

Chiral Squaramide-Catalysed One-pot Enantioselective sulfa-Michael Addition/Thioesterification of Thiols with α,β -Unsaturated *N*-Acylated Succinimides

Bo-Liang Zhao and Da-Ming Du*

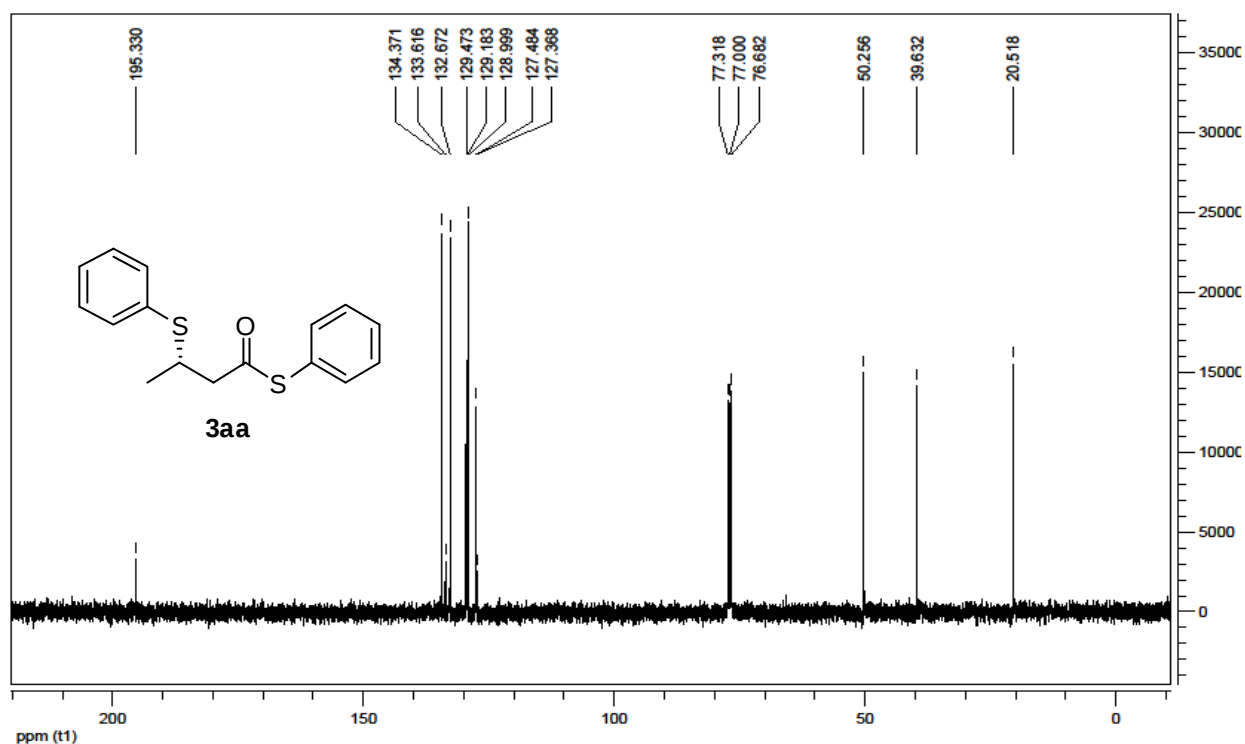
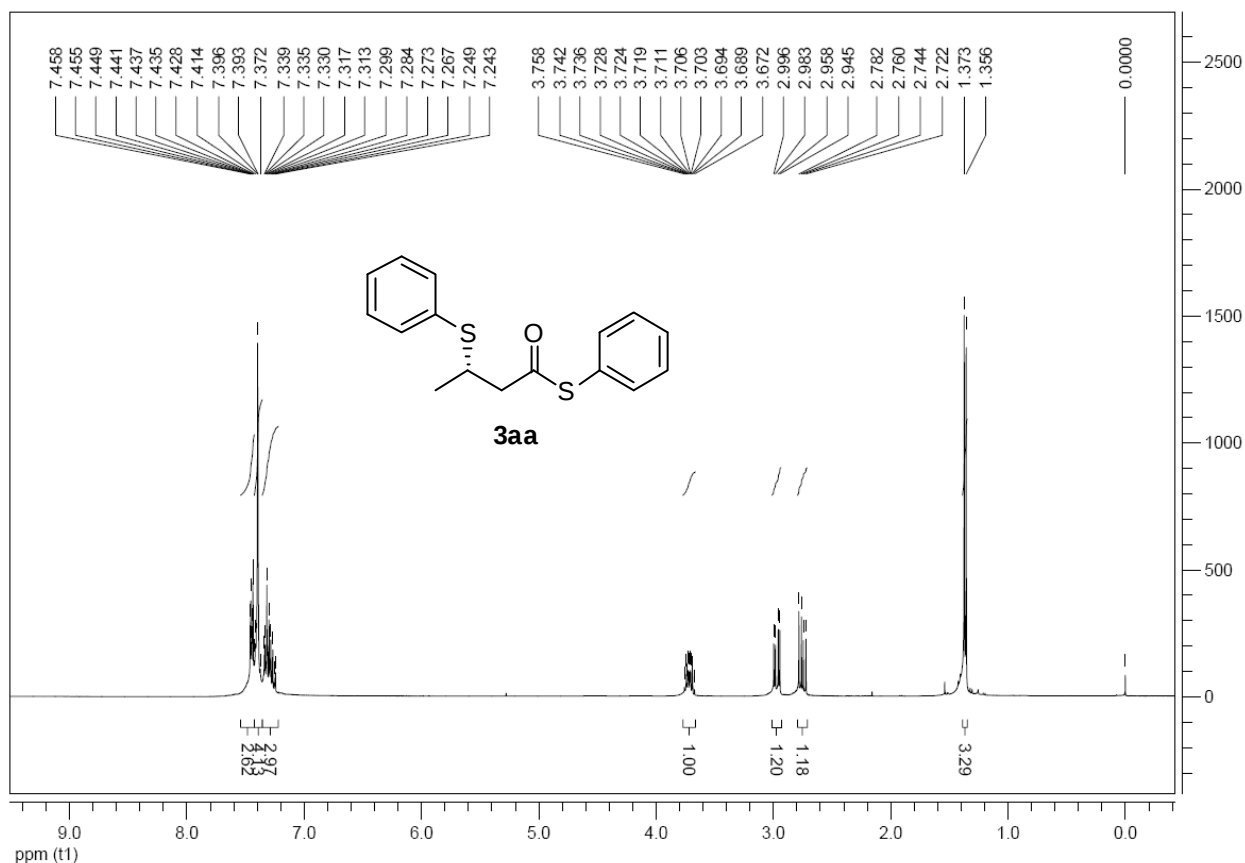
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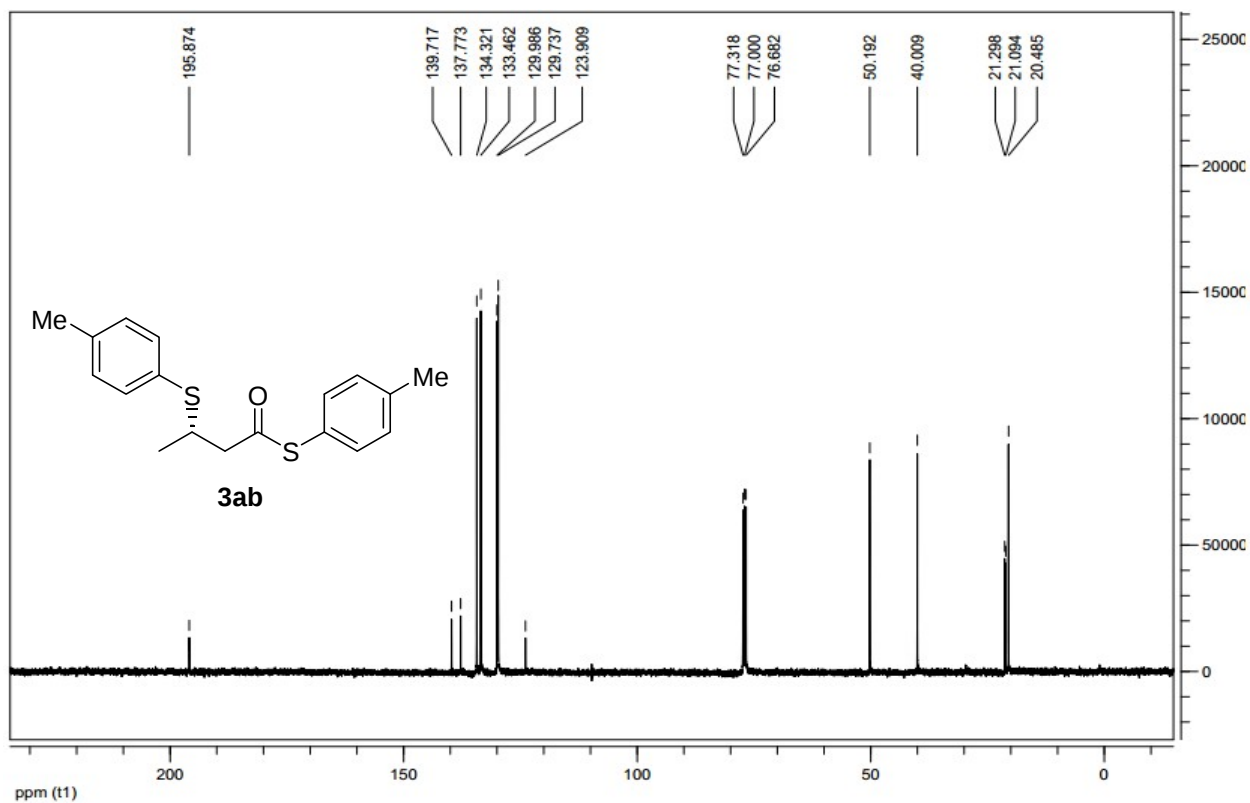
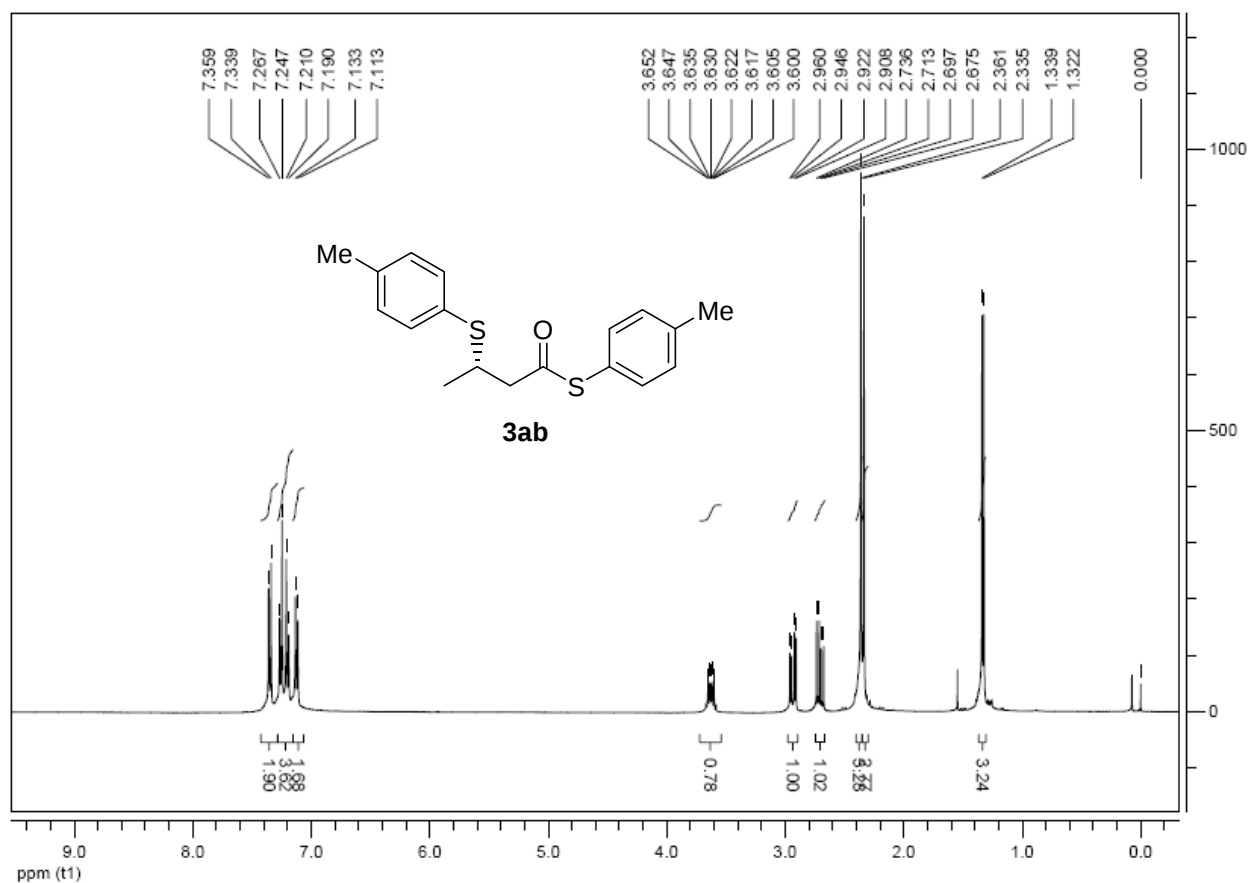
Supporting Information

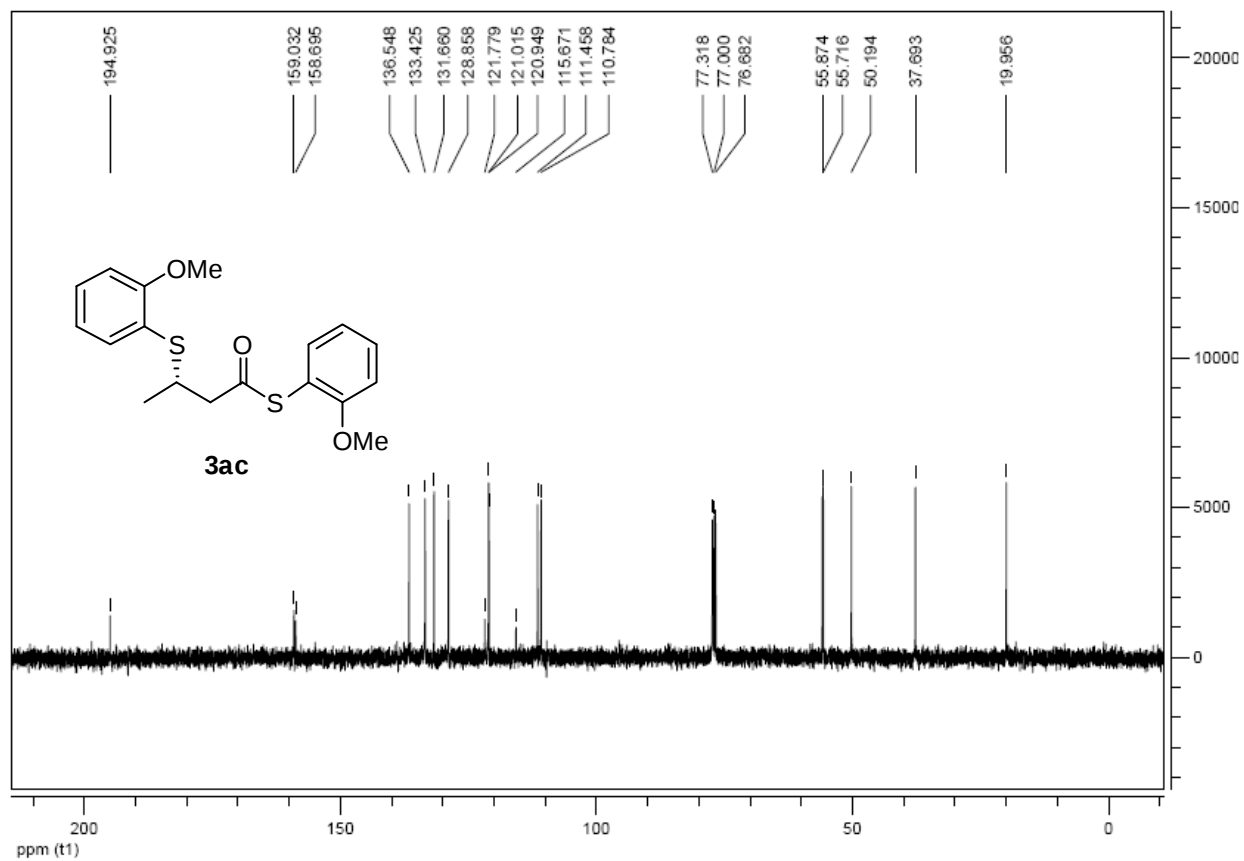
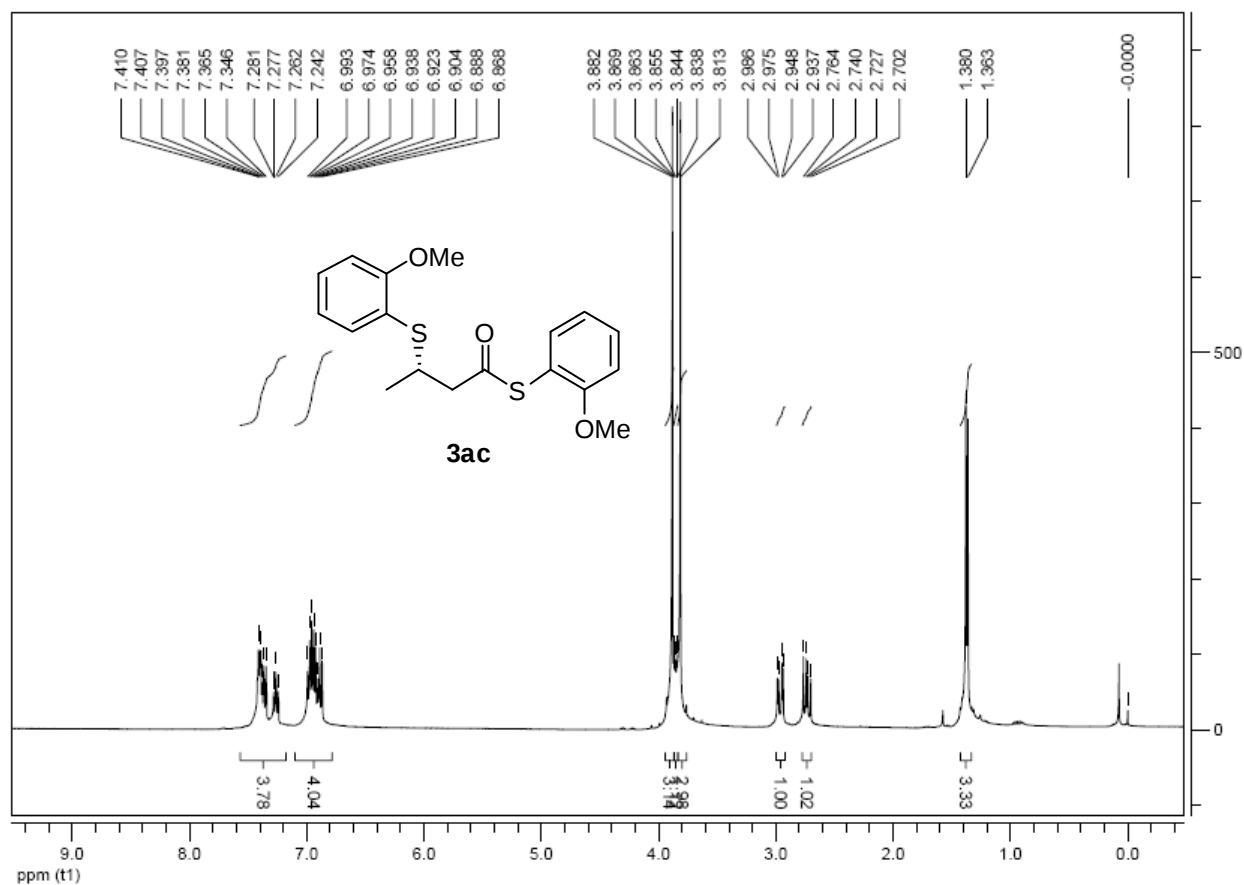
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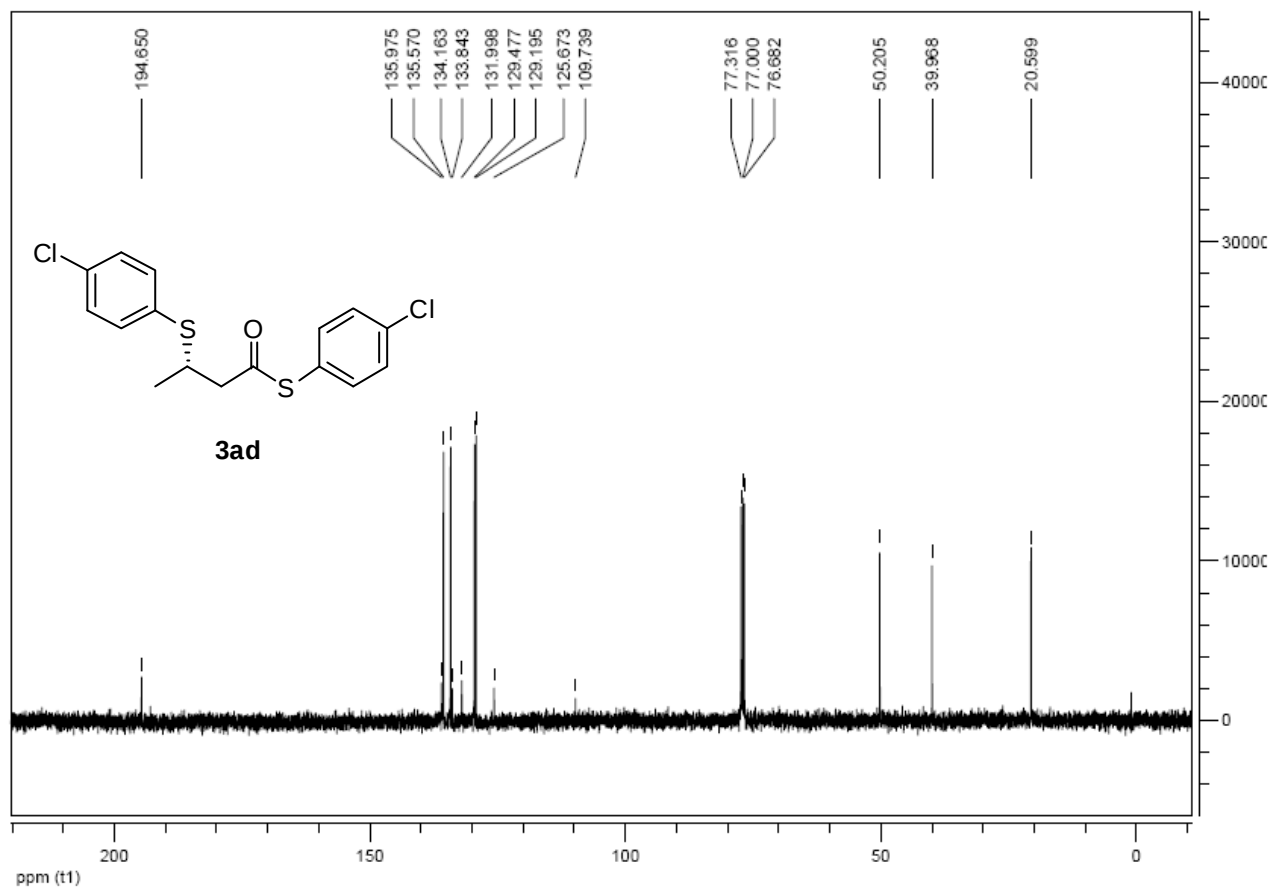
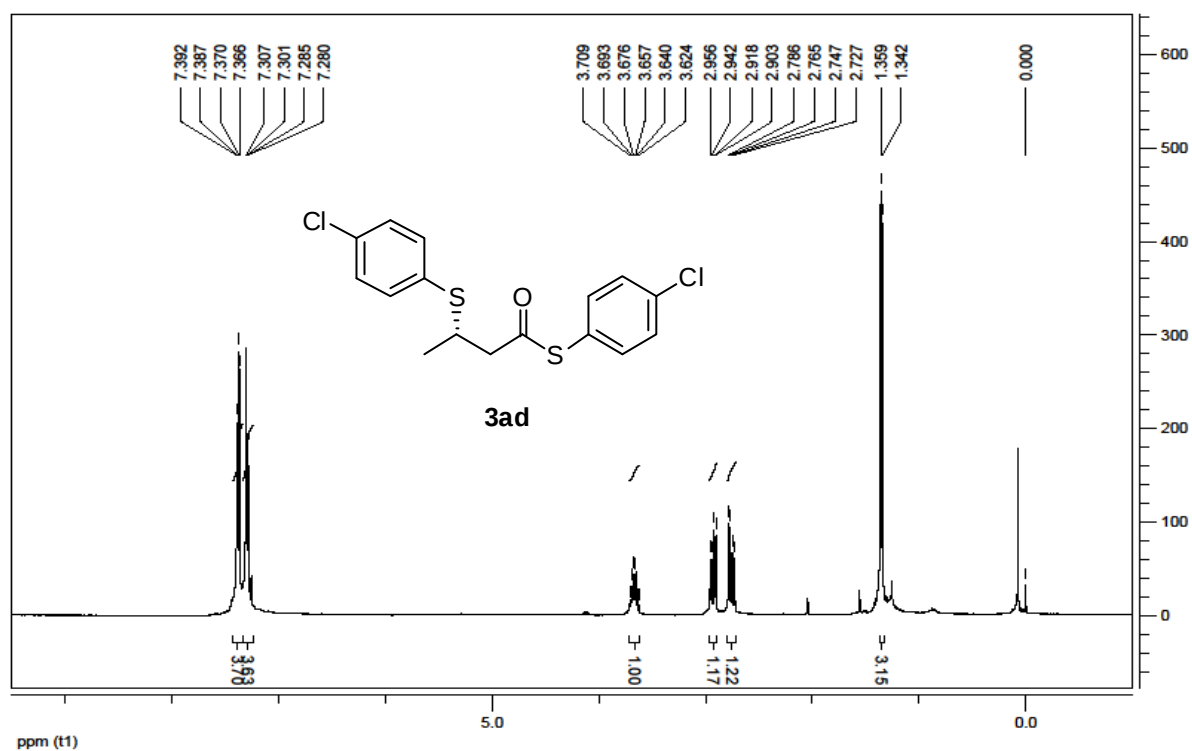
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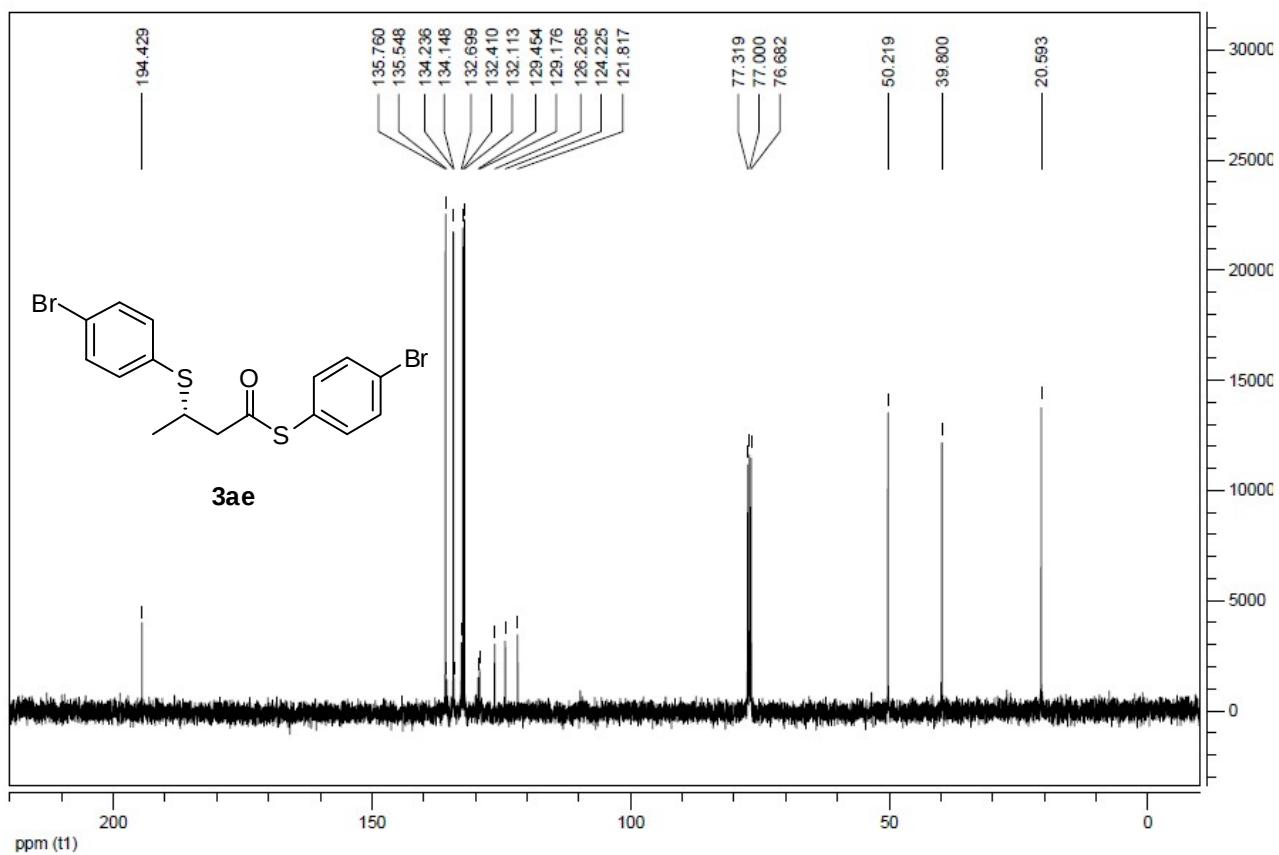
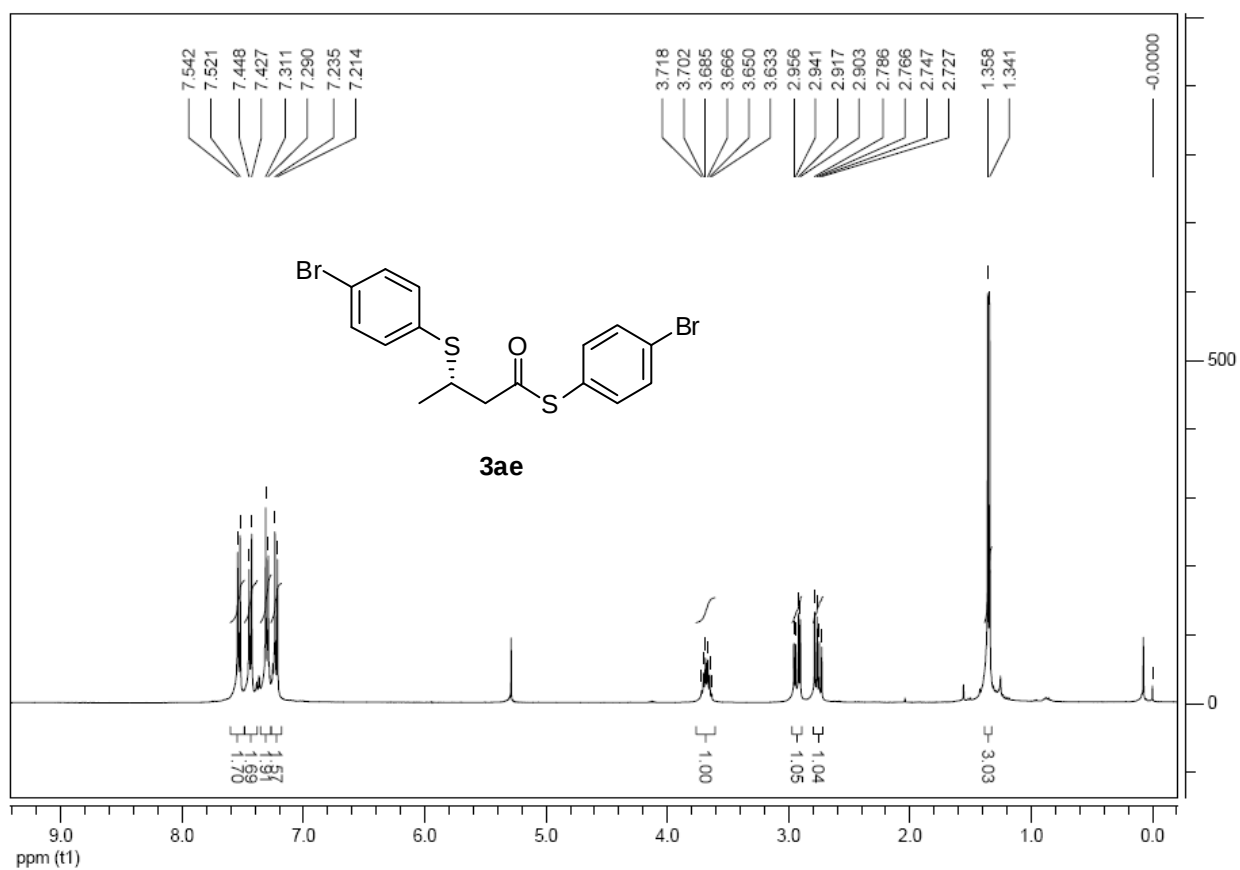
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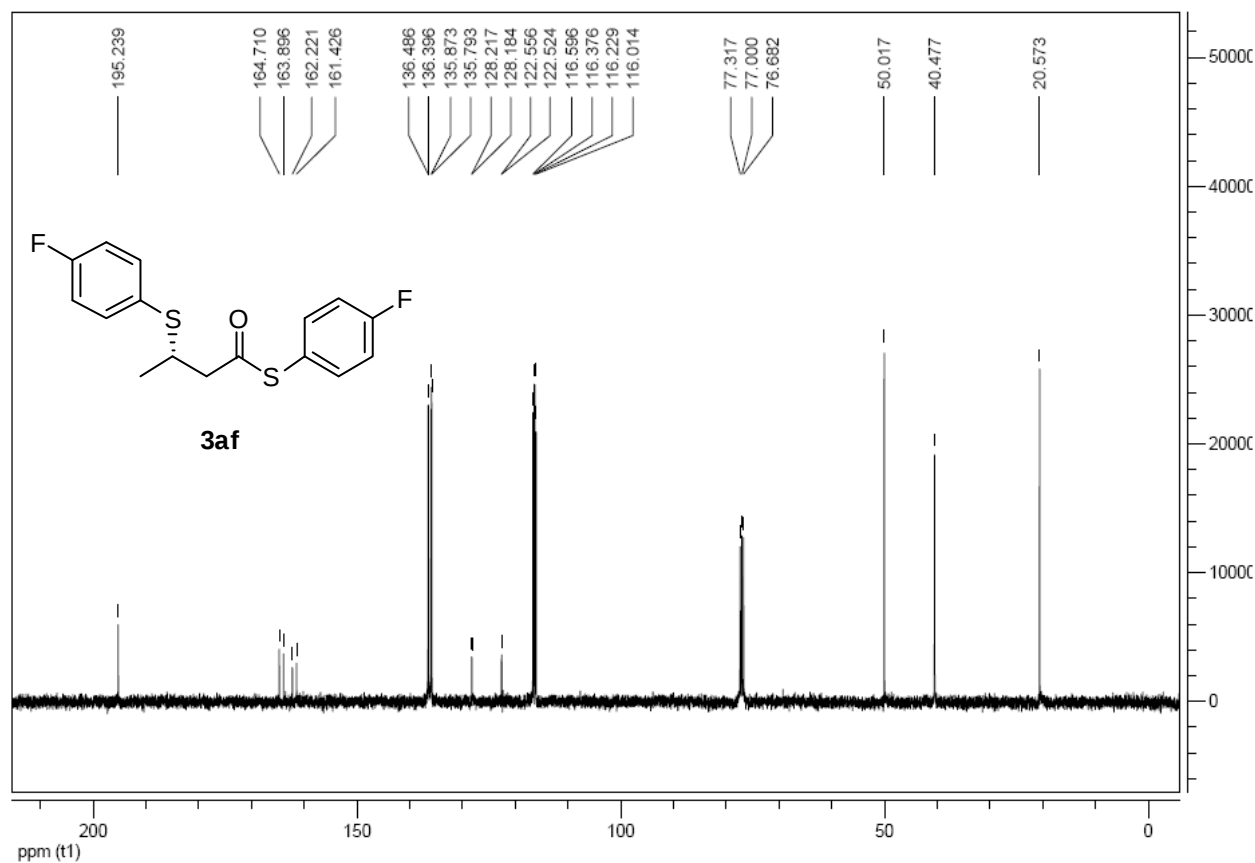
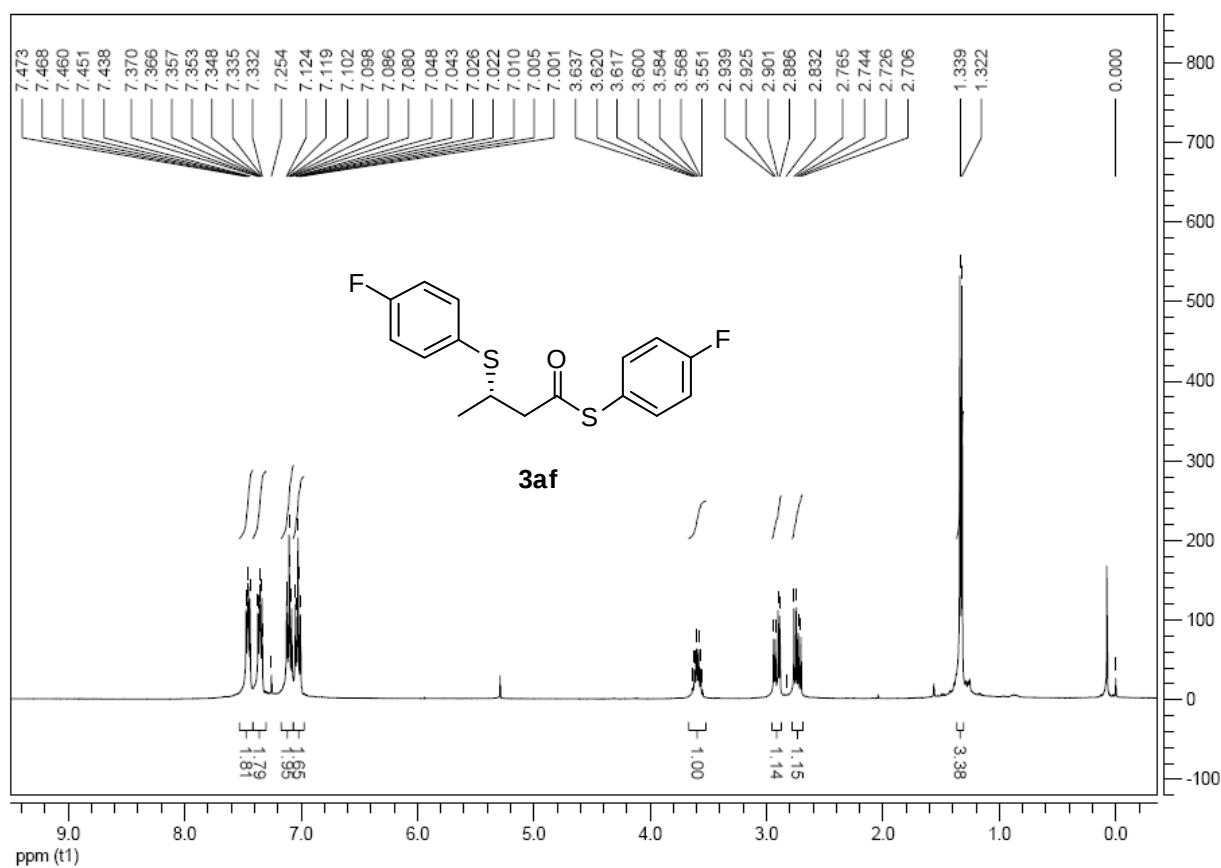


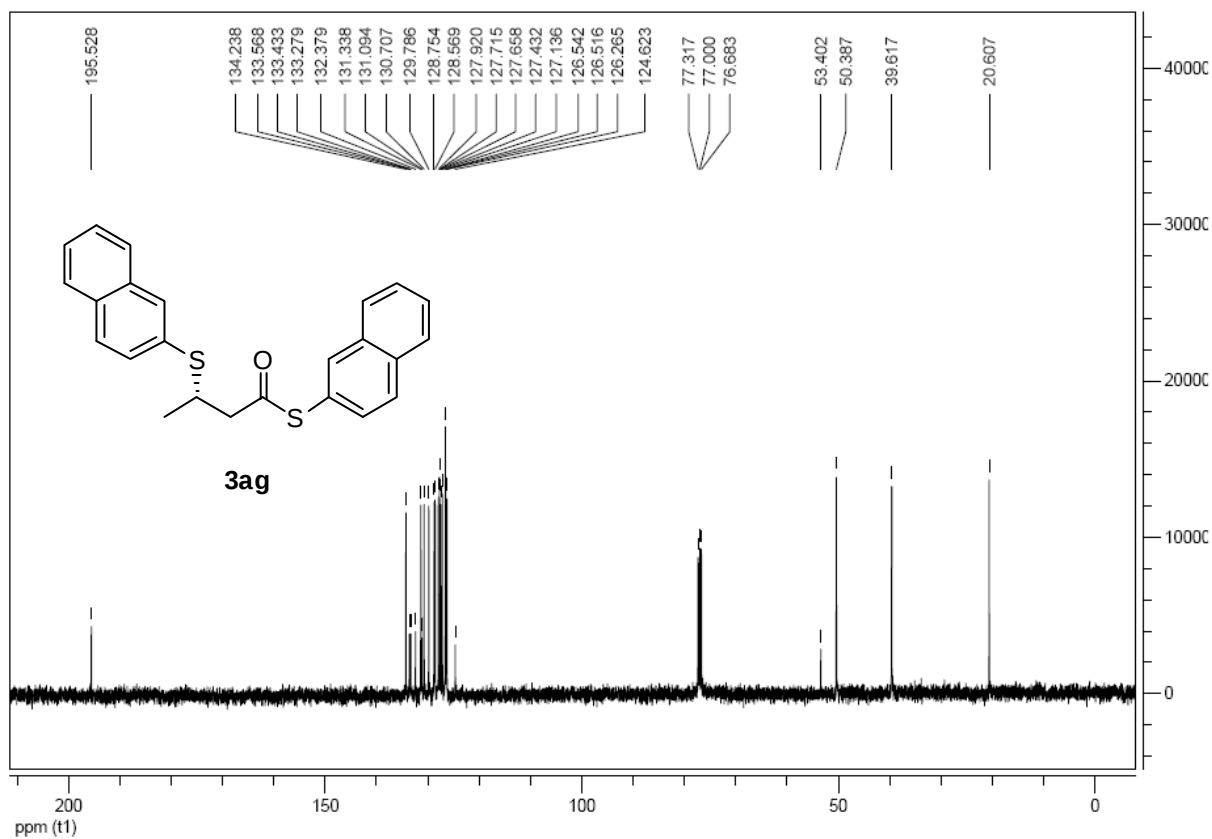
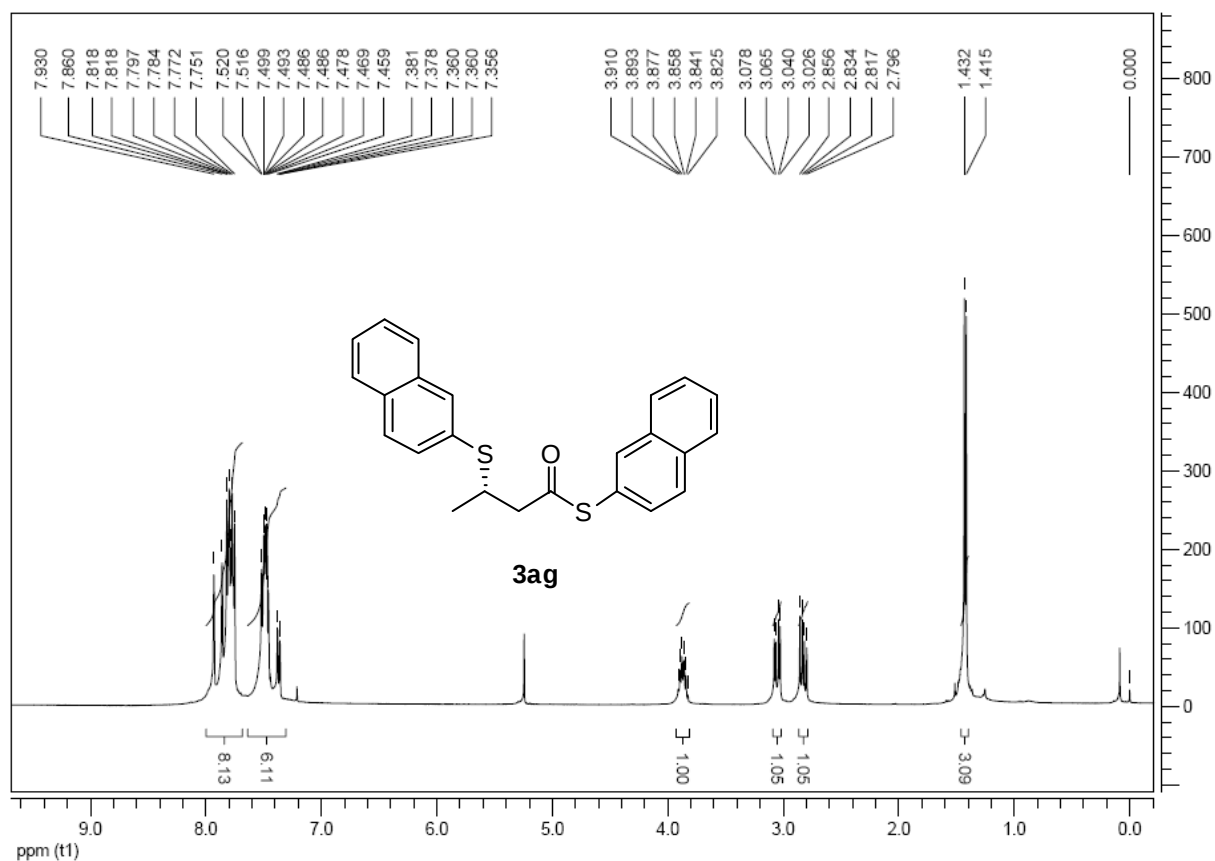


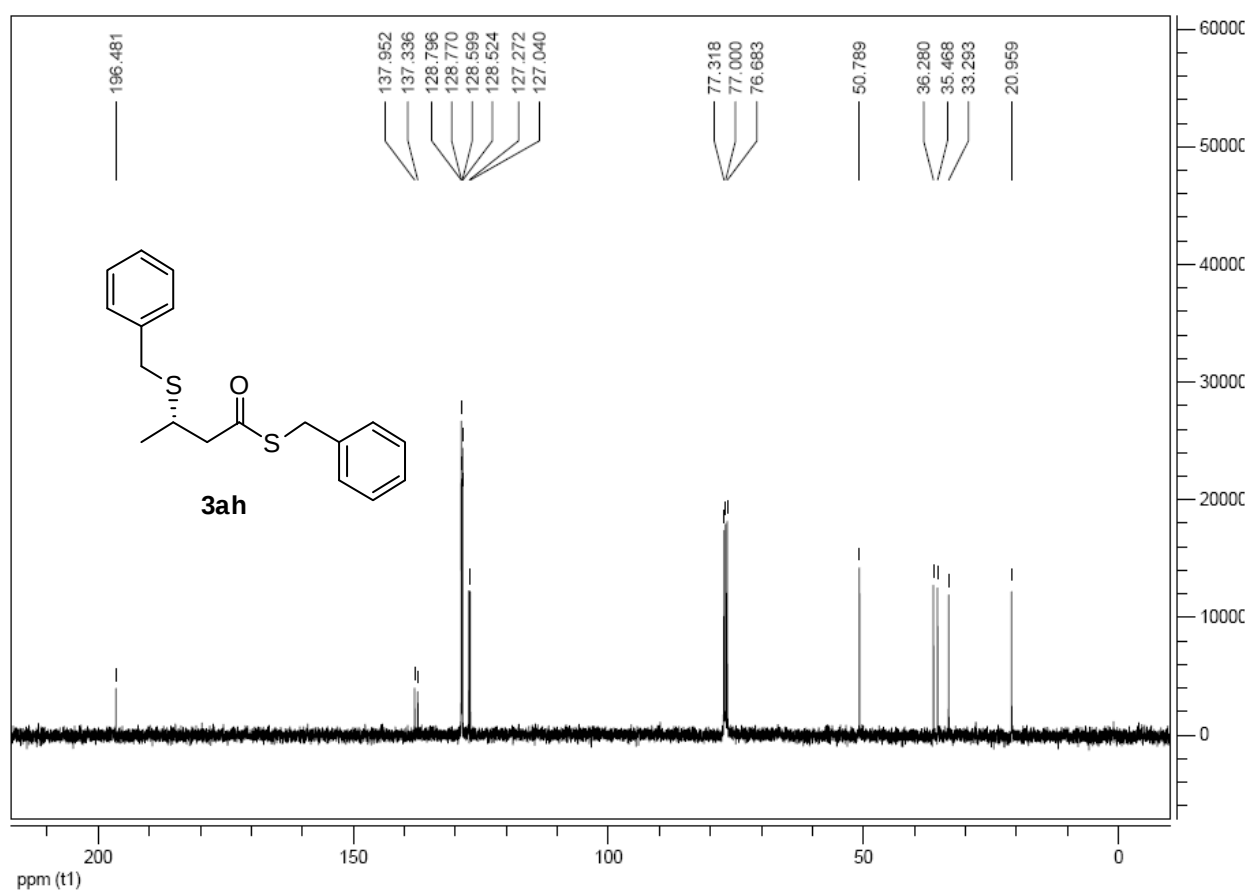
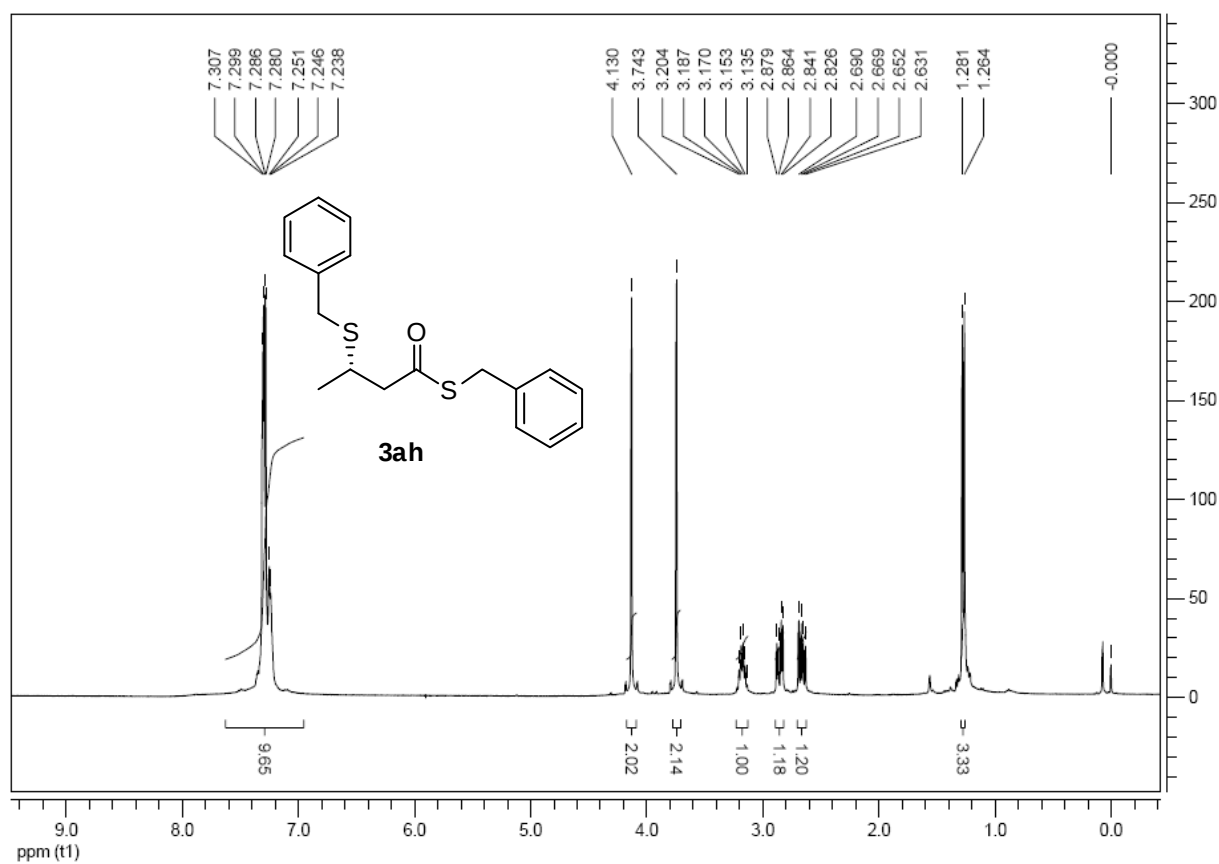


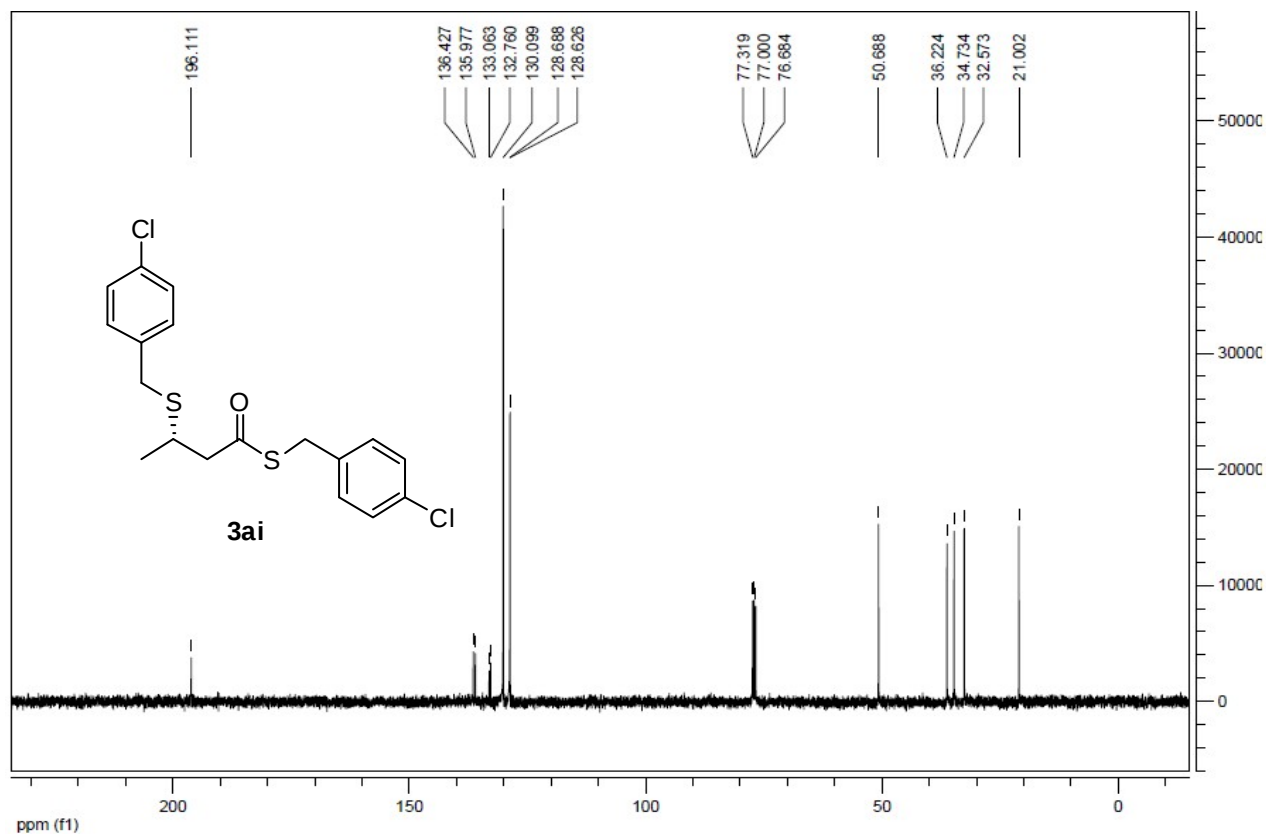
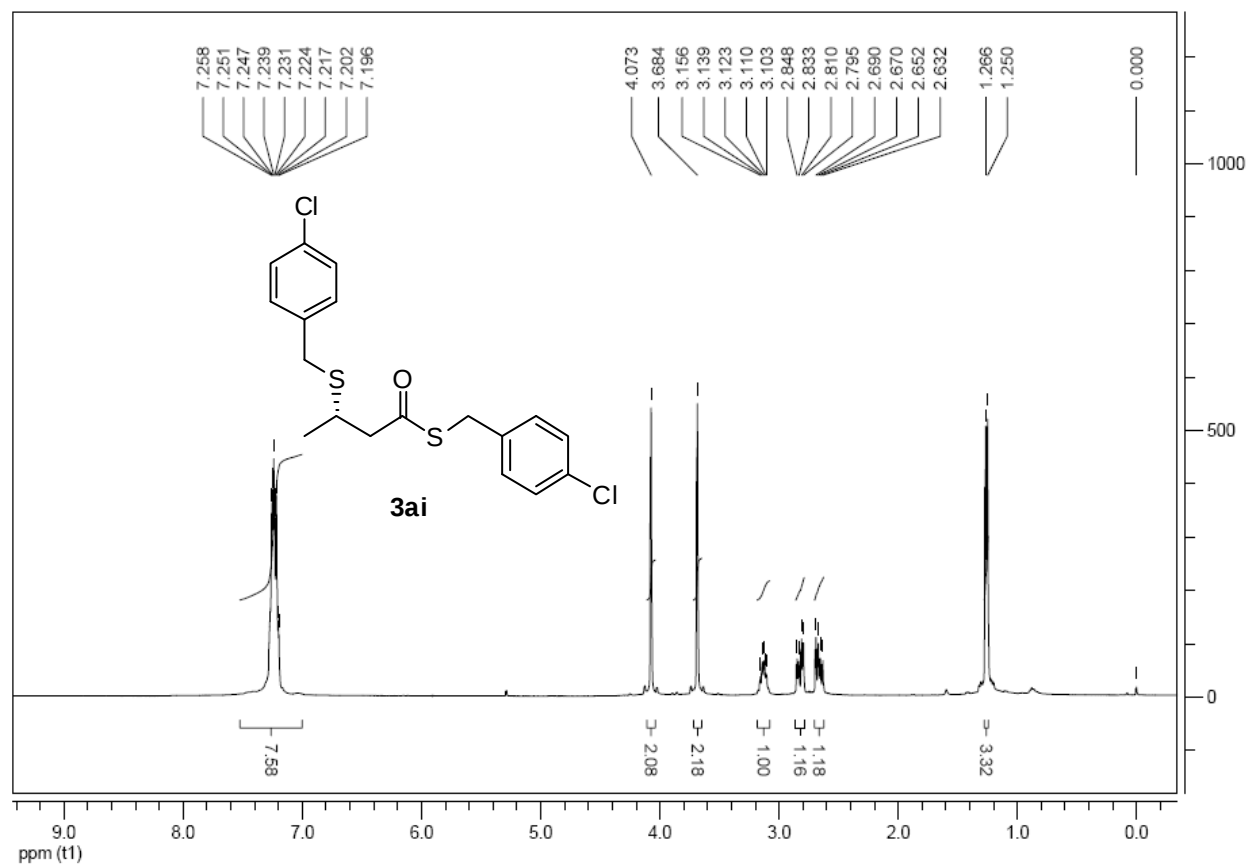


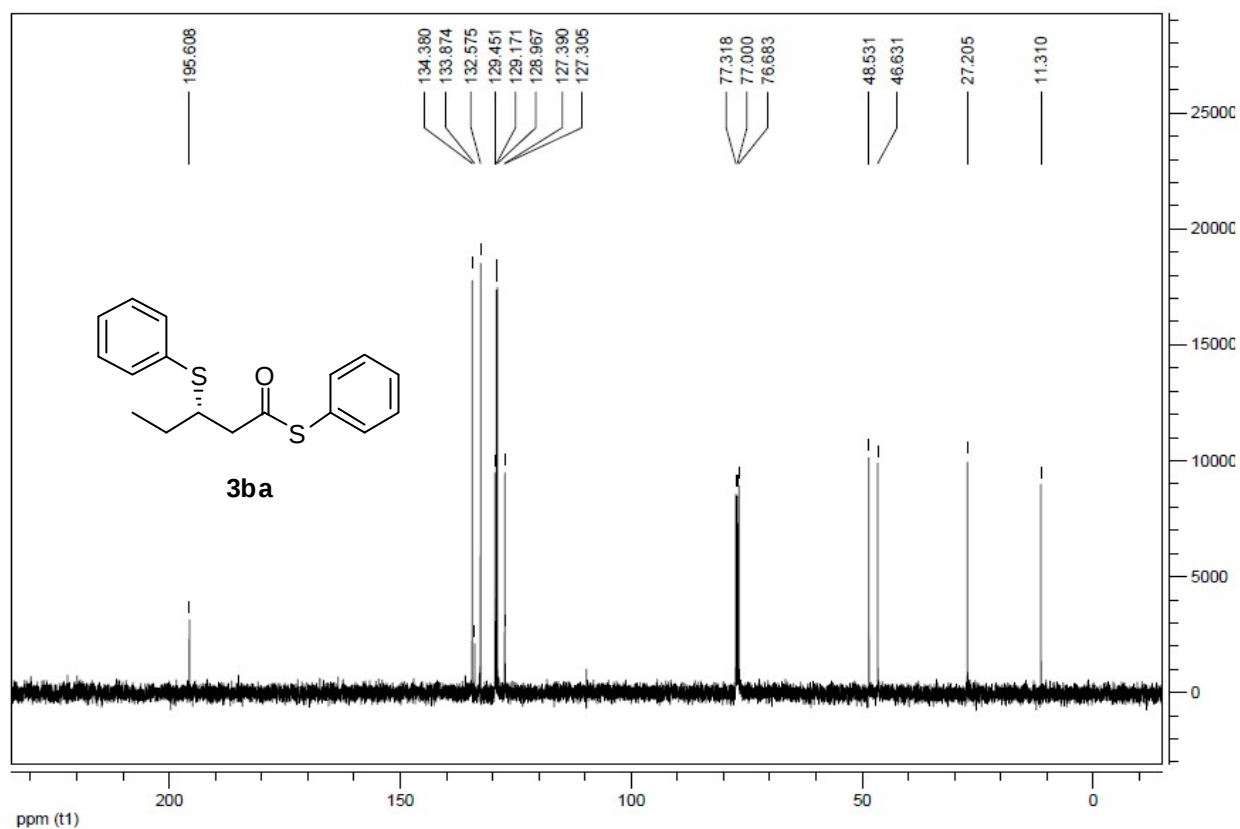
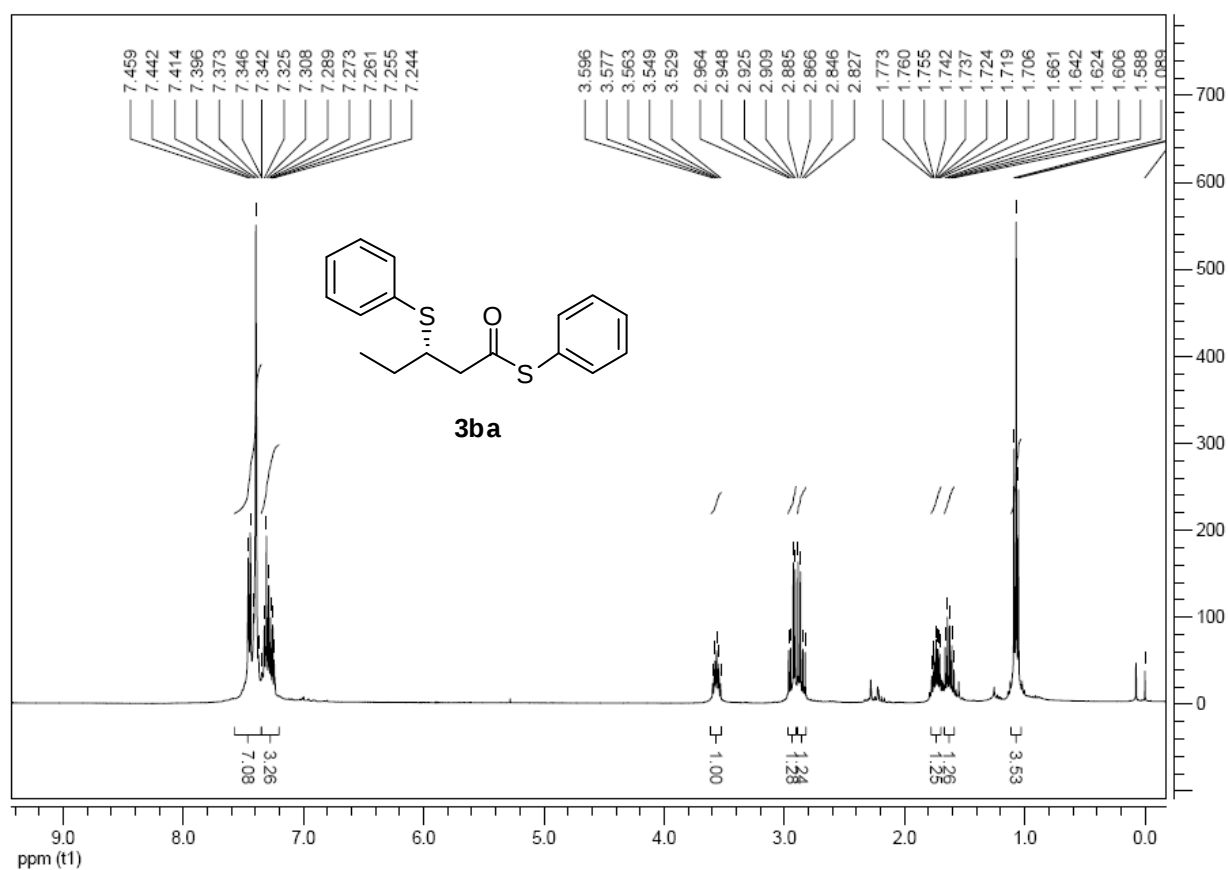


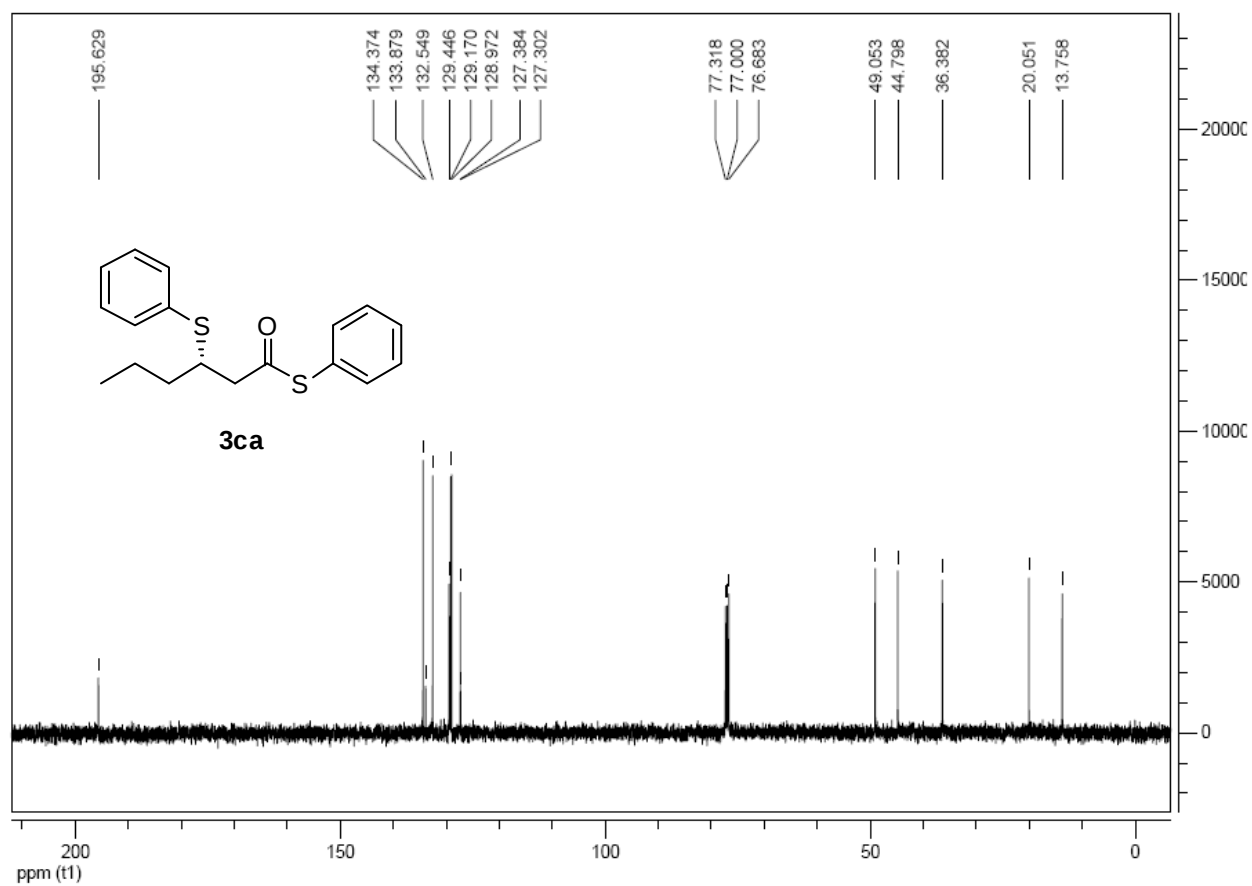
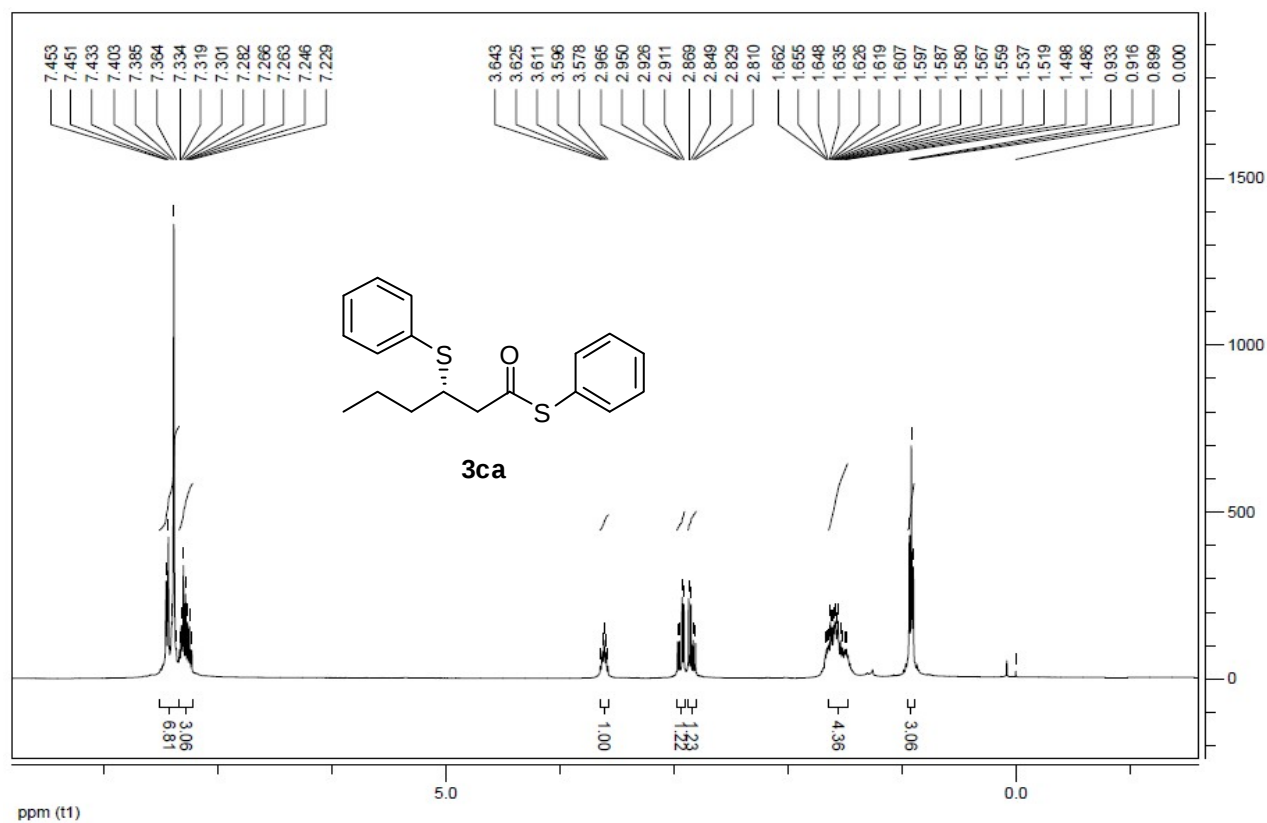


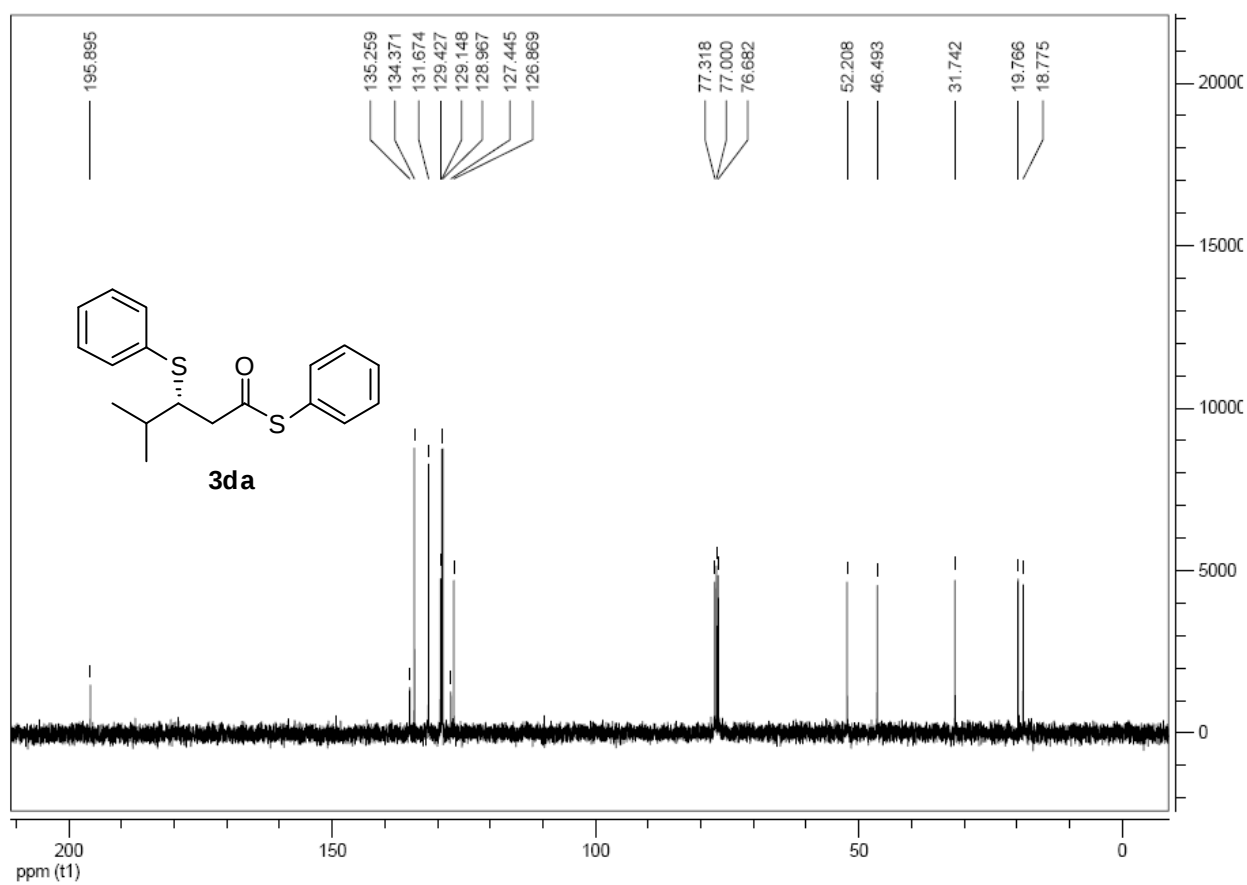
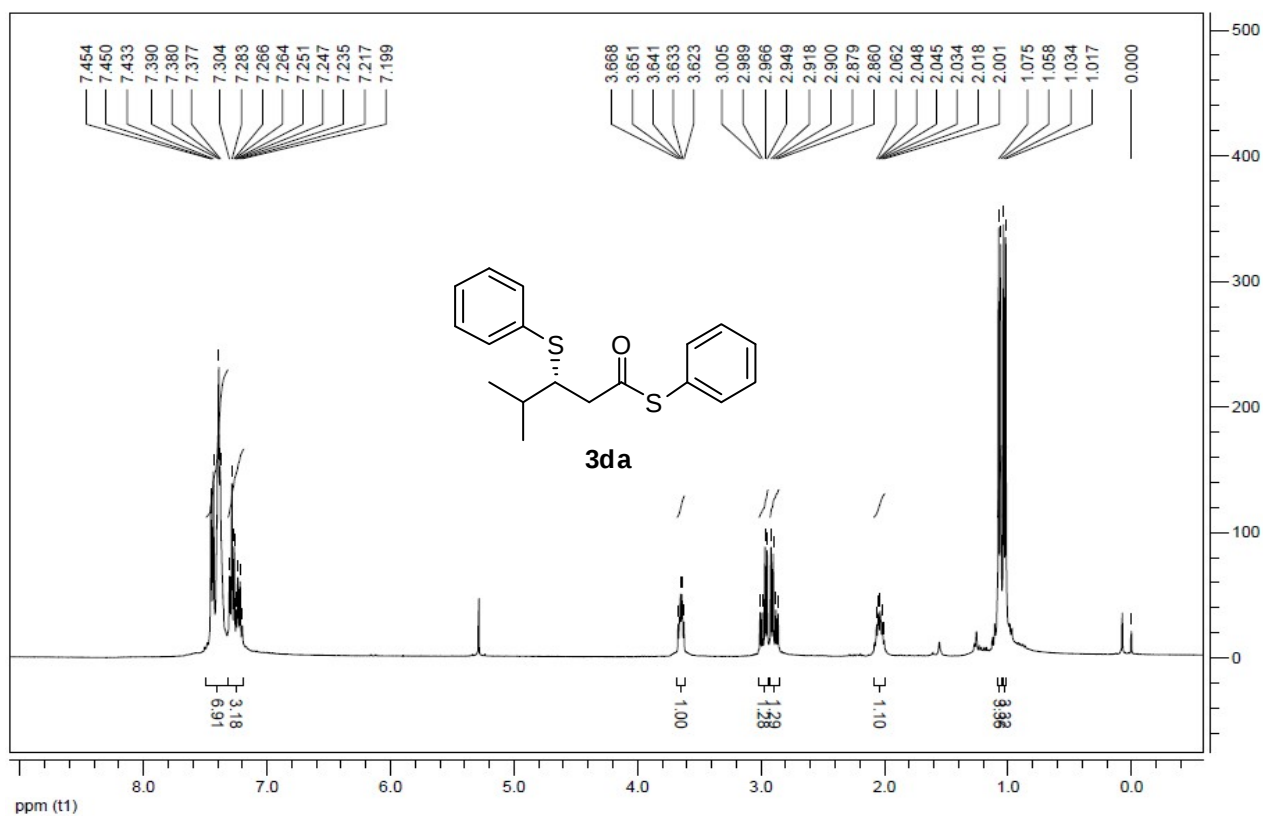


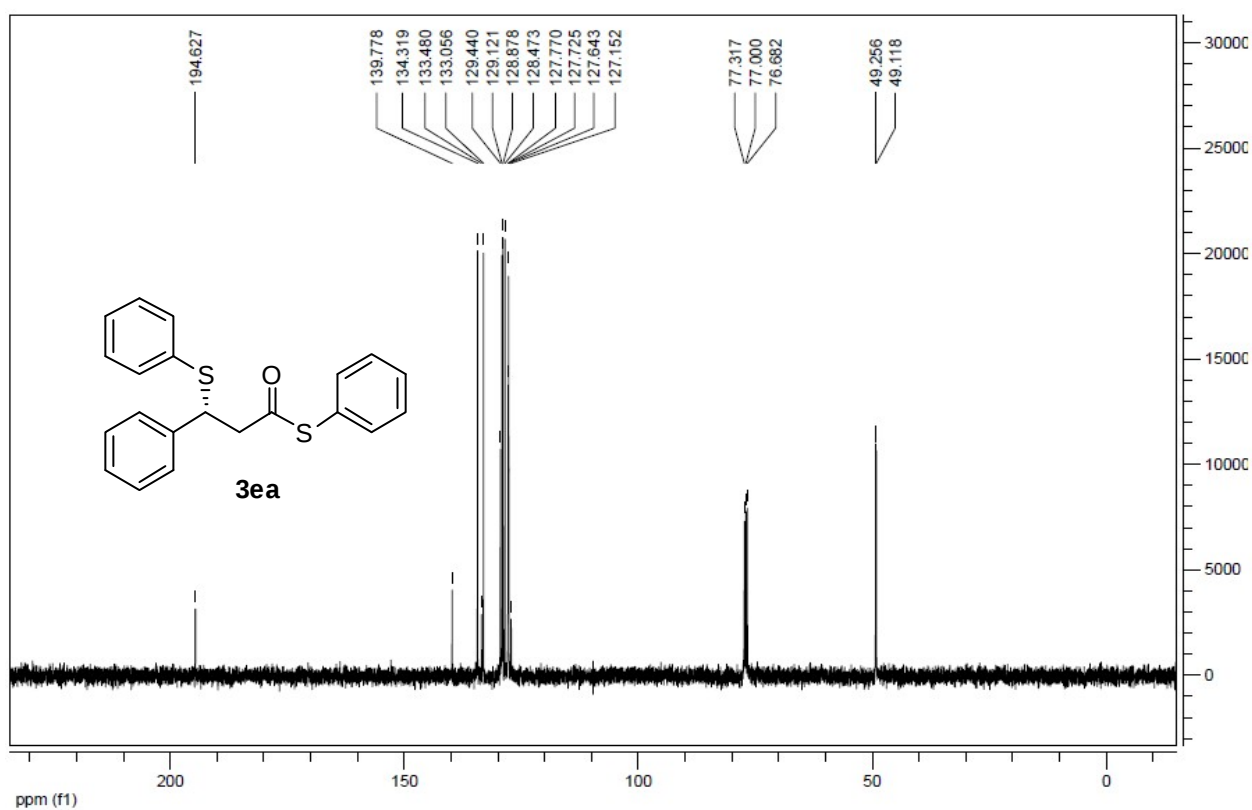
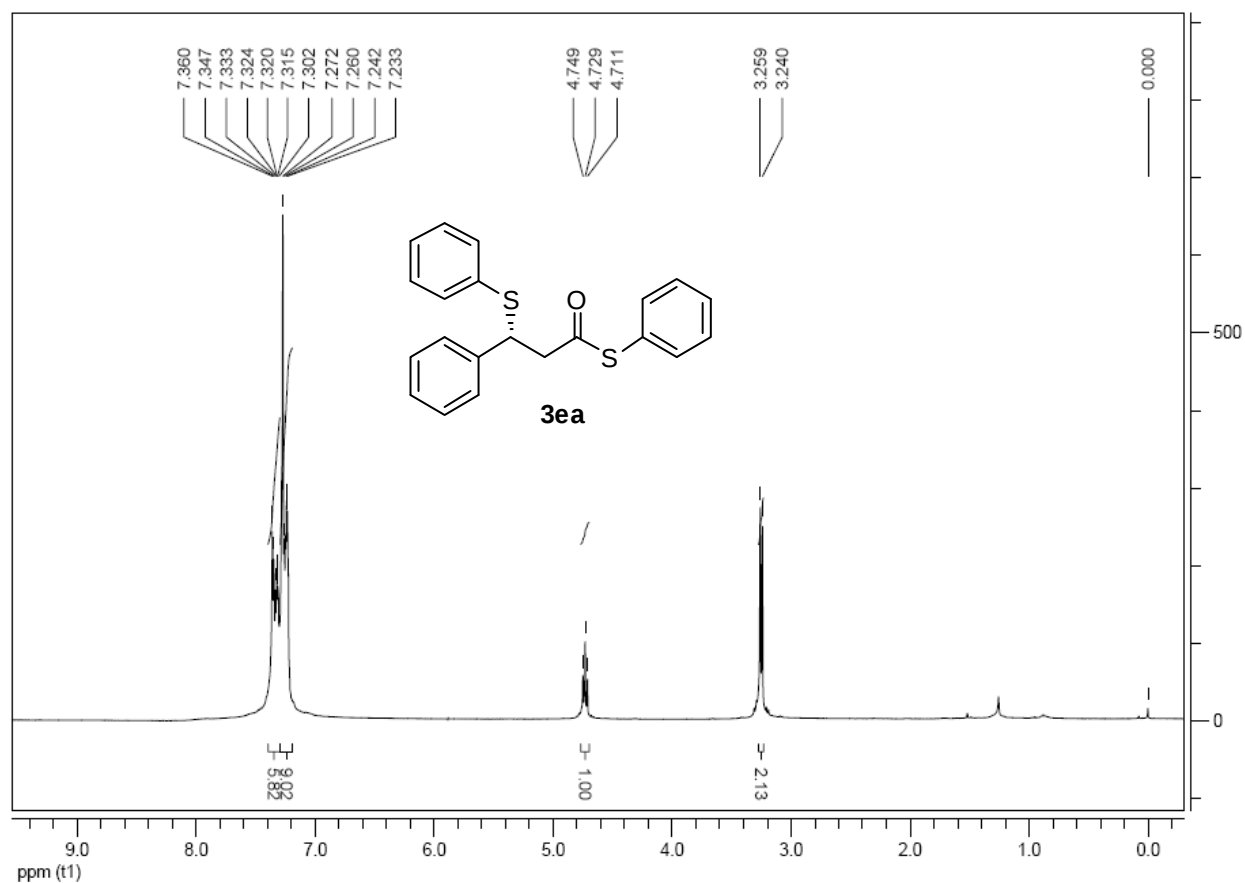


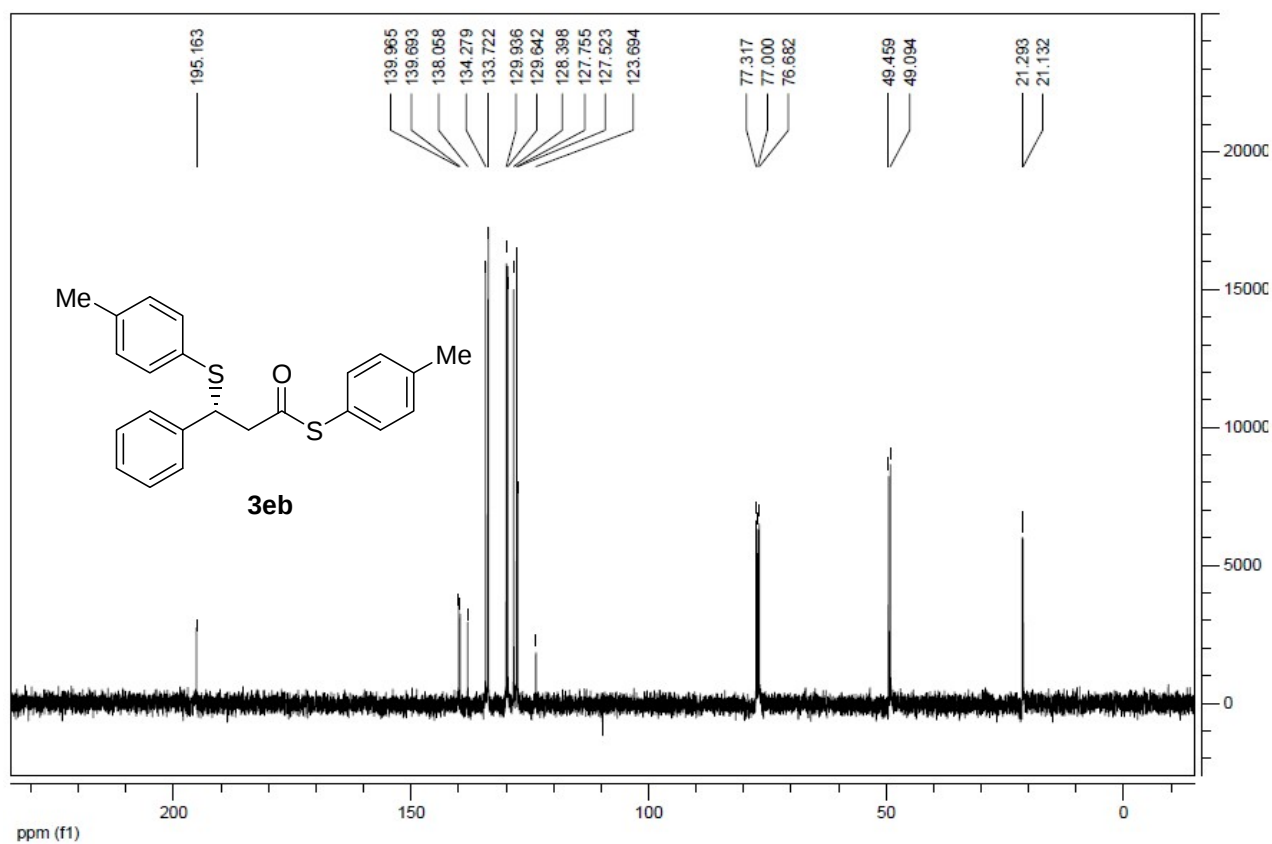
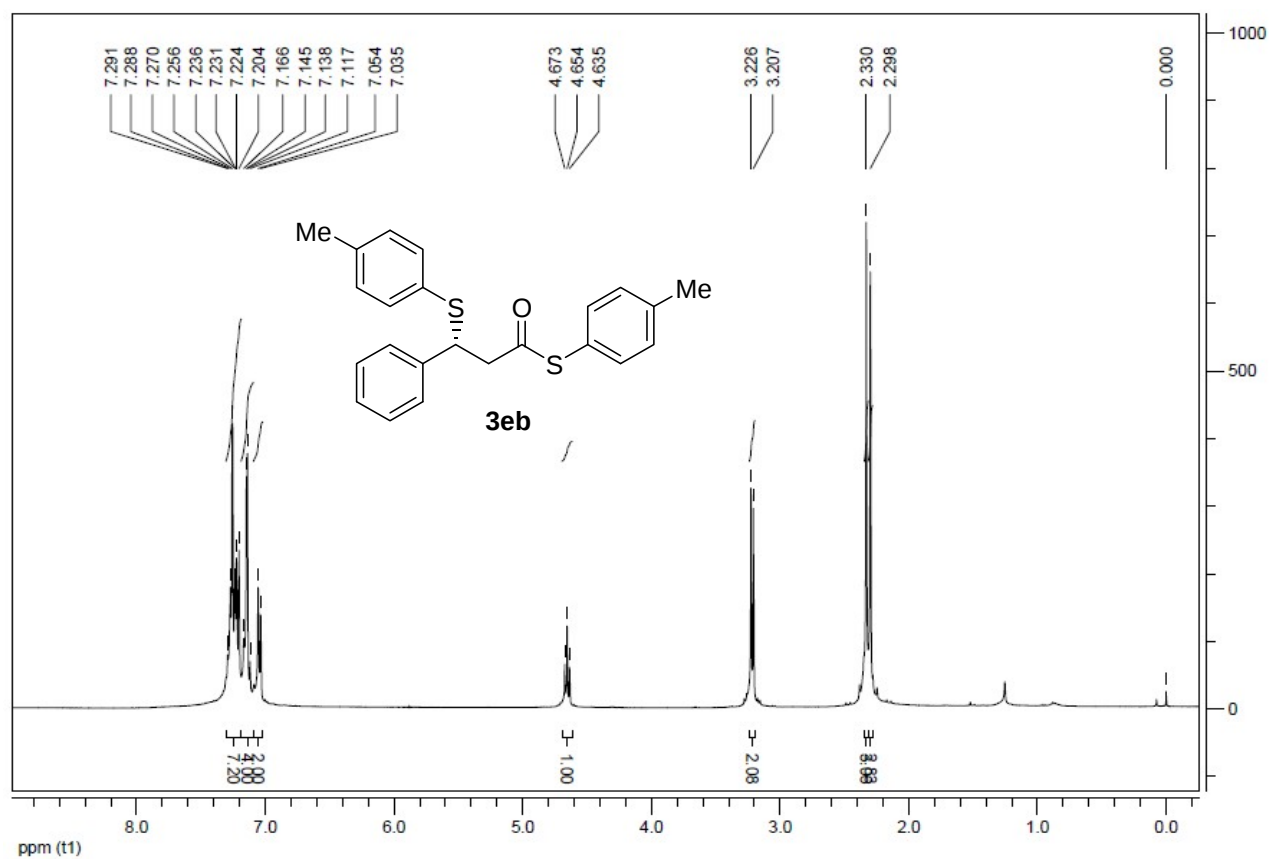


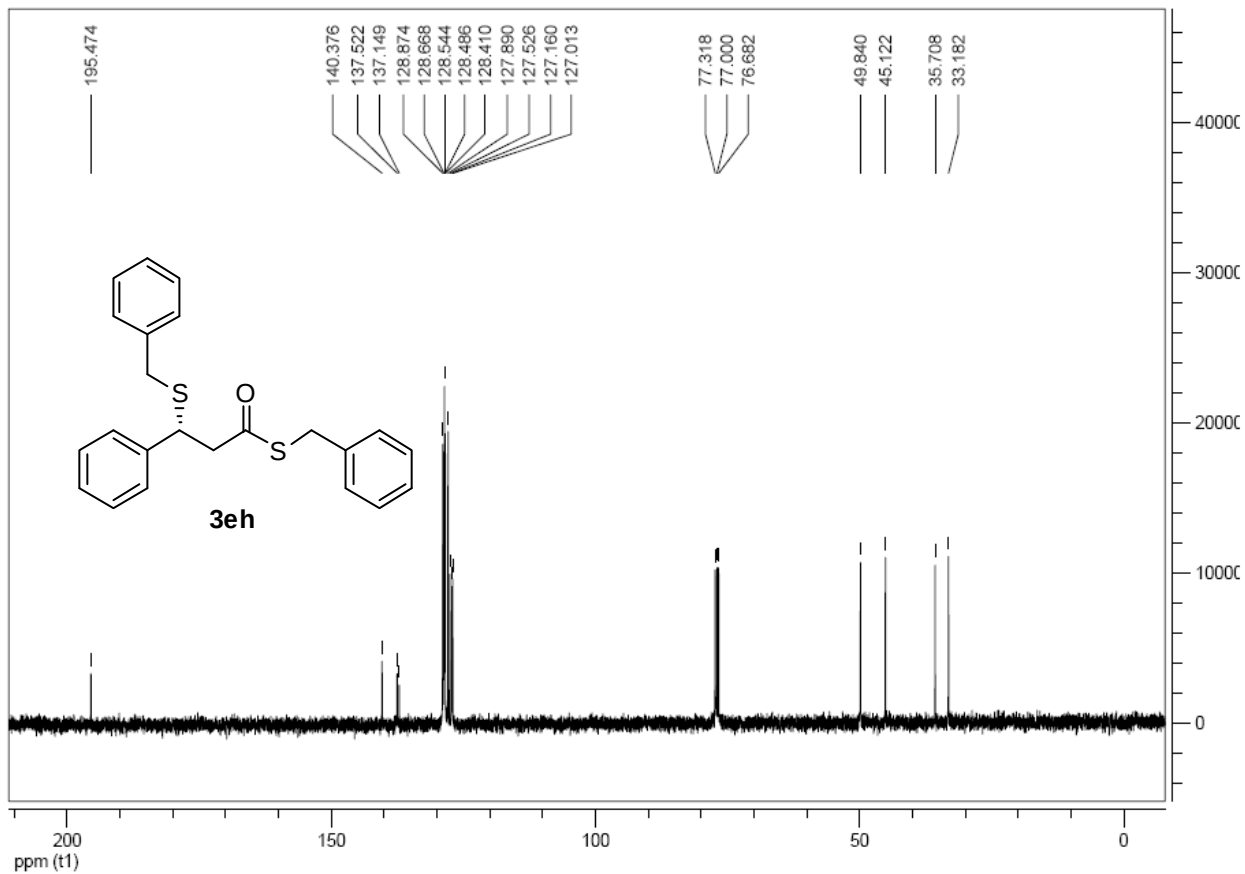
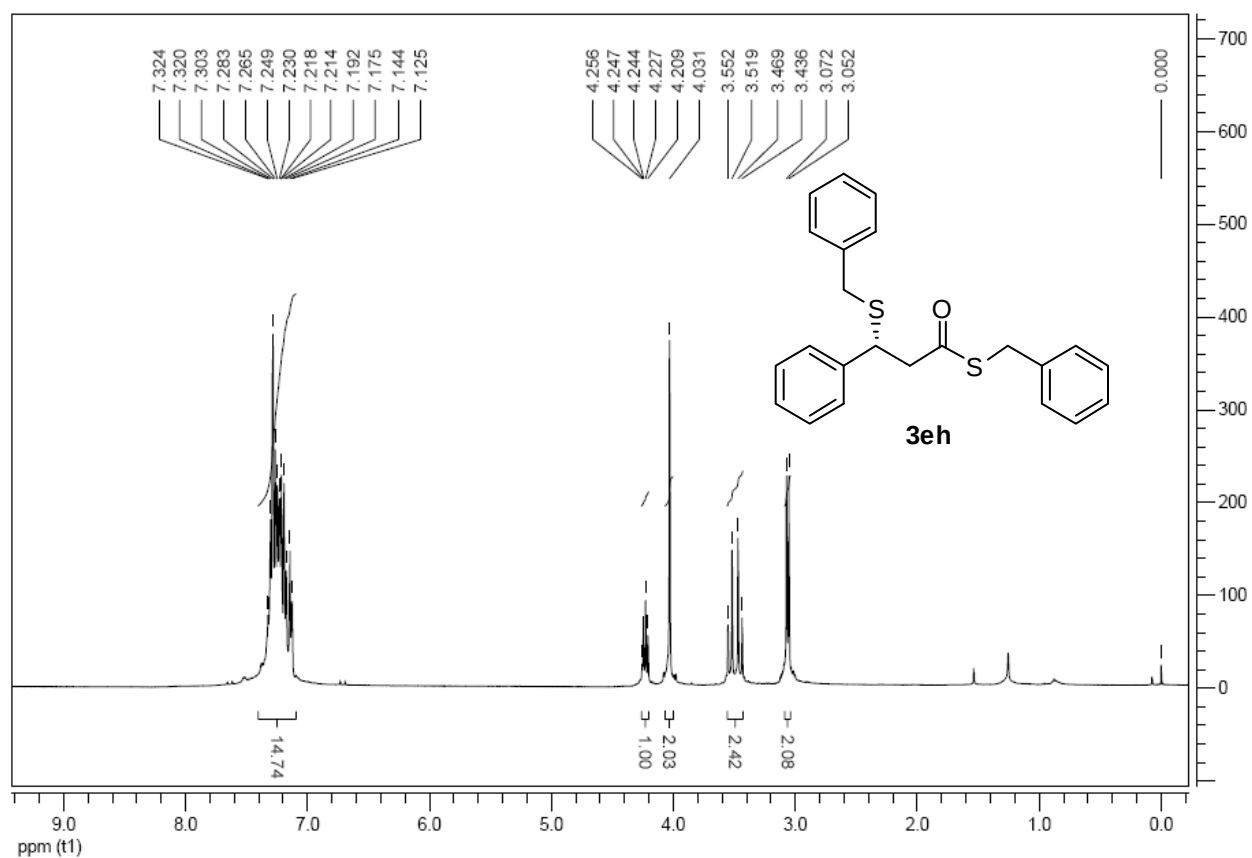


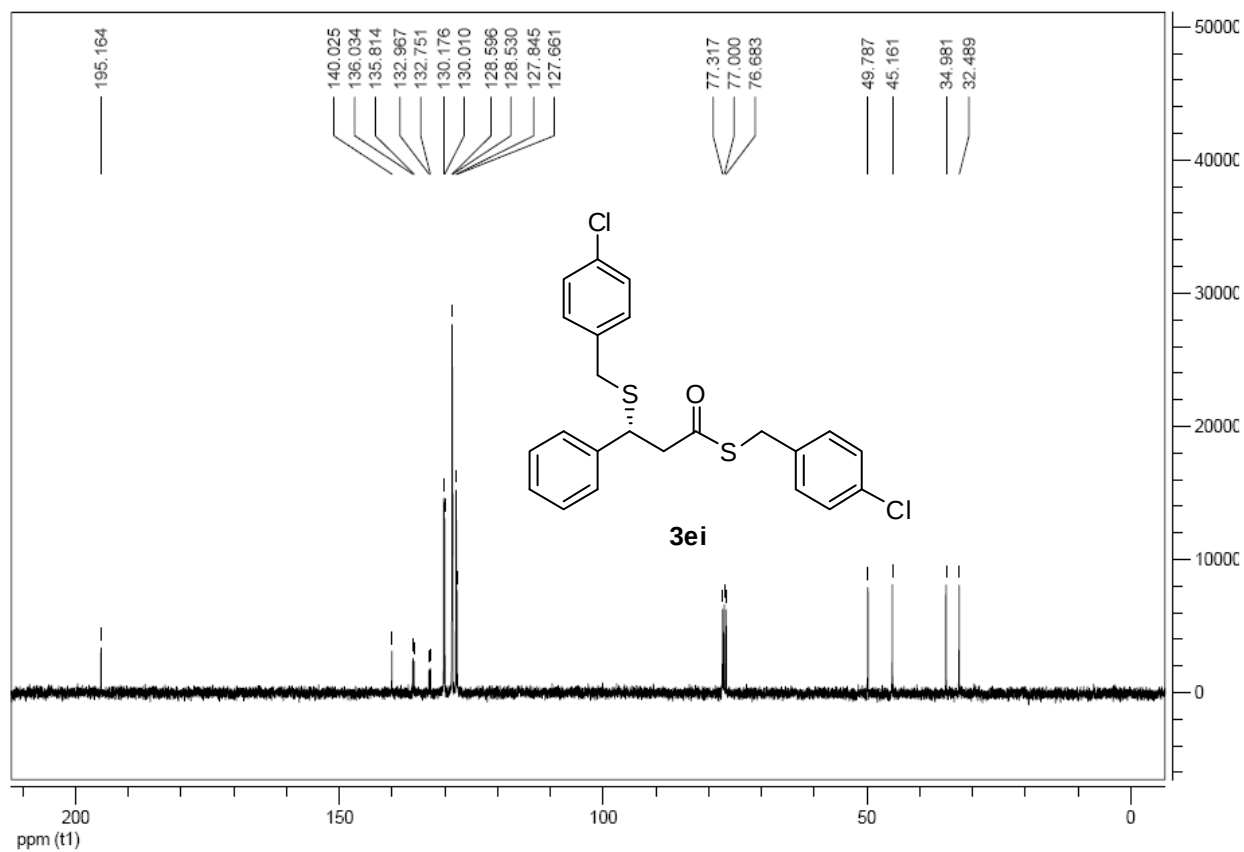
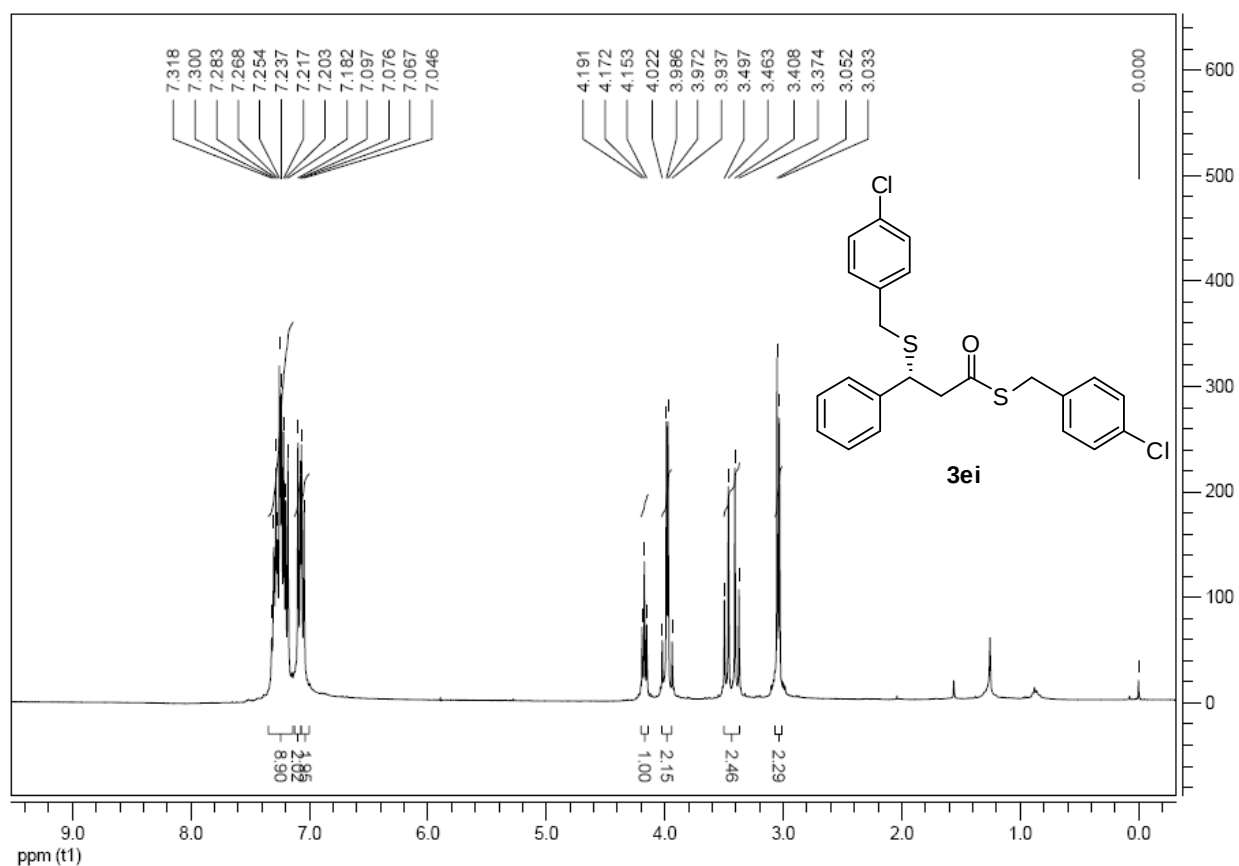


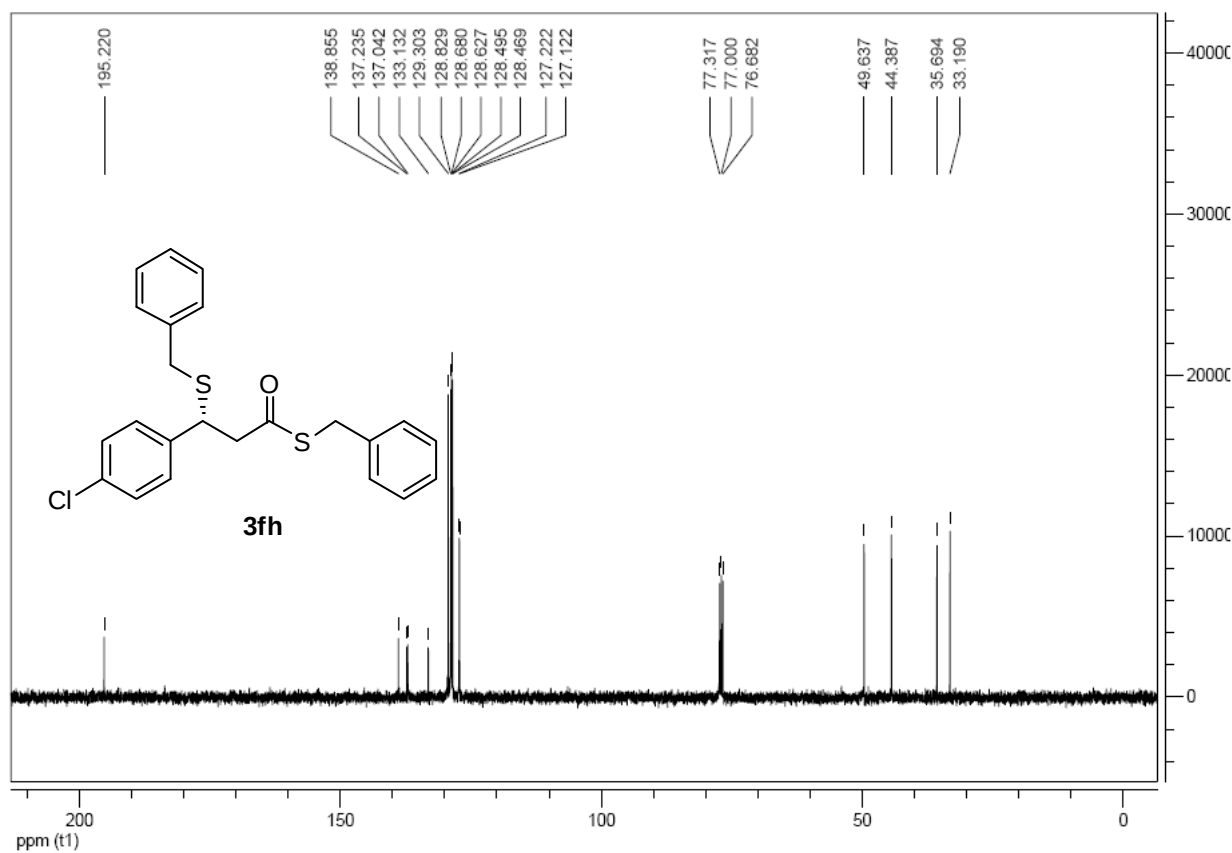
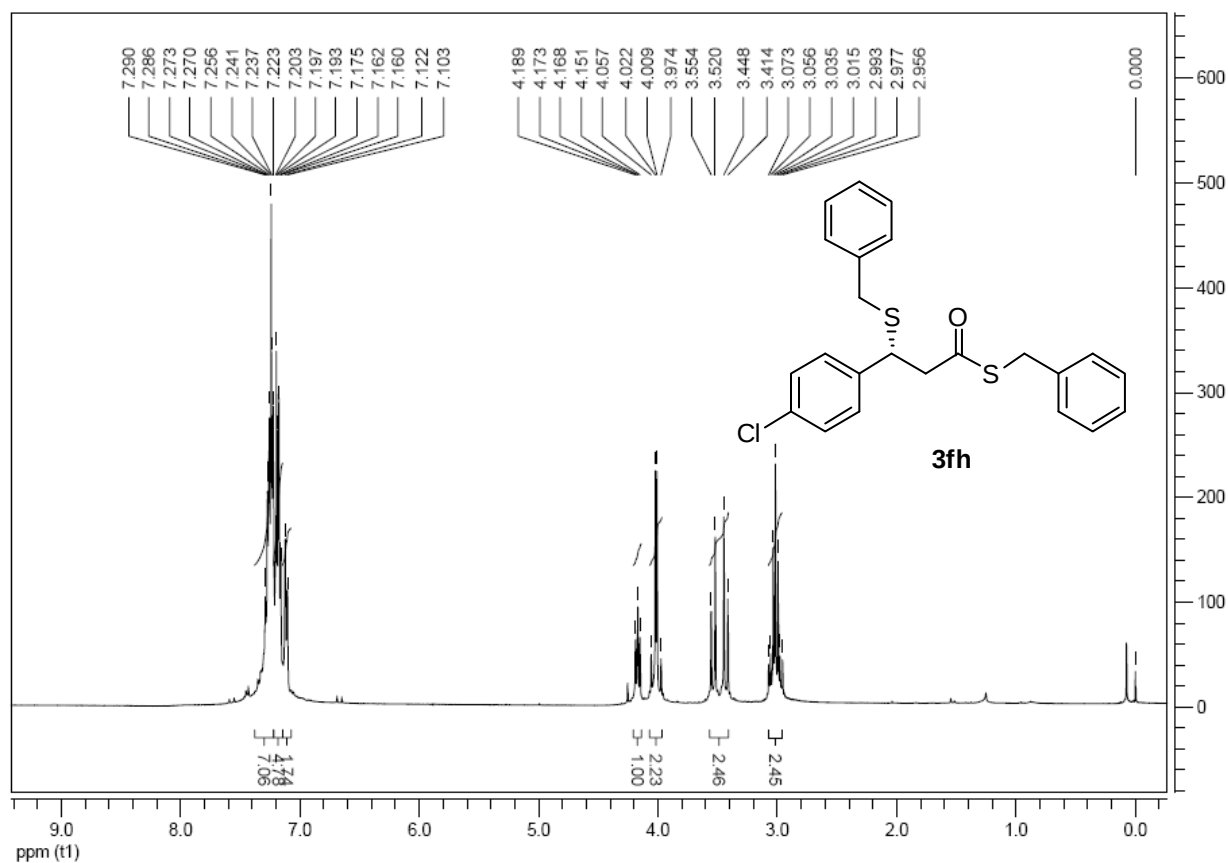


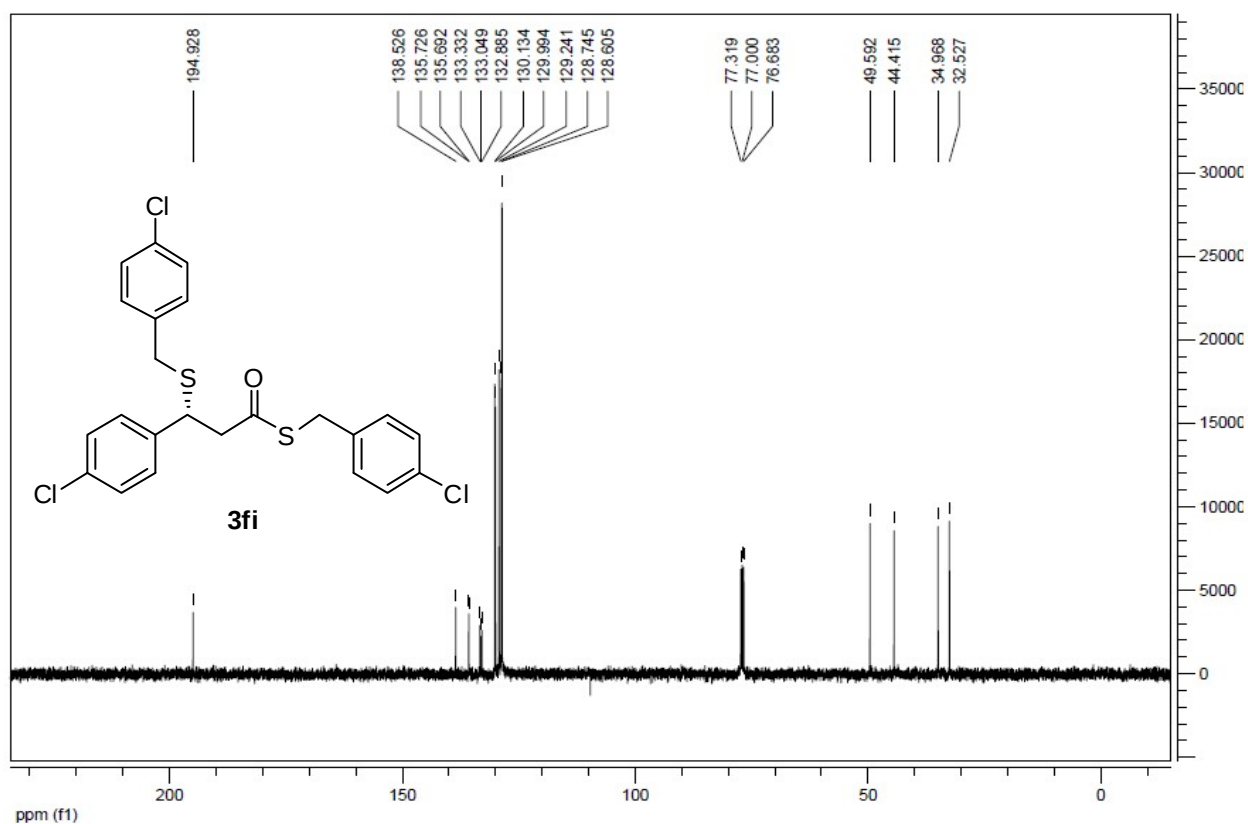
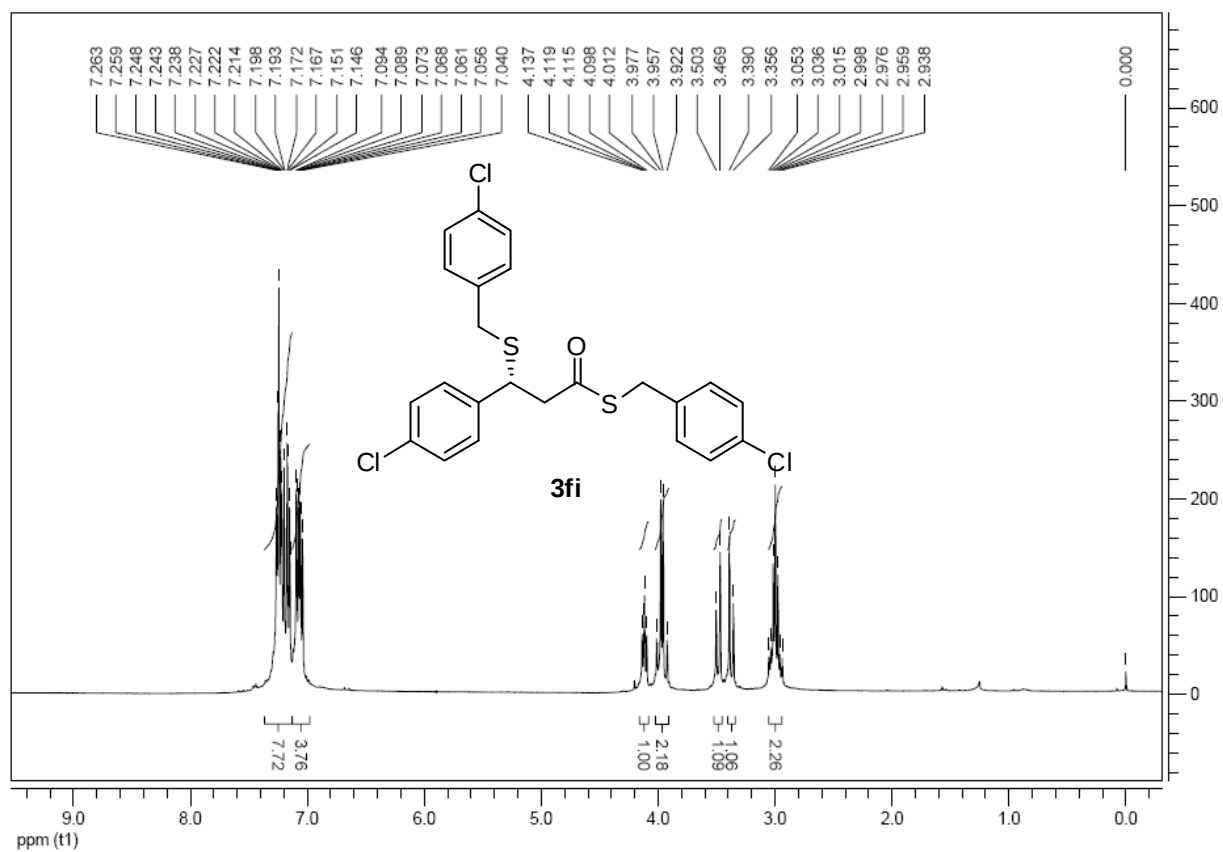


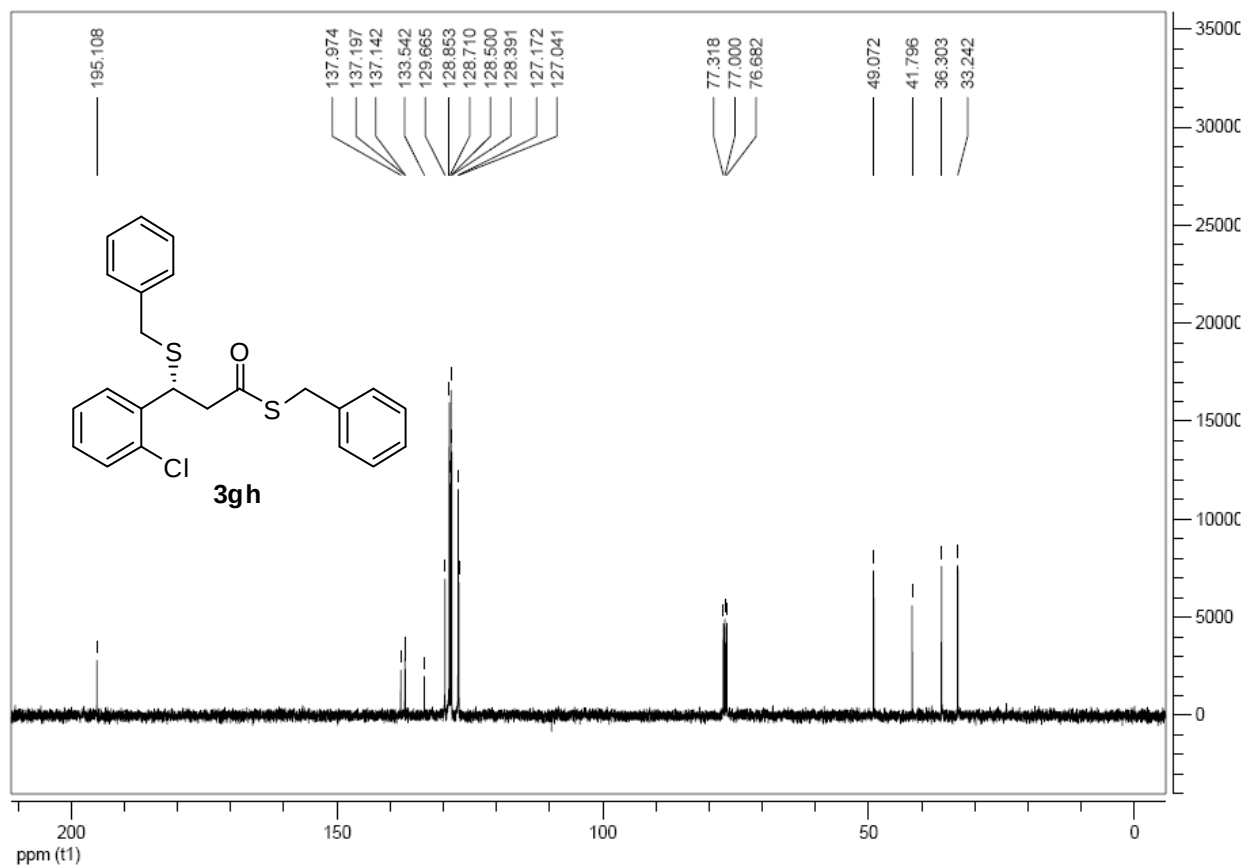
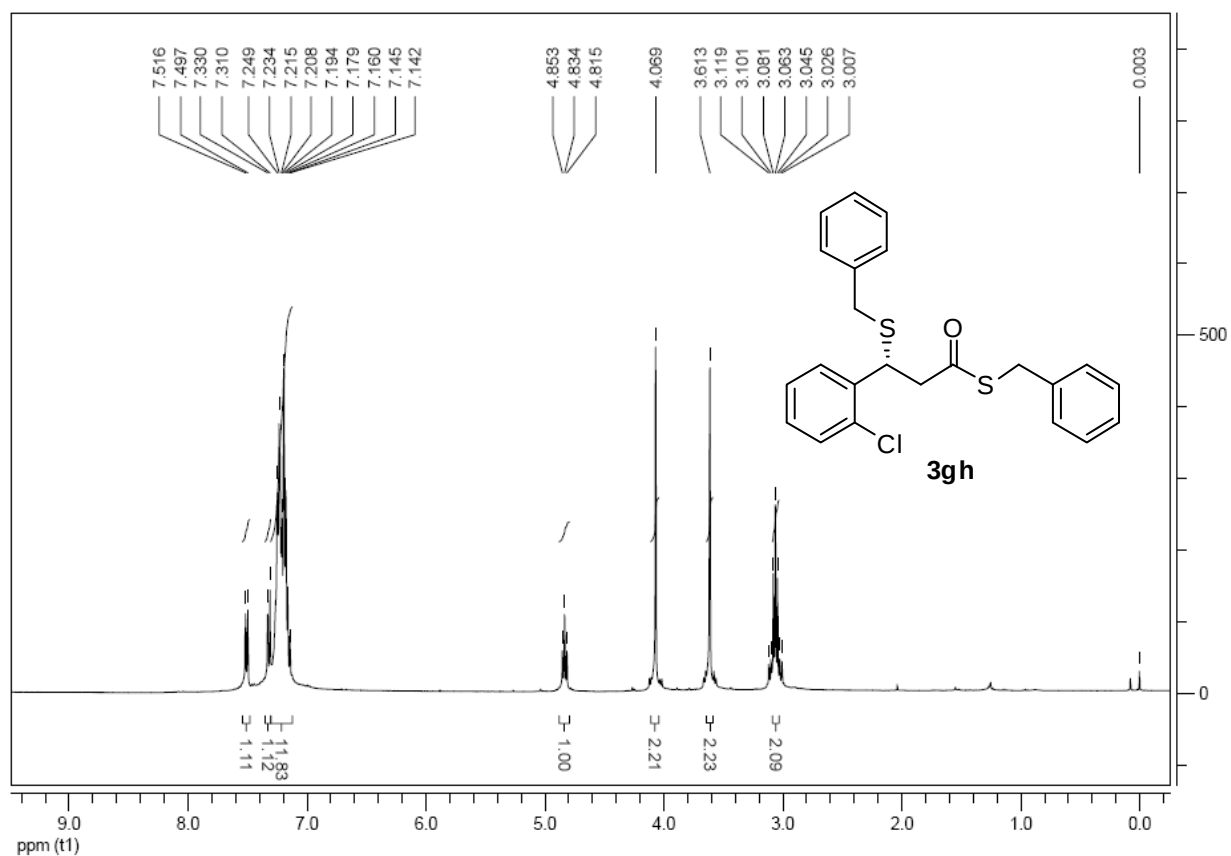


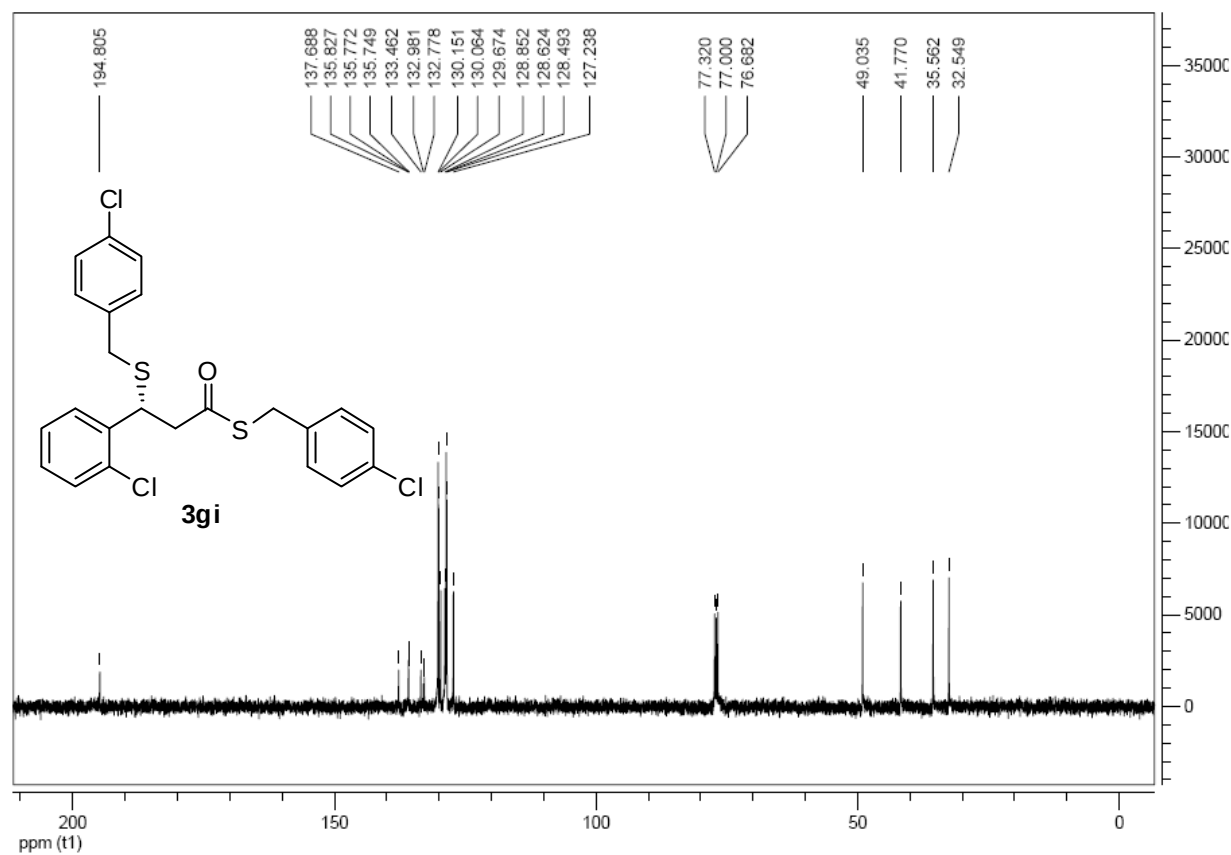
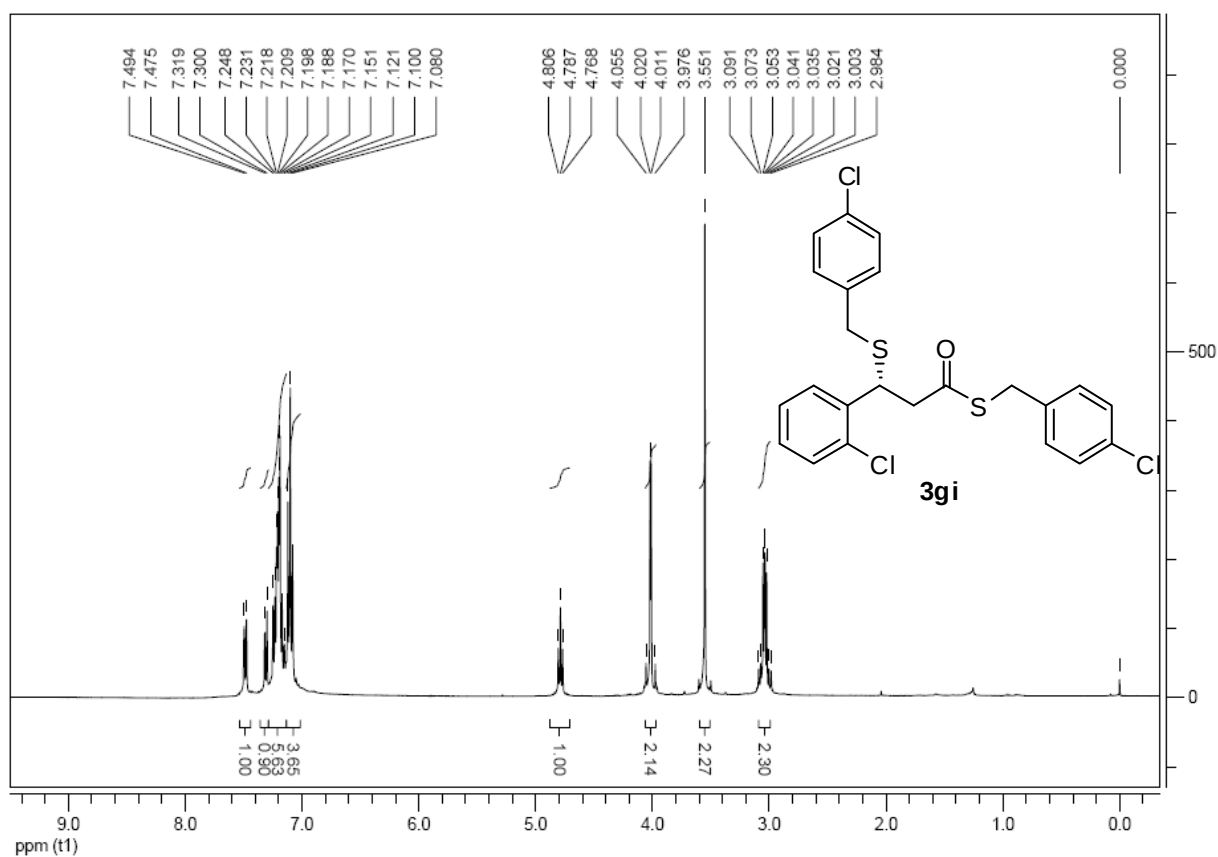


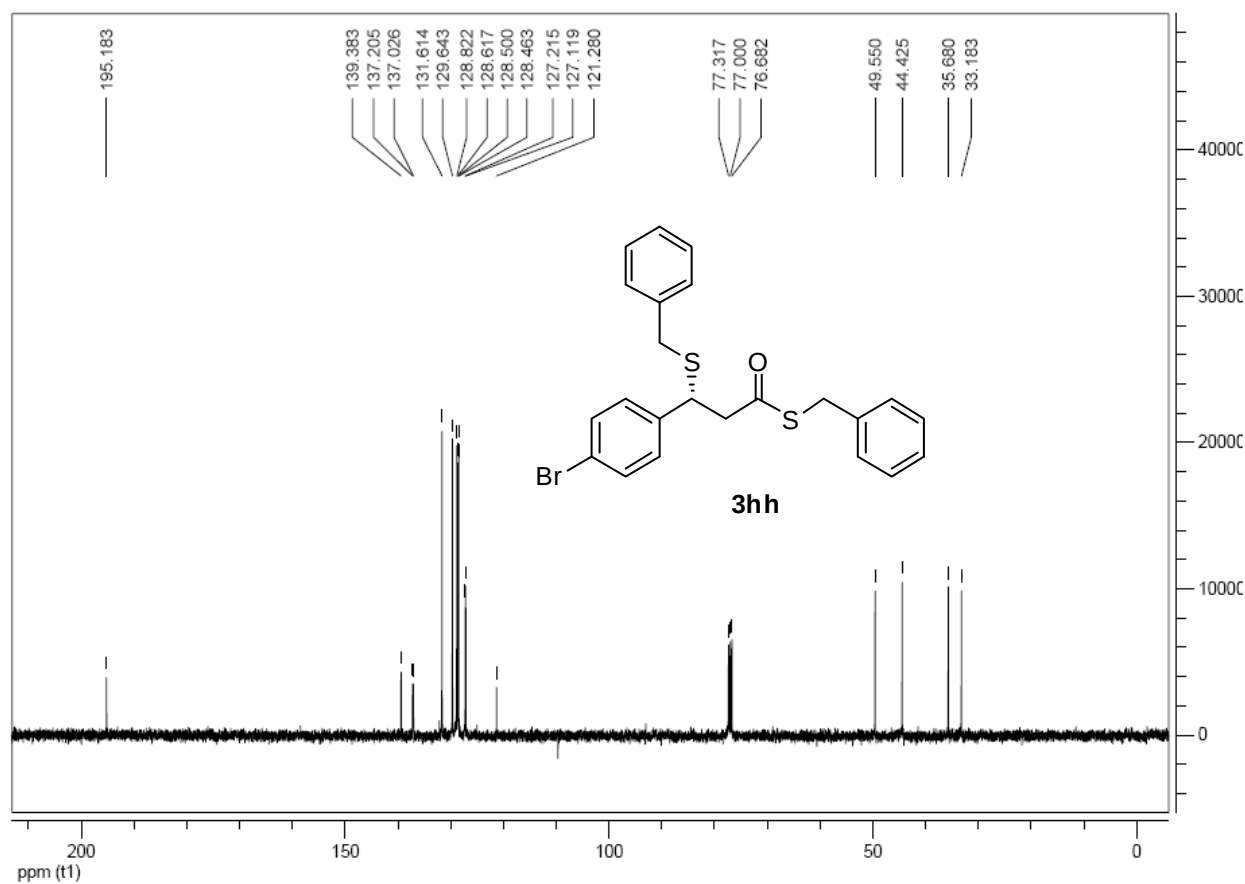
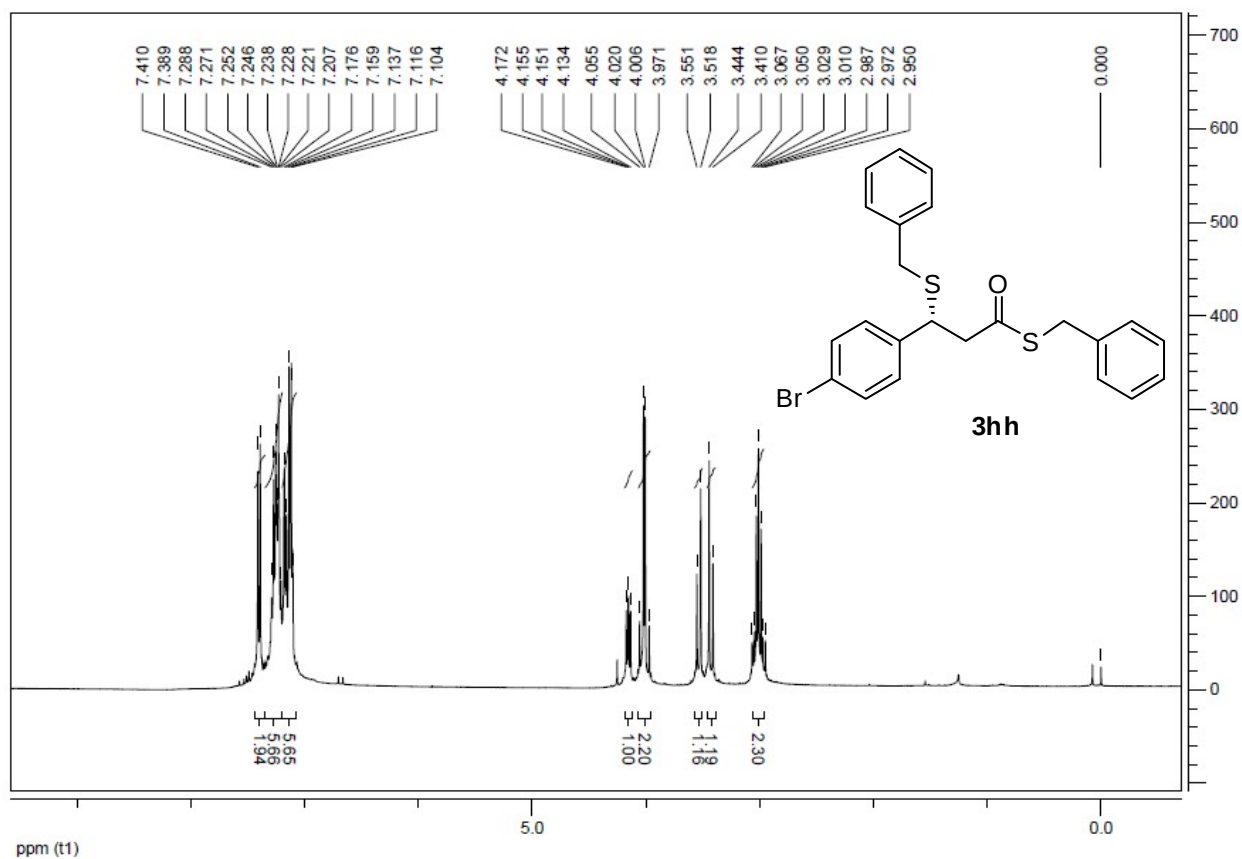


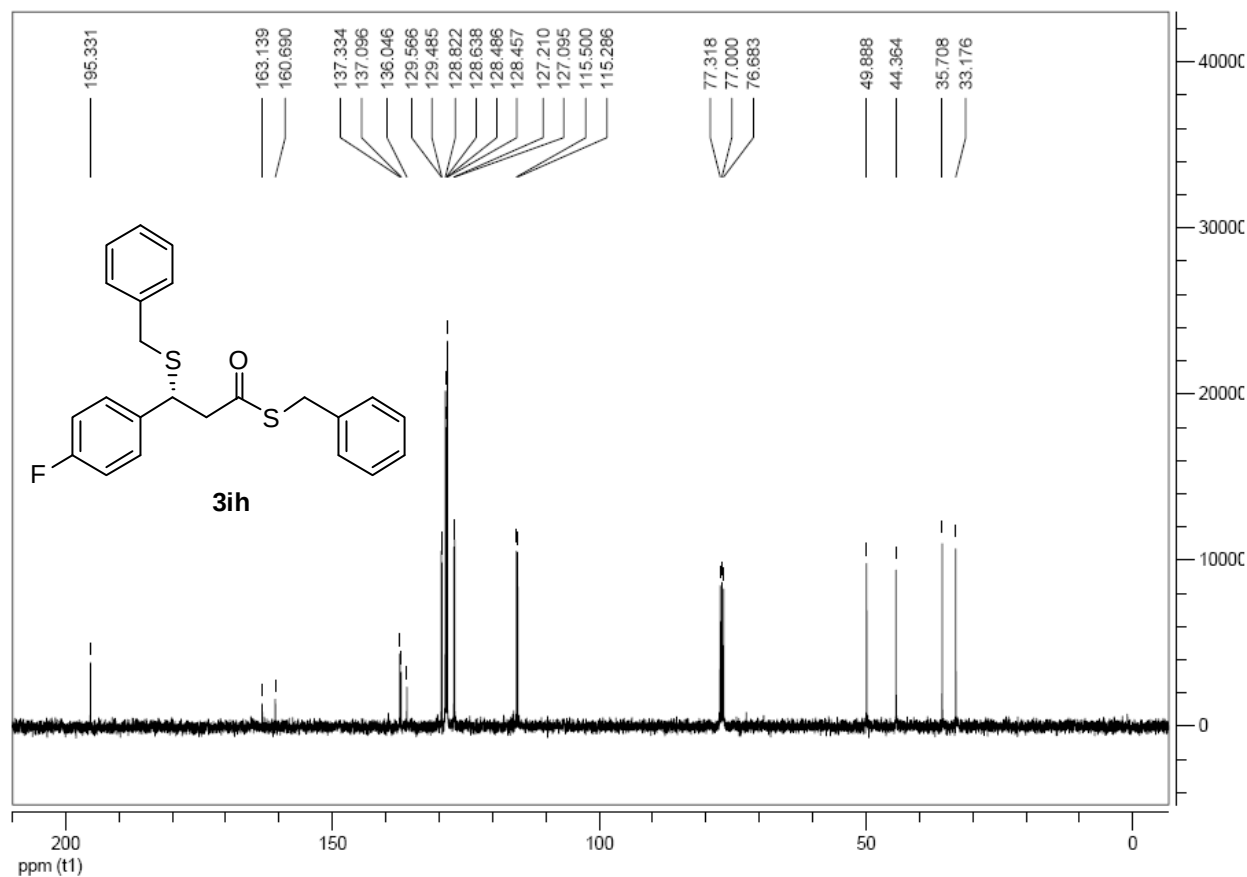
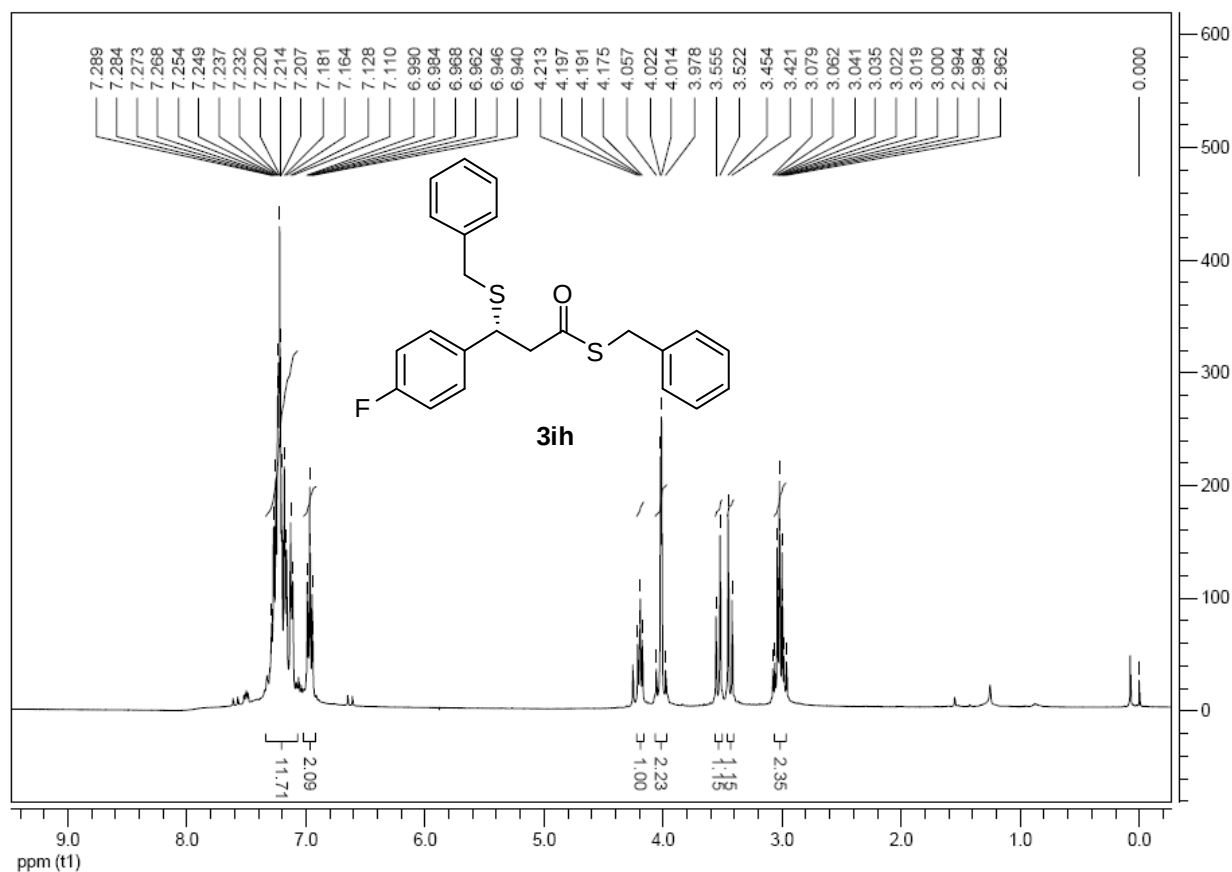


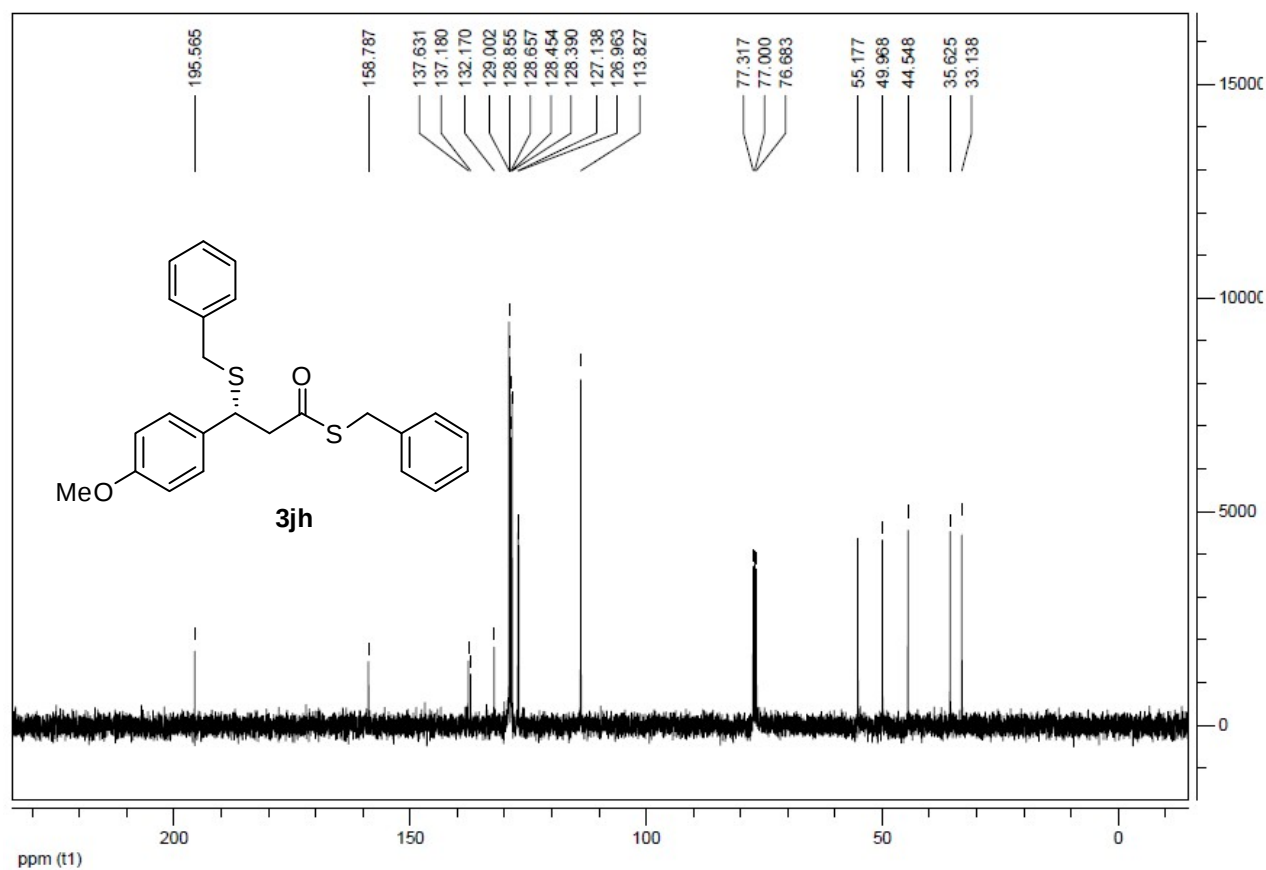
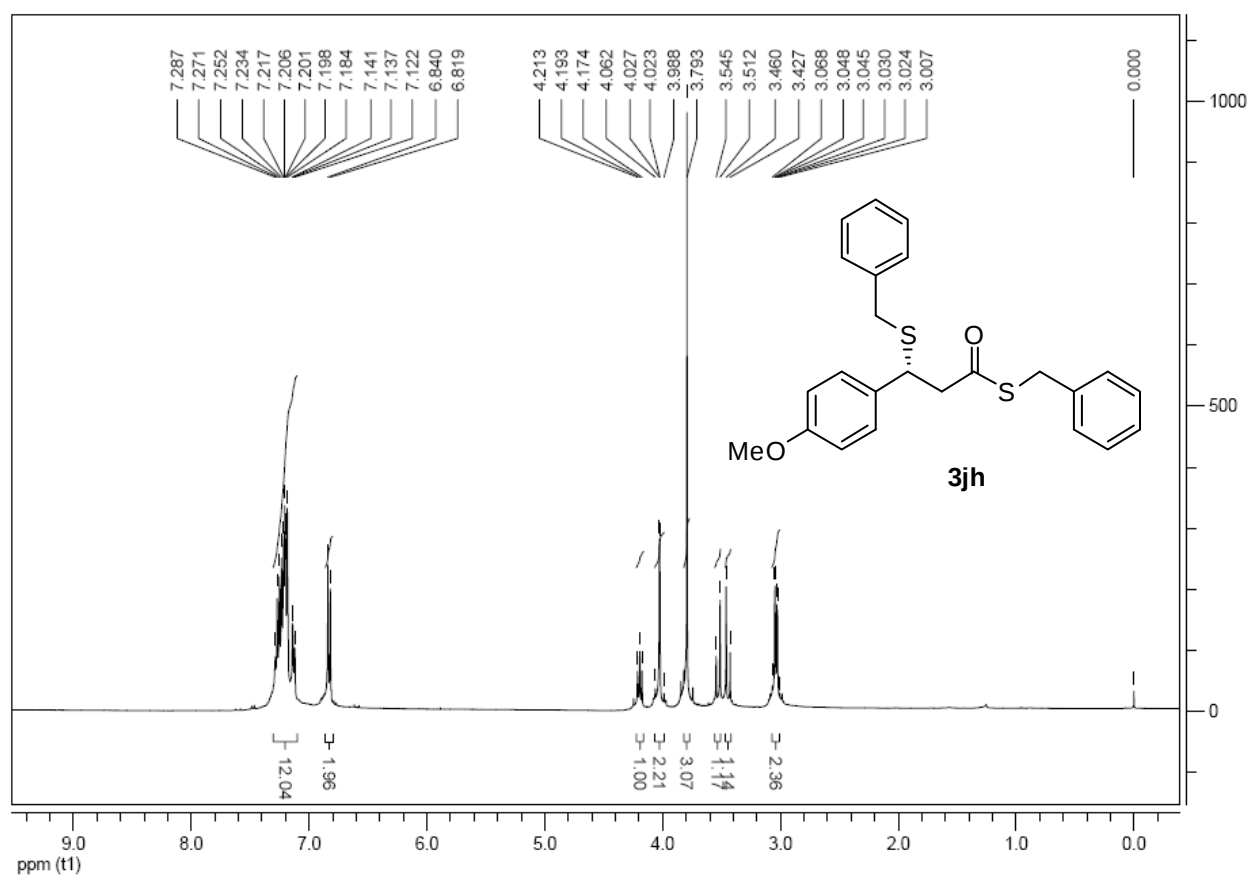


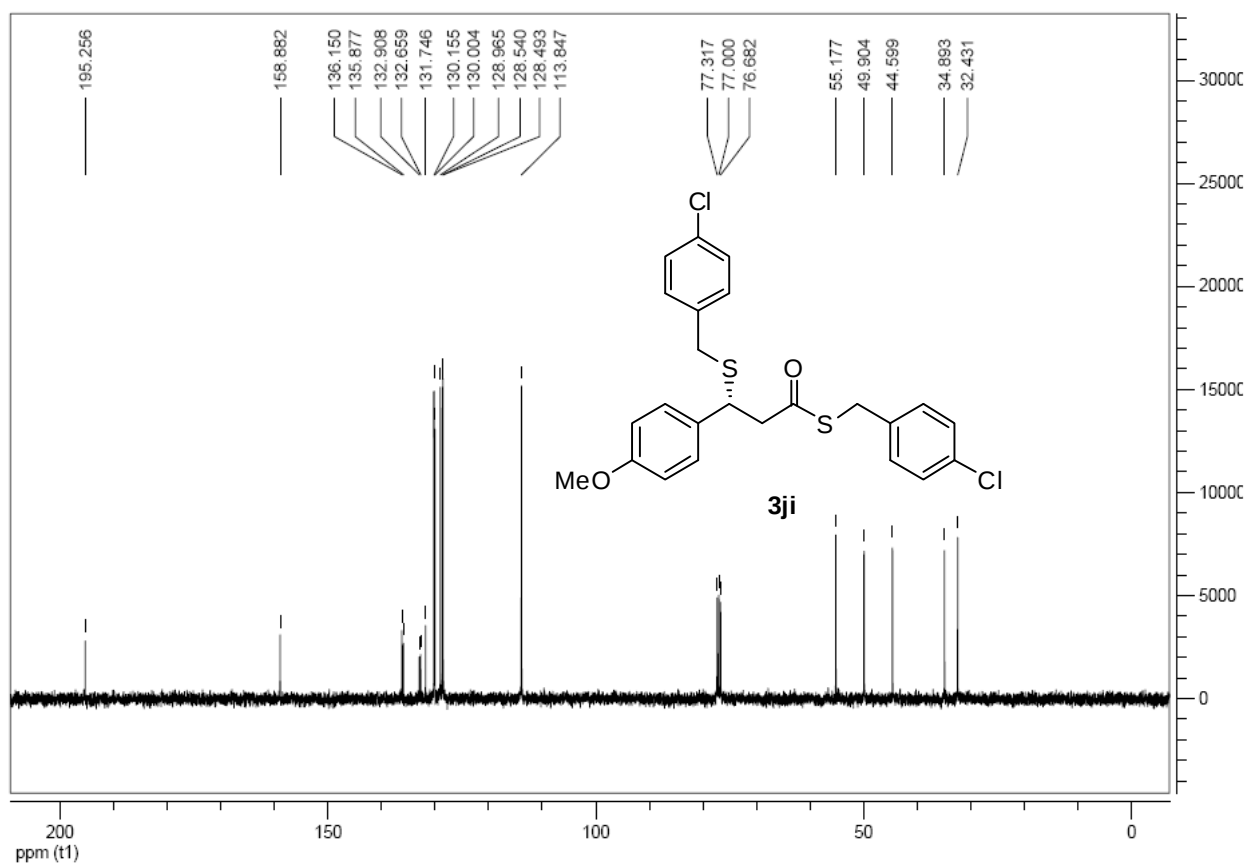
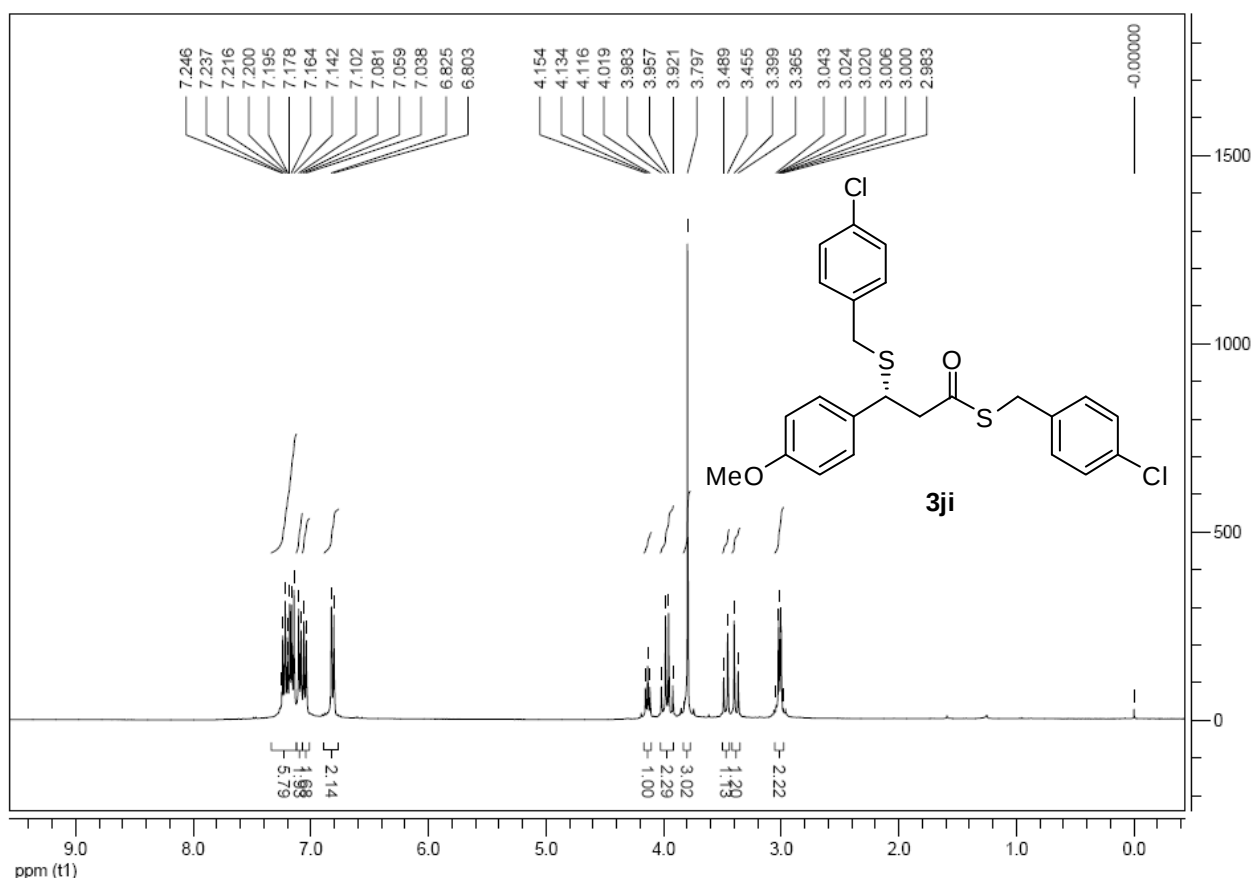


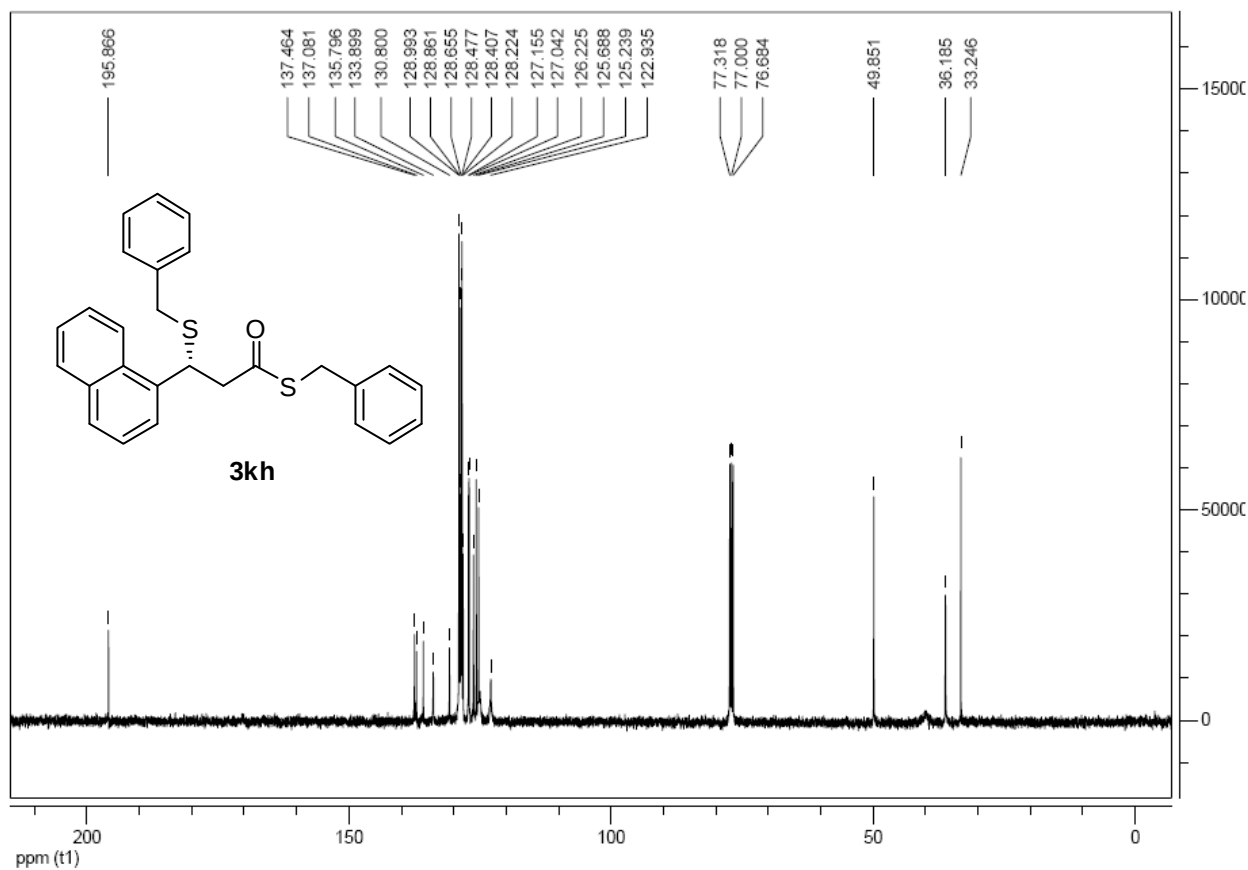
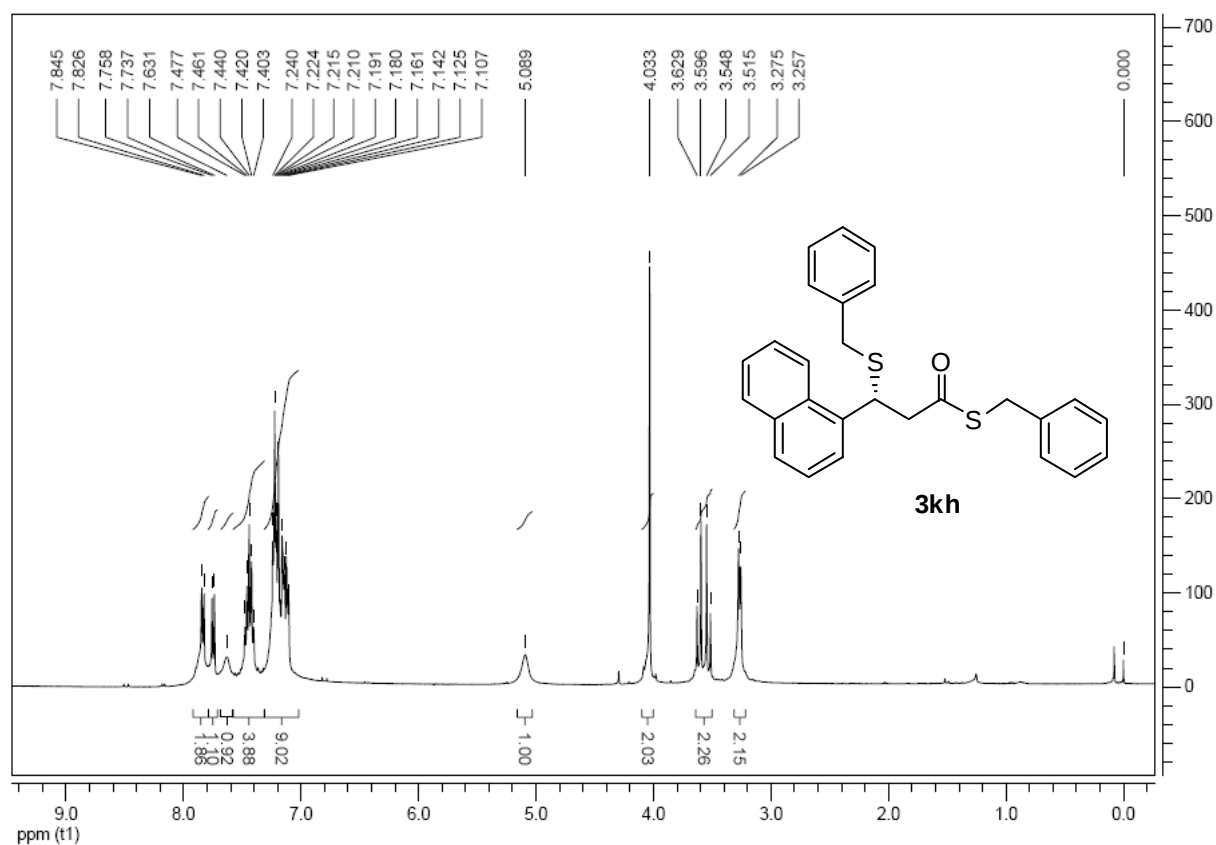


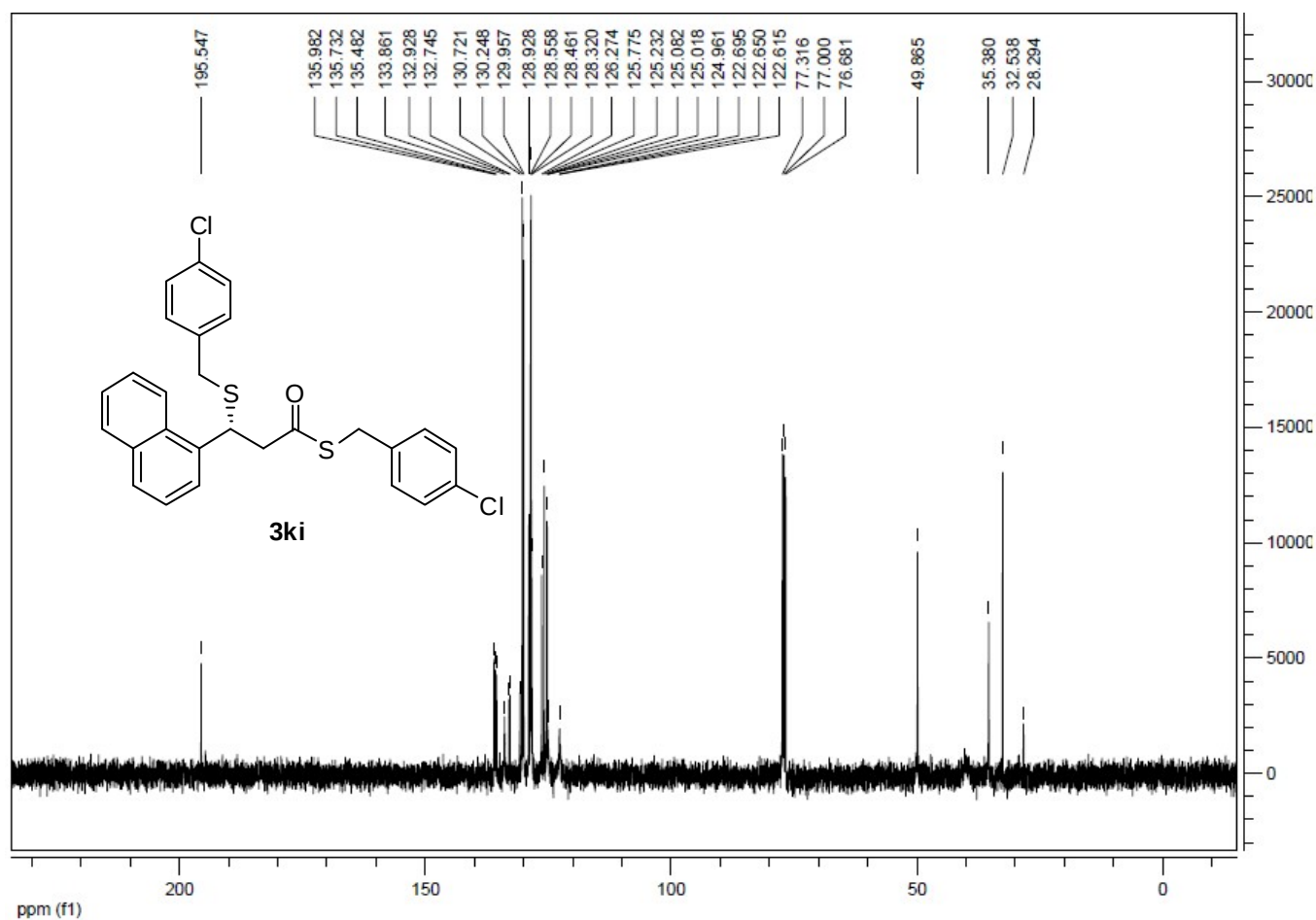
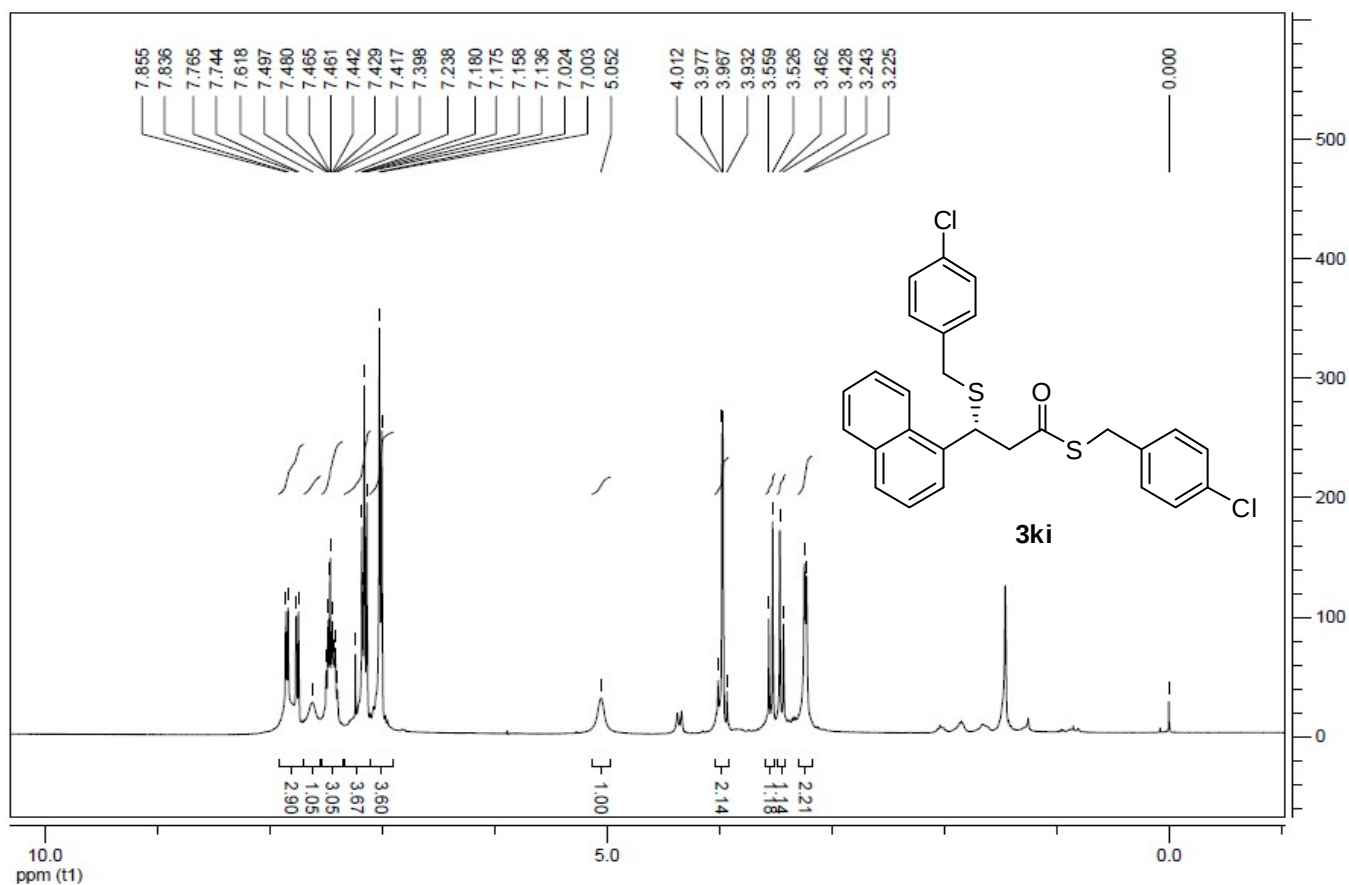


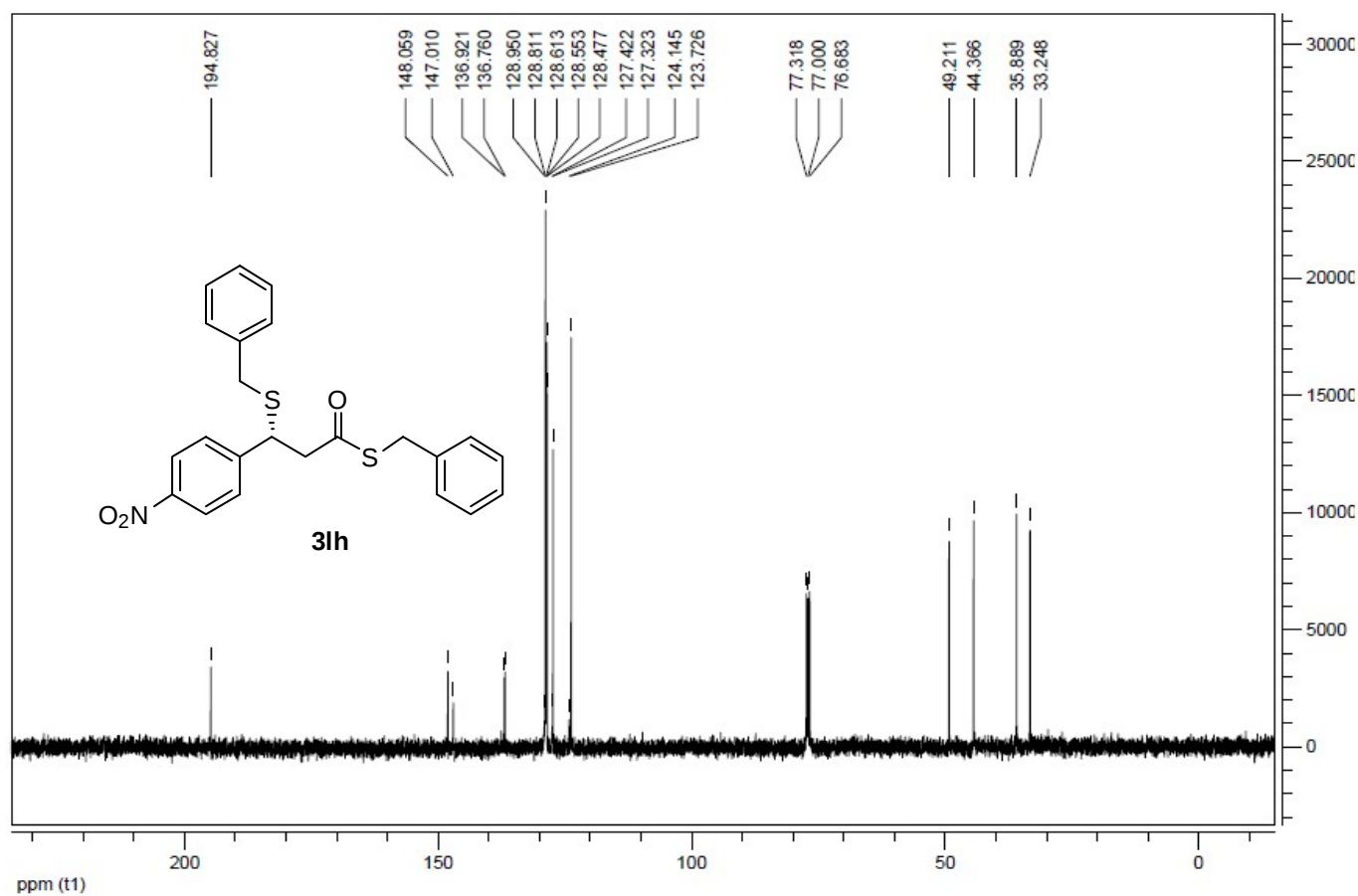
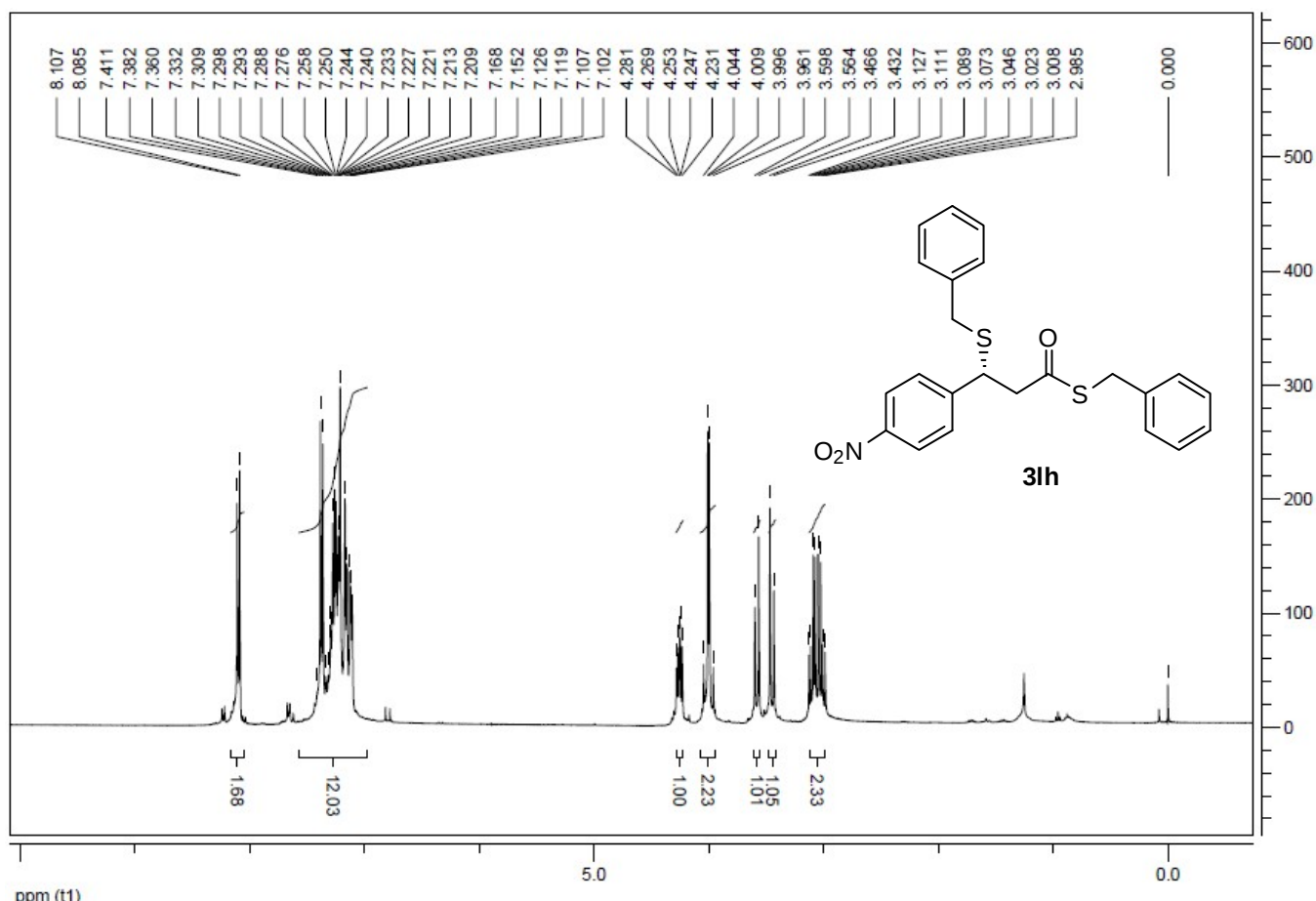


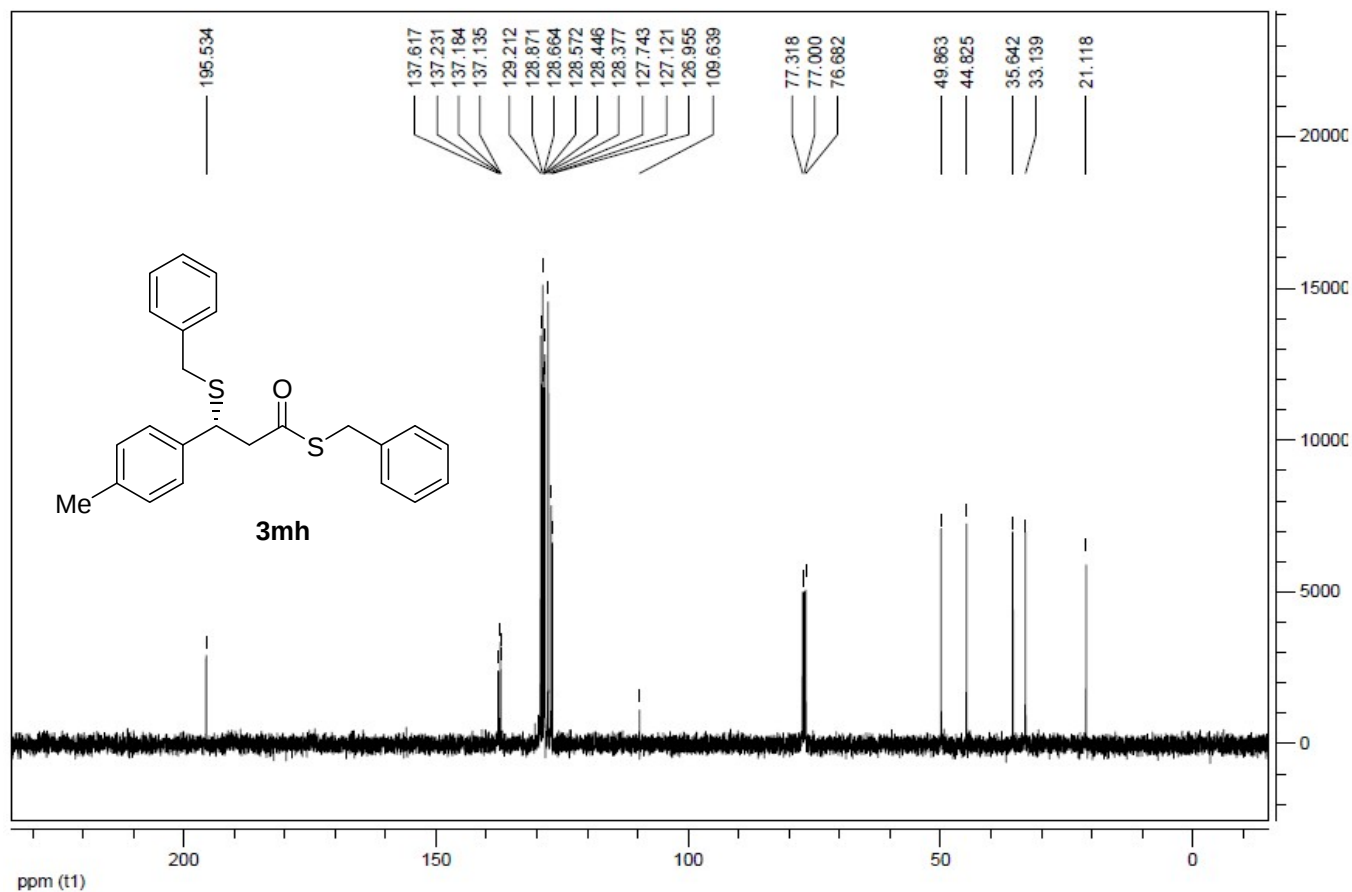
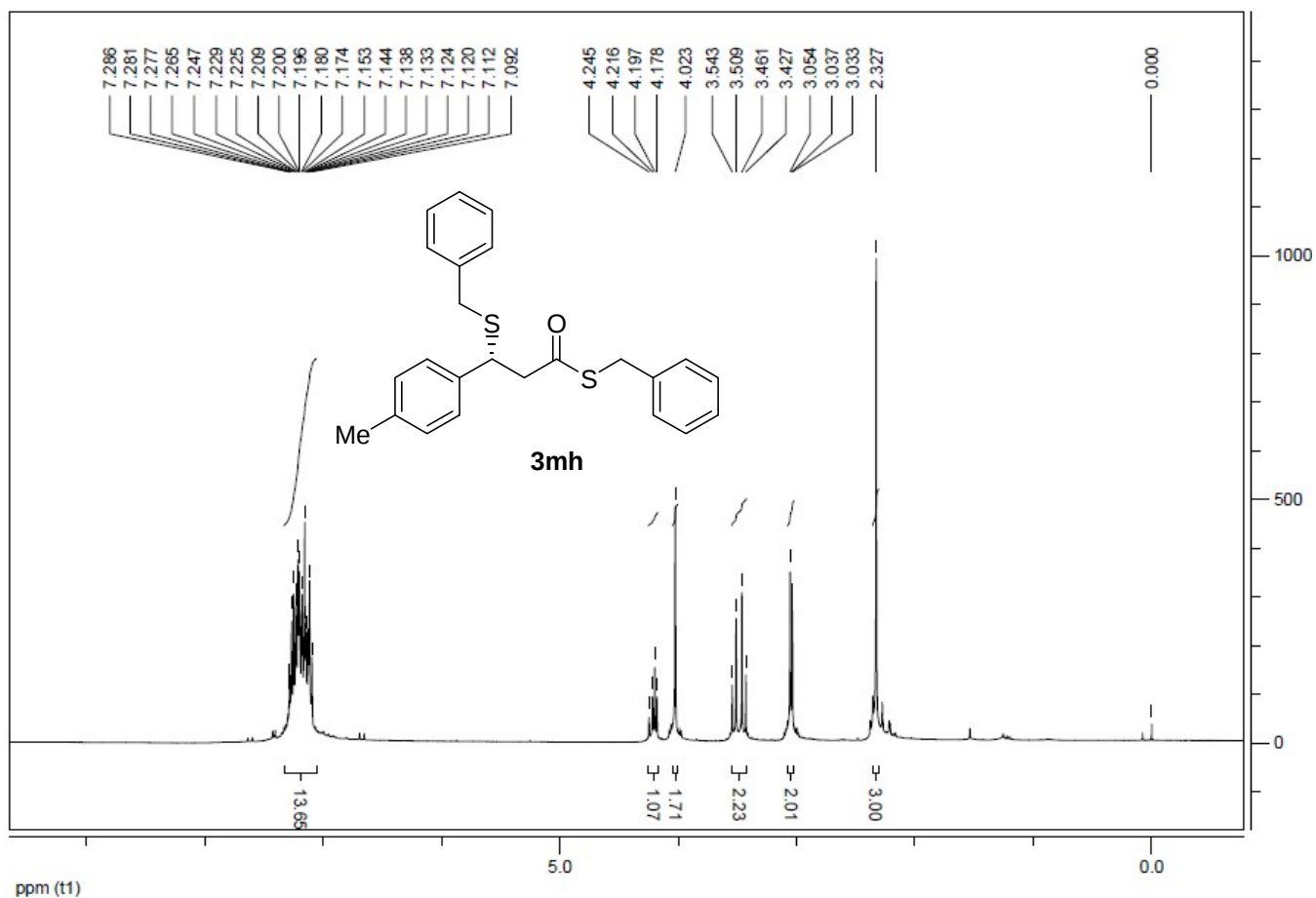


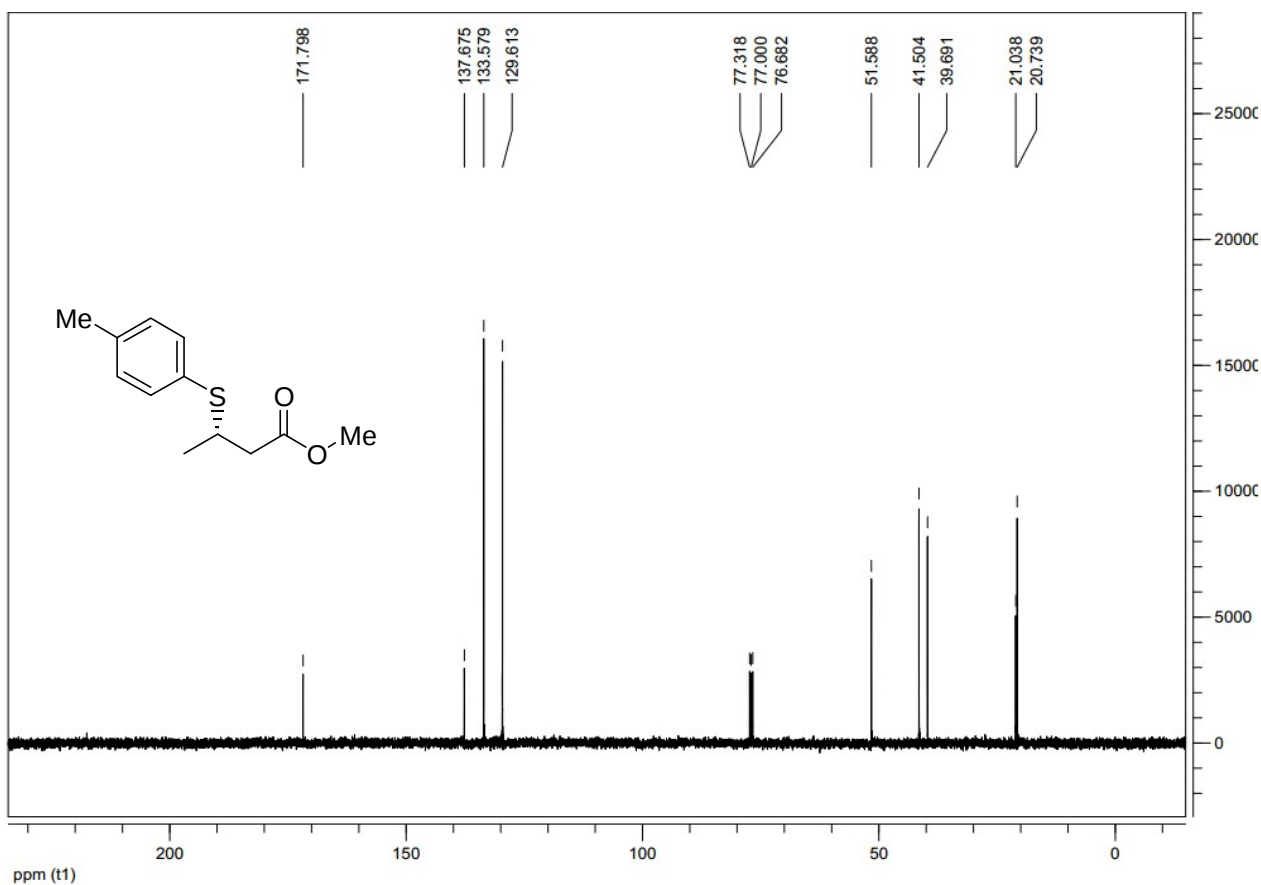
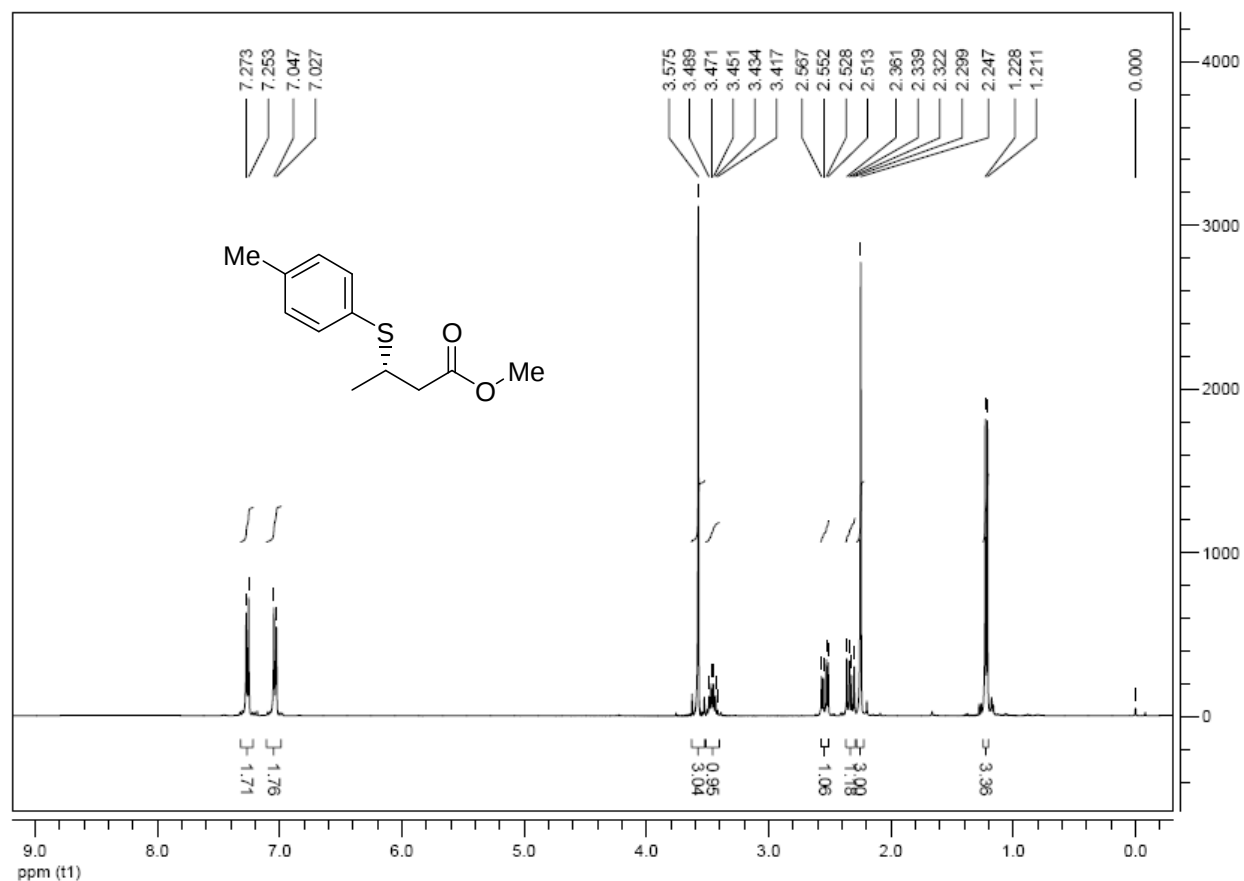


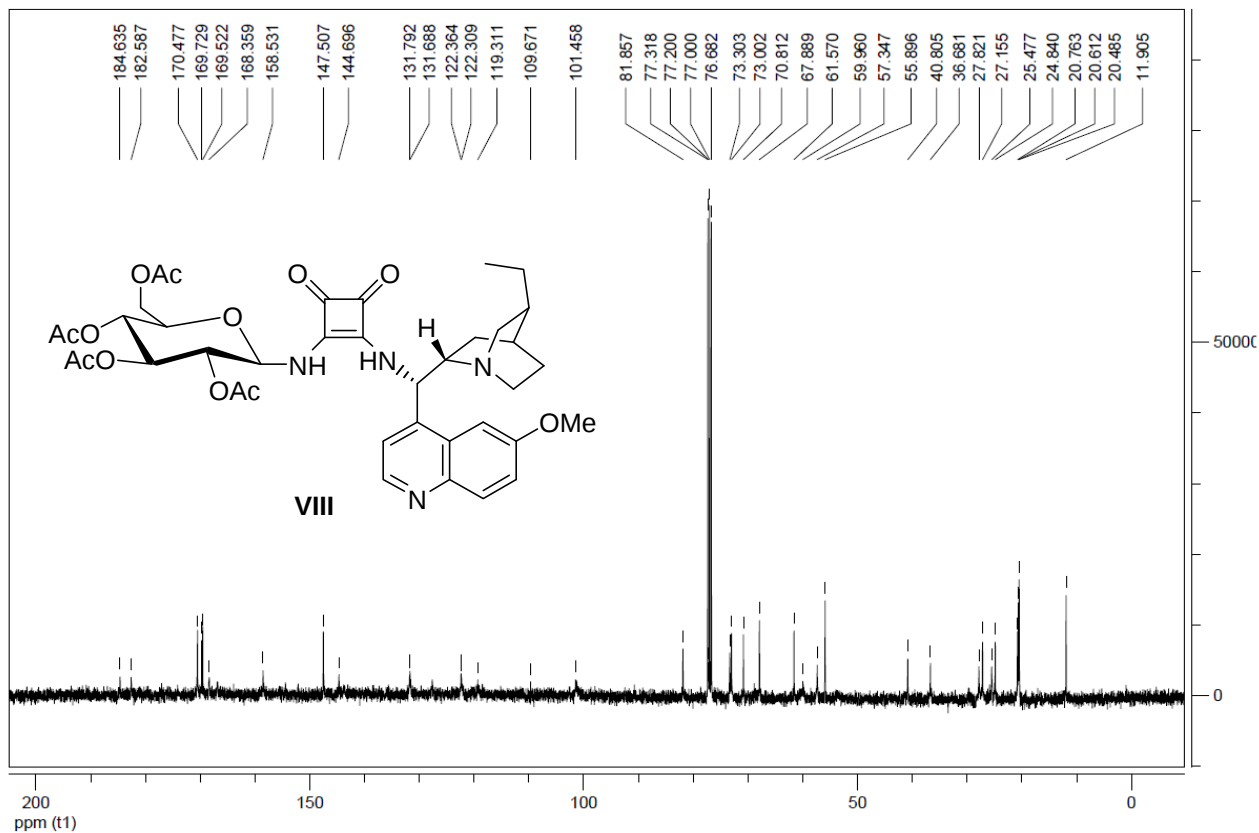
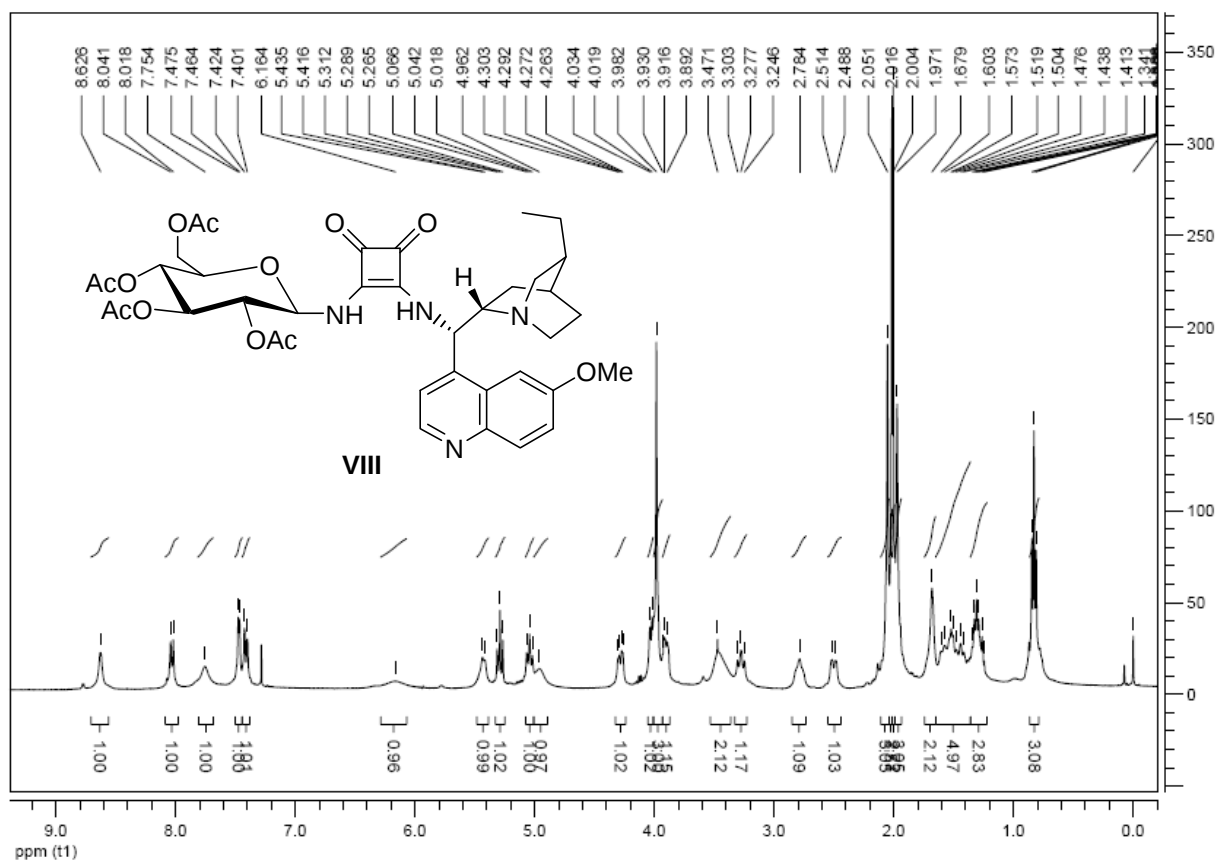




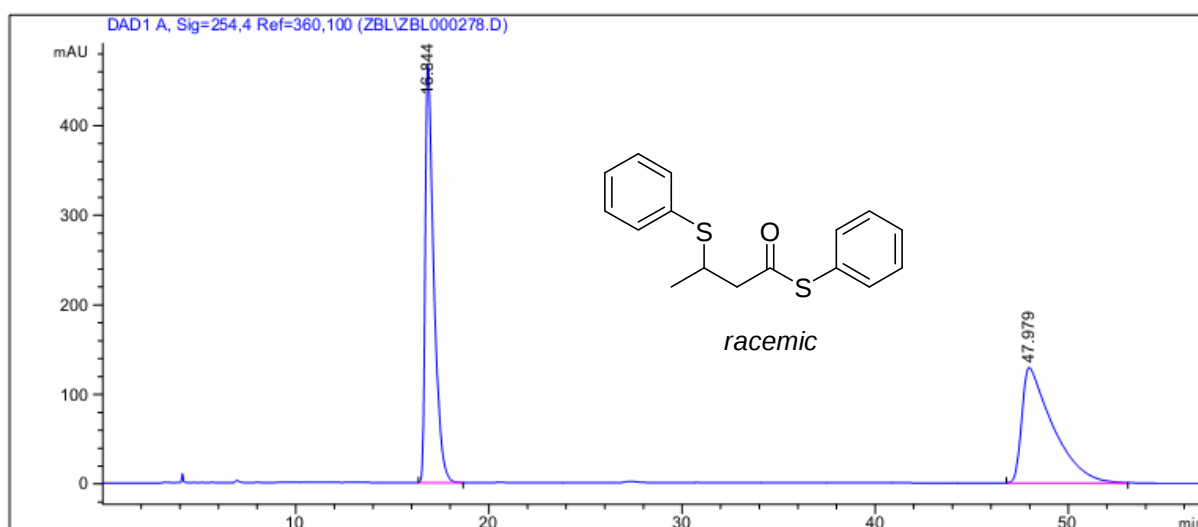




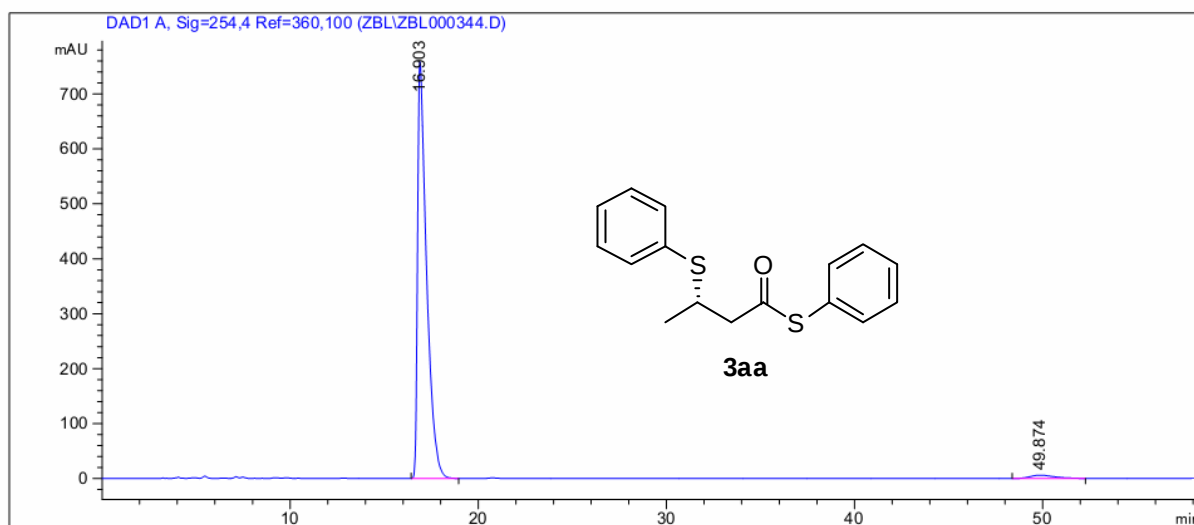




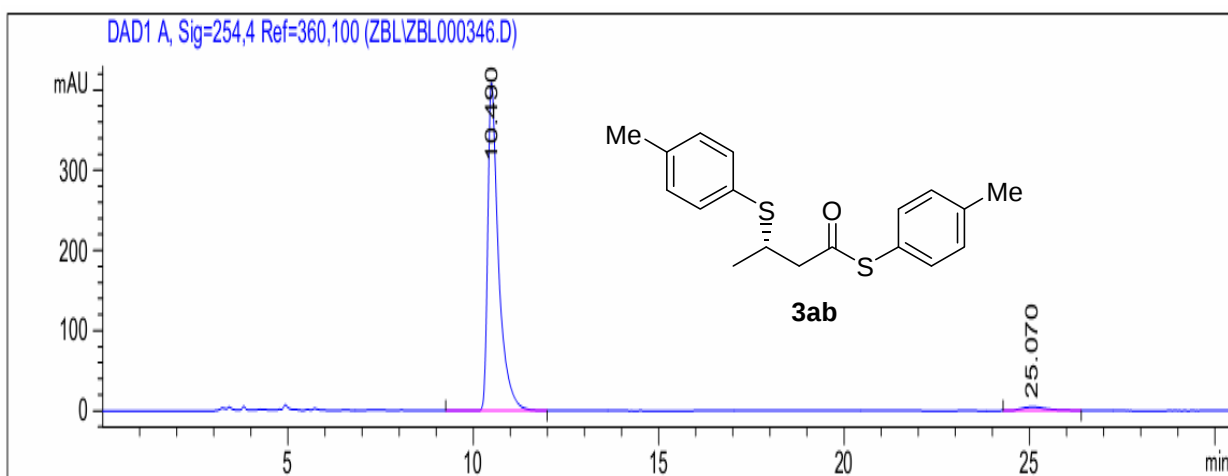
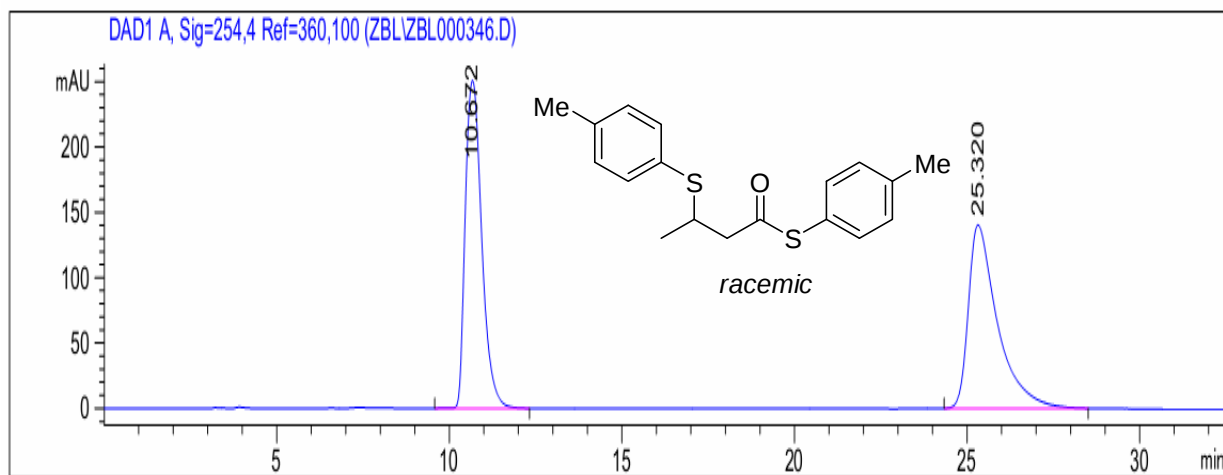
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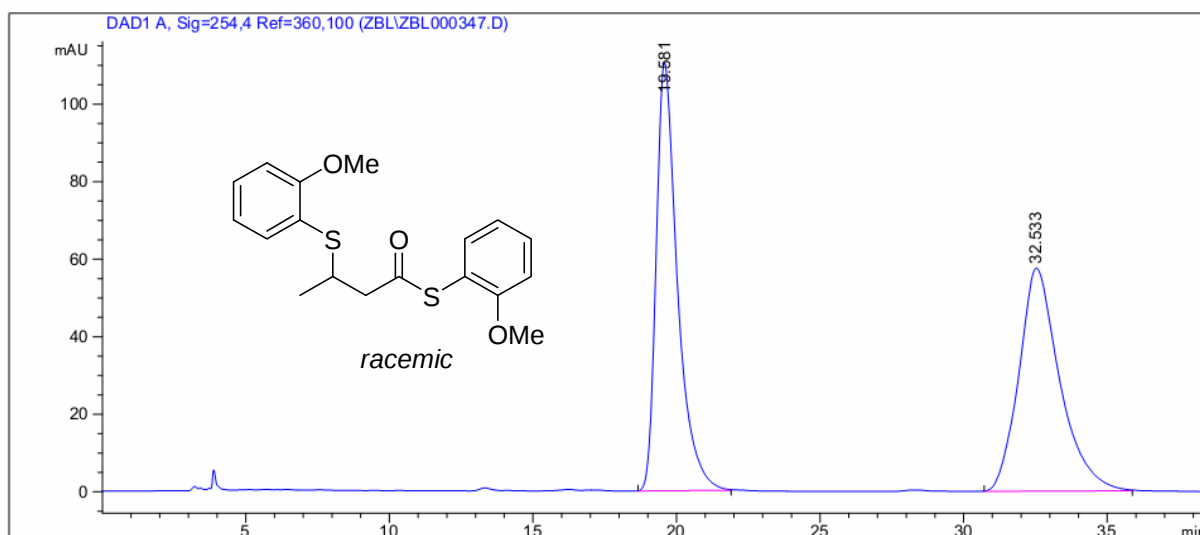


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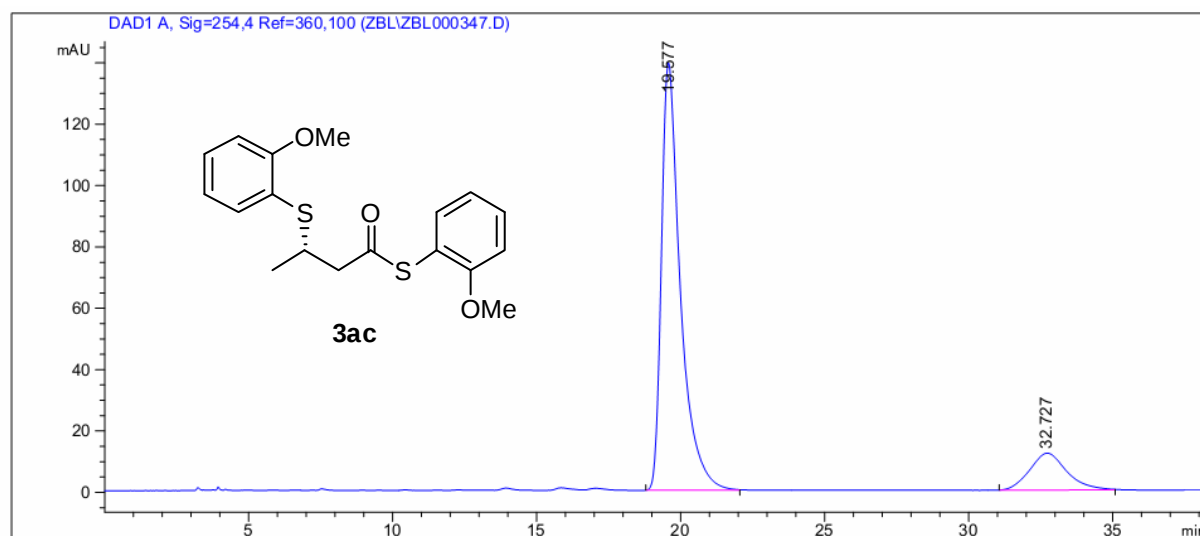


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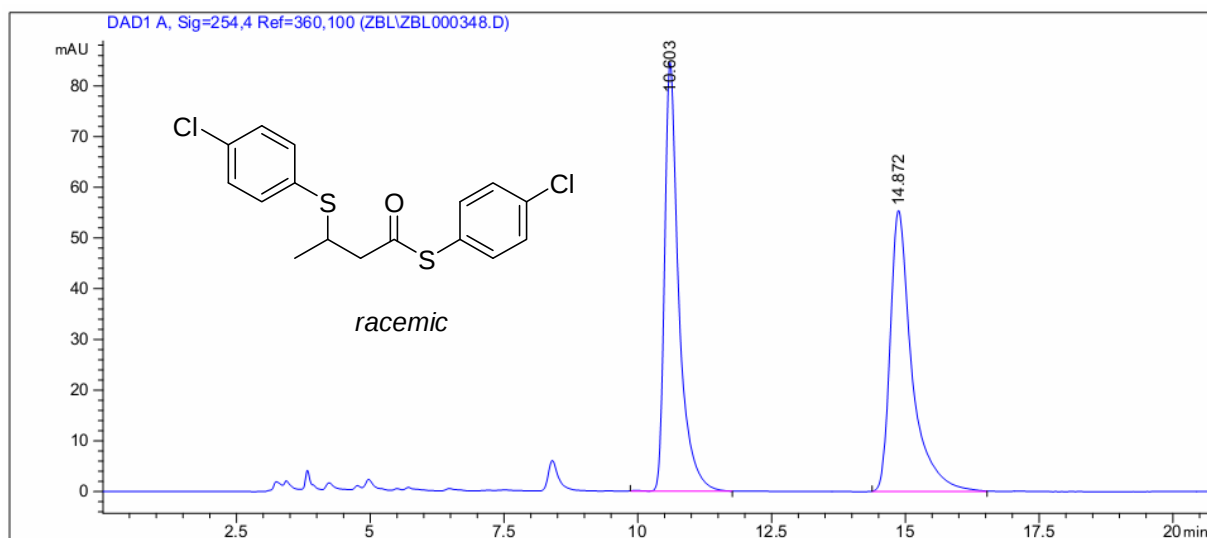




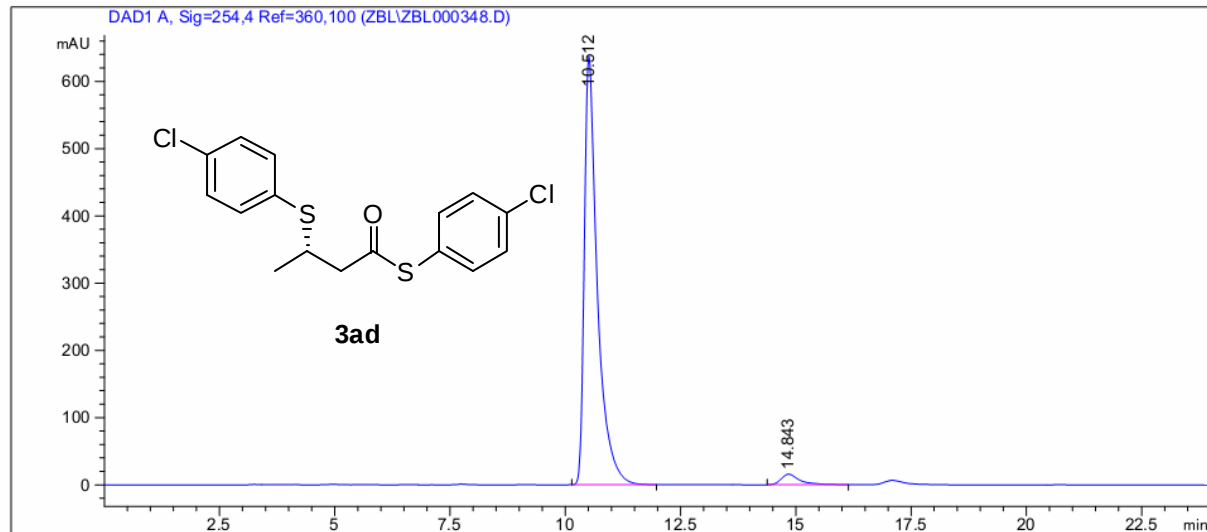
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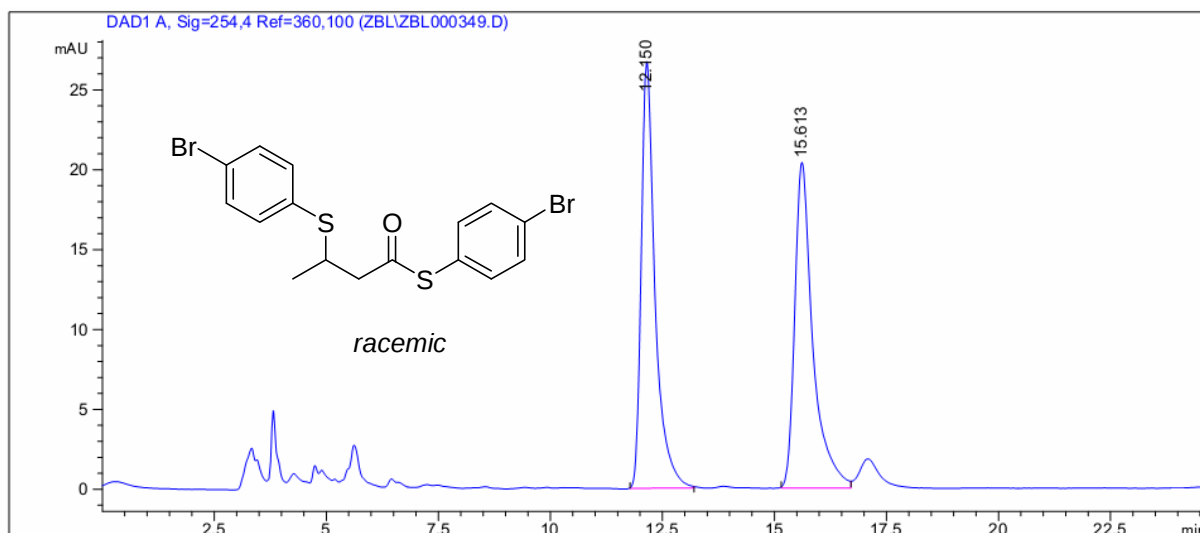
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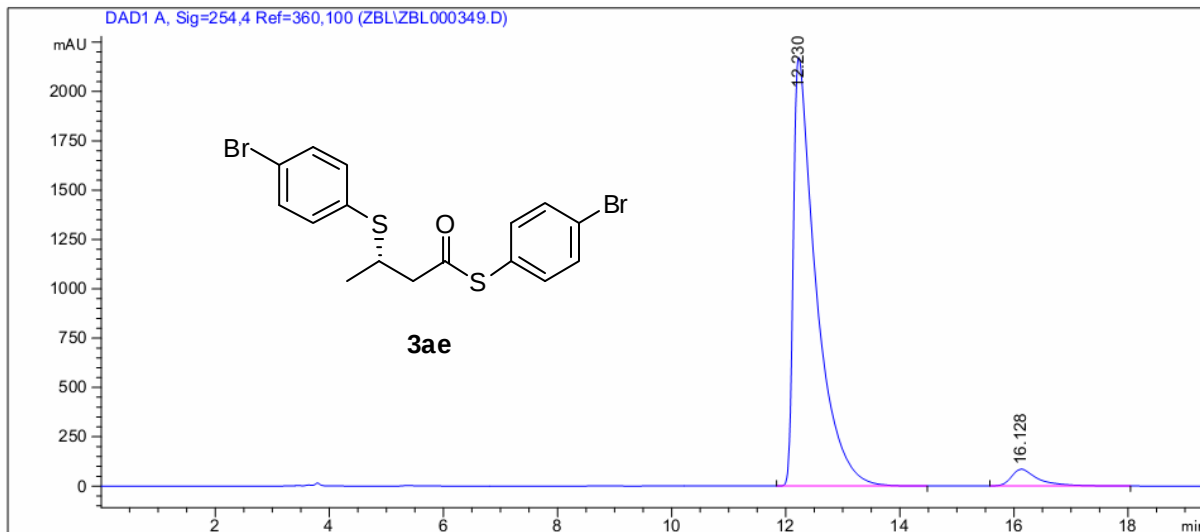
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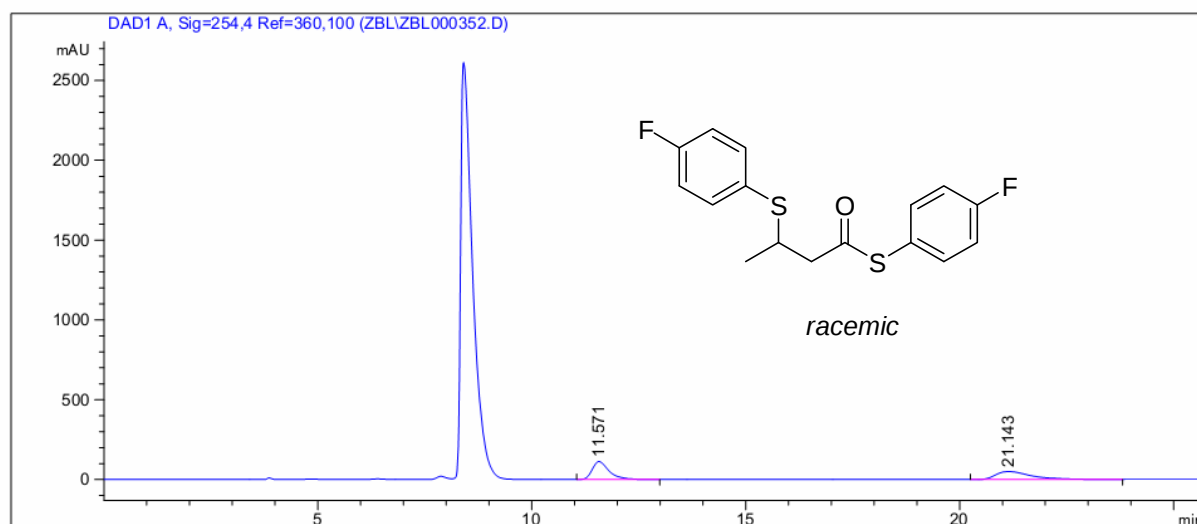
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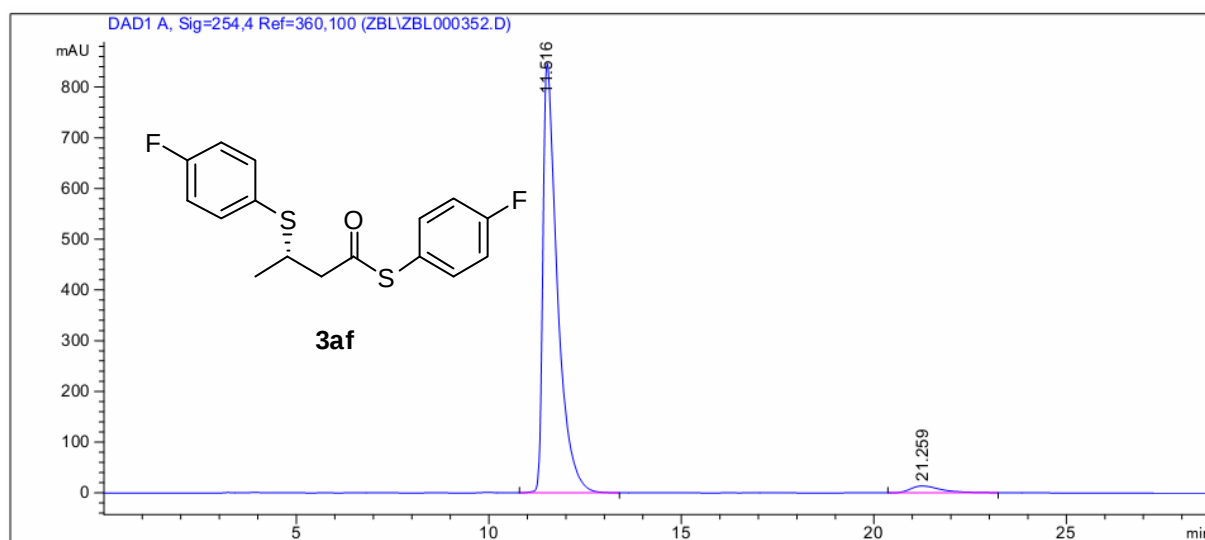
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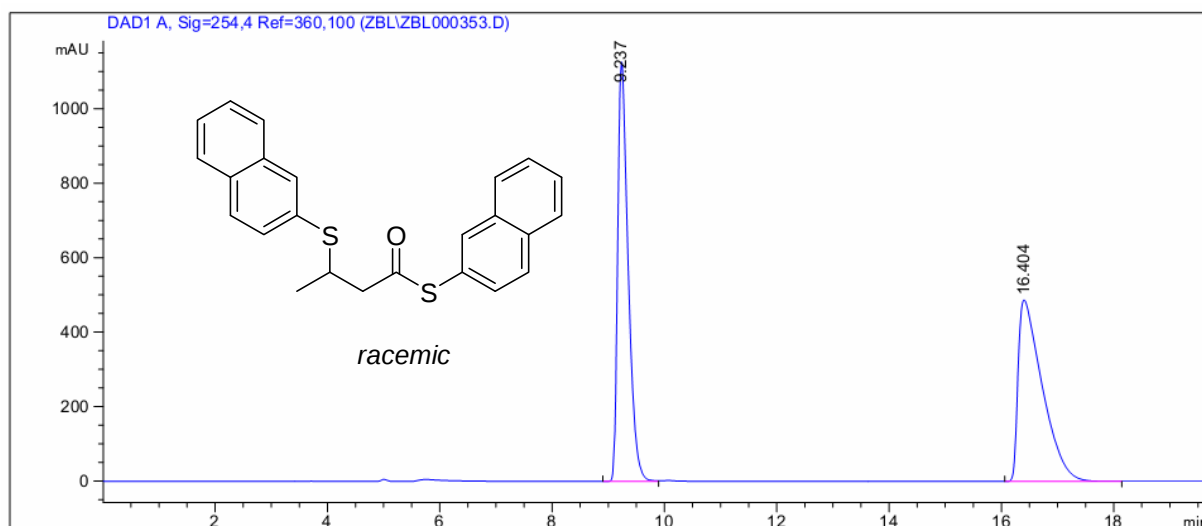
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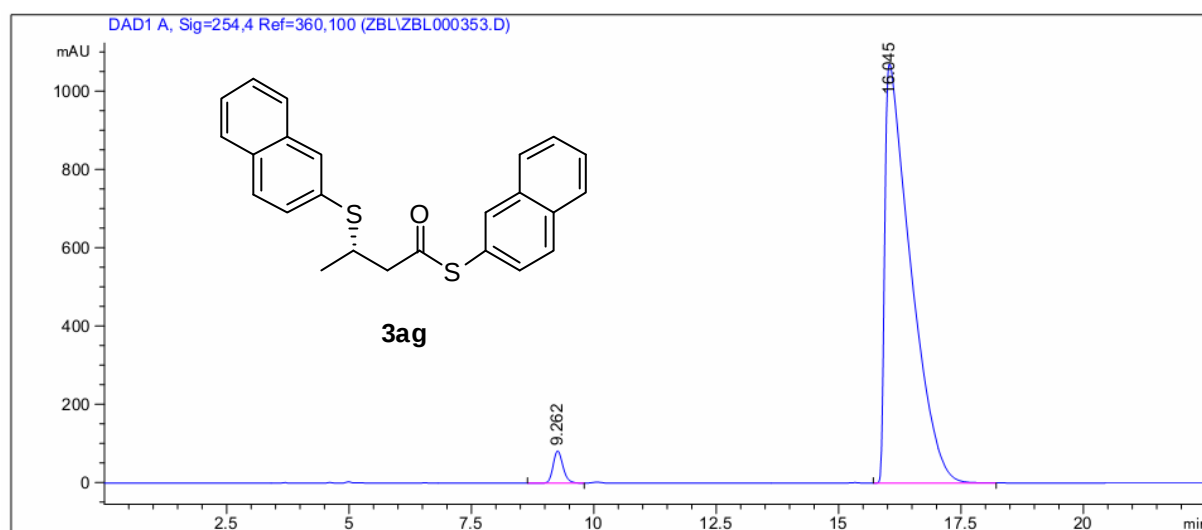
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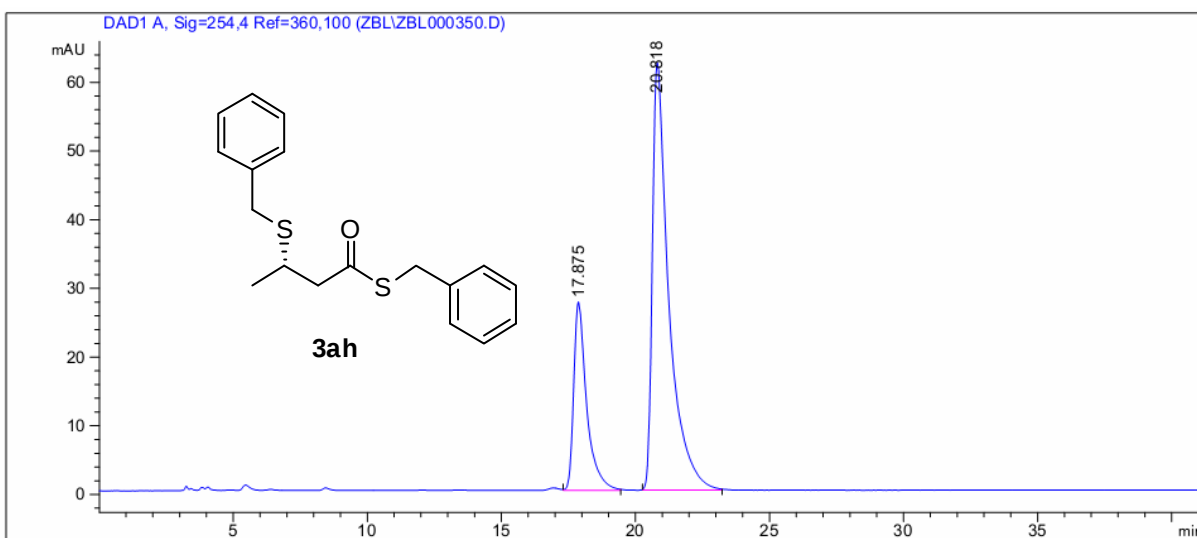
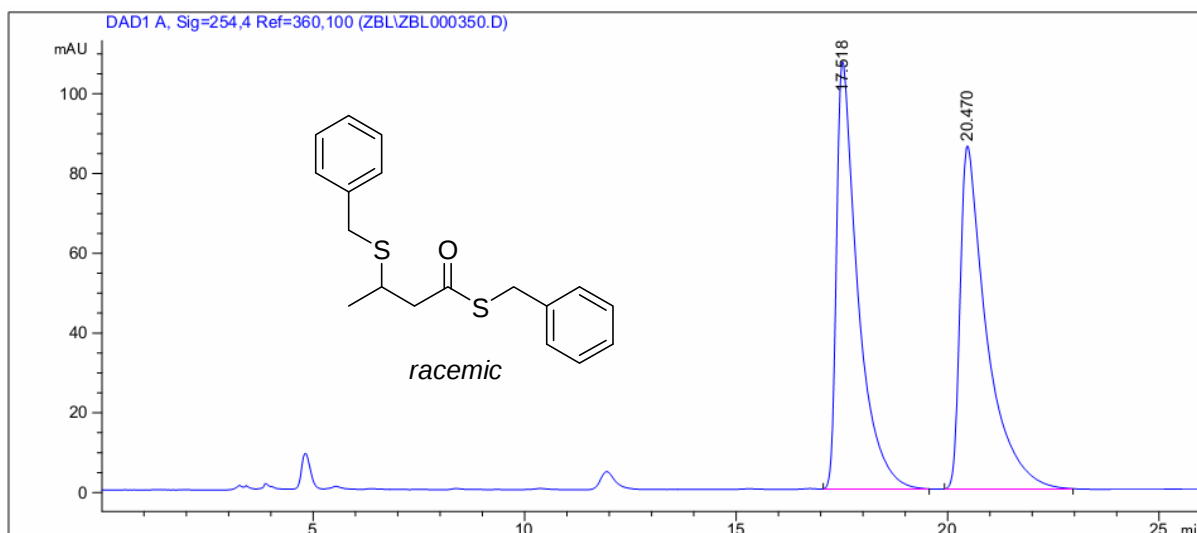
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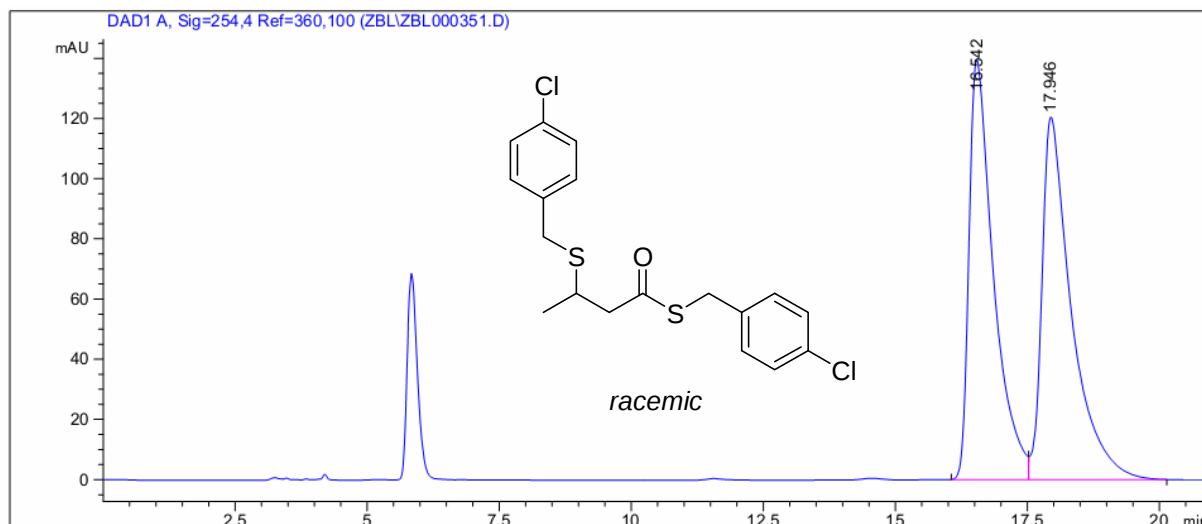


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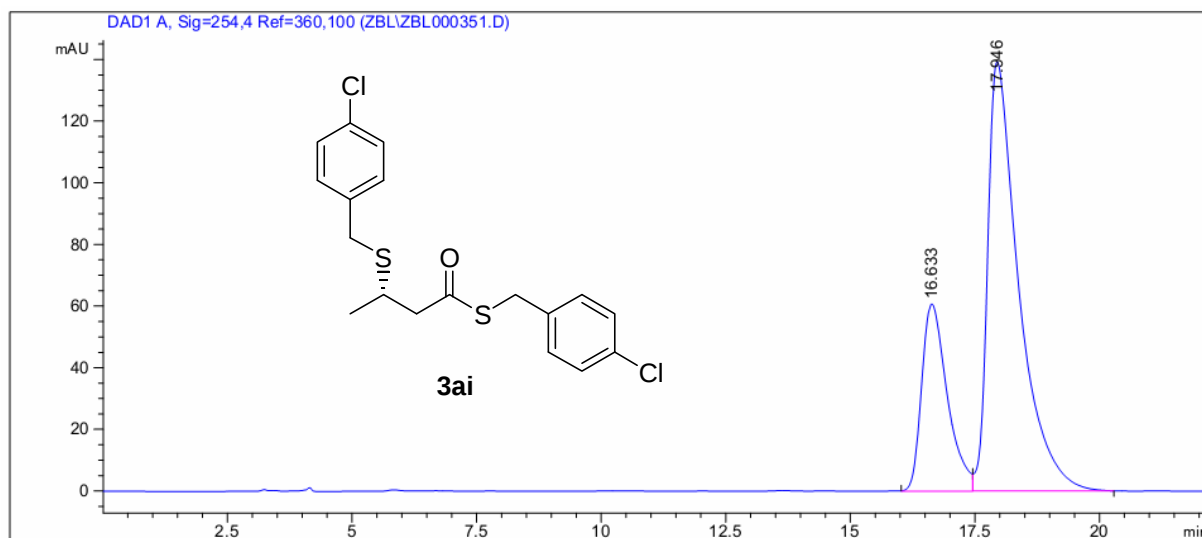


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2	16.045	VB	0.5192	3.92147e4	1070.96265	97.1497

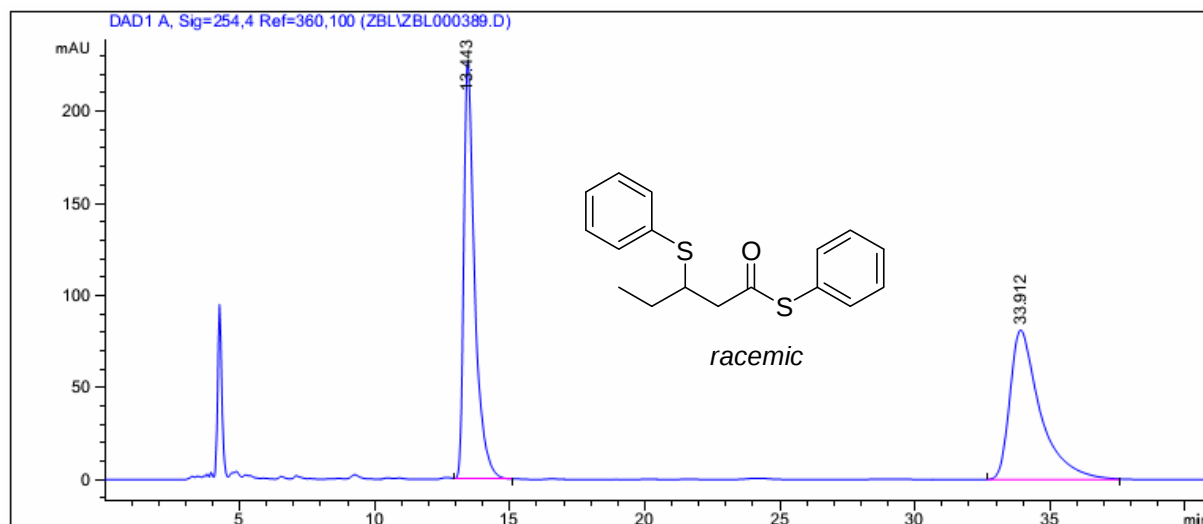




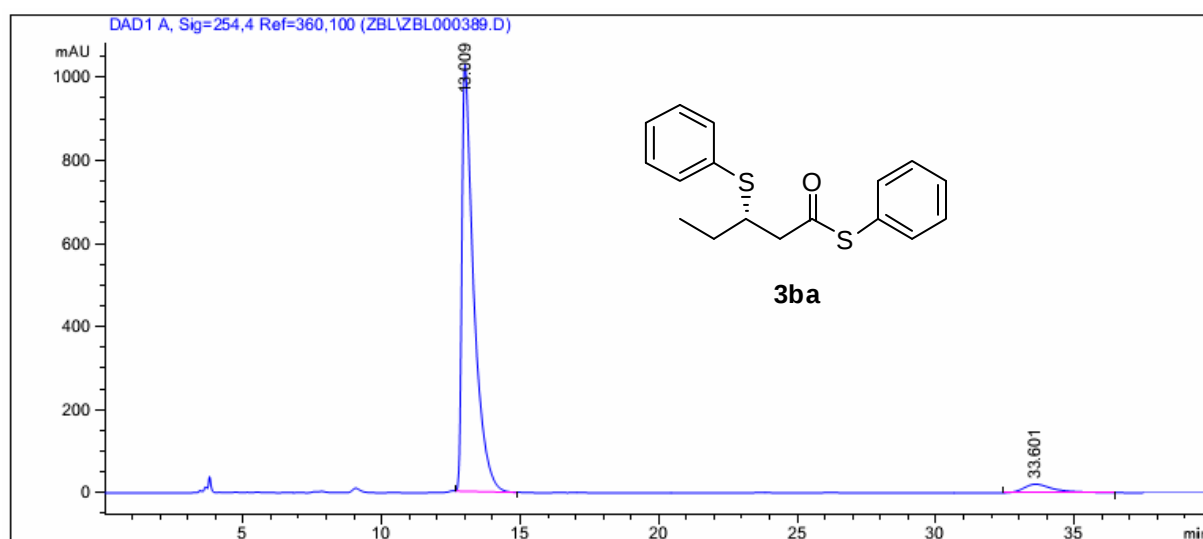
Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	16.542	BV	0.4714	4485.22314	139.38741	48.9860
2	17.946	VB	0.5563	4670.91699	120.49402	51.0140



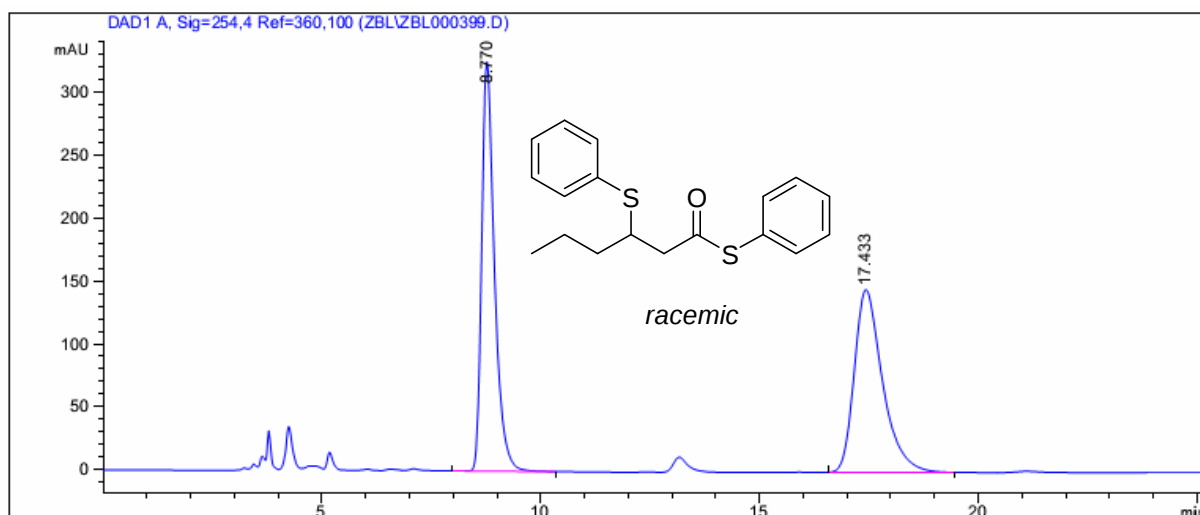
Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	16.633	BV	0.5449	2170.94336	60.74527	26.4956
2	17.946	VB	0.6364	6022.66943	139.29597	73.5044



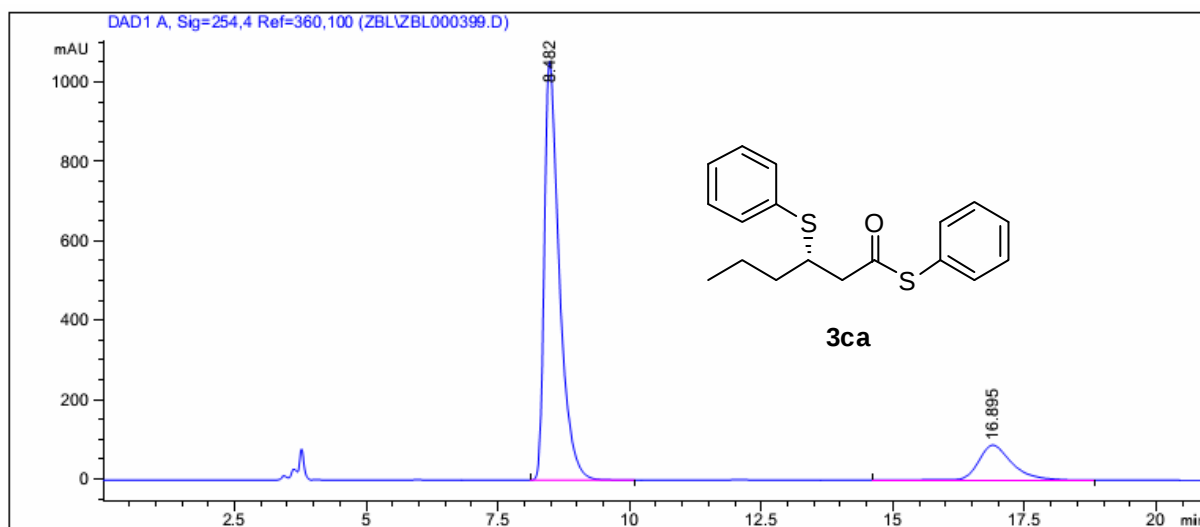
Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	13.443	VB	0.4139	6354.35596	227.44507	50.0646
2	33.912	BB	1.1502	6337.96484	81.23562	49.9354



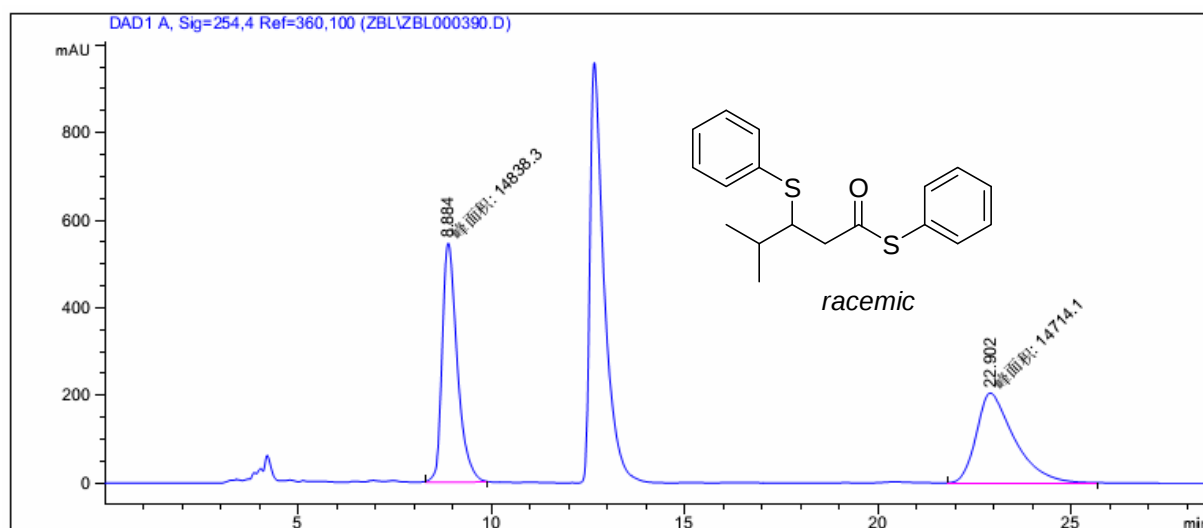
Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	13.009	BB	0.4225	3.01750e4	1027.88892	95.0241
2	33.601	BB	1.1264	1580.09326	20.70262	4.9759



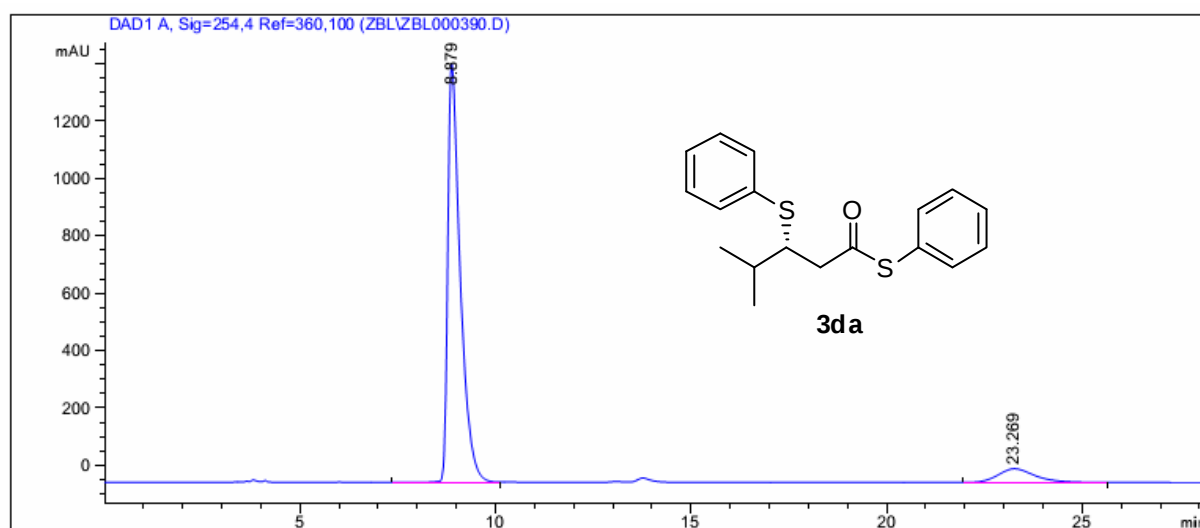
Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	8.770	BB S	0.3038	6581.71484	325.58487	50.2227
2	17.433	BB	0.6754	6523.35547	145.41528	49.7773



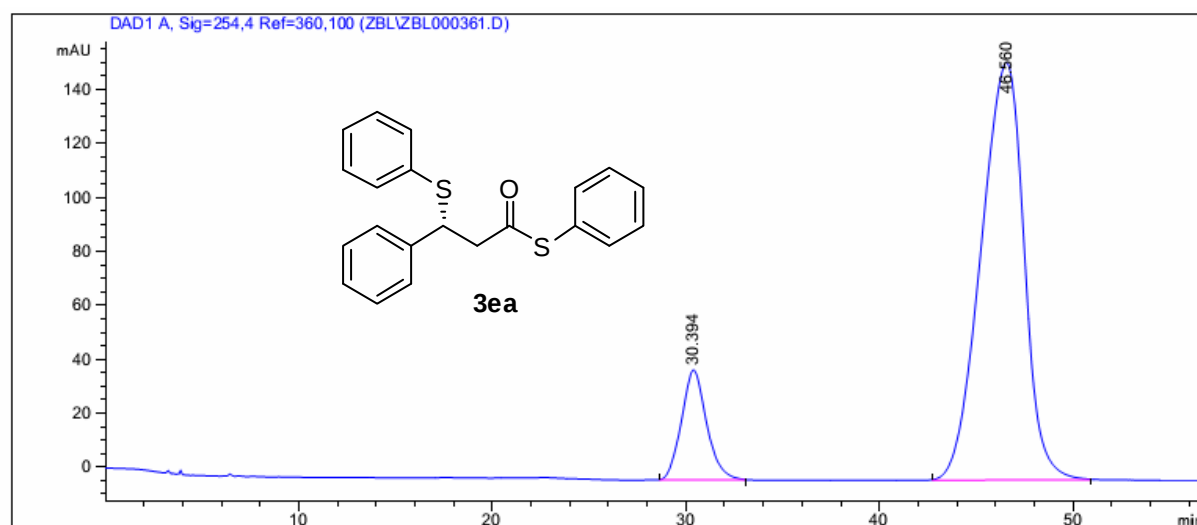
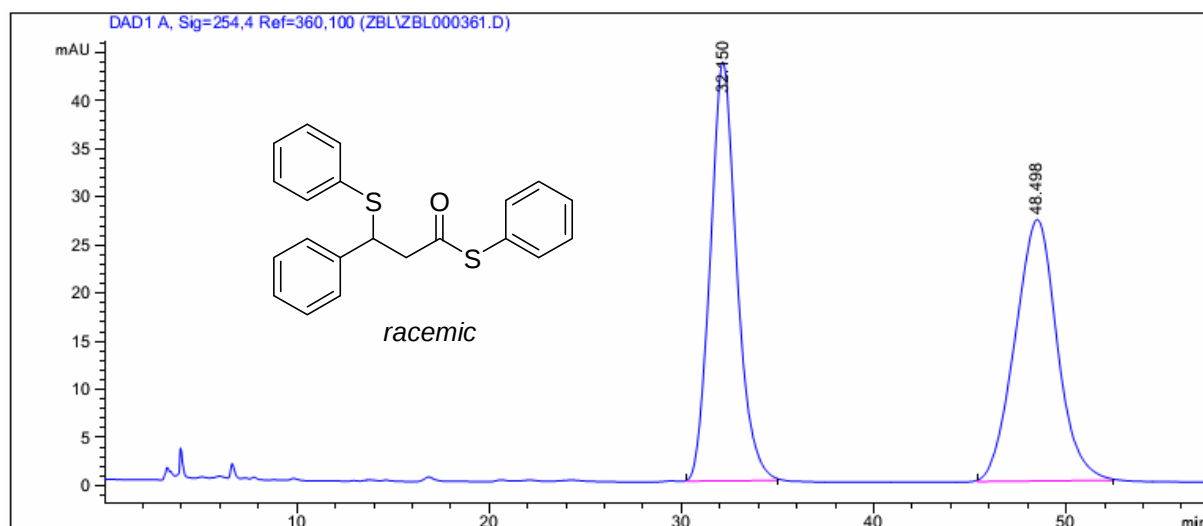
Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	8.482	BB S	0.2934	2.07442e4	1054.87720	84.0984
2	16.895	BB	0.6662	3922.38257	88.30673	15.9016

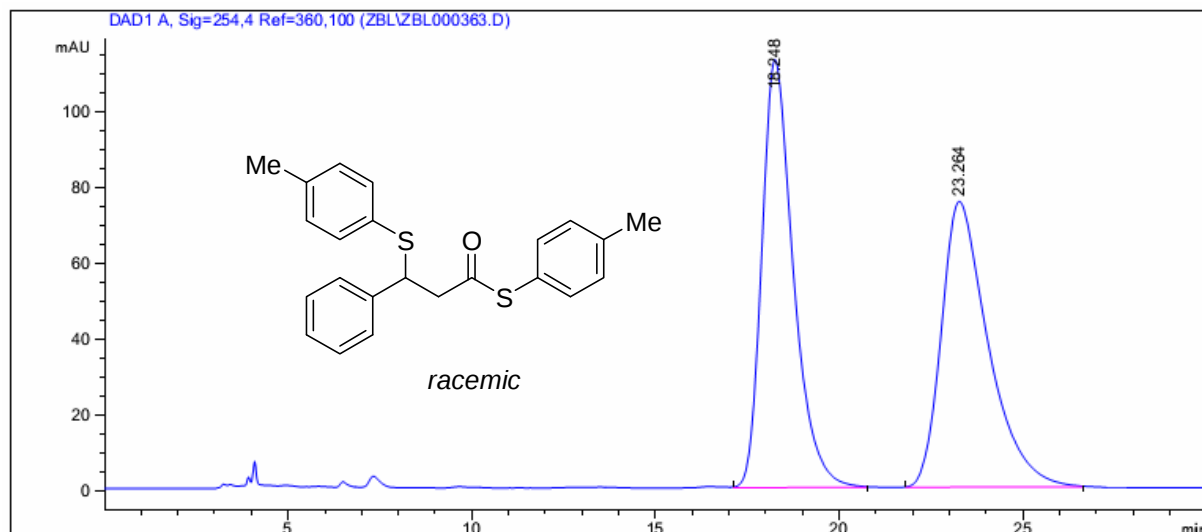


Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	8.884	MM	0.4530	1.48383e4	545.94574	50.2101
2	22.902	MM	1.1773	1.47141e4	208.30536	49.7899

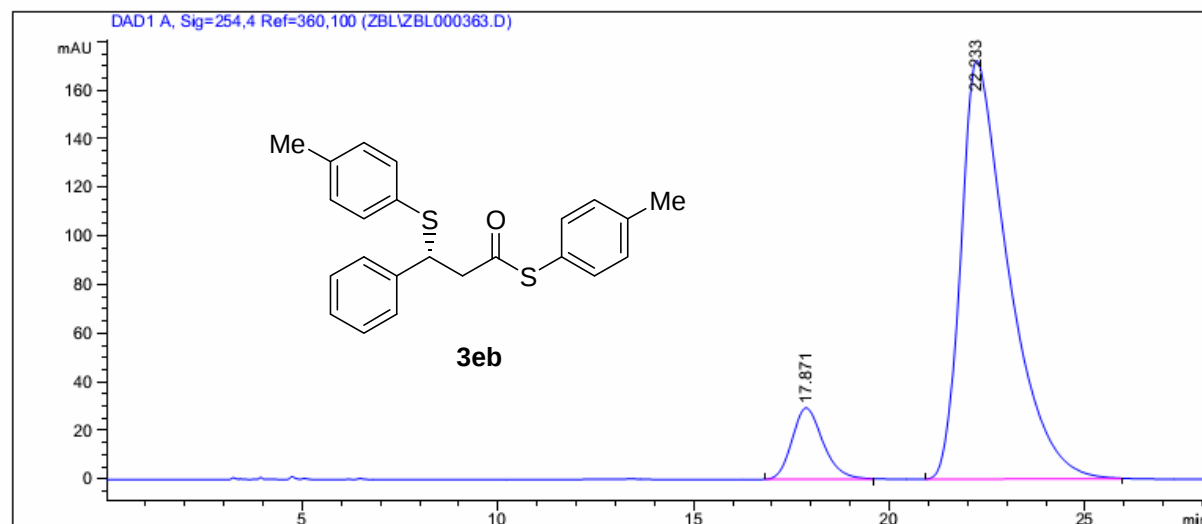


Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	8.879	BV S	0.3246	3.21031e4	1459.59778	91.0367
2	23.269	BB	0.9952	3160.80518	47.81394	8.9633

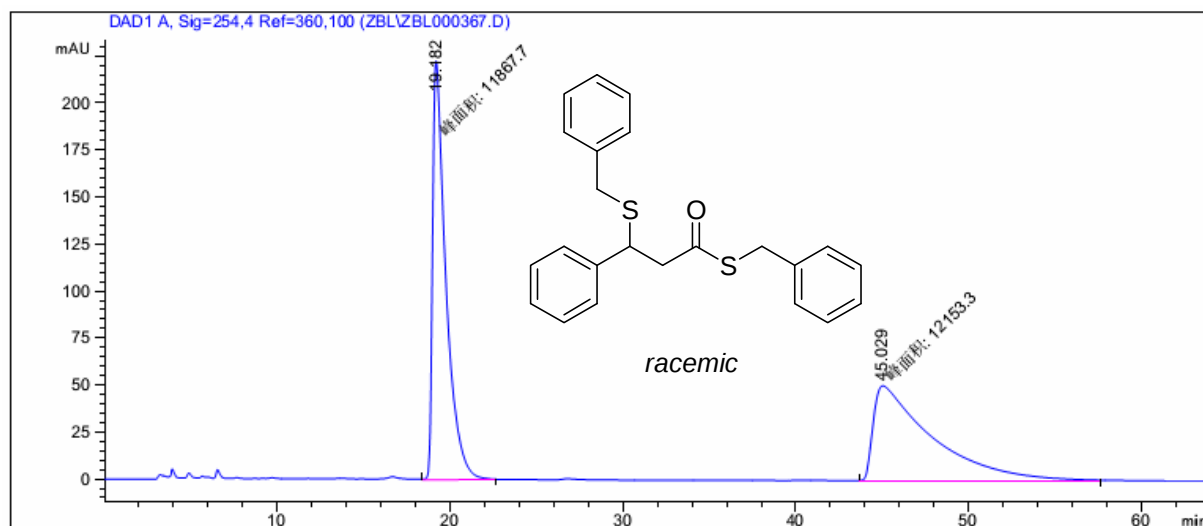




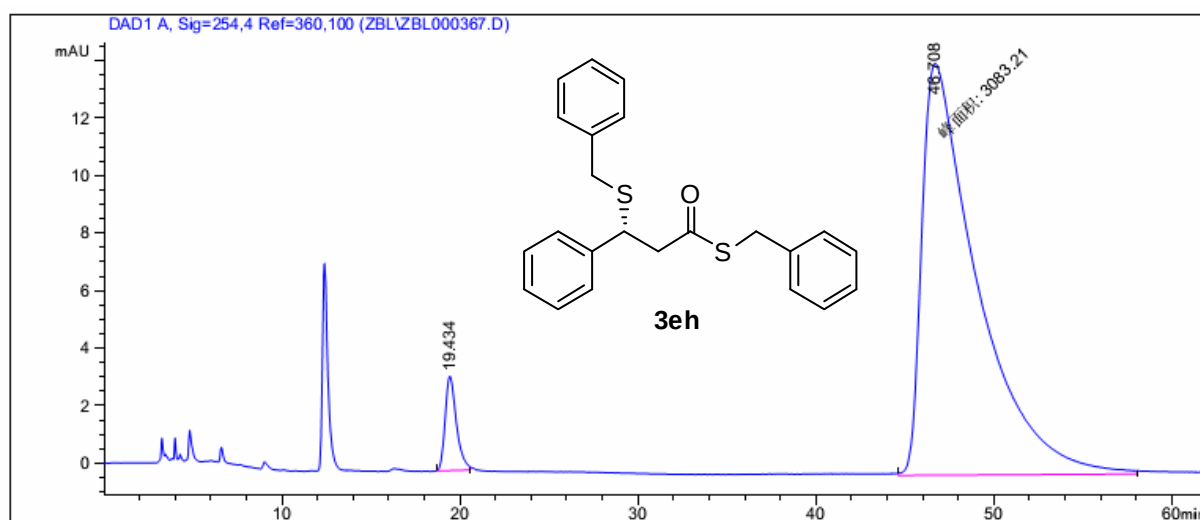
Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	18.248	BB	0.8984	6704.16992	112.62942	50.1550
2	23.264	BB	1.3136	6662.73145	75.20326	49.8450



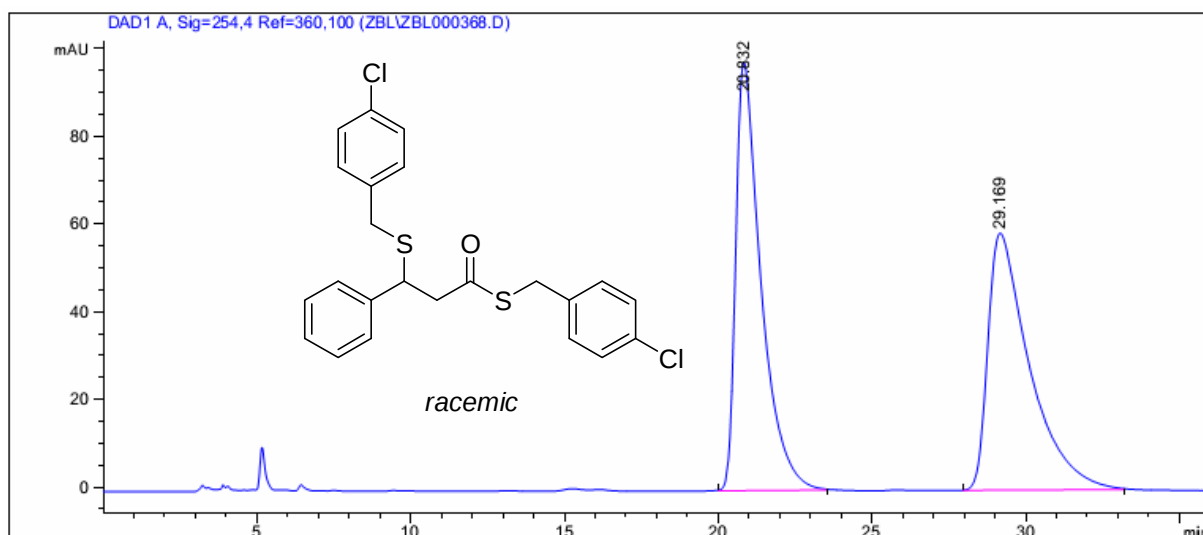
Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	17.871	BB	0.8464	1616.74939	29.36035	10.0345
2	22.233	BB	1.2101	1.44952e4	172.18643	89.9655



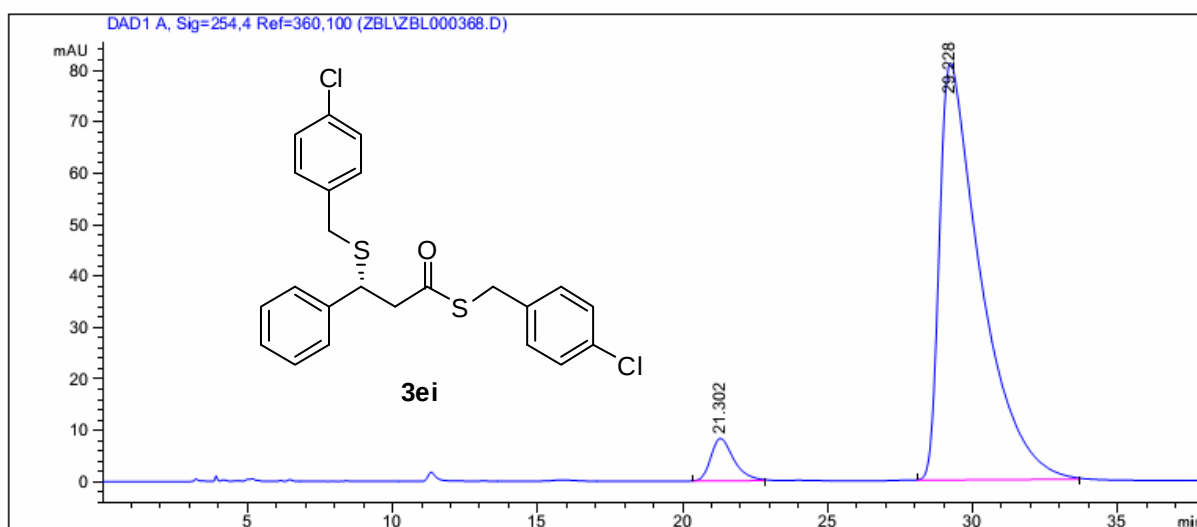
Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	19.182	MM	0.8876	1.18677e4	222.84961	49.4055
2	45.029	MM	3.9822	1.21533e4	50.86530	50.5945



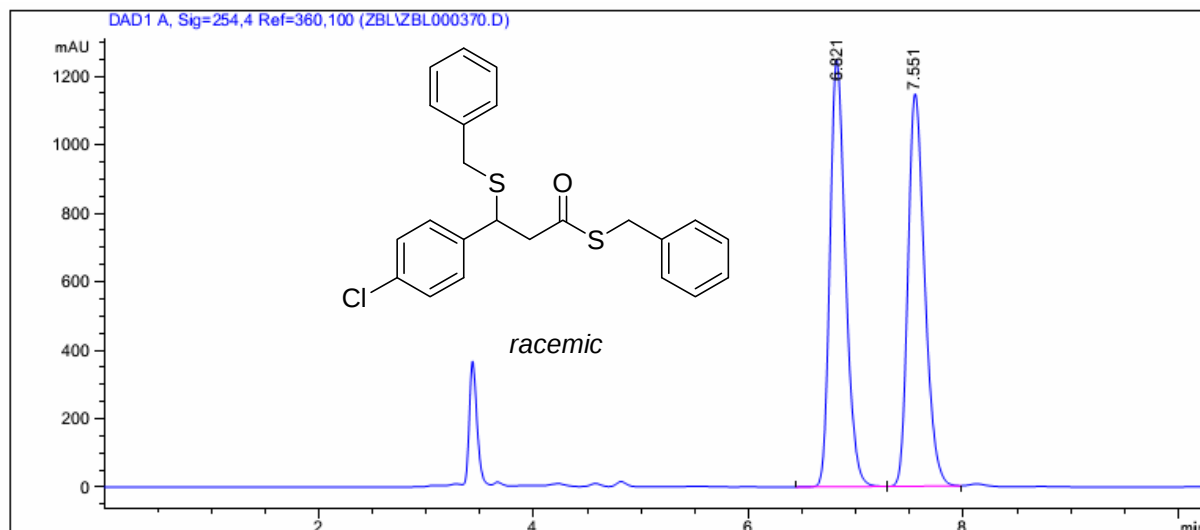
Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	19.434	BB	0.6678	143.96127	3.28151	4.4609
2	46.708	MM	3.5877	3083.20703	14.32315	95.5391



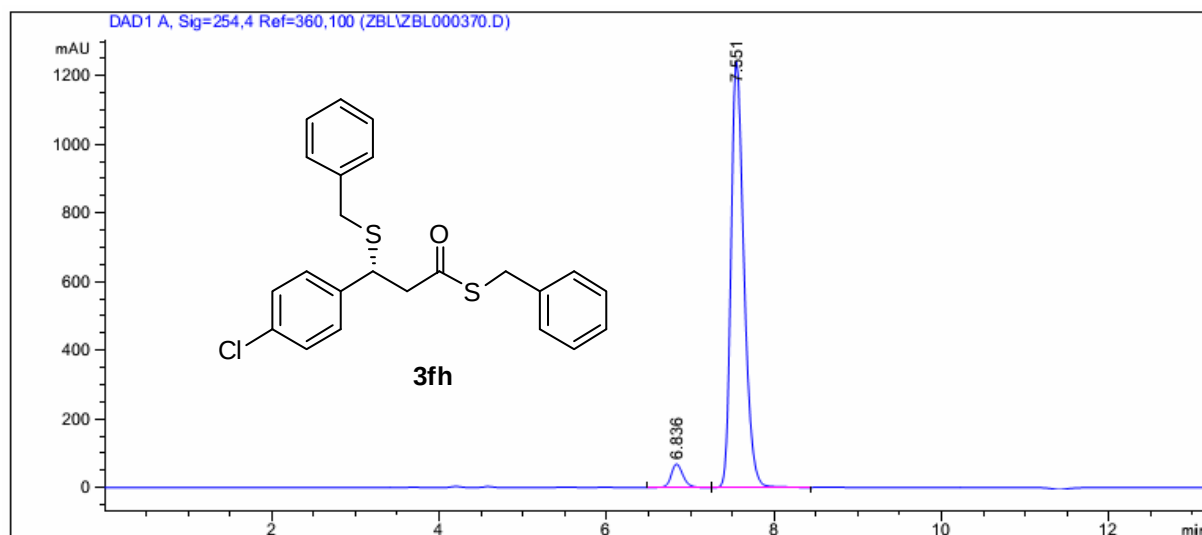
Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	20.832	BB	0.8367	5566.83789	97.70399	50.3228
2	29.169	BB	1.3463	5495.42236	58.58742	49.6772



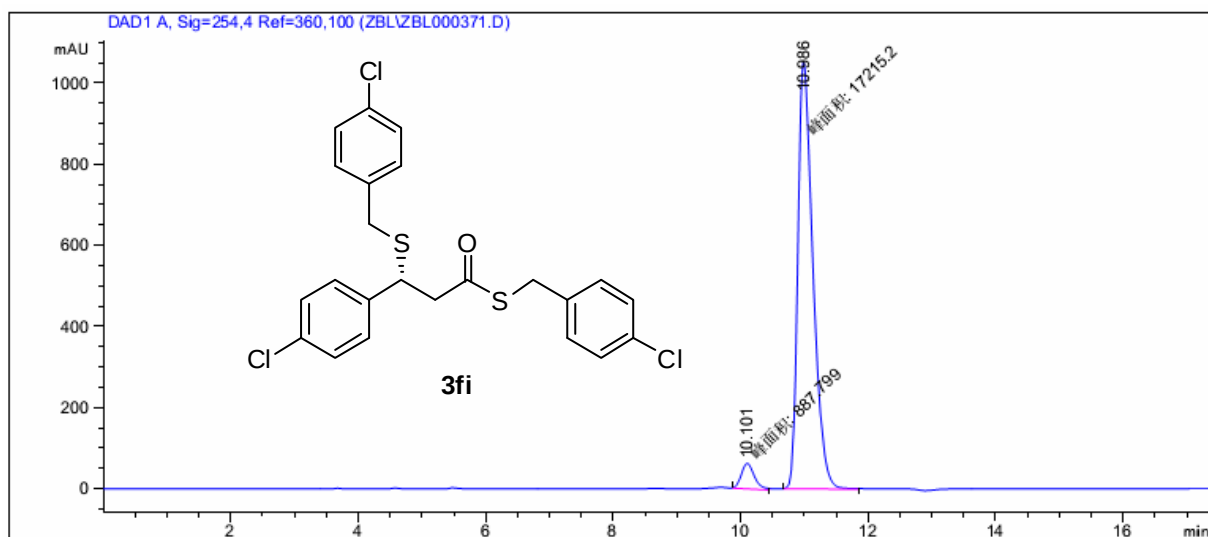
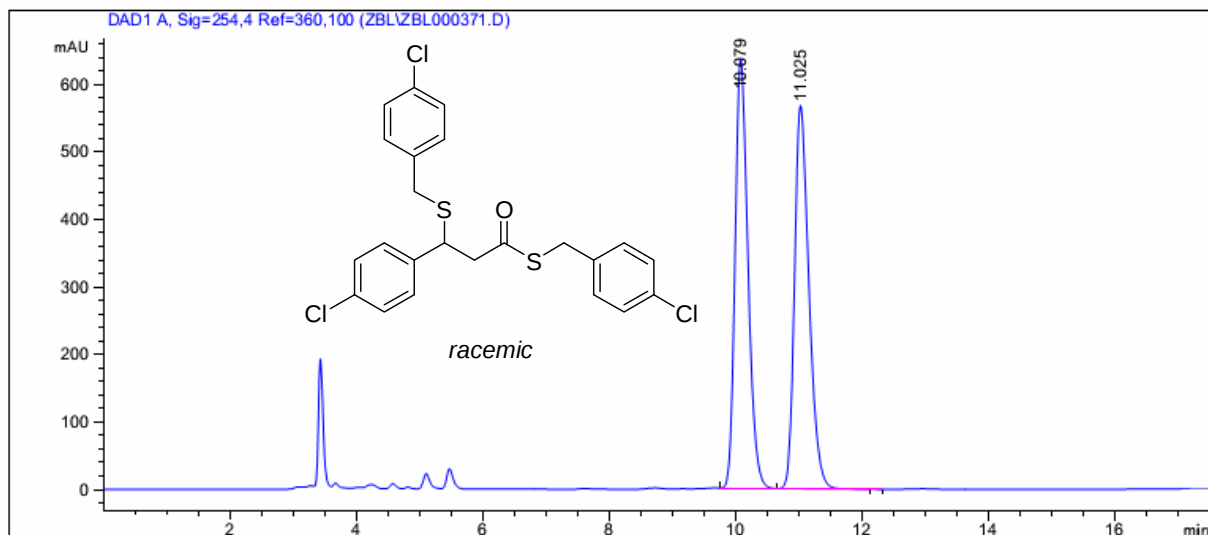
Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	21.302	BB	0.8182	453.70352	8.24224	5.3574
2	29.228	BB	1.4015	8015.06006	81.06306	94.6426

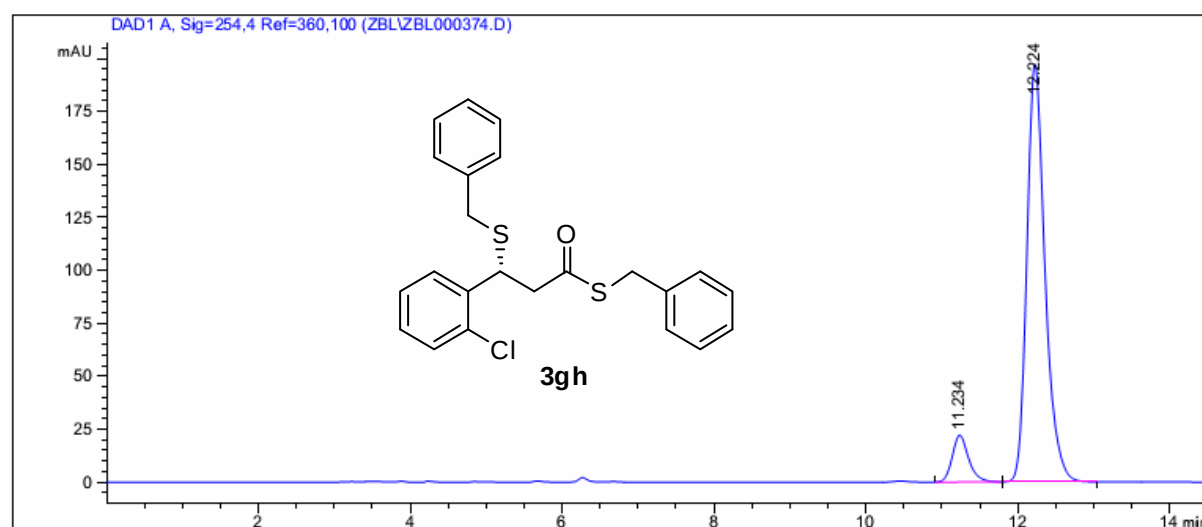
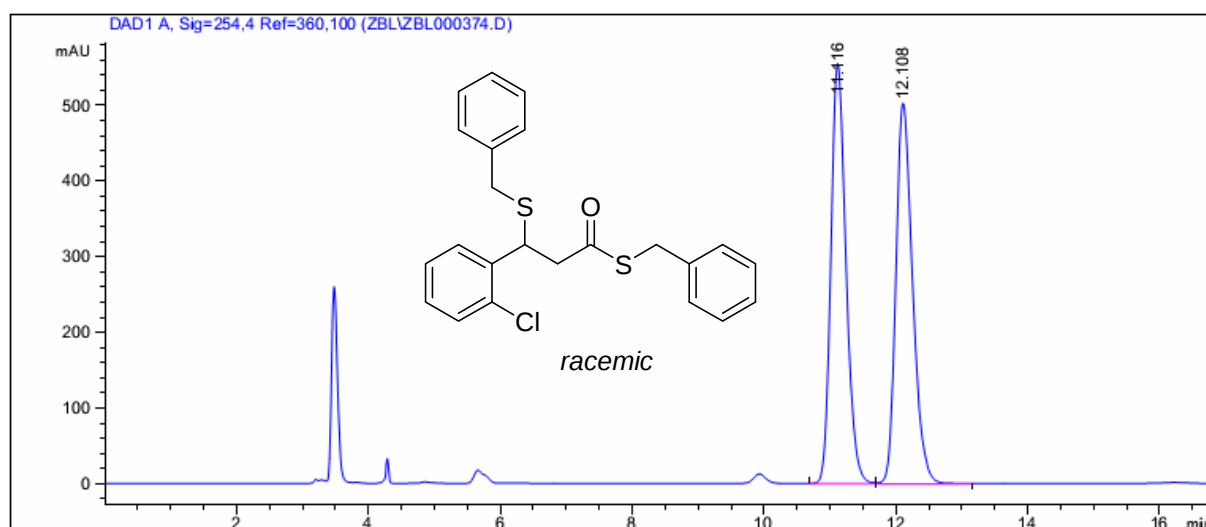


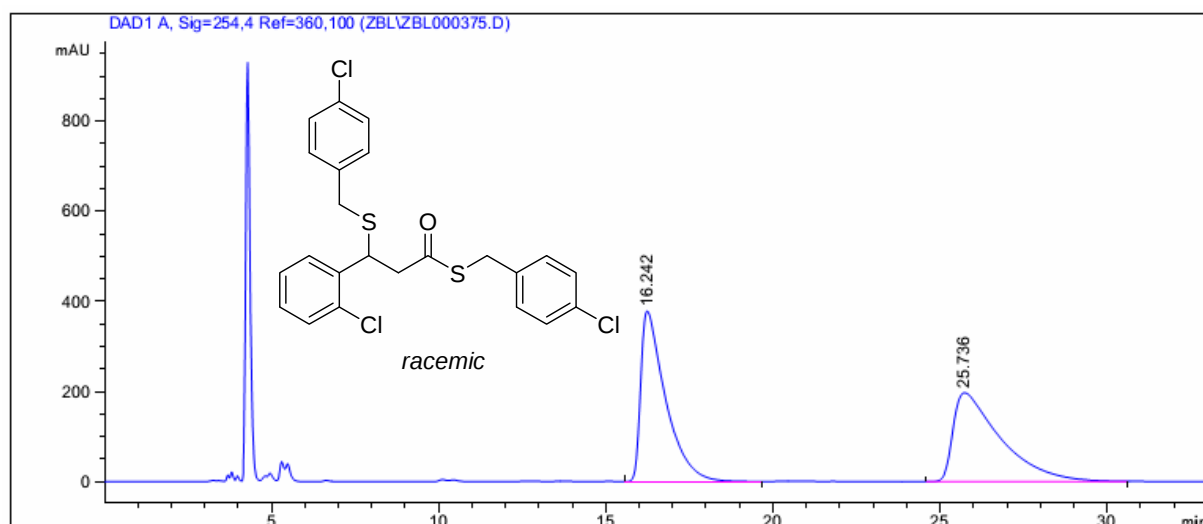
Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	6.821	BB	0.1524	1.24408e4	1247.27295	50.1004
2	7.551	BB S	0.1702	1.23909e4	1145.24878	49.8996



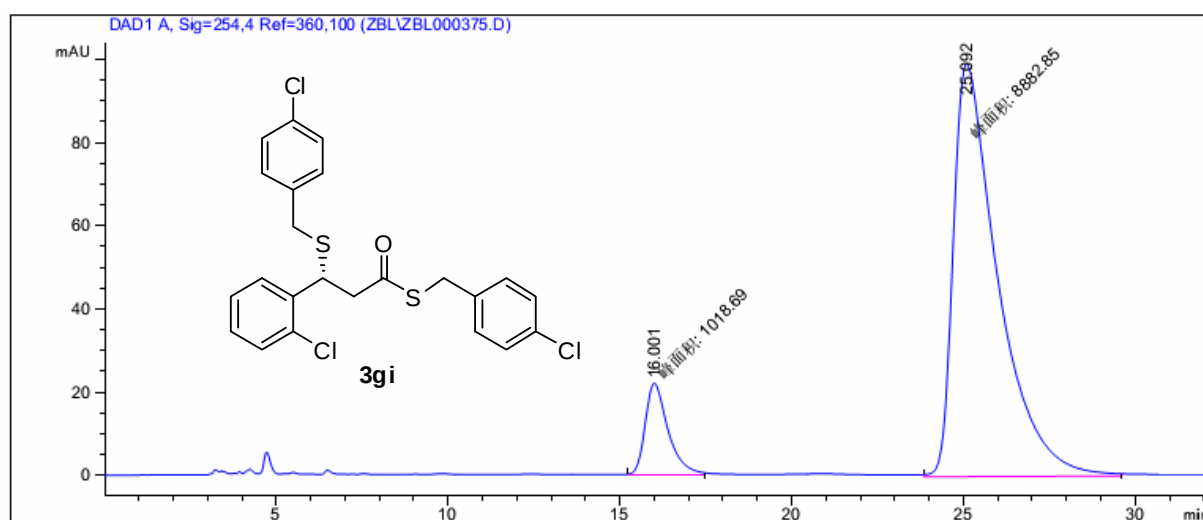
Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	6.836	BB	0.1488	663.03003	68.56863	4.7471
2	7.551	BB S	0.1652	1.33040e4	1240.14868	95.2529



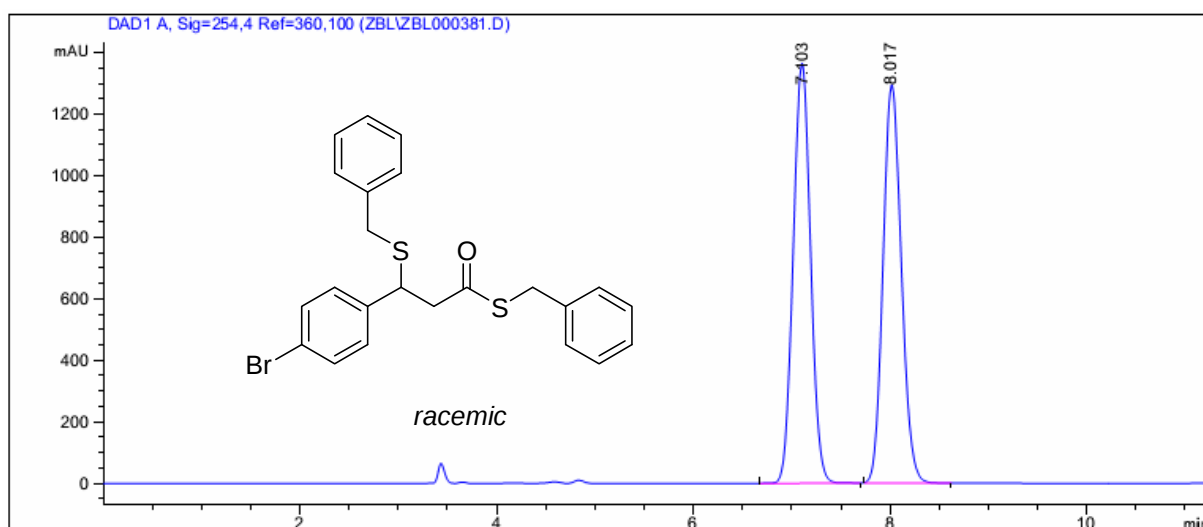




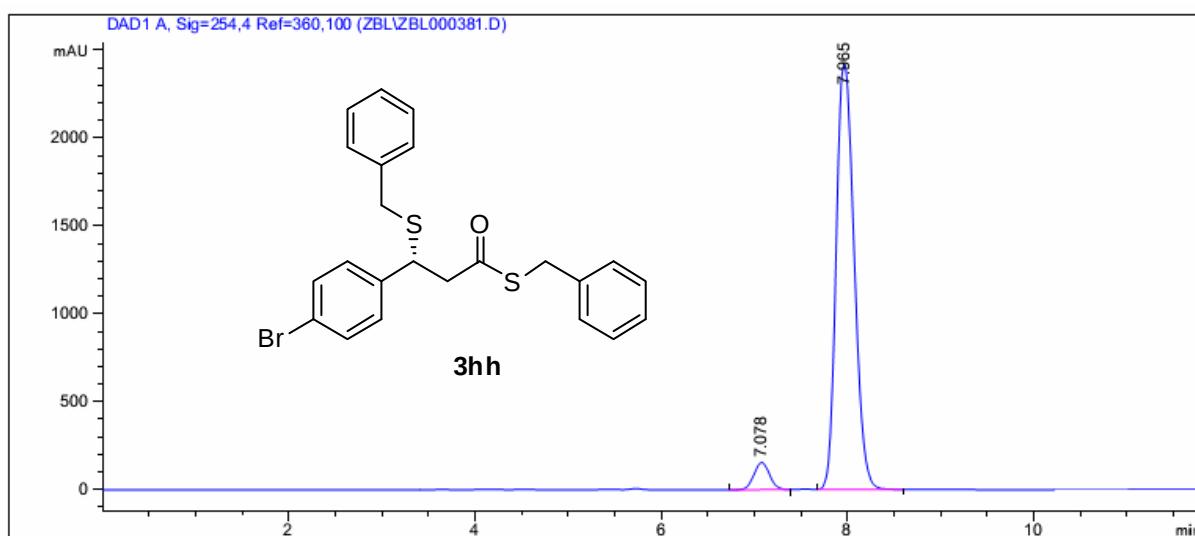
Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	16.242	VB	0.7471	1.95967e4	379.10498	50.1502
2	25.736	BB	1.4024	1.94794e4	197.55315	49.8498



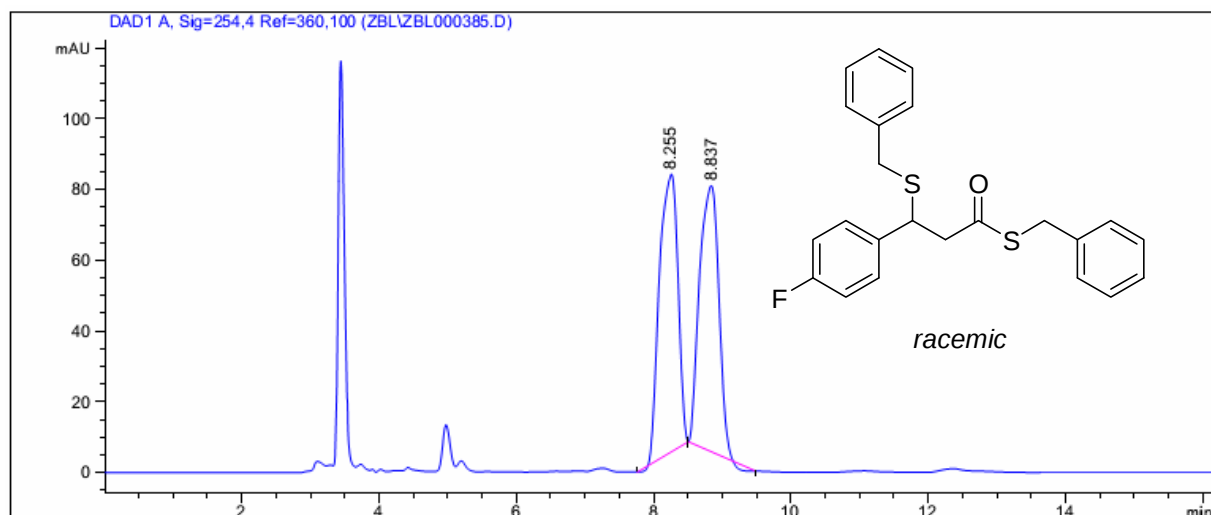
Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	16.001	MM	0.7724	1018.68890	21.98071	10.2882
2	25.092	MM	1.4926	8882.84668	99.18974	89.7118



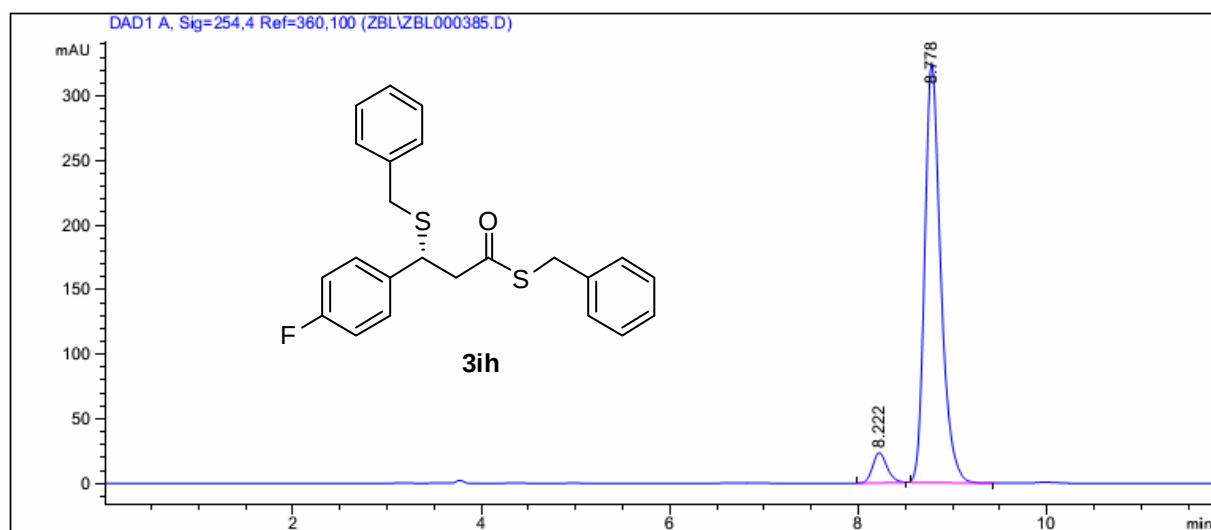
Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	7.103	BB S	0.1909	1.67116e4	1364.36731	50.0269
2	8.017	BB	0.2025	1.66936e4	1293.87708	49.9731



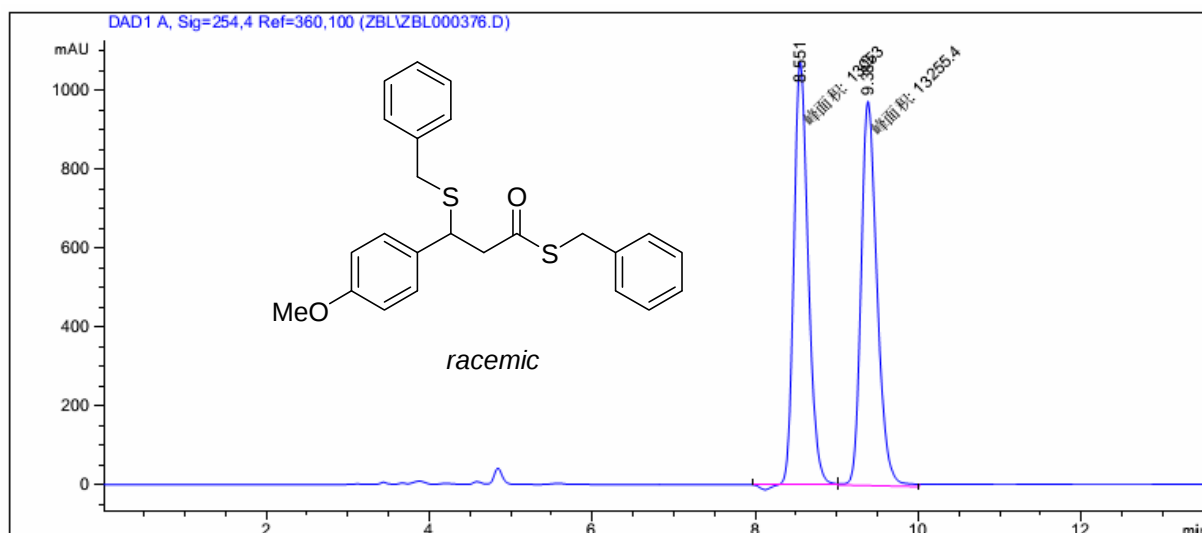
Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	7.078	BB	0.1827	1784.20959	154.57516	5.2155
2	7.965	VB S	0.2122	3.24256e4	2422.23364	94.7845



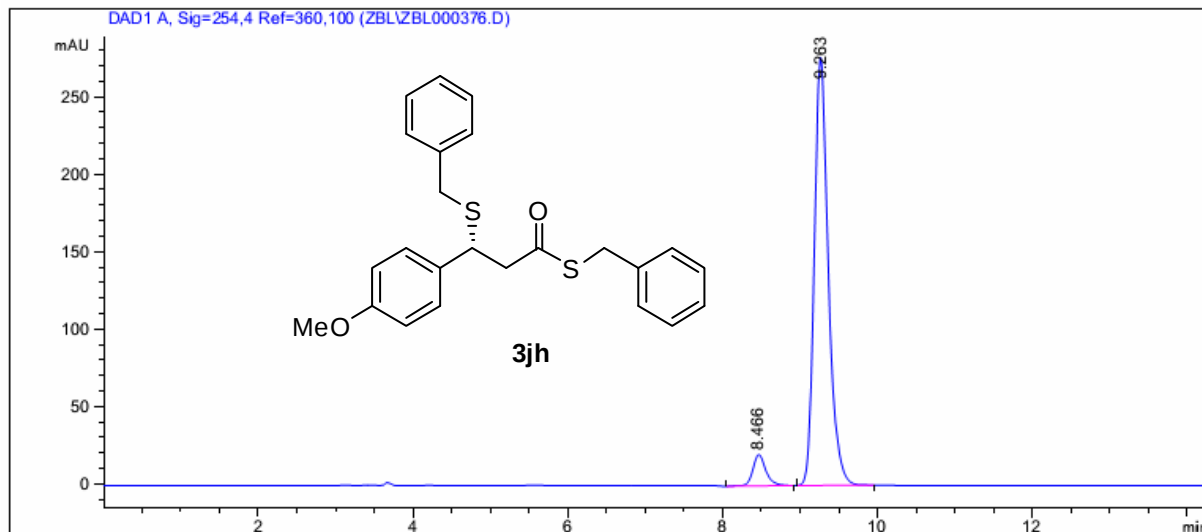
Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	8.255	BB	0.3145	1470.38464	78.50151	50.4878
2	8.837	BB	0.3197	1441.97107	75.20708	49.5122



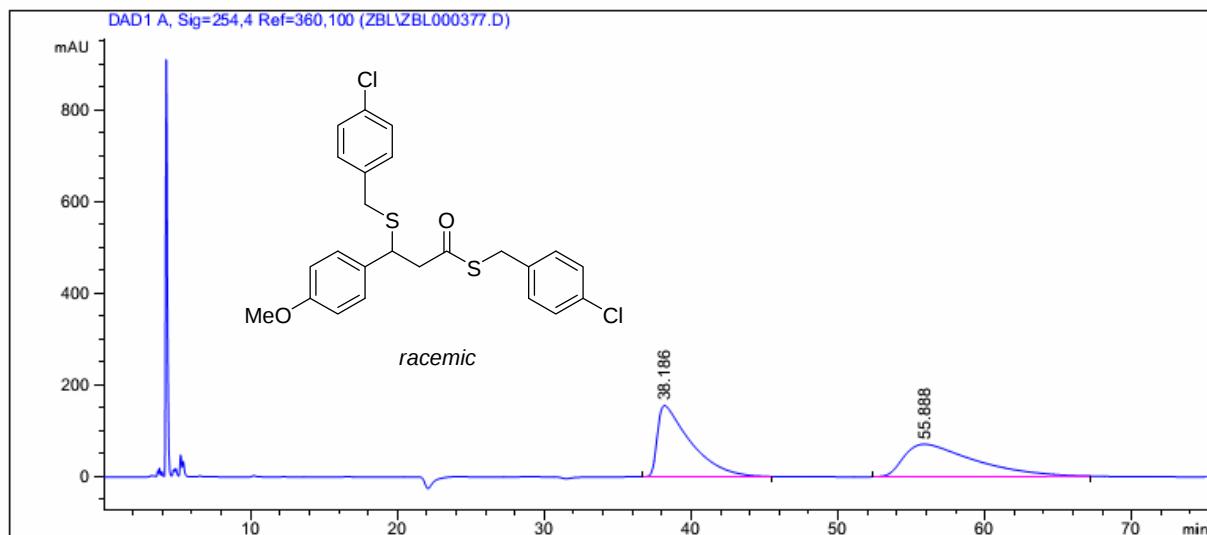
Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	8.222	BB S	0.1594	247.32414	23.37551	6.0752
2	8.778	BB	0.1813	3823.72632	324.85248	93.9248



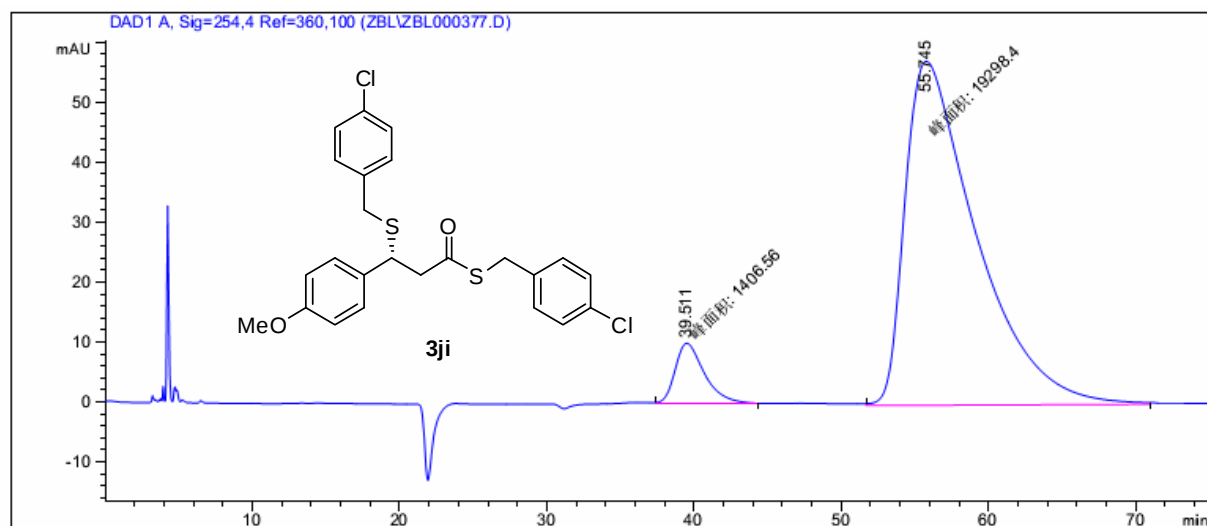
Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	8.551	MM	0.2022	1.30530e4	1076.01233	49.6152
2	9.382	MM	0.2263	1.32554e4	976.30884	50.3848



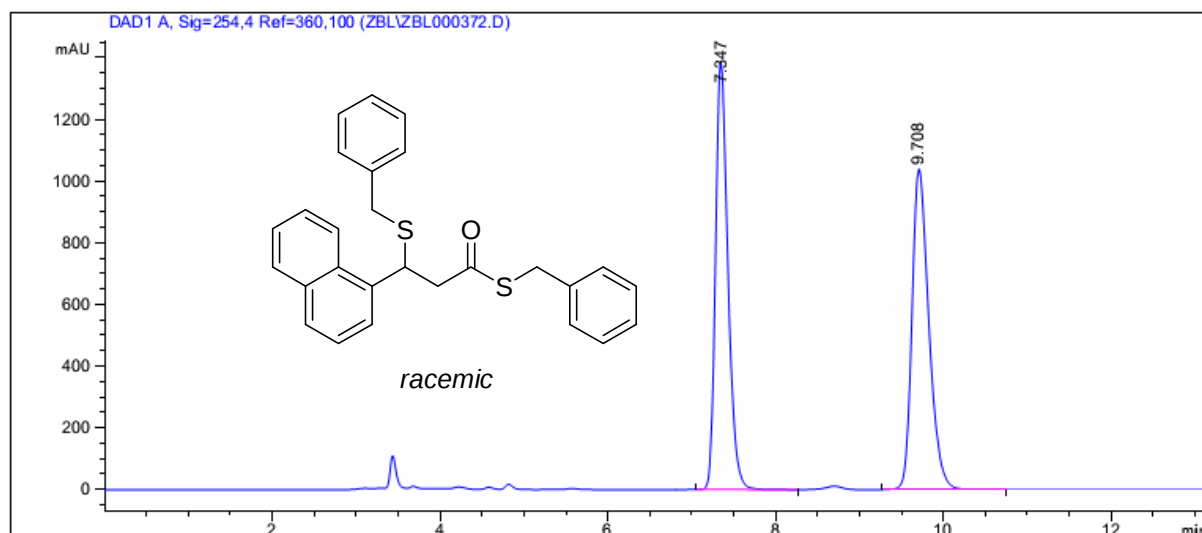
Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	8.466	BB S	0.1760	235.06569	20.17205	6.3851
2	9.263	BB S	0.1897	3446.40161	276.01587	93.6149



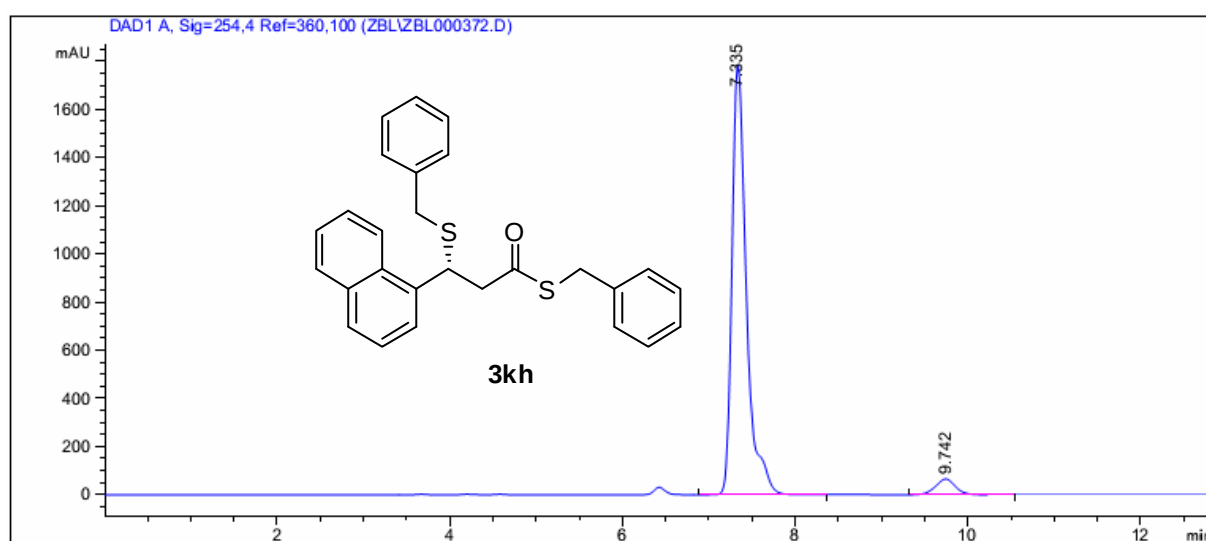
Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	38.186	BB	2.1965	2.43789e4	155.20544	50.6284
2	55.888	BB	4.4897	2.37737e4	71.01384	49.3716



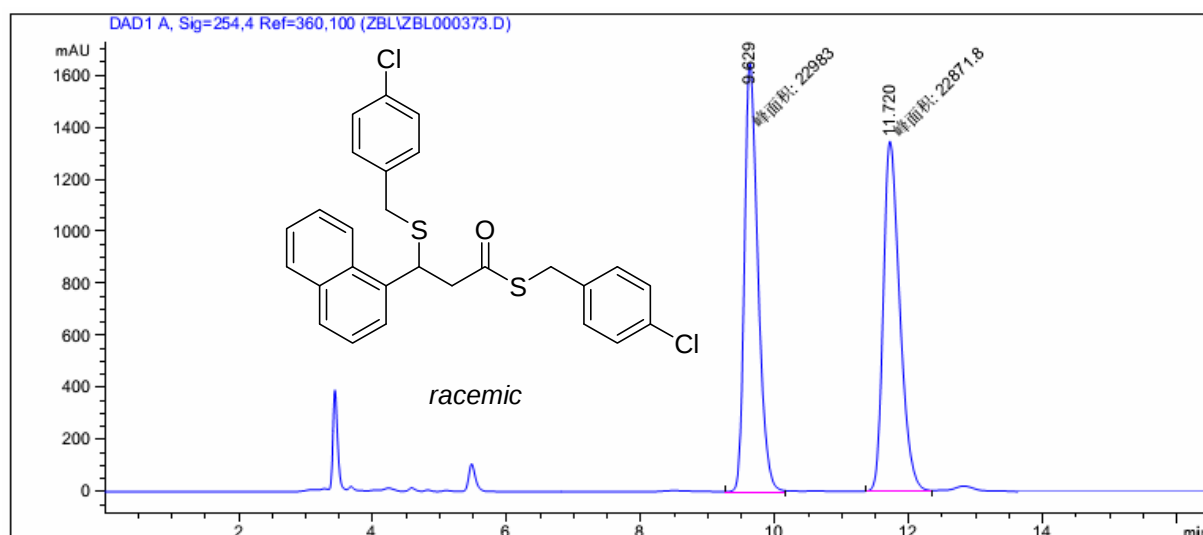
Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	39.511	MM	2.3230	1406.55579	10.09136	6.7933
2	55.745	MM	5.6086	1.92984e4	57.34756	93.2067



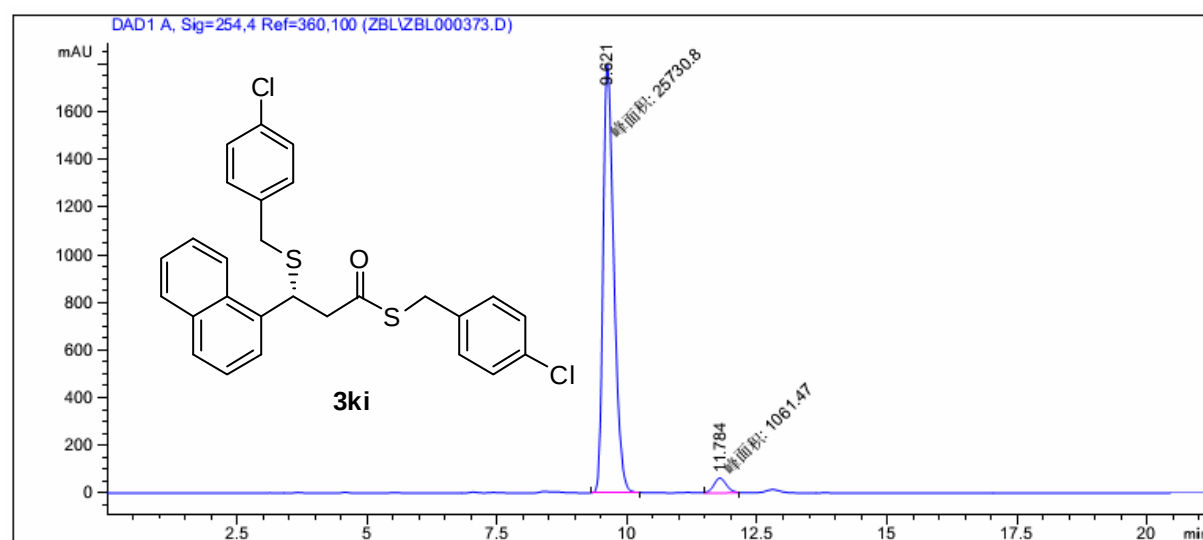
Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	7.347	BB S	0.1552	1.41427e4	1383.71118	49.5108
2	9.708	BB S	0.2141	1.44222e4	1038.18567	50.4892



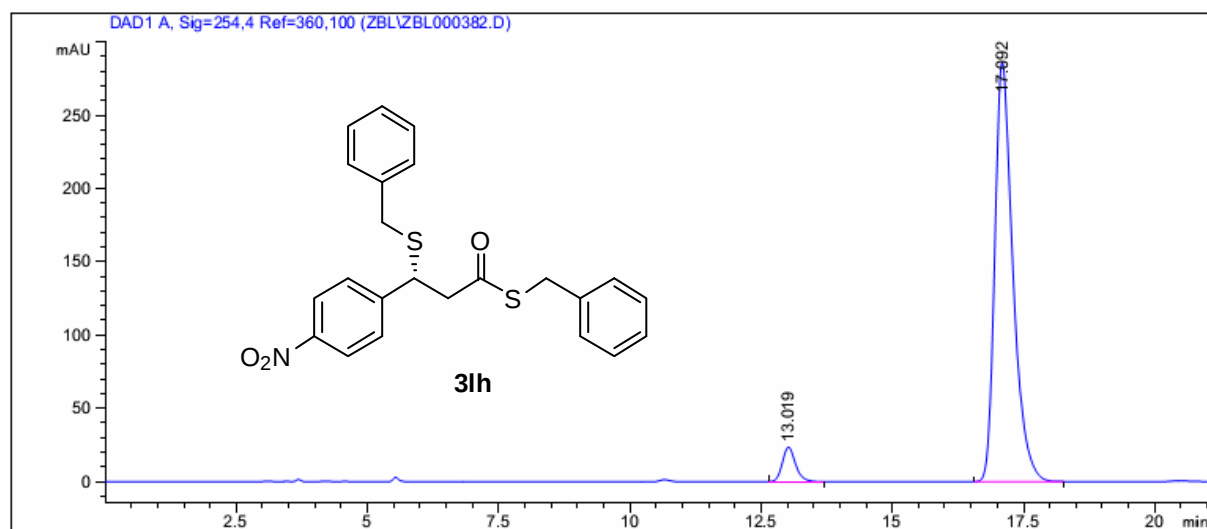
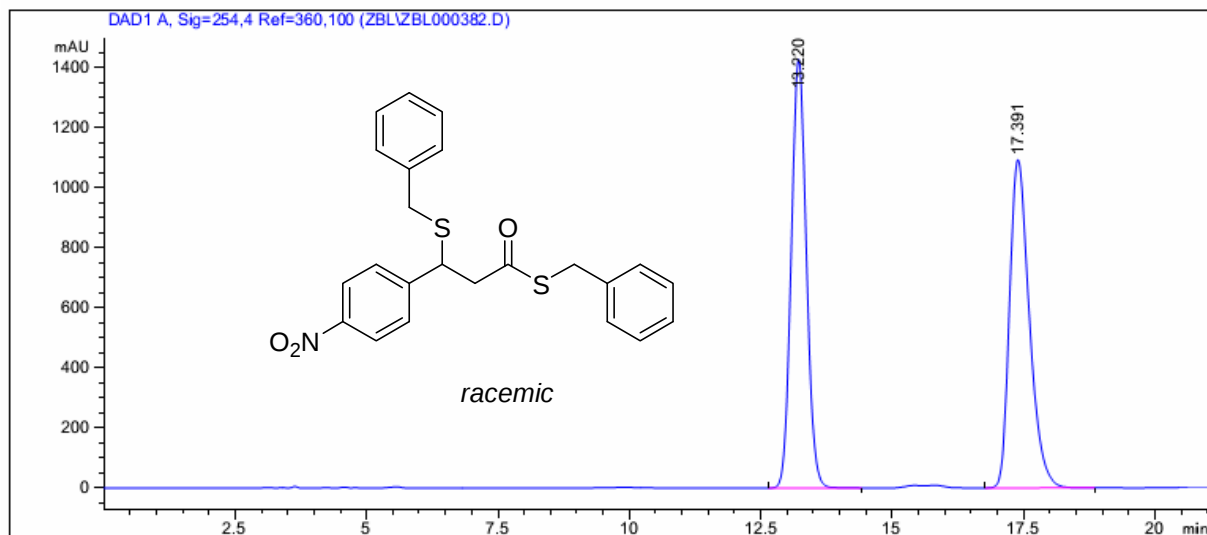
Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	7.335	BB S	0.1752	2.06373e4	1780.83301	95.1814
2	9.742	BB S	0.2410	1044.78210	65.88487	4.8186

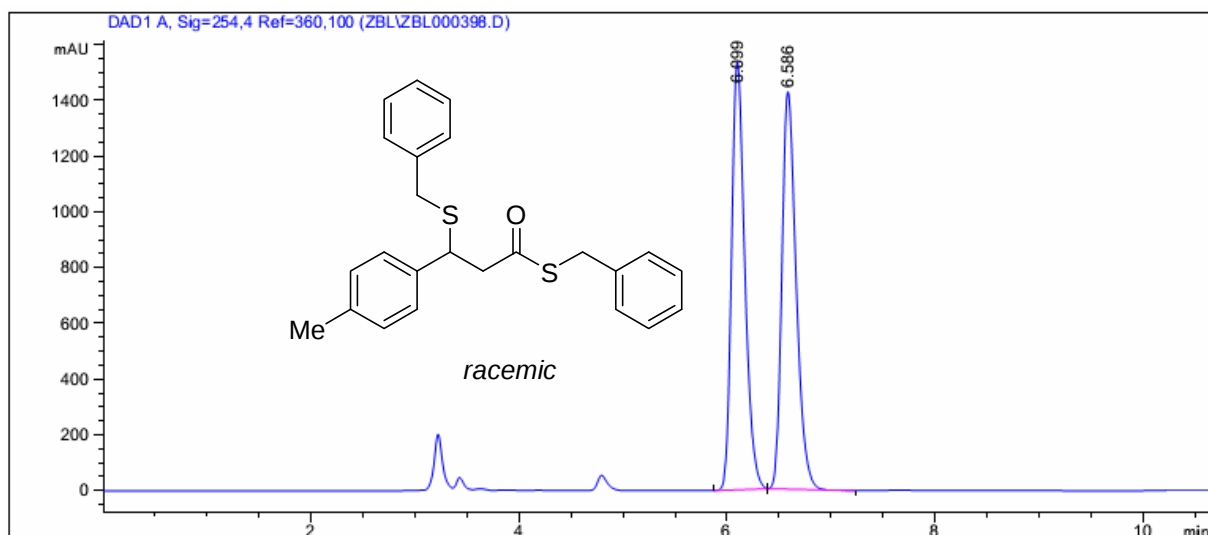


Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	9.629	MM	0.2321	2.29830e4	1650.26807	50.1213
2	11.720	MM	0.2834	2.28718e4	1345.26025	49.8787

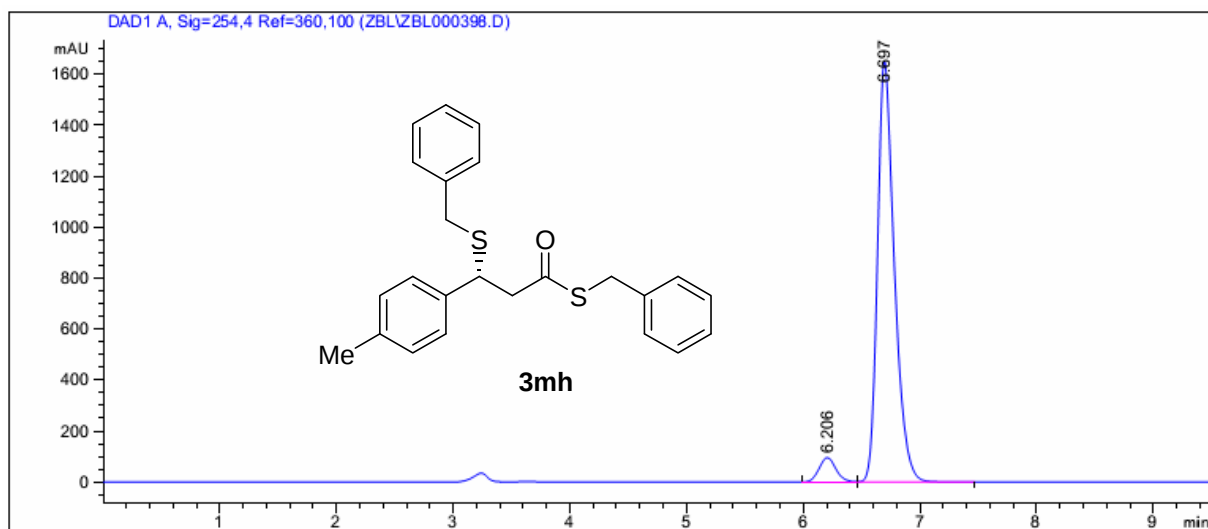


Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	9.621	MM	0.2382	2.57308e4	1800.60999	96.0381
2	11.784	MM	0.2800	1061.46936	63.18257	3.9619





Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	6.099	BB	0.1349	1.35364e4	1535.14050	49.9730
2	6.586	BB	0.1471	1.35510e4	1423.00781	50.0270



Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	6.206	BB	0.1552	941.84204	95.35658	5.4082
2	6.697	BB	0.1526	1.64732e4	1648.27136	94.5918