

# Supporting Information

## Study on the Substituent Effects of Norbornadiene Derivatives in Iridium-Catalyzed Asymmetric [2+2] Cycloaddition Reactions

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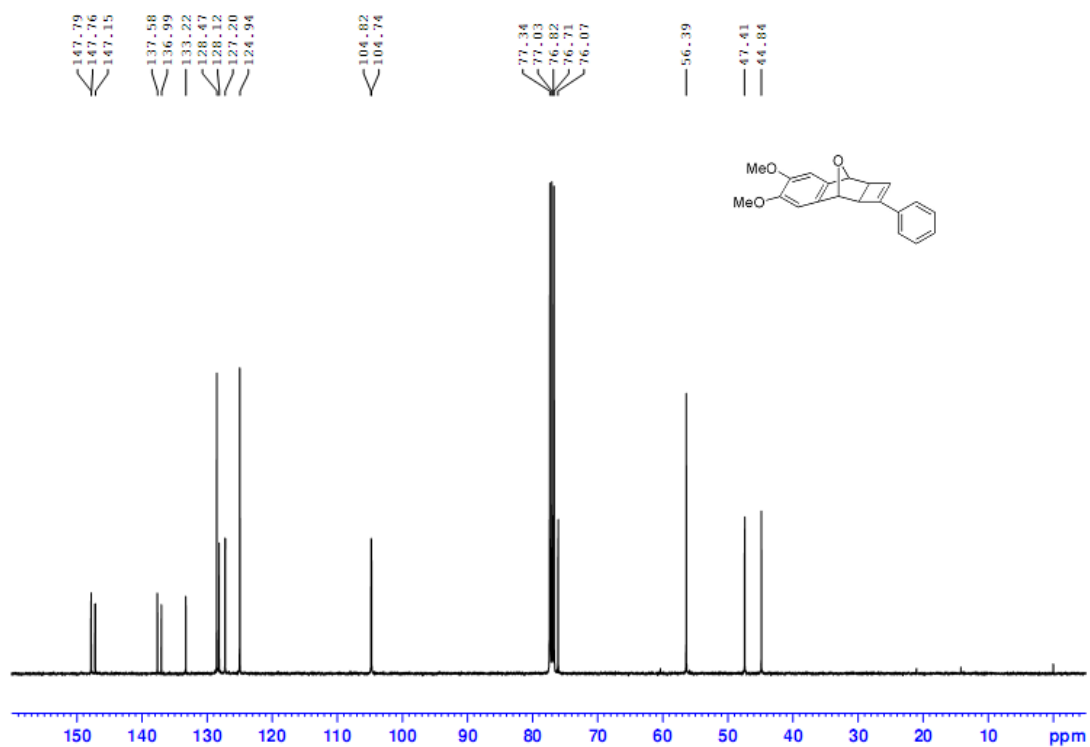
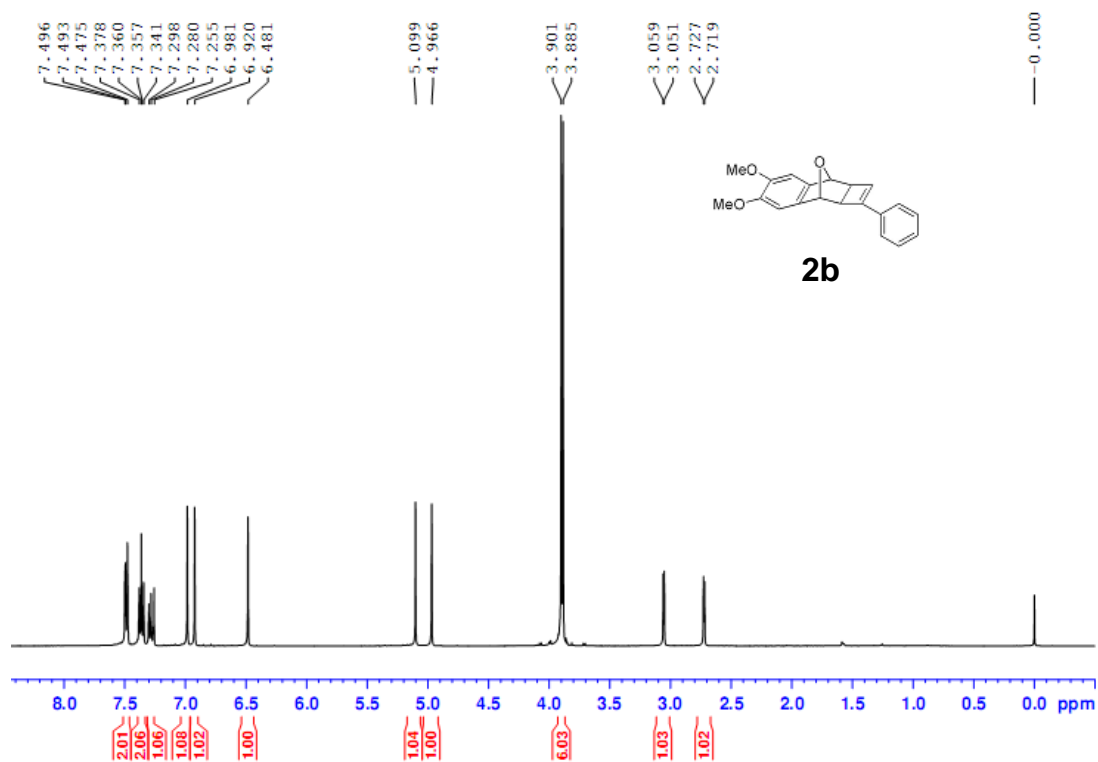
Key Laboratory of Chemistry in Ethnic Medicinal Resources, State Ethnic Affairs Commission & Ministry of Education, Yunnan University of Nationalities, Kunming, 650500, China

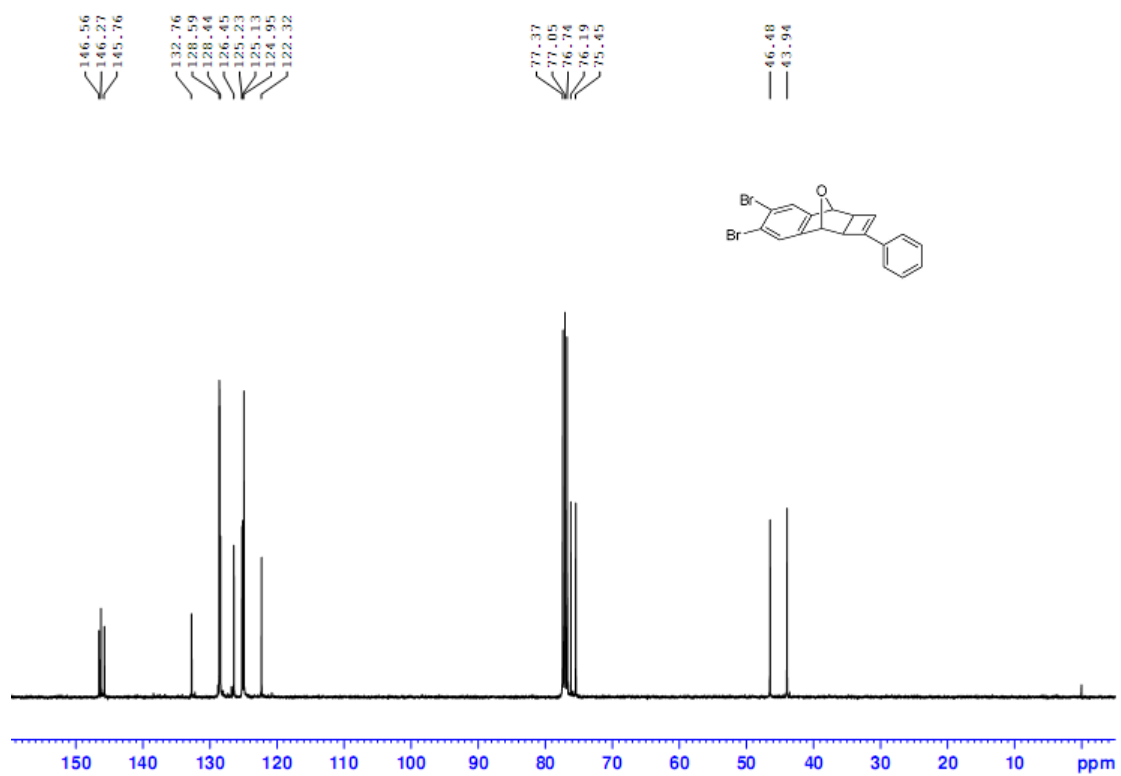
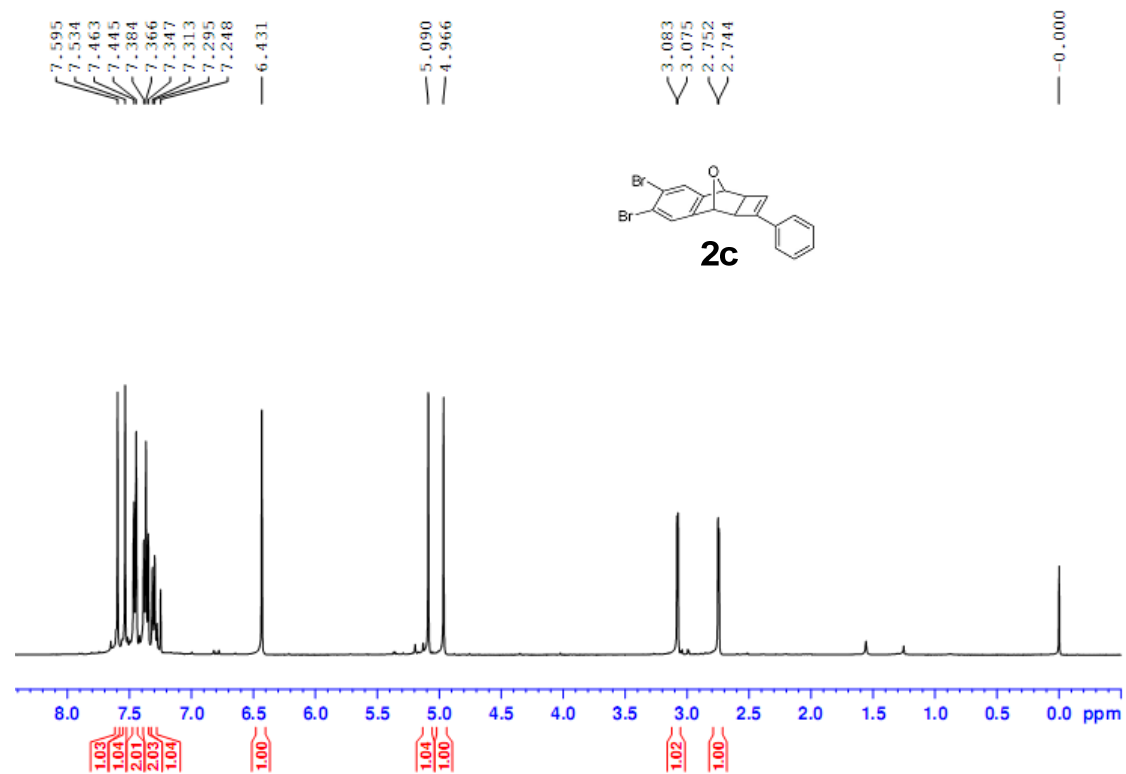
<sup>†</sup> These two authors contributed equally to this paper

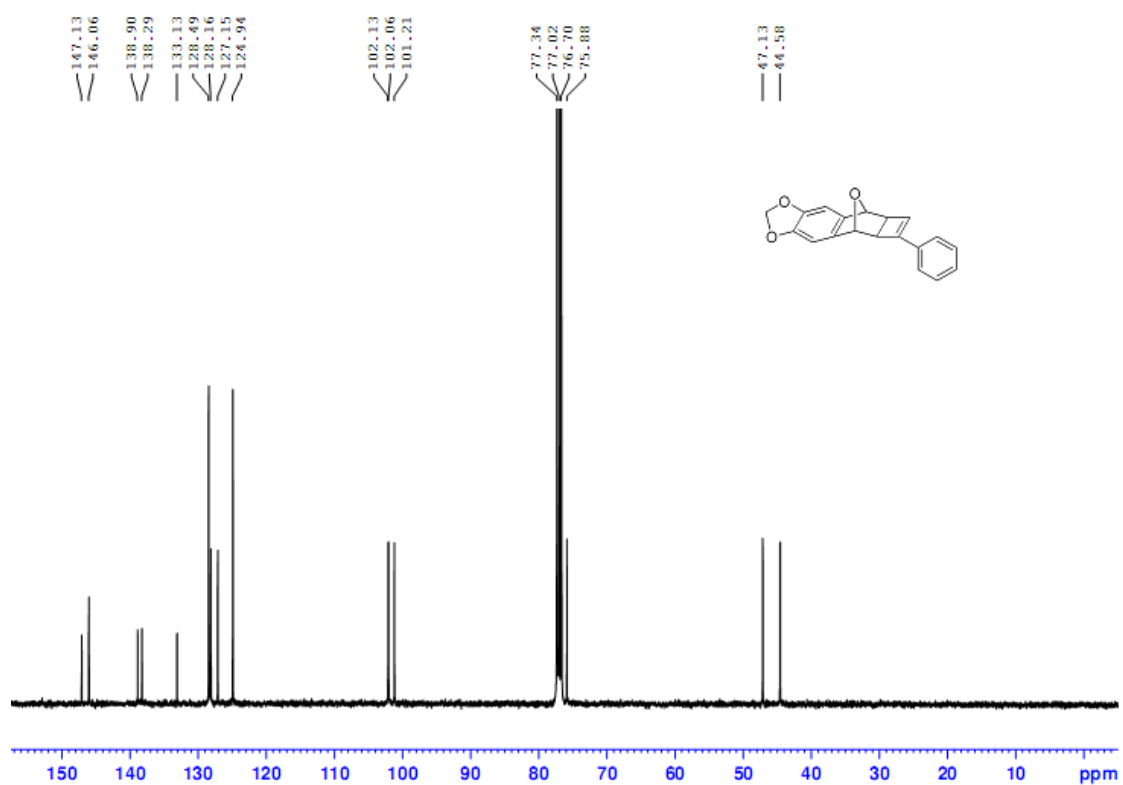
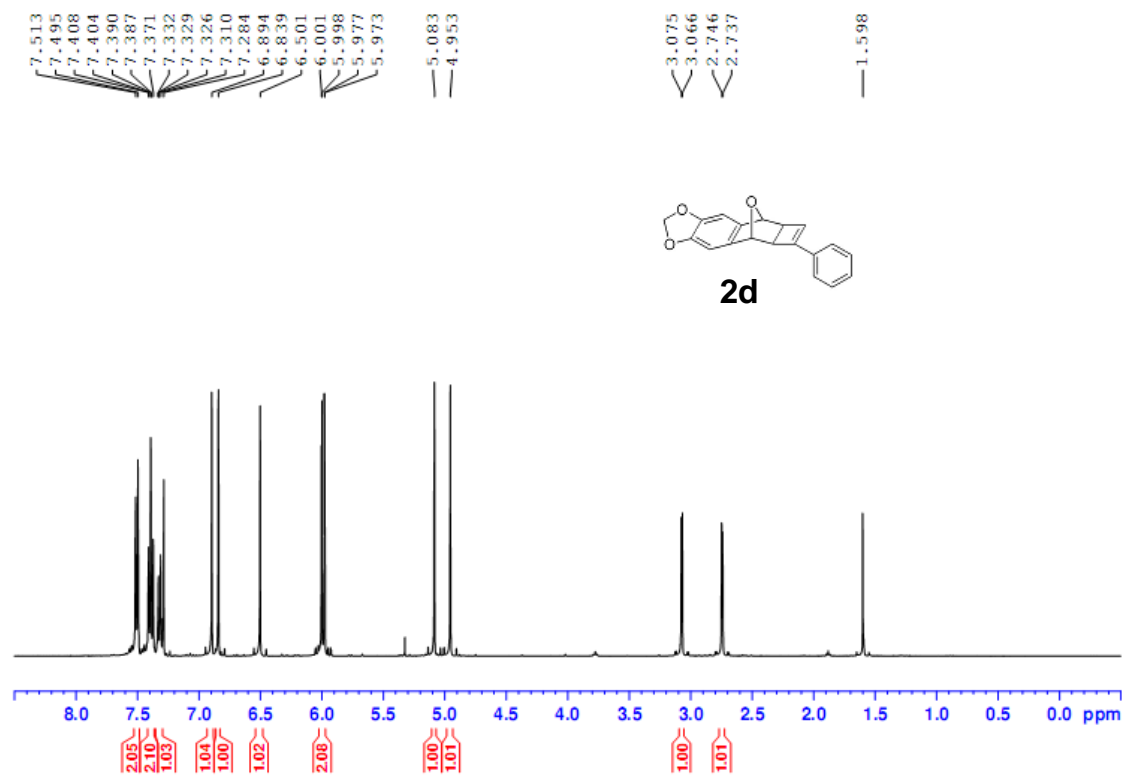
Fax: (+86)-871-5910017, E-mail: [adams.bmf@hotmail.com](mailto:adams.bmf@hotmail.com)

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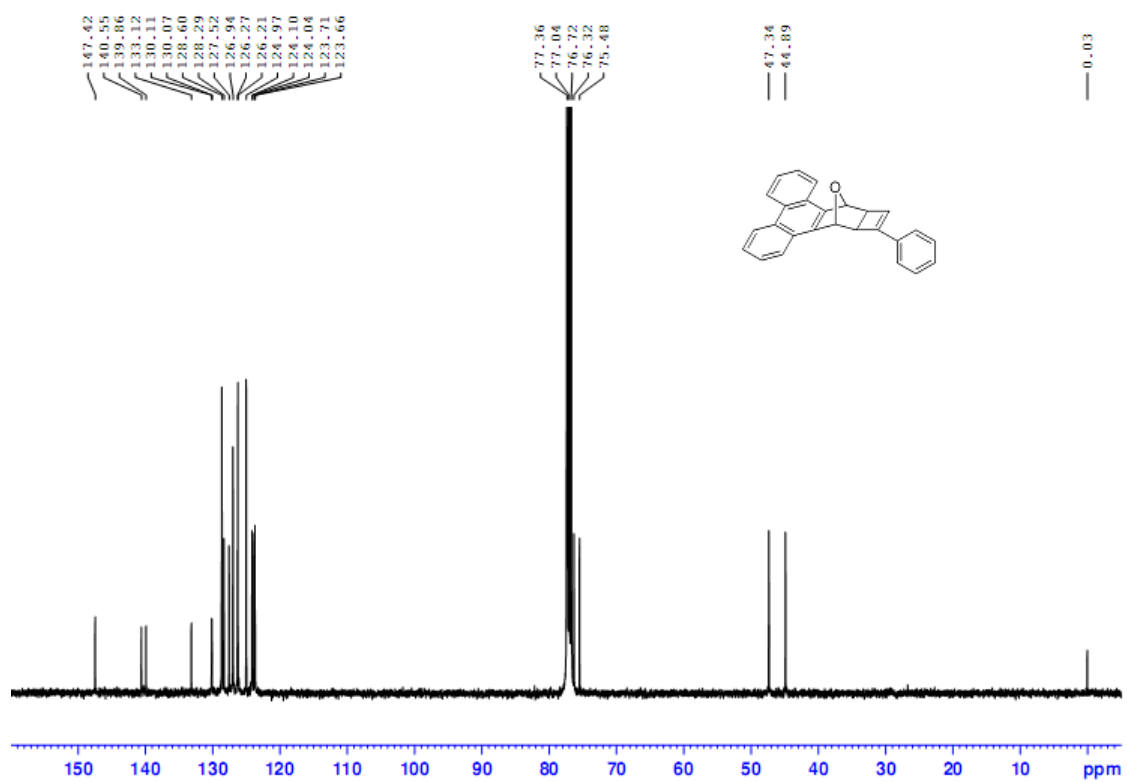
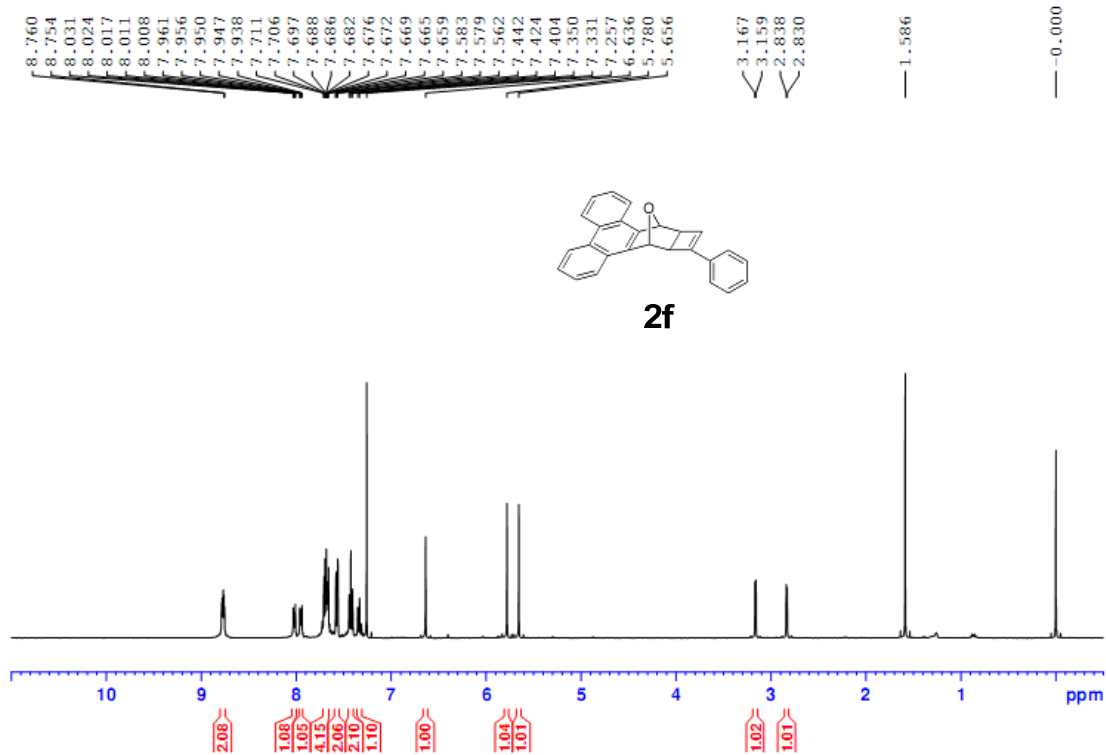
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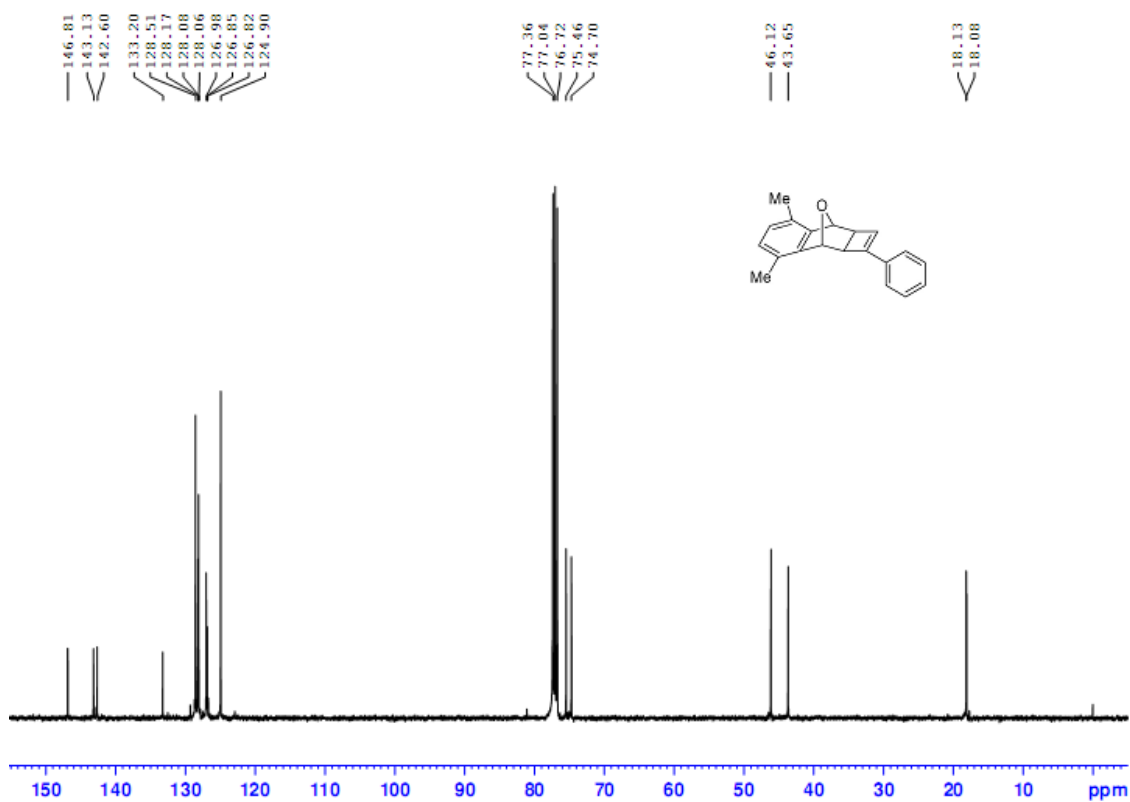
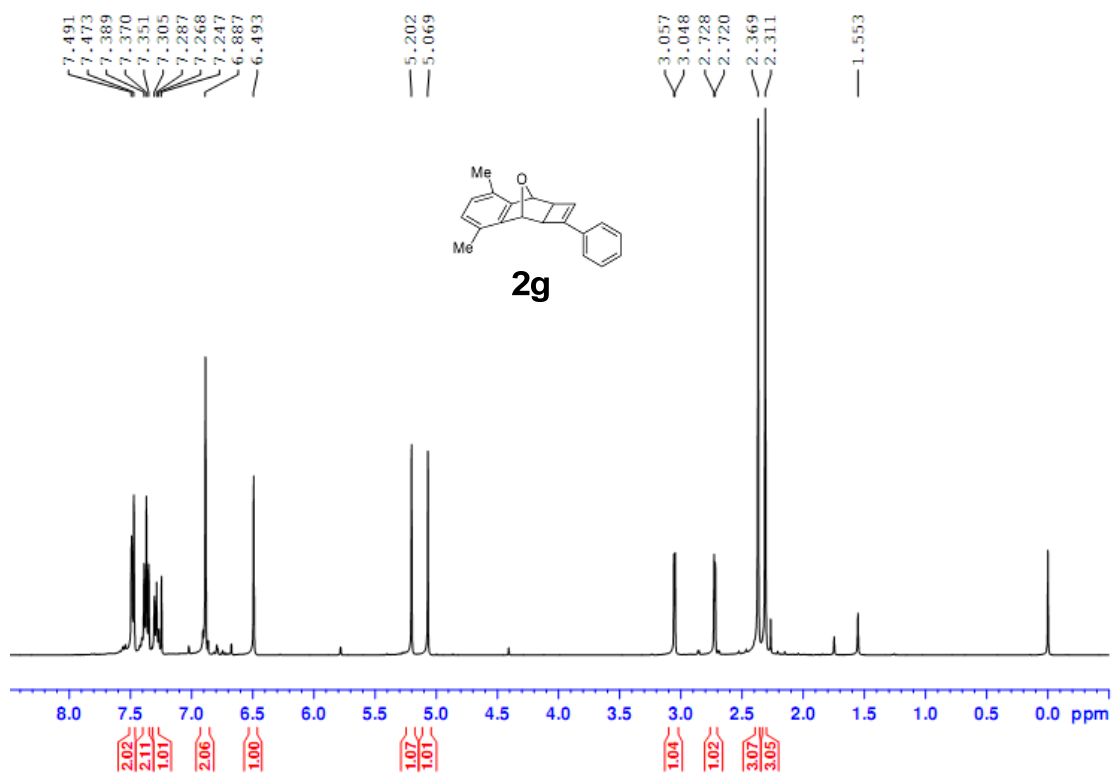


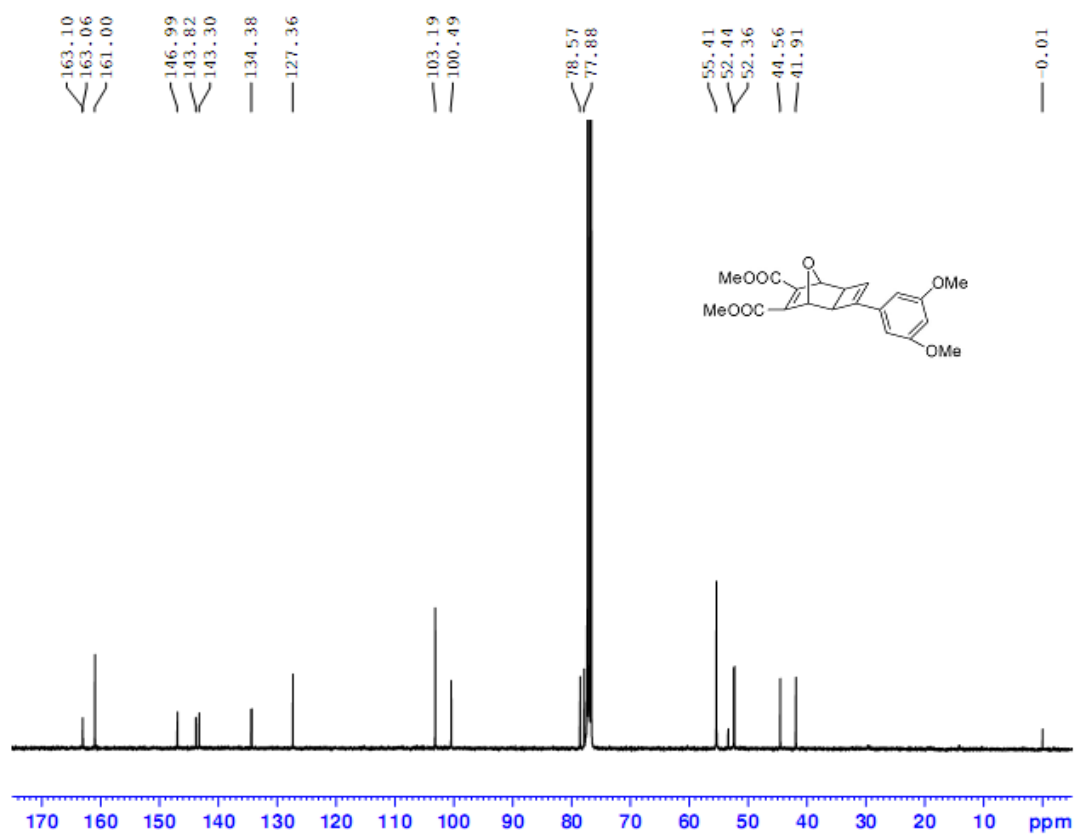
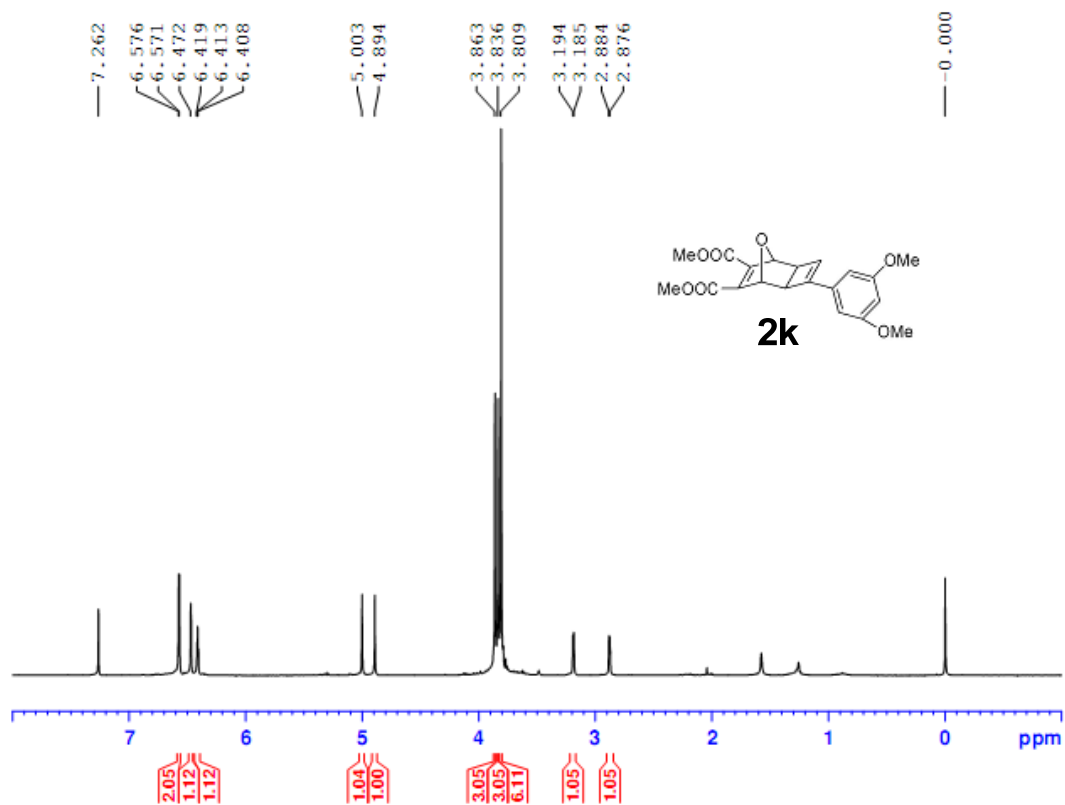




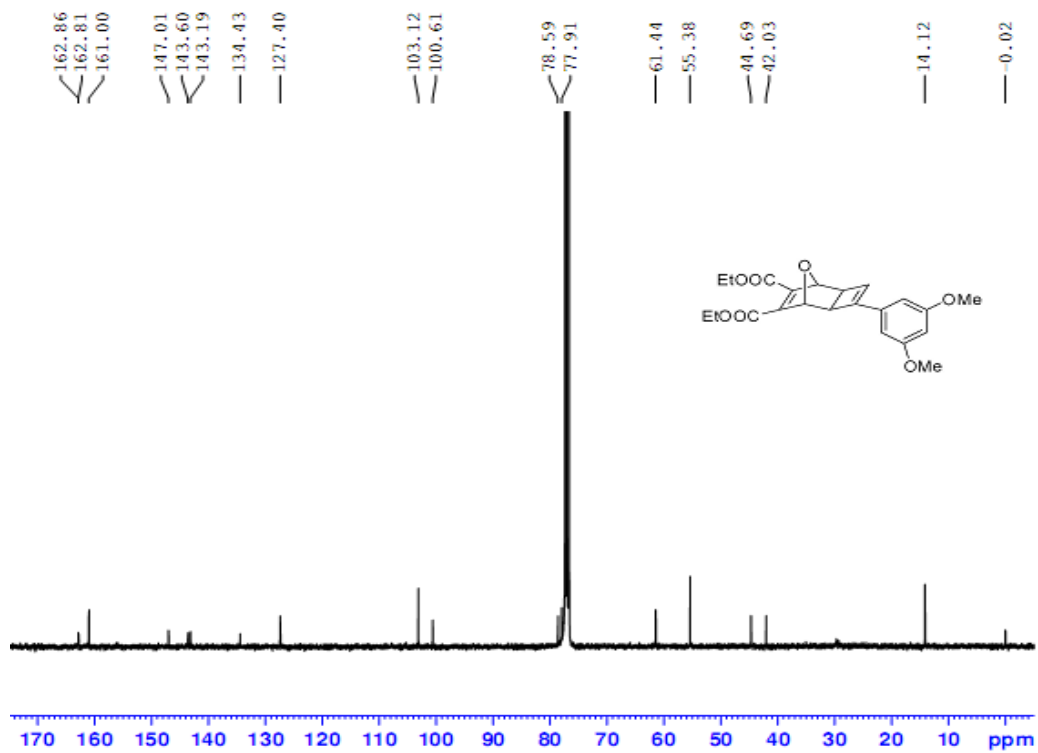
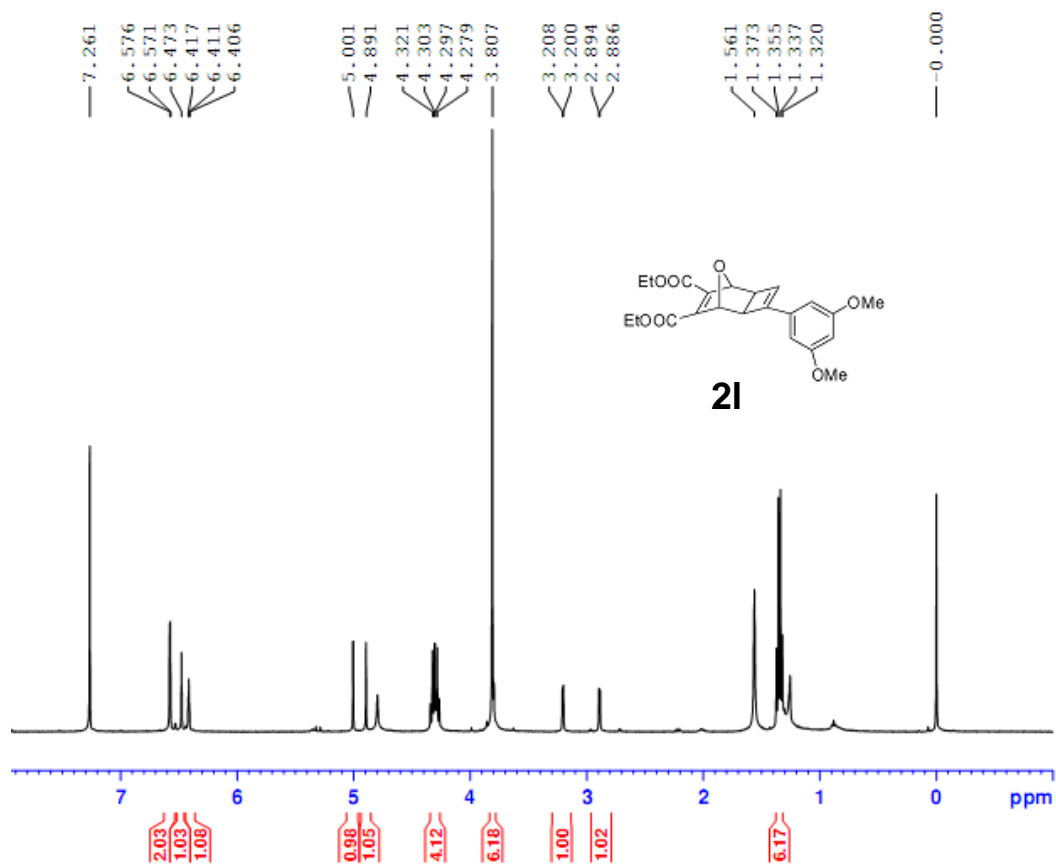


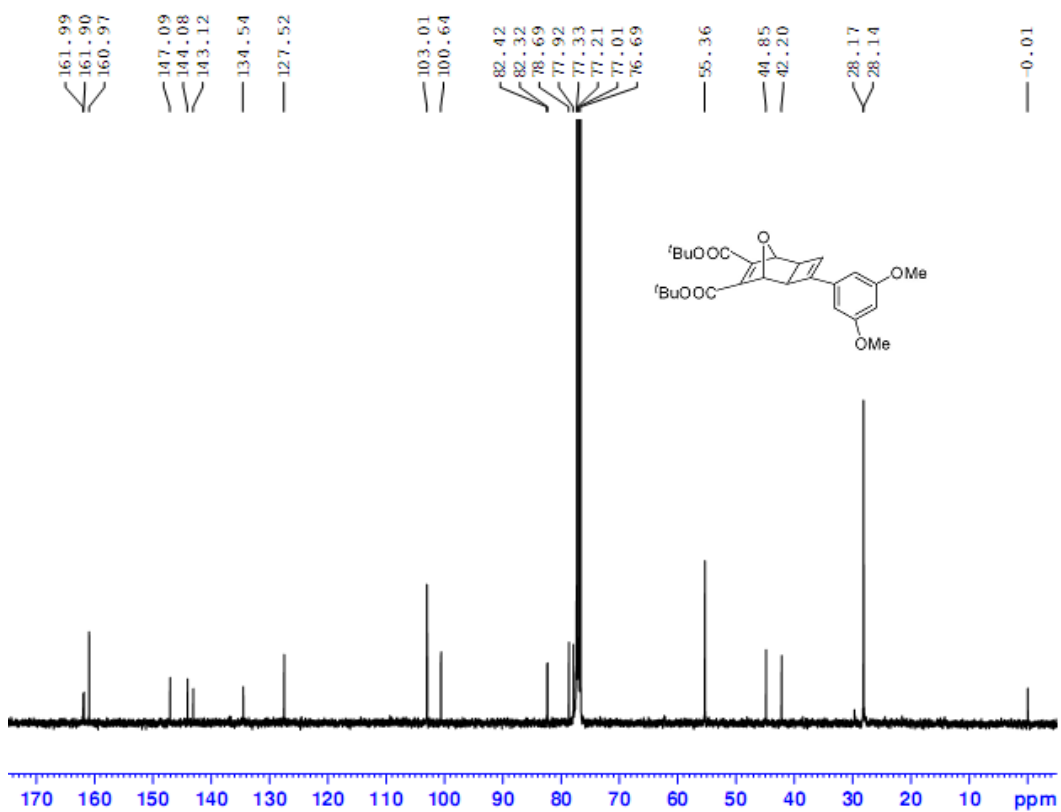
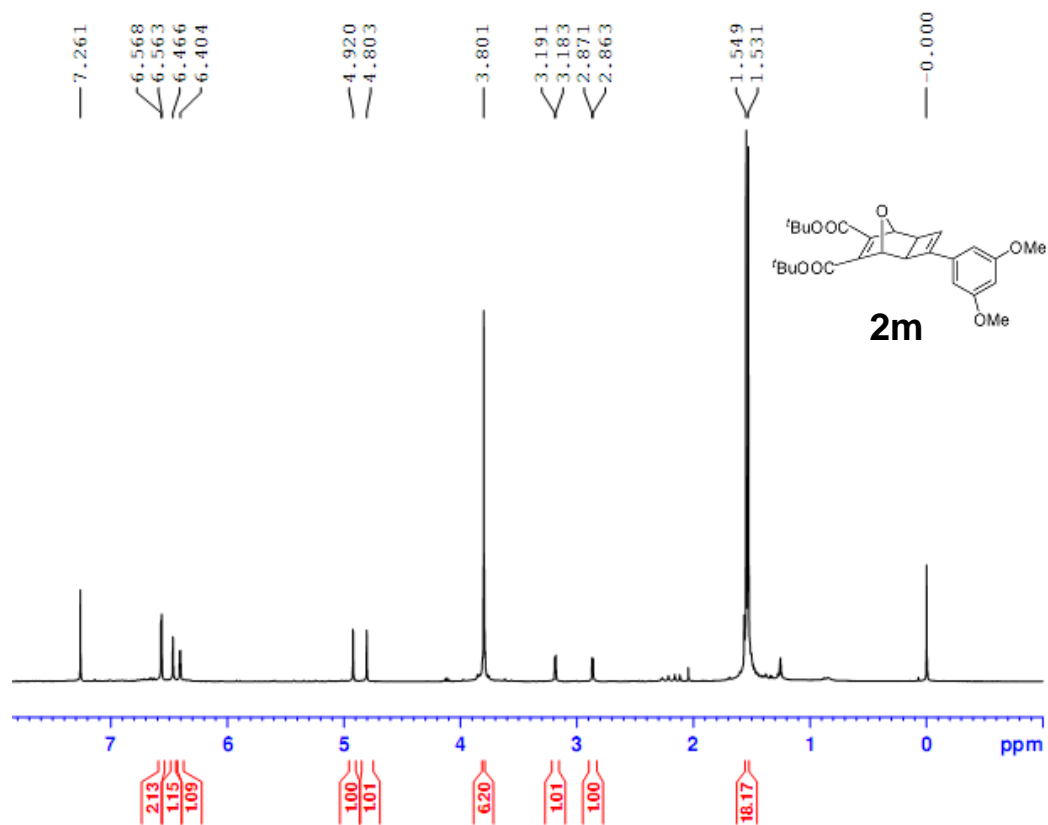


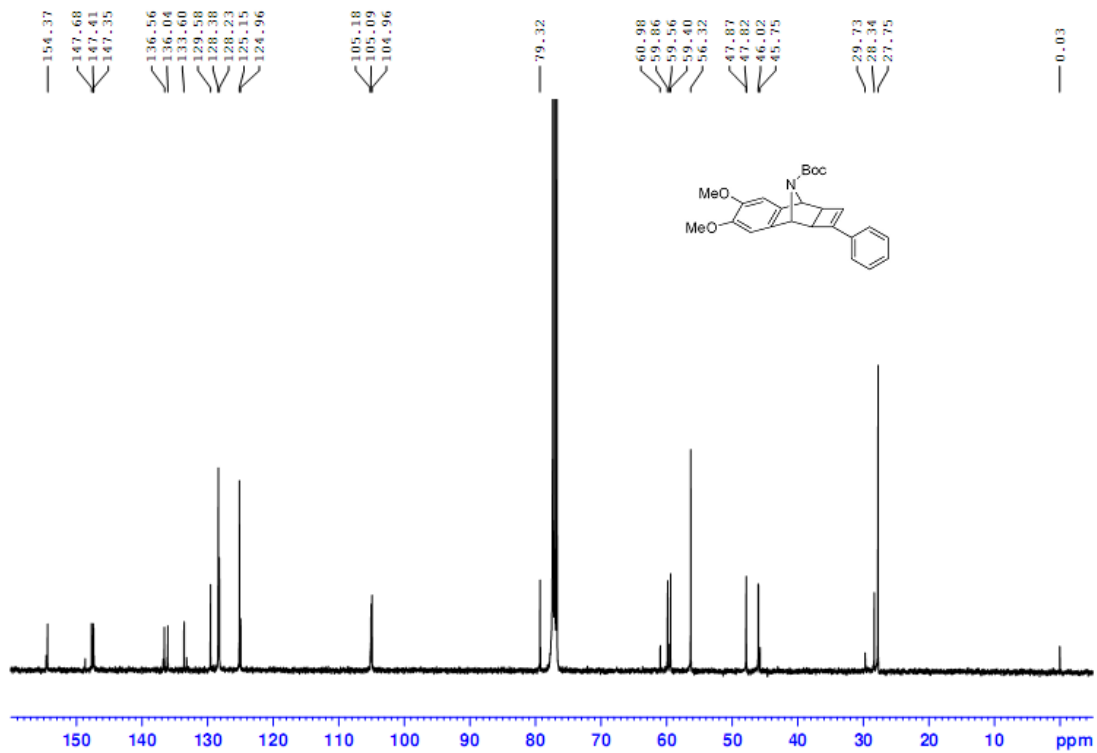
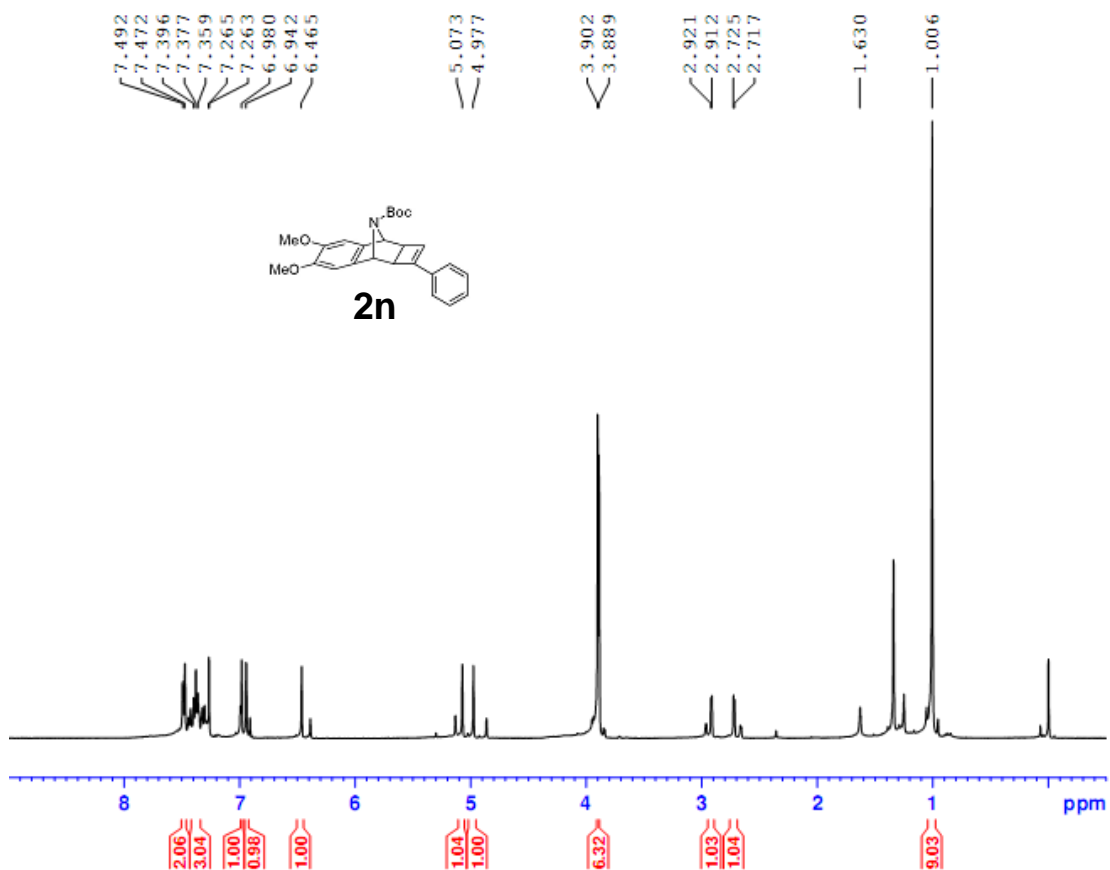


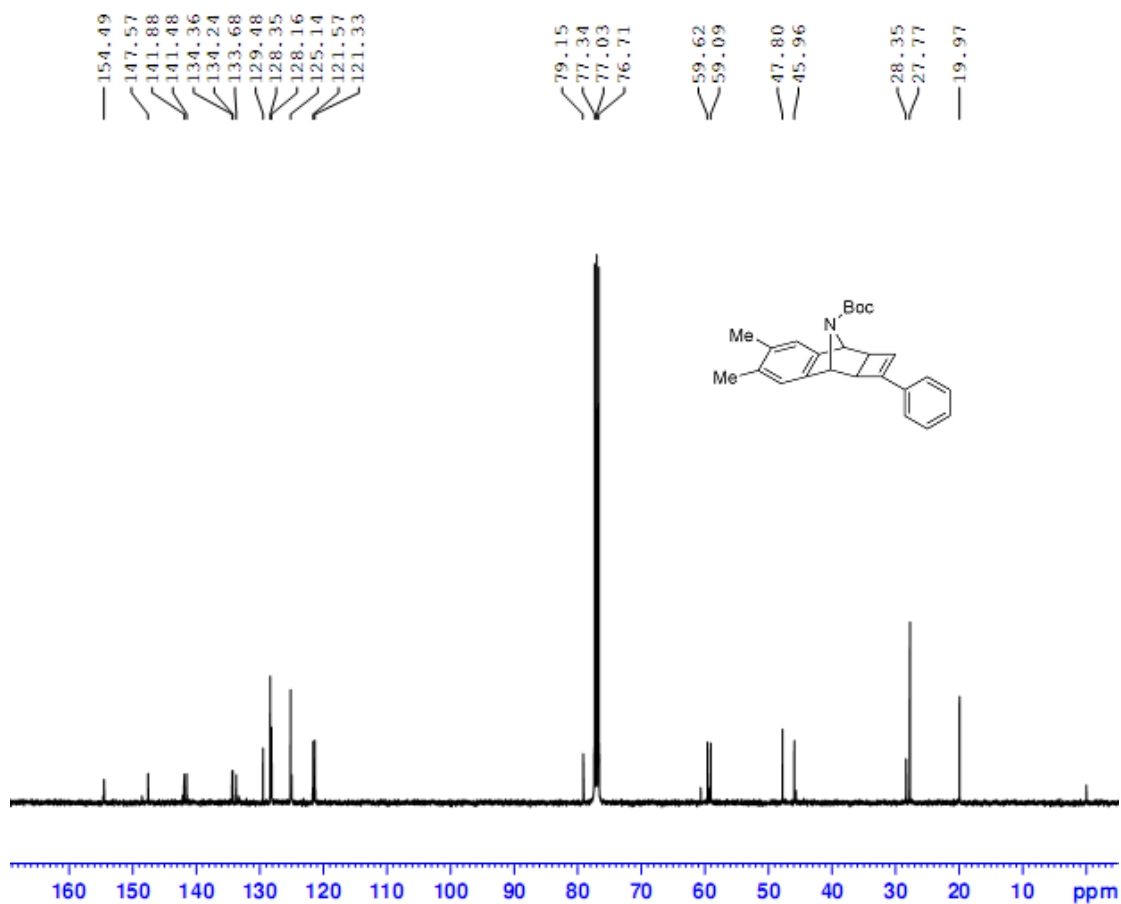
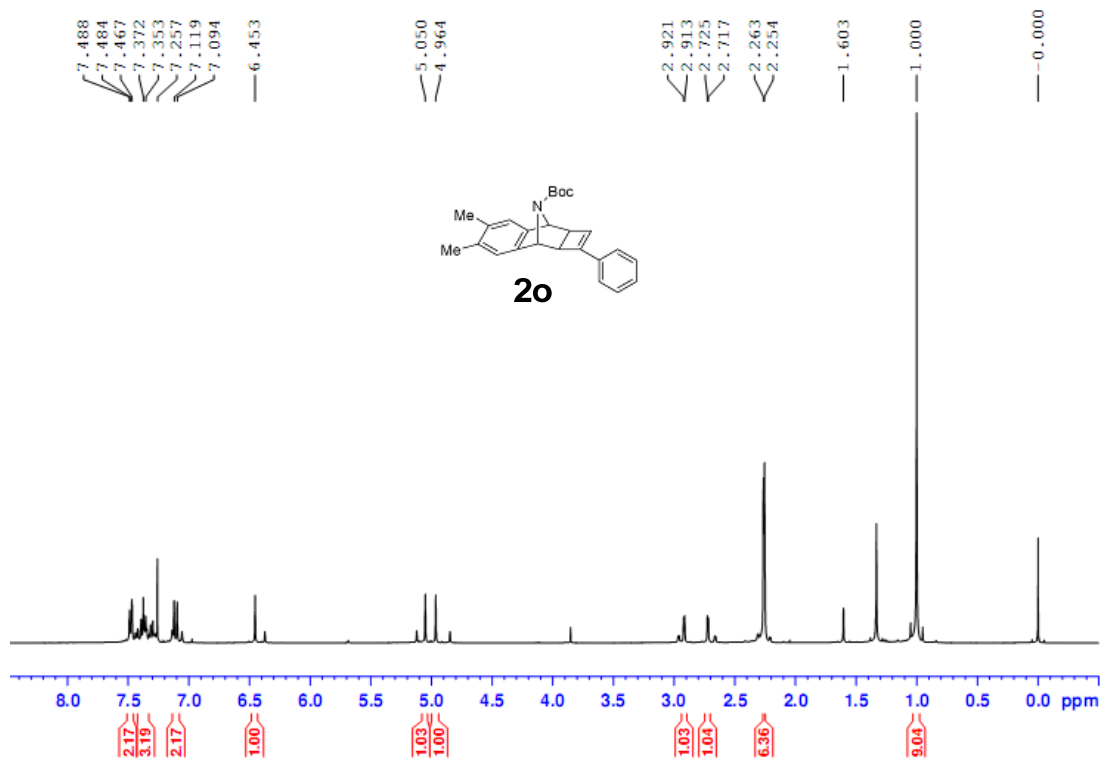


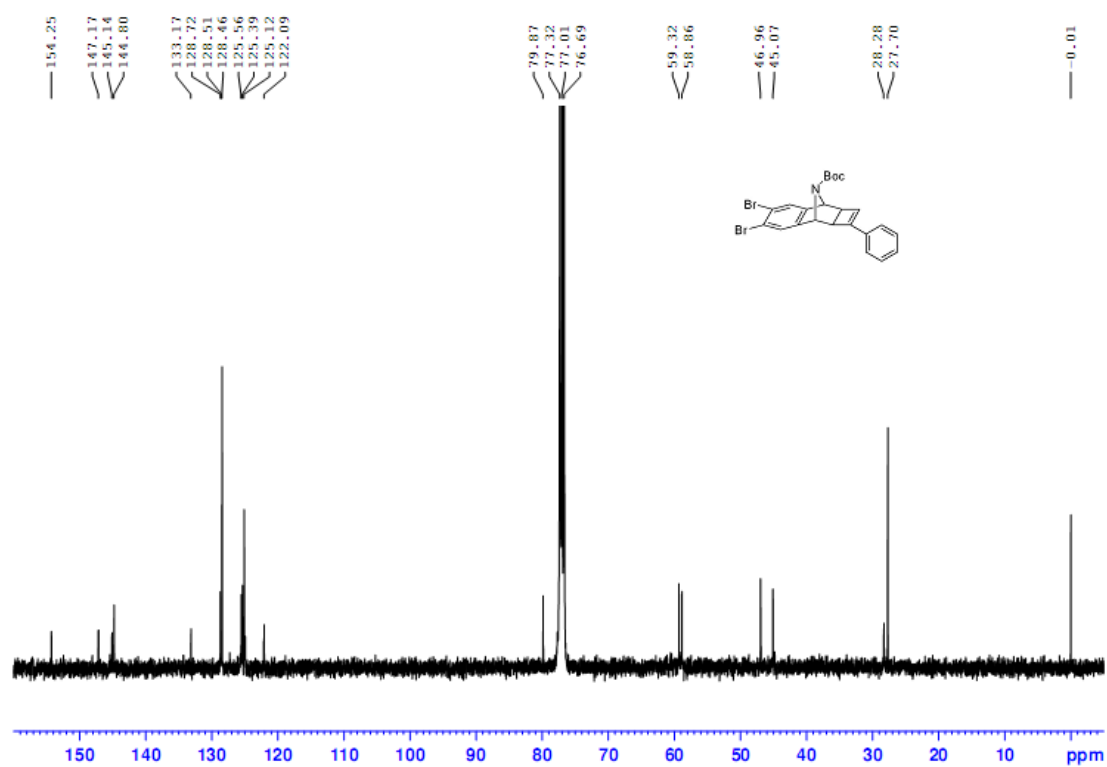
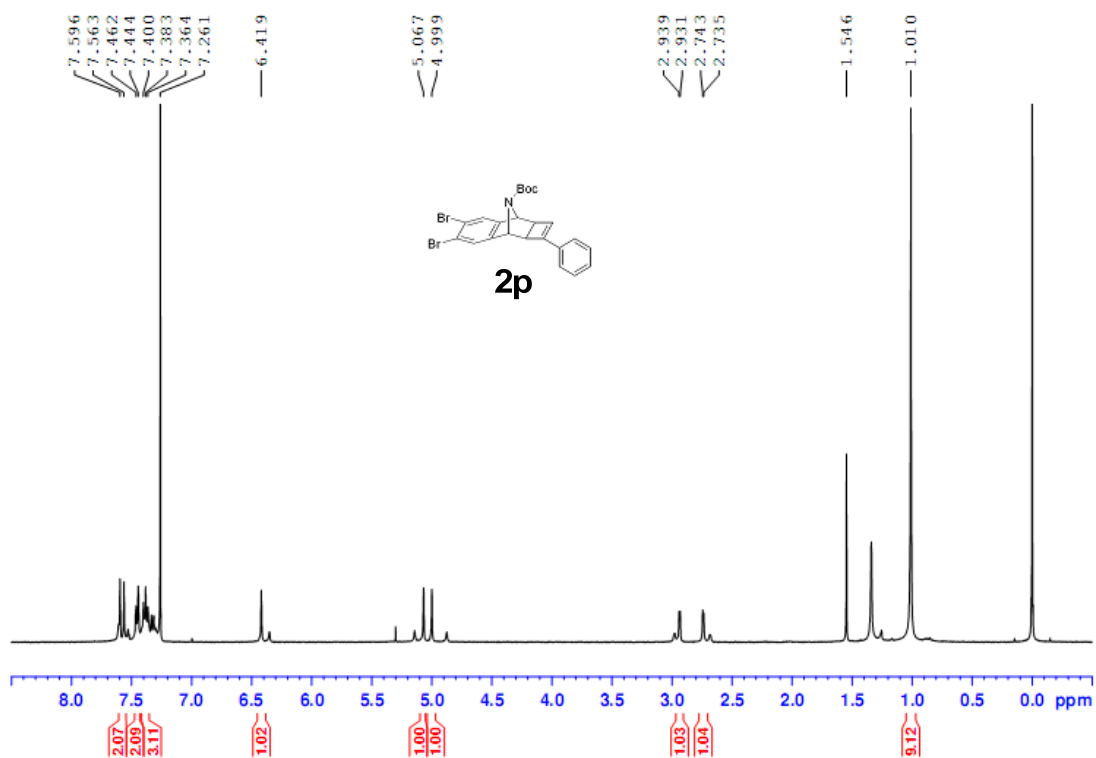


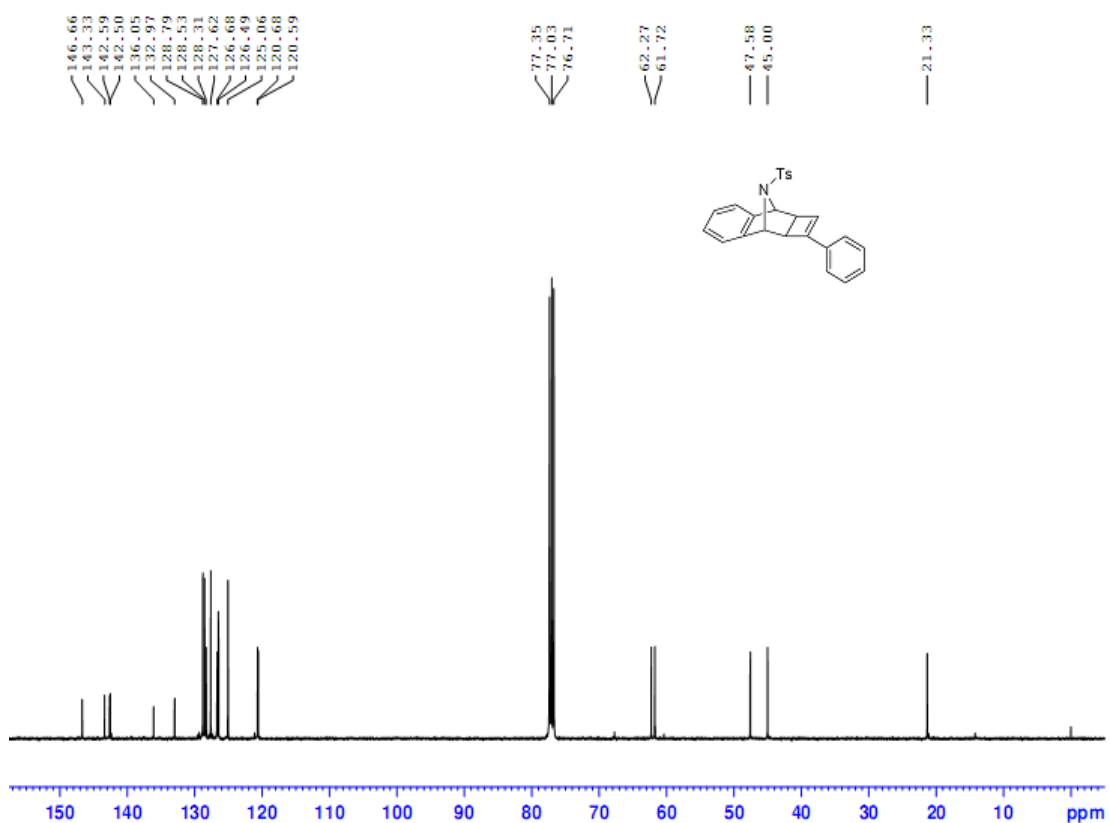
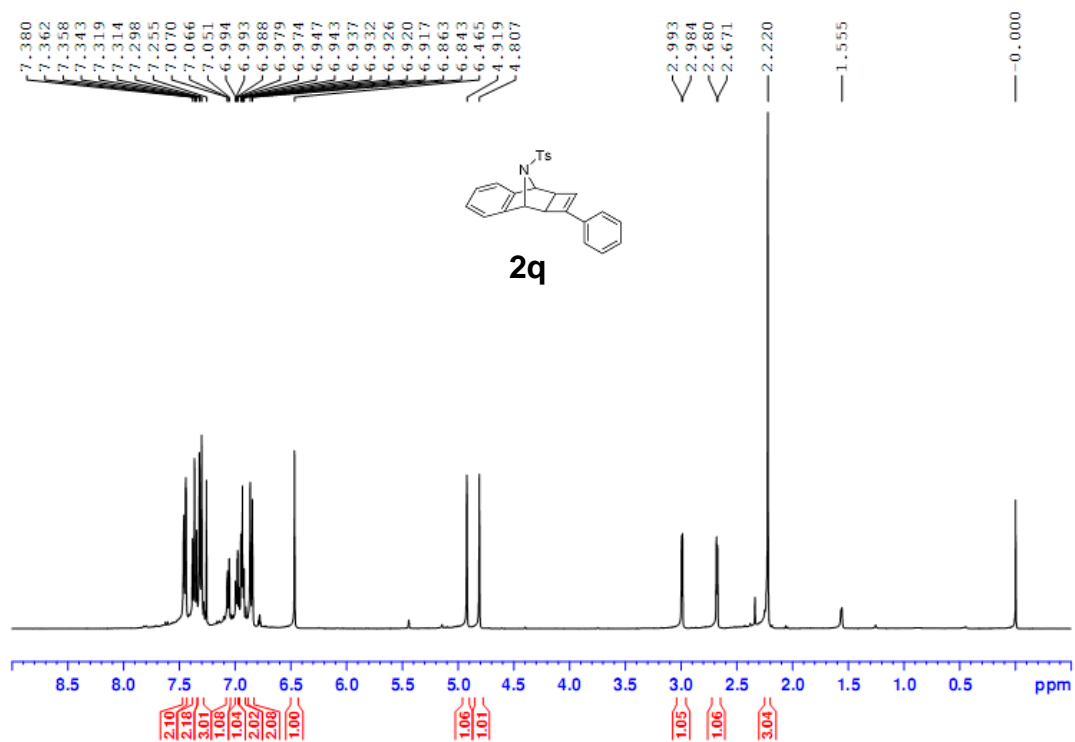


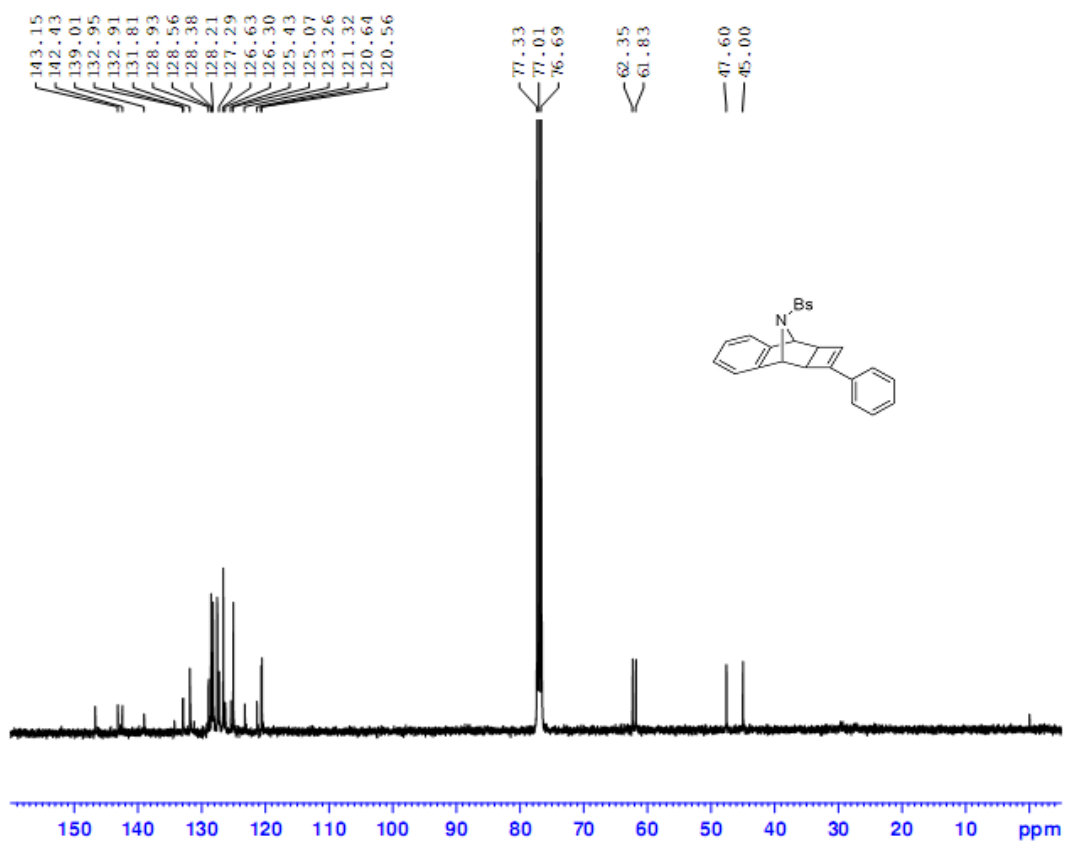
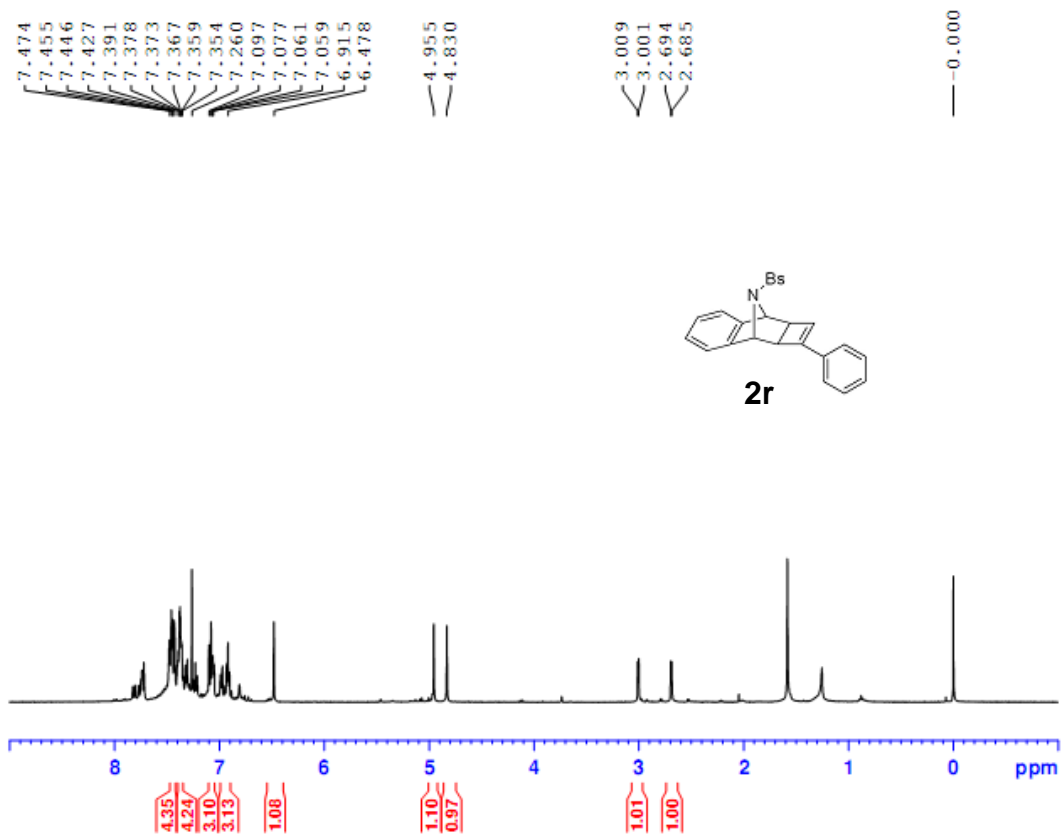


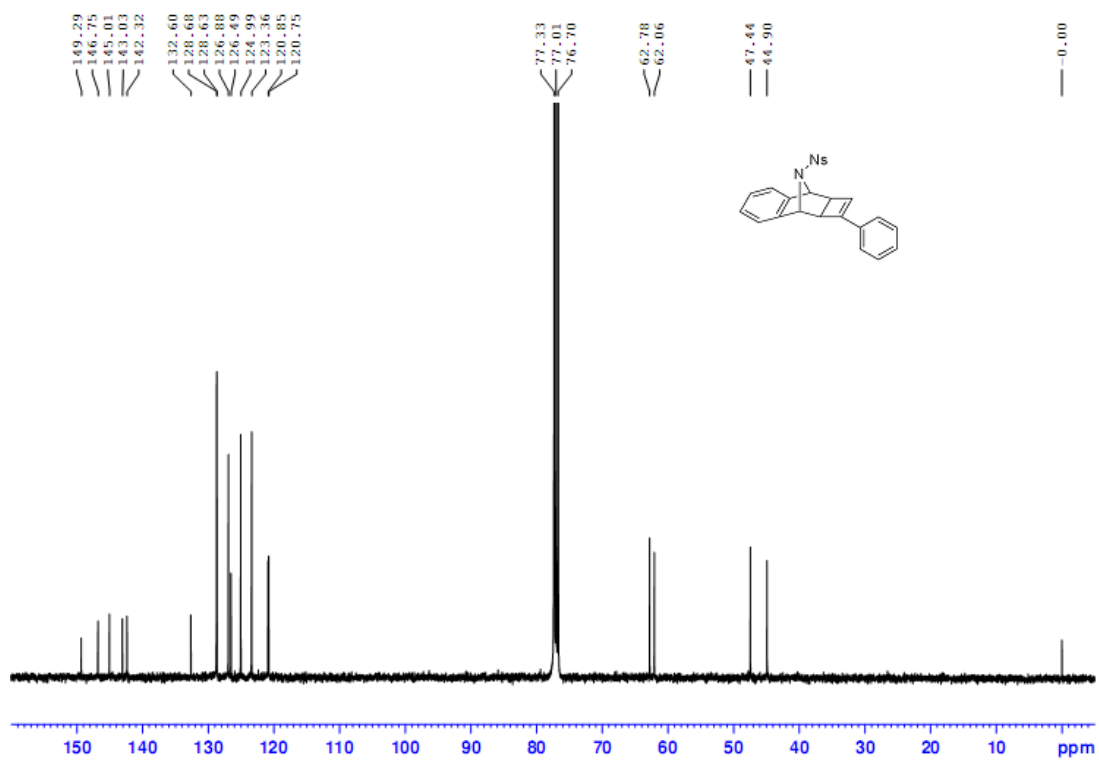
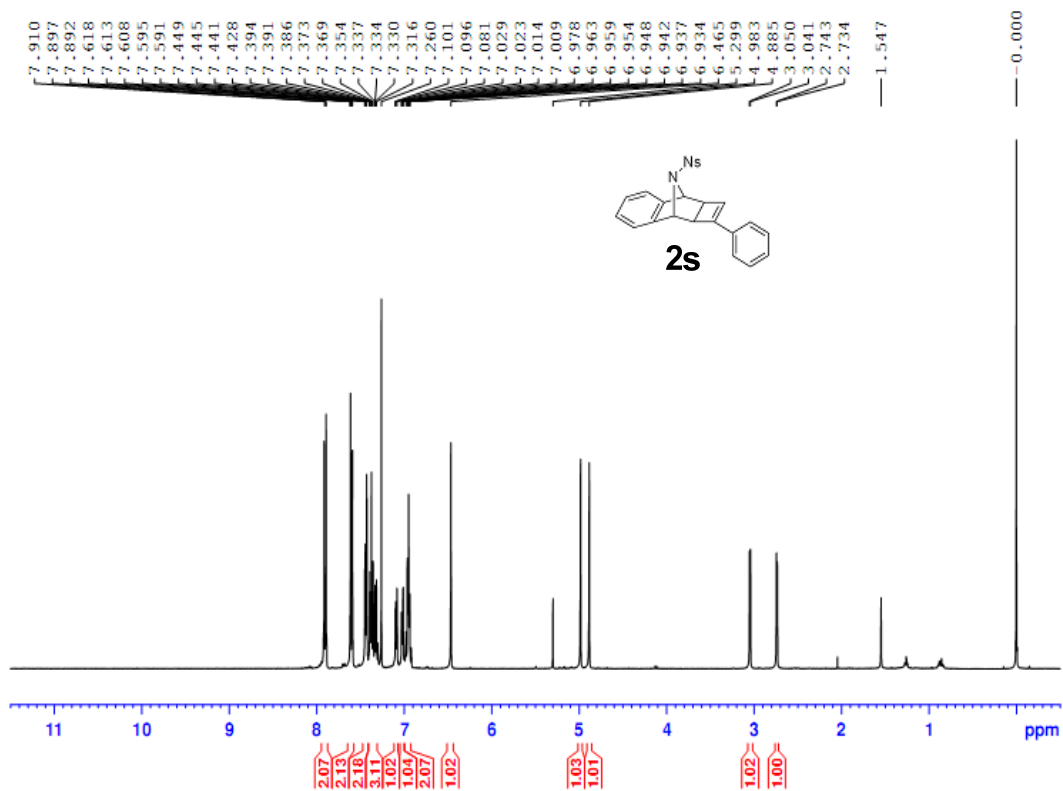




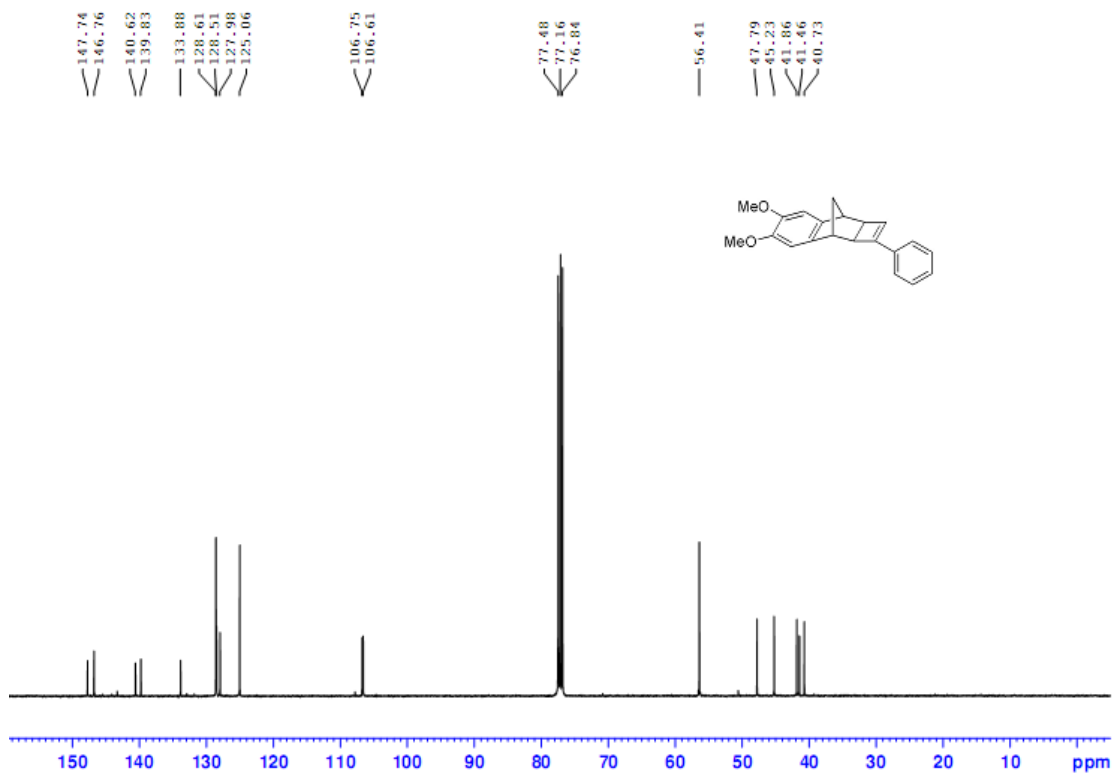
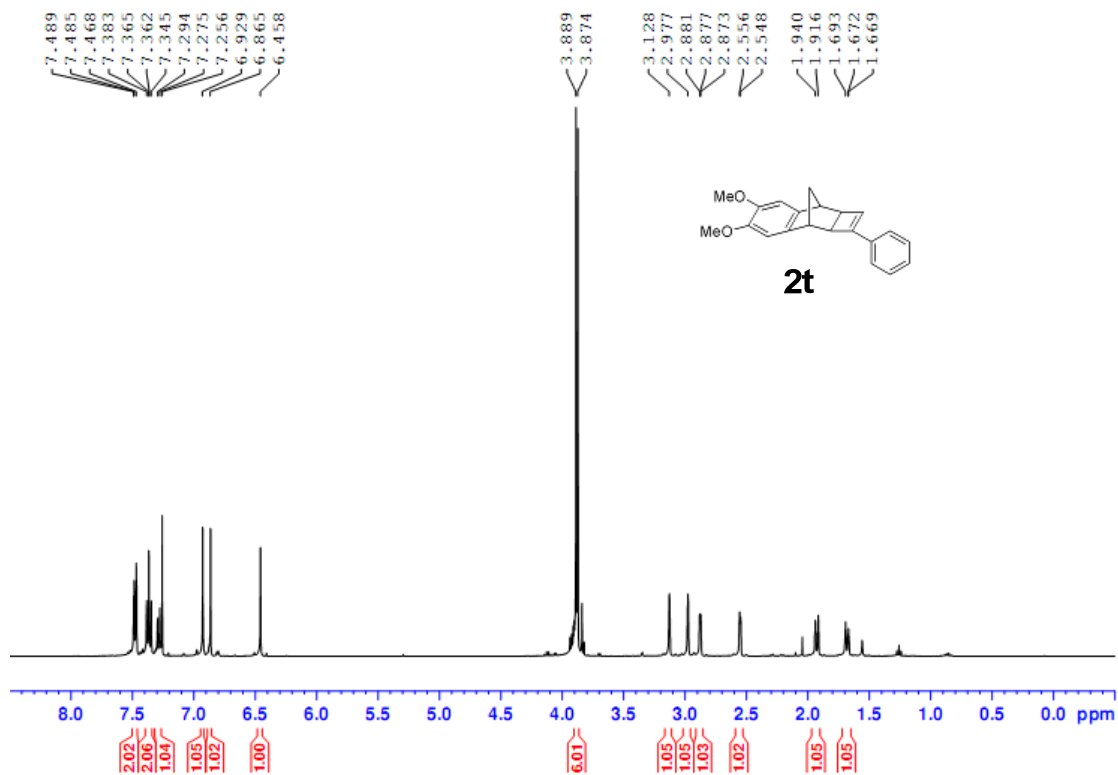


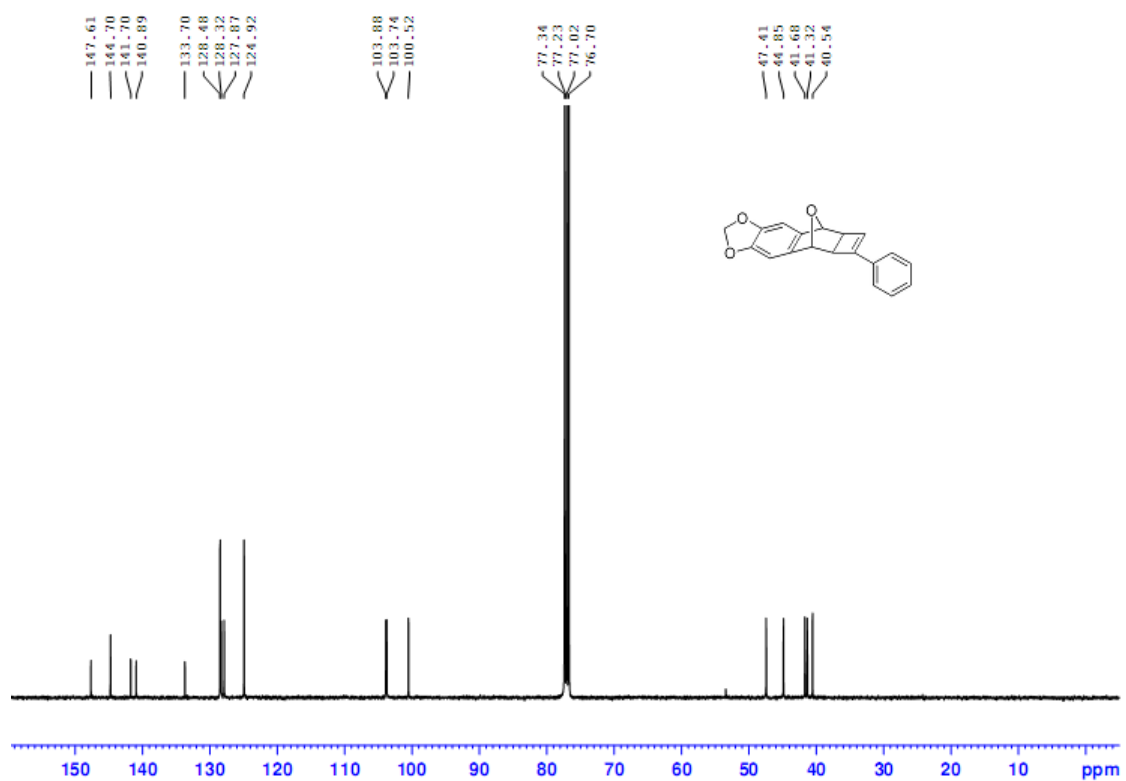
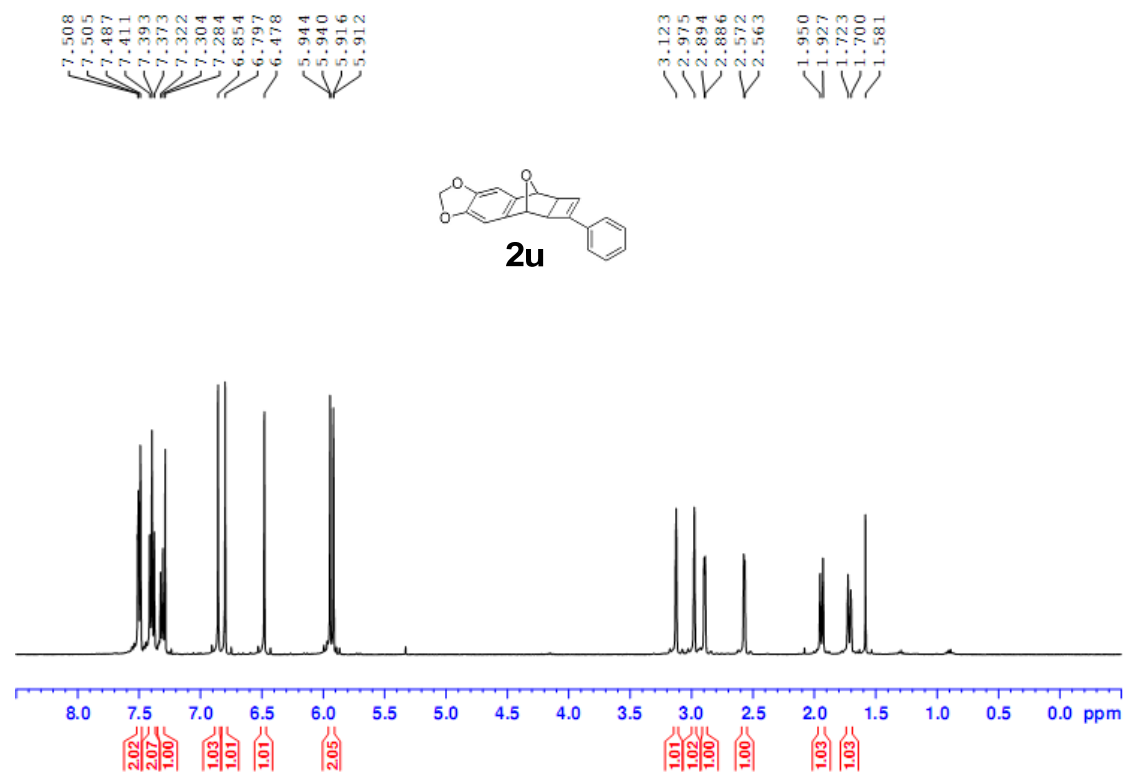


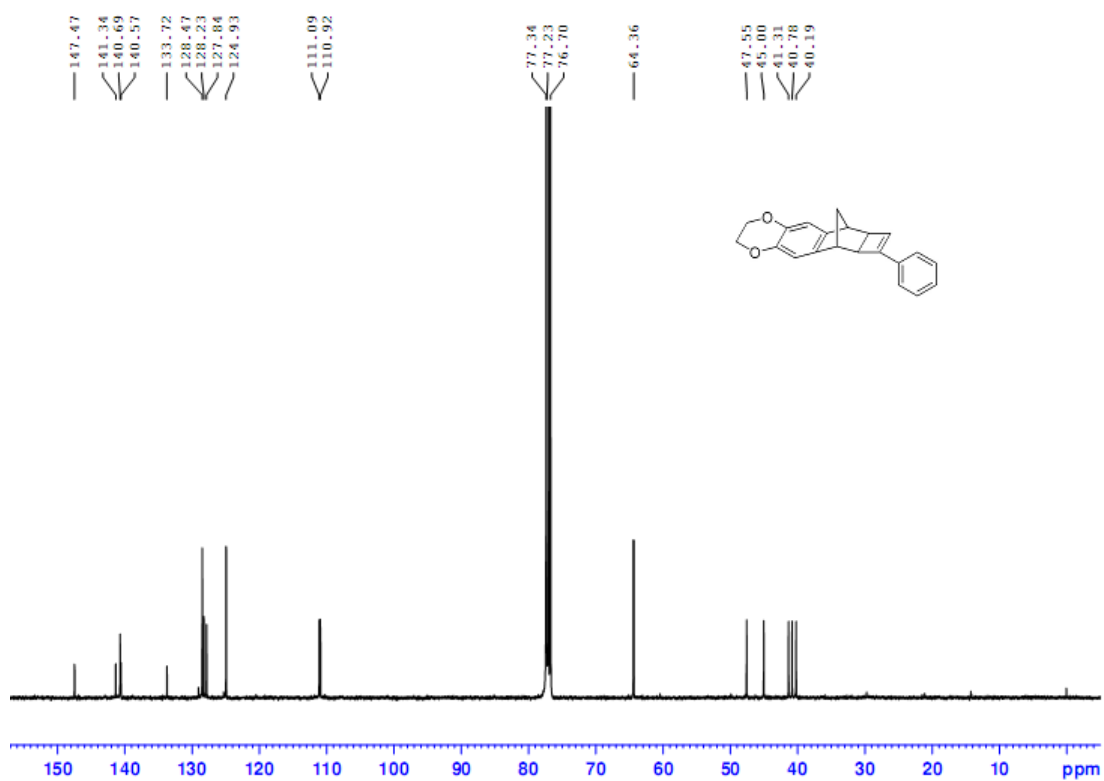
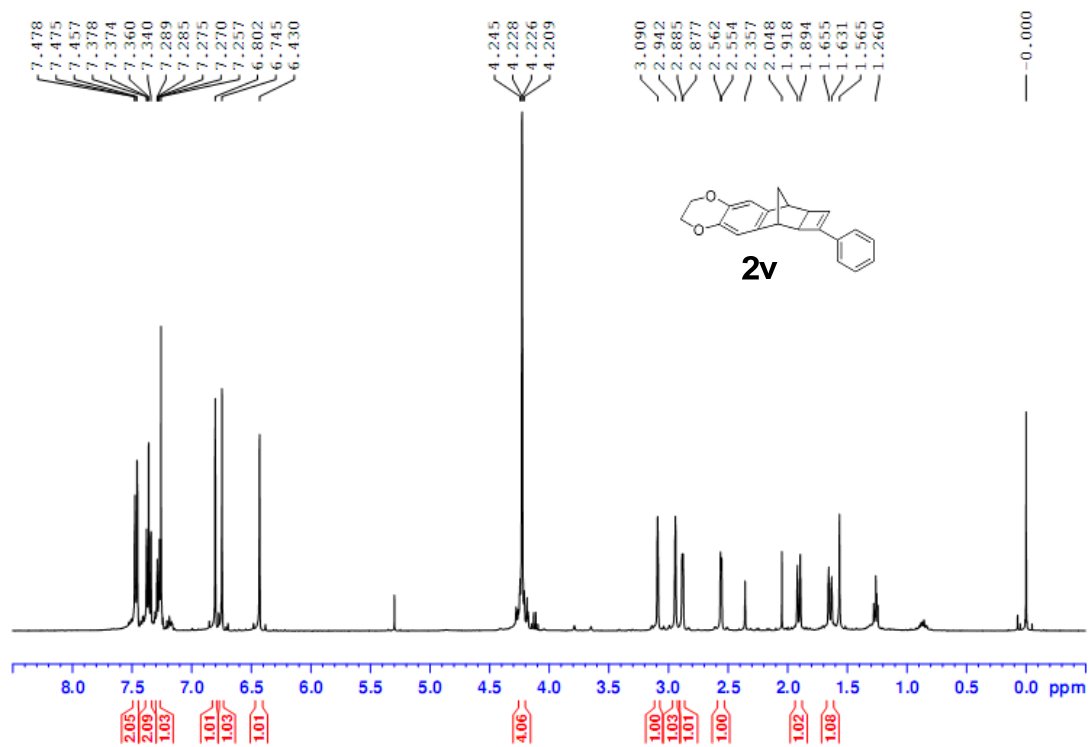


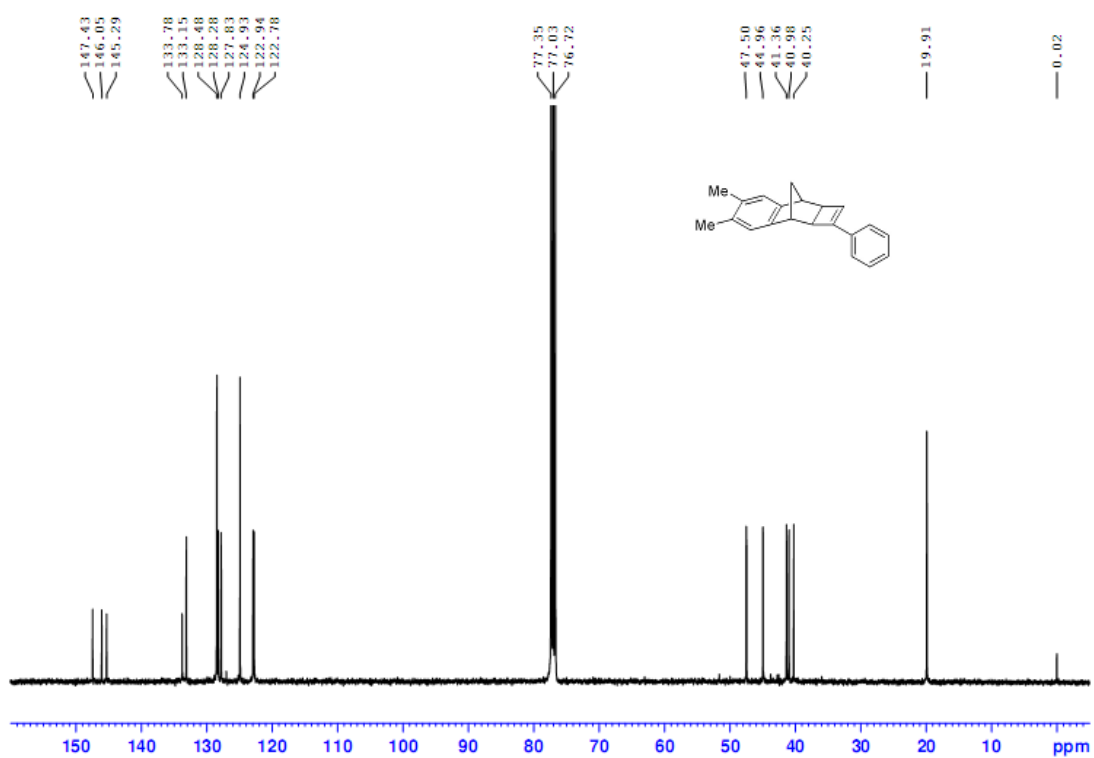
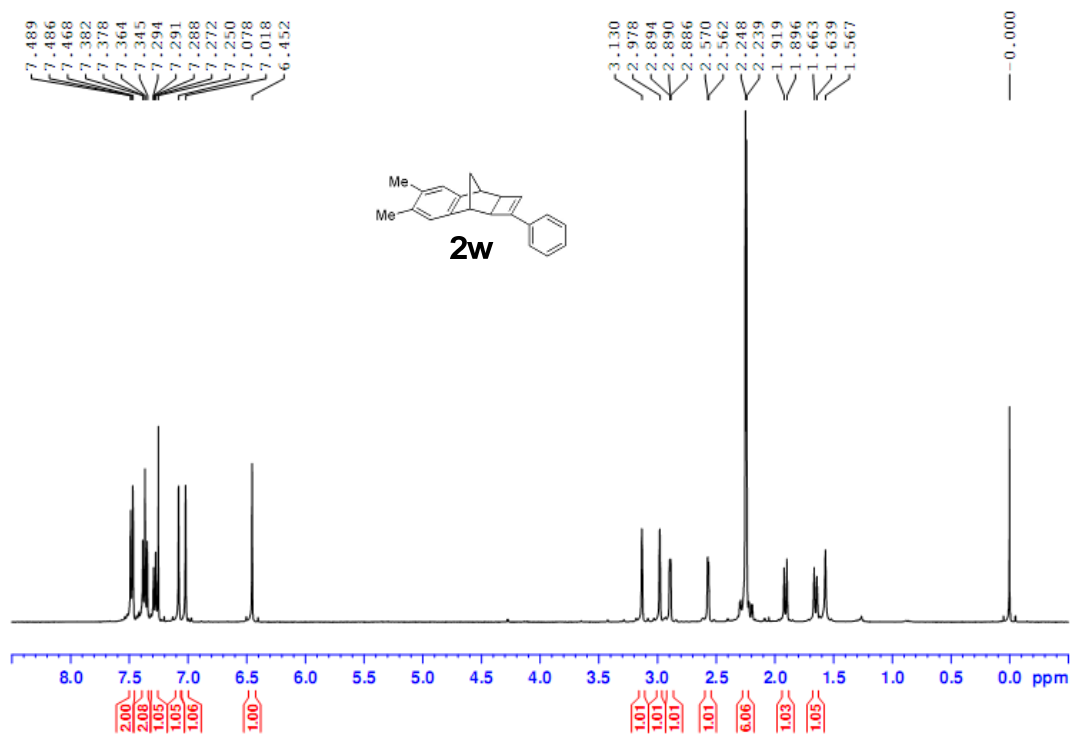


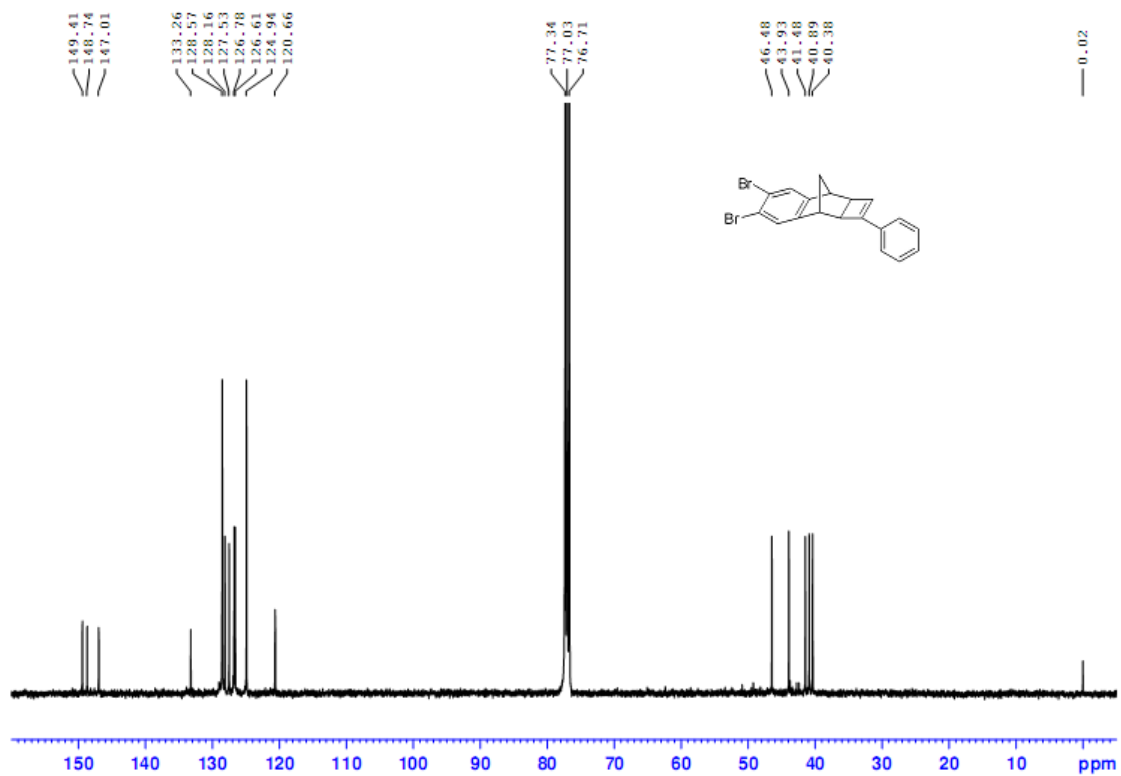
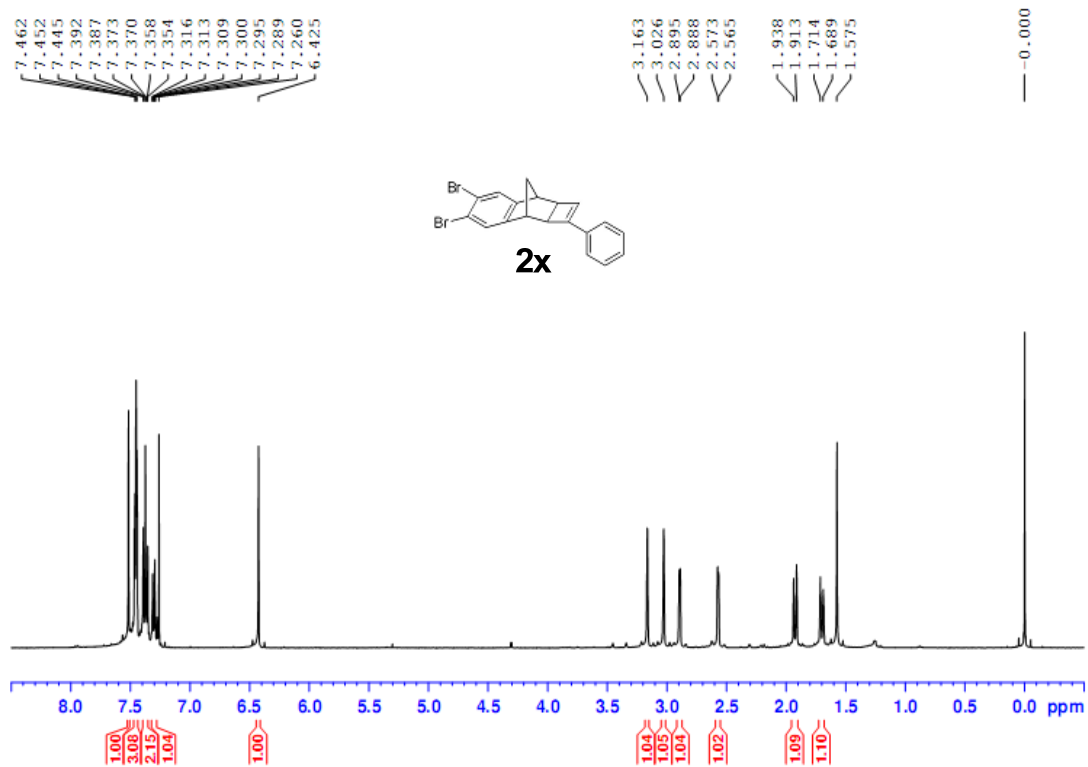


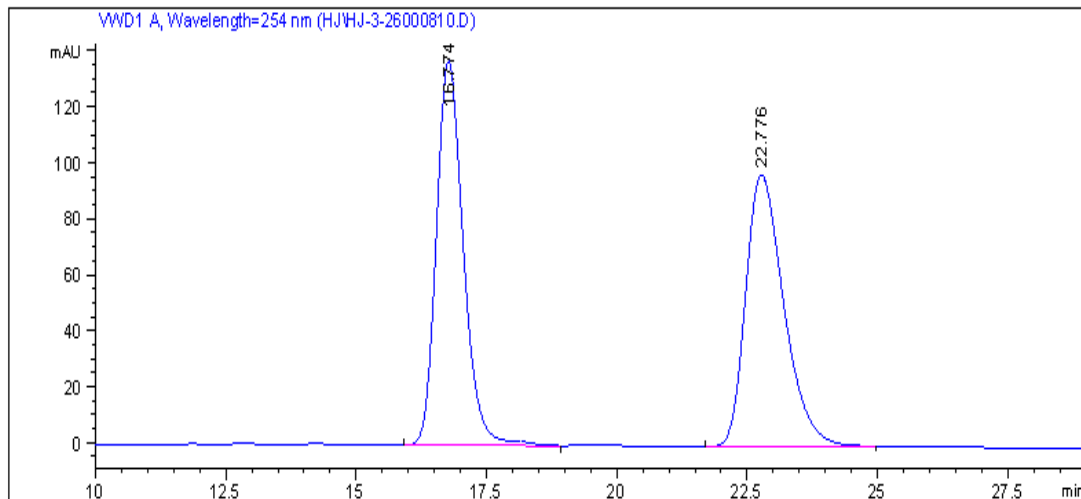
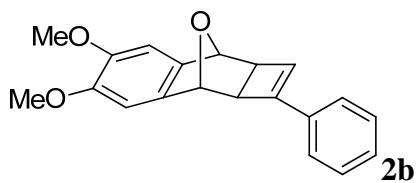




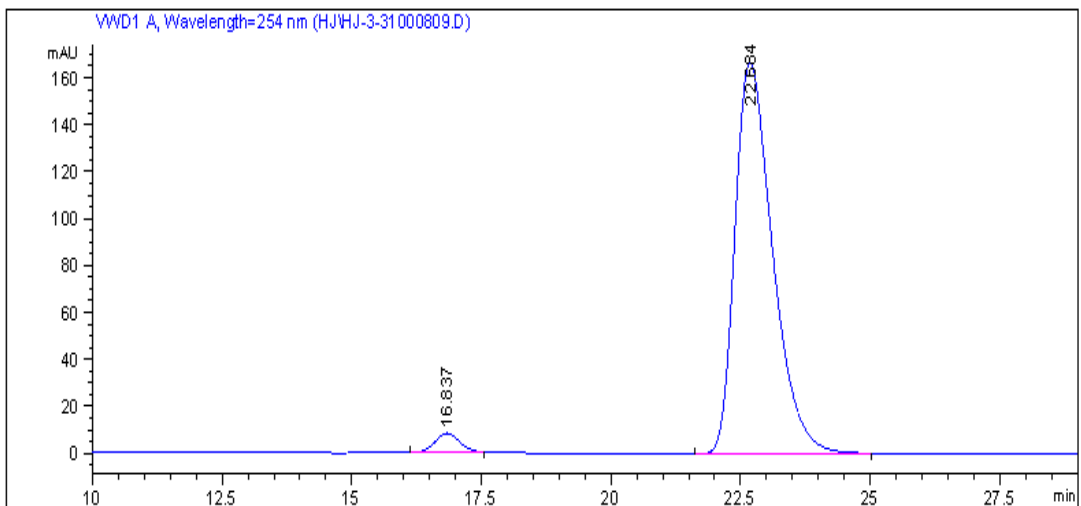




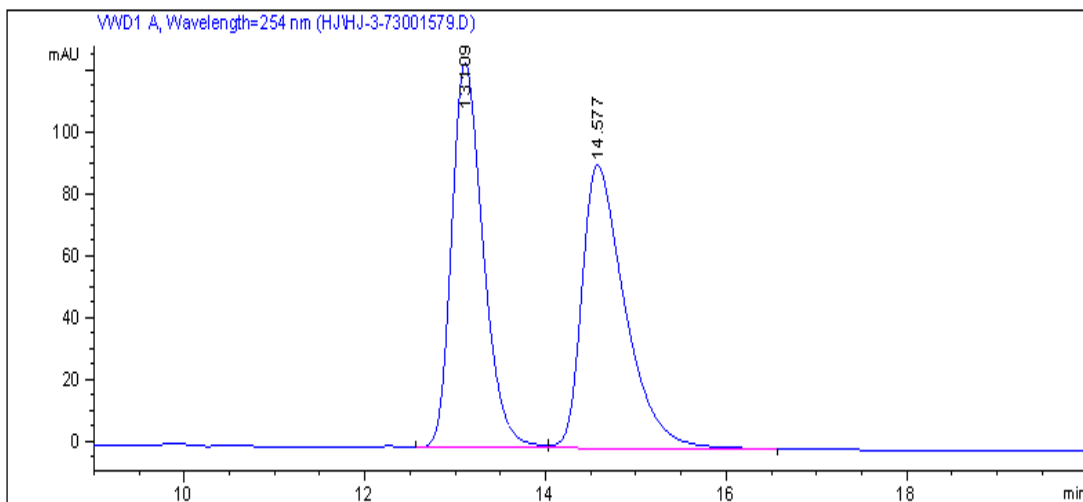
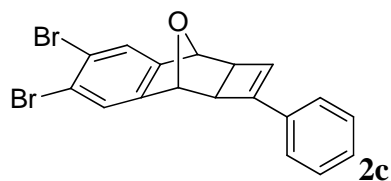




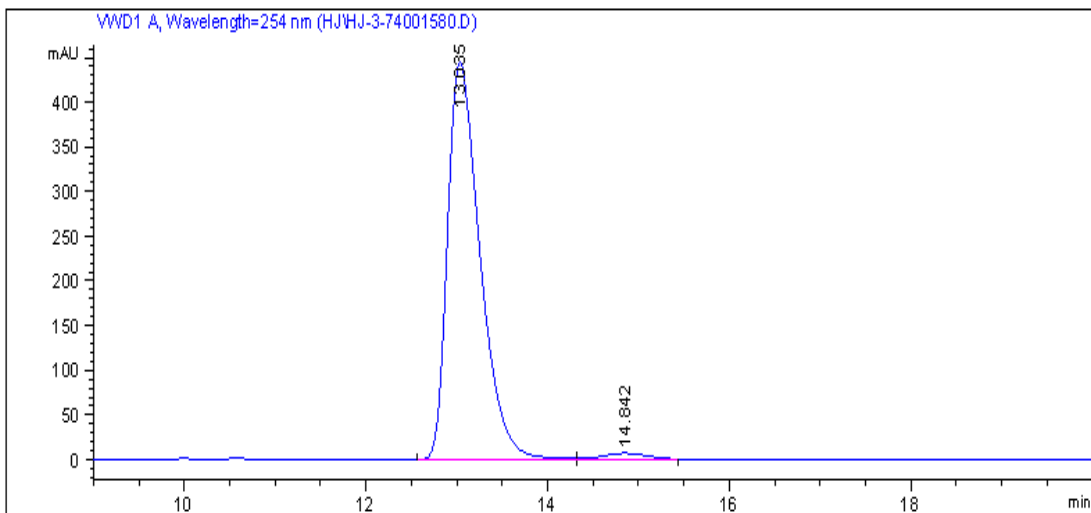
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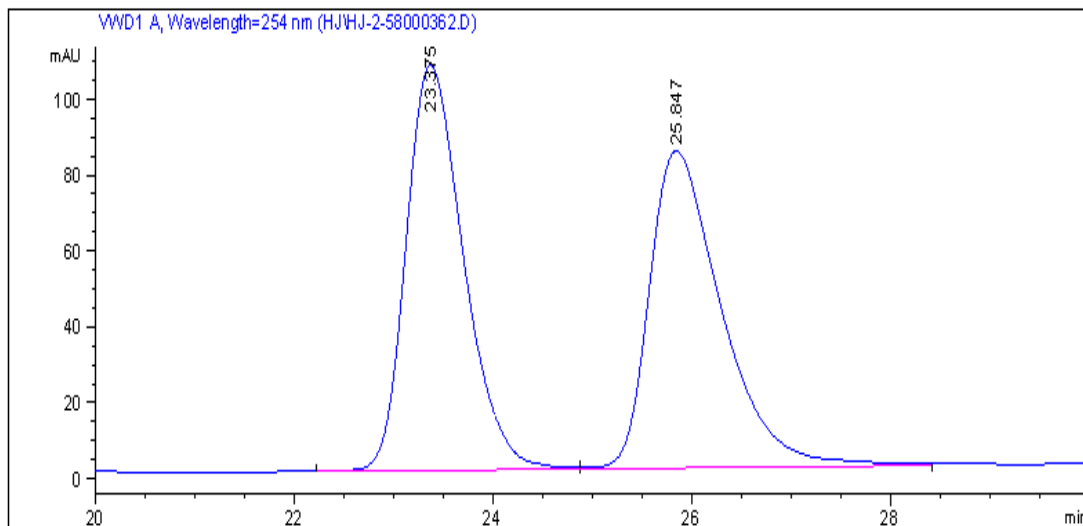
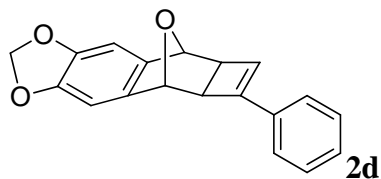
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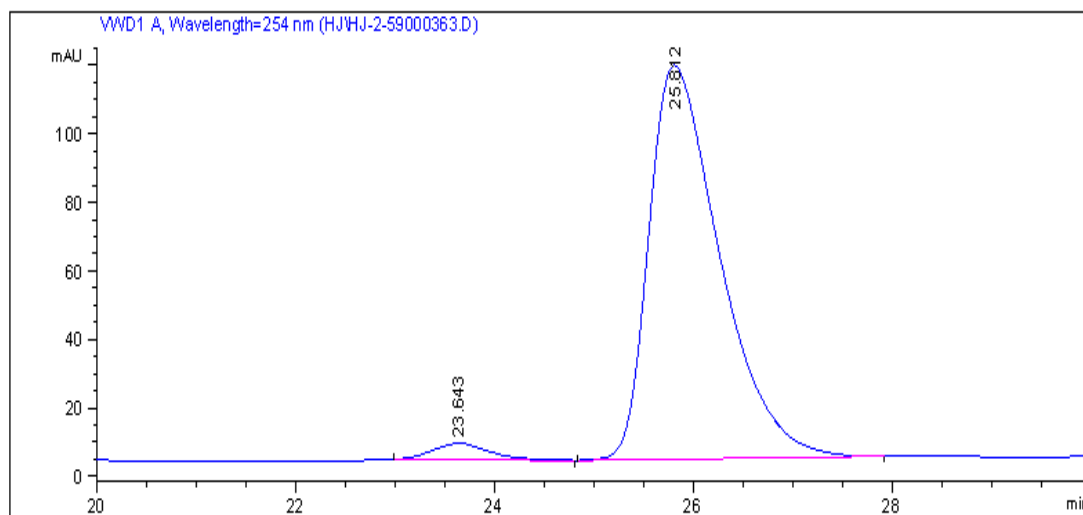
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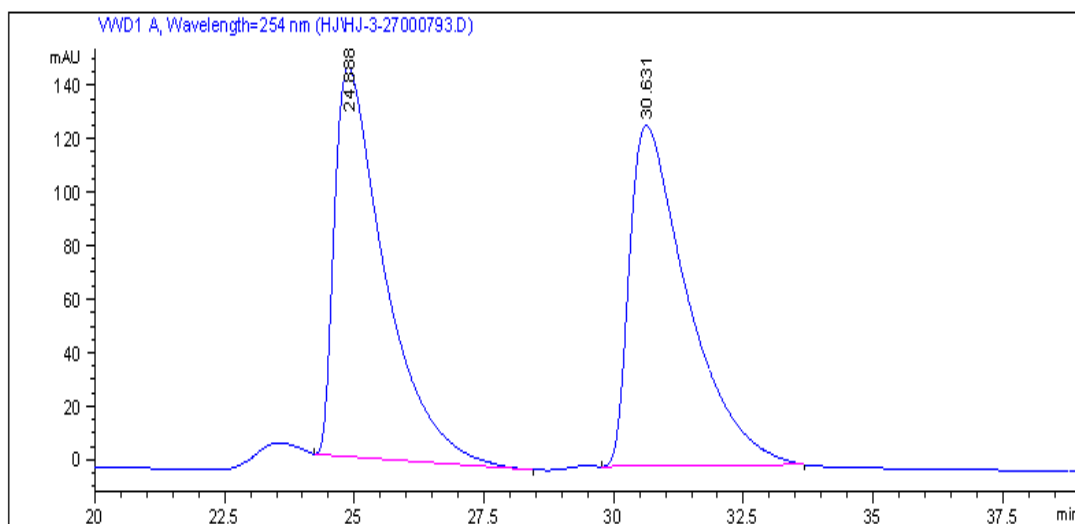
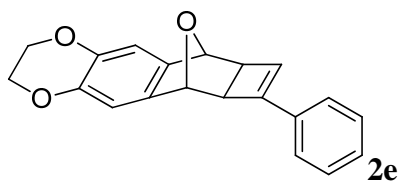


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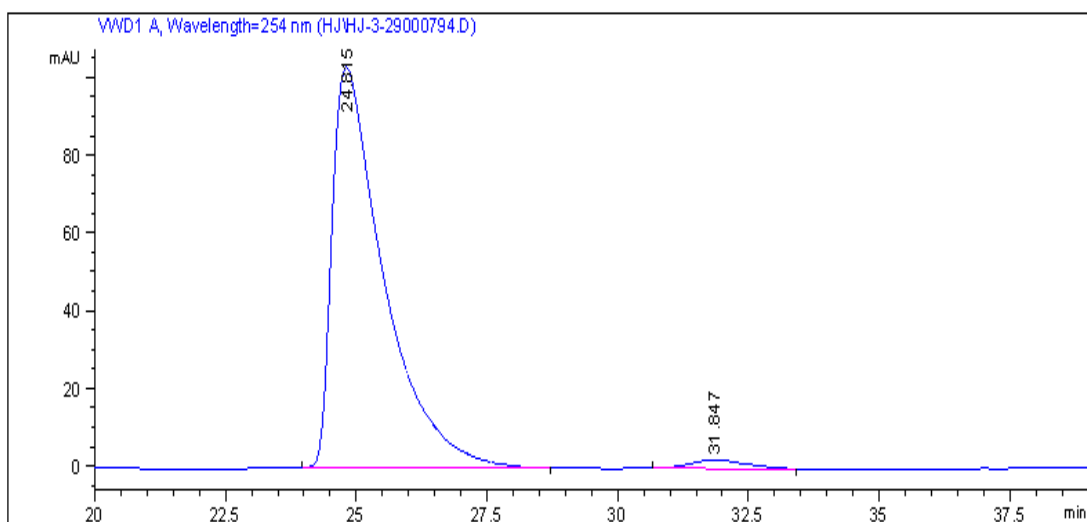


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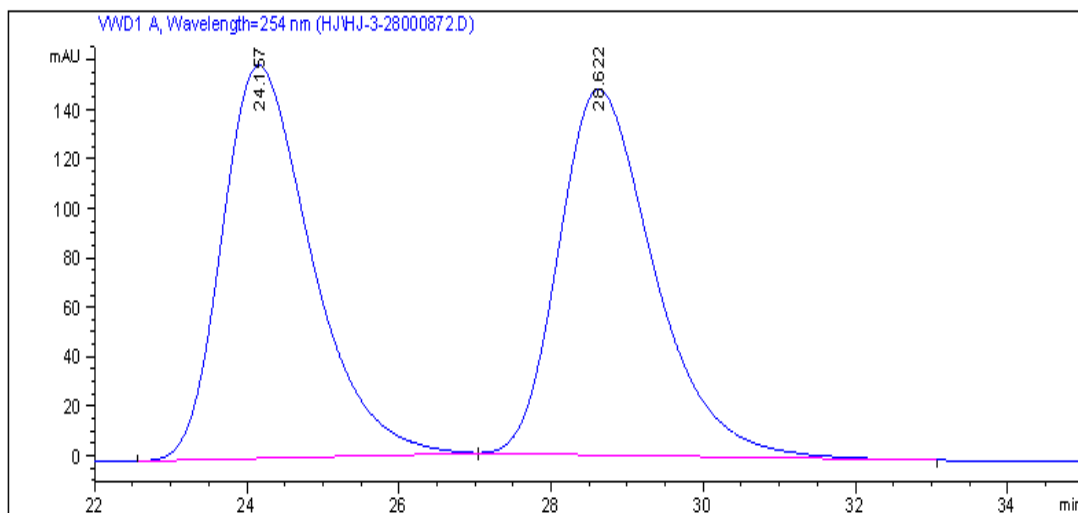
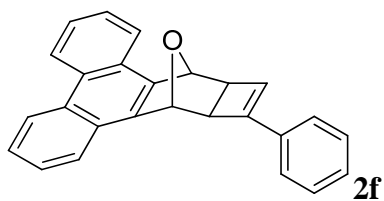




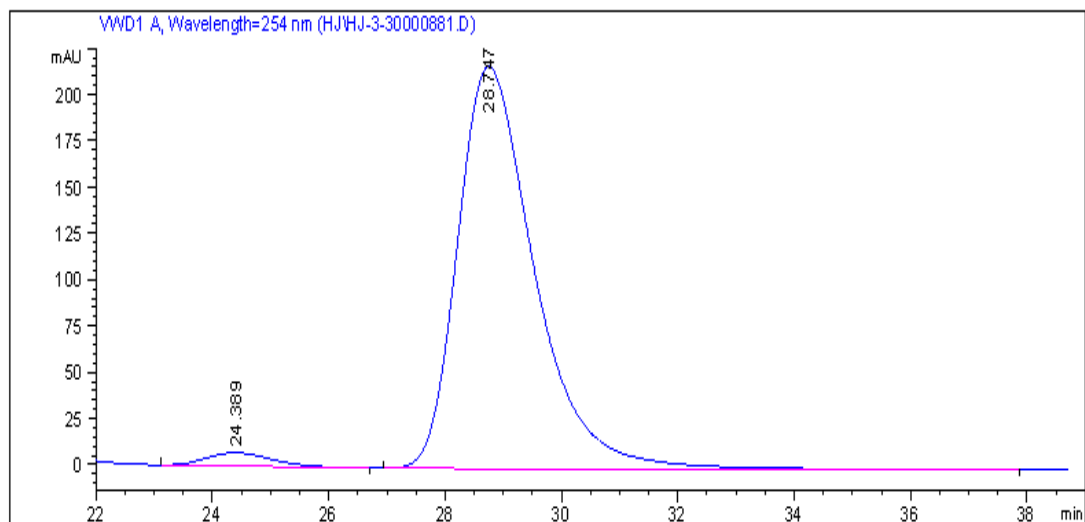
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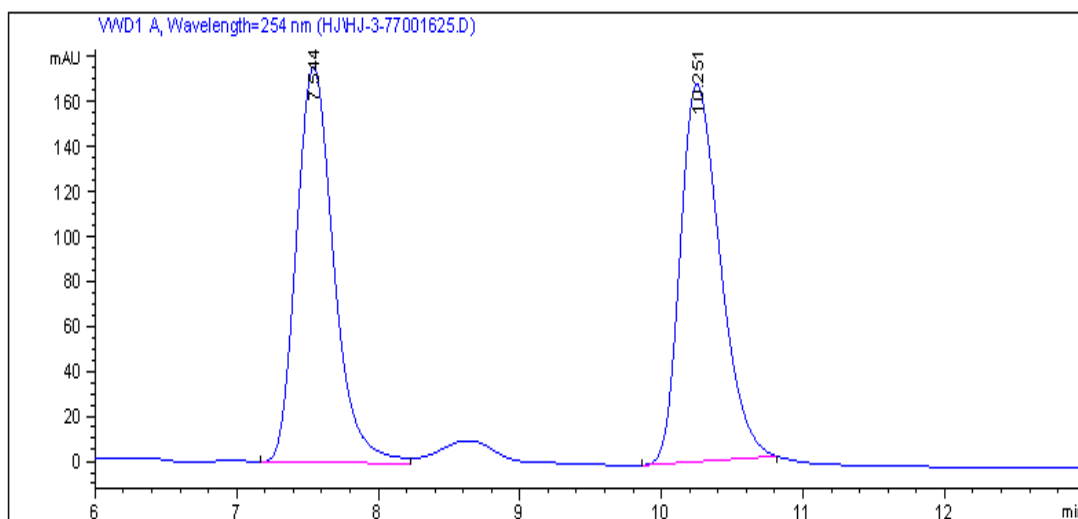
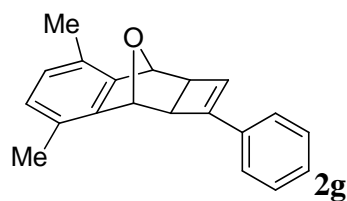
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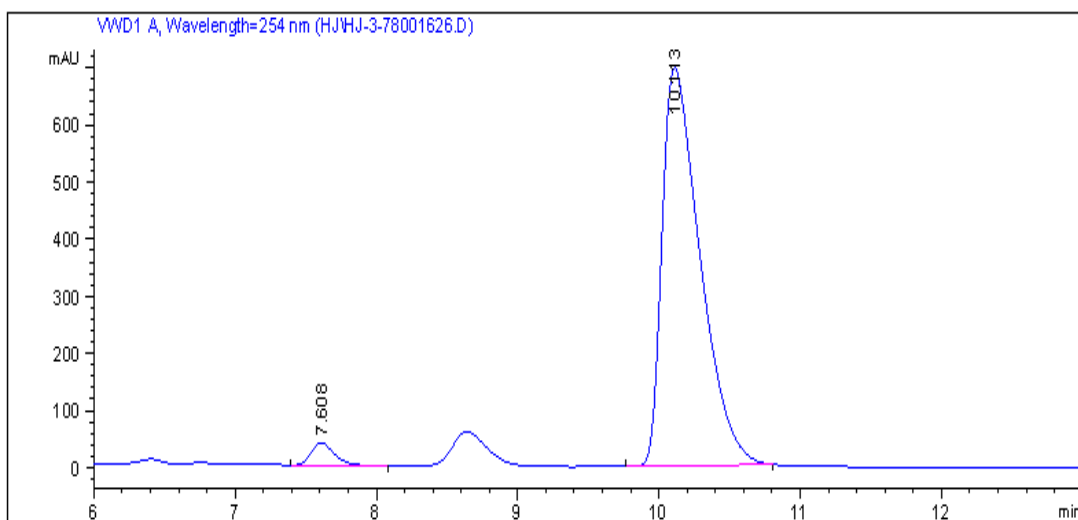
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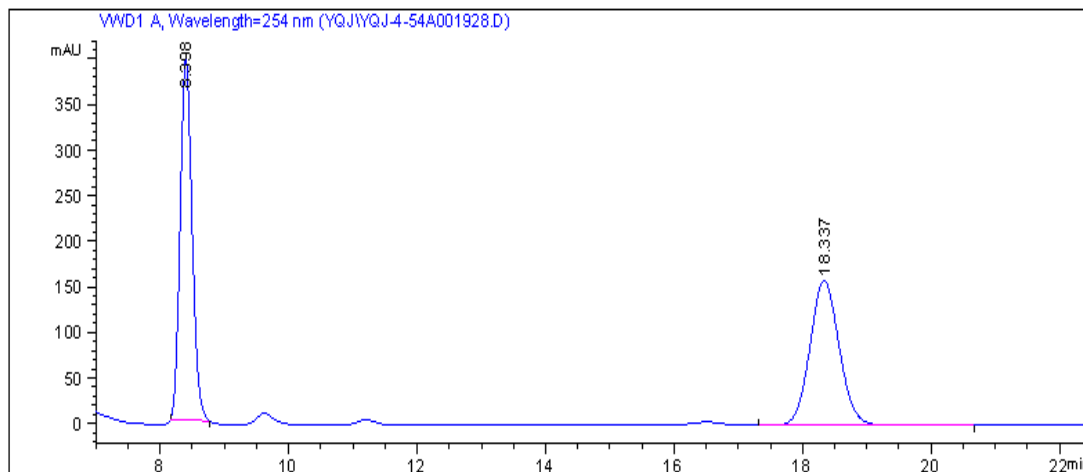
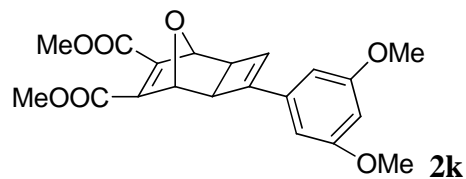
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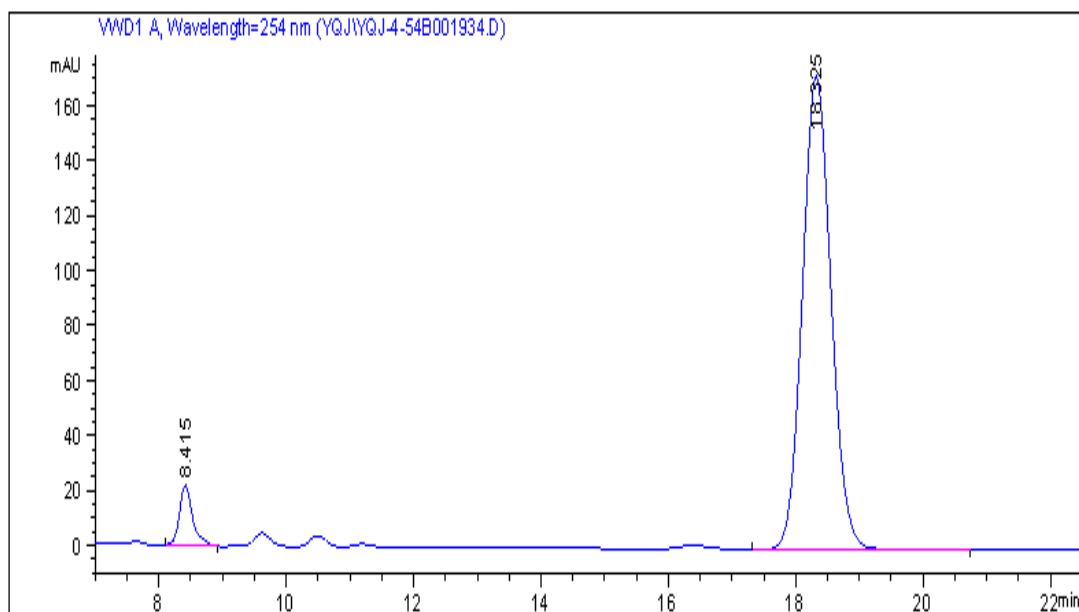
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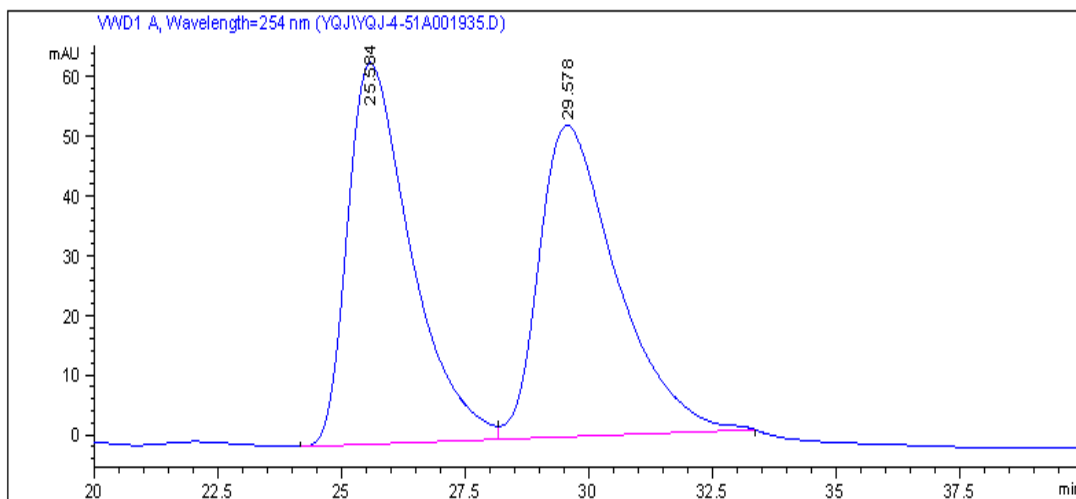
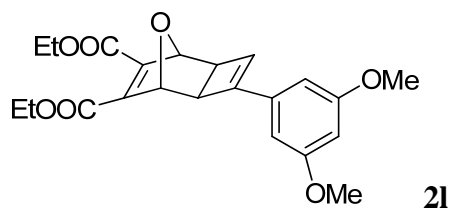
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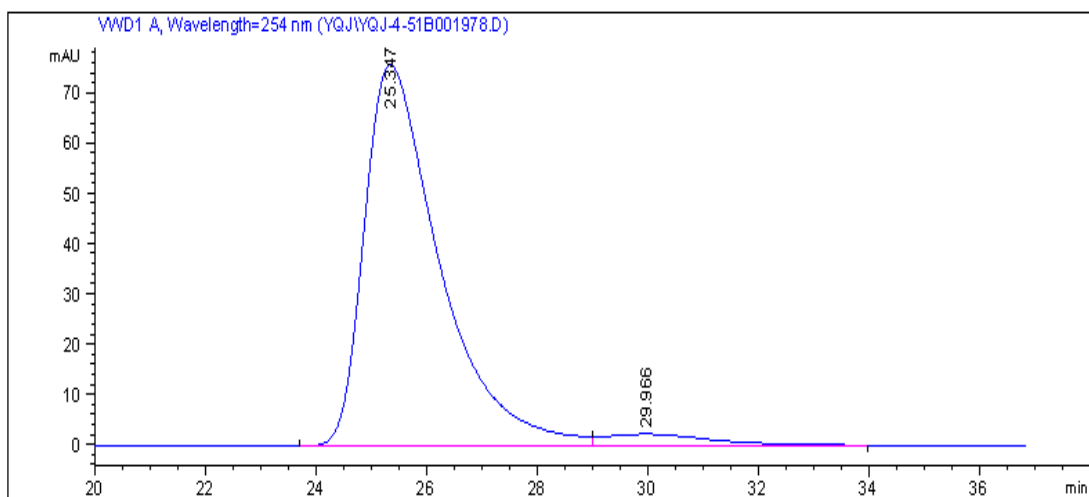
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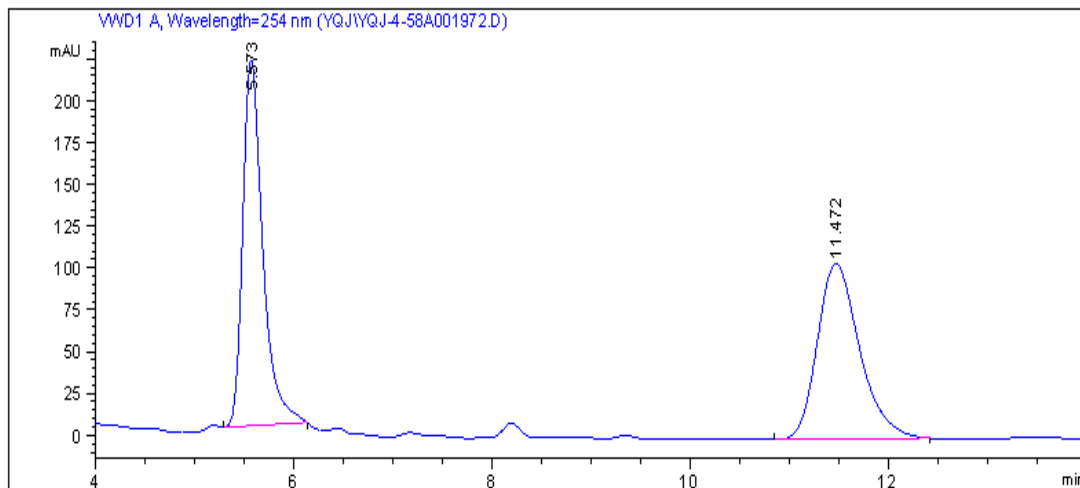
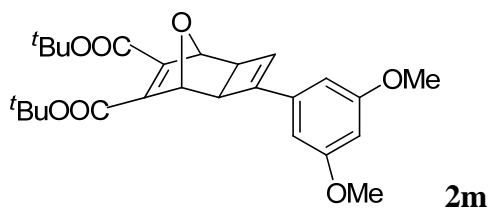
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2	18.325	BBA	0.4846	5382.03418	172.20247	94.5662



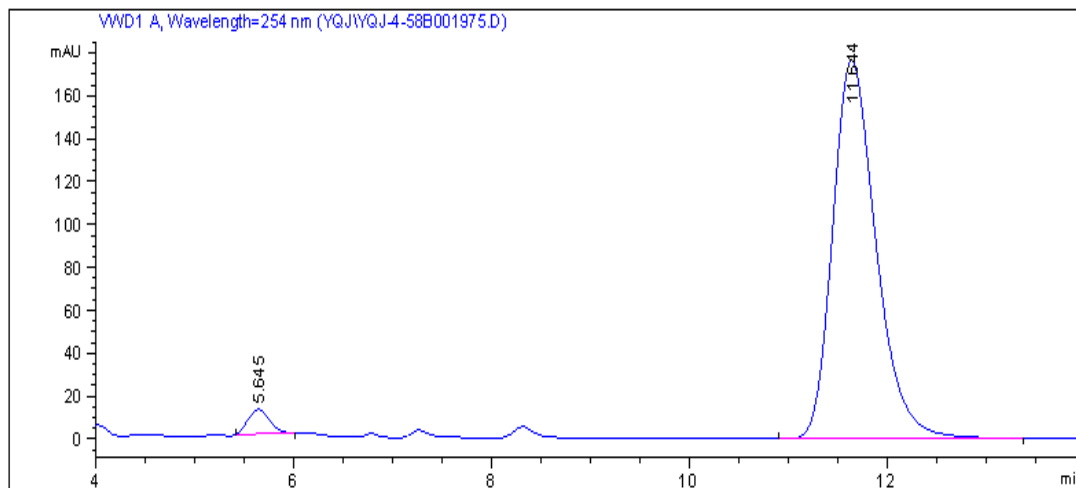
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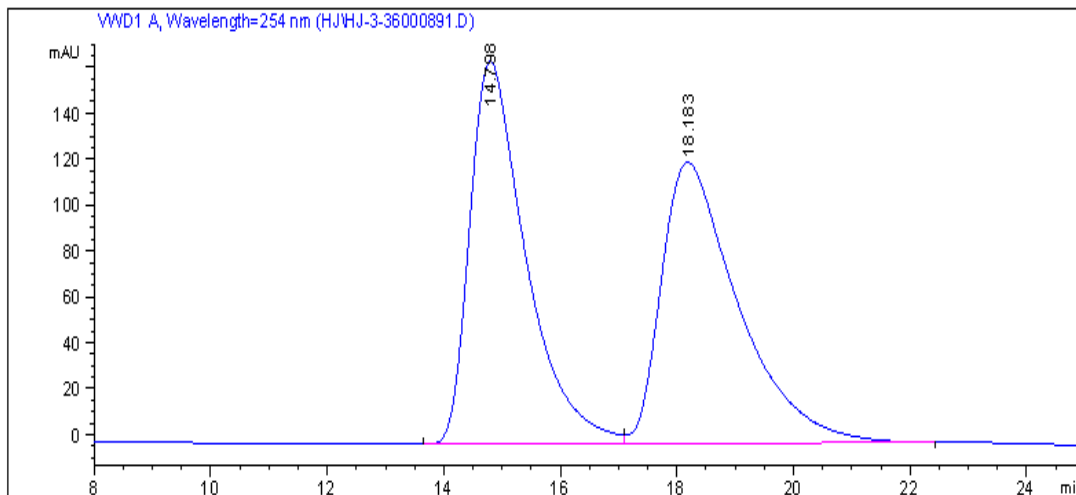
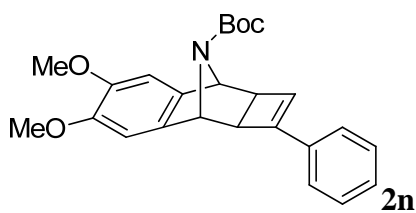
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2	29.966	VB	1.6344	298.64951	2.25318	3.9936



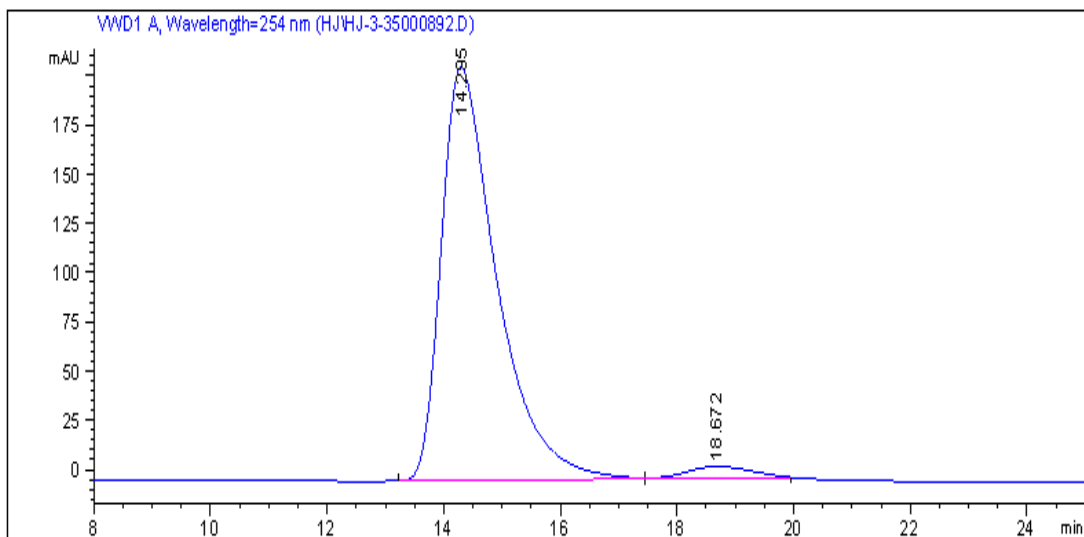
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2	11.472	BBA	0.4527	3101.05298	104.94494	50.3821



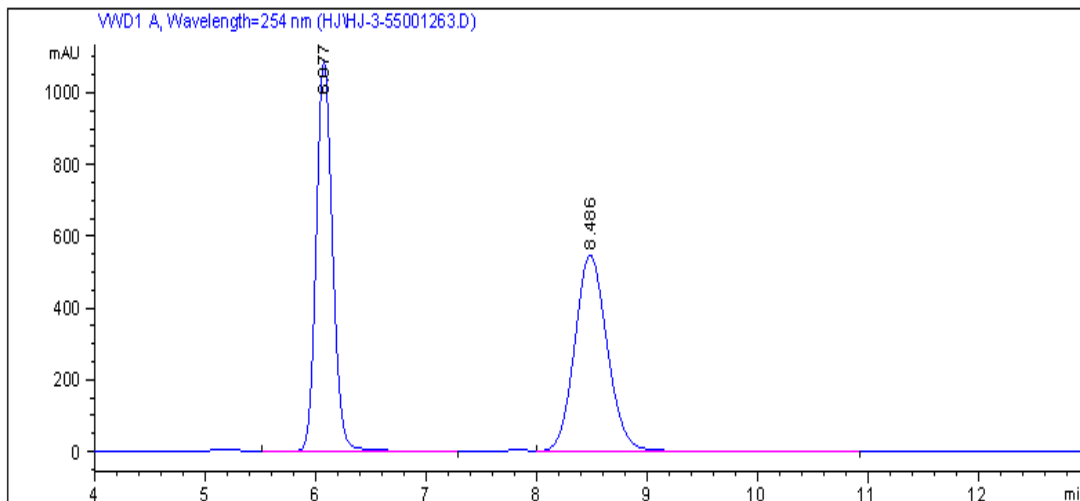
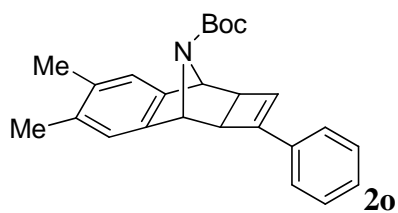
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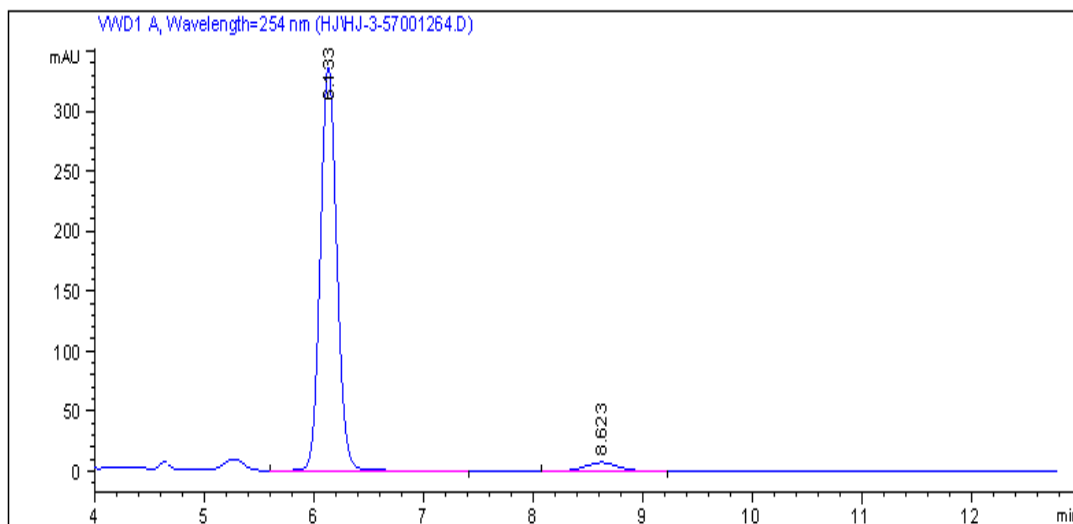
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2	18.183	VB	1.3396	1.12126e4	122.41810	50.1606



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2	18.672	VBA	1.1794	437.41043	5.75072	3.0518

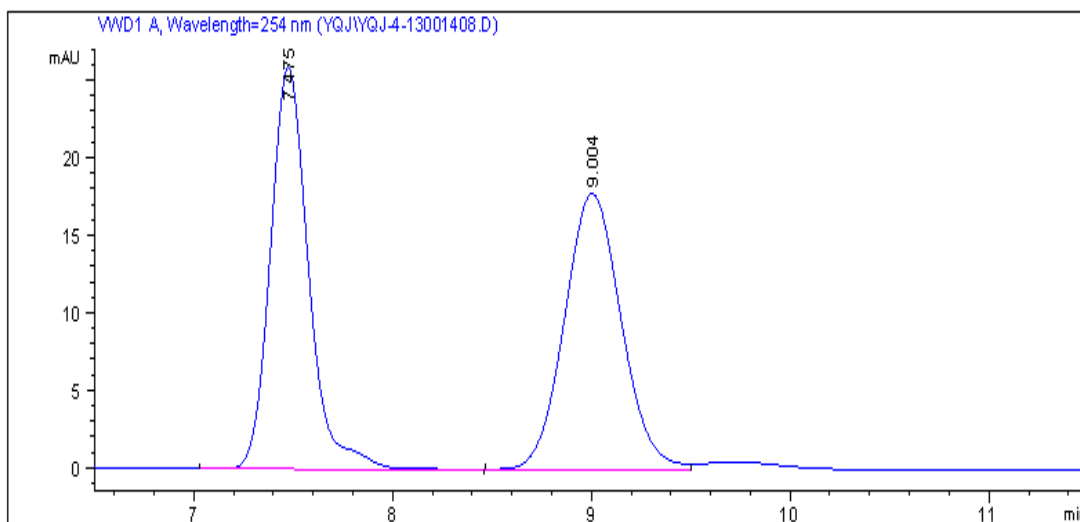
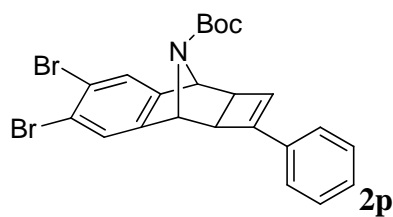


Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	6.077	BB	0.1603	1.11805e4	1083.92676	49.8107
2	8.486	VB	0.3201	1.12655e4	547.37988	50.1893

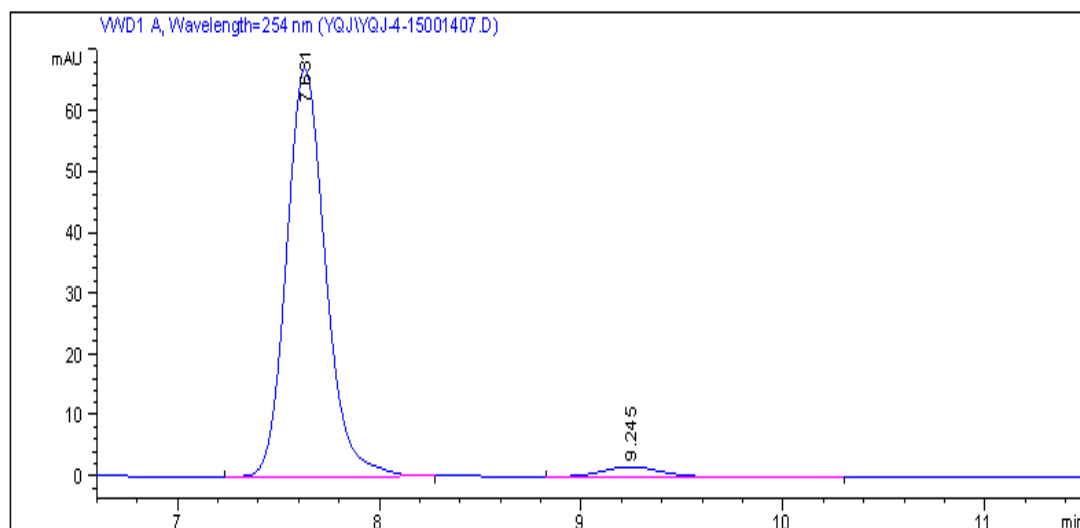


Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	6.133	BB	0.1624	3525.69531	336.14624	95.9448
2	8.623	BV	0.3267	149.01587	7.04811	4.0552

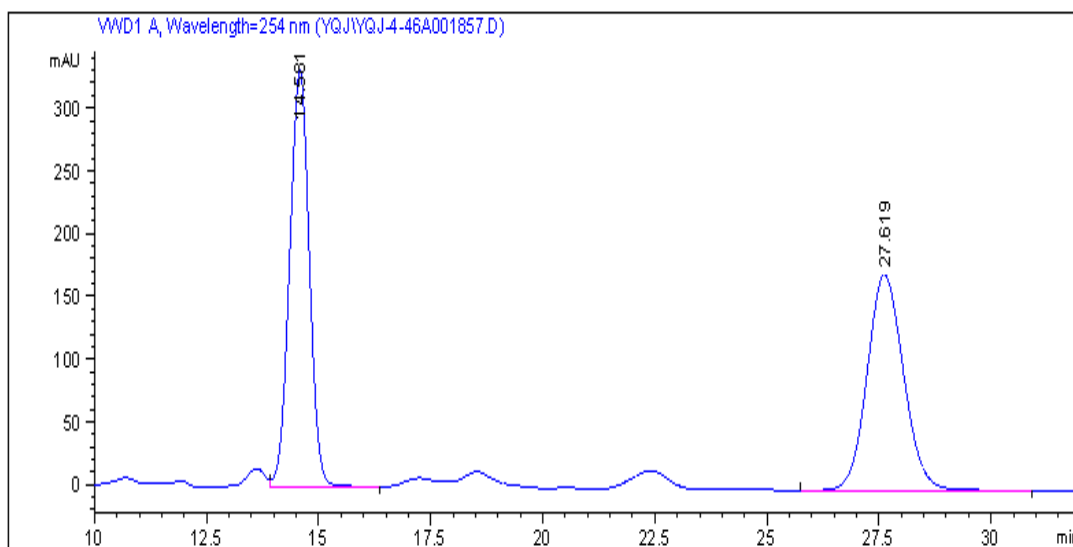
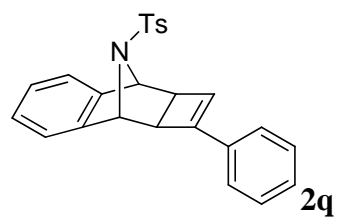




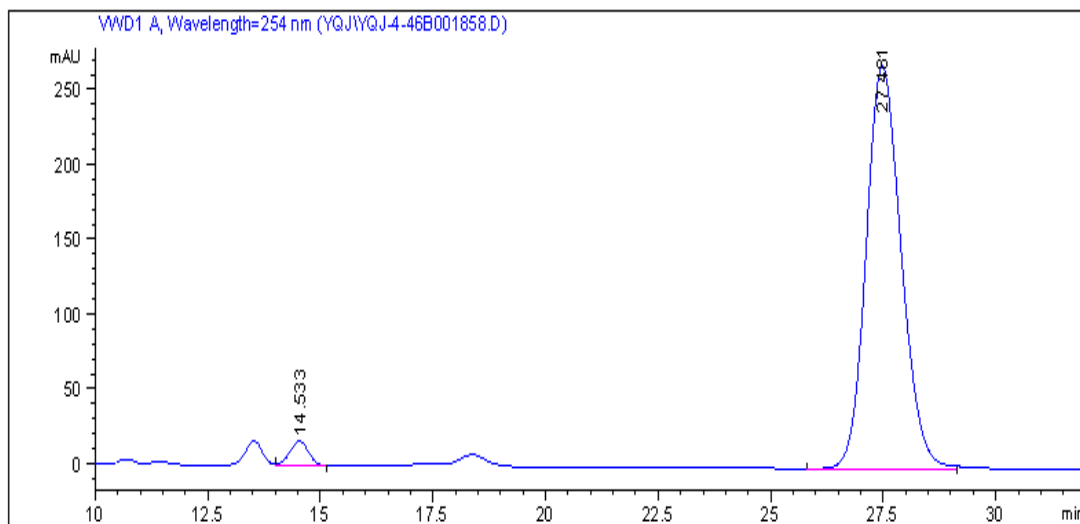
Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	7.475	BB	0.2053	345.17194	25.93069	49.4627
2	9.004	BV	0.3071	352.67126	17.80076	50.5373



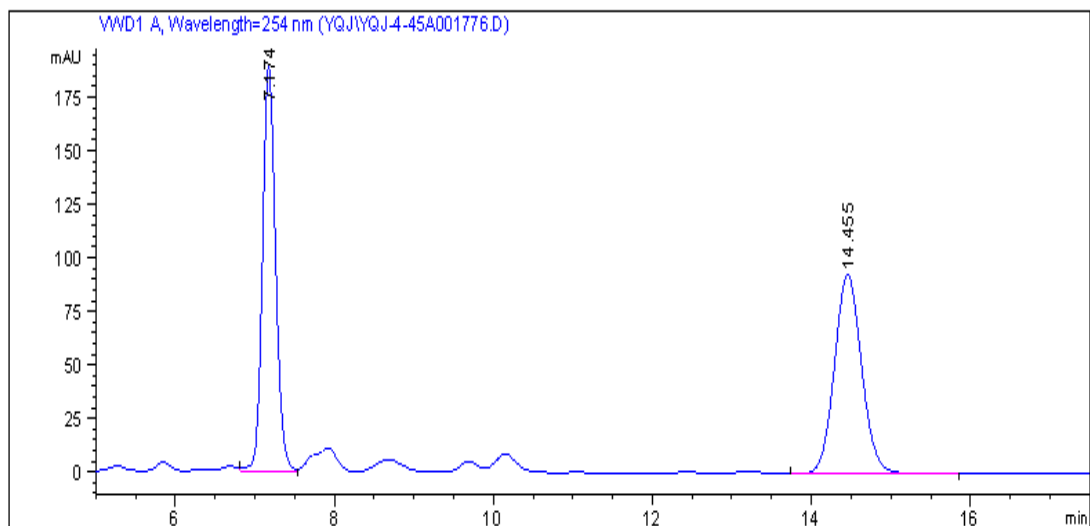
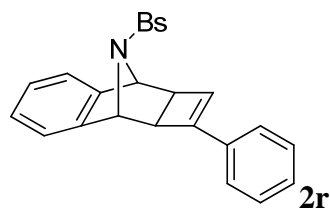
Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	7.631	BB	0.2083	897.84973	67.03928	96.4098
2	9.245	BB	0.3146	33.43456	1.66271	3.5902



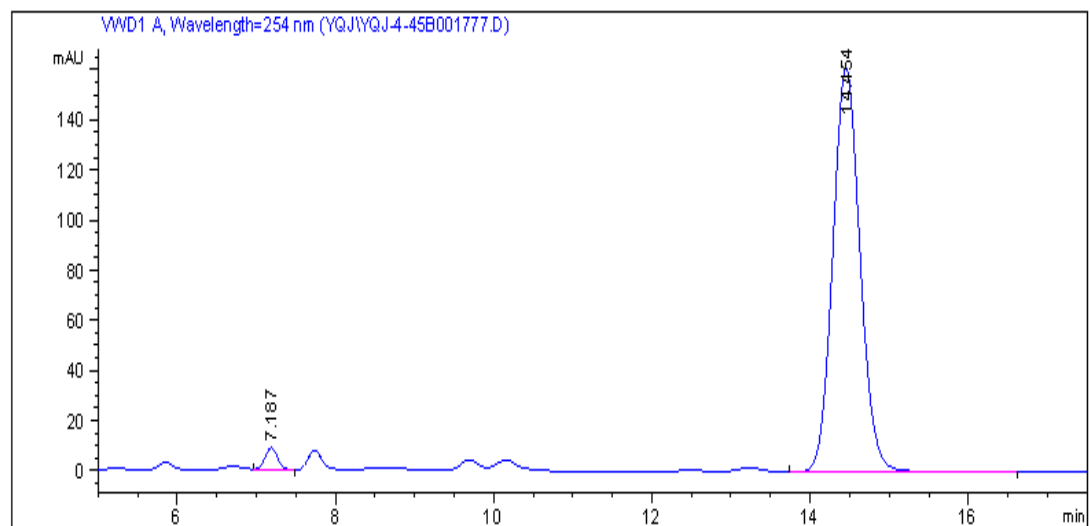
Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	14.581	VB	0.4856	1.01428e4	330.89502	50.9329
2	27.619	BB	0.8863	9771.27246	172.13429	49.0671



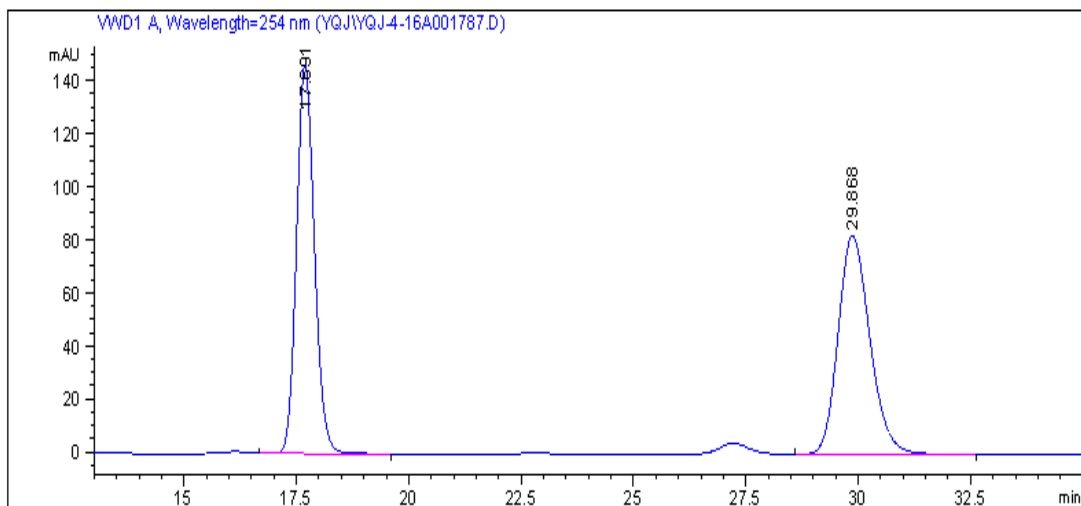
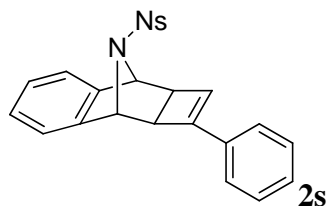
Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	14.533	VB	0.4443	465.66647	16.34956	3.0954
2	27.481	BV	0.8381	1.45780e4	269.04993	96.9046



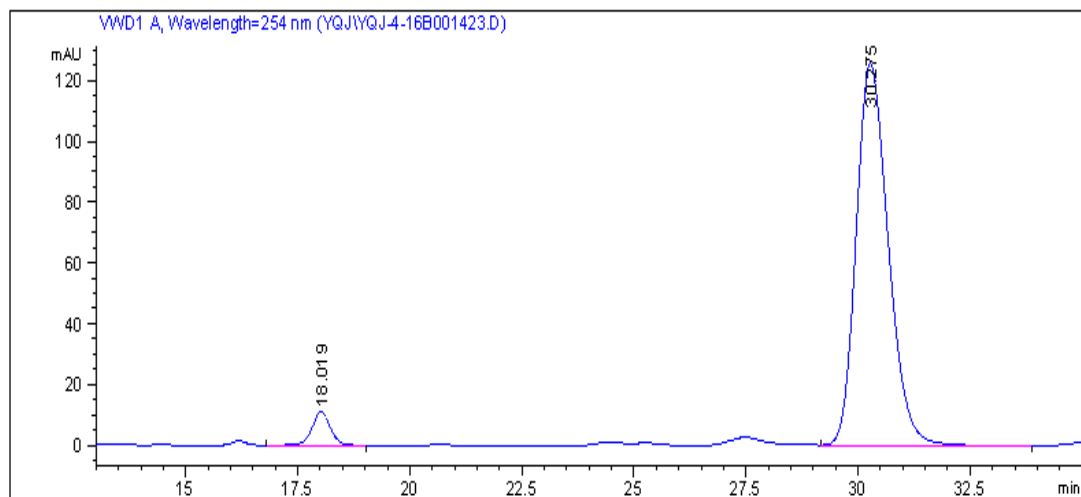
Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	7.174	VV	0.1756	2160.80176	188.75780	49.5290
2	14.455	BB	0.3682	2201.89917	92.99409	50.4710



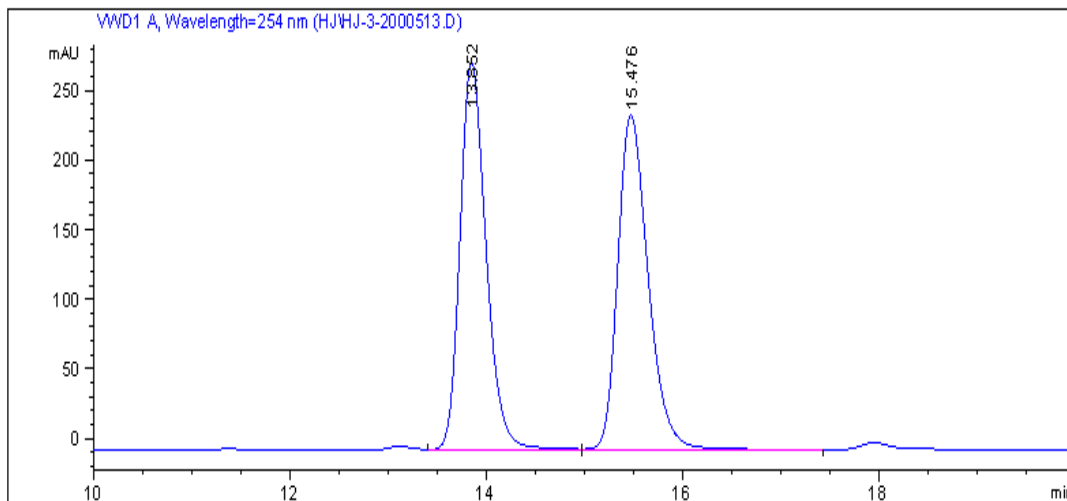
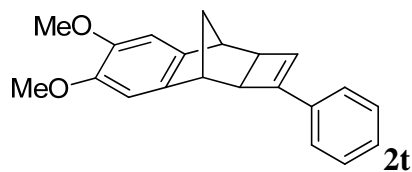
Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	7.187	VB	0.1773	102.18183	8.94381	2.5878
2	14.454	BB	0.3701	3846.36255	161.35265	97.4122



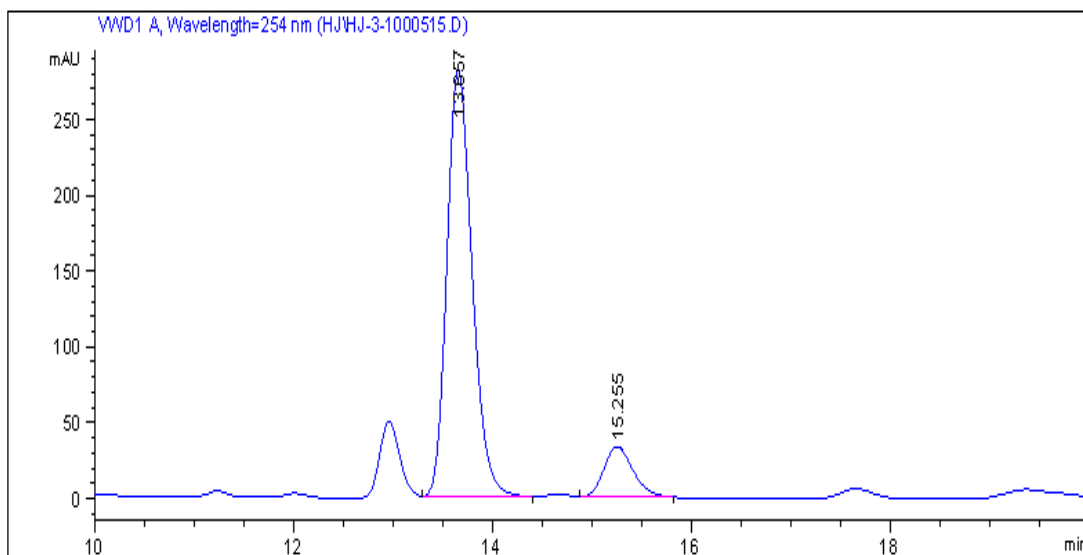
Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	17.691	BB	0.4281	4057.56812	146.95393	50.0216
2	29.868	VB	0.7629	4054.06177	82.56422	49.9784



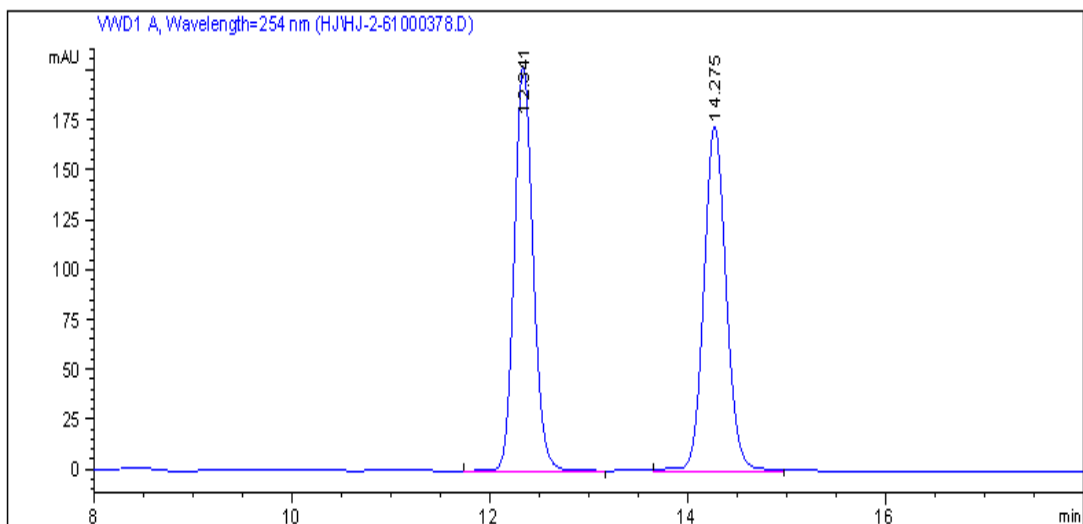
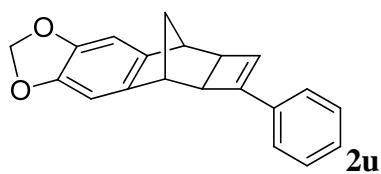
Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	18.019	BB	0.4402	317.44958	11.01645	4.8122
2	30.275	VB	0.7717	6279.37451	125.94003	95.1878



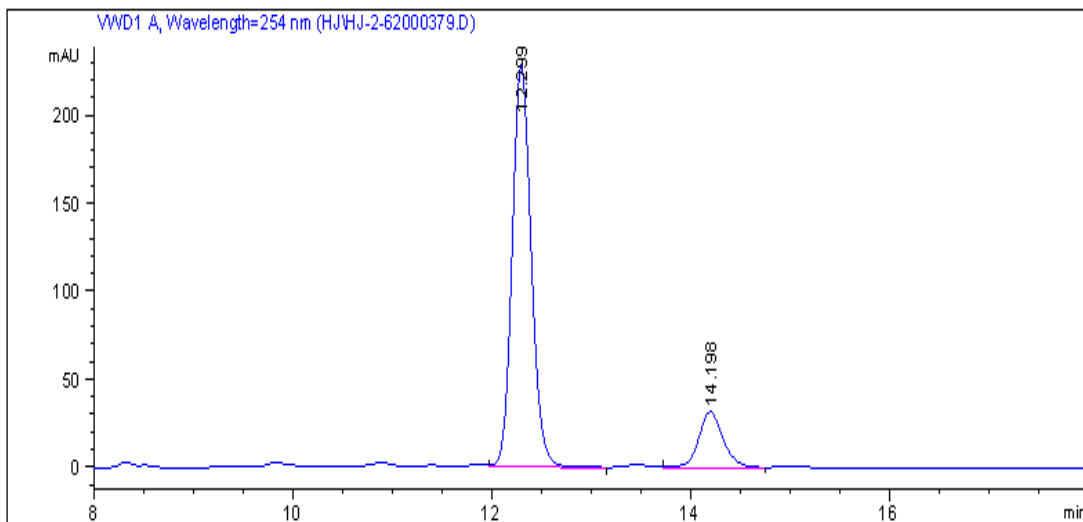
Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	13.852	VB	0.2824	5110.34717	278.06882	49.8476
2	15.476	BB	0.3296	5141.58740	240.28020	50.1524



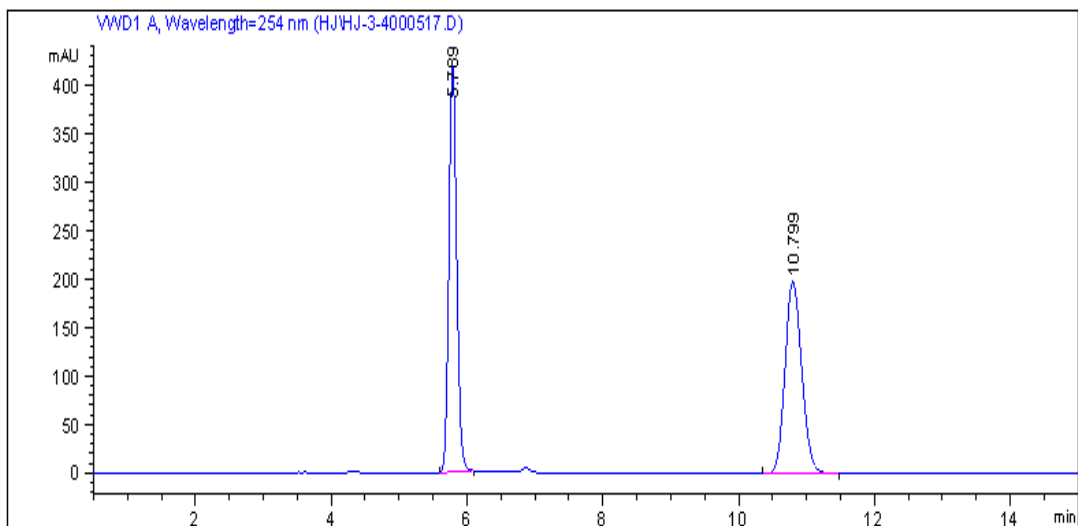
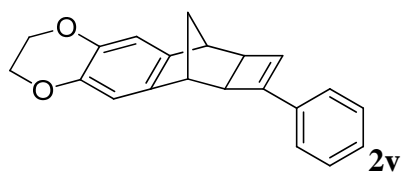
Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	13.657	BBA	0.2728	4935.91406	281.21570	87.9480
2	15.255	BBA	0.3137	676.39691	33.19622	12.0520



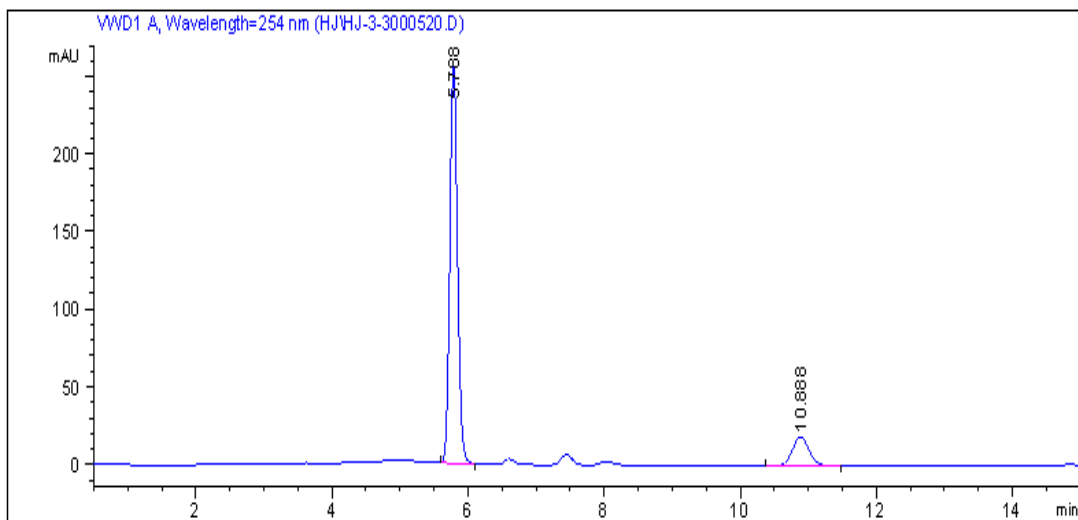
Peak #	RetTime [min]	Type	Width [min]	Area [mAU* s]	Height [mAU]	Area %
1	12.341	BB	0.2065	2676.59717	202.16405	49.6473
2	14.275	VV	0.2436	2714.62842	172.50690	50.3527



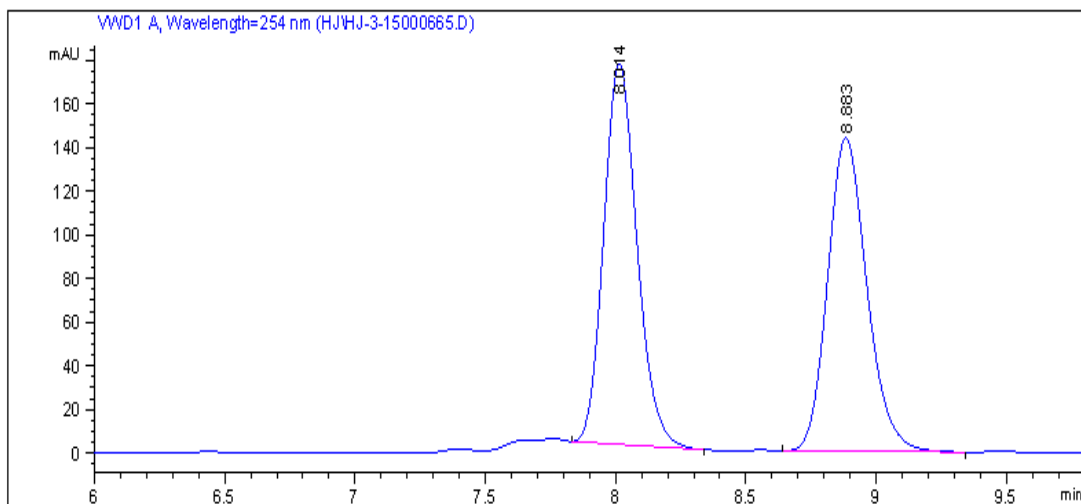
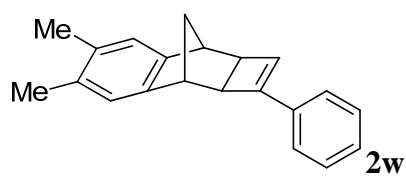
Peak #	RetTime [min]	Type	Width [min]	Area [mAU* s]	Height [mAU]	Area %
1	12.299	VB	0.2068	3029.28491	228.35631	84.6225
2	14.198	VV	0.2662	550.47595	31.75687	15.3775



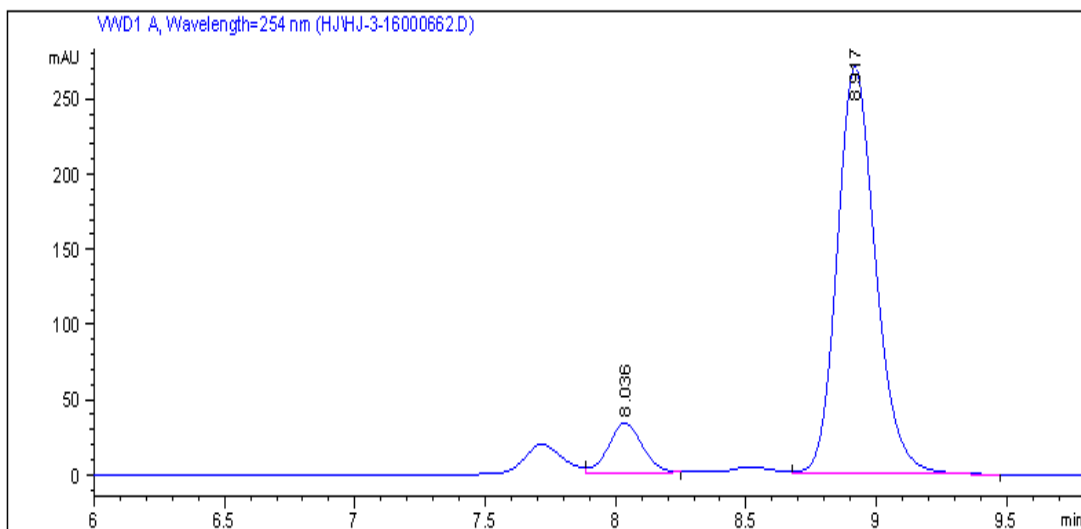
Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	5.789	BBA	0.1258	3358.72192	417.78687	49.7381
2	10.799	BBA	0.2676	3394.09766	198.39313	50.2619



Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	5.788	BBA	0.1239	2012.01245	255.41867	86.5950
2	10.888	BBA	0.2652	311.46225	18.42547	13.4050

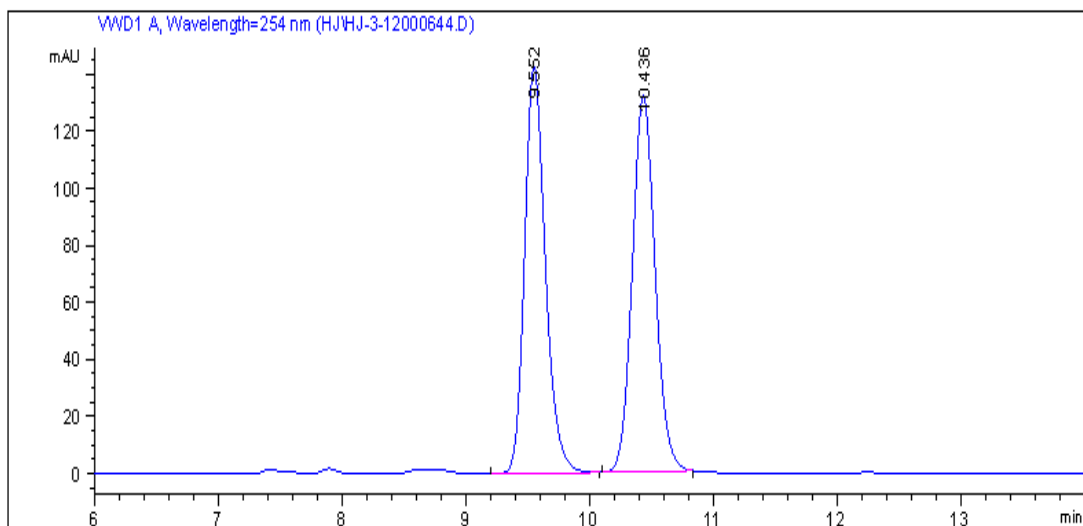
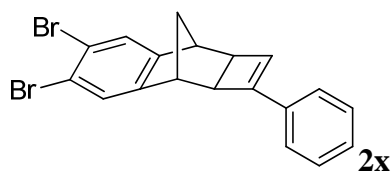


Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	8.014	BBA	0.1357	1546.61328	174.01872	50.7084
2	8.883	BB	0.1626	1503.40137	143.09990	49.2916

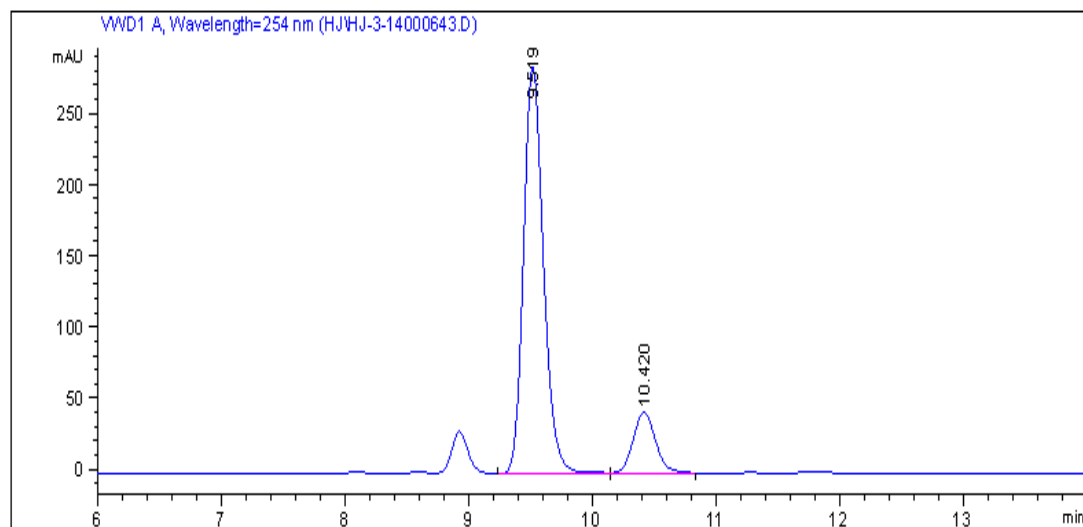


Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	8.036	VV	0.1375	298.78506	33.05334	9.7576
2	8.917	VB	0.1596	2763.29053	269.52576	90.2424





Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	9.552	BB	0.1798	1659.56689	142.61021	49.5768
2	10.436	BBA	0.1976	1687.89844	131.62720	50.4232



Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	9.519	BV	0.1701	3184.92969	285.55975	85.5529
2	10.420	VBA	0.1994	537.83008	42.55865	14.4471