

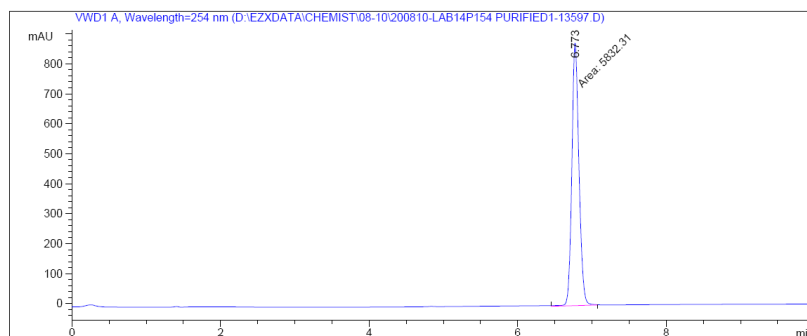
**Supplementary Material (ESI) for Organic & Biomolecular Chemistry**

**New Methodology for the N-Alkylation of 2-Amino-3-acylthiophenes**

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Ethyl 2-(methylamino)-4,5,6,7-tetrahydrobenzo[*b*]thiophene-3-carboxylate (**8a**)



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Area Percent Report  
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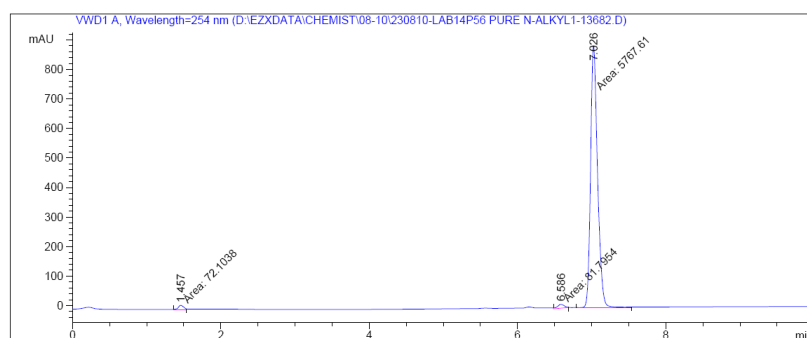
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Dilution: : 1.0000  
Use Multiplier & Dilution Factor with ISTDs

Signal 1: VWD1 A, Wavelength=254 nm

Peak #	RetTime [min]	Type	Width [min]	Area mAU *s	Height [mAU]	Area %
1	6.773	MM	0.1108	5832.31494	877.49347	100.0000

Totals : 5832.31494 877.49347

Ethyl 2-(ethylamino)-4,5,6,7-tetrahydrobenzo[*b*]thiophene-3-carboxylate (**8b**)



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Area Percent Report  
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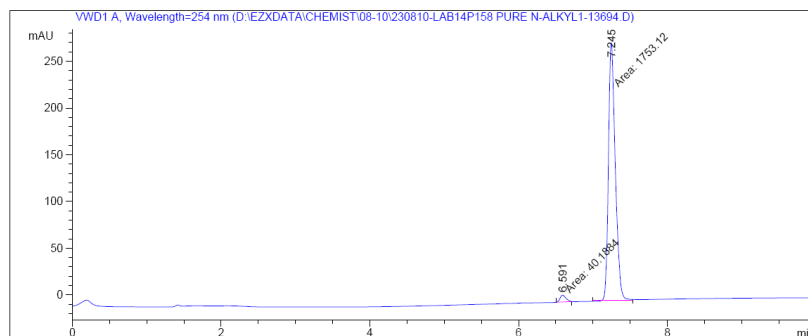
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Use Multiplier & Dilution Factor with ISTDs

Signal 1: VWD1 A, Wavelength=254 nm

Peak #	RetTime [min]	Type	Width [min]	Area mAU *s	Height [mAU]	Area %
1	1.457	MM	0.0852	72.10382	14.10571	1.2177
2	6.586	MM	0.1031	81.79545	13.22071	1.3813
3	7.026	MM	0.1082	5767.61230	888.02972	97.4010

Totals : 5921.51157 915.35614

Ethyl 2-(propylamino)-4,5,6,7-tetrahydrobenzo[*b*]thiophene-3-carboxylate (**8c**)



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Area Percent Report  
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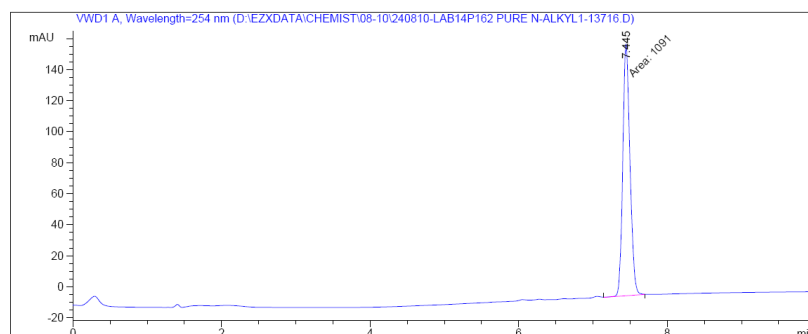
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Use Multiplier & Dilution Factor with ISTDs

Signal 1: VWD1 A, Wavelength=254 nm

Peak #	RetTime [min]	Type	Width [min]	Area mAU	Area *s	Height [mAU]	Area %
1	6.591	MM	0.0923	40.18841	7.25886	2.2410	
2	7.245	MM	0.1060	1753.11816	275.73428	97.7590	

Totals : 1793.30658 282.99314

2-(butylamino)-4,5,6,7-tetrahydrobenzo[*b*]thiophene-3-carboxylate (**8d**)



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Area Percent Report  
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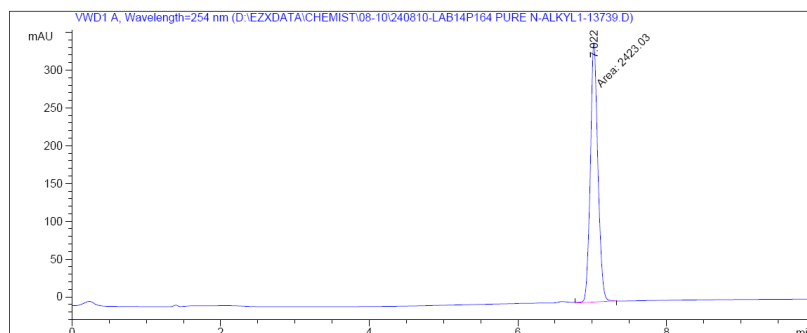
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Use Multiplier & Dilution Factor with ISTDs

Signal 1: VWD1 A, Wavelength=254 nm

Peak #	RetTime [min]	Type	Width [min]	Area mAU	Area *s	Height [mAU]	Area %
1	7.445	MM	0.1120	1090.99902	162.35892	100.0000	

Totals : 1090.99902 162.35892

2-(Allylamino)-4,5,6,7-tetrahydrobenzo[*b*]thiophene-3-carboxylate (**8e**)



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Area Percent Report  
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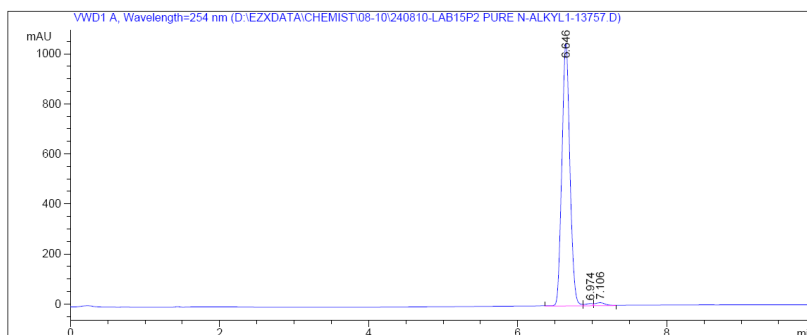
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Use Multiplier & Dilution Factor with ISTDs

Signal 1: VWD1 A, Wavelength=254 nm

Peak #	RetTime [min]	Type	Width [min]	Area mAU *s	Height [mAU]	Area %
1	7.022	MM	0.1178	2423.03149	342.69989	100.0000

Totals : 2423.03149 342.69989

Ethyl 2-(prop-2-yn-1-ylamino)-4,5,6,7-tetrahydrobenzo[*b*]thiophene-3-carboxylate (**8f**)



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Area Percent Report  
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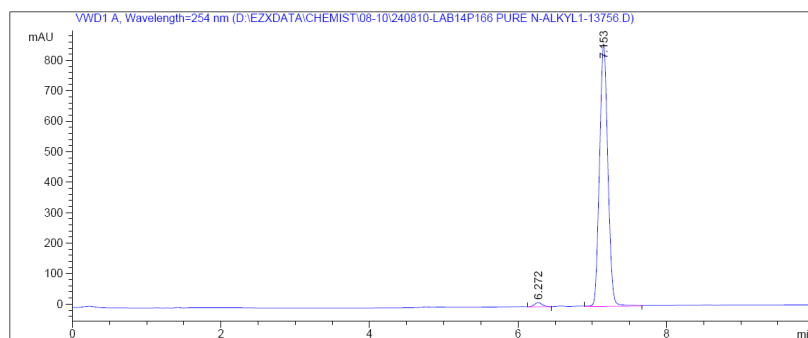
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Use Multiplier & Dilution Factor with ISTDs

Signal 1: VWD1 A, Wavelength=254 nm

Peak #	RetTime [min]	Type	Width [min]	Area mAU *s	Height [mAU]	Area %
1	6.646	VV	0.1132	7834.58496	1051.01794	97.8078
2	6.974	VV	0.0995	60.24644	8.72771	0.7521
3	7.106	VV	0.1362	115.35637	12.08009	1.4401

Totals : 8010.18777 1071.82574

Ethyl 2-(benzylamino)-4,5,6,7-tetrahydrobenzo[*b*]thiophene-3-carboxylate (**8g**)



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Area Percent Report  
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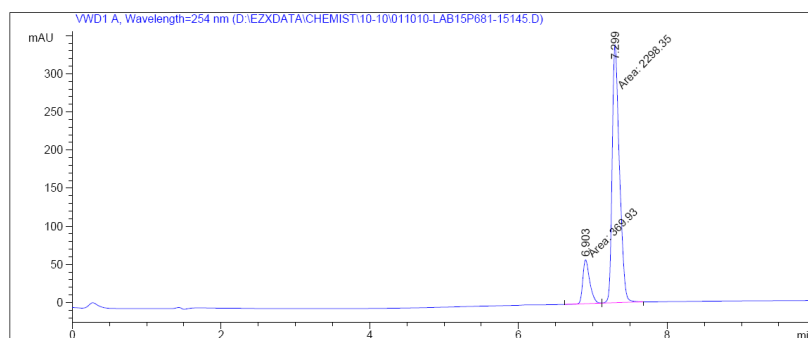
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Use Multiplier & Dilution Factor with ISTDs

Signal 1: VWD1 A, Wavelength=254 nm

Peak #	RetTime [min]	Type	Width [min]	Area mAU *s	Height [mAU]	Area %
1	6.272	VV	0.1129	106.23212	14.05319	1.5572
2	7.153	VB	0.1172	6715.82520	860.96240	98.4428

Totals : 6822.05731 875.01559

Ethyl 2-(isopropylamino)-4,5,6,7-tetrahydrobenzo[*b*]thiophene-3-carboxylate (**11**)



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Area Percent Report  
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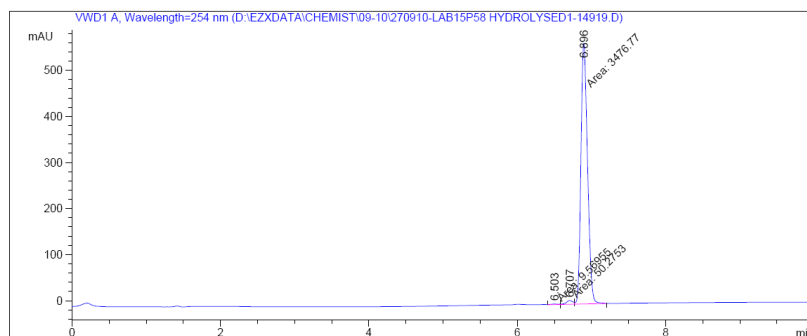
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Dilution: : 1.0000  
Use Multiplier & Dilution Factor with ISTDs

Signal 1: VWD1 A, Wavelength=254 nm

Peak #	RetTime [min]	Type	Width [min]	Area mAU *s	Height [mAU]	Area %
1	6.903	MF	0.1071	369.93048	57.59196	13.8640
2	7.299	FM	0.1132	2298.34546	338.51202	86.1360

Totals : 2668.27594 396.10398

(4-Chlorophenyl)(2-(methylamino)-4,5,6,7-tetrahydrobenzo[*b*]thiophen-3-yl)methanone (**24a**)



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Area Percent Report  
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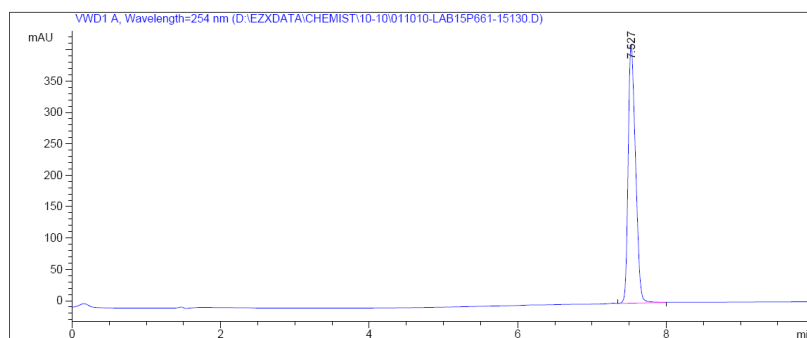
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Dilution: : 1.0000  
Use Multiplier & Dilution Factor with ISTDs

Signal 1: VWD1 A, Wavelength=254 nm

Peak #	RetTime [min]	Type	Width [min]	Area mAU *s	Height [mAU]	Area %
1	6.503	MF	0.1187	9.56955	1.34326	0.2706
2	6.707	MF	0.1026	50.27529	8.16507	1.4216
3	6.896	FM	0.1023	3476.76782	566.32275	98.3078

Totals : 3536.61266 575.83108

(2-(Butylamino)-4,5,6,7-tetrahydrobenzo[*b*]thiophen-3-yl)(4-chlorophenyl)methanone (**24b**)



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Area Percent Report  
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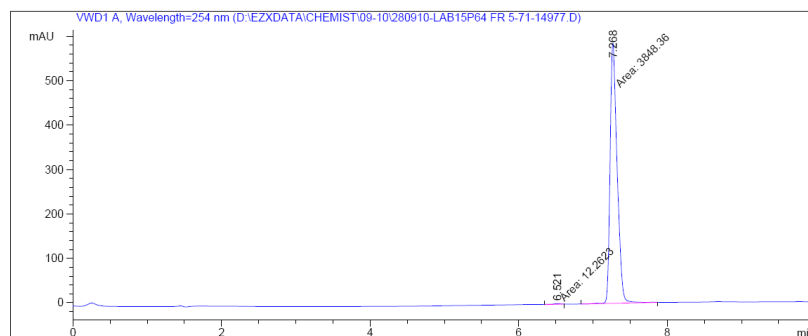
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Dilution: : 1.0000  
Use Multiplier & Dilution Factor with ISTDs

Signal 1: VWD1 A, Wavelength=254 nm

Peak #	RetTime [min]	Type	Width [min]	Area mAU *s	Height [mAU]	Area %
1	7.527	VB	0.1051	2840.16919	412.46588	100.0000

Totals : 2840.16919 412.46588

(2-(Benzylamino)-4,5,6,7-tetrahydrobenzo[*b*]thiophen-3-yl)(4-chlorophenyl)methanone (**24c**)



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Area Percent Report  
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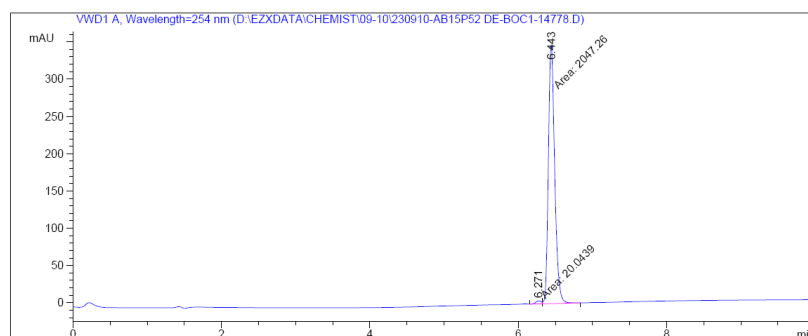
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Multiplier: : 1.0000  
Dilution: : 1.0000  
Use Multiplier & Dilution Factor with ISTDs

Signal 1: WVD1 A, Wavelength=254 nm

Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	6.521	MM	0.1452	12.26229	1.40729	0.3176
2	7.268	MM	0.1092	3848.35645	587.43463	99.6824

Totals : 3860.61874 588.84192

Ethyl 3-(3-chlorophenyl)-5-(methylamino)-4-oxo-3,4-dihydrothieno[3,4-*d*]pyridazine-1-carboxylate (**27a**)



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Area Percent Report  
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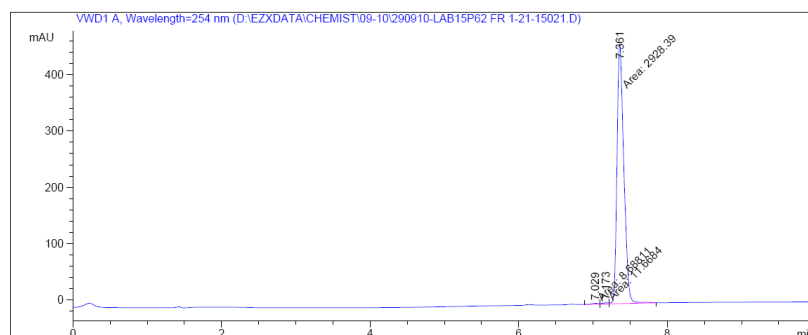
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Dilution: : 1.0000  
Use Multiplier & Dilution Factor with ISTDs

Signal 1: WVD1 A, Wavelength=254 nm

Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	6.271	MF	0.0847	20.04388	3.94341	0.9696
2	6.443	FM	0.0981	2047.26221	347.68423	99.0304

Totals : 2067.30609 351.62764

Butyl 5-(butylamino)-3-(3-chlorophenyl)-4-oxo-3,4-dihydrothieno[3,4-*d*]pyridazine-1-carboxylate  
(27b)



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Area Percent Report  
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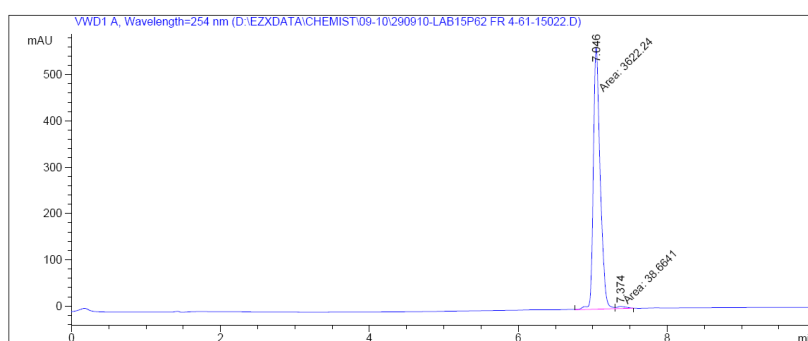
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Dilution: : 1.0000  
Use Multiplier & Dilution Factor with ISTDs

Signal 1: VWD1 A, Wavelength=254 nm

Peak #	RetTime [min]	Type	Width [min]	Area mAU *s	Height [mAU]	Area %
1	7.029	MF	0.0900	8.68811	1.60964	0.2946
2	7.173	MF	0.0867	11.66838	2.24335	0.3957
3	7.361	FM	0.1059	2928.38525	461.04764	99.3097

Totals : 2948.74174 464.90063

Ethyl 5-(butylamino)-3-(3-chlorophenyl)-4-oxo-3,4-dihydrothieno[3,4-*d*]pyridazine-1-carboxylate  
(27c)



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

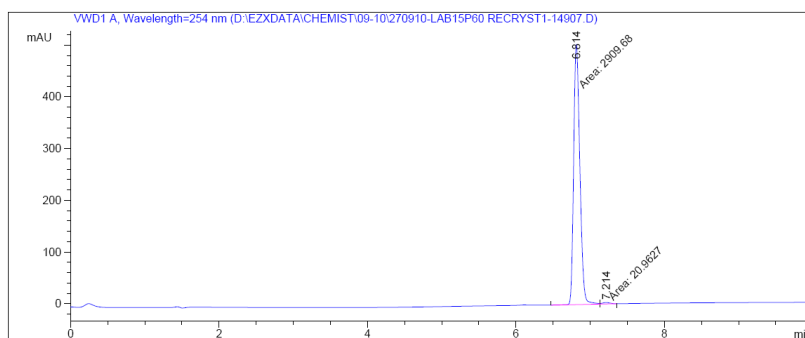
Signal 1: VWD1 A, Wavelength=254 nm

Peak #	RetTime [min]	Type	Width [min]	Area mAU *s	Height [mAU]	Area %
1	7.046	MF	0.1066	3622.24316	566.26776	98.9439
2	7.374	FM	0.1391	38.66413	4.63285	1.0561

Totals : 3660.90730 570.90061



Ethyl 5-(benzylamino)-3-(3-chlorophenyl)-4-oxo-3,4-dihydrothieno[3,4-*d*]pyridazine-1-carboxylate  
(27d)



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Area Percent Report  
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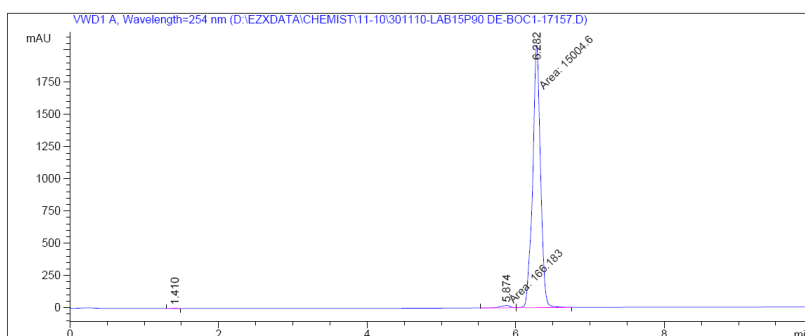
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Dilution: : 1.0000  
Use Multiplier & Dilution Factor with ISTDs

Signal 1: VWD1 A, Wavelength=254 nm

Peak #	RetTime [min]	Type	Width [min]	Area mAU	Area %	Height [mAU]	Area %
1	6.814	MF	0.0963	2309.68164	99.2847	503.77374	99.2847
2	7.214	FM	0.1217	20.96273	0.7153	2.86968	0.7153

Totals : 2930.64437 506.64342

(2-(Methylamino)phenyl)(phenyl)methanone (31a)



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Area Percent Report  
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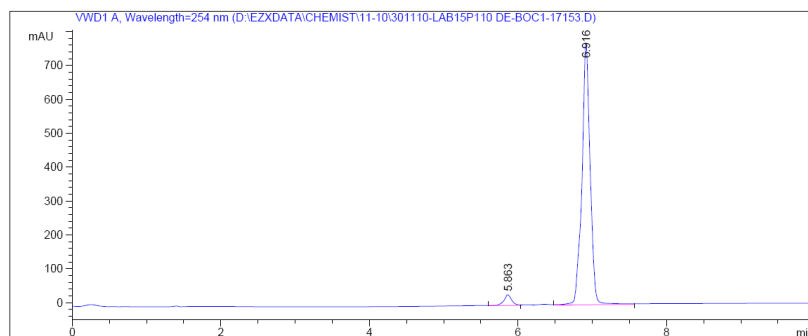
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Dilution: : 1.0000  
Use Multiplier & Dilution Factor with ISTDs

Signal 1: VWD1 A, Wavelength=254 nm

Peak #	RetTime [min]	Type	Width [min]	Area mAU	Area %	Height [mAU]	Area %
1	1.410	EV	0.0967	14.80281	0.0975	2.40142	0.0975
2	5.874	MF	0.1498	166.18314	1.0943	18.48588	1.0943
3	6.282	FM	0.1225	15004.6e4	98.8082	2041.75513	98.8082

Totals : 1.51856e4 2062.64242

(2-(Butylamino)phenyl)(phenyl)methanone (**31b**)



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Area Percent Report  
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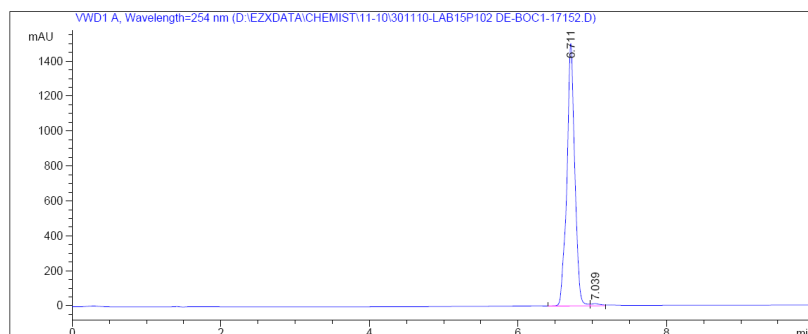
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Dilution: : 1.0000  
Use Multiplier & Dilution Factor with ISTDs

Signal 1: VWD1 A, Wavelength=254 nm

Peak #	RetTime [min]	Type	Width [min]	Area mAU *s	Height [mAU]	Area %
1	5.863	VV	0.1059	232.22896	31.68933	3.7236
2	6.916	VB	0.1097	6004.51367	772.11945	96.2764

Totals : 6236.74263 803.80878

(2-(benzylamino)phenyl)(phenyl)methanone (**31c**)



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Area Percent Report  
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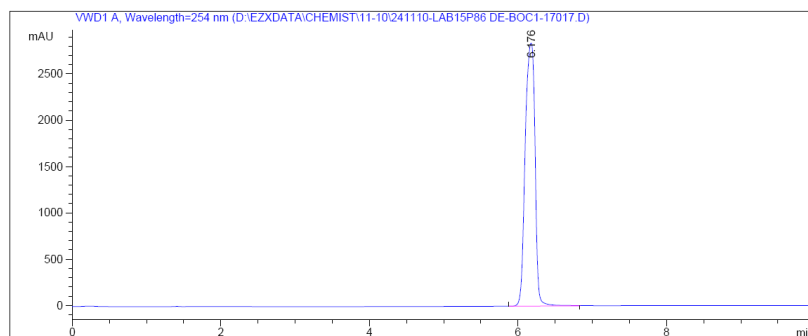
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Dilution: : 1.0000  
Use Multiplier & Dilution Factor with ISTDs

Signal 1: VWD1 A, Wavelength=254 nm

Peak #	RetTime [min]	Type	Width [min]	Area mAU *s	Height [mAU]	Area %
1	6.711	VV	0.1067	1.11203e4	1503.31287	98.9844
2	7.039	VV	0.1189	114.09492	13.11741	1.0156

Totals : 1.12344e4 1516.43028

1-(Methylamino)-9H-fluoren-9-one (**34a**)



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Area Percent Report  
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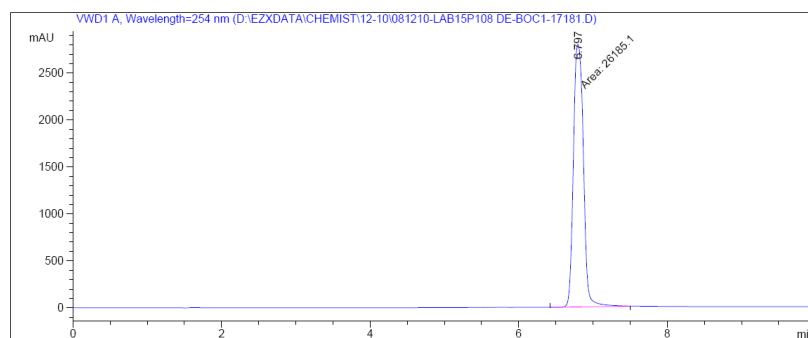
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Dilution: : 1.0000  
Use Multiplier & Dilution Factor with ISTDs

Signal 1: VWd1 A, Wavelength=254 nm

Peak #	RetTime [min]	Type	Width [min]	Area mAU *s	Height [mAU]	Area %
1	6.176	VV	0.1522	2.60810e4	2840.75220	100.0000

Totals : 2.60810e4 2840.75220

1-(Butylamino)-9H-fluoren-9-one (**34b**)



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Area Percent Report  
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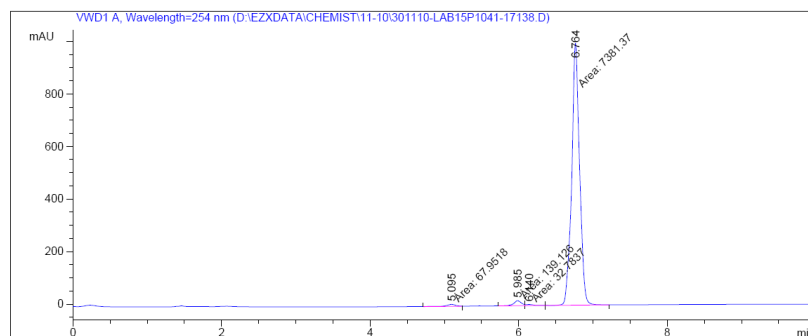
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Dilution: : 1.0000  
Use Multiplier & Dilution Factor with ISTDs

Signal 1: VWd1 A, Wavelength=254 nm

Peak #	RetTime [min]	Type	Width [min]	Area mAU *s	Height [mAU]	Area %
1	6.797	MM	0.1561	2.61851e4	2796.01953	100.0000

Totals : 2.61851e4 2796.01953

1-(Benzylamino)-9H-fluoren-9-one (**34c**)



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

Signal 1: VWD1 A, Wavelength=254 nm

Peak #	RetTime [min]	Type	Width [min]	Area mAU *s	Height [mAU]	Area %
1	5.095	MF	0.1456	67.95181	7.77755	0.8916
2	5.985	MF	0.1194	139.12598	19.41591	1.8255
3	6.140	FM	0.1207	32.78373	4.52672	0.4302
4	6.764	FM	0.1233	7381.36816	998.08844	96.8527

Totals :                   7621.22968 1029.80862