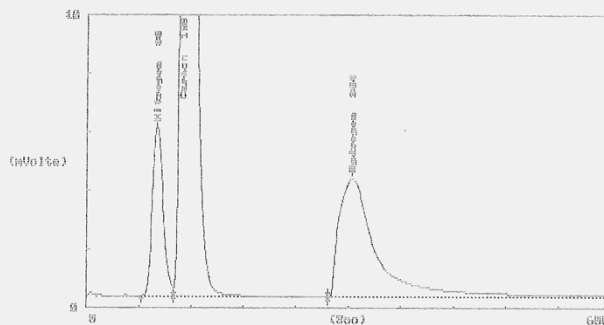






EAGER 200 Stripchart

Sample Ident. : 33 2146_BenzAmin Filename : 284333
 Analysed : 12-12-13 14:28:36 Printed : 12-12-2013 15:37:31



EAGER 200 Peak Integration Report

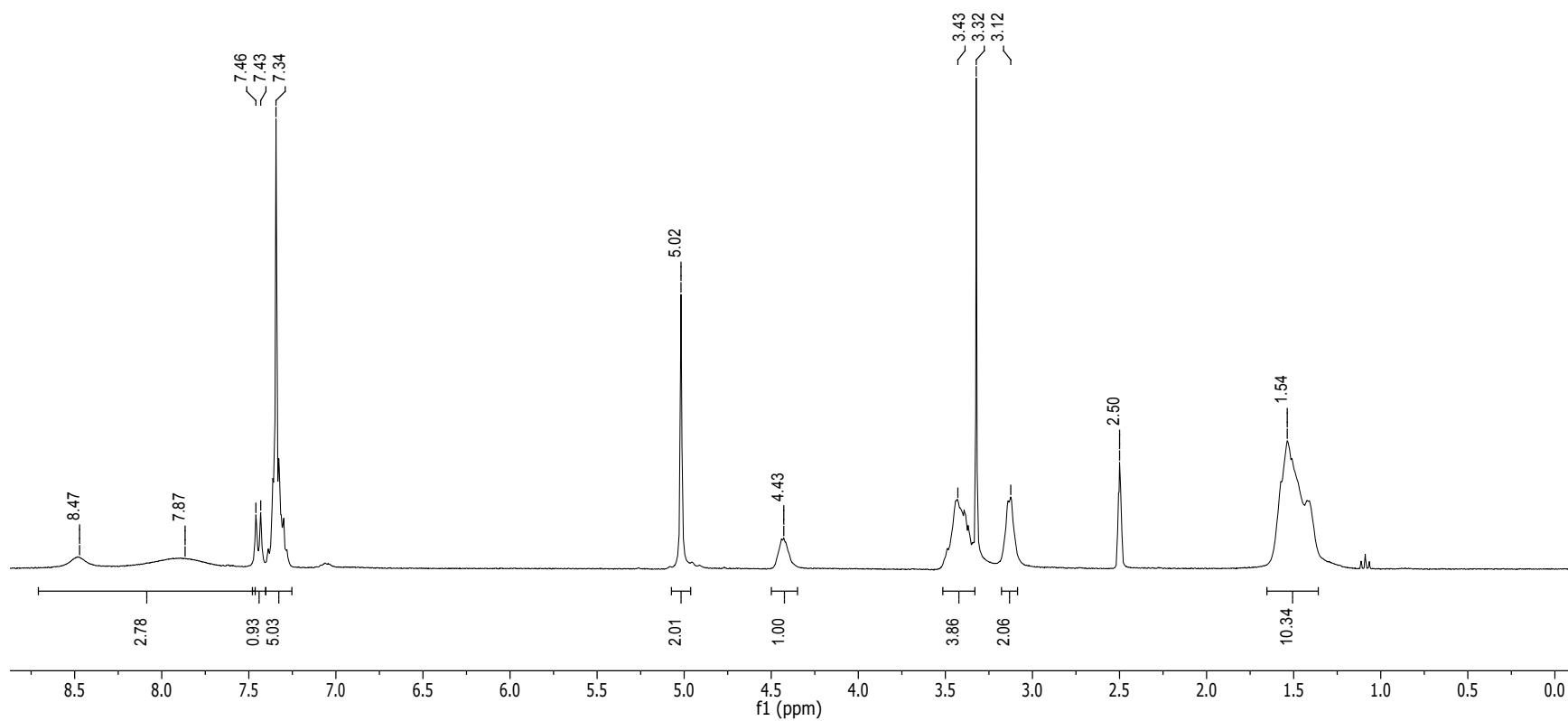
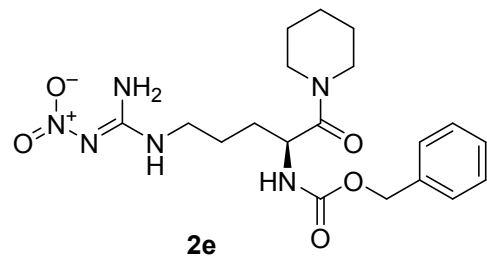
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 Company Name : U of Florida Operator Ident. : KOU
 Analysed : 12-12-13 14:28:36 Printed : 12-12-2013 15:37:31
 Sample Ident. : 33 2146_BenzAmin Filename : 284333
 Sample Weight : 2.062 Calc.method: using 'K. Factors'

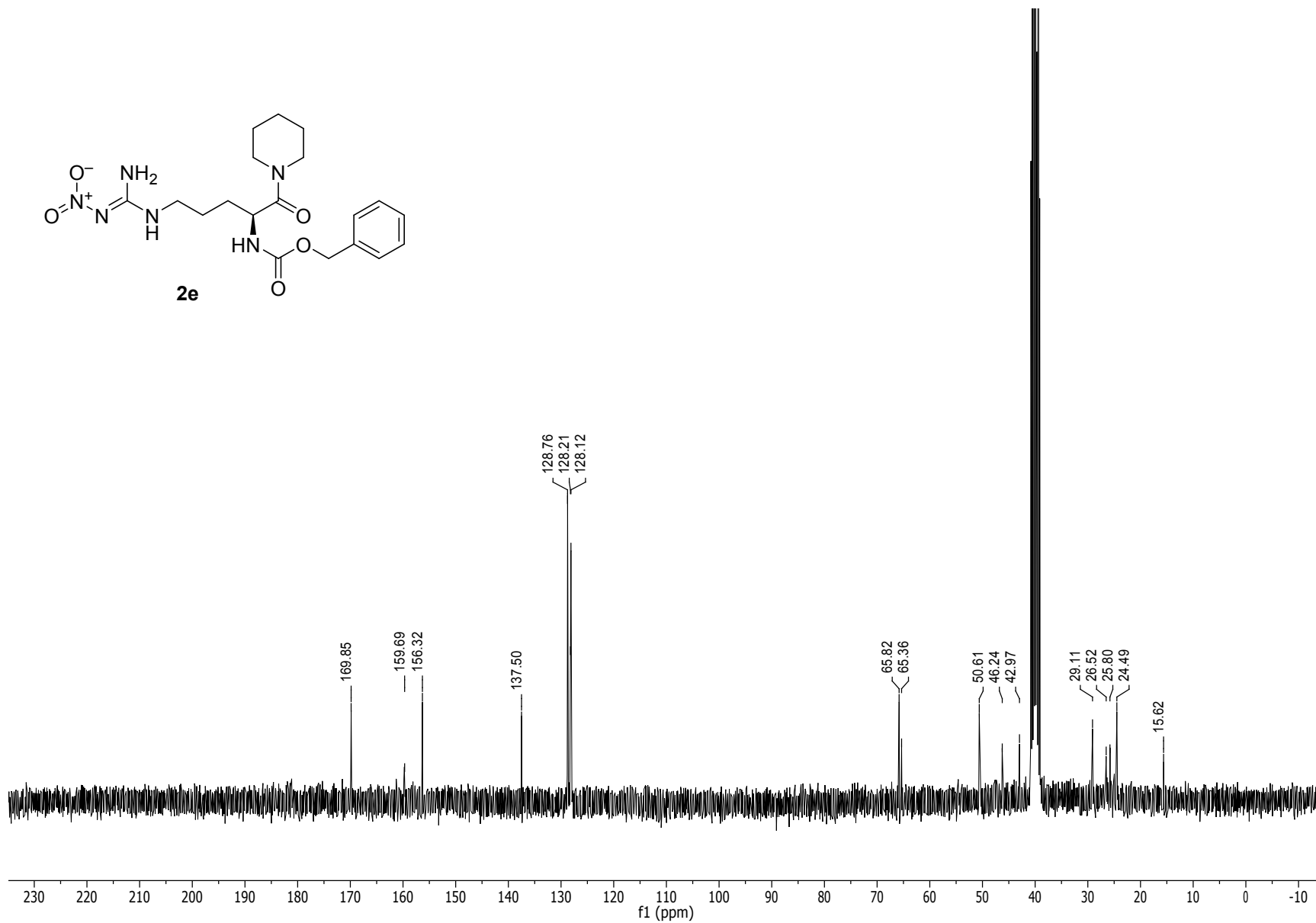
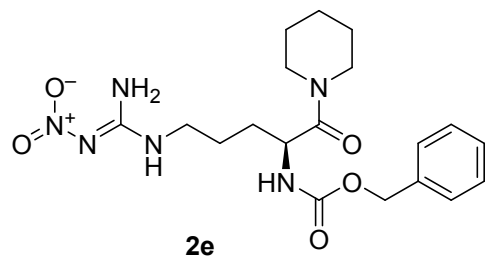
No. (#)	Type (#)	Start (Sec)	End (Sec)	Ret Time (Sec)	Height (fV)	Area (fV*Sec)	Area % (%)	Name	
1	FU	63	99	80	5719.2	75926	8.10	Nitrogen	
2	FU	99	277	109	45333.0	664024	70.85	Carbon	
3	RS	277	597	304	3991.2	197310	21.05	Hydrogen	
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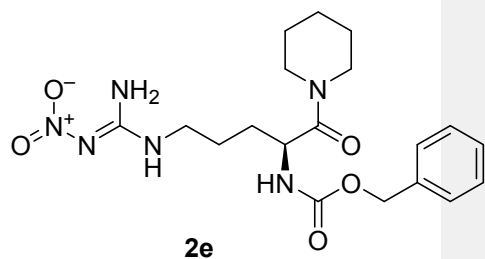
EAGER 200 Unk Report

Instrument name : Instrument #1 Bline drift (fV): 3.6
 Company Name : U of Florida Operator Ident. : KOU
 Analysed : 12-12-13 14:28:36 Printed : 12-12-2013 15:37:31
 Sample Ident. : 33 2146_BenzAmin Filename : 284333
 Sample Weight : 2.062 Calc.method: using 'K. Factors'

Pk. (#)	Ret Time (Sec)	Area (fV*Sec)	Element % (%)	Area Ratio	Name
1	80	75926	19.114	.874566E+01	Nitrogen
2	109	664024	56.698	.100000E+01	Carbon
3	304	197310	6.304	.336538E+01	Hydrogen

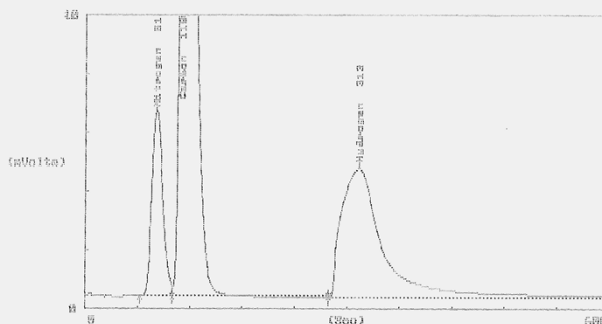






EAGER 200 Stripehart

Sample Ident. : 16 2146_Piperidine Filename : 285116
 Analysed : 02-06-14 11:51:10 Printed : 02-06-2014 12:01:13



EAGER 200 Peak Integration Report

Instrument name : Instrument #1 Bline drift (fV): 2.8
 Company Name : U of Florida Operator Ident. : KOU
 Analysed : 02-06-14 11:51:10 Printed : 02-06-2014 12:01:13
 Sample Ident. : 16 2146_Piperidine Filename : 285116
 Sample Weight : 2.151 Calc.method: using 'K. Factors'

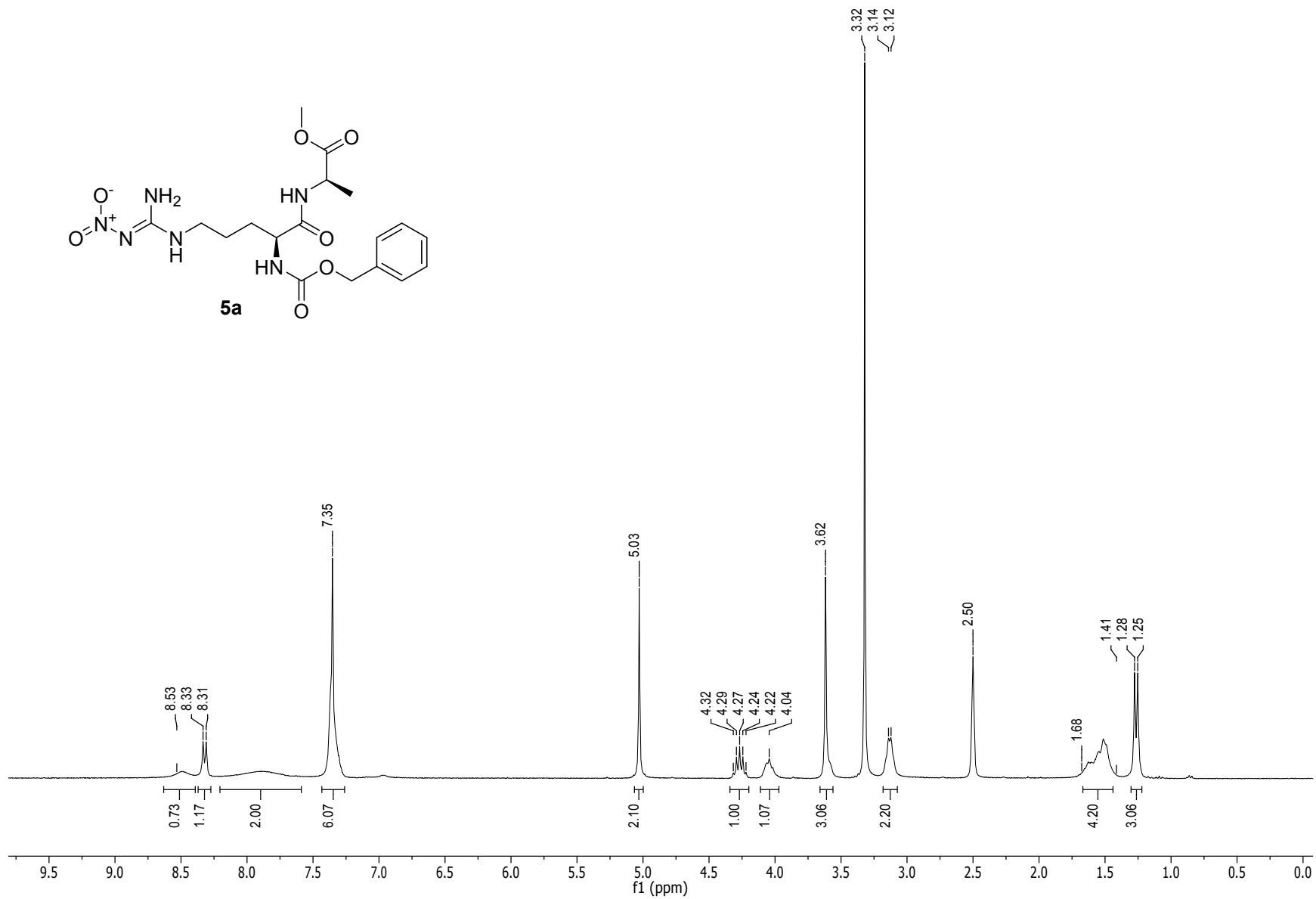
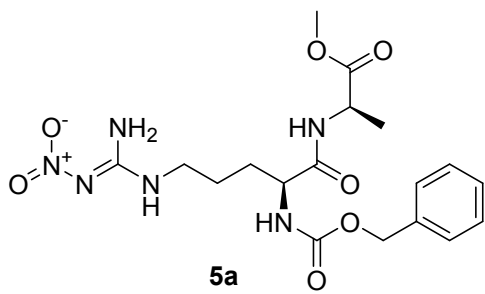
No. (#)	Type (#)	Start (Sec)	End (Sec)	Ret Time (Sec)	Height (fV)	Area (fV*Sec)	Area % (%)	Name
1	FU	63	100	81	6280.3	85496	8.63	Nitrogen
2	FU	100	279	110	44592.7	669270	67.53	Carbon
3	RS	279	593	313	4329.3	236239	23.84	Hydrogen

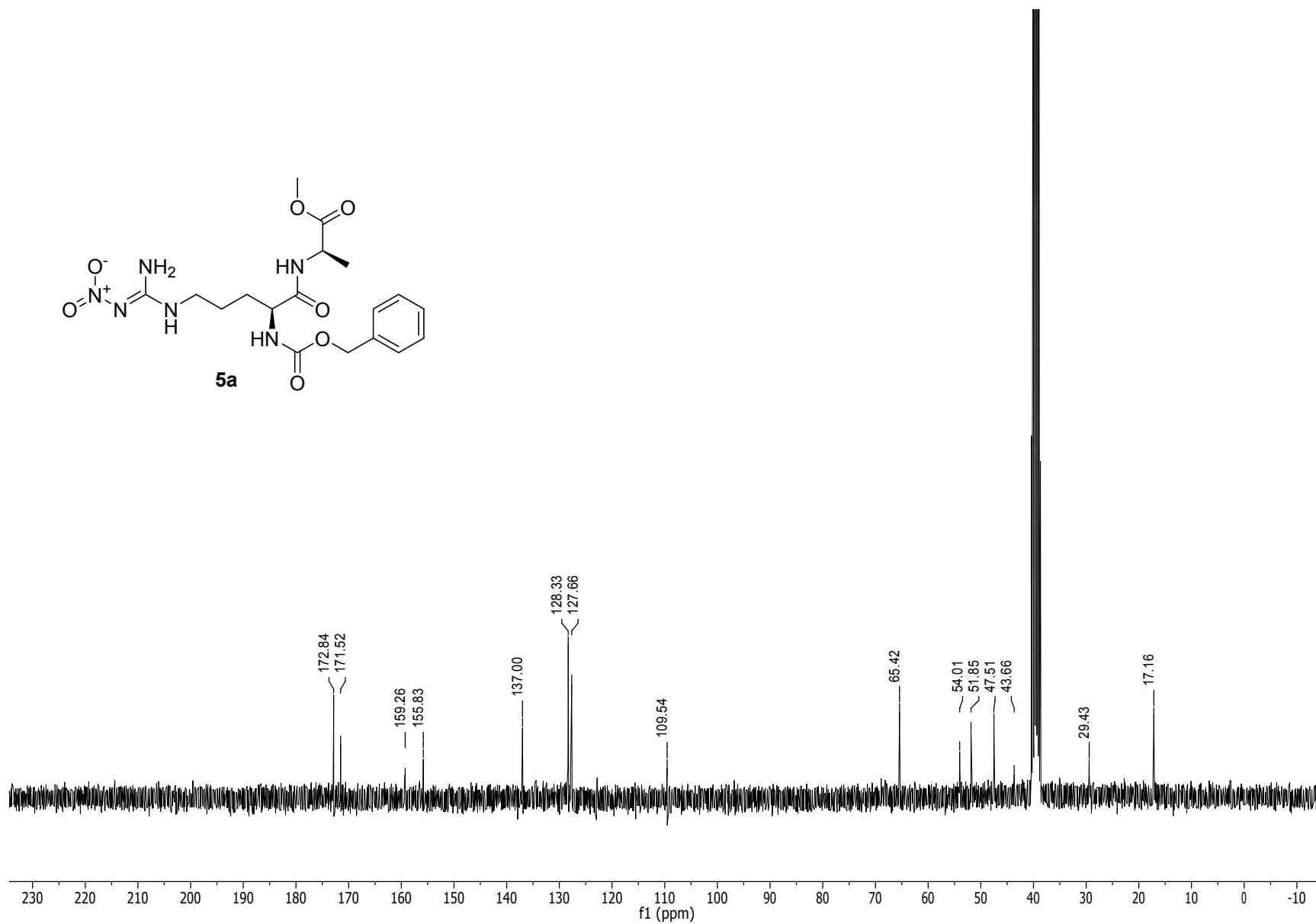
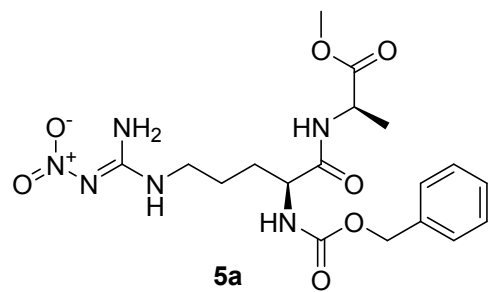
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EAGER 200 Unk Report

Instrument name : Instrument #1 Bline drift (fV): 2.8
 Company Name : U of Florida Operator Ident. : KOU
 Analysed : 02-06-14 11:51:10 Printed : 02-06-2014 12:01:13
 Sample Ident. : 16 2146_Piperidine Filename : 285116
 Sample Weight : 2.151 Calc.method: using 'K. Factors'

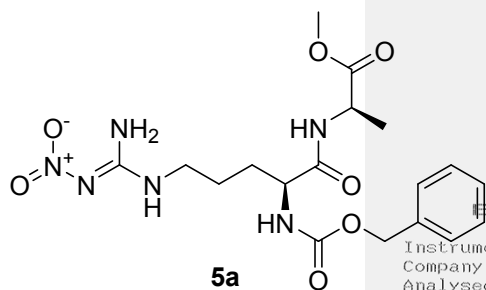
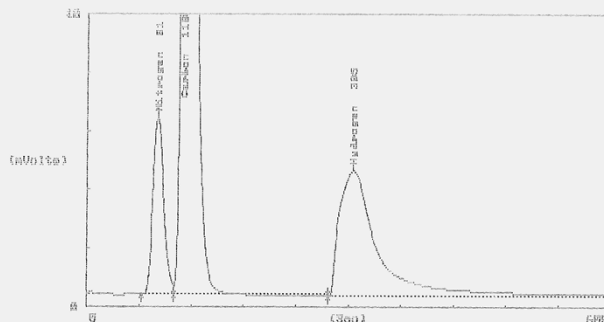
Pk. (#)	Ret Time (Sec)	Area (fV*Sec)	Element % (%)	Area Ratio	Name
1	81	85496	20.321	.782810E+01	Nitrogen
2	110	669270	53.896	.100000E+01	Carbon
3	313	236239	7.031	.283302E+01	Hydrogen





EAGER 200 Stripchart

Sample Ident. : 20 2146_AlaOMe Filename : 284520
 Analysed : 12-24-13 12:33:16 Printed : 12-24-2013 12:52:35



EAGER 200 Peak Integration Report

Instrument name : Instrument #1 Bline drift (fV):-14.7
 Company Name : U of Florida Operator Ident. : KOU
 Analysed : 12-24-13 12:33:16 Printed : 12-24-2013 12:52:36
 Sample Ident. : 20 2146_AlaOMe Filename : 284520
 Sample Weight : 2.184 Calc.method: using 'K. Factors'

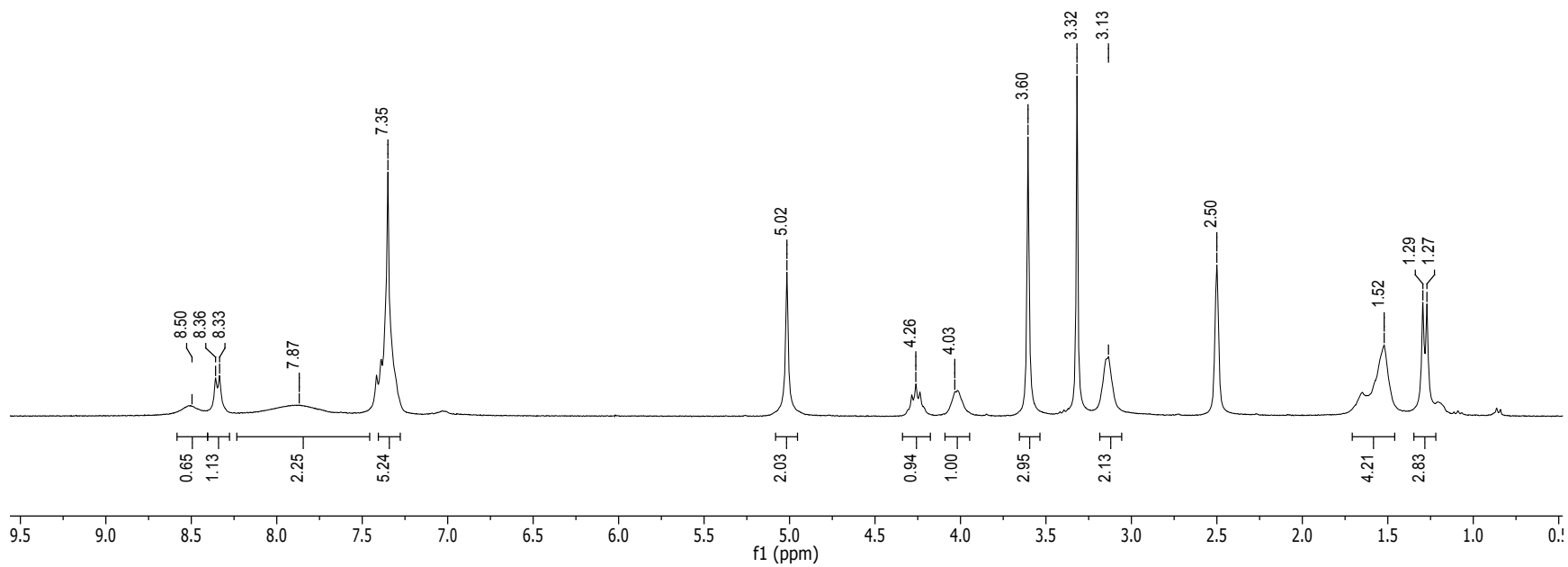
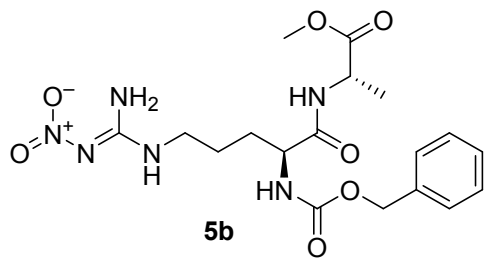
No. (#)	Type (#)	Start (Sec)	End (Sec)	Ret Time (Sec)	Height (fV)	Area (fV*Sec)	Area % (%)	Name
1	FU	63	100	81	6012.0	81032	2.00	Nitrogen
2	FU	100	277	110	41337.1	609287	67.70	Carbon
3	RS	277	597	305	4194.6	209630	23.29	Hydrogen

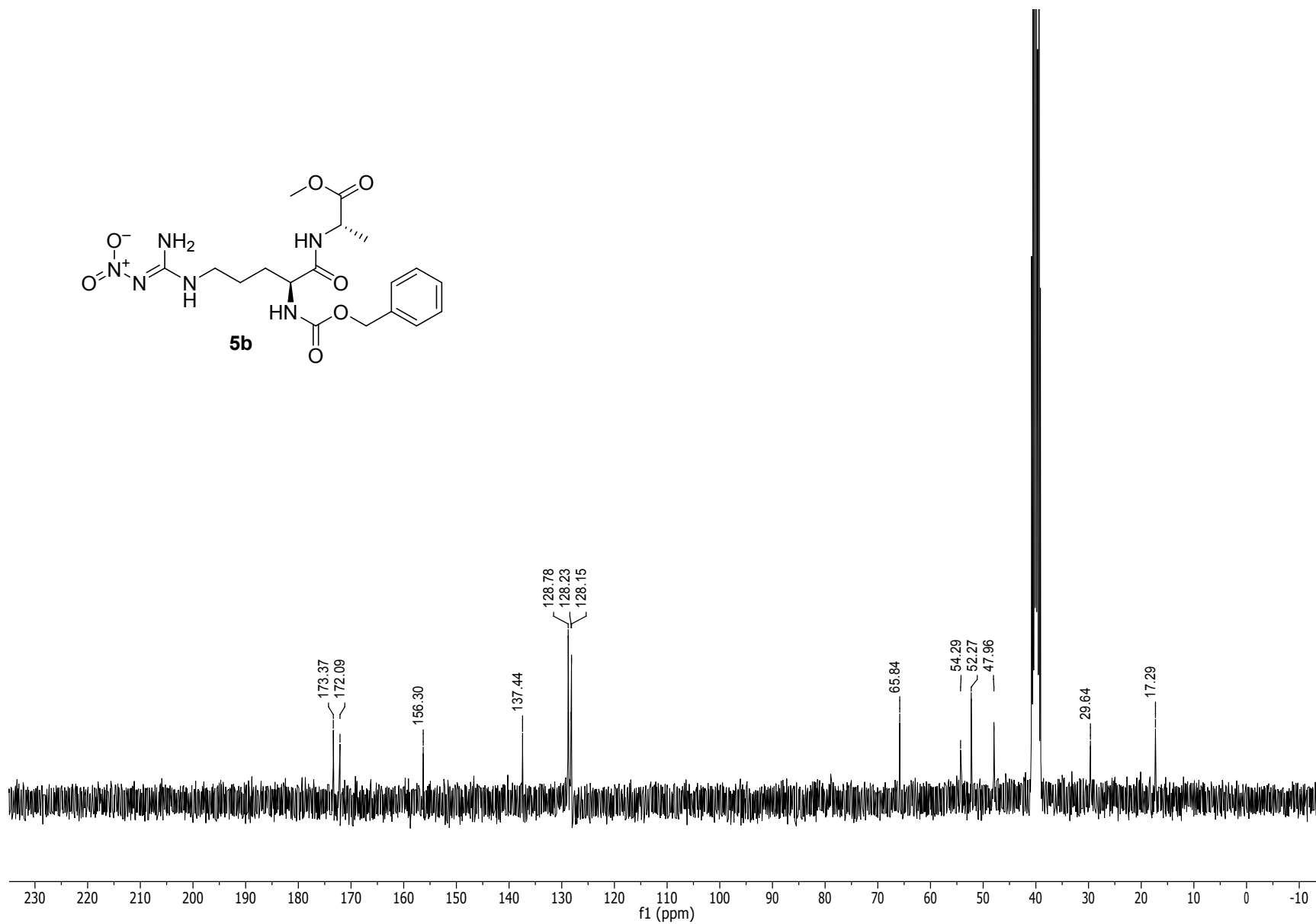
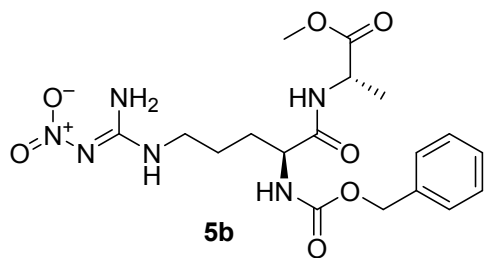
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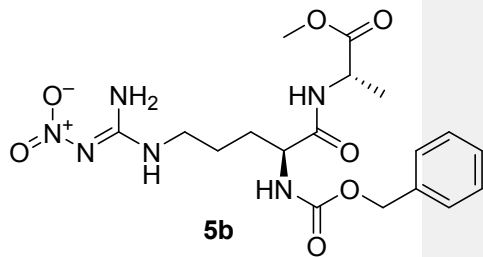
EAGER 200 Unk Report

Instrument name : Instrument #1 Bline drift (fV):-14.7
 Company Name : U of Florida Operator Ident. : KOU
 Analysed : 12-24-13 12:33:16 Printed : 12-24-2013 12:52:36
 Sample Ident. : 20 2146_AlaOMe Filename : 284520
 Sample Weight : 2.184 Calc.method: using 'K. Factors'

Pk. (#)	Ret Time (Sec)	Area (fV*Sec)	Element % (%)	Area Ratio	Name
1	81	81032	19.543	.751910E+01	Nitrogen
2	110	609287	49.234	.100000E+01	Carbon
3	305	209630	6.368	.290648E+01	Hydrogen

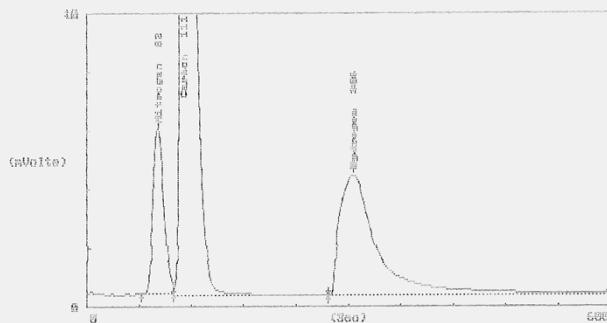






EAGER 200 Stripchart

Sample Ident. : 17 2146_LAlaOMe Filename : 285317
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EAGER 200 Peak Integration Report

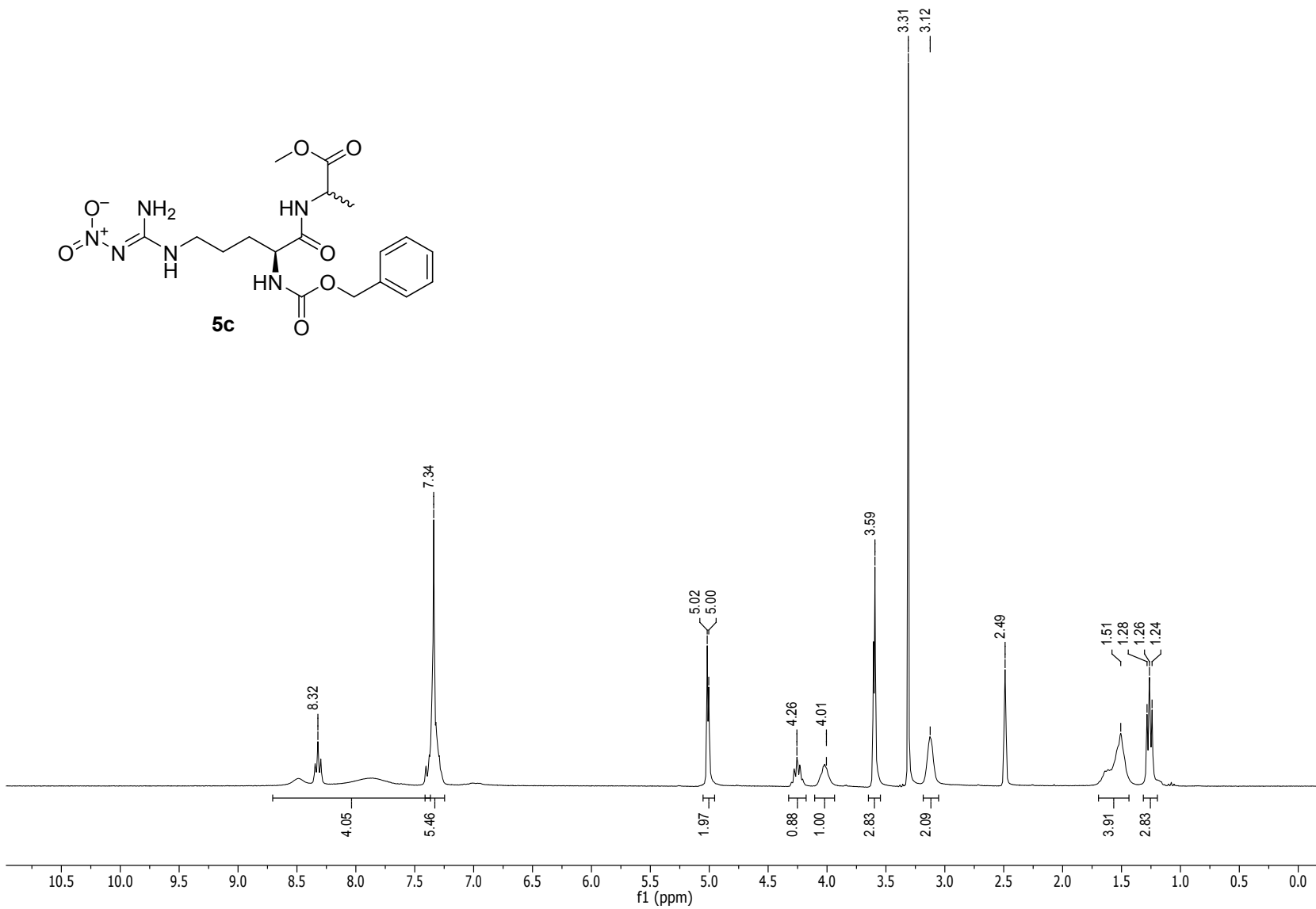
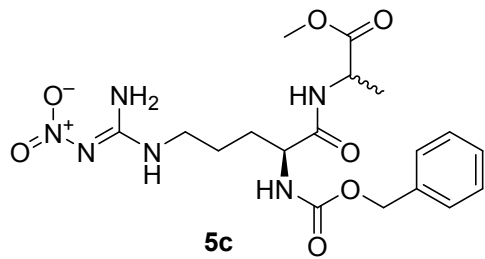
Instrument name : Instrument #1 Bline drift (fV): 2.9
 Company Name : U of Florida Operator Ident. : KOU
 Analysed : 02-18-14 12:50:41 Printed : 02-18-2014 14:43:42
 Sample Ident. : 17 2146_LAlaOMe Filename : 285317
 Sample Weight : 2.117 Calc.method: using 'K. Factors'

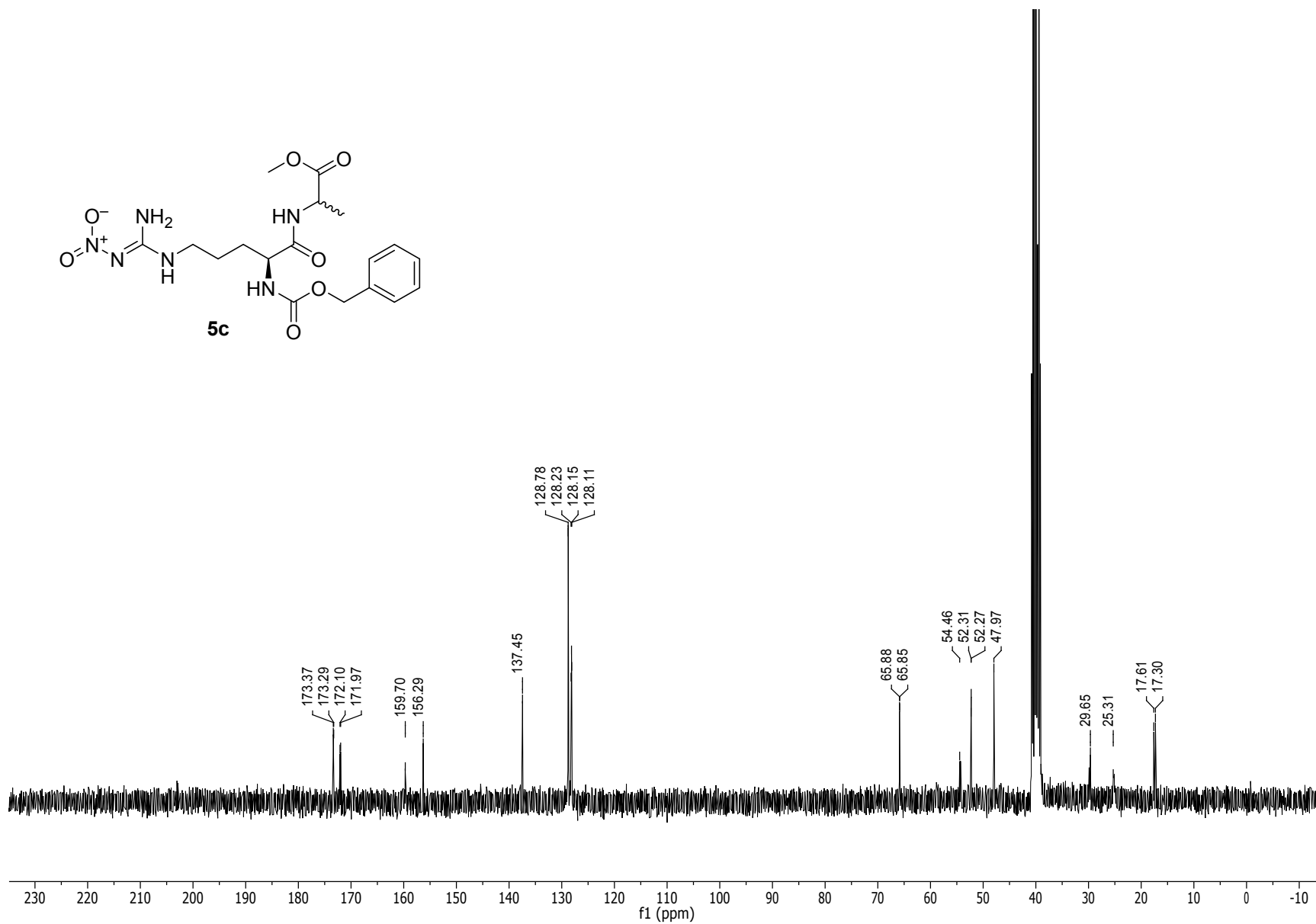
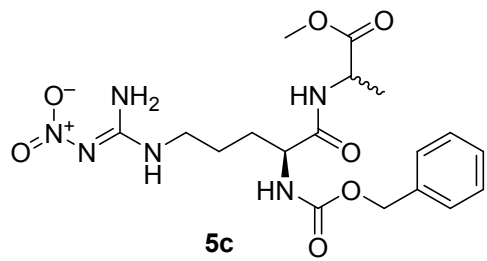
No. (#)	Type (#)	Start (Sec)	End (Sec)	Ret Time (Sec)	Height (fV)	Area (fV*Sec)	Area % (%)	Name
1	FU	63	100	82	5617.5	76964	8.82	Nitrogen
2	FU	100	277	111	39832.6	593287	67.96	Carbon
3	RS	277	593	306	4054.5	202724	23.22	Hydrogen
							872976	100.00

EAGER 200 Unk Report

Instrument name : Instrument #1 Bline drift (fV): 2.9
 Company Name : U of Florida Operator Ident. : KOU
 Analysed : 02-18-14 12:50:41 Printed : 02-18-2014 14:43:42
 Sample Ident. : 17 2146_LAlaOMe Filename : 285317
 Sample Weight : 2.117 Calc.method: using 'K. Factors'

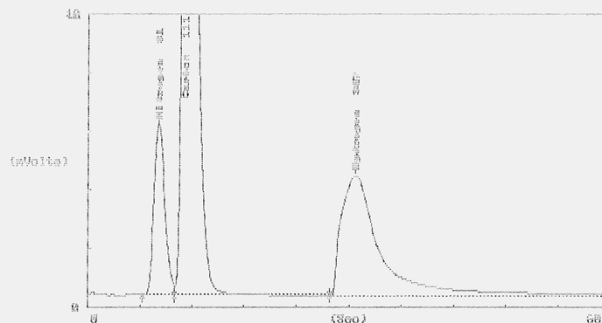
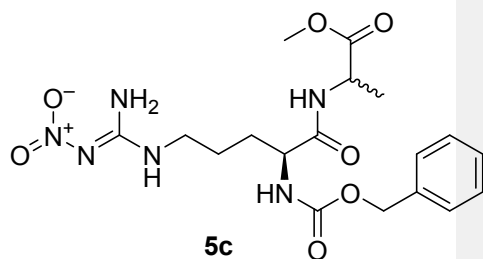
Pk. (#)	Ret Time (Sec)	Area (fV*Sec)	Element % (%)	Area Ratio	Name
1	82	76964	18.813	.770860E+01	Nitrogen
2	111	593287	49.001	.100000E+01	Carbon
3	306	202724	6.229	.292657E+01	Hydrogen





EAGER 200 Stripchart

Sample Ident. : 11 2146-DLAlaOMe Filename : 286111
 Analysed : 03-17-14 10:14:39 Printed : 03-17-2014 10:24:41



EAGER 200 Peak Integration Report

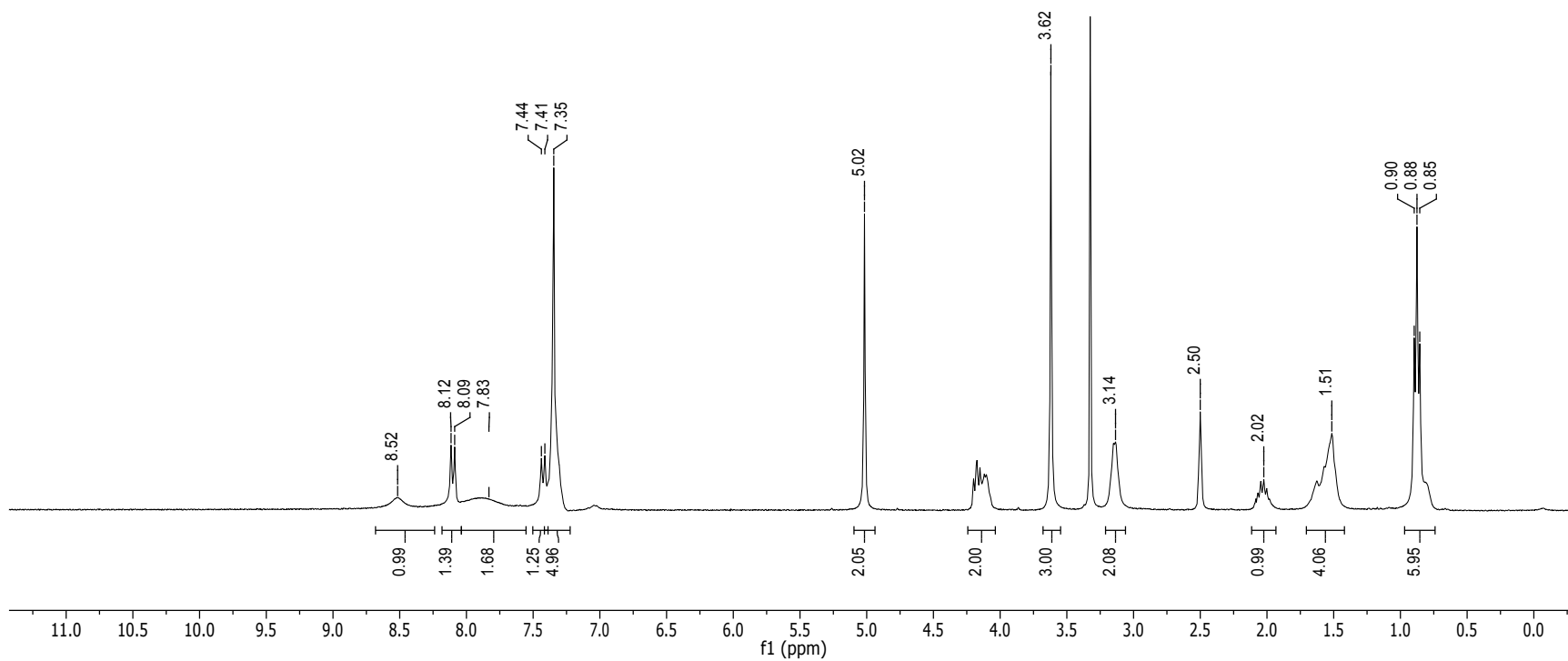
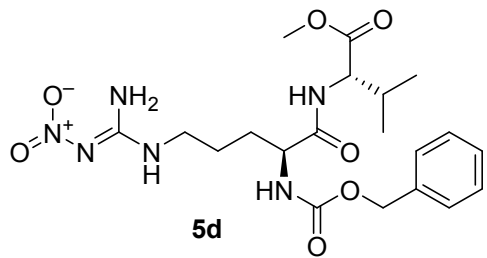
Instrument name : Instrument #1 Bline drift (fV): 2.6
 Company Name : U of Florida Operator Ident. : KOU
 Analysed : 03-17-14 10:14:39 Printed : 03-17-2014 10:24:42
 Sample Ident. : 11 2146-DLAlaOMe Filename : 286111
 Sample Weight : 2.116 Calc.method: using 'K. Factors'

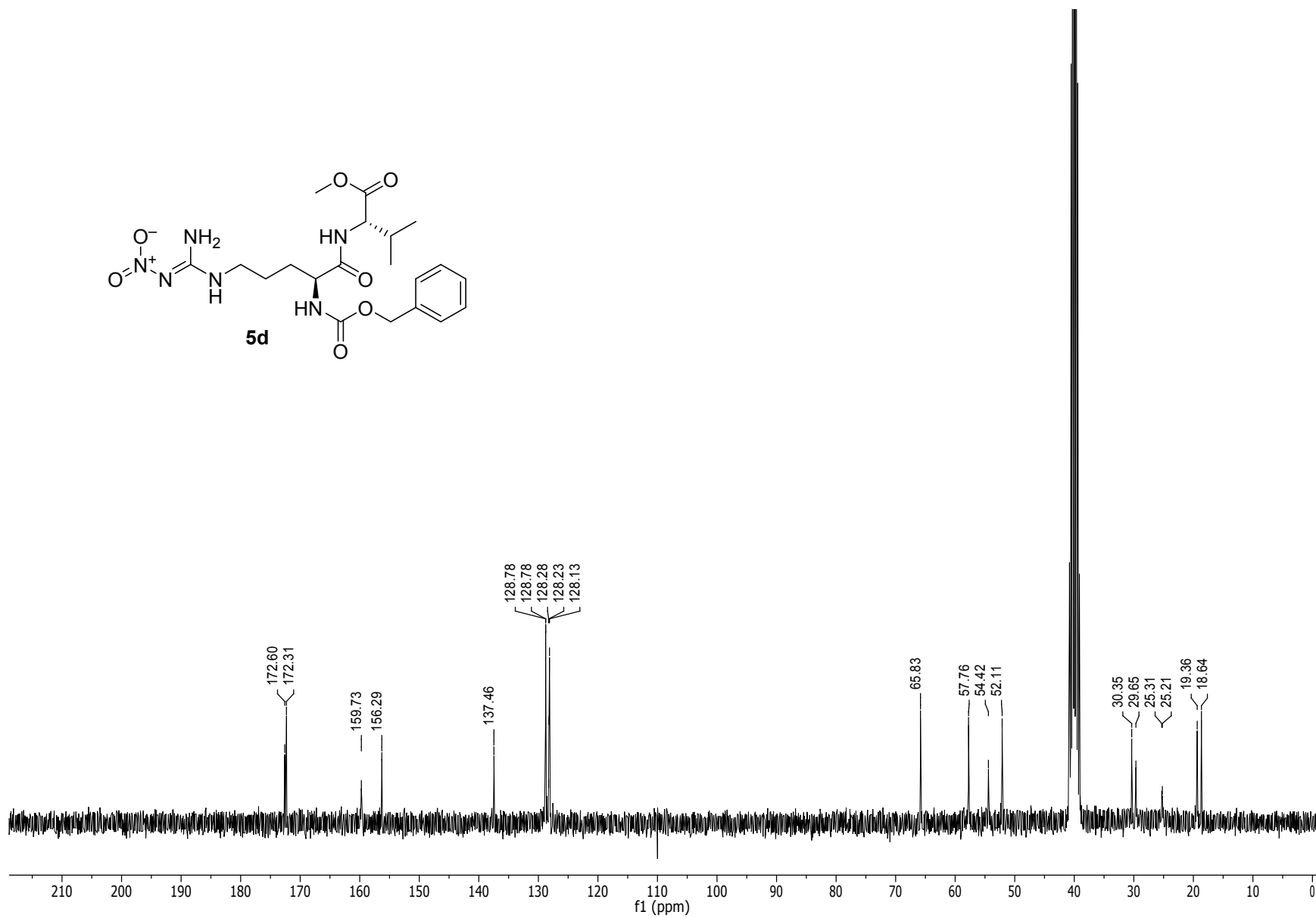
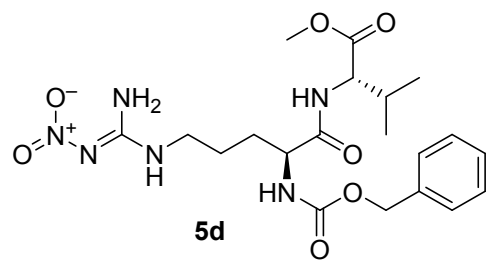
No. (#)	Type (#)	Start (Sec)	End (Sec)	Ret Time (Sec)	Height (fV)	Area (fV*Sec)	Area % (%)	Name
1	FU	63	100	81	5766.0	78693	8.86	Nitrogen
2	FU	100	278	111	40485.8	605406	68.15	Carbon
3	RS	278	597	307	4039.9	204228	22.99	Hydrogen
							888332	100.00

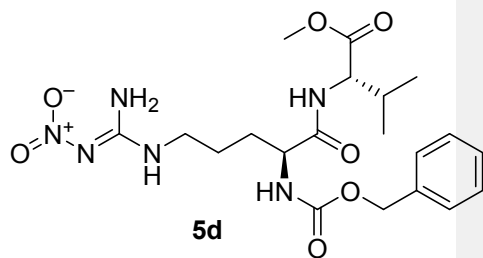
EAGER 200 Unk Report

Instrument name : Instrument #1 Bline drift (fV): 2.6
 Company Name : U of Florida Operator Ident. : KOU
 Analysed : 03-17-14 10:14:39 Printed : 03-17-2014 10:24:42
 Sample Ident. : 11 2146-DLAlaOMe Filename : 286111
 Sample Weight : 2.116 Calc.method: using 'K. Factors'

Pk. (#)	Ret Time (Sec)	Area (fV*Sec)	Element % (%)	Area Ratio	Name
1	81	78693	19.448	.769275E+01	Nitrogen
2	111	605406	49.270	.100000E+01	Carbon
3	307	204228	6.157	.296436E+01	Hydrogen

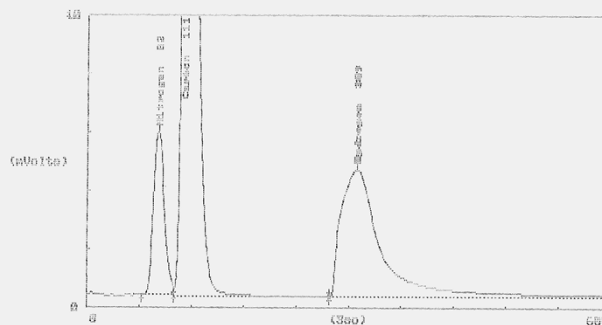






EAGER 200 Stripchart

Sample Ident. : 18 2146_ValOMe Filename : 285318
 Analysed : 02-18-14 13:00:44 Printed : 02-18-2014 14:43:44



EAGER 200 Peak Integration Report

Instrument name : Instrument #1 Bline drift (fV): 4.3
 Company Name : U of Florida Operator Ident. : KOU
 Analysed : 02-18-14 13:00:44 Printed : 02-18-2014 14:43:45
 Sample Ident. : 18 2146_ValOMe Filename : 285318
 Sample Weight : 2.163 Calc.method: using 'K. Factors'

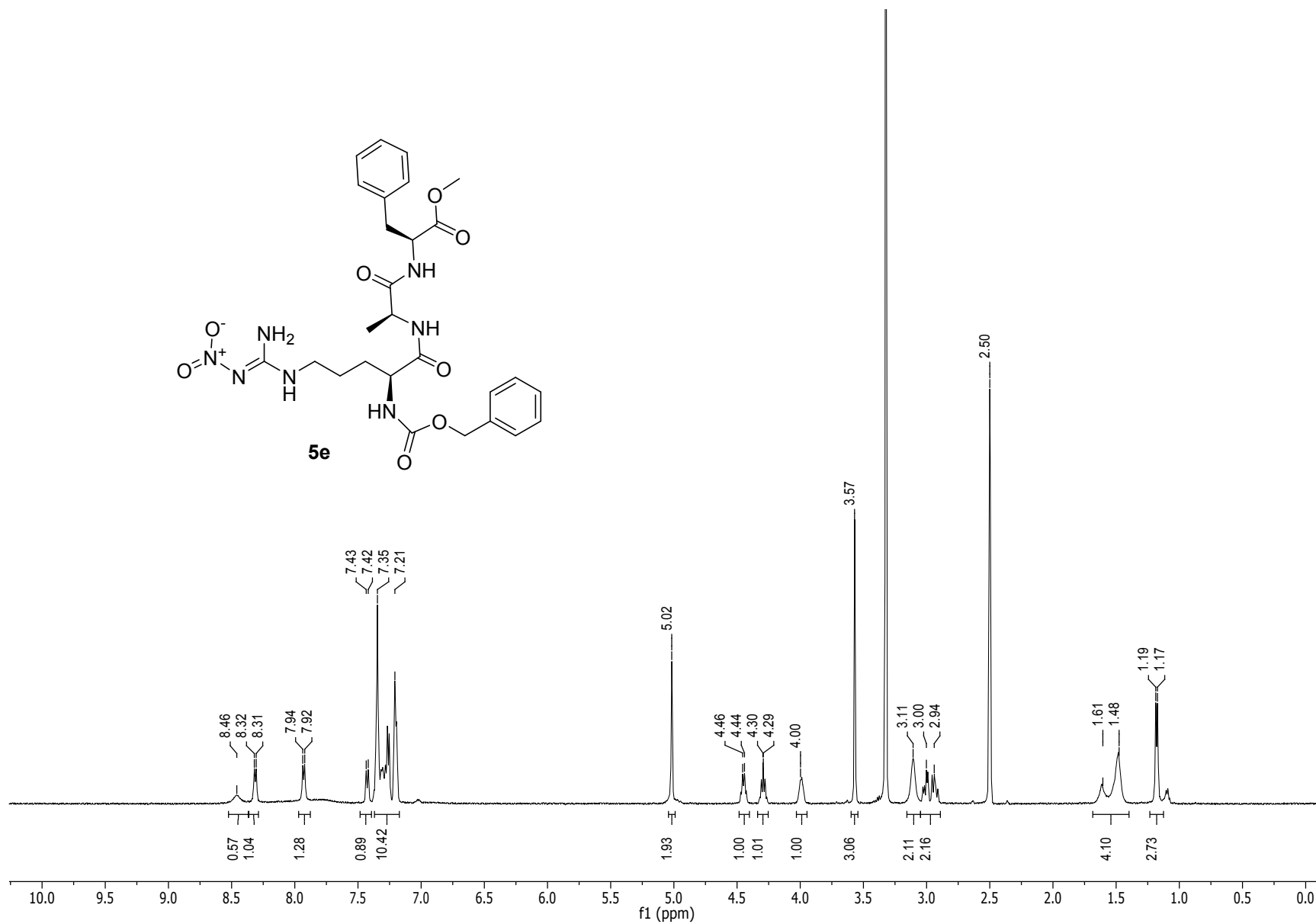
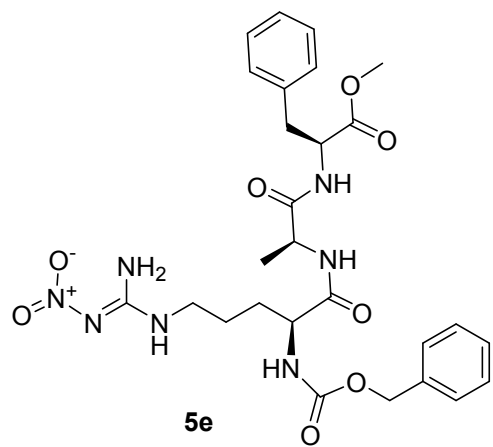
No. (#)	Type (#)	Start (Sec)	End (Sec)	Ret Time (Sec)	Height (fV)	Area (fV*Sec)	Area % (%)	Name
1	FU	63	100	82	5553.5	75611	8.09	Nitrogen
2	FU	100	278	111	42407.0	632905	67.75	Carbon
3	RS	278	598	309	4287.5	225697	24.16	Hydrogen

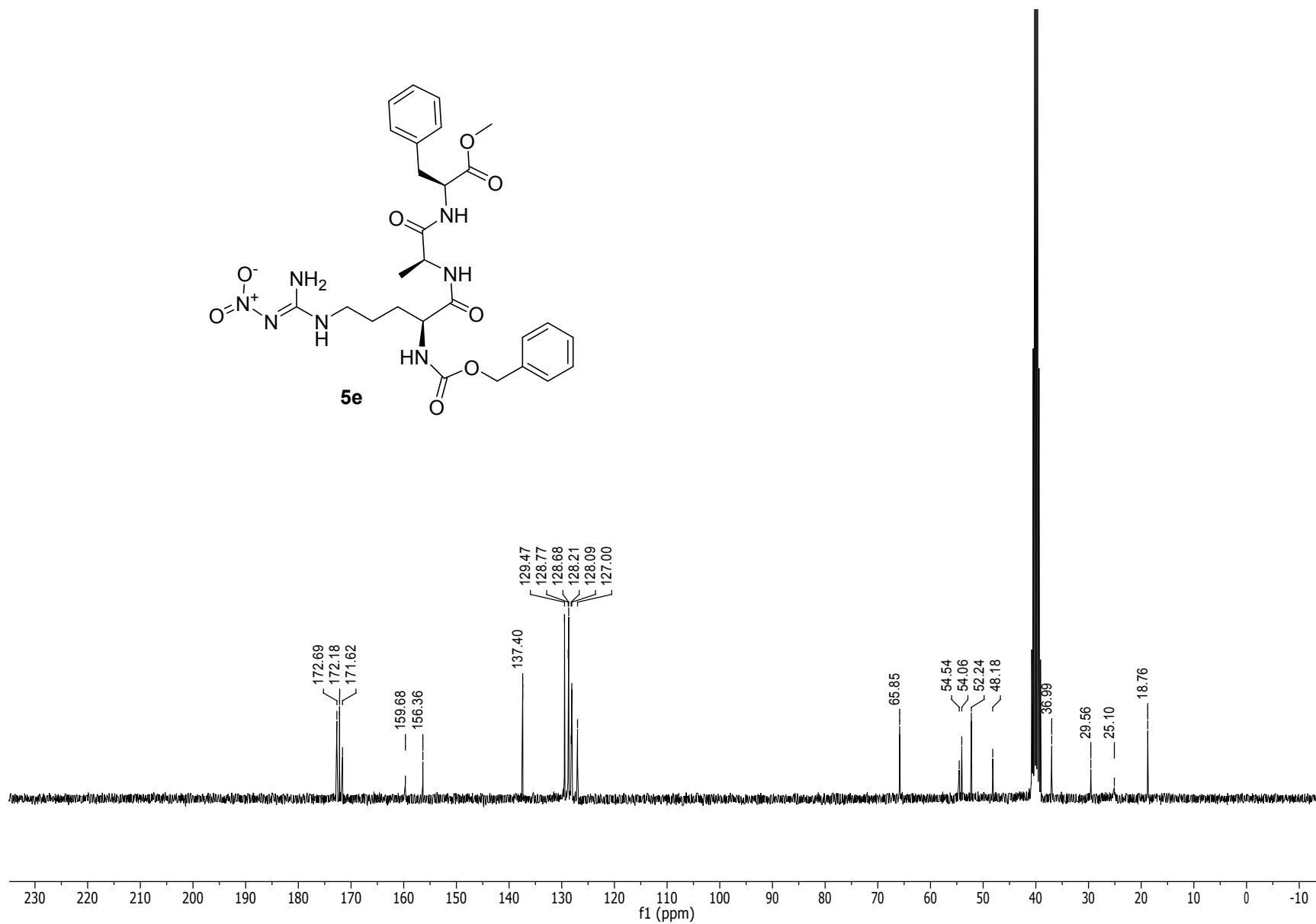
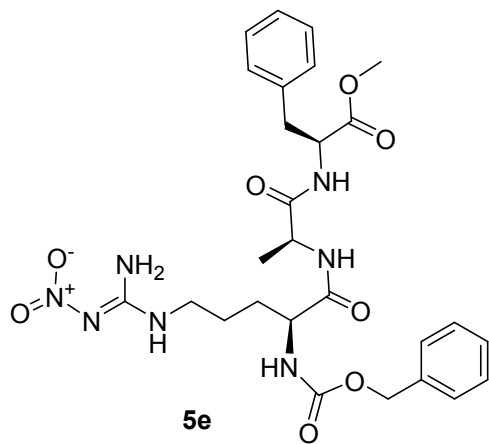
934213 100.00

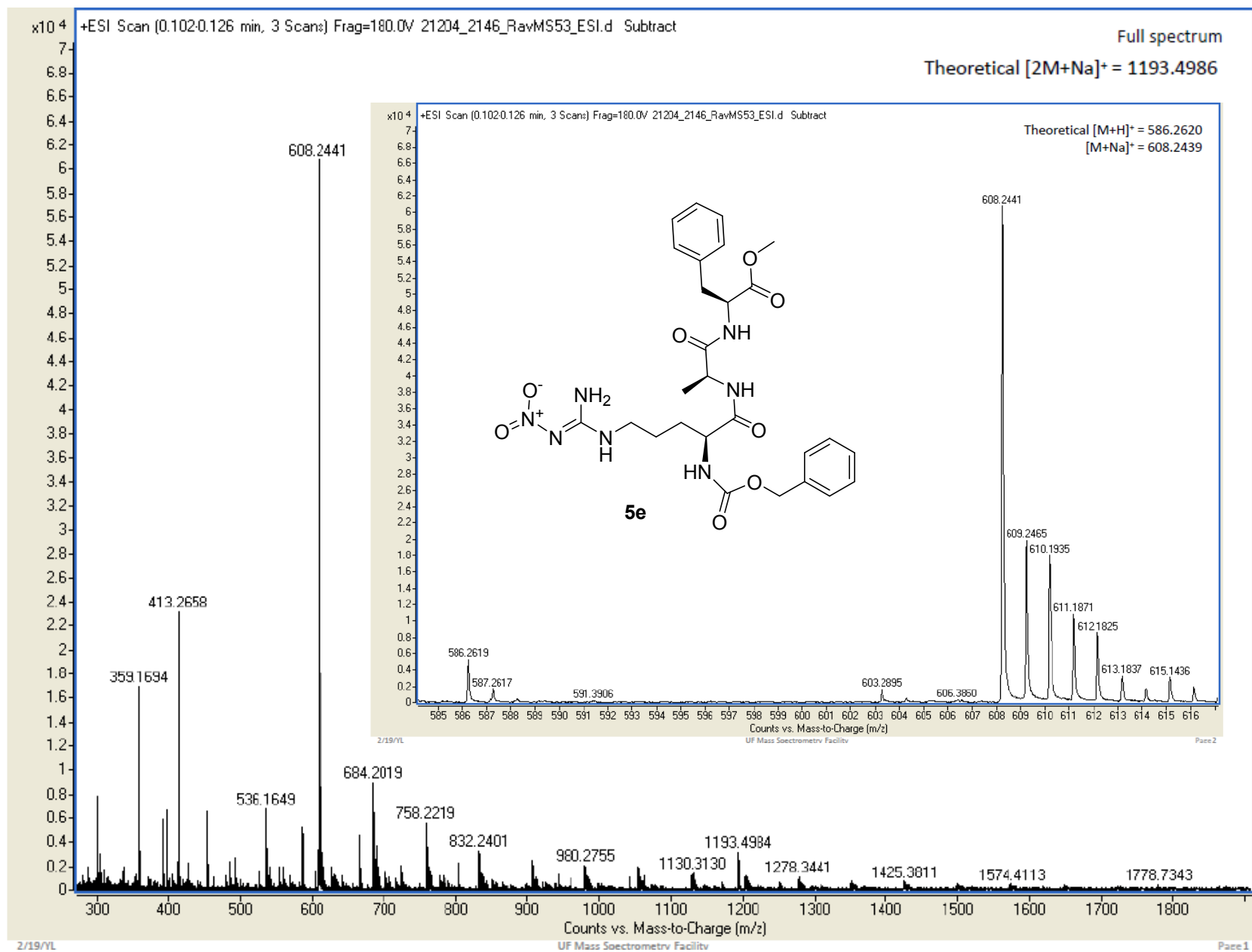
EAGER 200 Unk Report

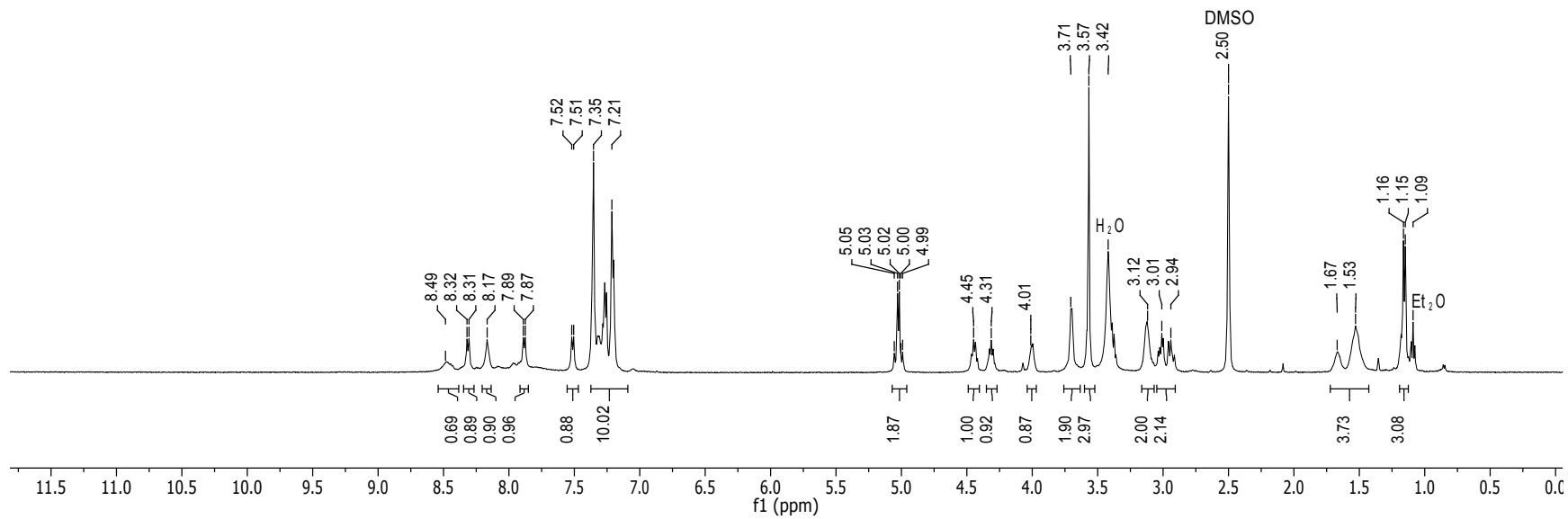
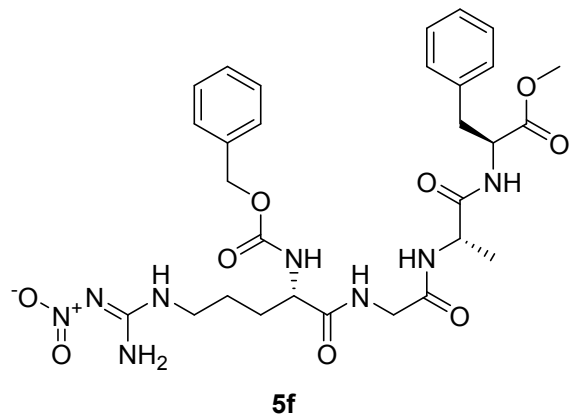
Instrument name : Instrument #1 Bline drift (fV): 4.3
 Company Name : U of Florida Operator Ident. : KOU
 Analysed : 02-18-14 13:00:44 Printed : 02-18-2014 14:43:45
 Sample Ident. : 18 2146_ValOMe Filename : 285318
 Sample Weight : 2.163 Calc.method: using 'K. Factors'

Pk. (#)	Ret Time (Sec)	Area (fV*Sec)	Element % (%)	Area Ratio	Name
1	82	75611	18.089	.837053E+01	Nitrogen
2	111	632905	51.161	.100000E+01	Carbon
3	309	225697	6.788	.280423E+01	Hydrogen

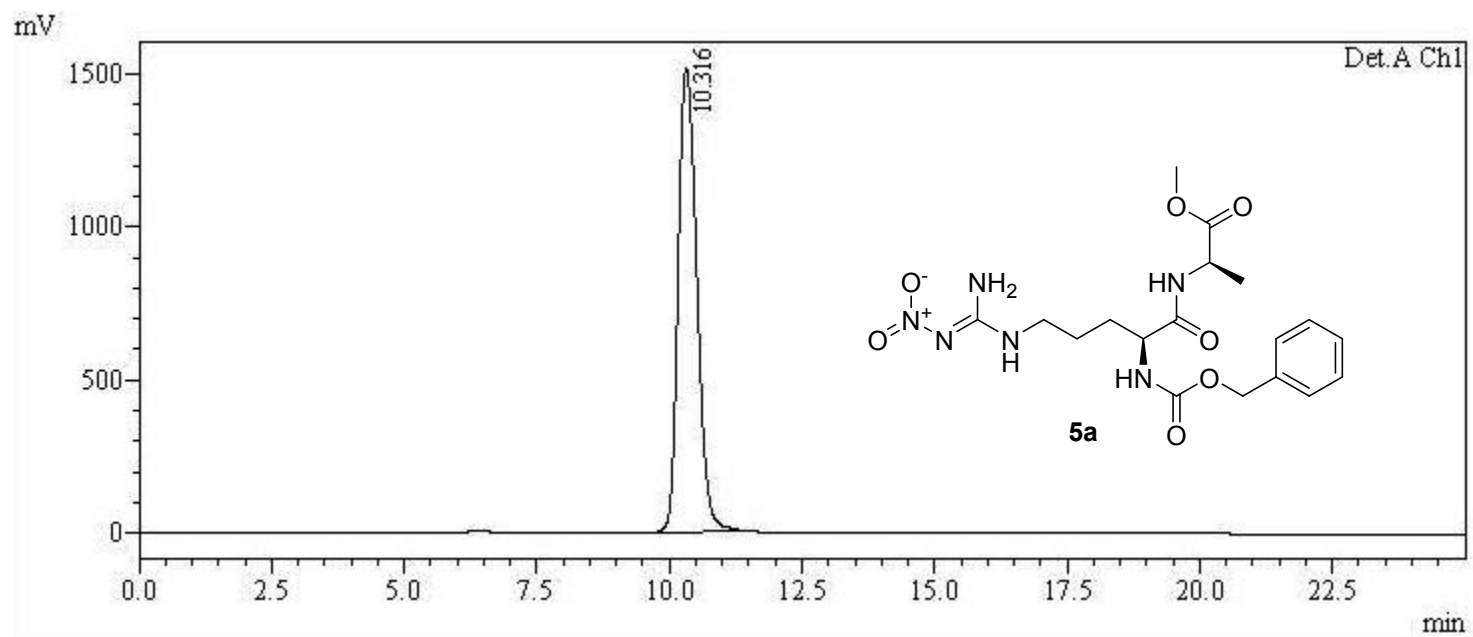




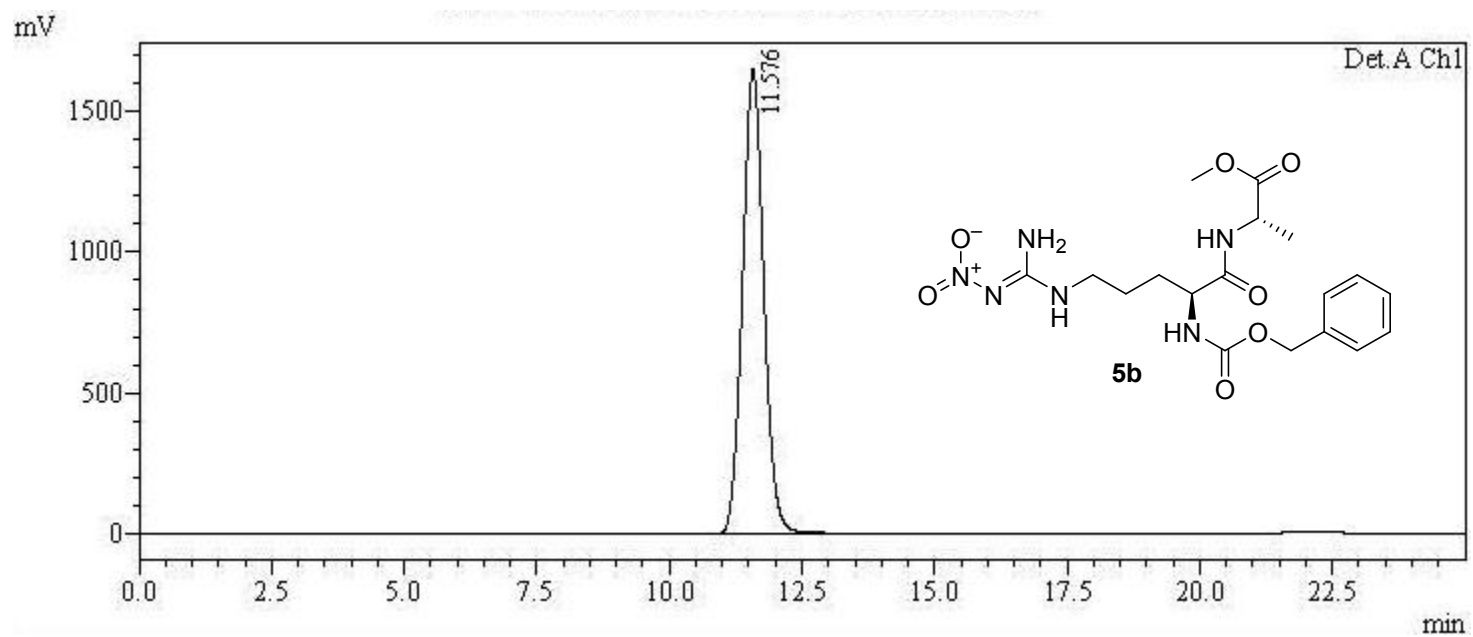




HPLC spectra of compound **5a**:



HPLC spectra of compound **5b**:



HPLC spectra of compound **5c**:

