

Efficient Kinetic Resolution of Racemic 3-Nitro-2H-Chromene Derivatives Catalyzed by Takemoto's Organocatalyst

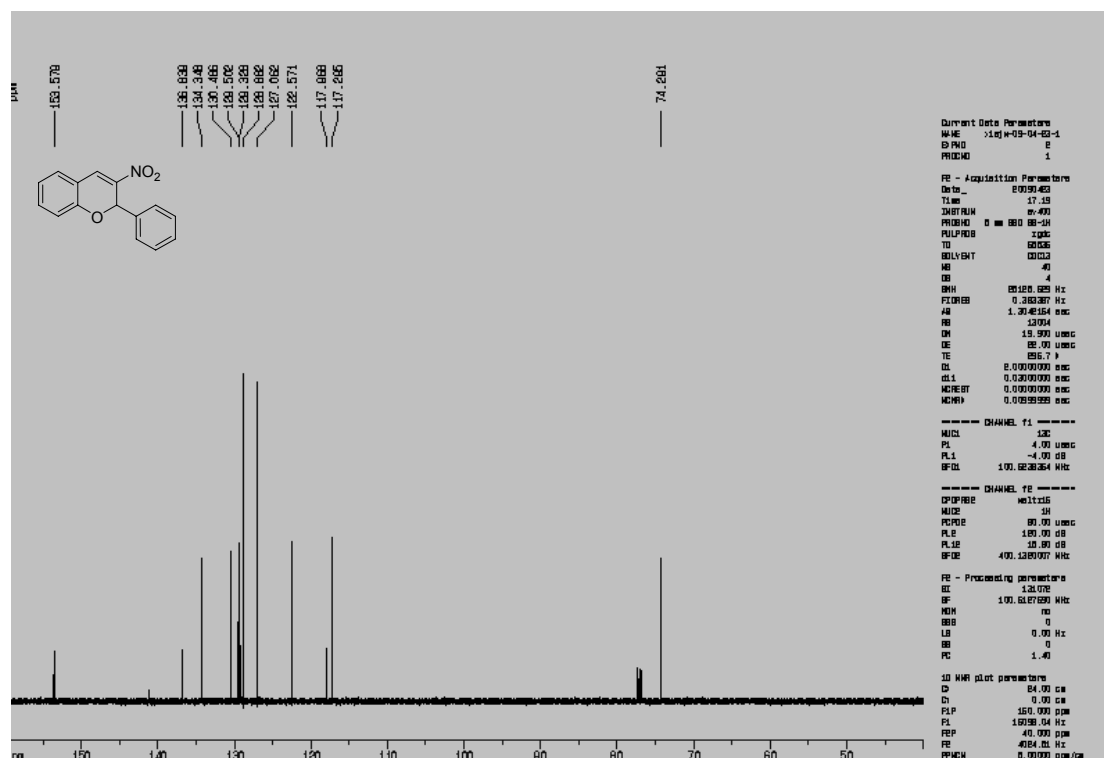
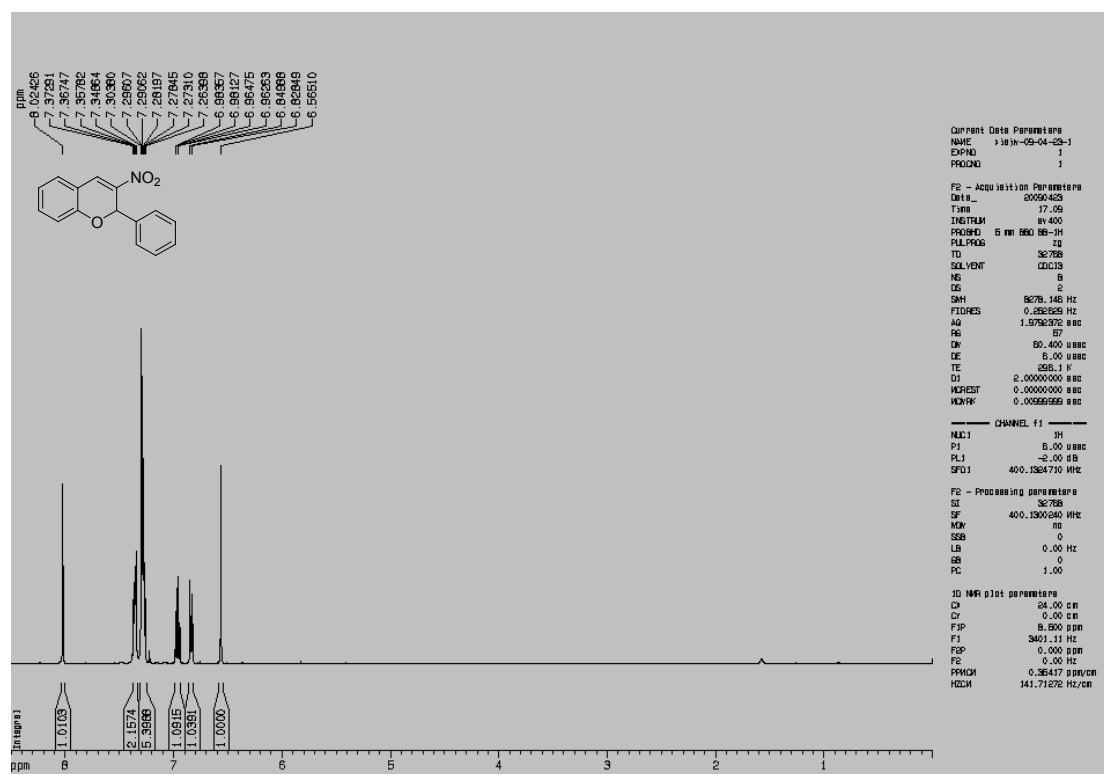
Jian-Wu Xie,^{a,*} Li-Ping Fan,^a Hong Su,^a Xin-Sheng Li,^a Dong-Cheng Xu^a

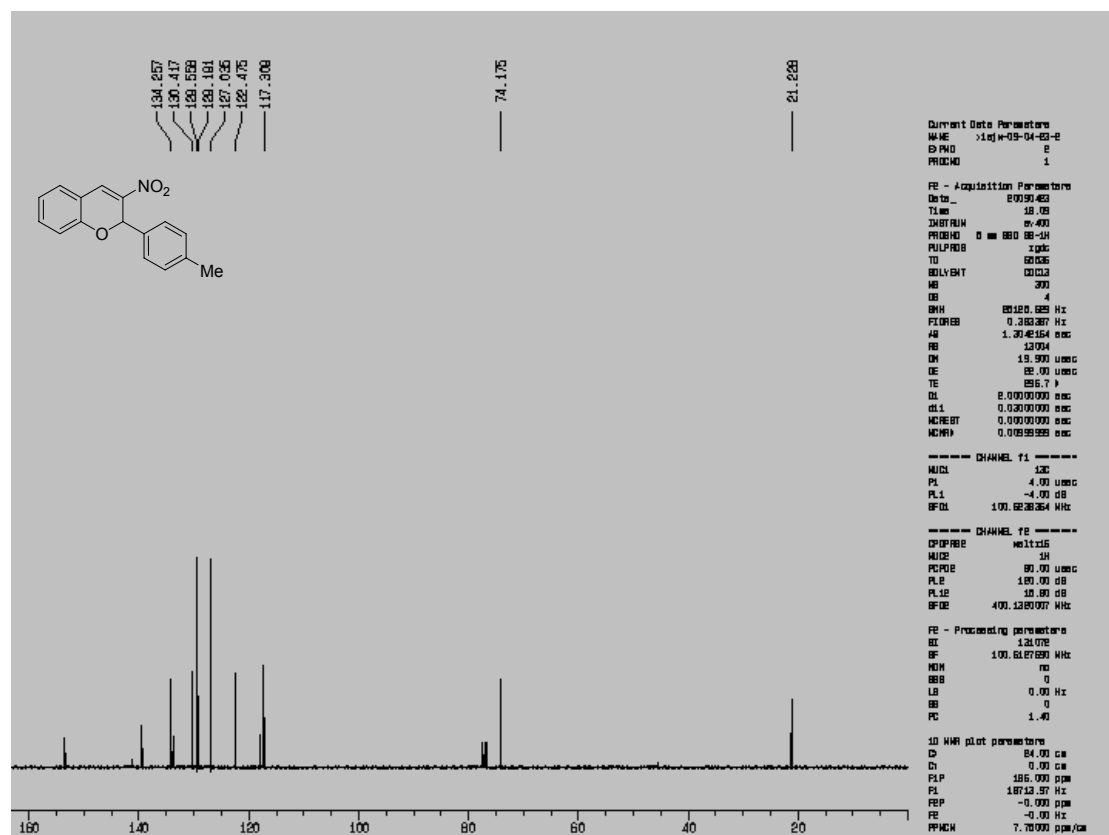
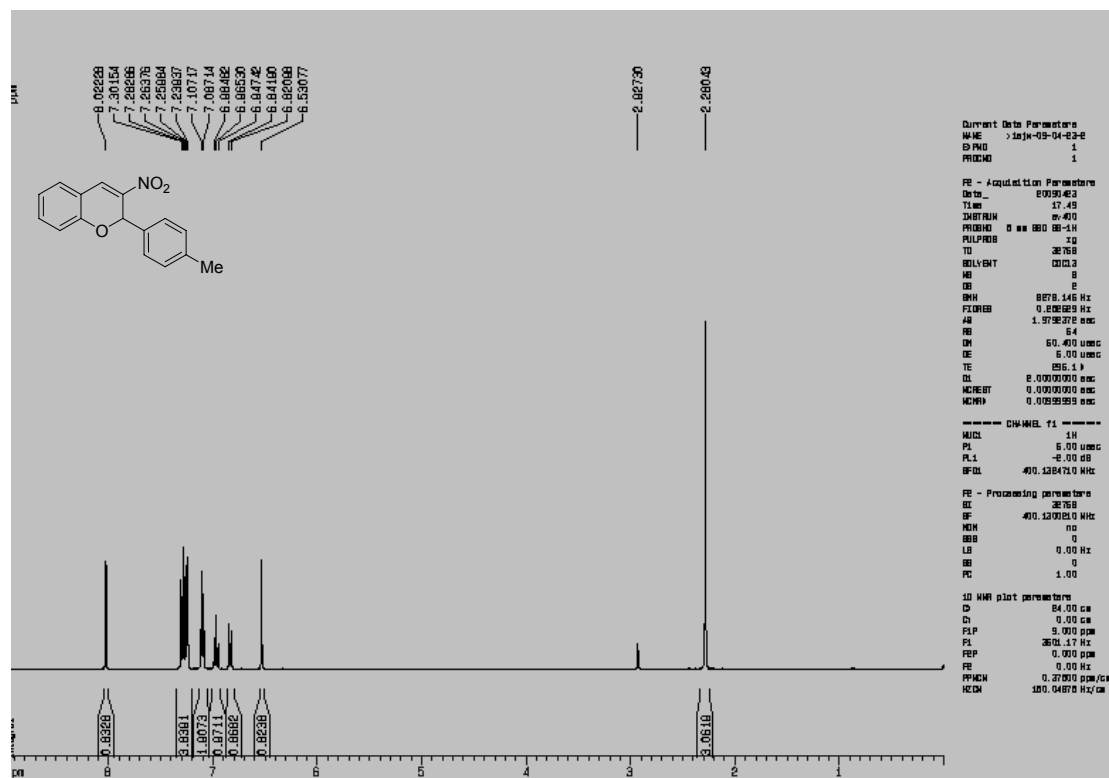
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Life Science, Zhejiang Normal University, Jinhua 321004, China;*

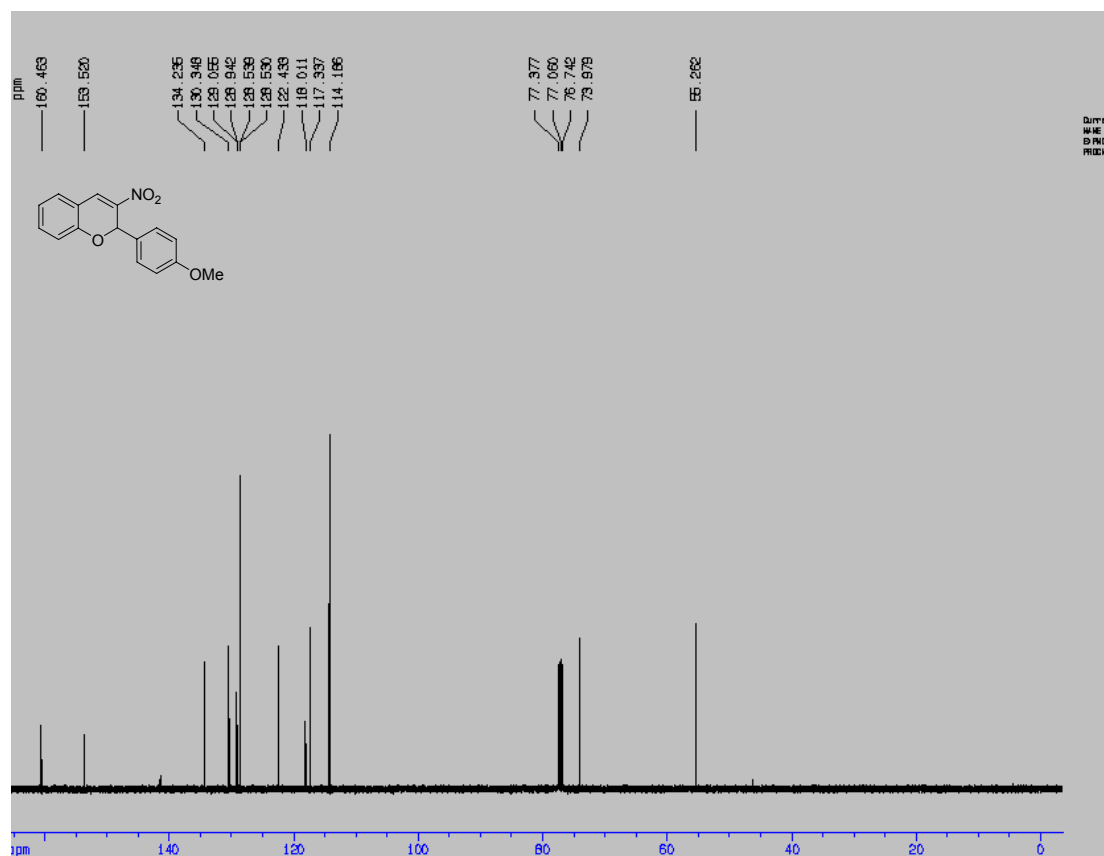
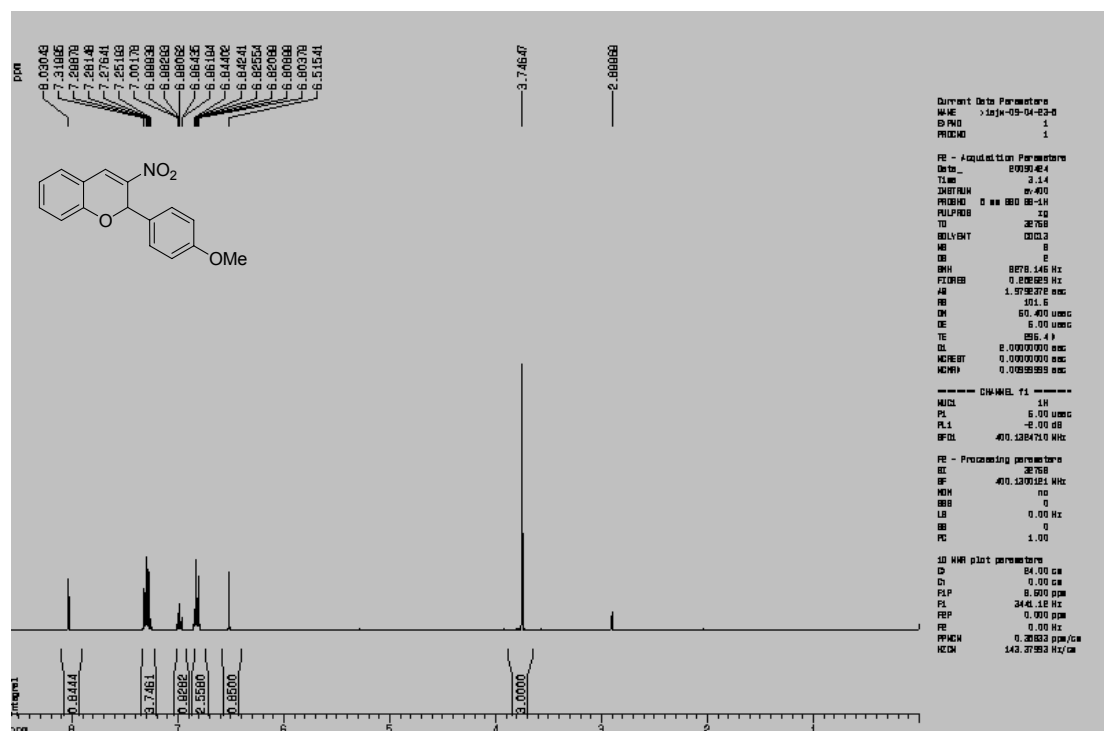
E-mail: xiejw@zjnu.cn; Fax: 86 579 82282610

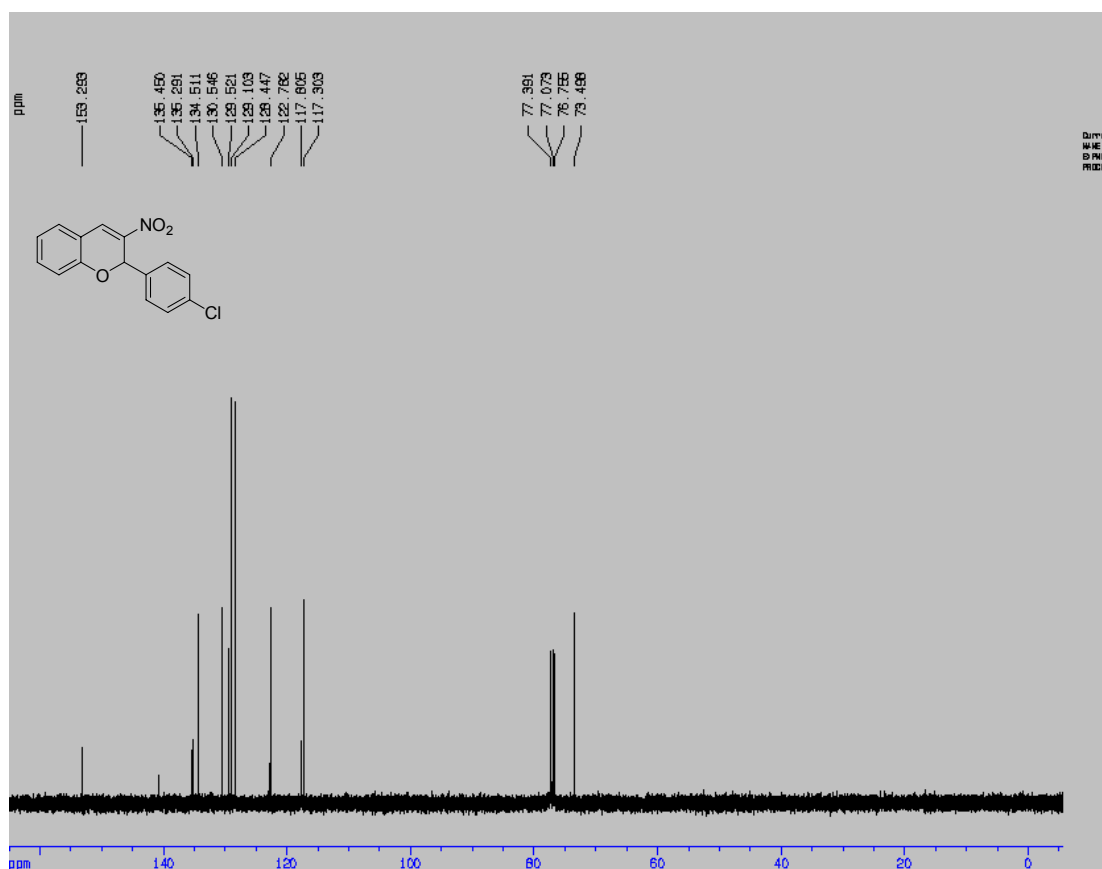
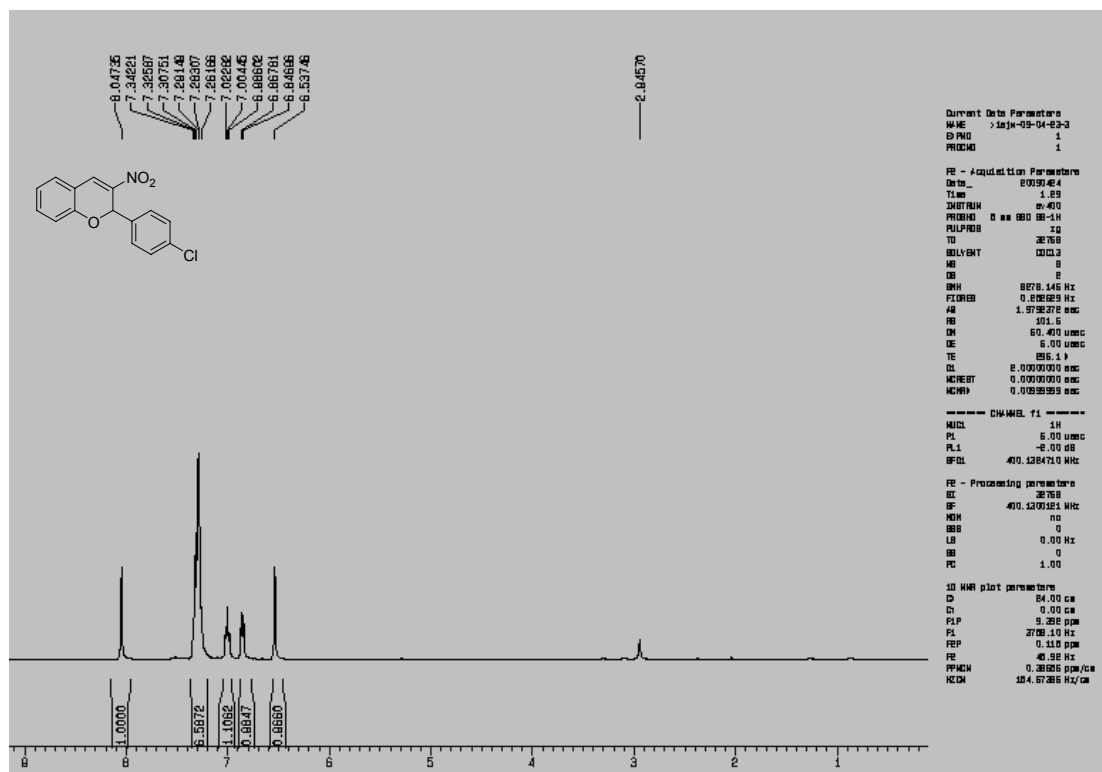
¹H, ¹³C NMR and HPLC spectra

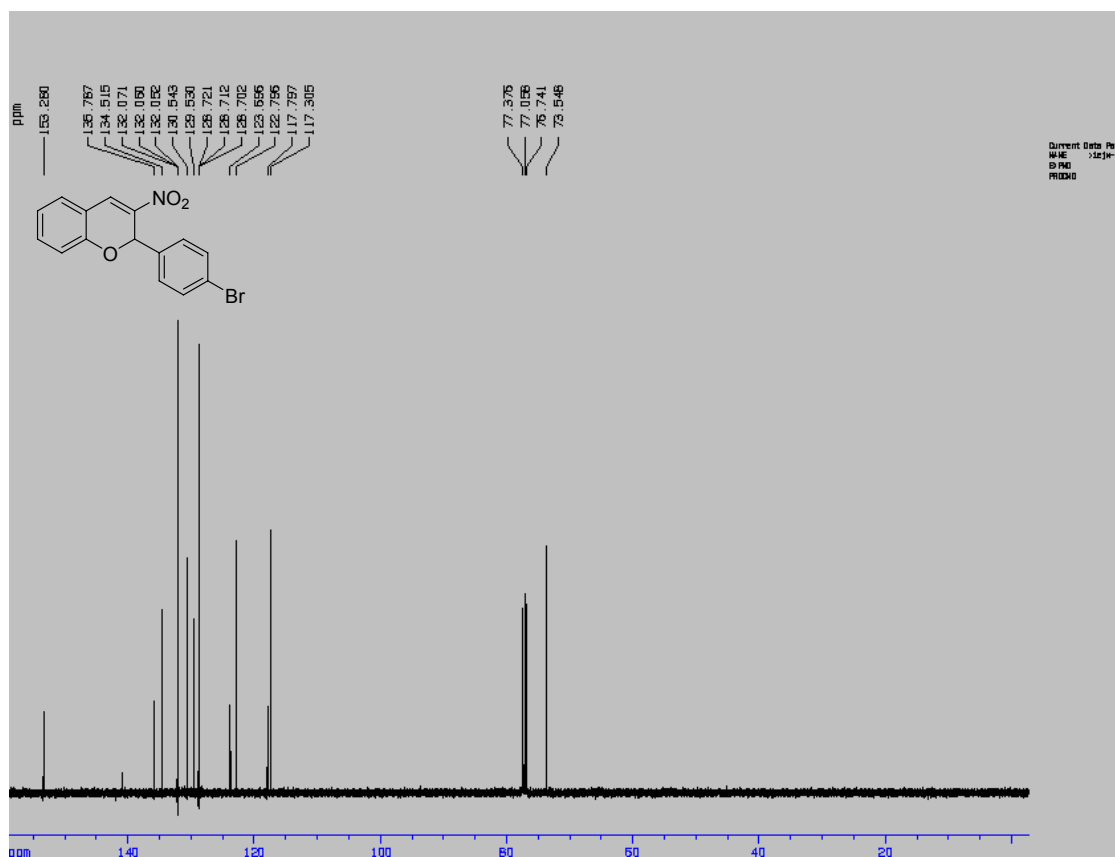
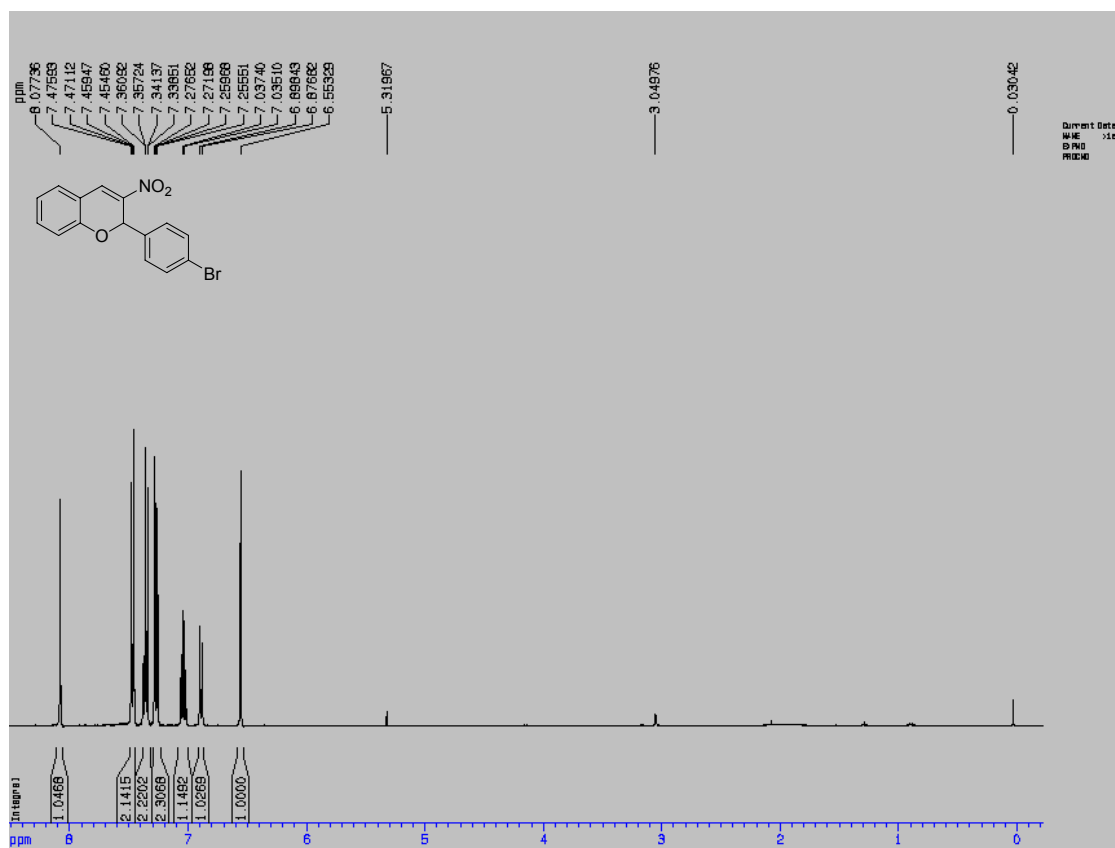
NMR

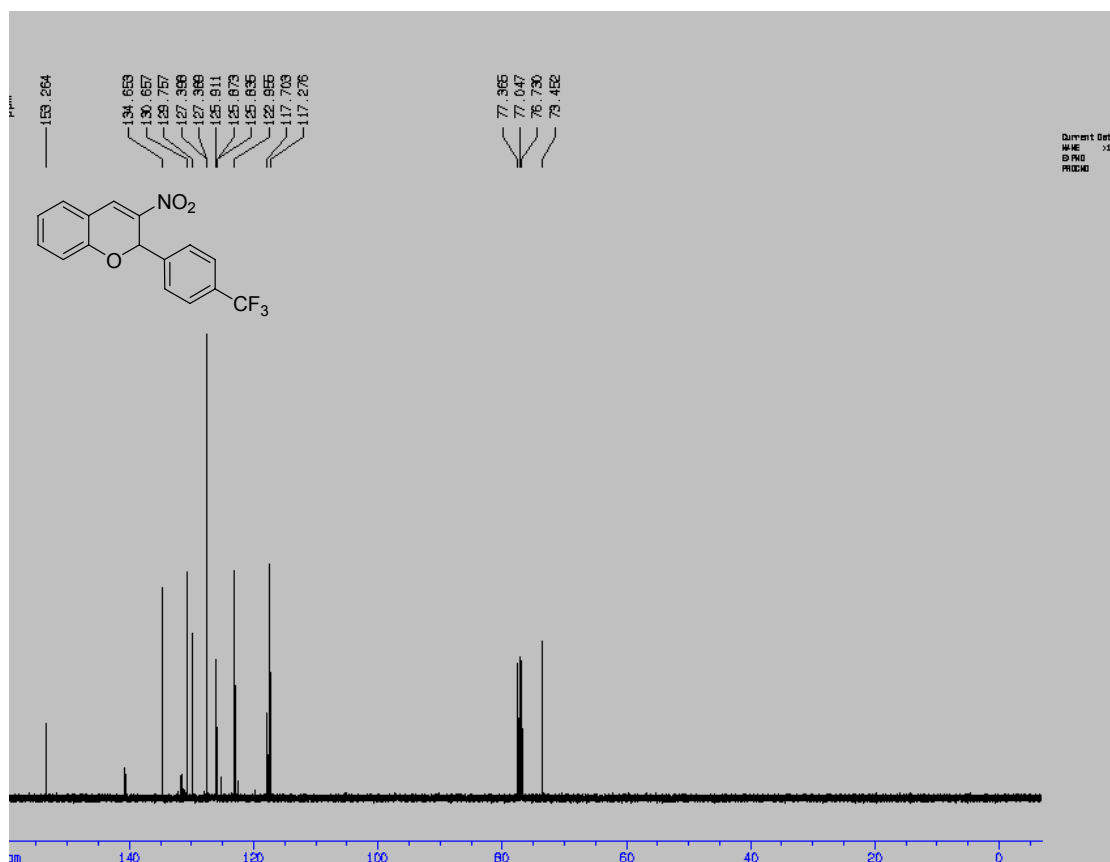
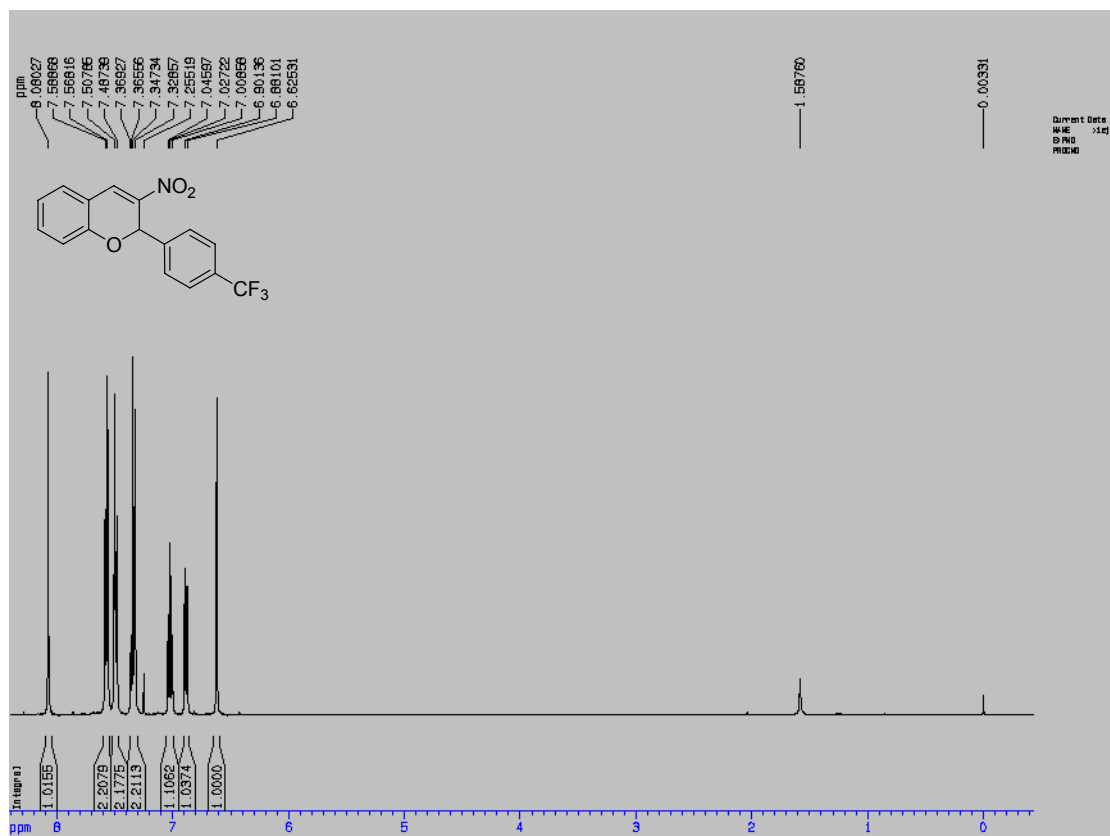


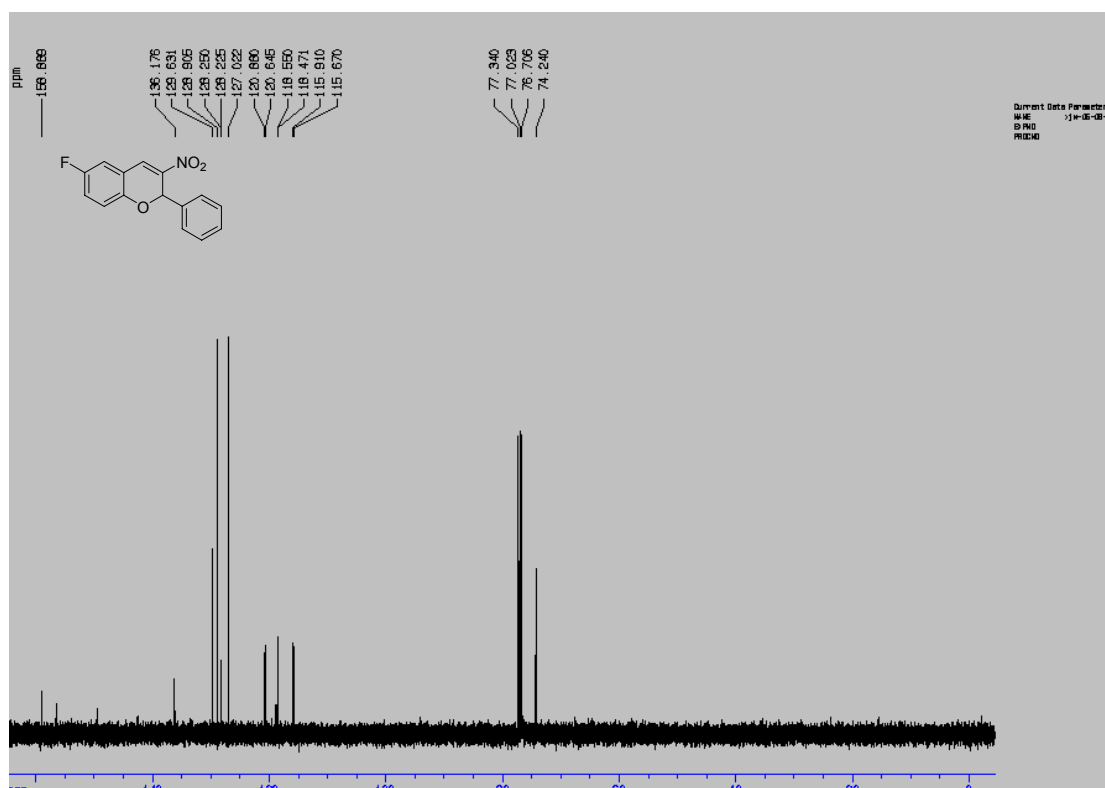
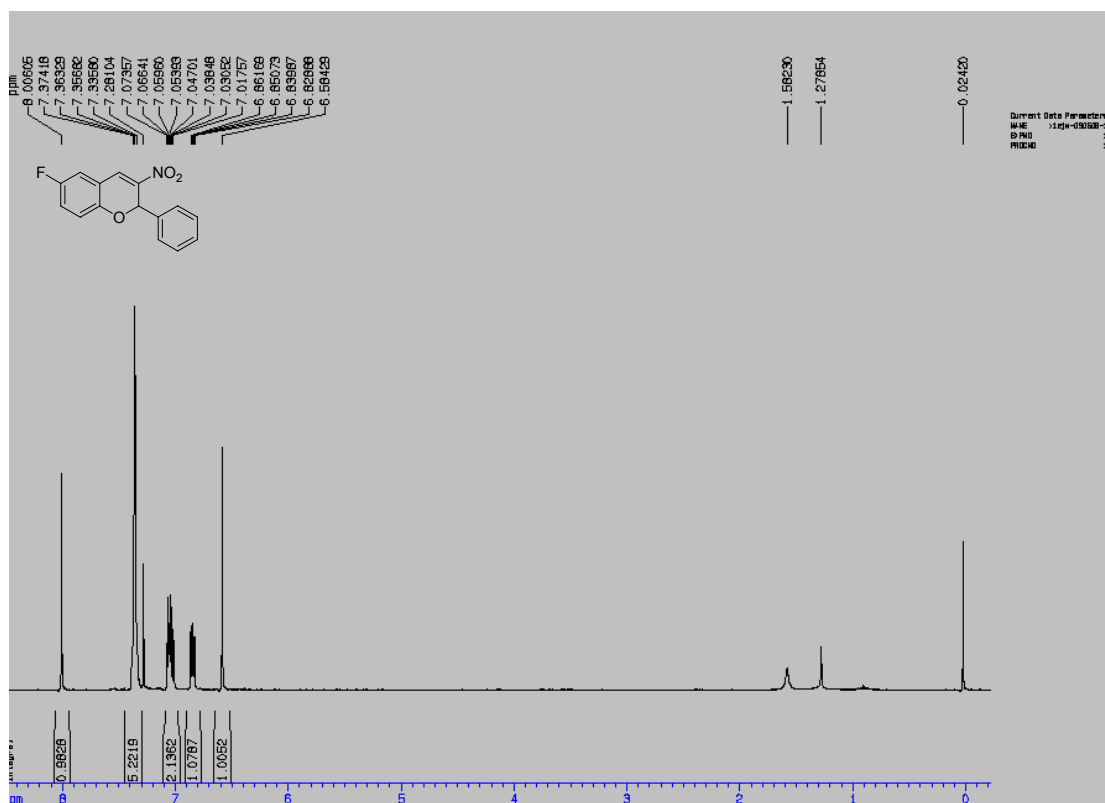


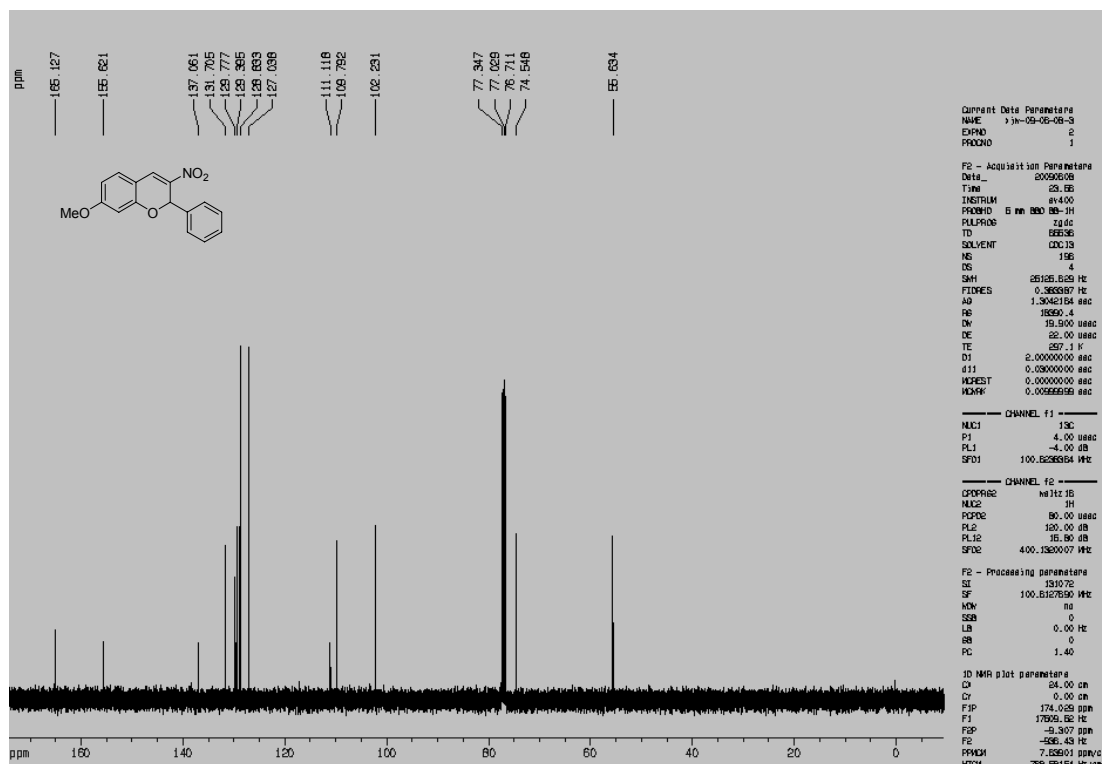
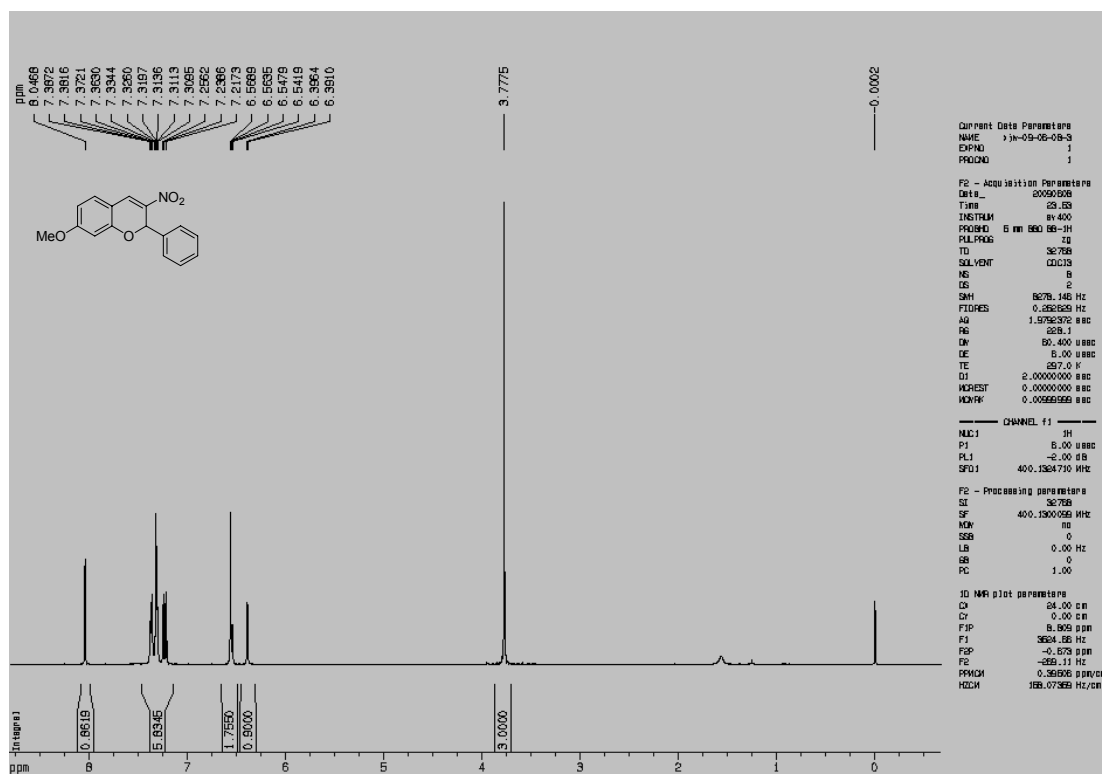


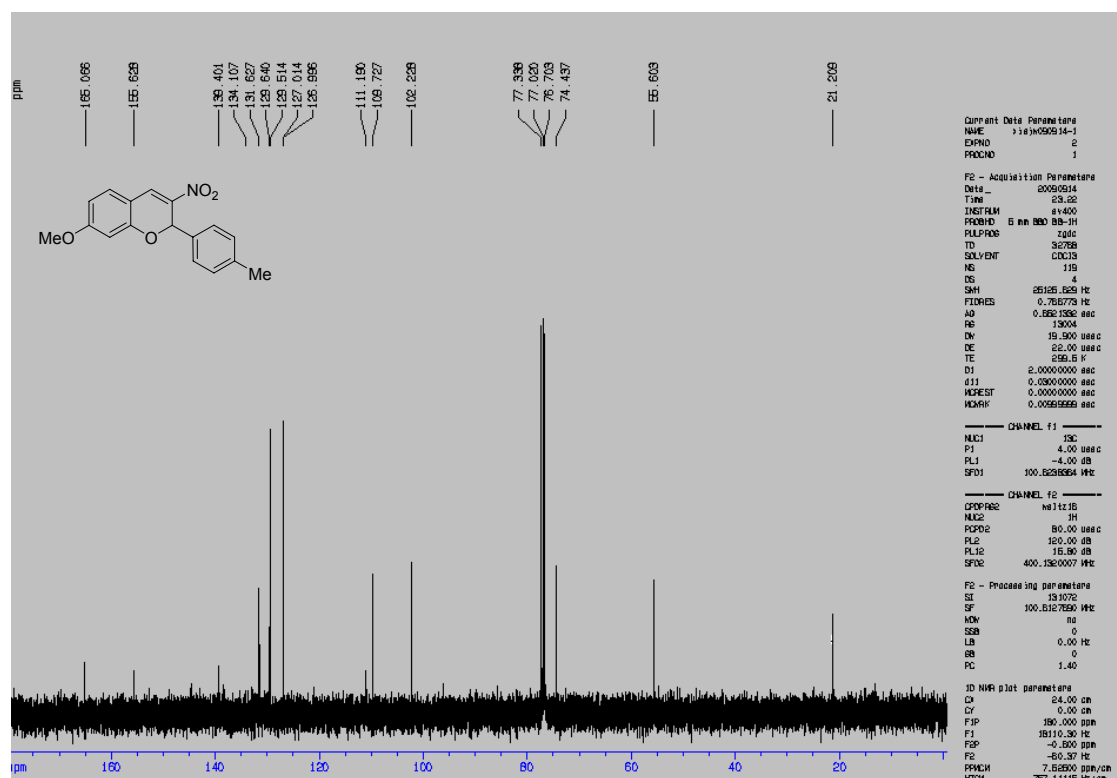
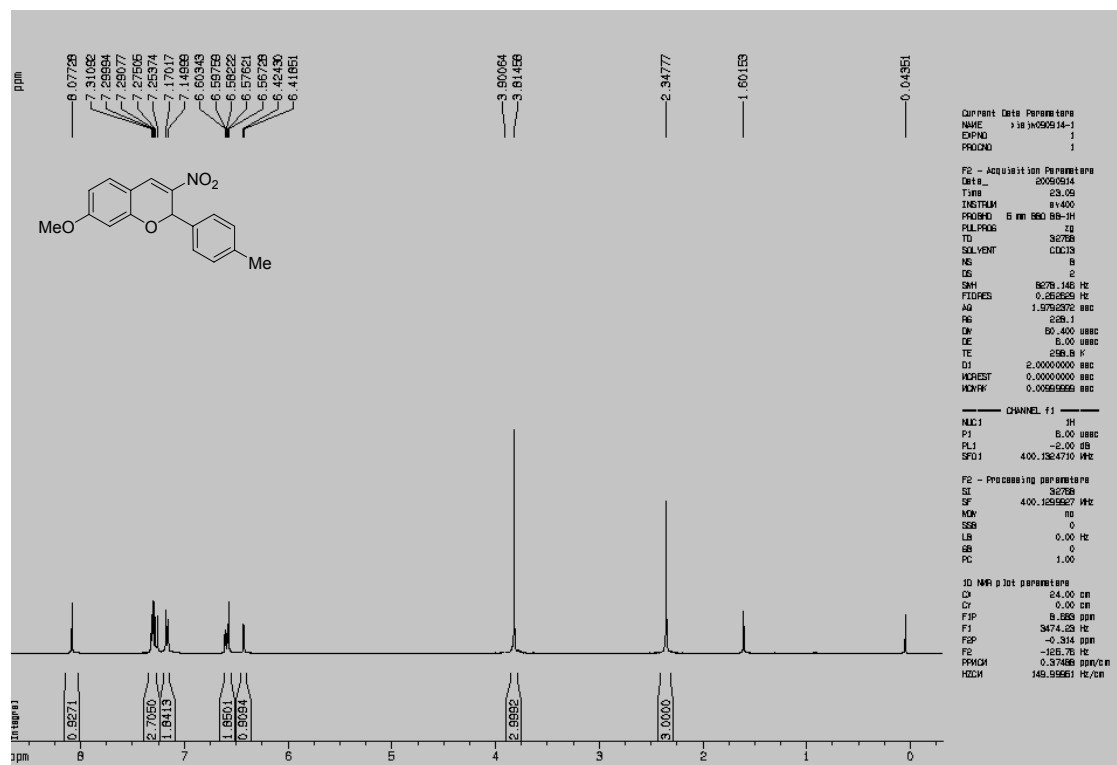


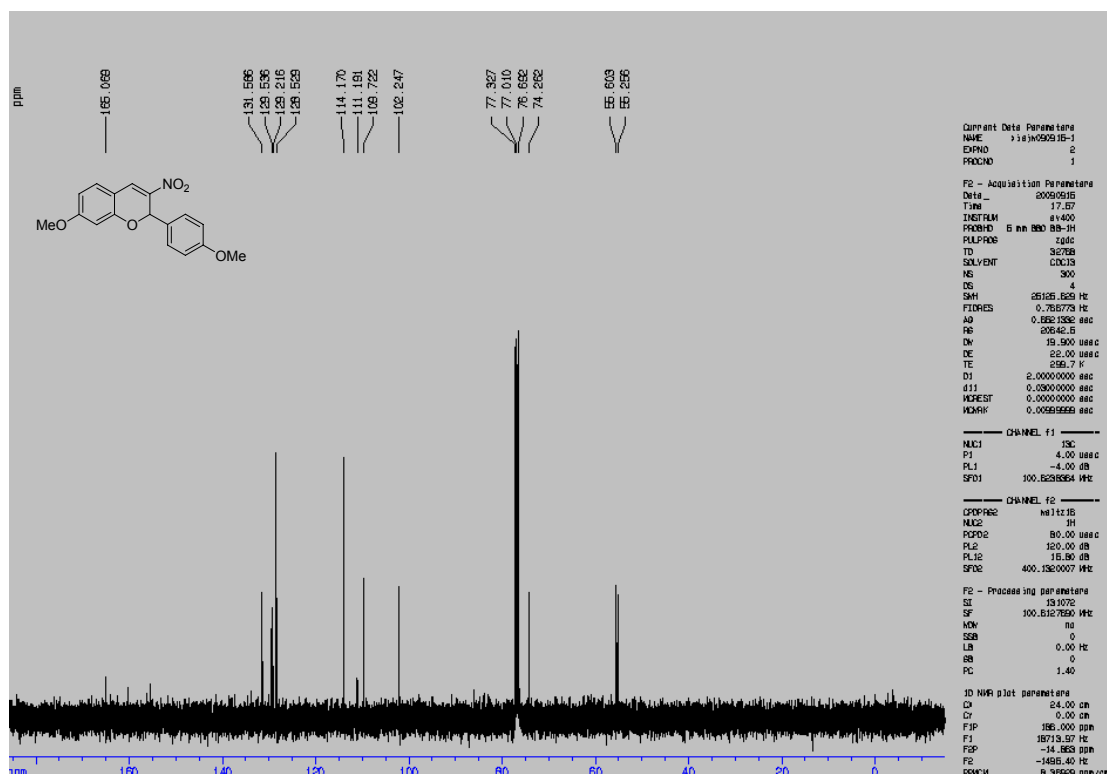
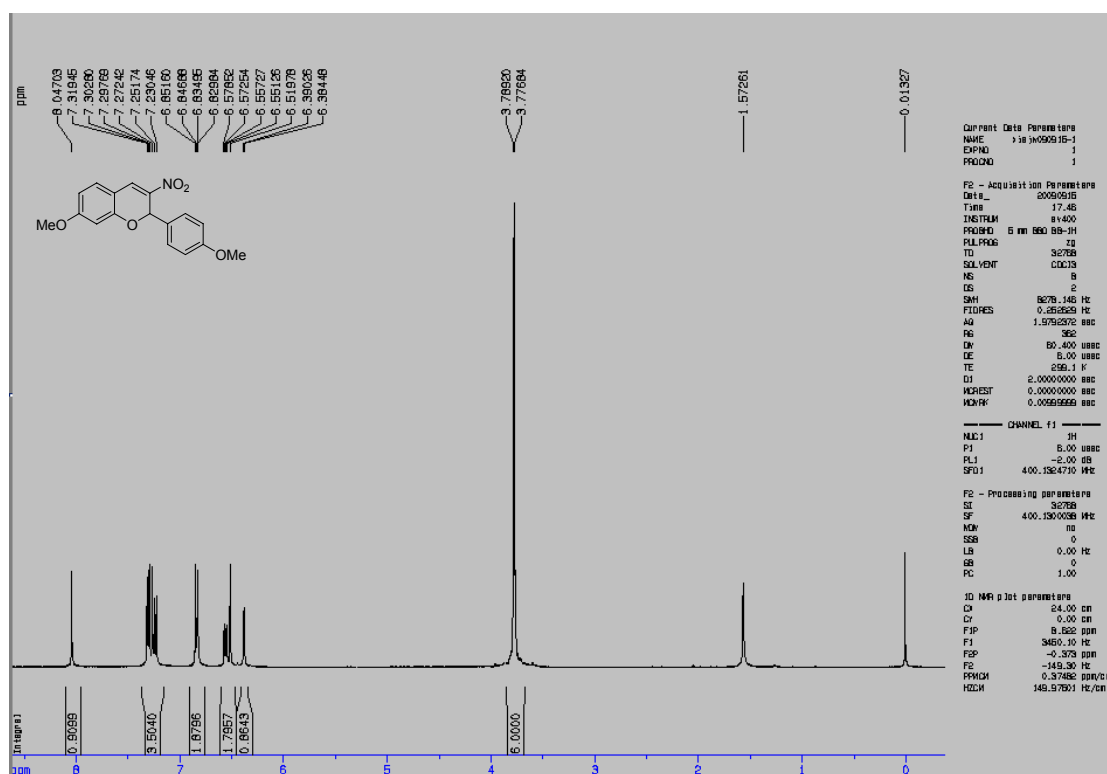


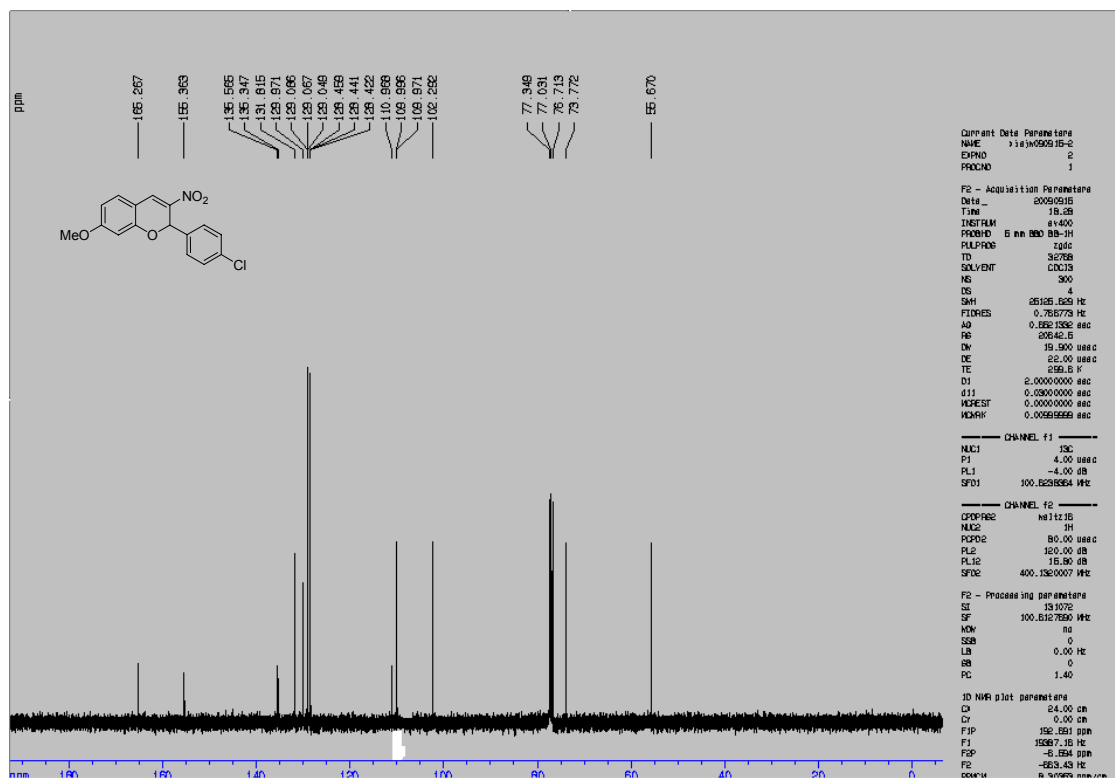
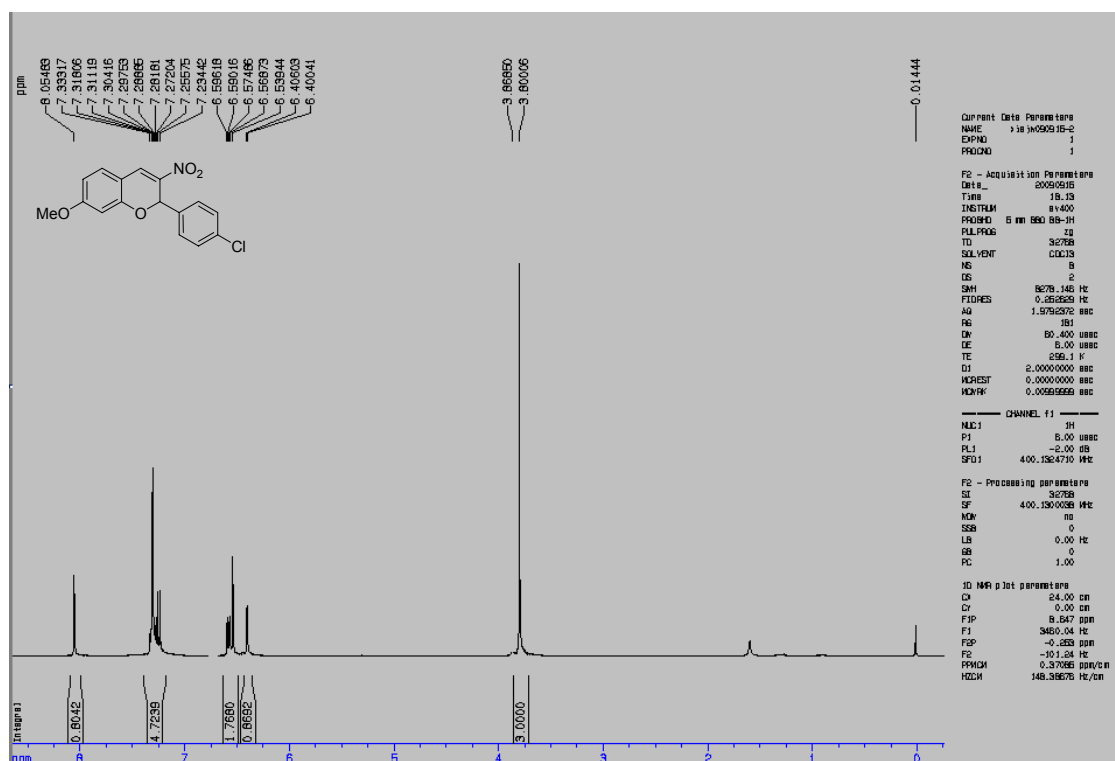


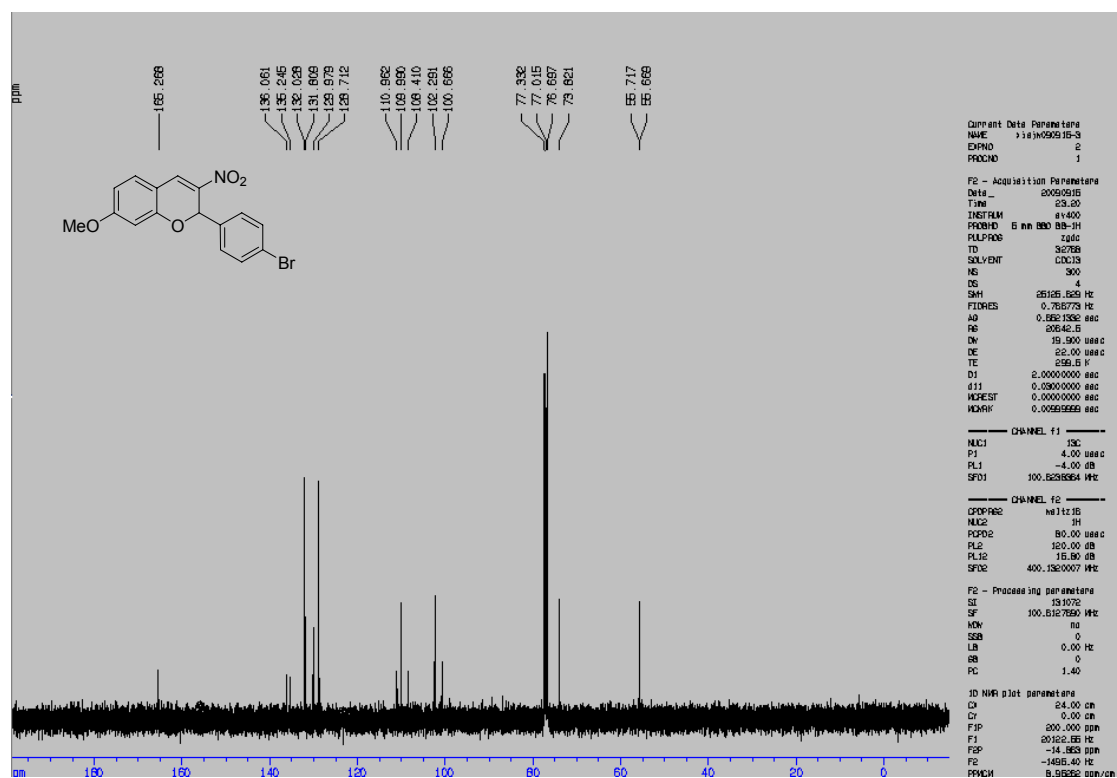
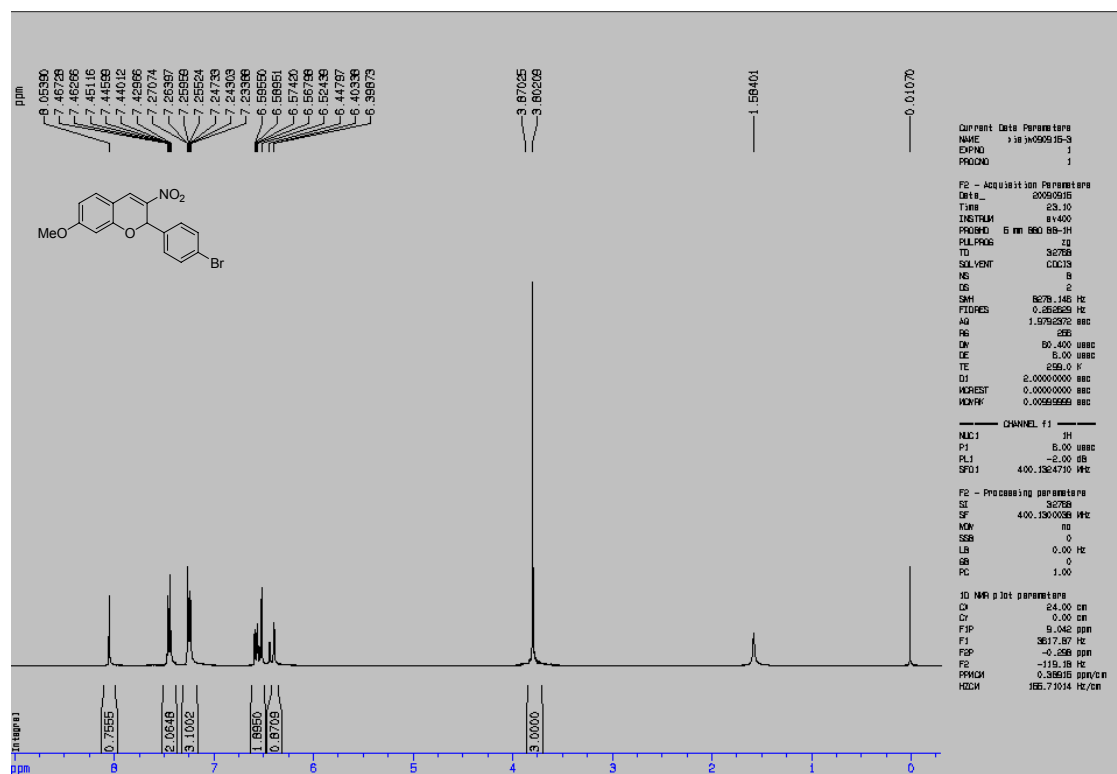


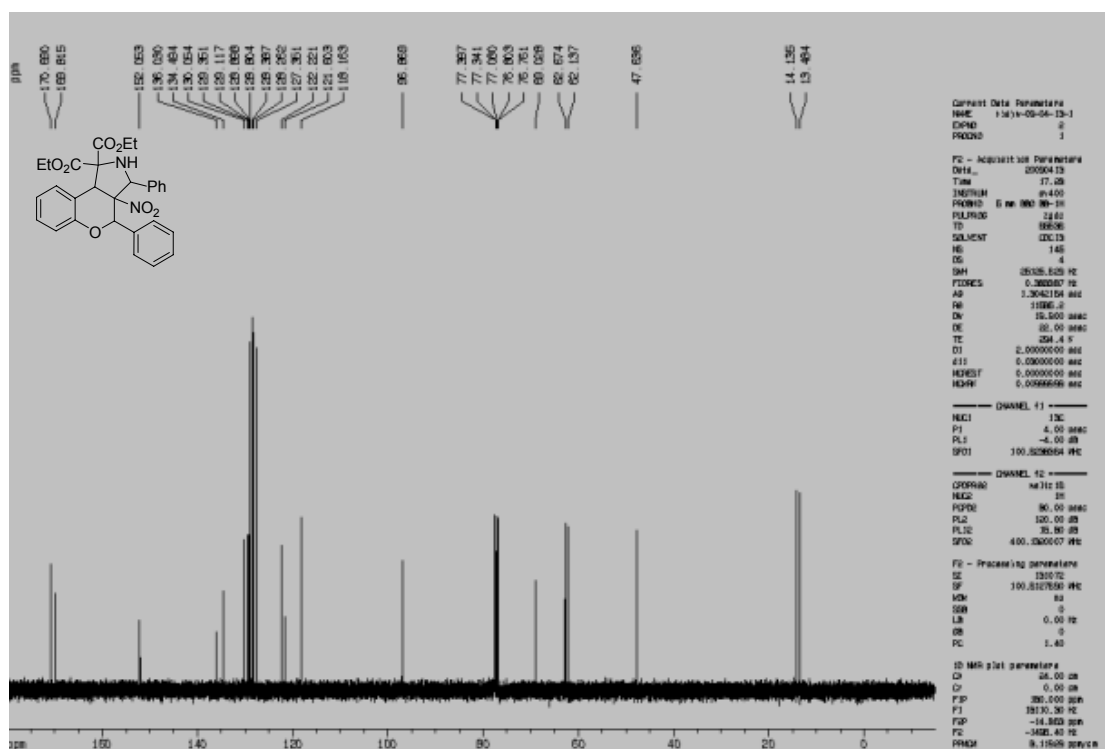
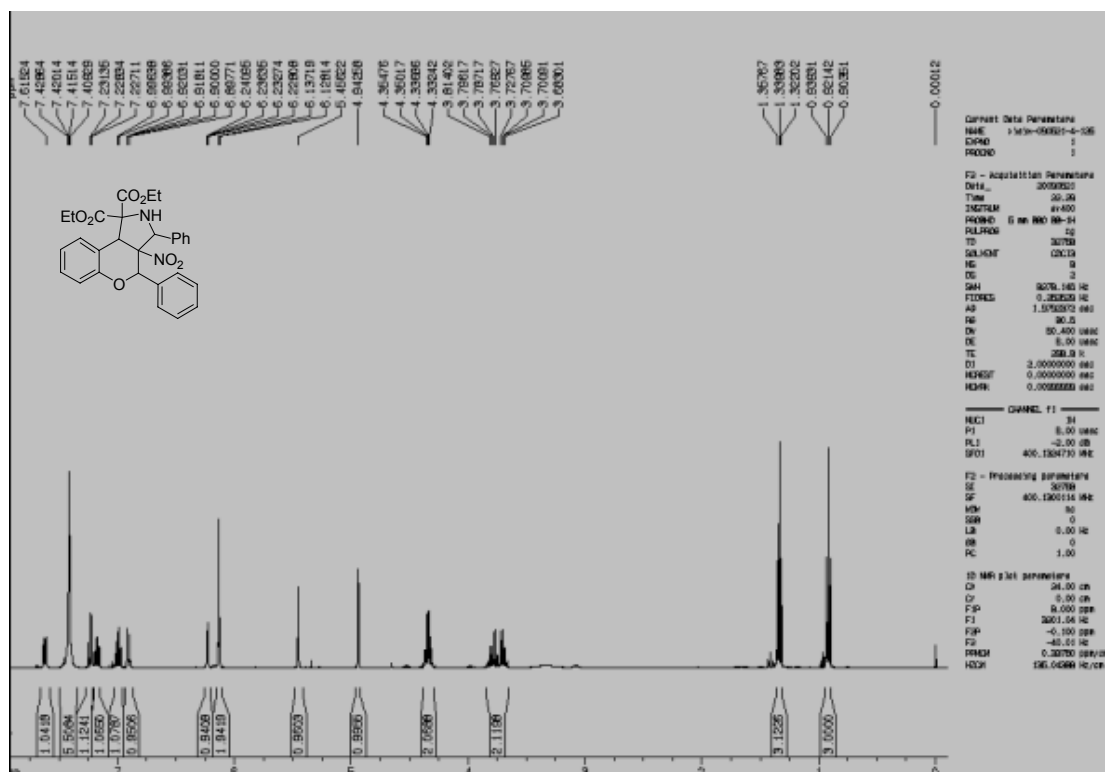


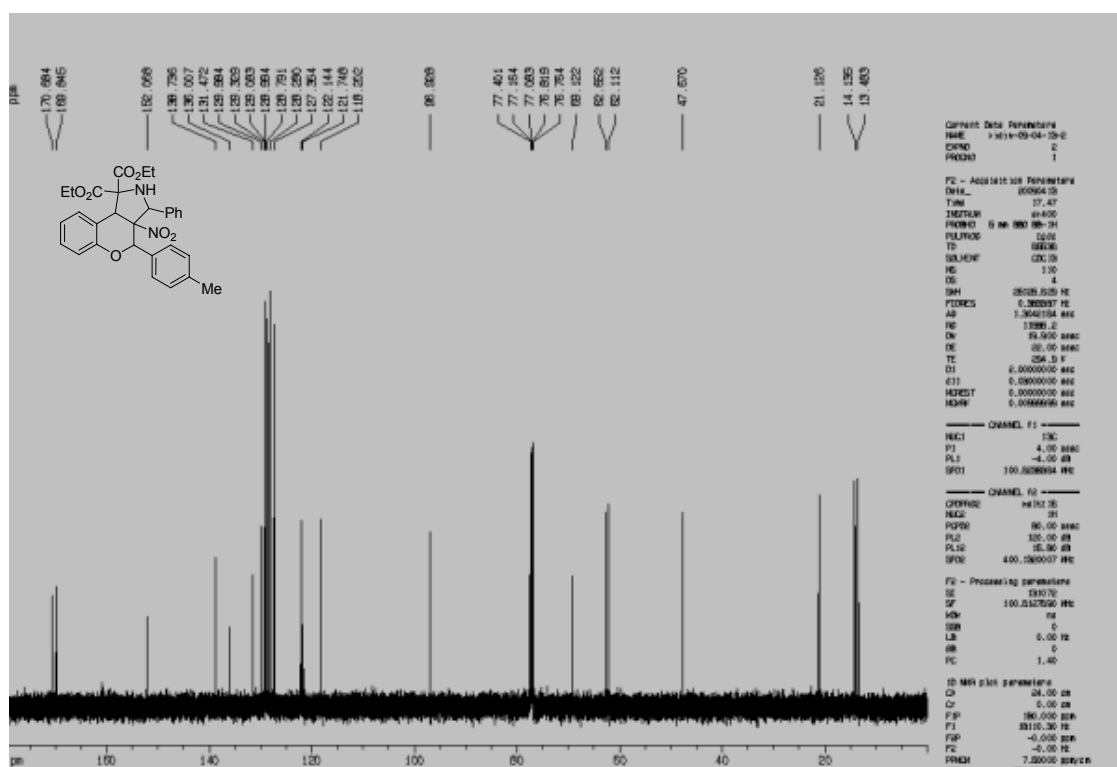
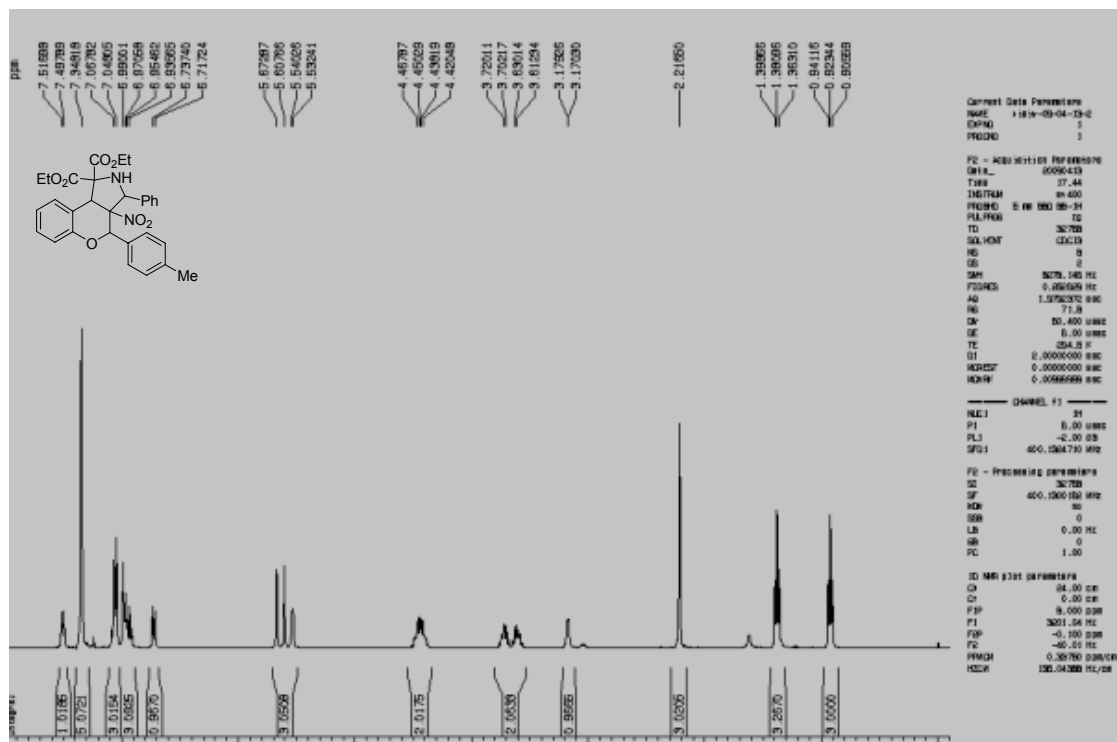


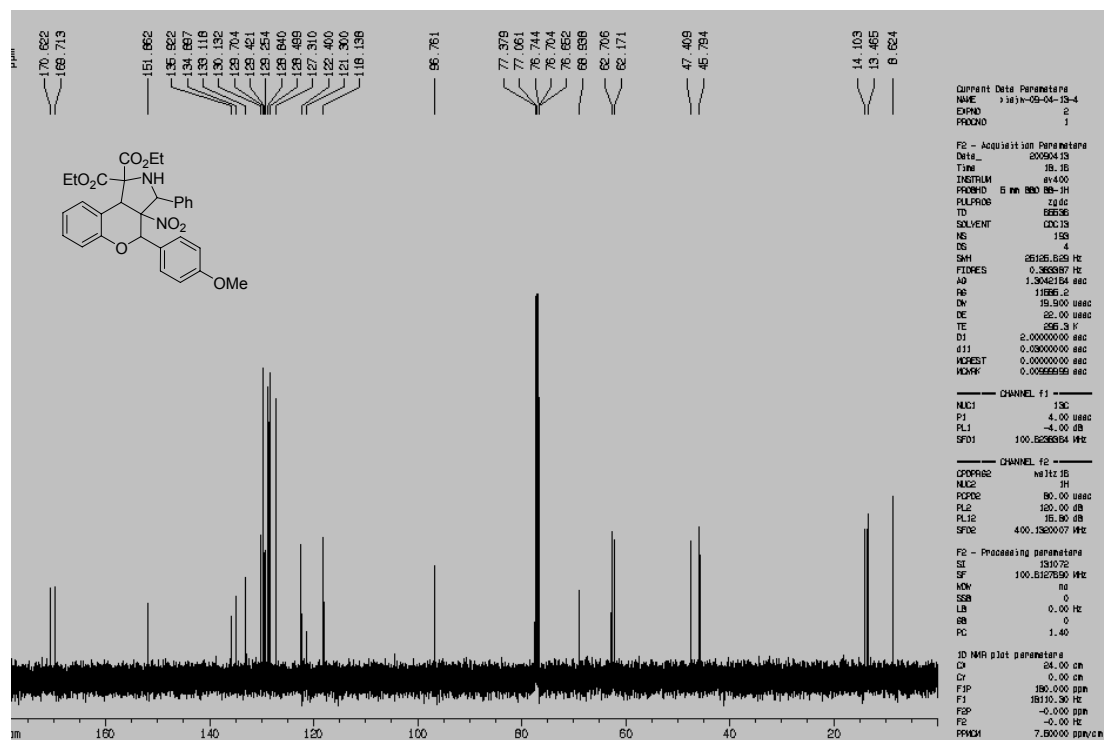
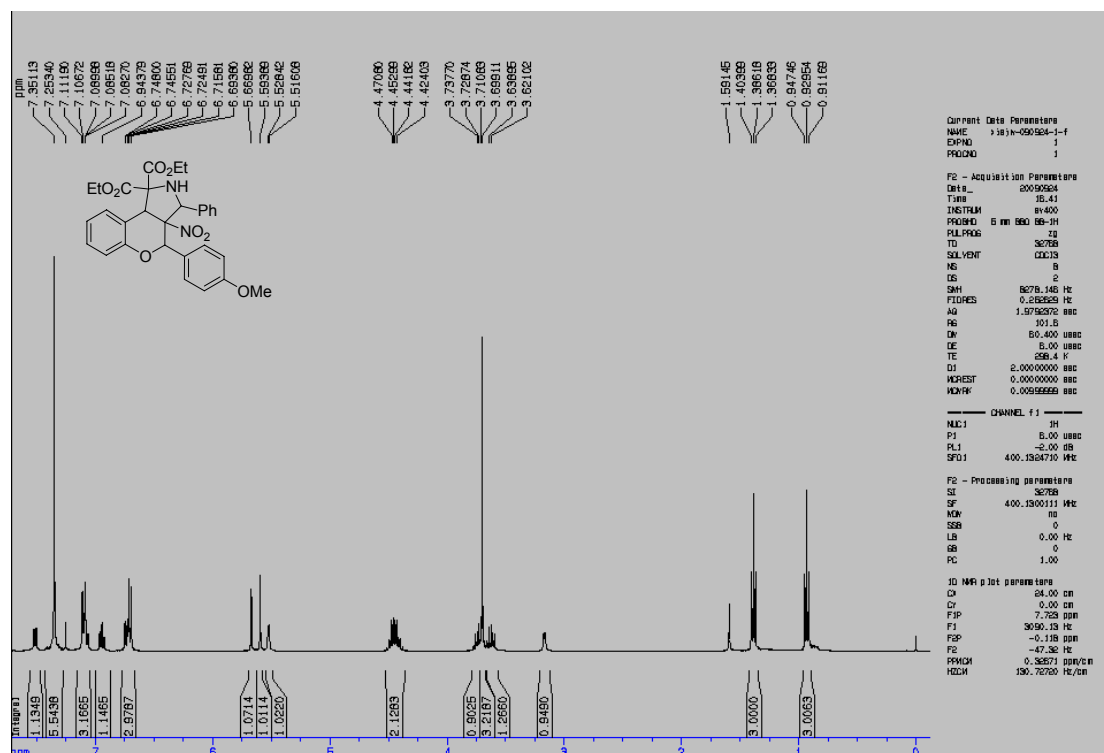


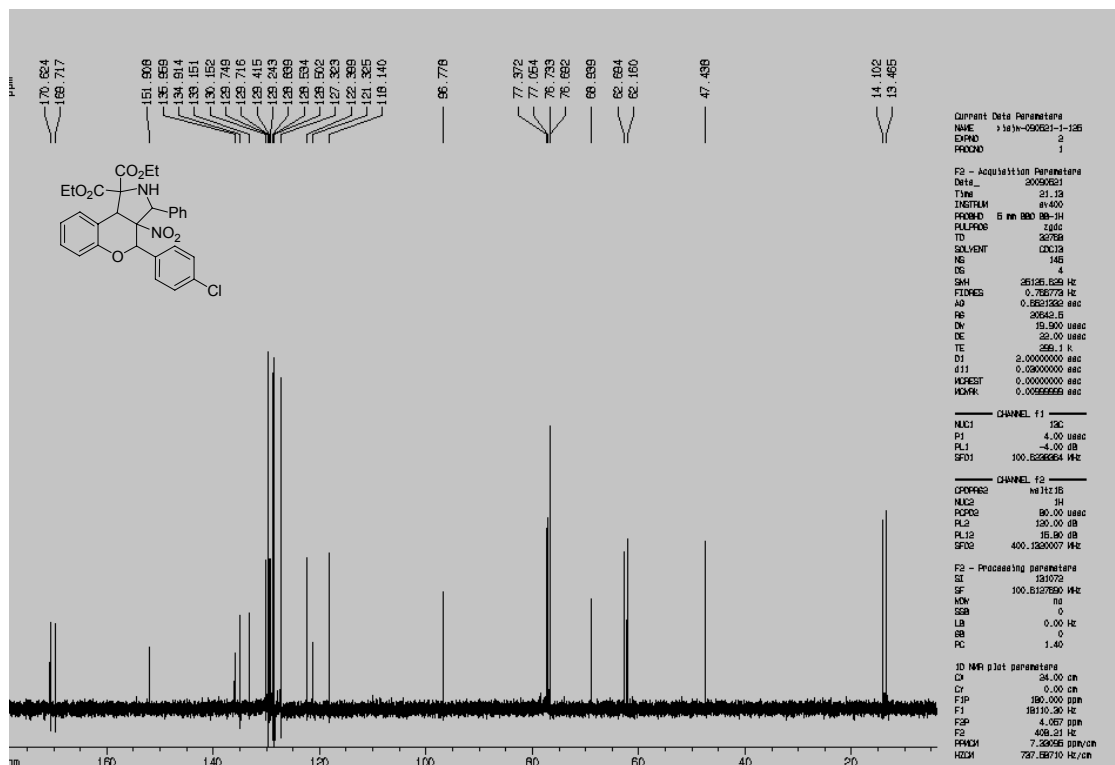
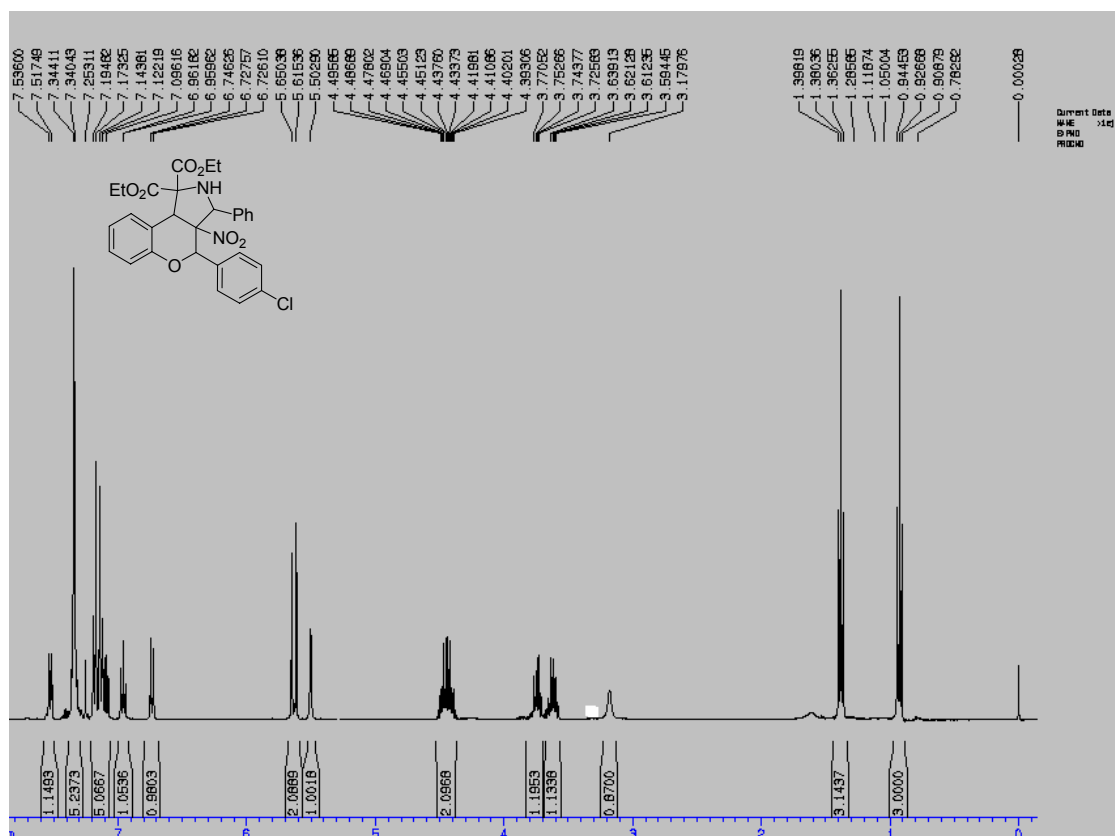


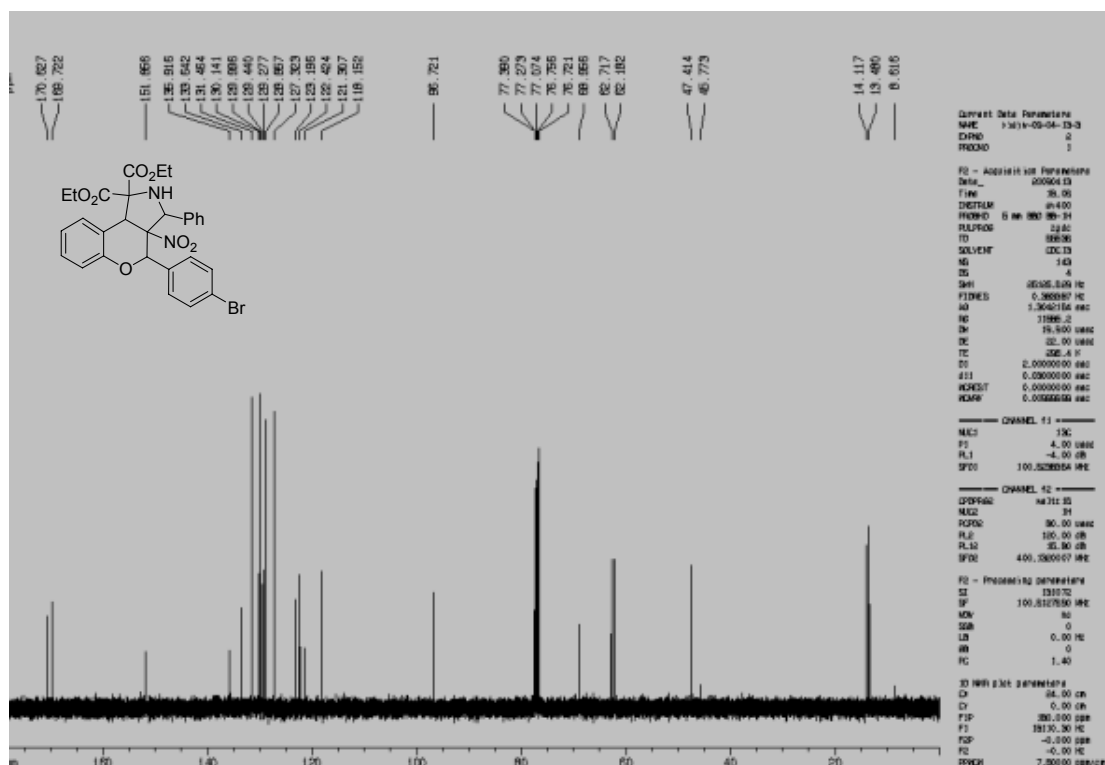
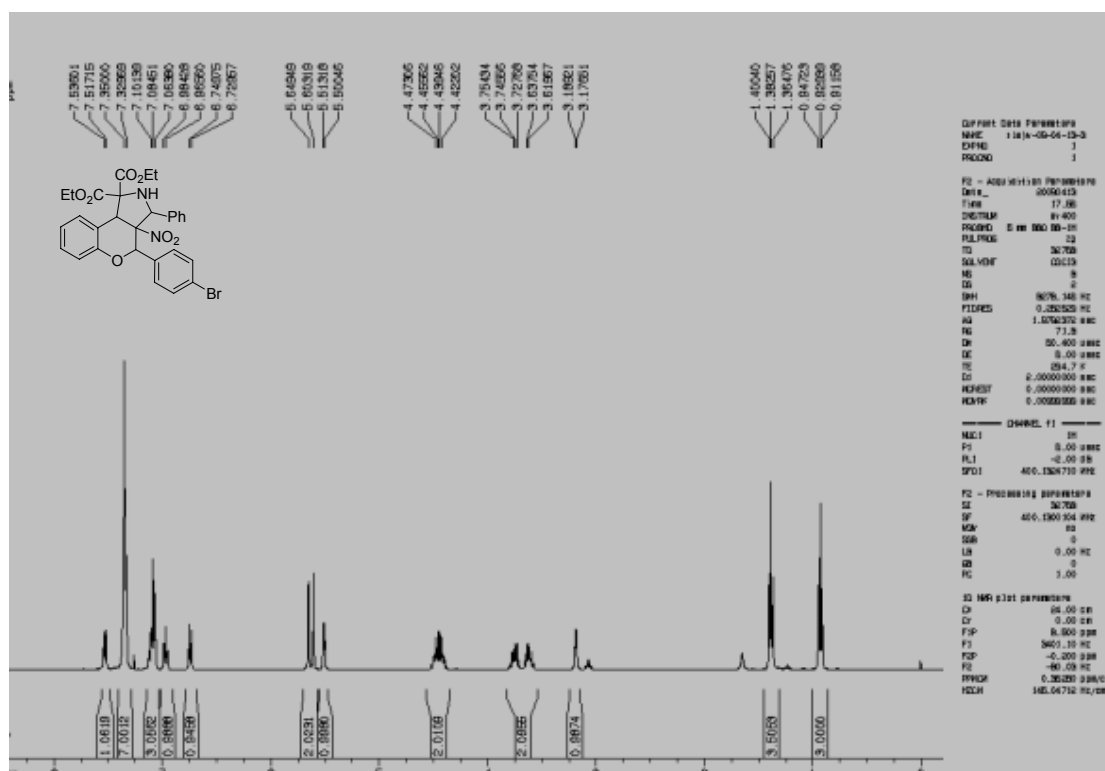


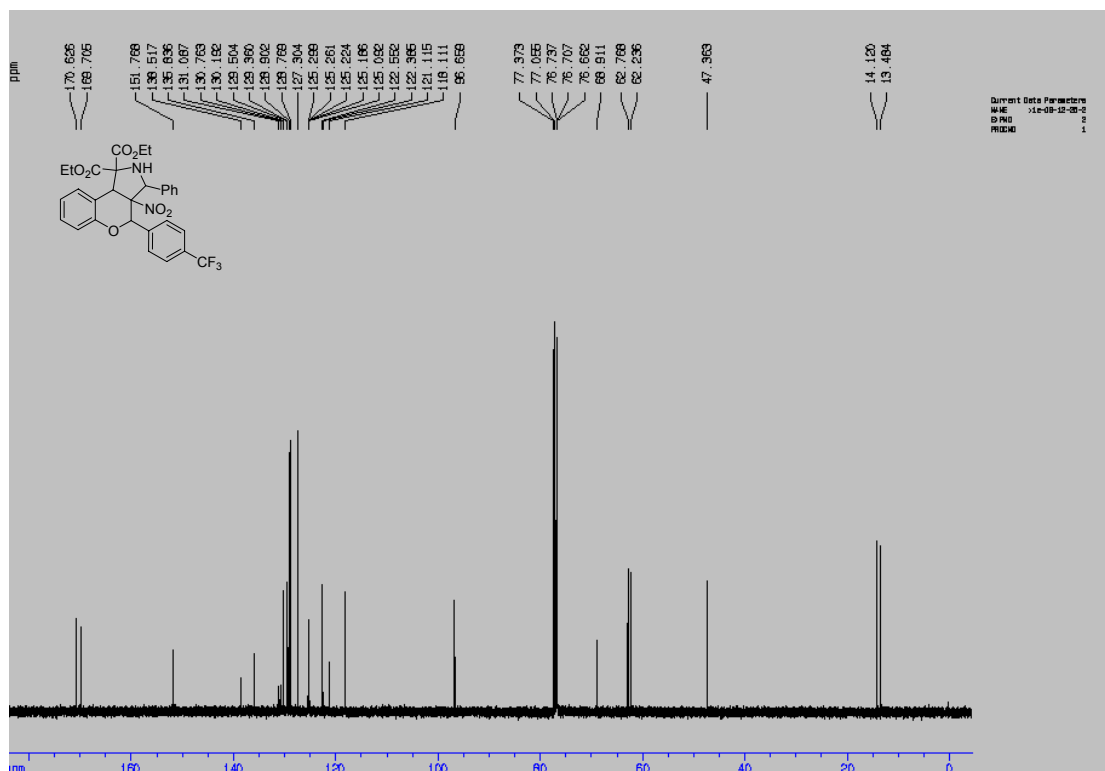
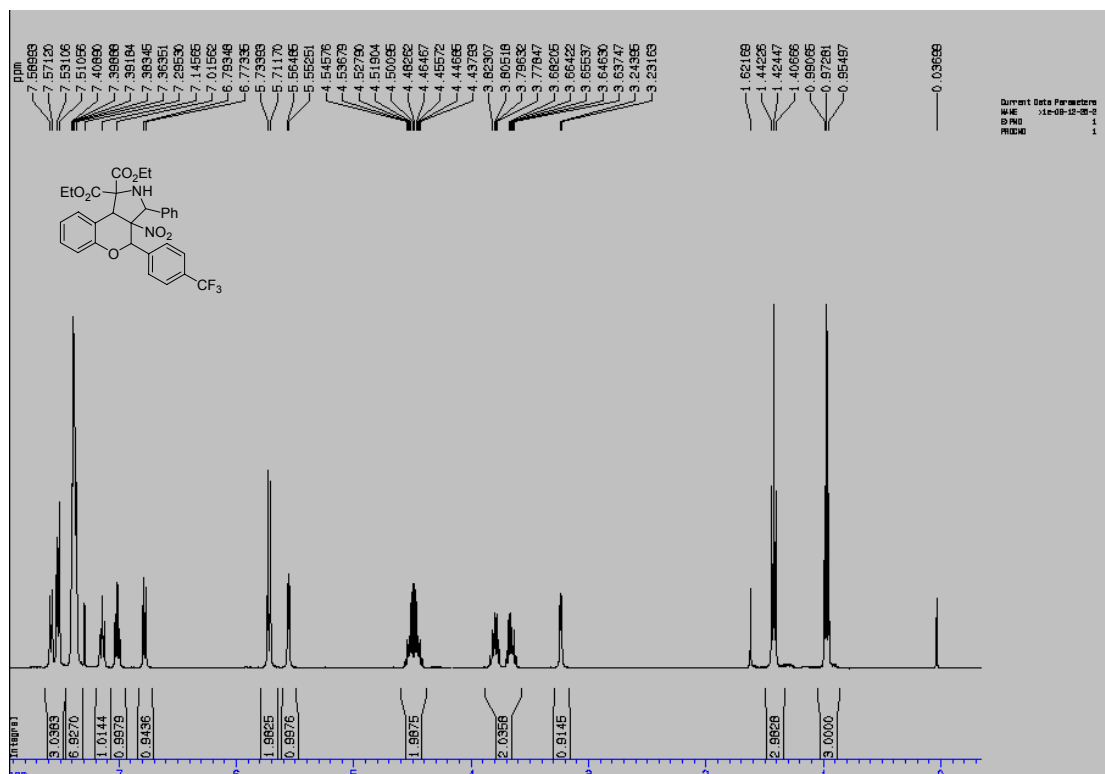


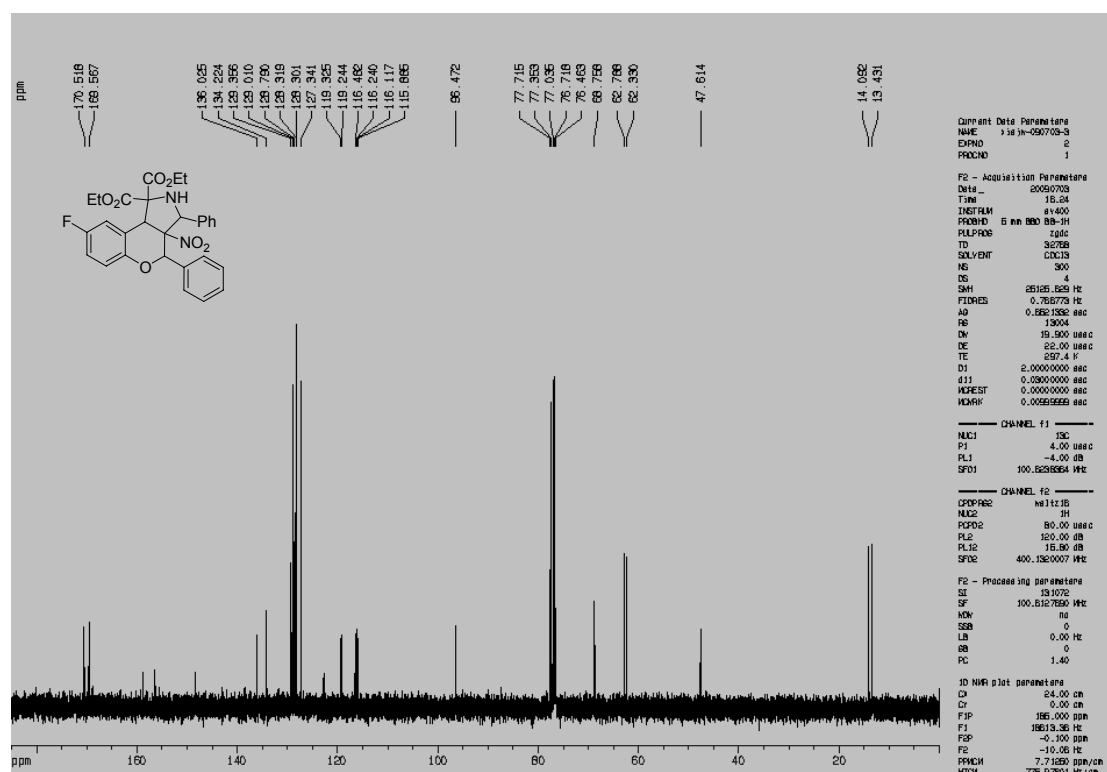
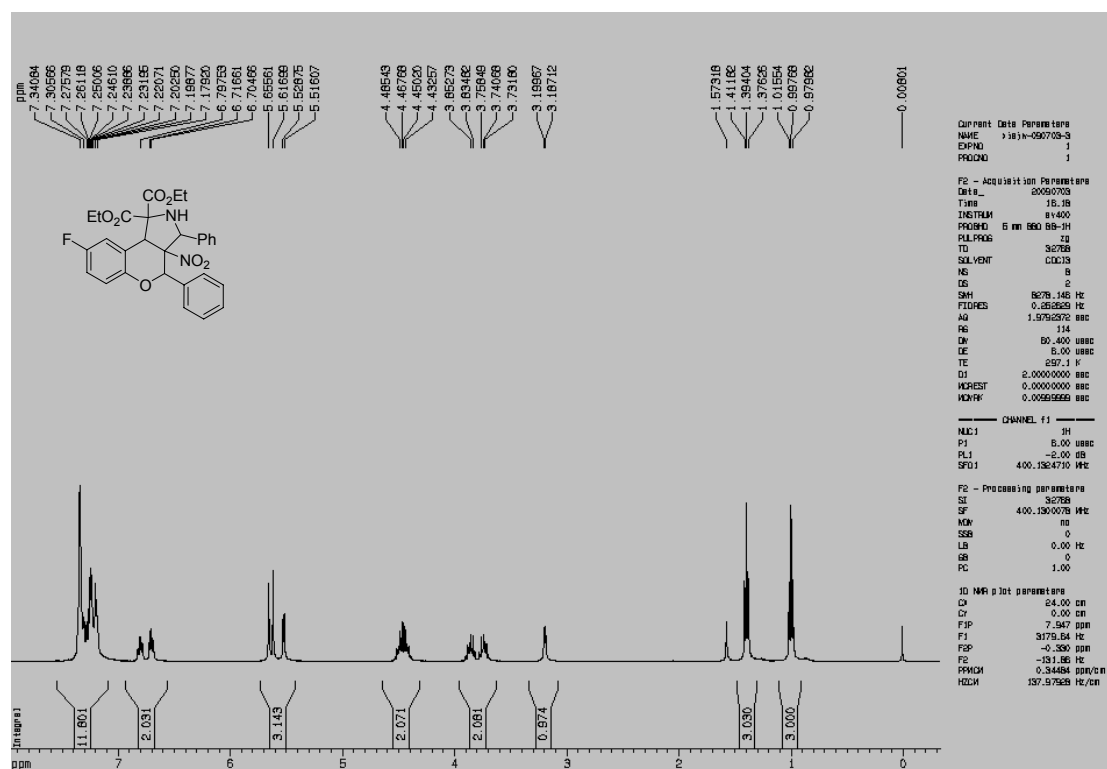


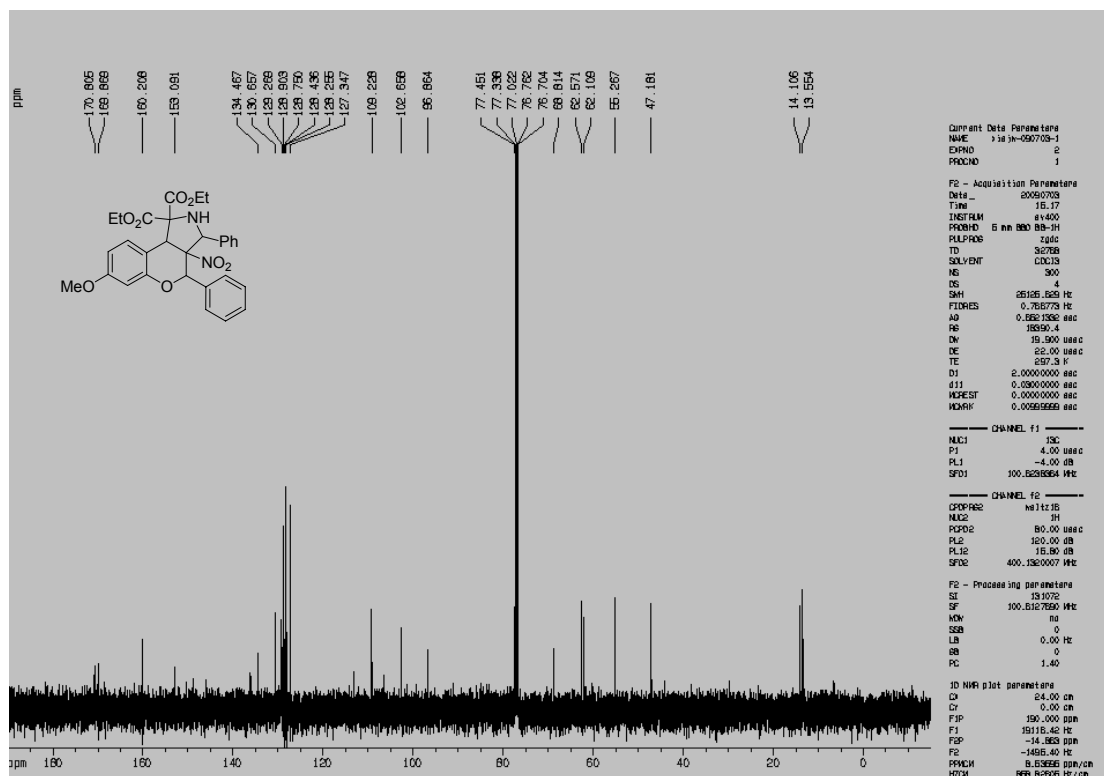
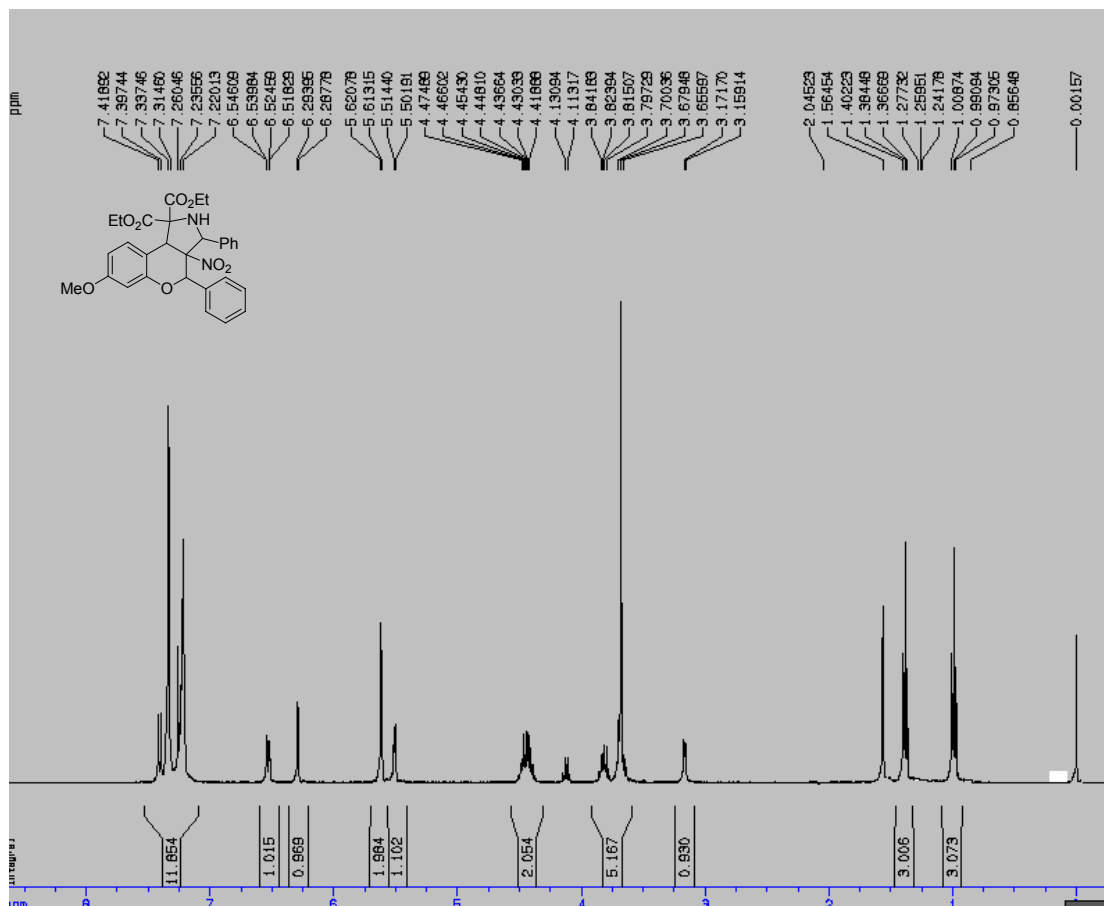


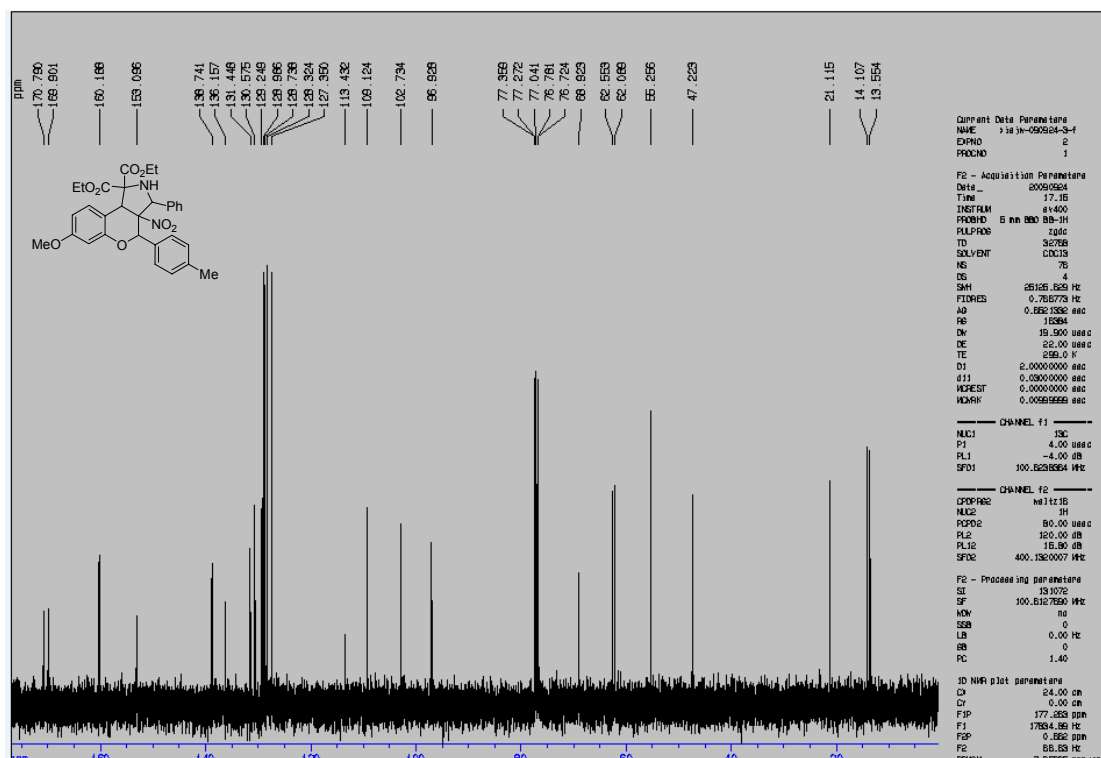
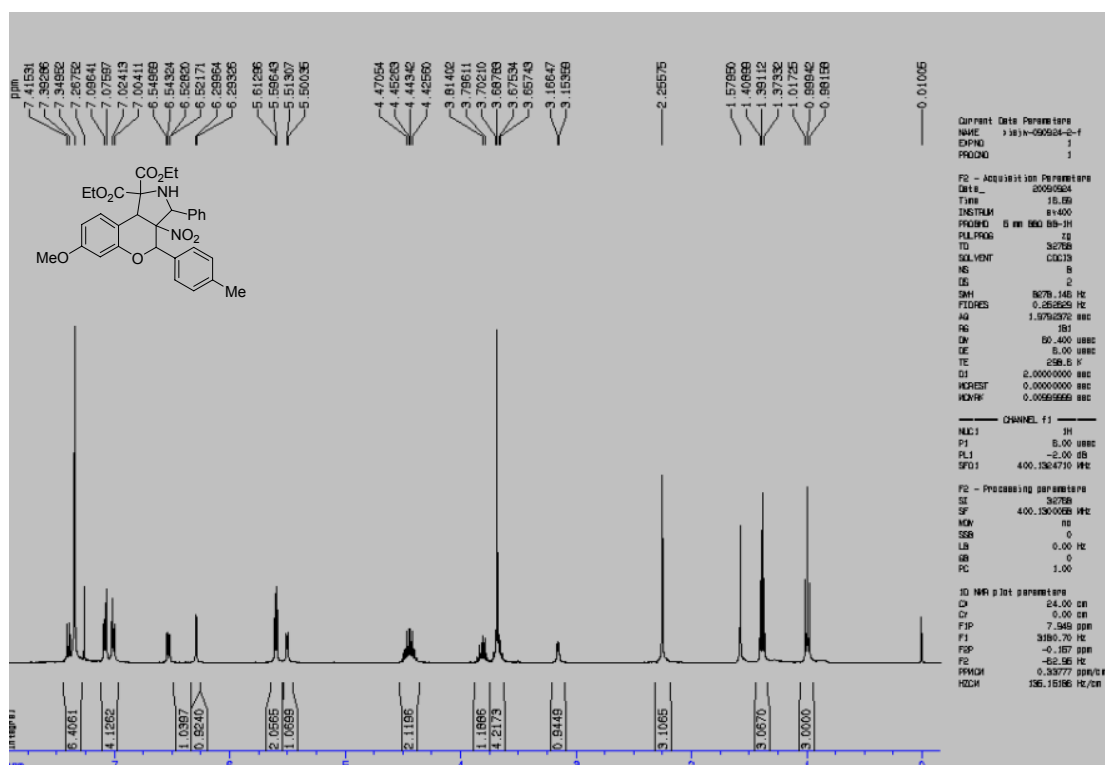


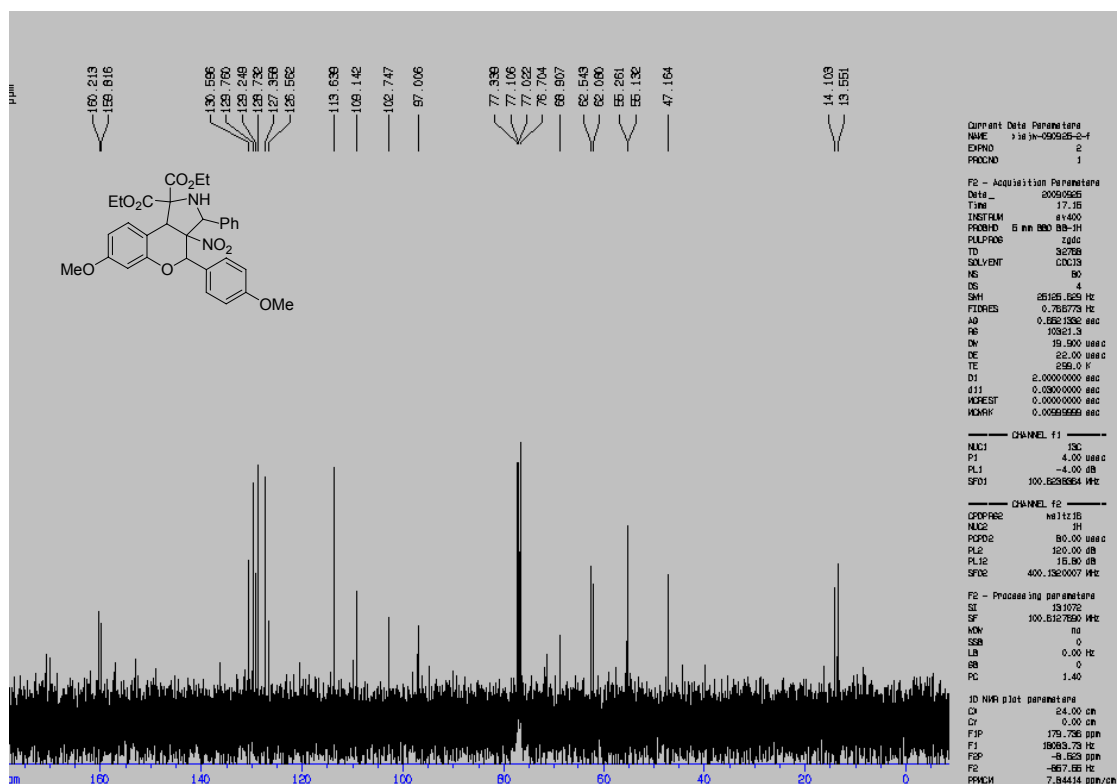
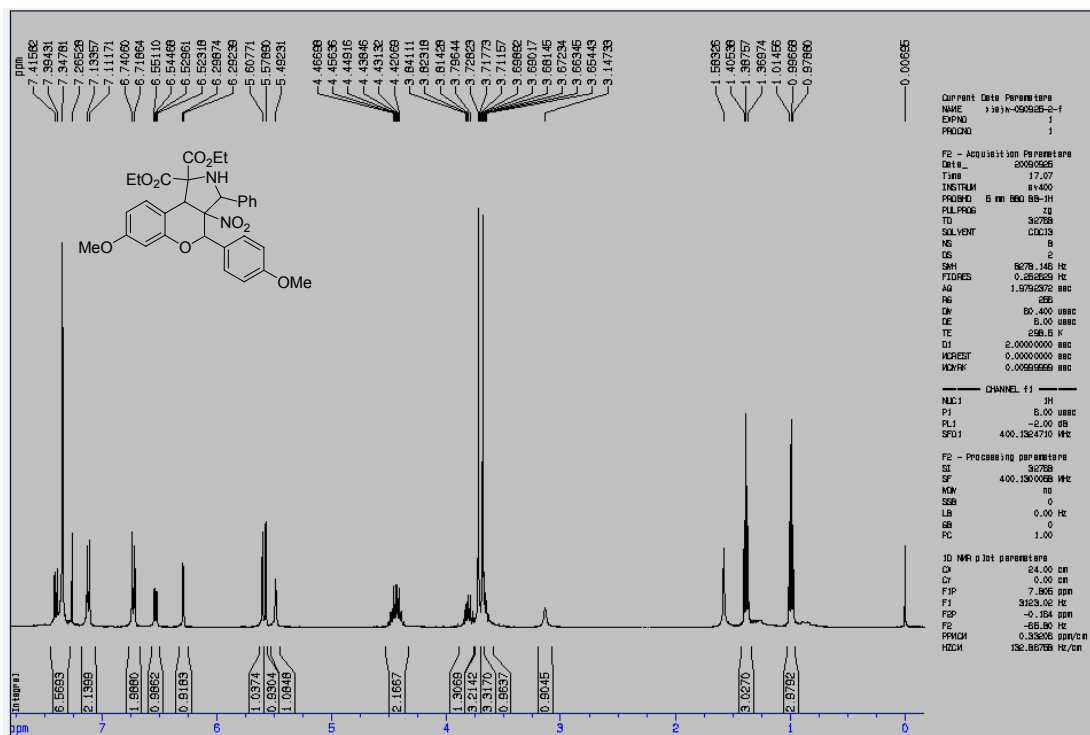


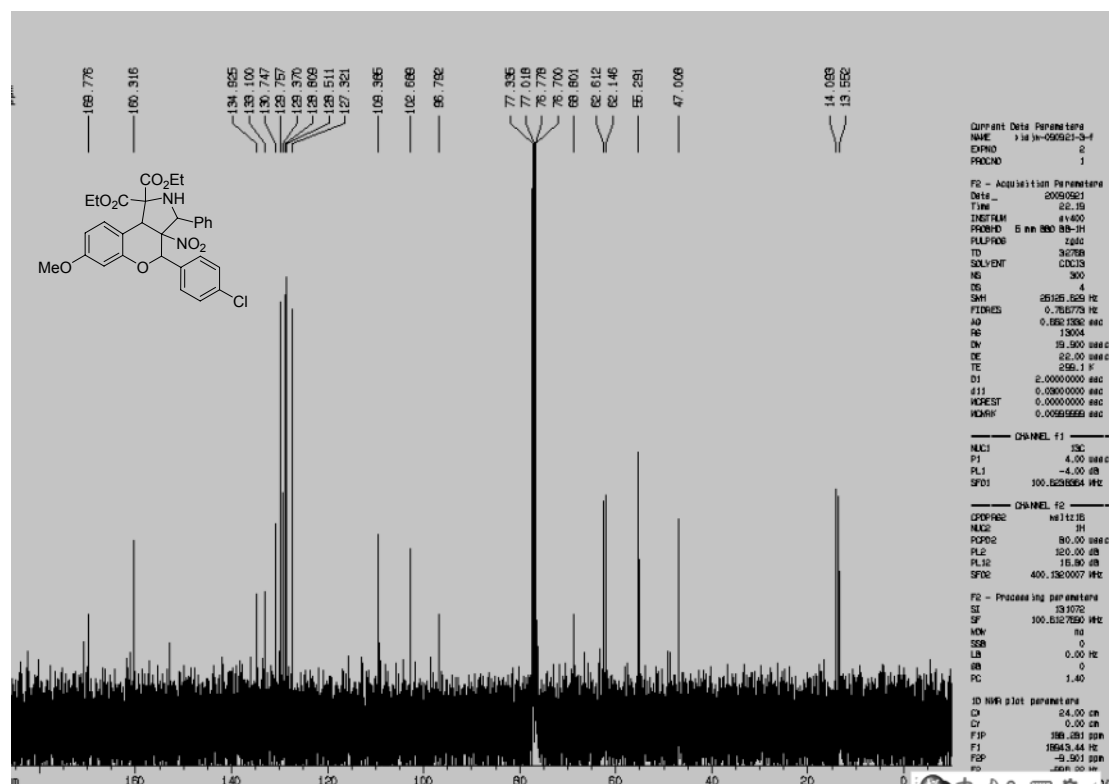
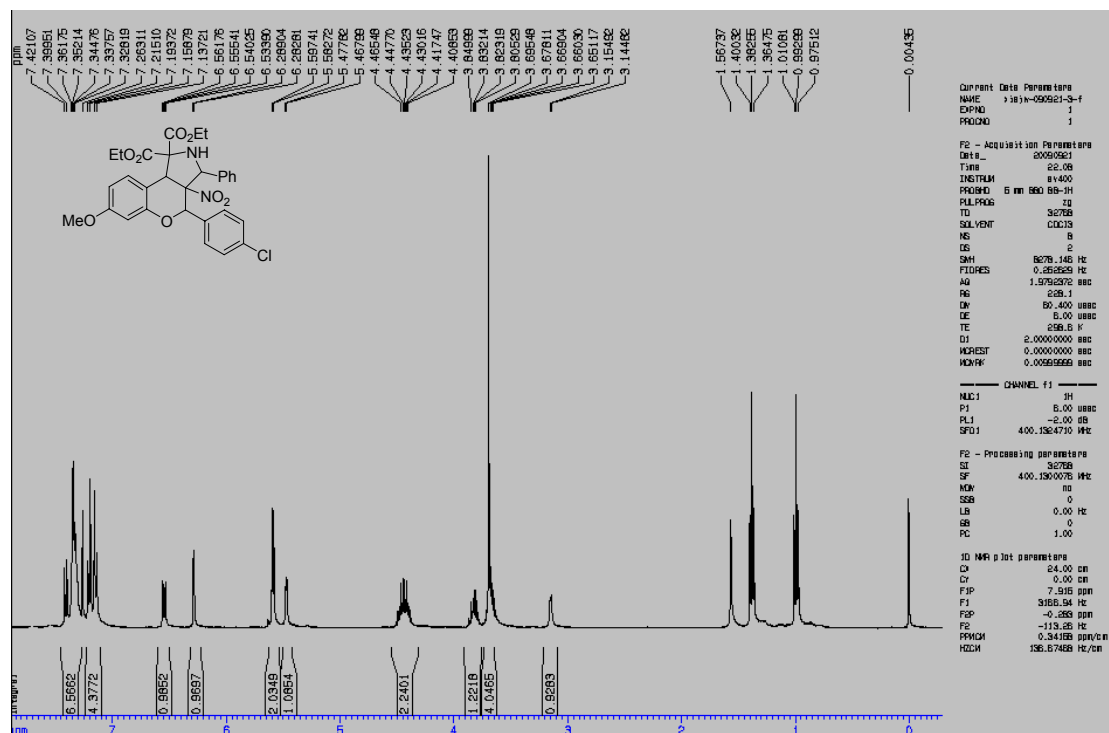


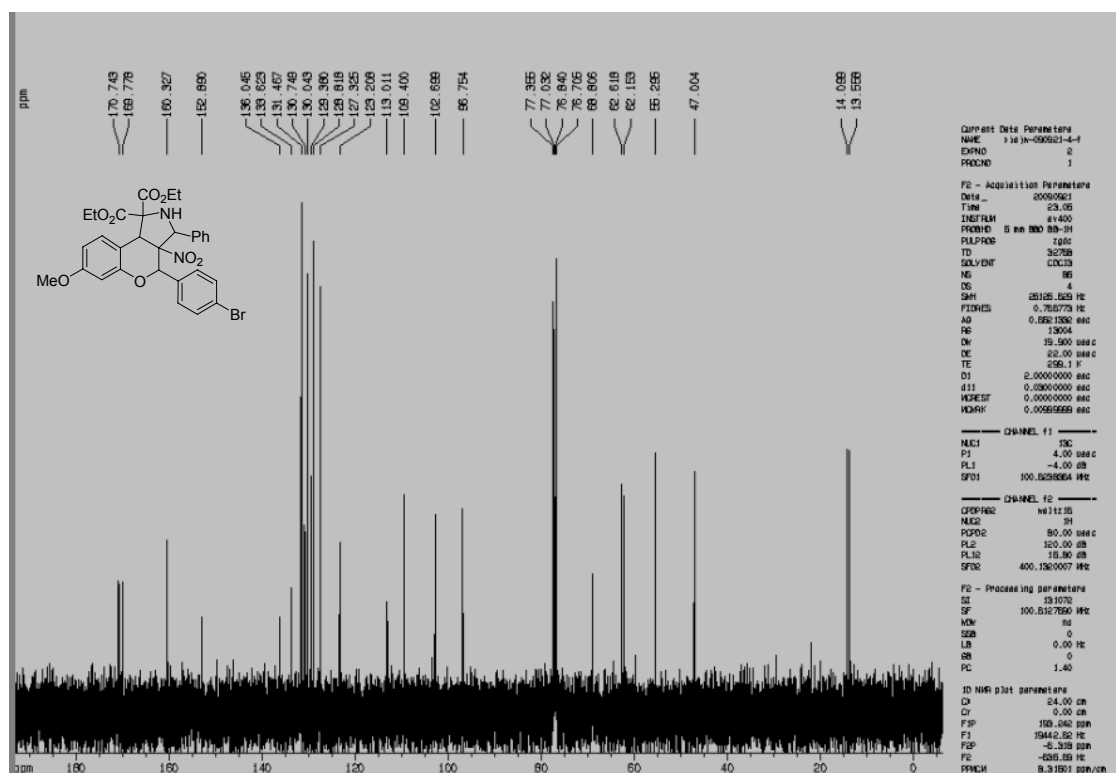
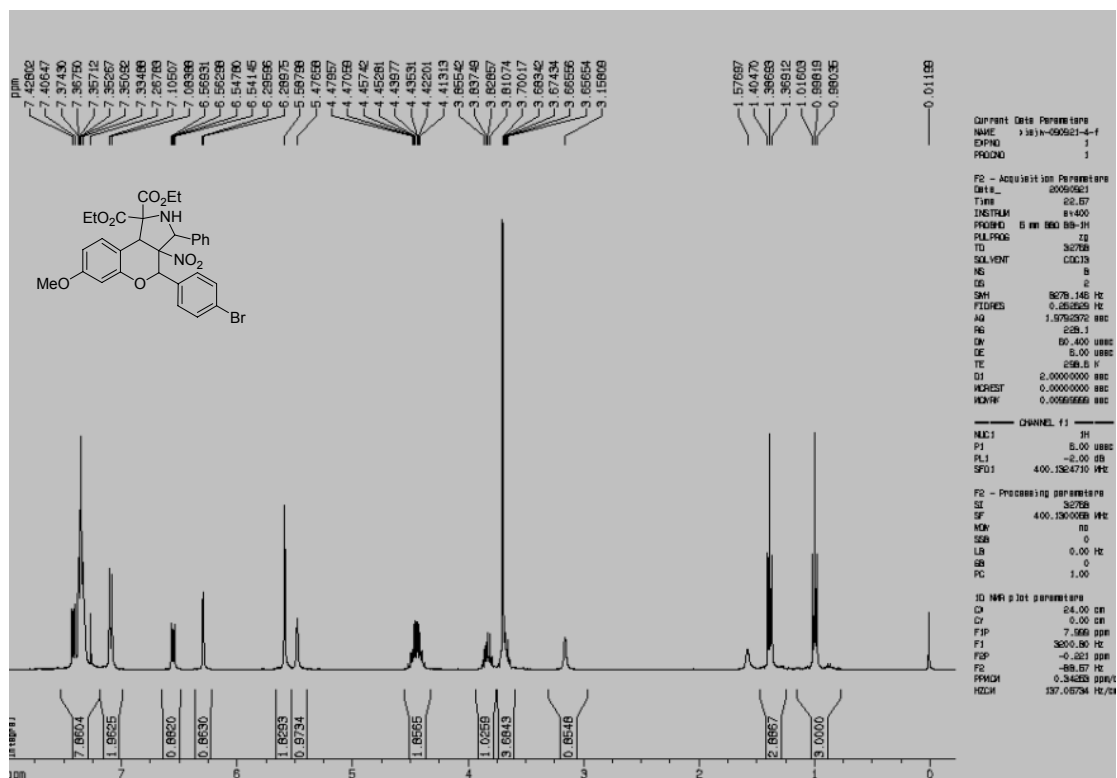




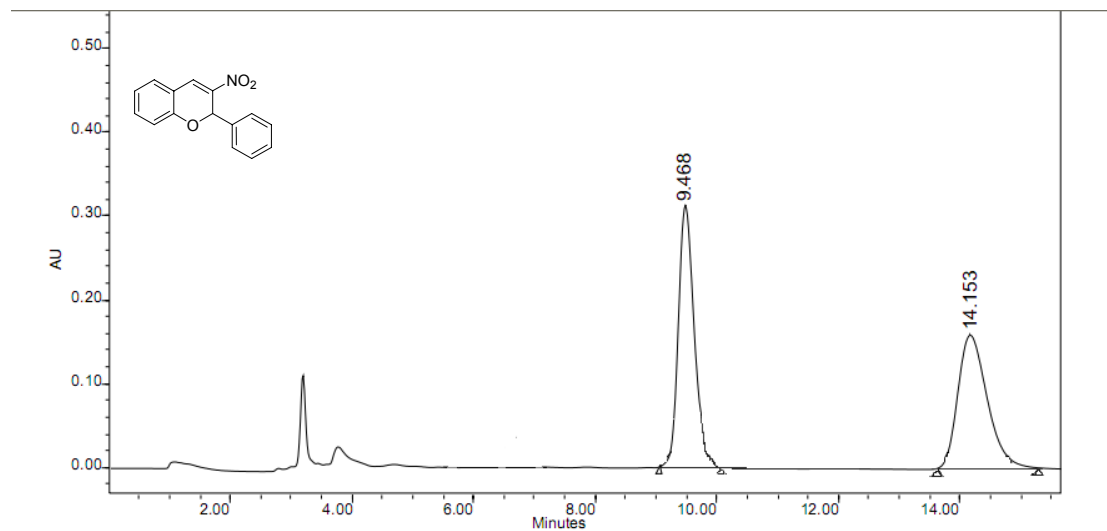




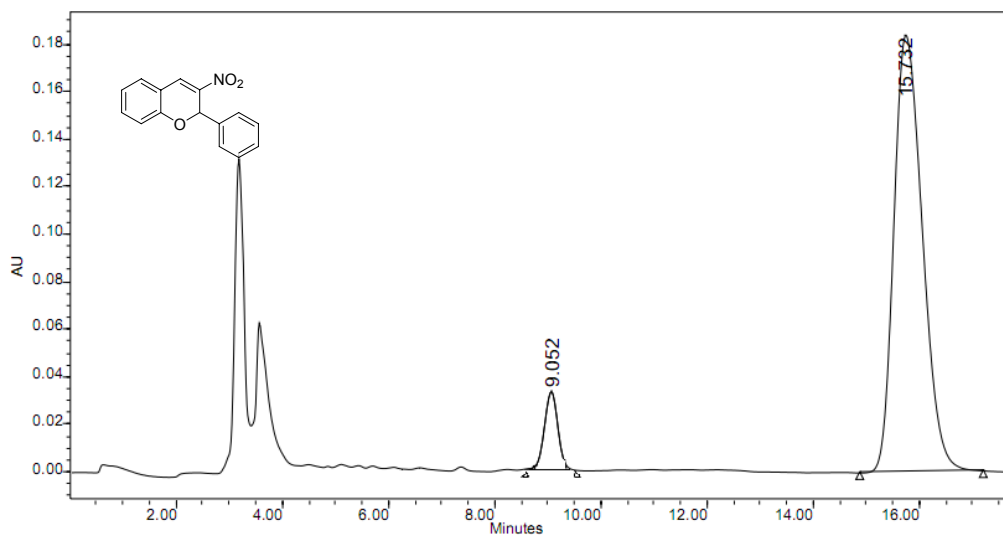




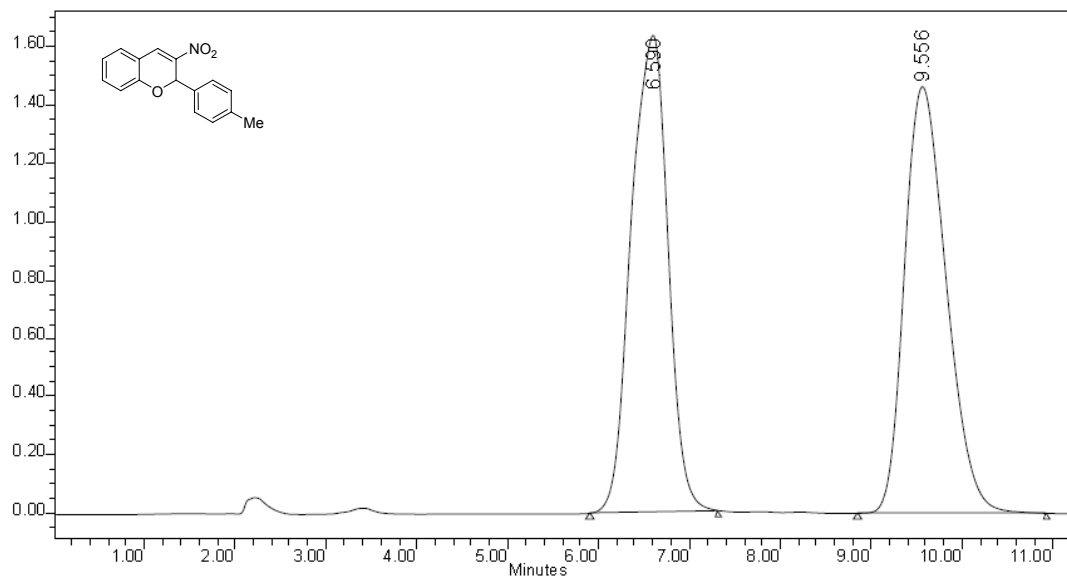
HPLC spectra



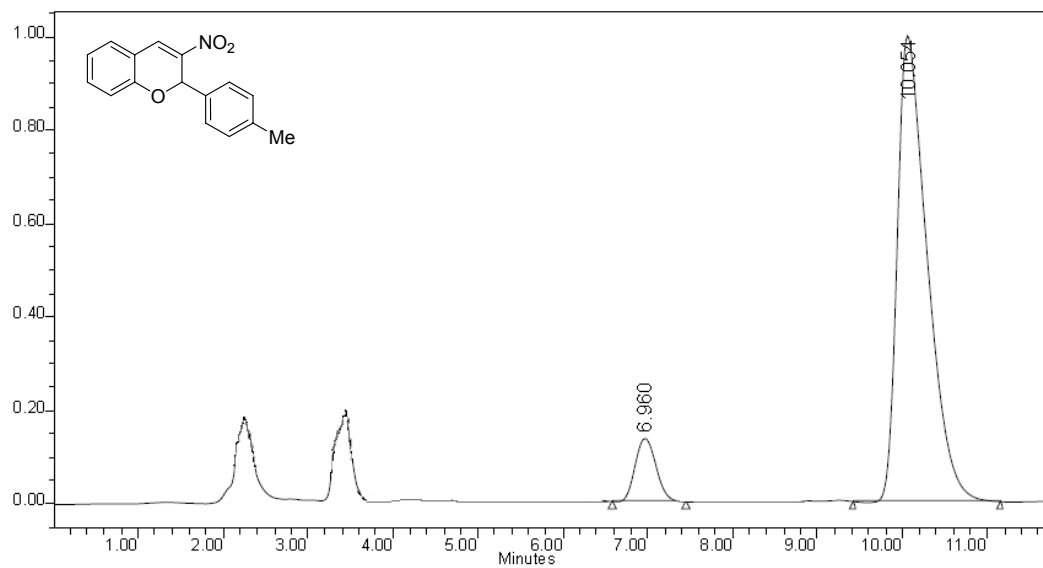
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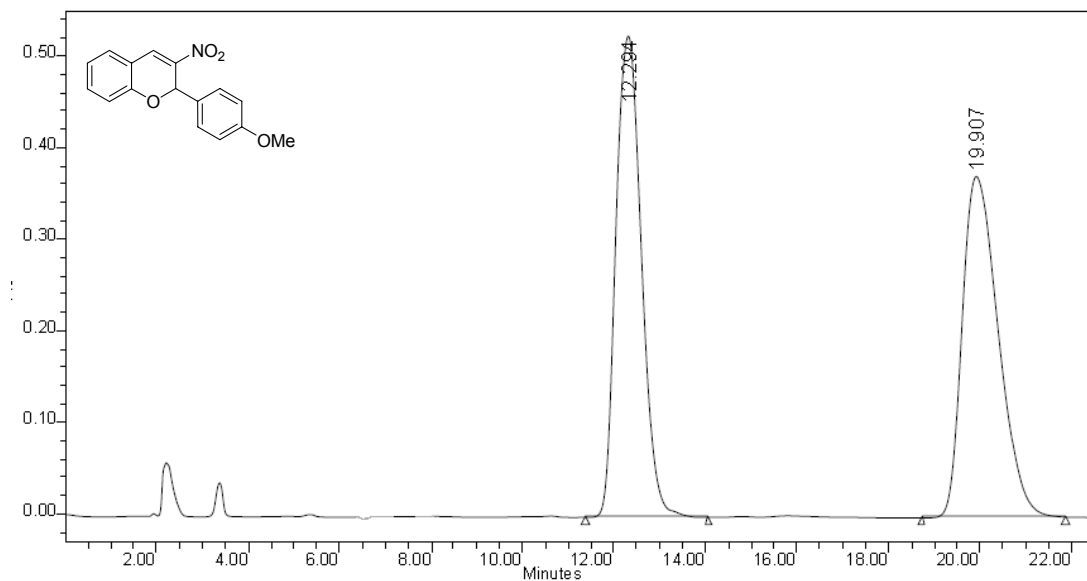
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1	9.052	487309	6.62	30470	14.21
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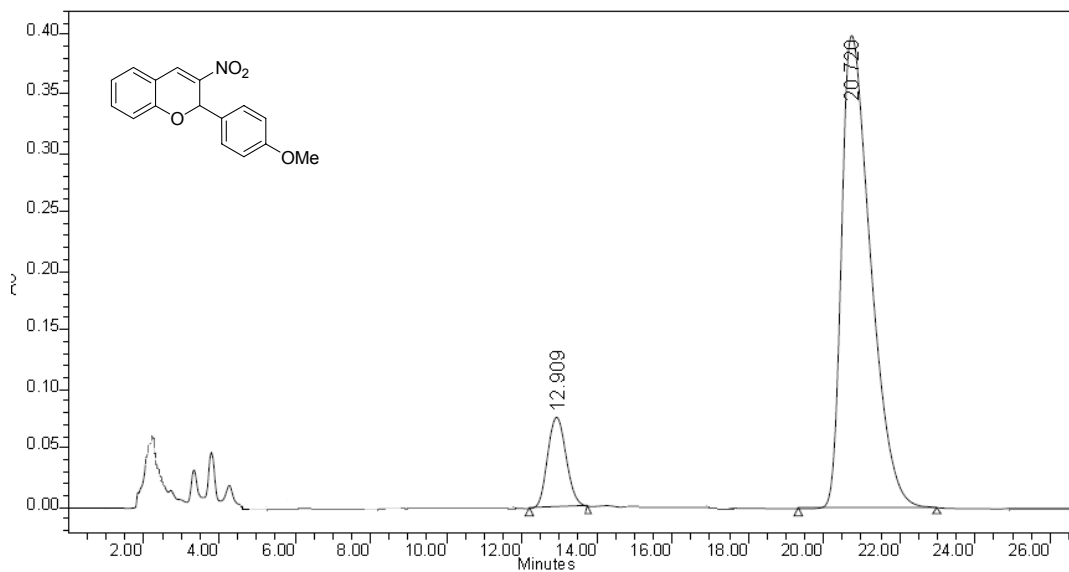
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2	9.556	46660662	50.44	1458764	47.24



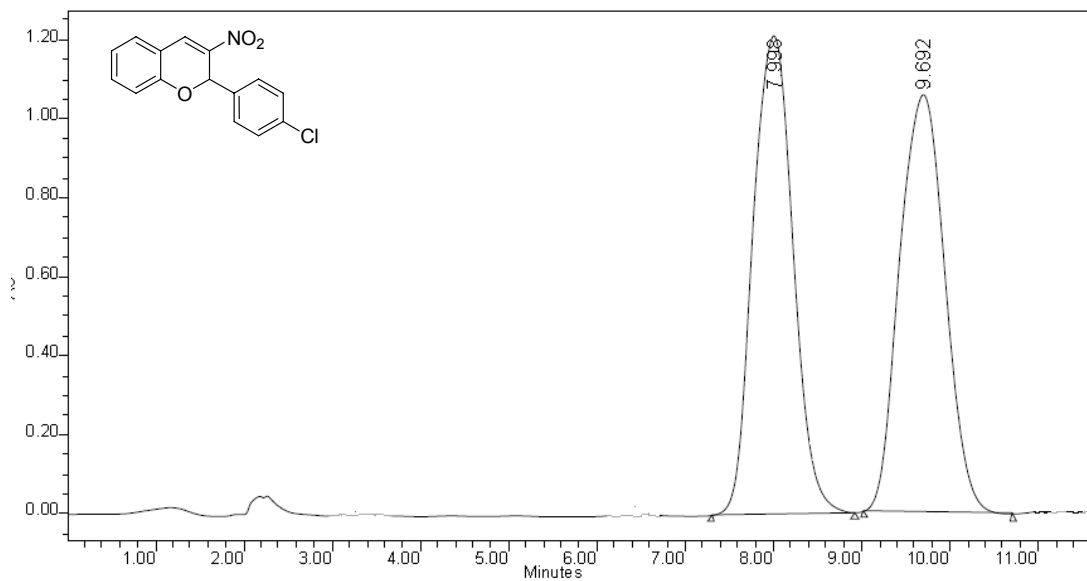
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1	6.960	2335428	8.72	135624	11.96
2	10.054	24438280	91.28	998480	88.04



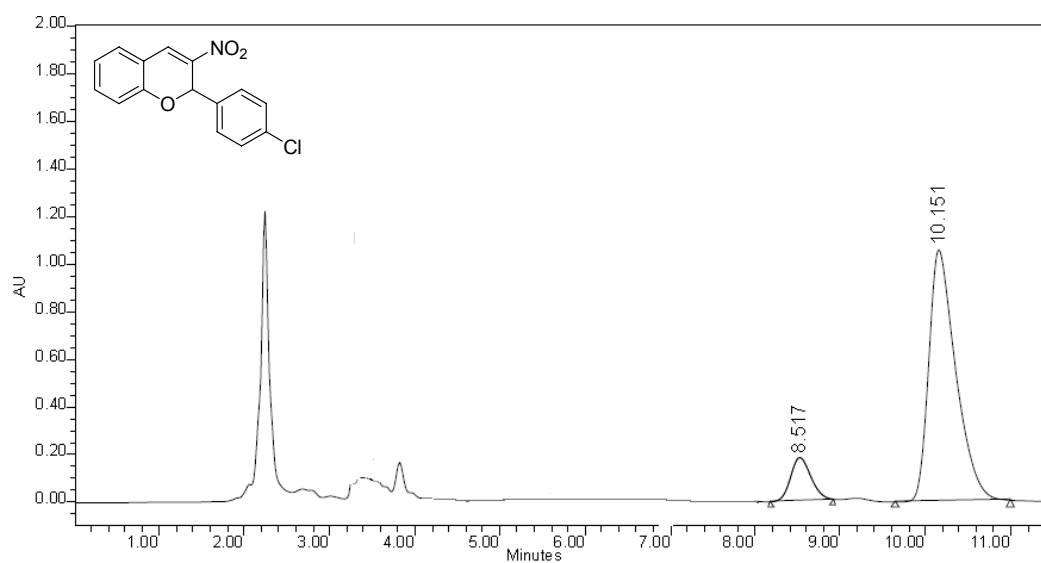
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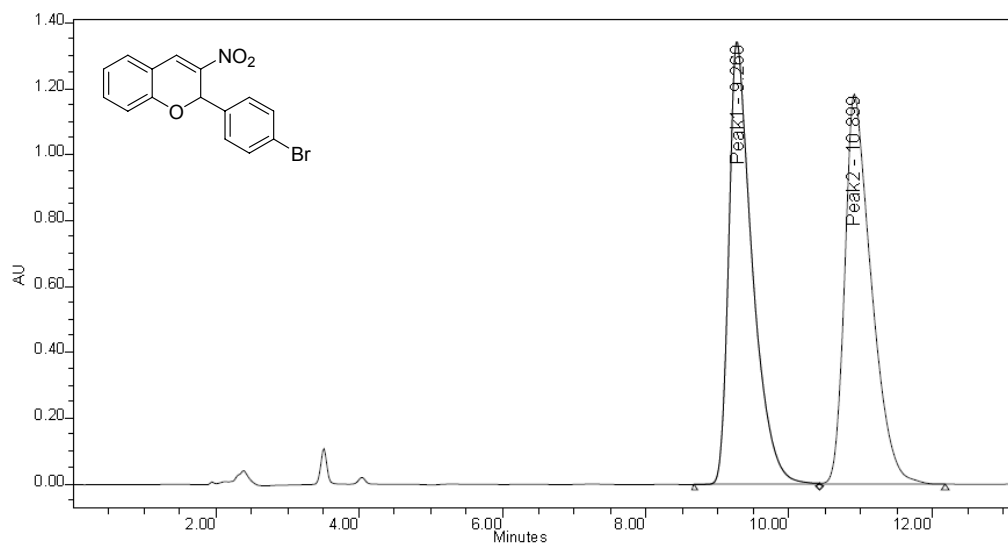
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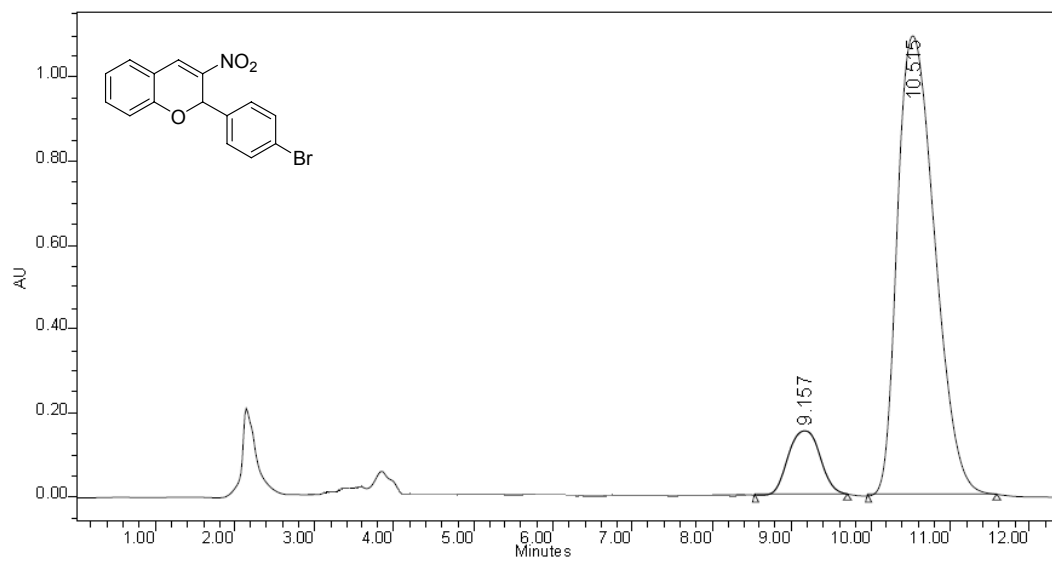
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2	9.692	37731283	49.67	1056223	46.59



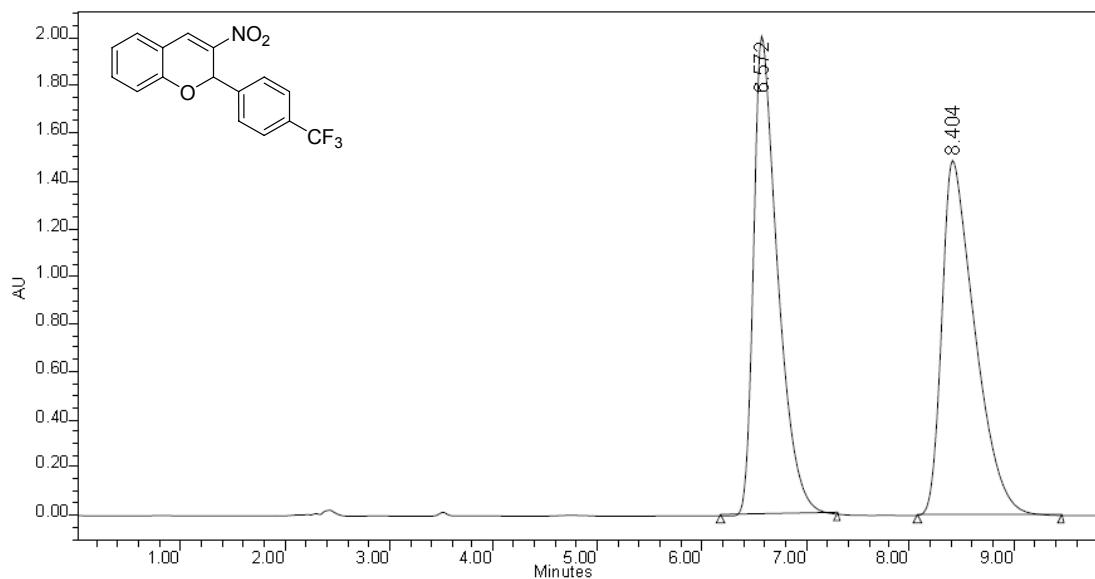
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2	10.151	23358654	88.58	1059431	85.36



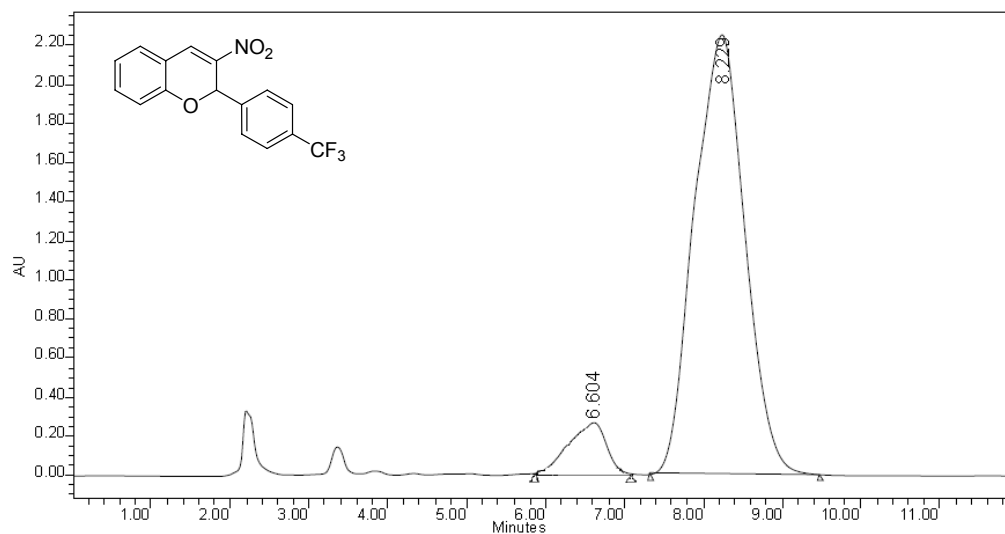
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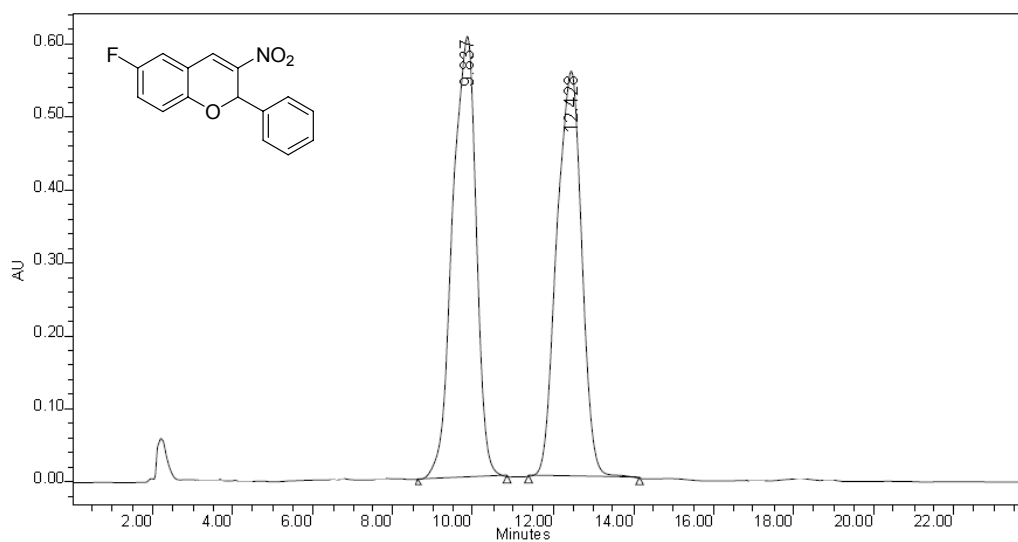
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1	9.157	4239645	10.59	151736	12.17
2	10.515	35785218	89.41	1094681	87.83



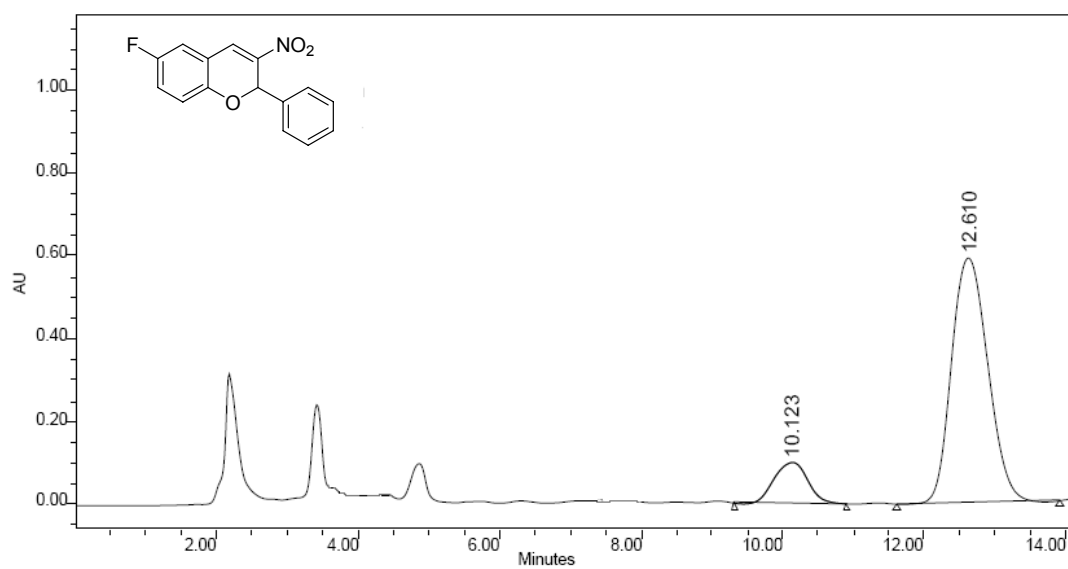
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1	6.572	32350998	49.68	2010782	57.47
2	8.404	32764219	50.32	1488054	42.53



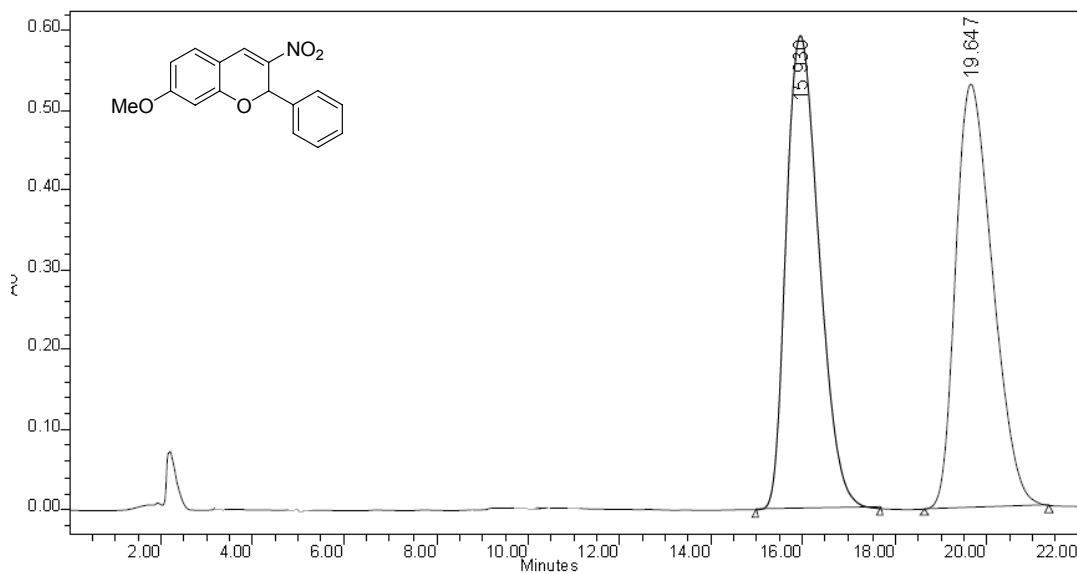
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1	6.604	7954805	7.34	247359	9.90
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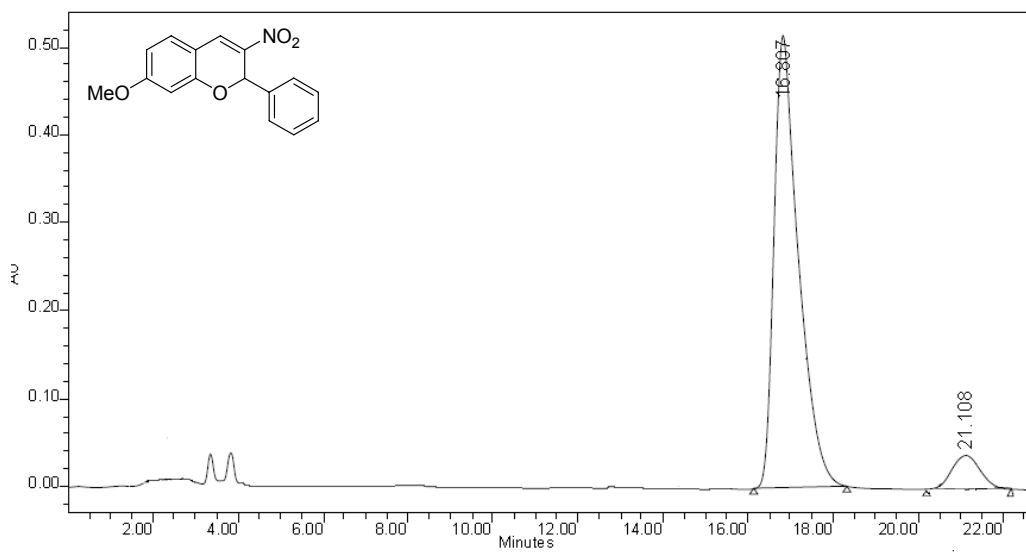
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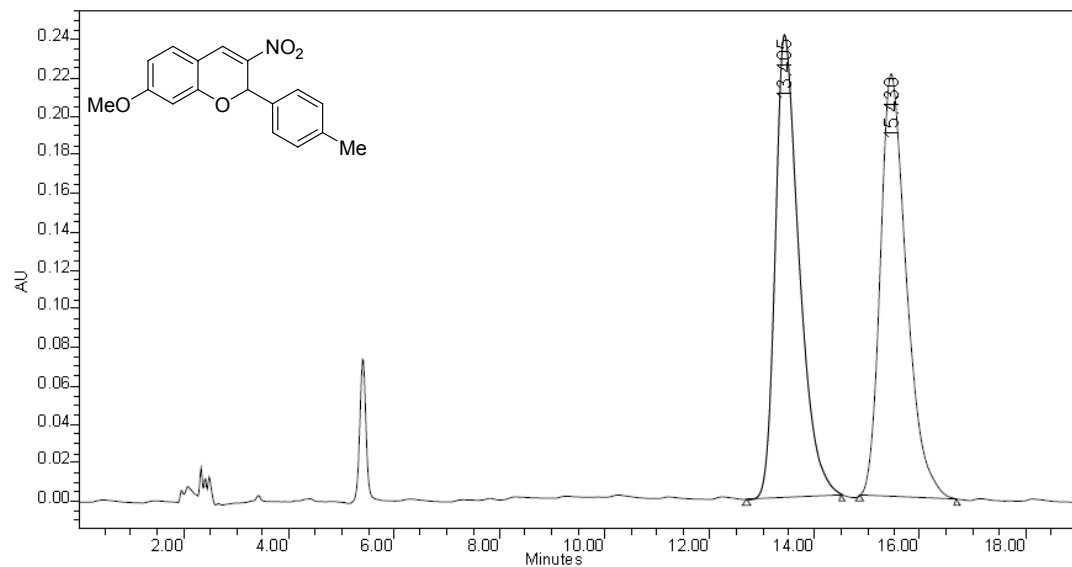
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2	12.610	21137627	86.46	590826	85.61



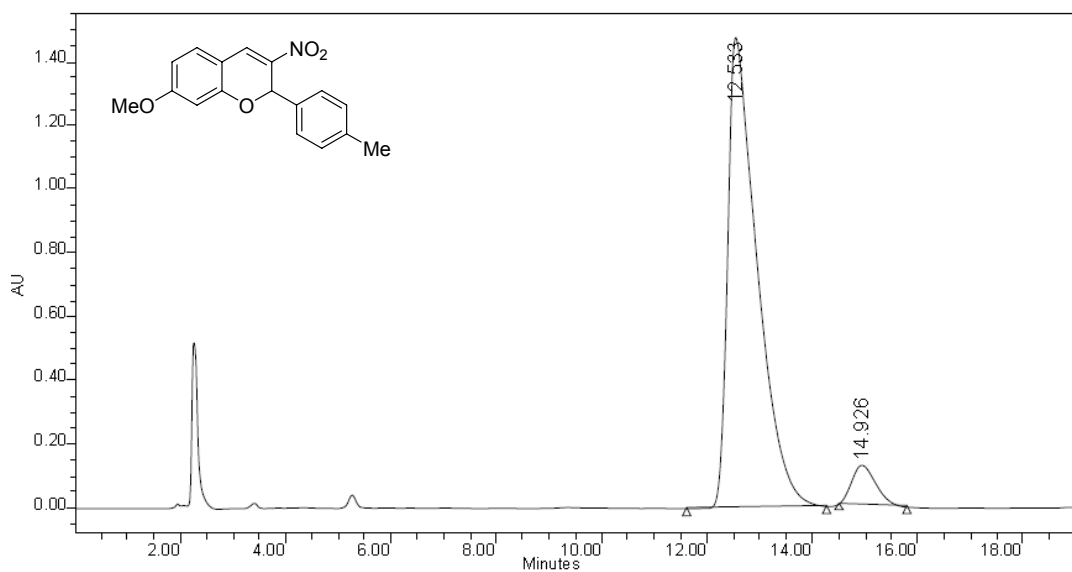
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1	15.930	29640211	49.95	593141	52.79
2	19.647	29703700	50.05	530415	47.21



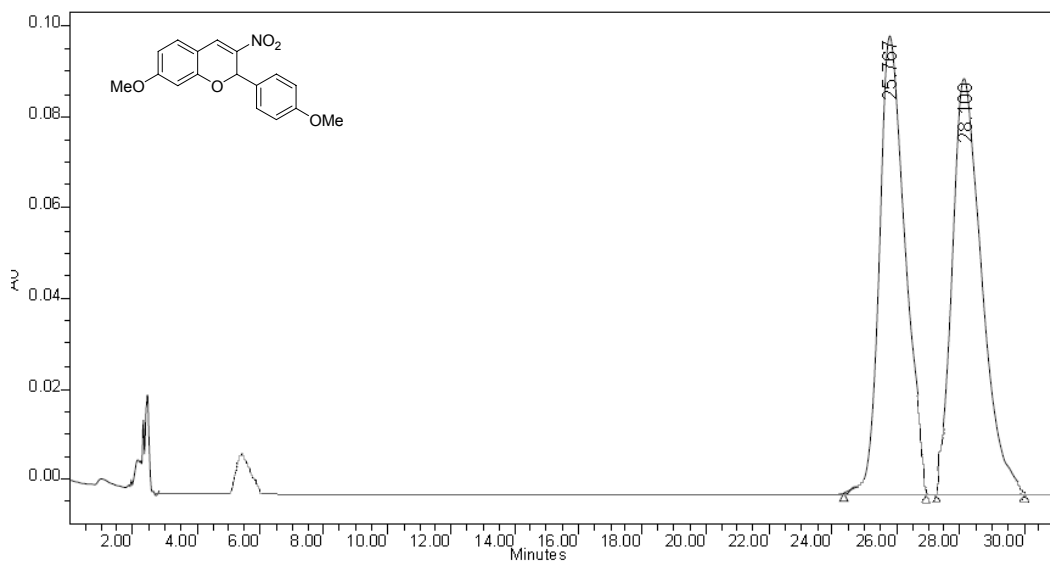
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1	16.807	20576335	92.98	514746	93.50
2	21.108	1554355	7.02	35808	6.50



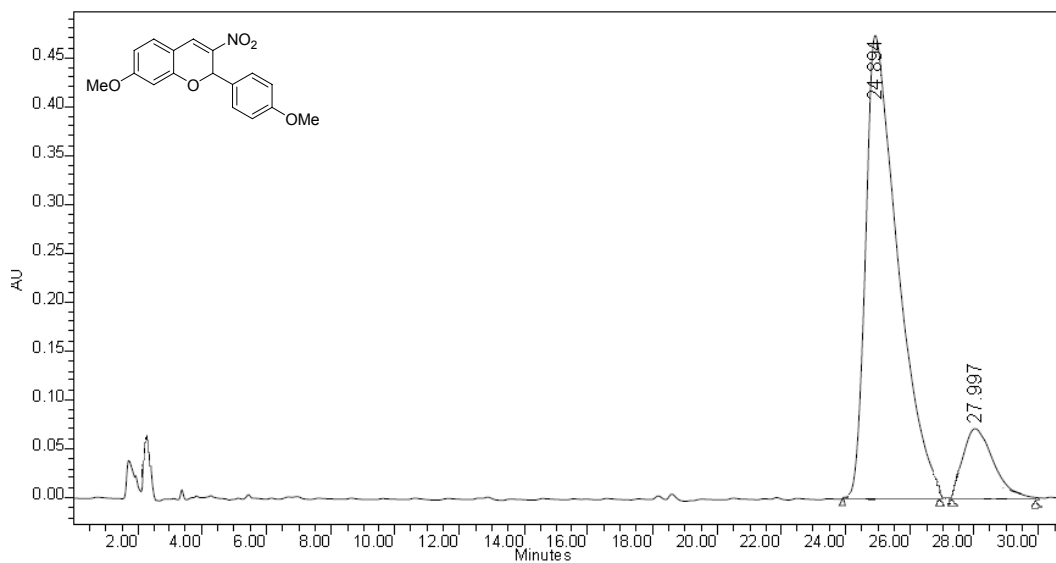
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1	13.405	7598205	50.09	240727	52.29
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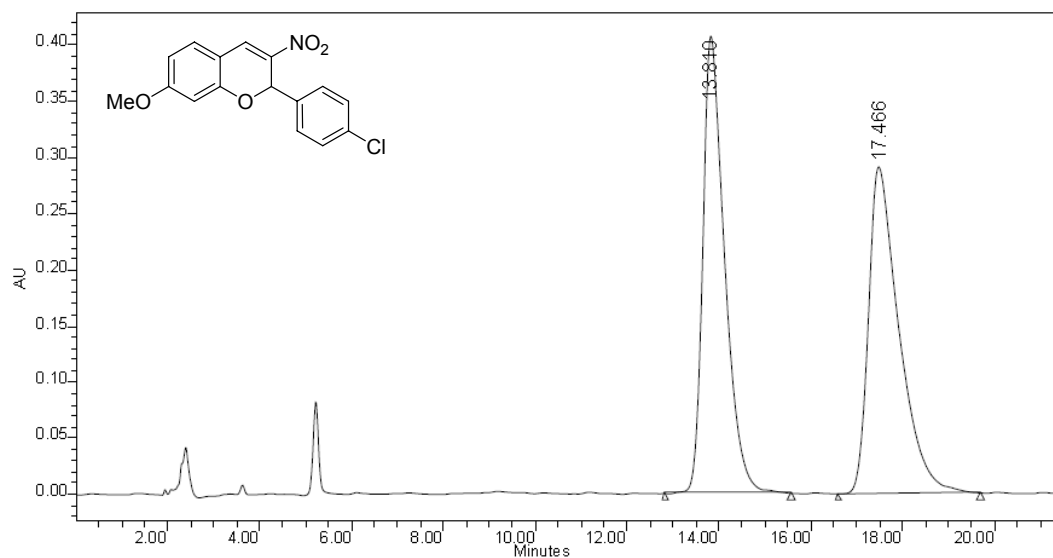
	RT (min)	Area (V*sec)	% Area	Height (V)	% Height
1	12.533	57332693	93.58	1475160	92.26
2	14.926	3932970	6.42	123718	7.74



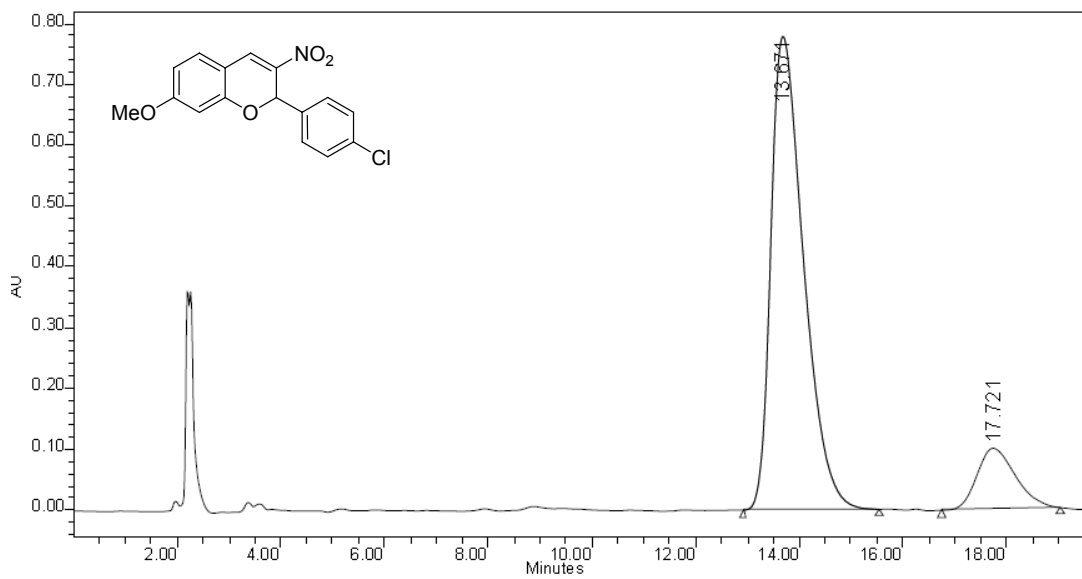
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1	25.767	5135375	49.97	96580	53.02
2	28.100	5142448	50.03	85585	46.98



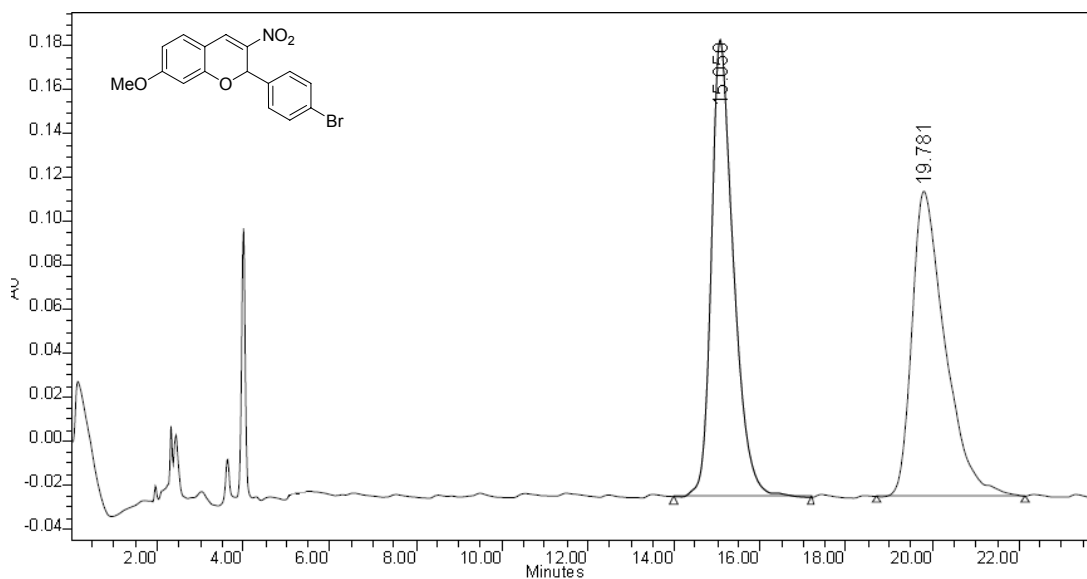
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1	24.894	31904138	91.70	470011	89.80
2	27.997	2887924	8.30	53408	10.20



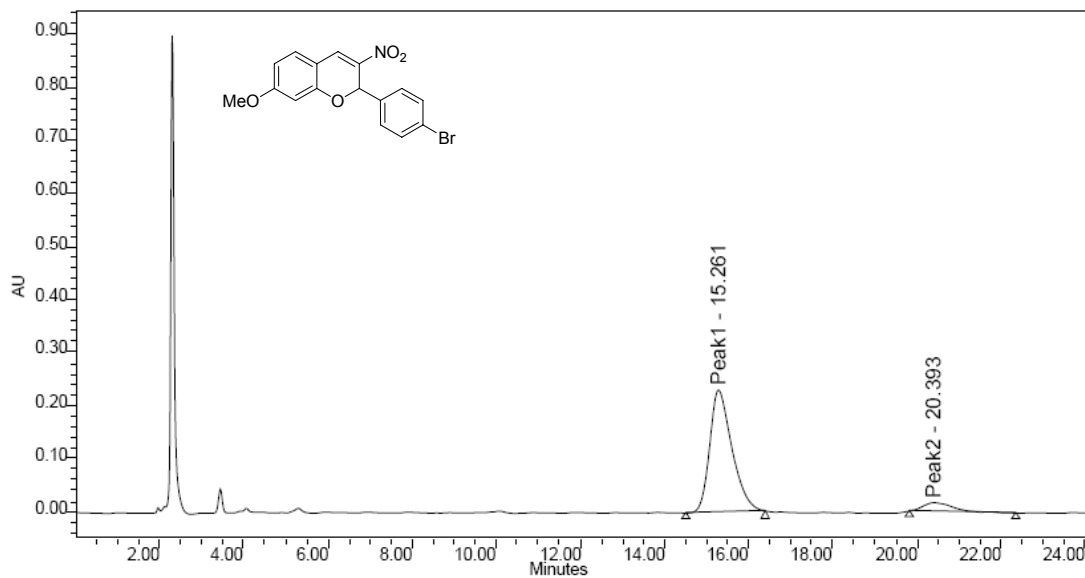
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1	13.810	13473519	50.07	407918	58.33
2	17.466	13435696	49.93	291398	41.67



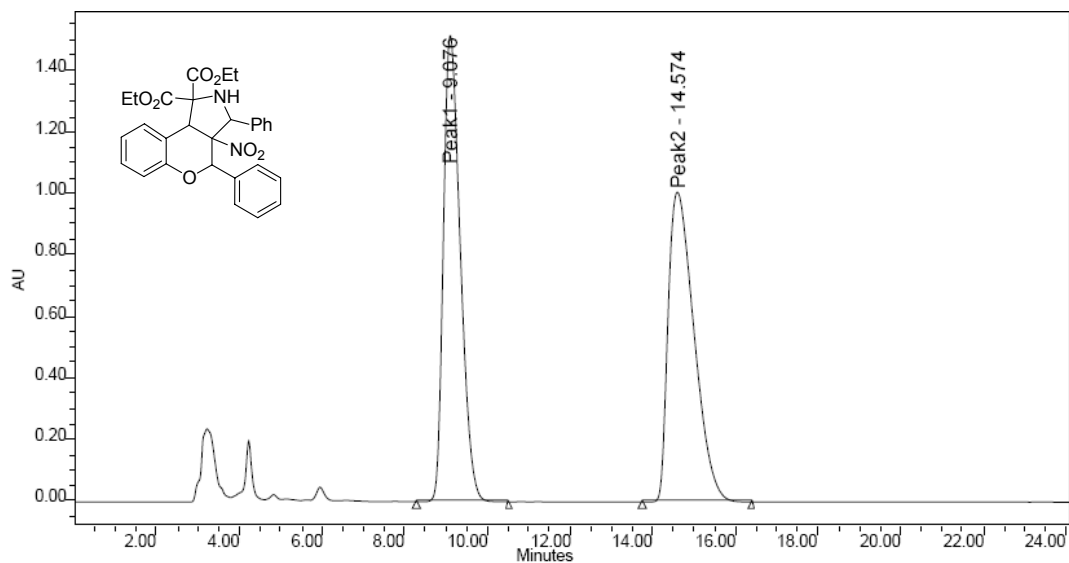
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1	13.671	34107803	86.81	778381	88.58
2	17.721	5183335	13.19	100319	11.42



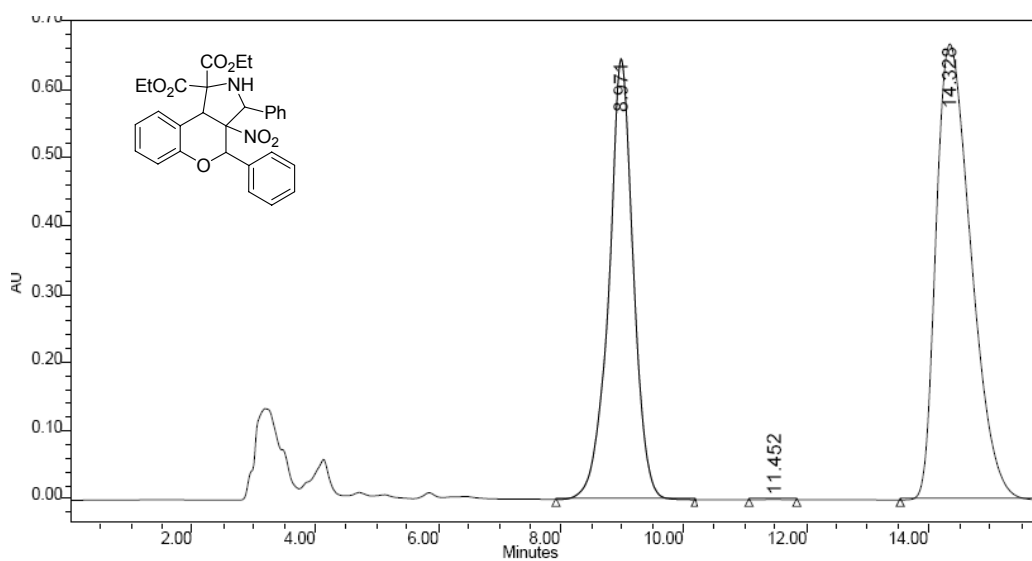
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1	15.050	7467985	50.07	208414	59.96
2	19.781	7445624	49.93	139153	40.04



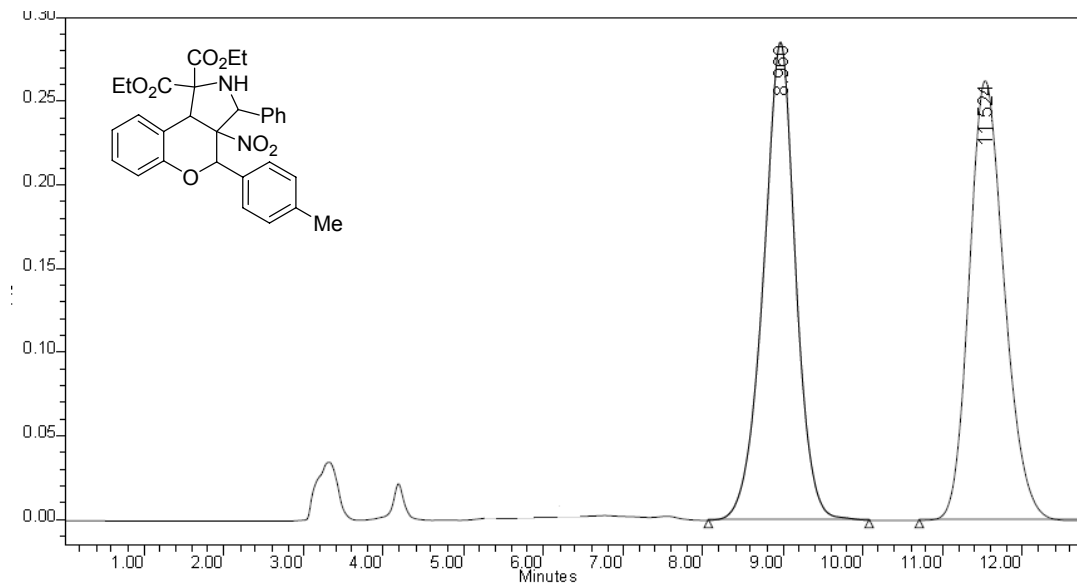
	Peak Name	RT (min)	Area (V*sec)	% Area	Height (V)	% Height
1	Peak1	15.261	8511896	91.18	230711	93.34
2	Peak2	20.393	822942	8.82	16455	6.66



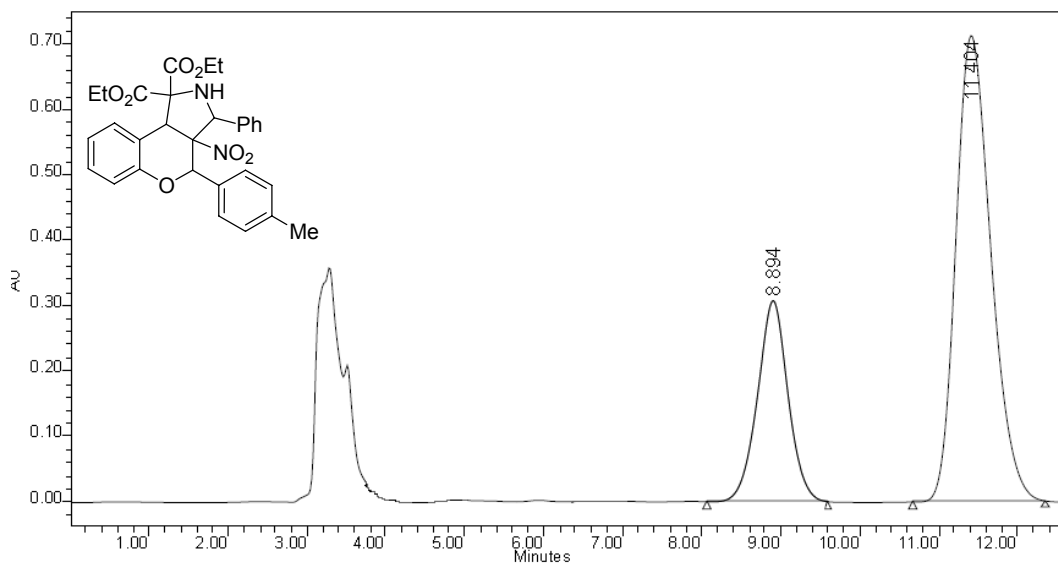
Peak Name	RT (min)	Area (V*sec)	% Area	Height (V)	% Height
1 Peak1	9.076	42987991	49.52	1515973	60.08
2 Peak2	14.574	43814121	50.48	1007398	39.92



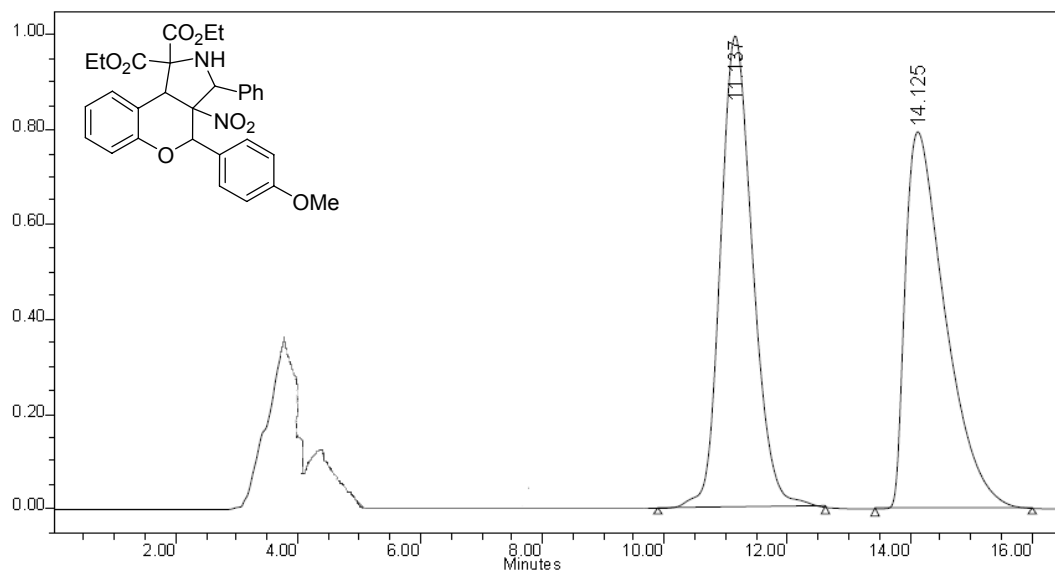
RT (min)	Area (V*sec)	% Area	Height (V)	% Height
1 8.971	17942623	40.43	645362	49.14
2 11.452	11508	0.03	491	0.04
3 14.328	26422176	59.54	667464	50.82



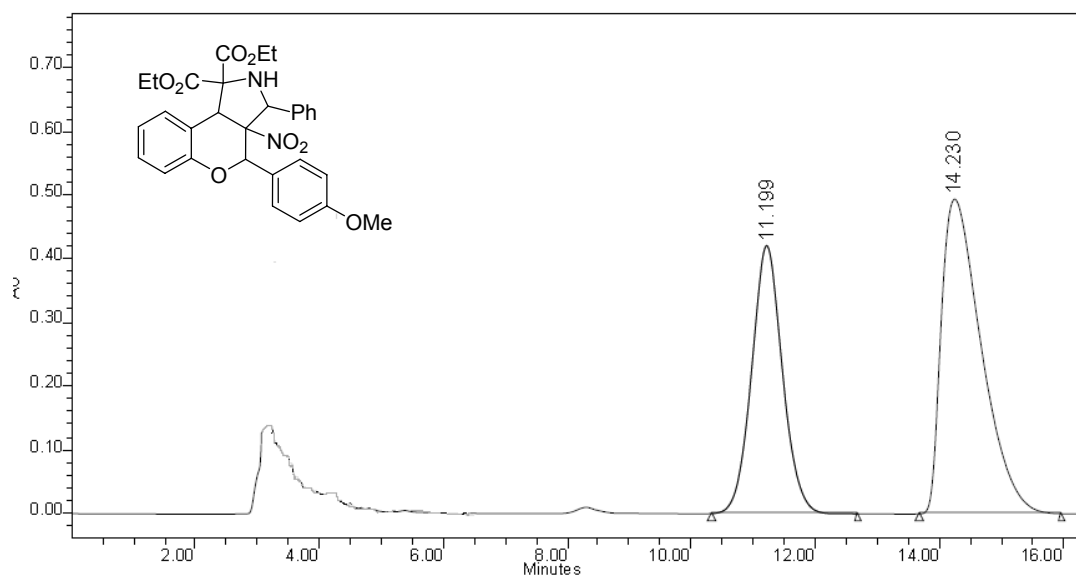
	RT (min)	Area (V*sec)	% Area	Height (V)	% Height
1	8.960	8037422	49.97	285784	52.09
2	11.524	8048352	50.03	262805	47.91



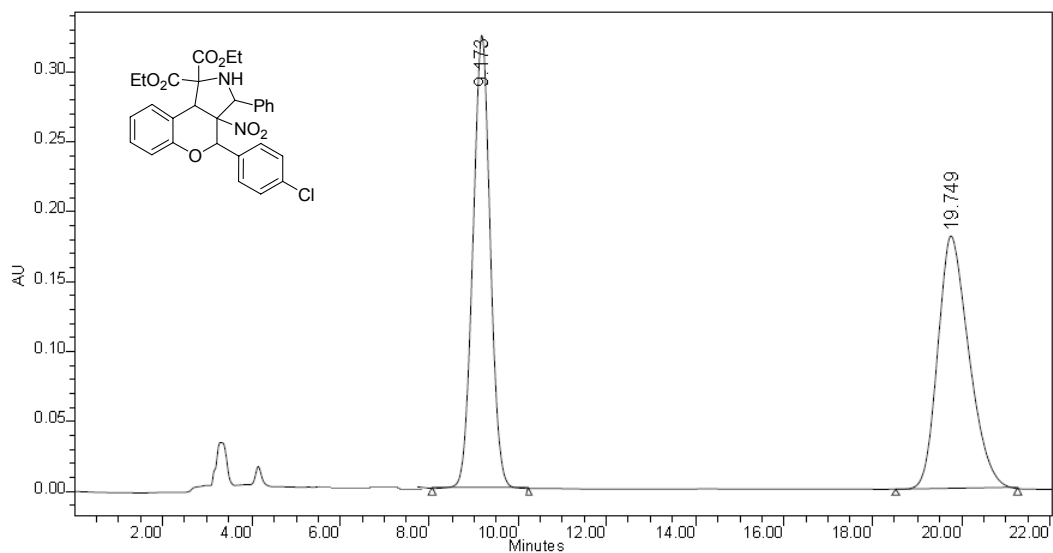
	RT (min)	Area (V*sec)	% Area	Height (V)	% Height
1	8.894	8284346	27.36	307670	30.15
2	11.404	21999907	72.64	712899	69.85



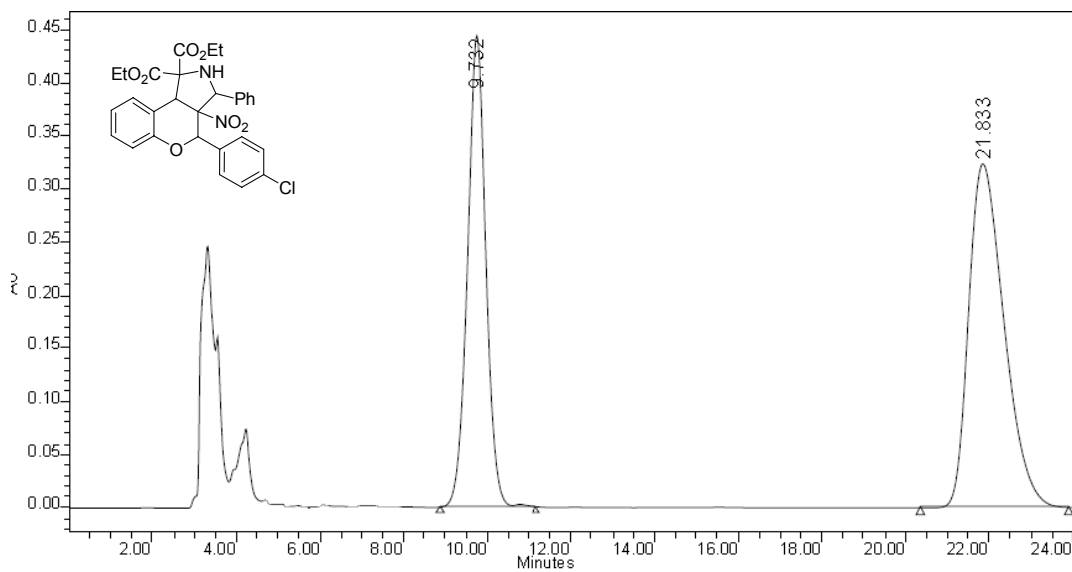
	RT (min)	Area (V*sec)	% Area	Height (V)	% Height
1	11.137	36602004	50.29	995407	55.59
2	14.125	36173792	49.71	795205	44.41



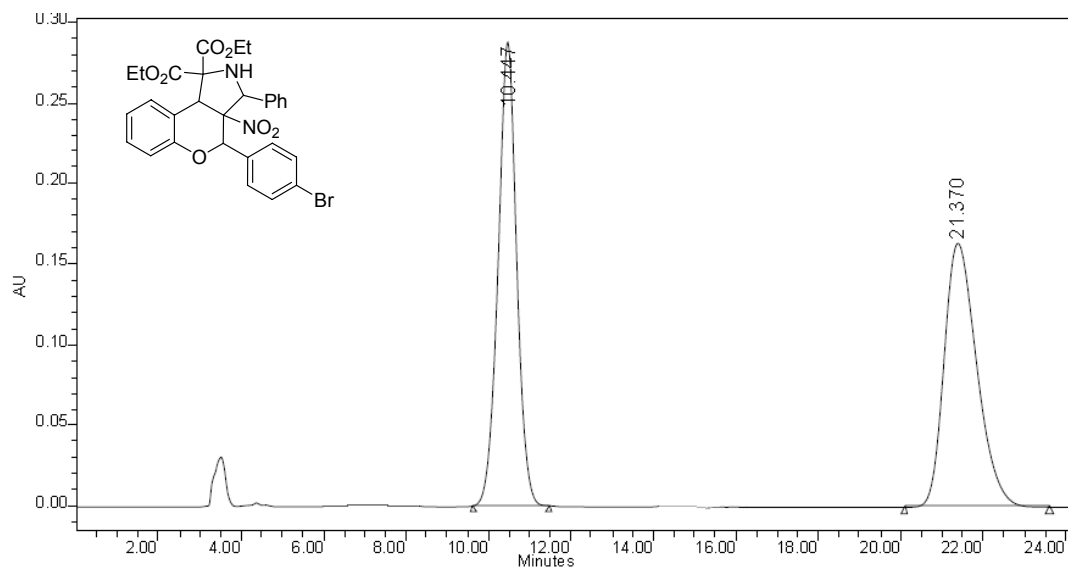
	RT (min)	Area (V*sec)	% Area	Height (V)	% Height
1	11.199	14539063	39.60	421508	46.00
2	14.230	22176907	60.40	494837	54.00



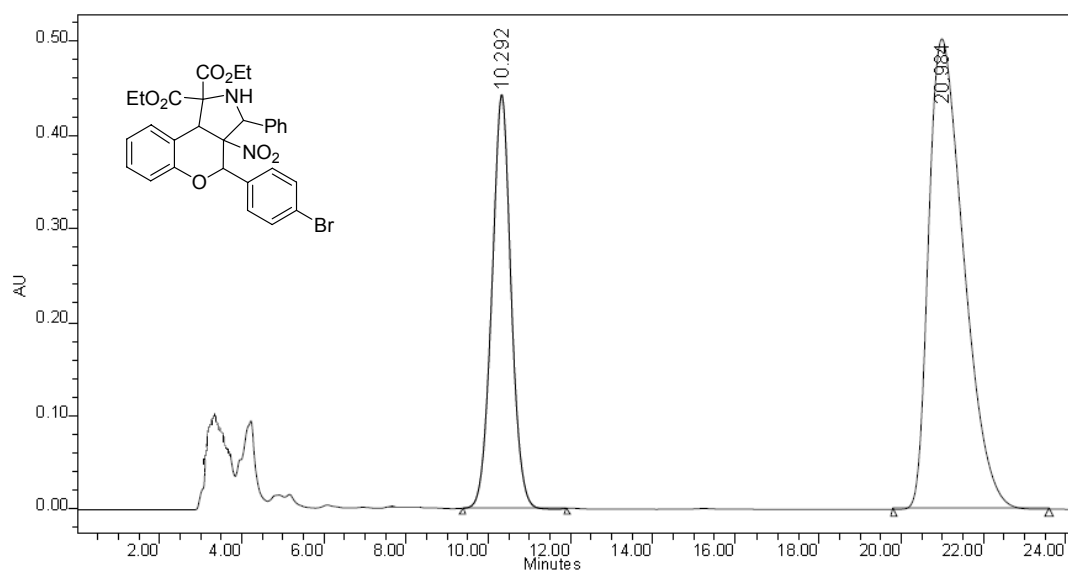
	RT (min)	Area (V*sec)	% Area	Height (V)	% Height
1	9.173	8861664	49.94	324965	64.17
2	19.749	8882974	50.06	181468	35.83



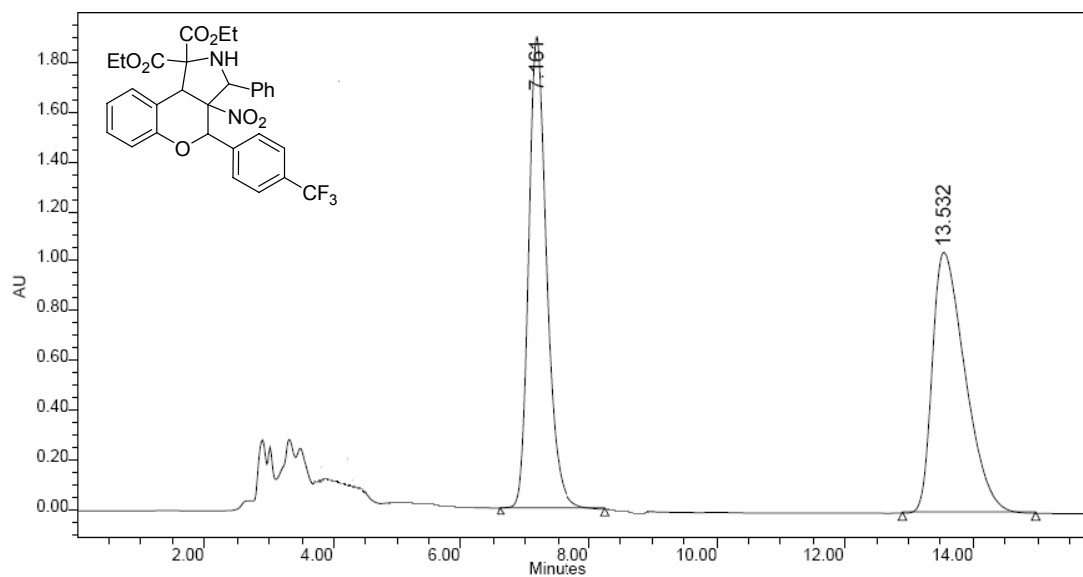
	RT (min)	Area (V*sec)	% Area	Height (V)	% Height
1	9.732	13511479	41.51	443887	57.81
2	21.833	19035178	58.49	324002	42.19



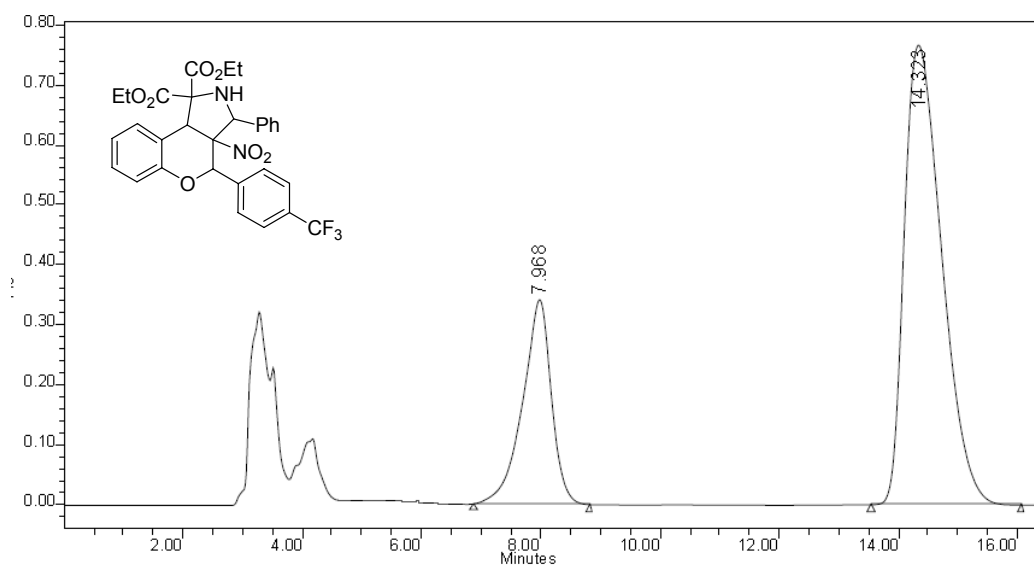
RT (min)	Area (V*sec)	% Area	Height (V)	% Height
1	8971284	49.88	287054	63.71
2	9014555	50.12	163502	36.29



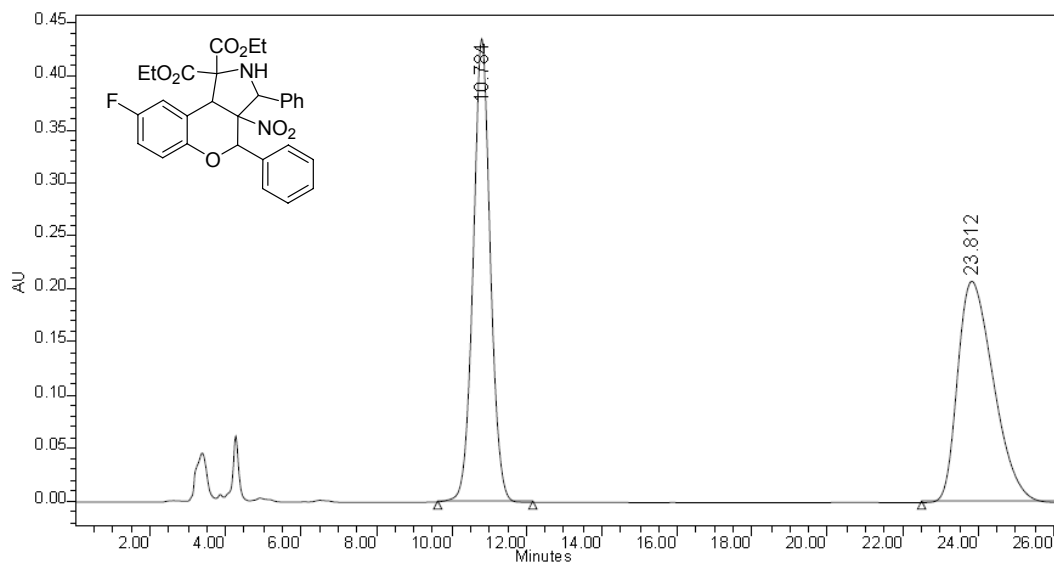
RT (min)	Area (V*sec)	% Area	Height (V)	% Height
1	14355179	32.51	442713	46.79
2	29796439	67.49	503535	53.21



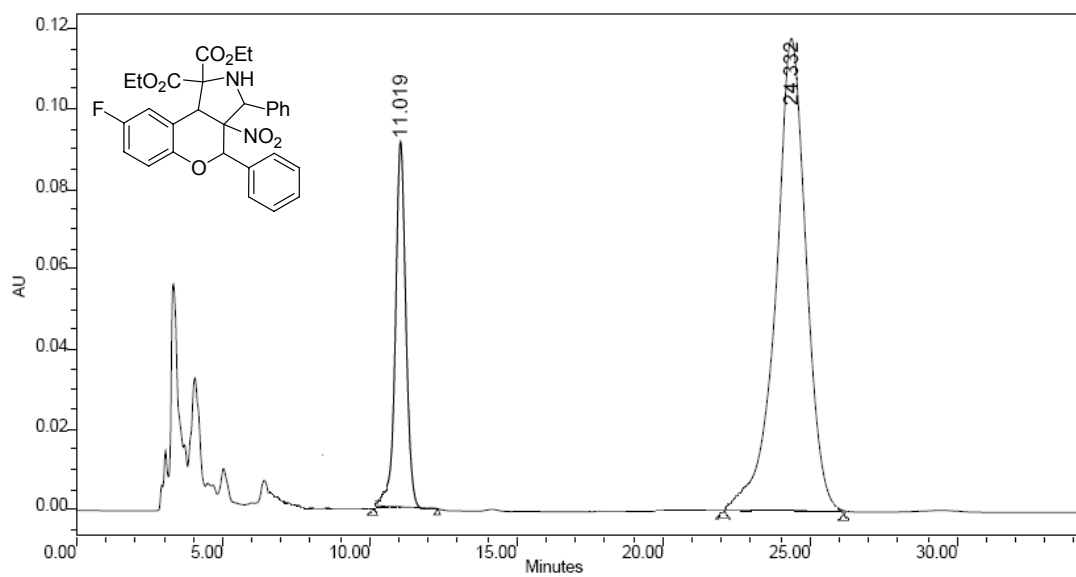
	RT (min)	Area (V*sec)	% Area	Height (V)	% Height
1	7.161	37279333	49.95	1893789	64.39
2	13.532	37359740	50.05	1047223	35.61



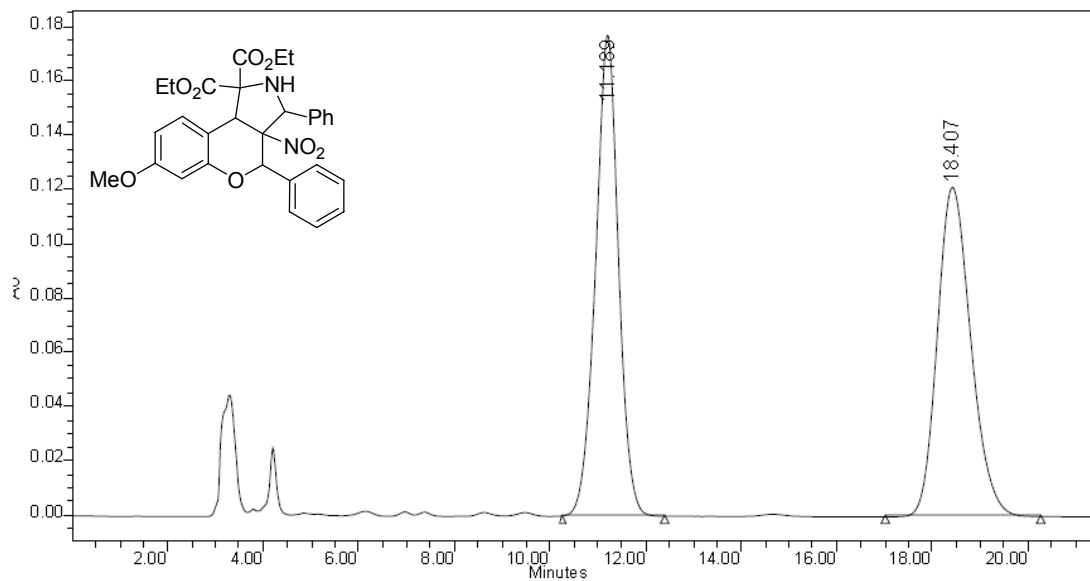
	RT (min)	Area (V*sec)	% Area	Height (V)	% Height
1	7.968	11453950	25.47	341583	30.80
2	14.323	33517777	74.53	767278	69.20



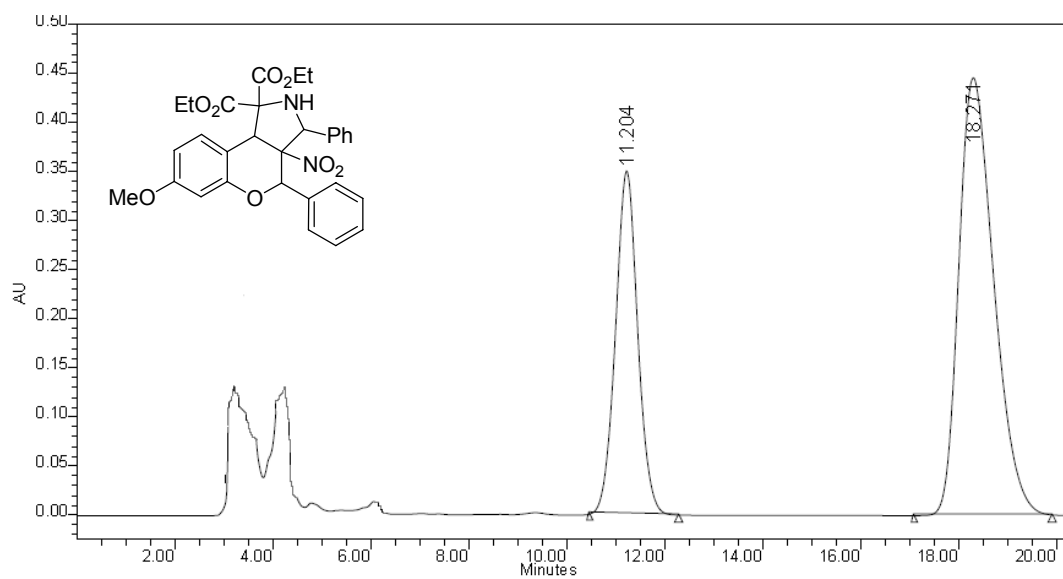
	RT (min)	Area (V*sec)	% Area	Height (V)	% Height
1	10.784	13833465	49.98	436024	67.66
2	23.812	13845348	50.02	208369	32.34



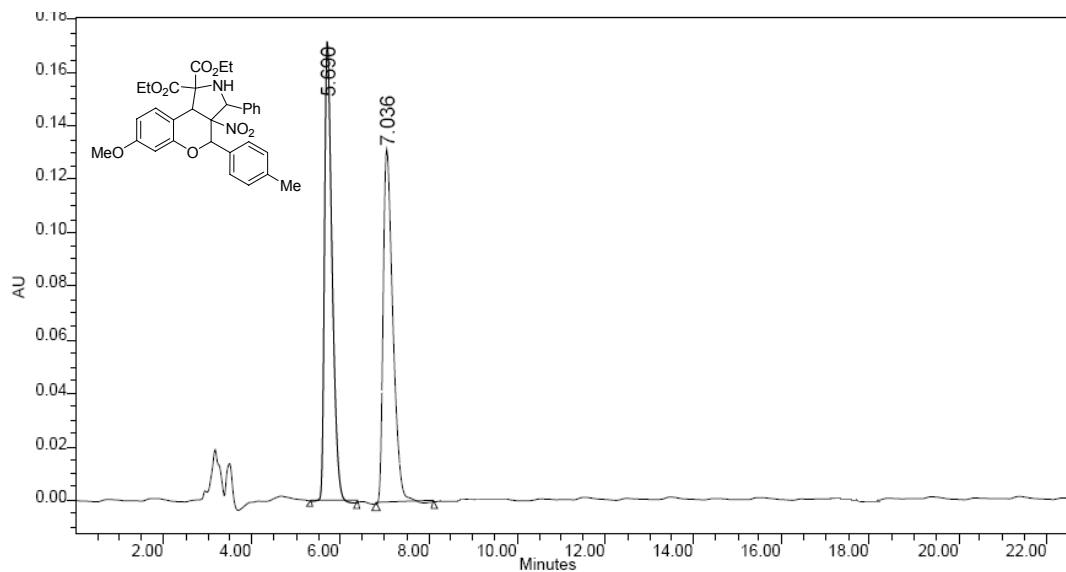
	RT (min)	Area (V*sec)	% Area	Height (V)	% Height
1	11.019	2432567	23.73	91382	44.23
2	24.332	7817874	76.27	115203	55.77



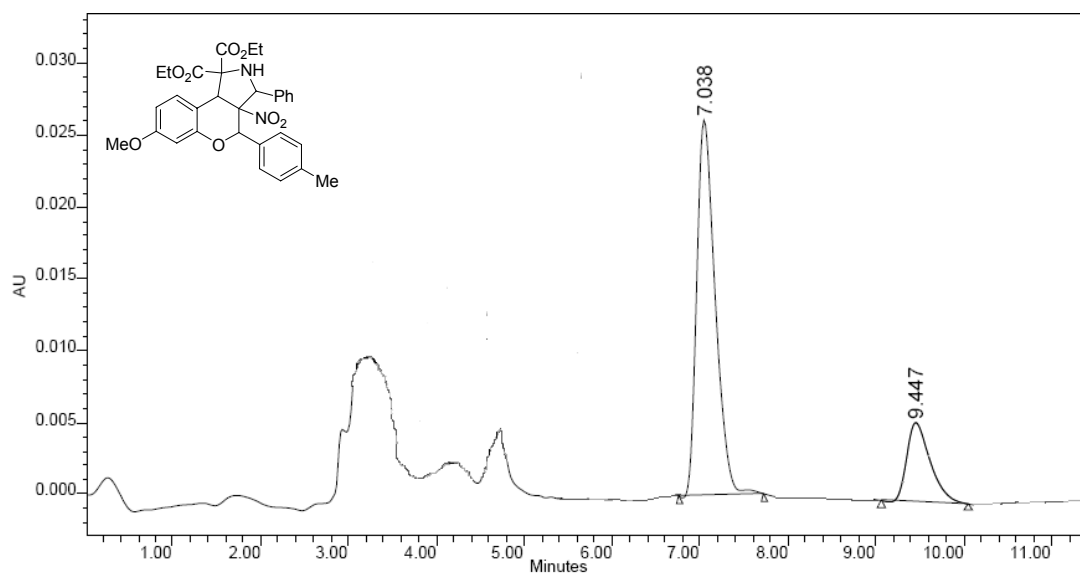
	RT (min)	Area (V*sec)	% Area	Height (V)	% Height
1	11.189	5910230	49.92	177150	59.34
2	18.407	5929164	50.08	121383	40.66



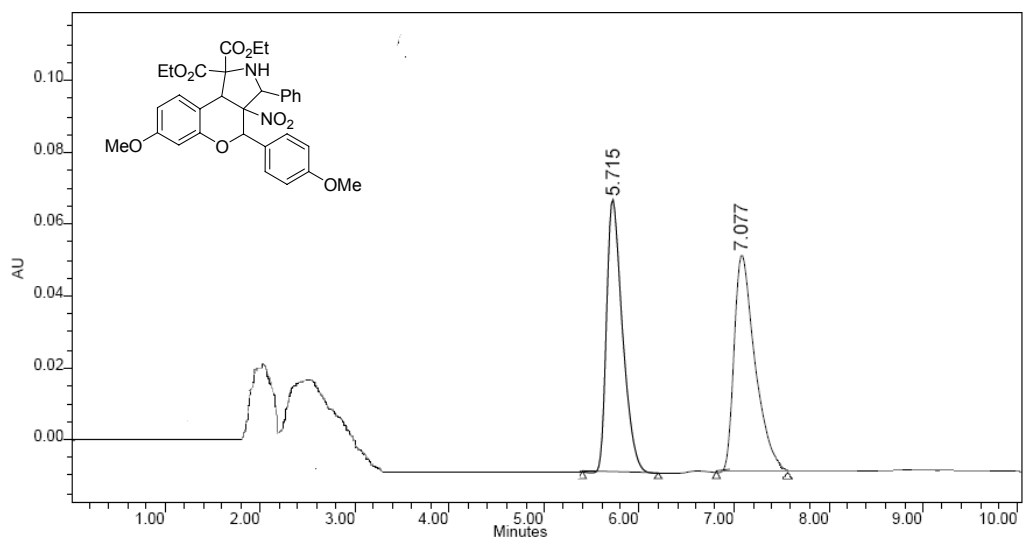
	RT (min)	Area (V*sec)	% Area	Height (V)	% Height
1	11.204	11032708	33.33	349959	43.96
2	18.271	22071368	66.67	446090	56.04



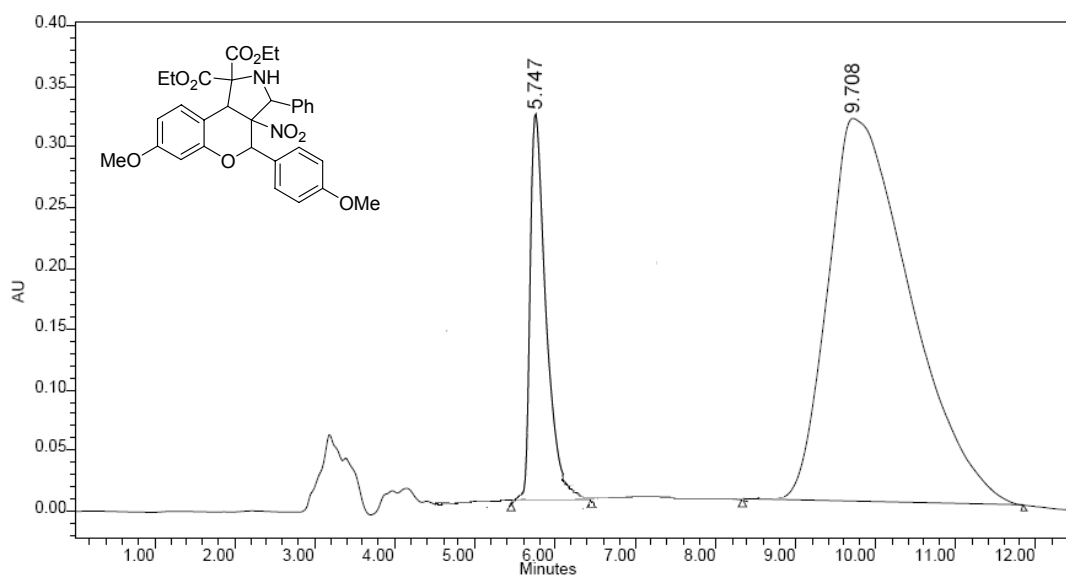
	RT (min)	Area (V*sec)	% Area	Height (V)	% Height
1	5.690	2062327	50.37	172895	56.58
2	7.036	2031876	49.63	132682	43.42



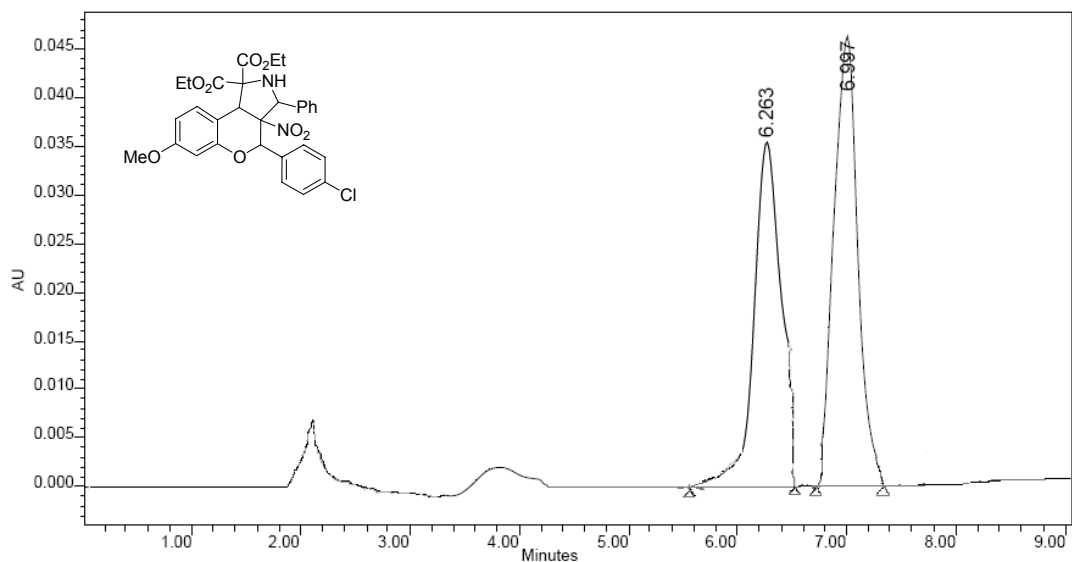
	RT (min)	Area (V*sec)	% Area	Height (V)	% Height
1	7.038	385143	78.84	26216	82.54
2	9.447	103396	21.16	5546	17.46



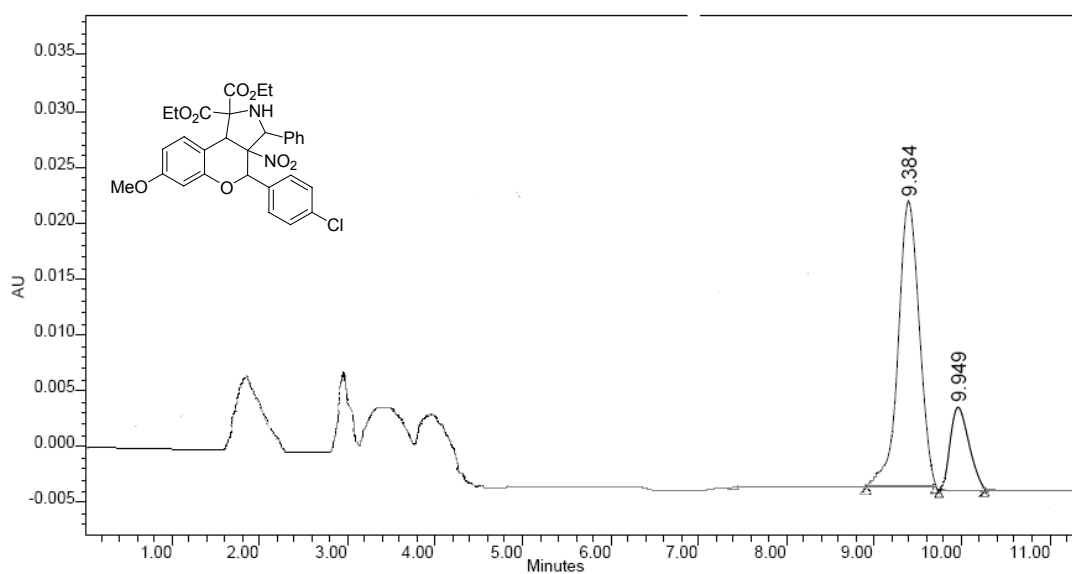
	RT (min)	Area (V*sec)	% Area	Height (V)	% Height
1	5.715	888471	50.23	75879	56.06
2	7.077	880305	49.77	59479	43.94



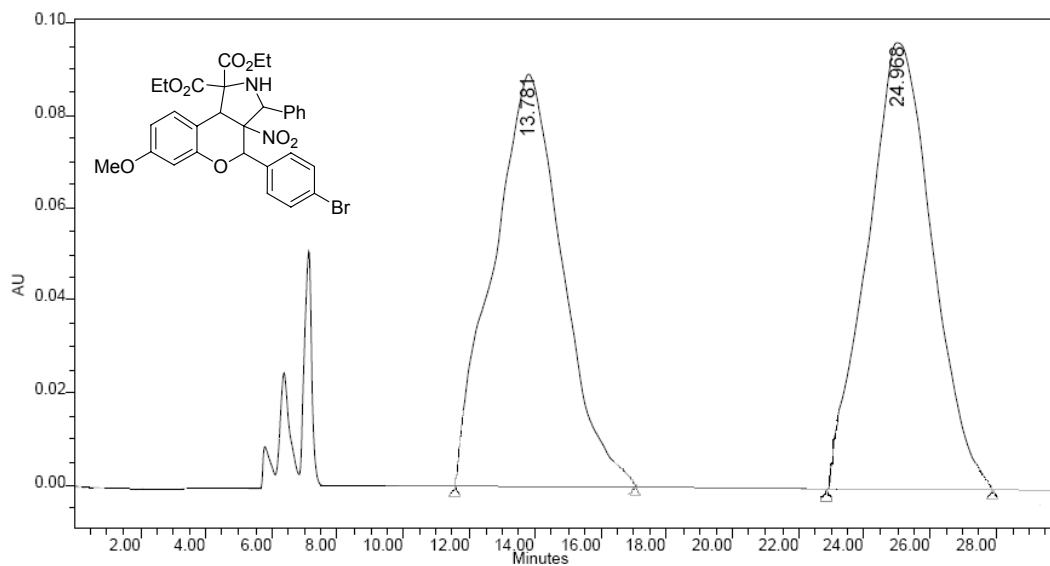
	RT (min)	Area (V*sec)	% Area	Height (V)	% Height
1	5.747	4049789	15.02	313175	49.68
2	9.708	22920211	84.98	317220	50.32



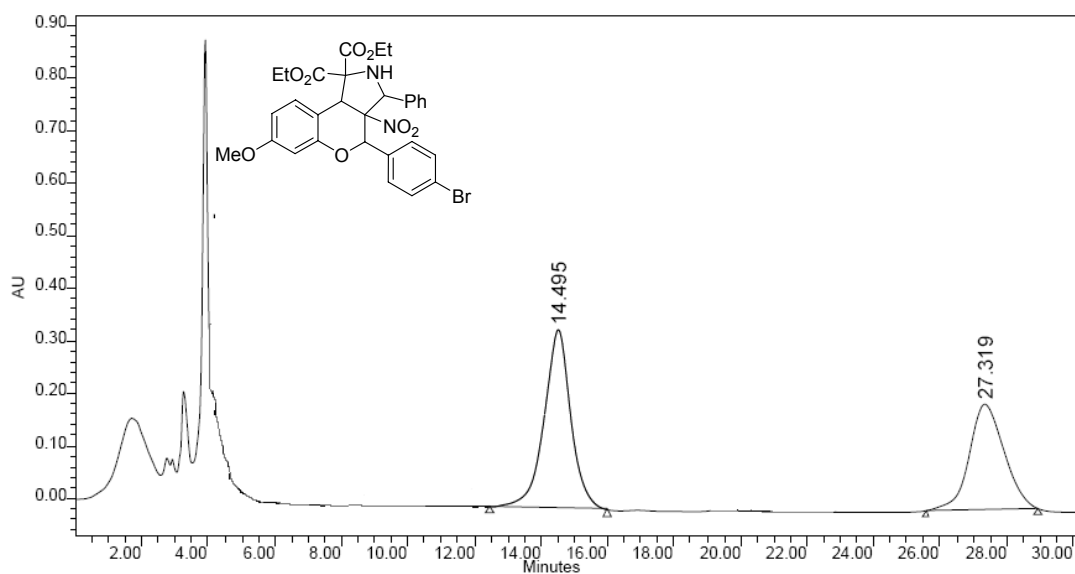
	RT (min)	Area (V*sec)	% Area	Height (V)	% Height
1	6.263	628992	50.69	32086	42.62
2	6.997	611917	49.31	43202	57.38



	RT (min)	Area (V*sec)	% Area	Height (V)	% Height
1	9.384	386908	75.74	24694	76.17
2	9.949	123944	24.26	7727	23.83



	RT (min)	Area (V*sec)	% Area	Height (V)	% Height
1	13.781	12441361	49.39	86125	48.03
2	24.968	12748234	50.61	93172	51.97



	RT (min)	Area (V*sec)	% Area	Height (V)	% Height
1	14.495	19079690	56.55	339761	62.85
2	27.319	14658998	43.45	200795	37.15