Electronic Supporting Information

Copper (II) triflate catalyzed three-component reaction for the synthesis of 2,3-diarylquinoline derivatives using aryl amines, aryl aldehydes and styrene oxides

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Crystal Data and Structure Refinement for Compound **5e**	**S2**
Copies of ^{1}H NMR,^{13}C NMR and HRMS spectra of all the Compounds	**S3–S74**

Figure: S1. ORTEP Diagram of compound 5e with 40% ellipsoid probability

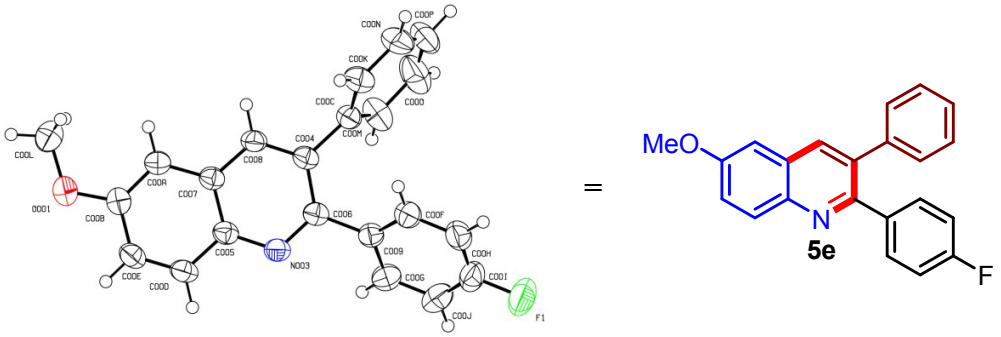
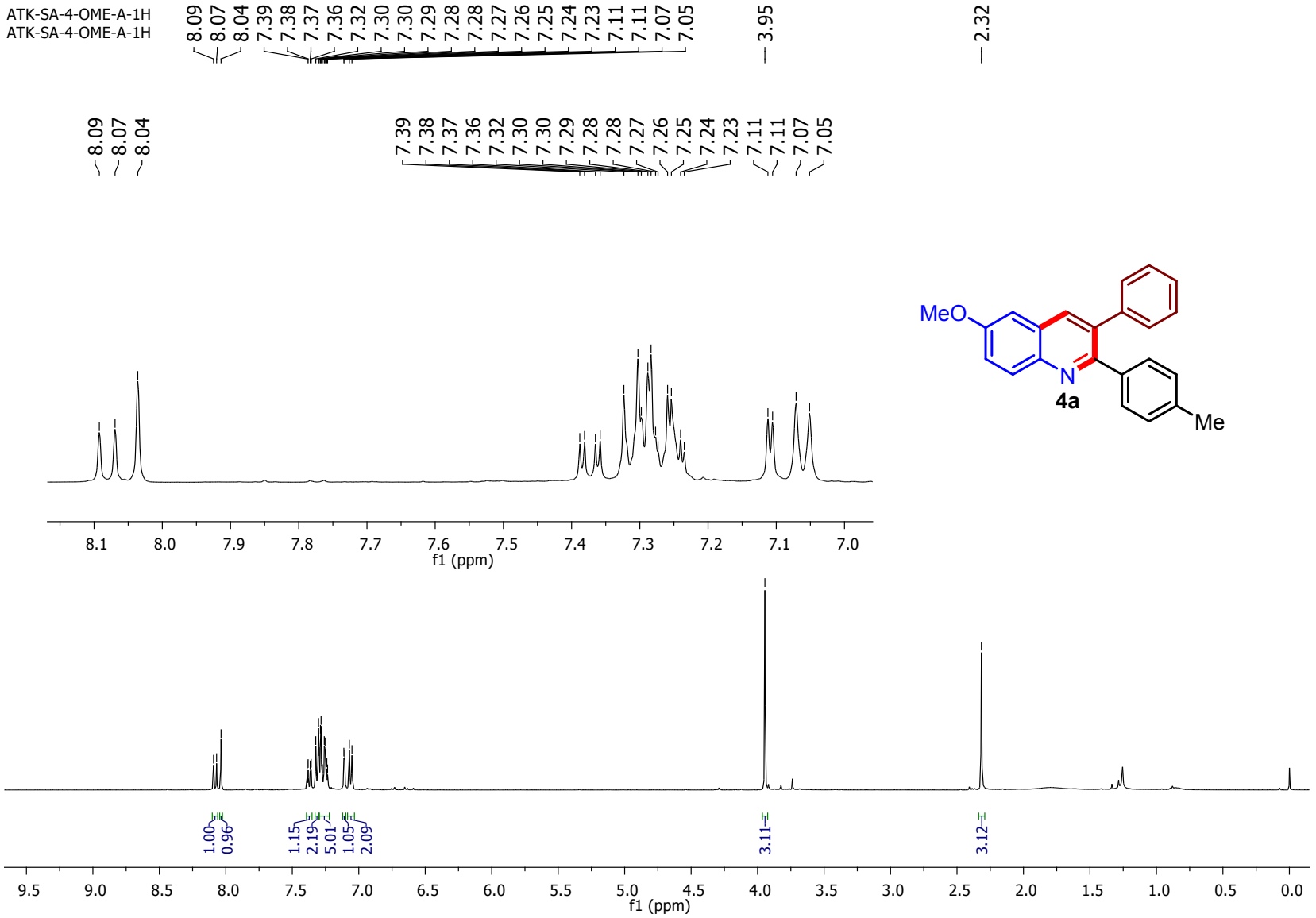


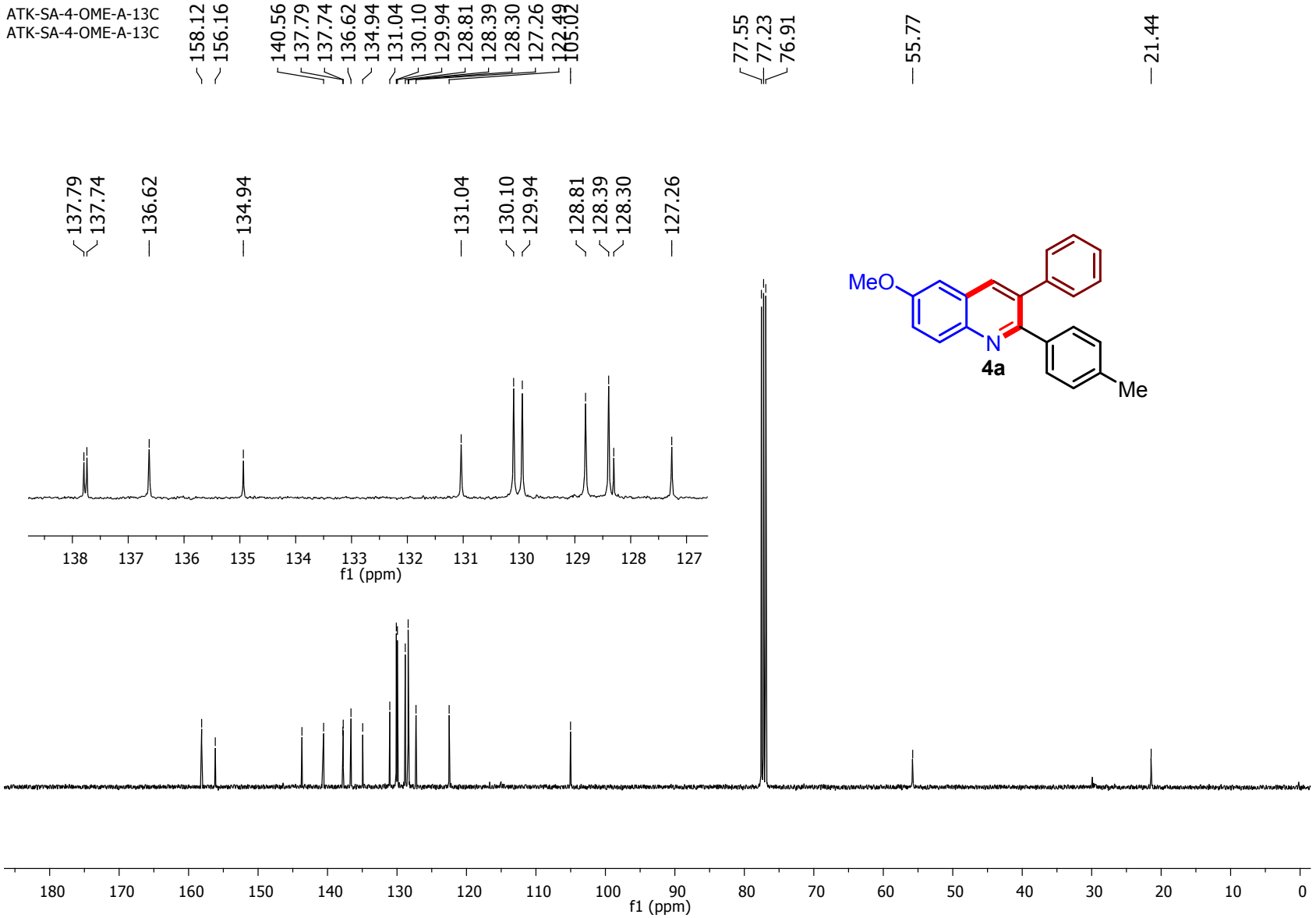
Table S1. Crystal data and structure refinement for compound 5e:

Entry	Identification code	Compound 5e
01	Empirical formula	$C_{22}H_{16}FNO$
02	Formula weight	329.12
03	Temperature	296 K
04	Wavelength	0.71073
05	Radiation type	MoK\a
06	Radiation source	'fine-focus sealed tube'
07	Crystal system	Monoclinic
08	Space group	P 21/c
09	Cell length	A = 13.9206 (6), b = 9.0995(4), c = 14.8399(6)
10	Cell Angle	$\alpha = 90$, $\beta = 116.476(1)$, $\gamma = 90$
11	Cell Volume	1682.63(12)
12	Density	1.3
13	Completeness to theta	0.999-28.489
14	Absorption correction	multi-scan
15	Refinement method	Full
16	Index ranges	$-18 \leq h \leq 18$, $-12 \leq k \leq 12$, $-19 \leq l \leq 19$
17	Reflection number	83679
18	Theta range	1.634-28.489
19	Cell formula units Z	1
20	CCDC no.	2040858

^{1}HNMR spectrum of compound: 4a



^{13}CNMR spectrum of compound: 4a



HRMS spectrum of compound: 4a

Sample Name	SAMPLE 36	**Position**	P2-D4	**Instrument Name**	Instrument 1	**User Name**	
Inj Vol	20	**InjPosition**		**SampleType**	Sample	**IRM Calibration Status**	Success
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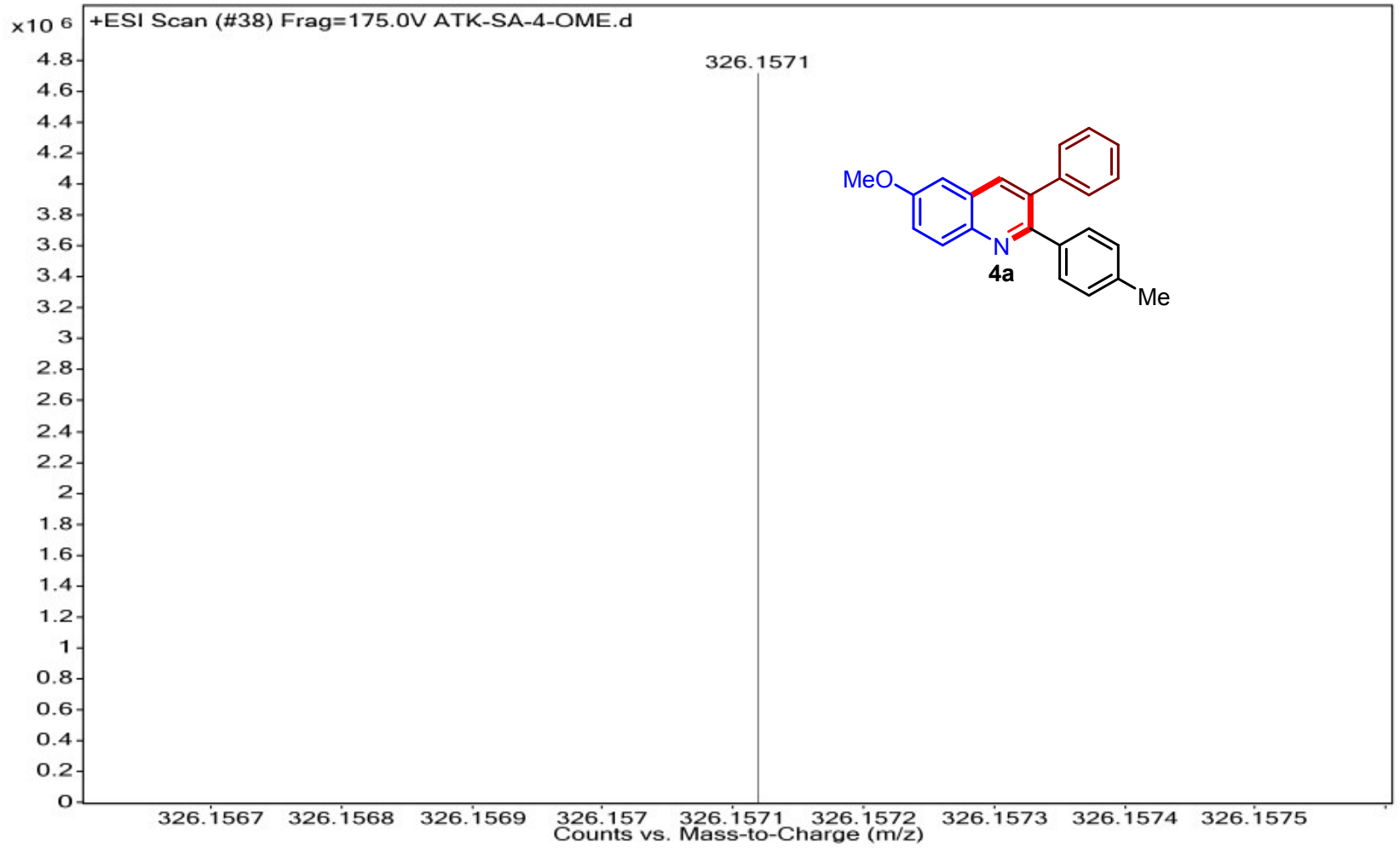
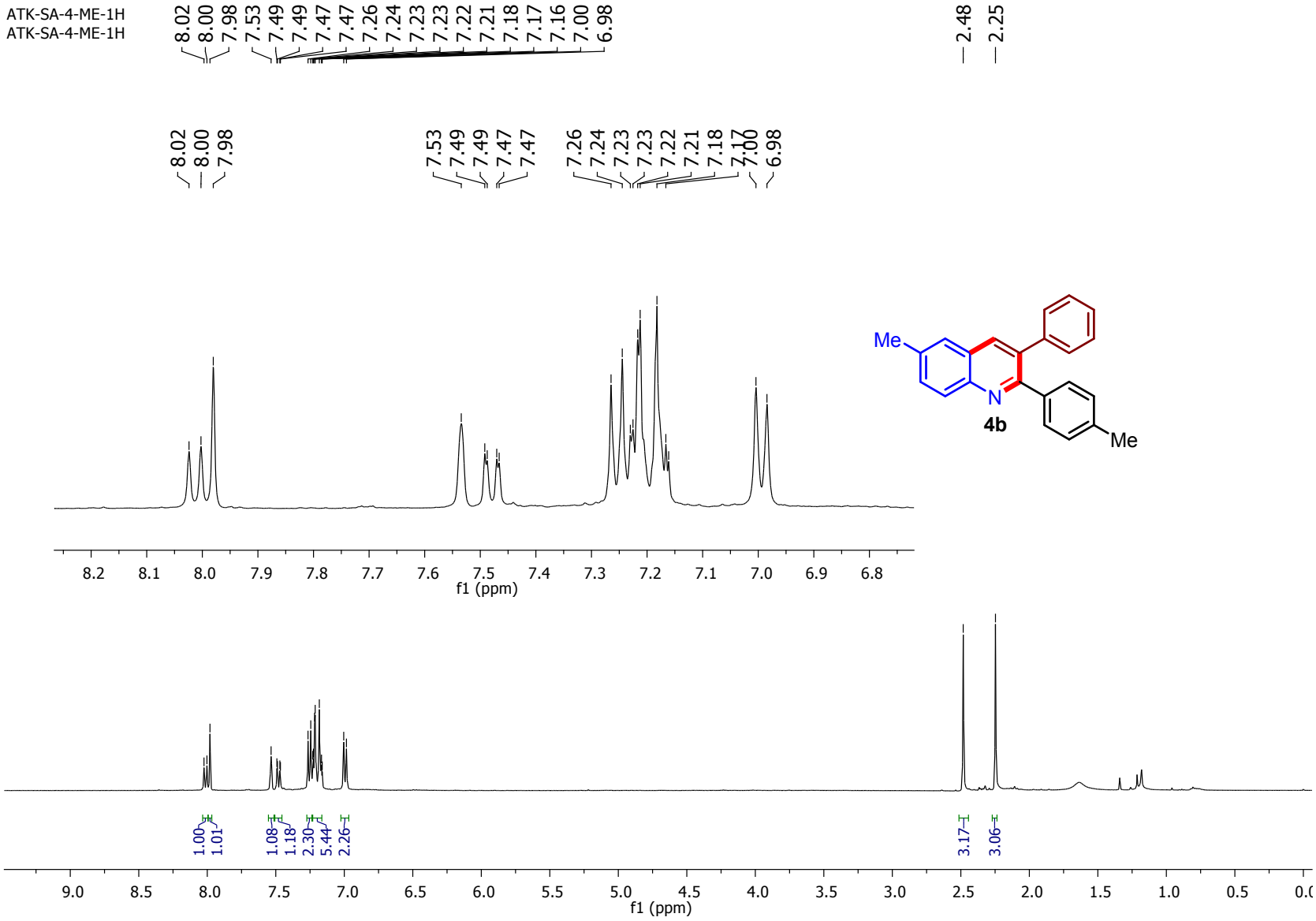
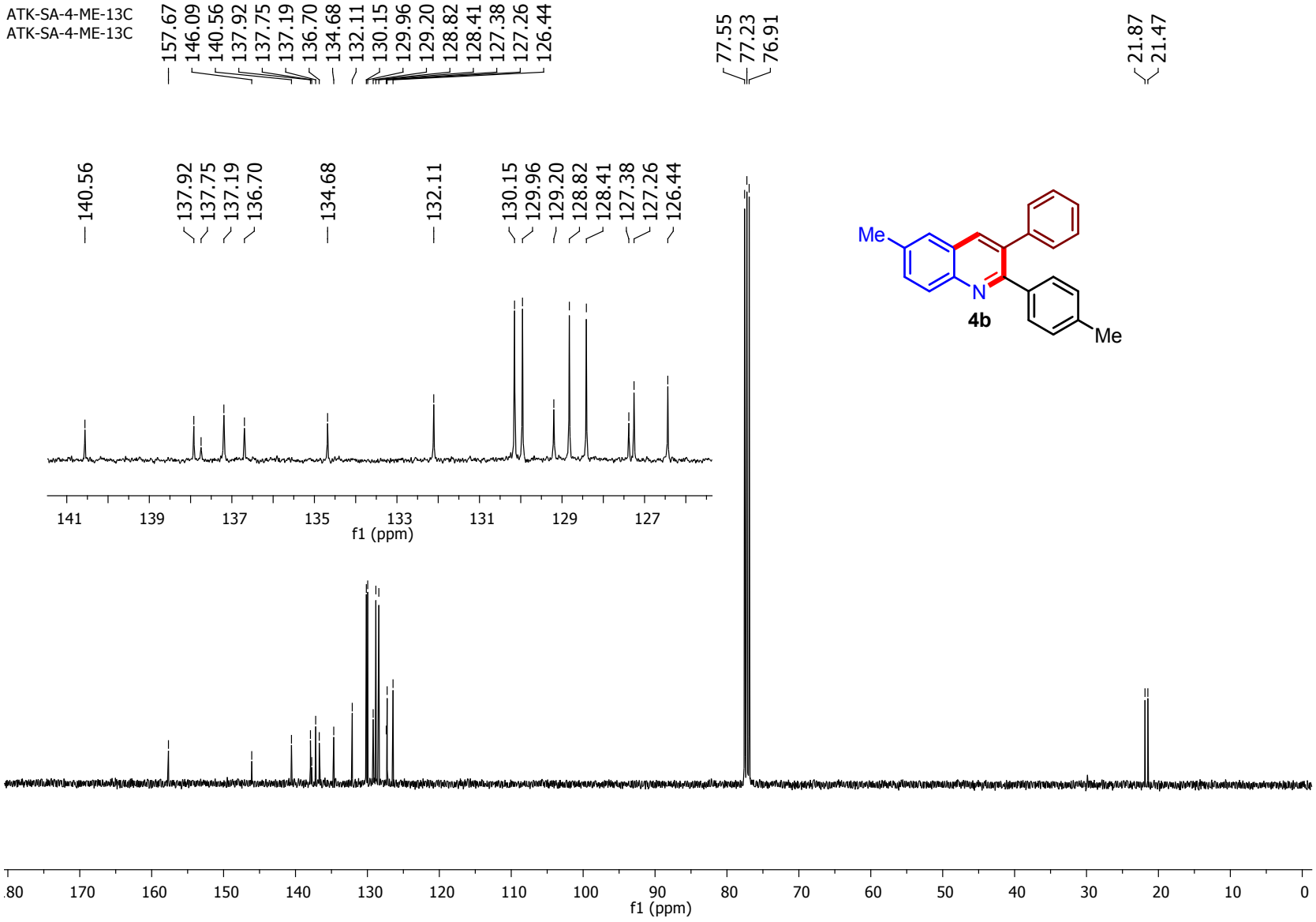


^{1}HNMR spectrum of compound: 4b



^{13}CNMR spectrum of compound: 4b



MRMS spectrum of compound: 4b

Sample Name	SAMPLE	**Position**	P2-C11	**Instrument Name**	Instrument 1	**User Name**	
Inj Vol	20	**InjPosition**		**SampleType**	Sample	**IRM Calibration Status**	Success
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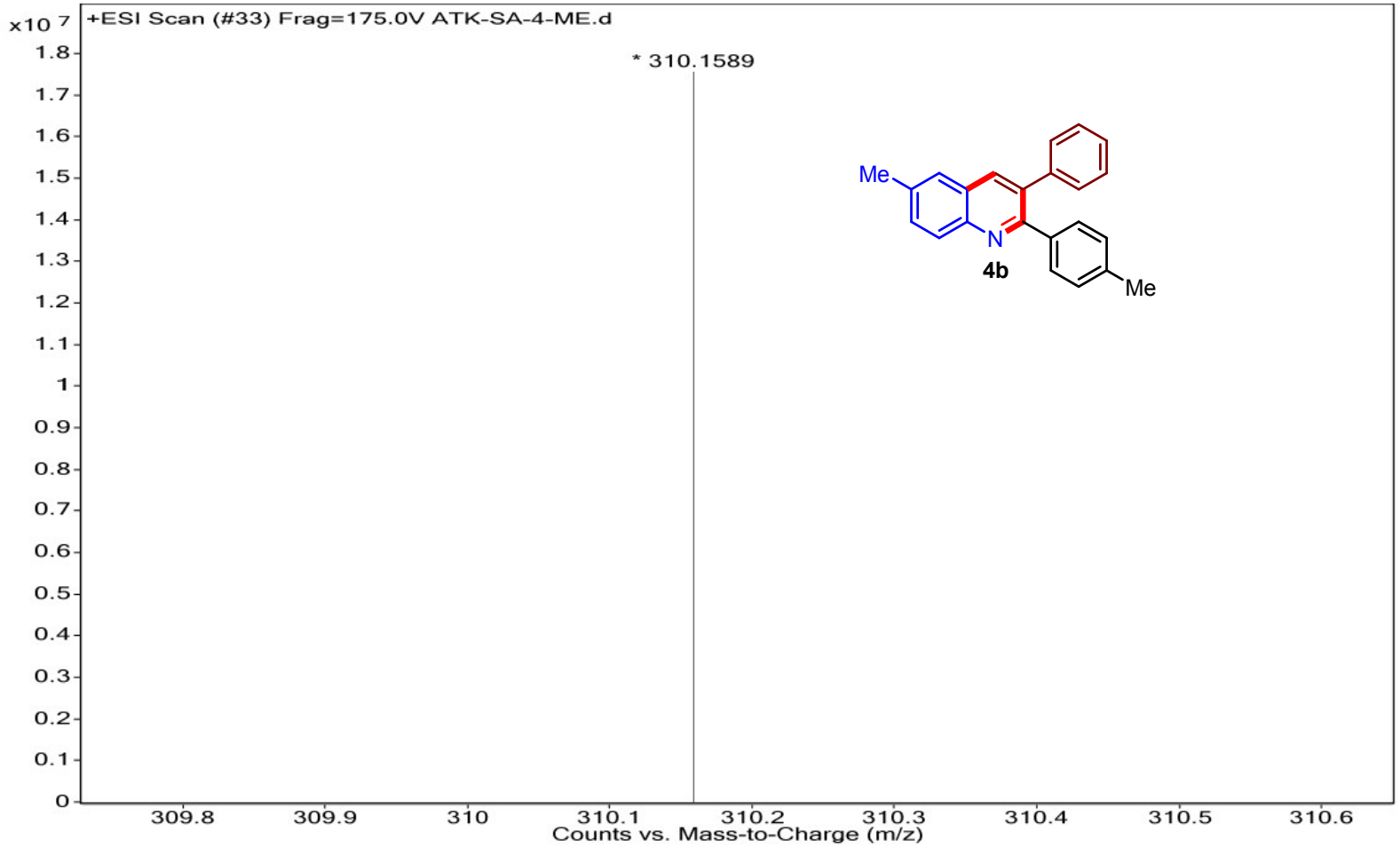
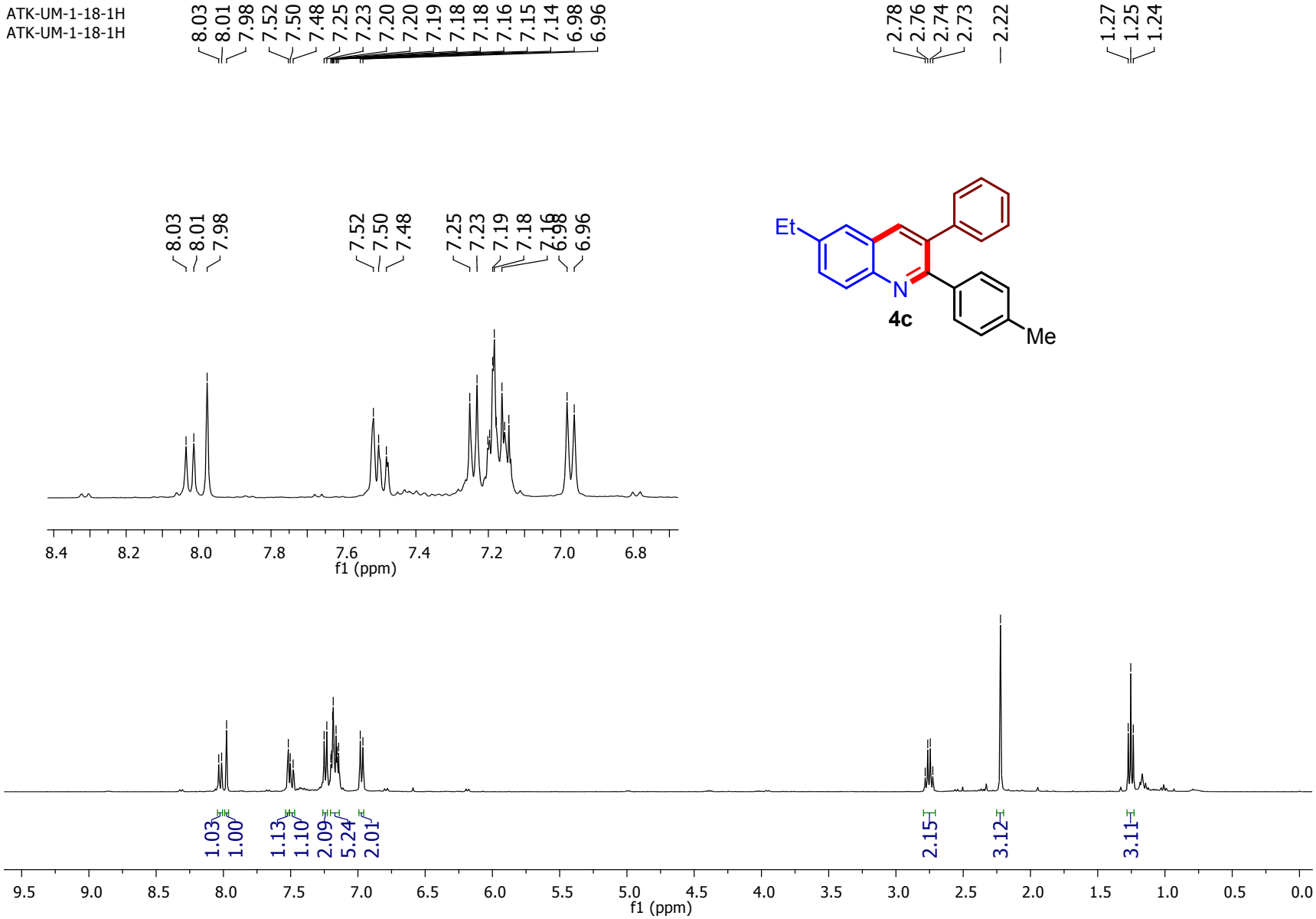
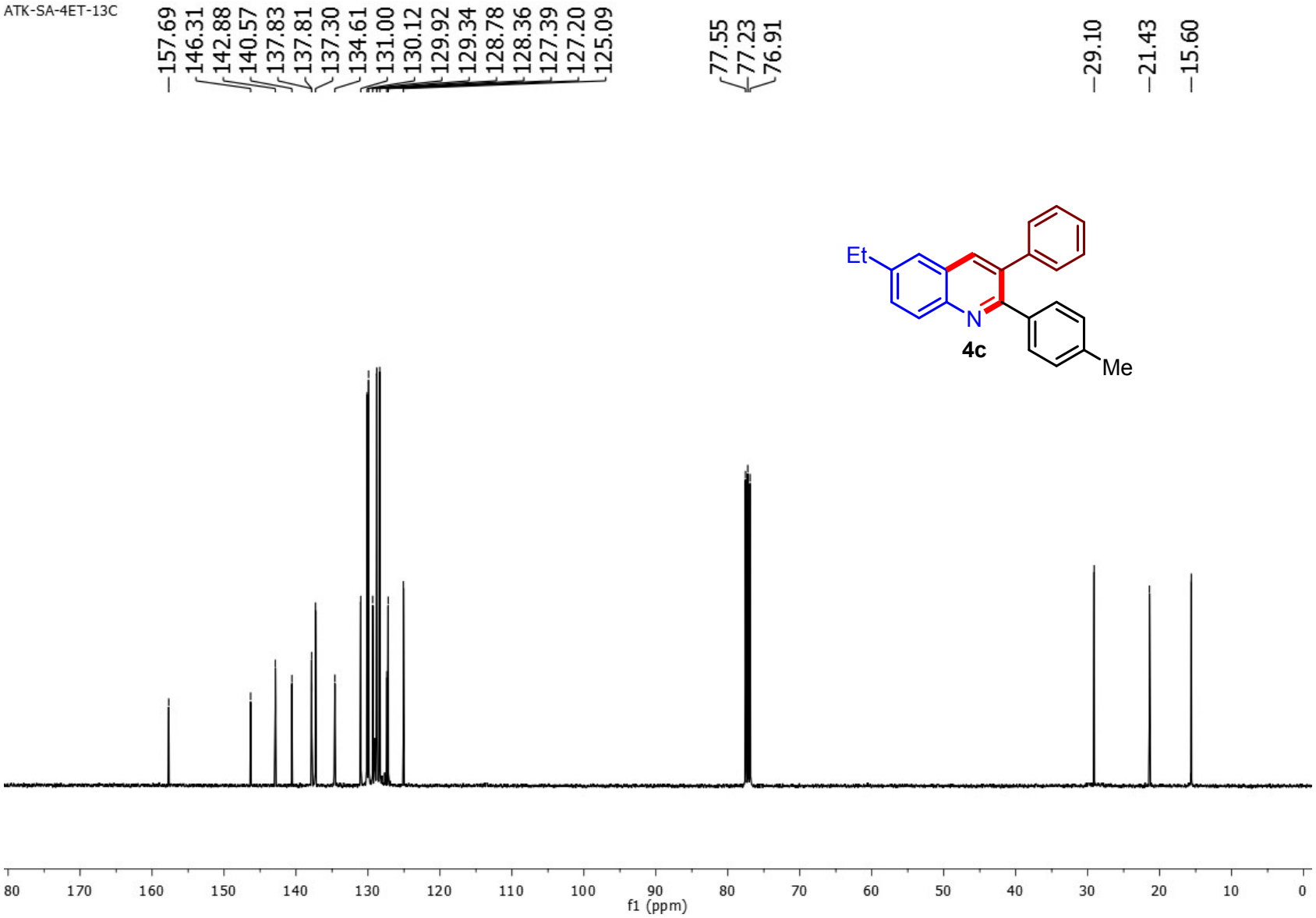


^{1}HNMR spectrum of compound: 4c



^{13}CNMR spectrum of compound: 4c



HRMS spectrum of compound: 4c

Sample Name	ATK-UM-4ET	**Position**	P1-D4	**Instrument Name**	Instrument 1	**User Name**	
Inj Vol	20	**InjPosition**		**SampleType**	Sample	**IRM Calibration Status**	Success
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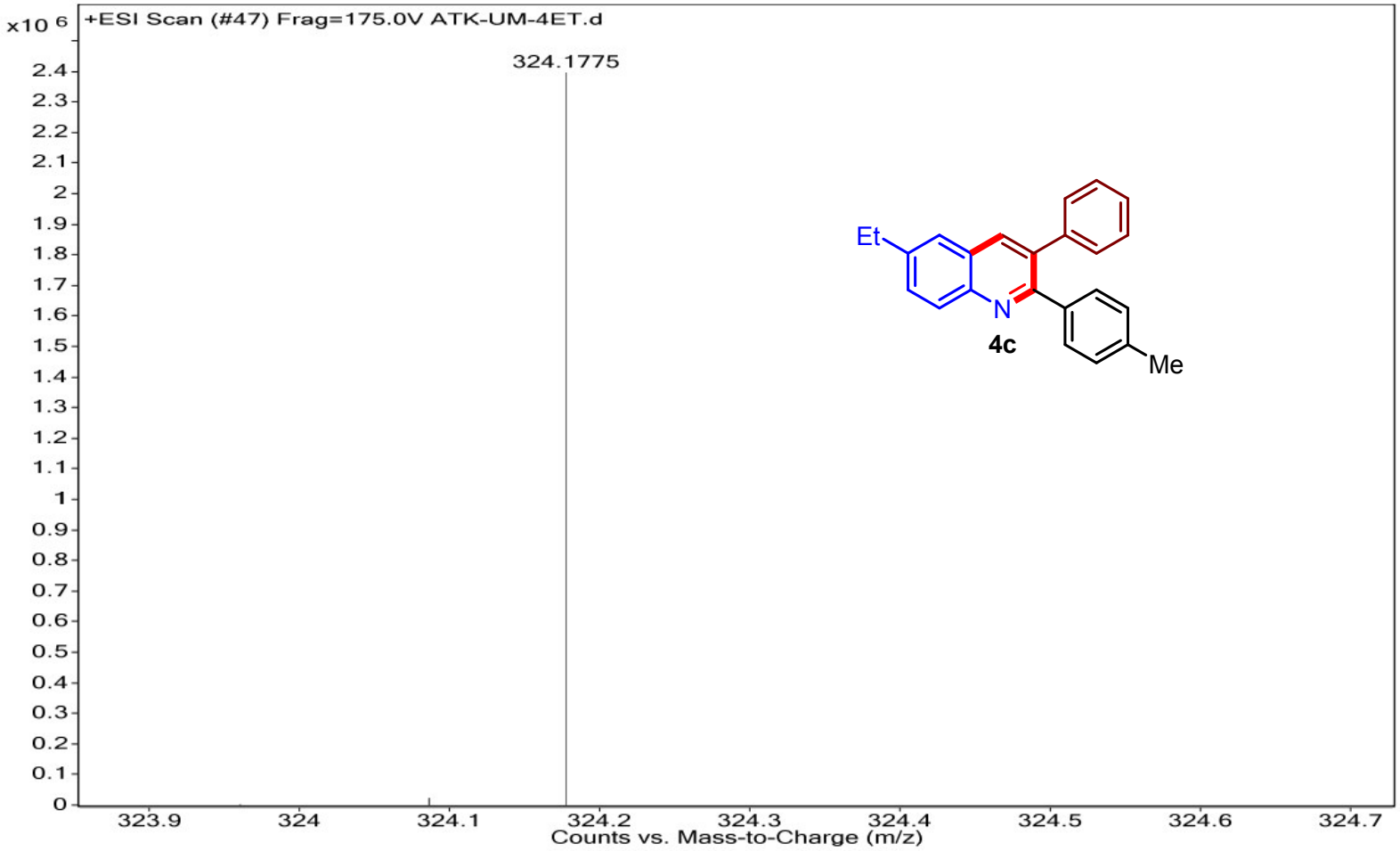
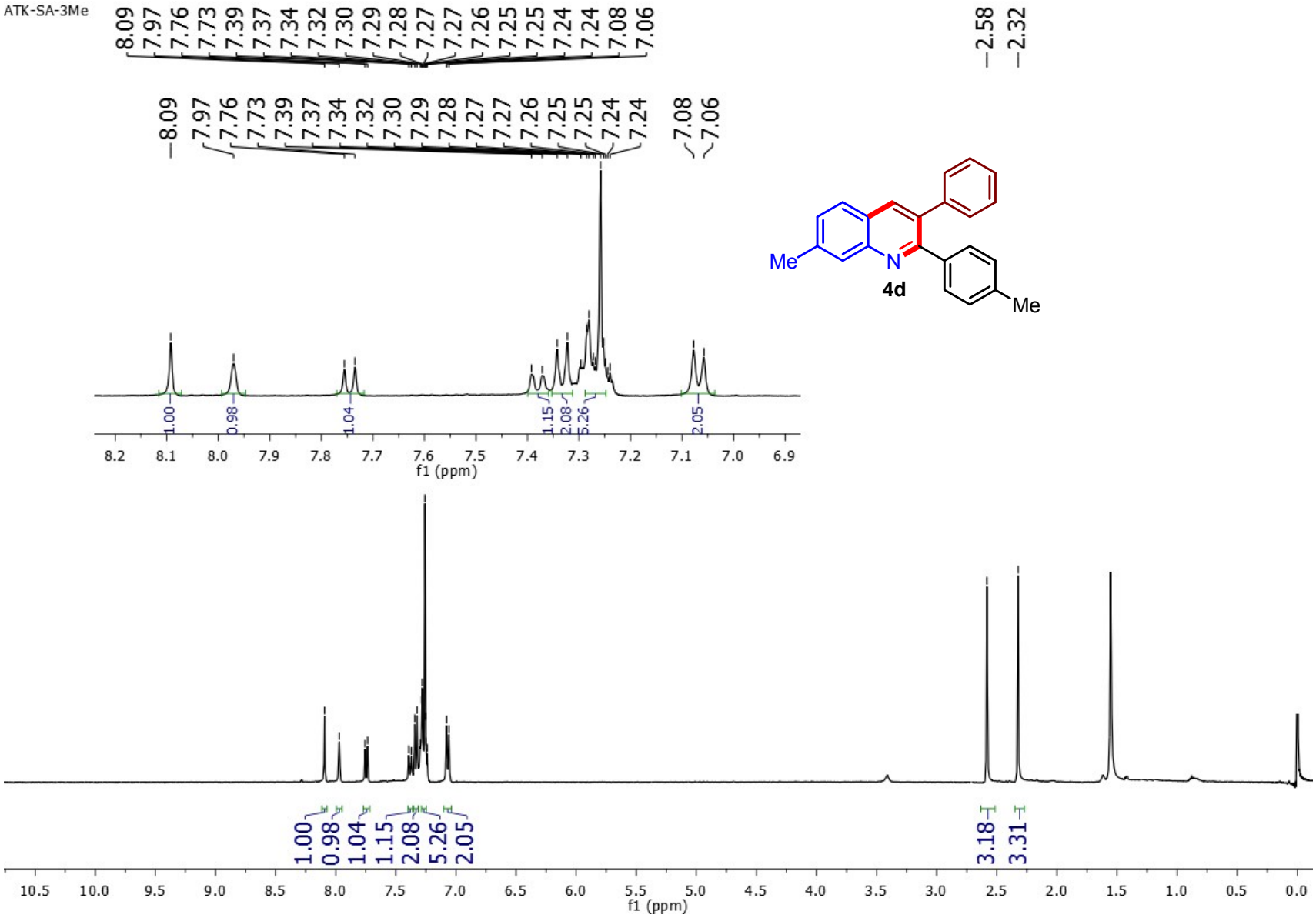
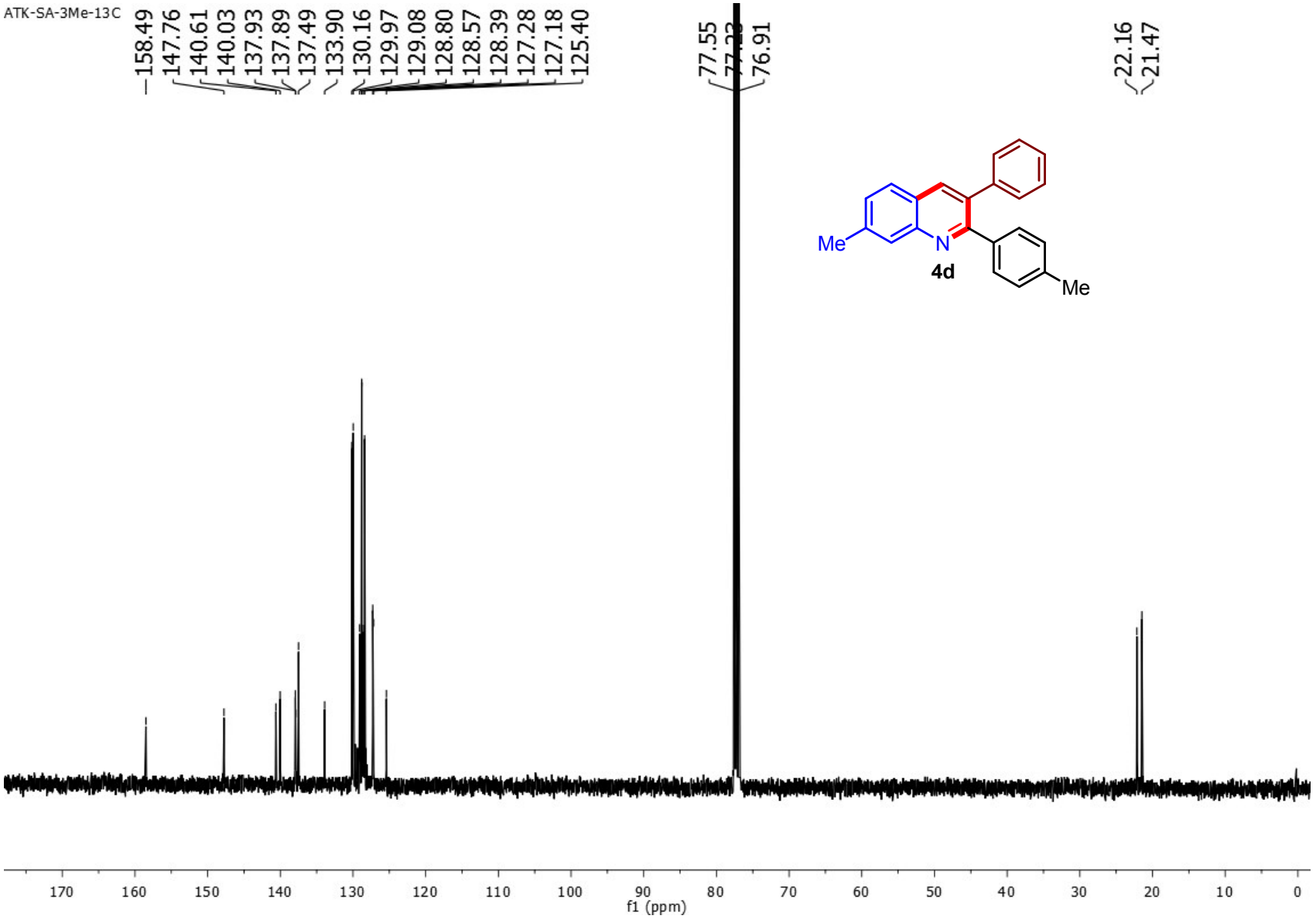


^{1}HNMR spectrum of compound: 4d

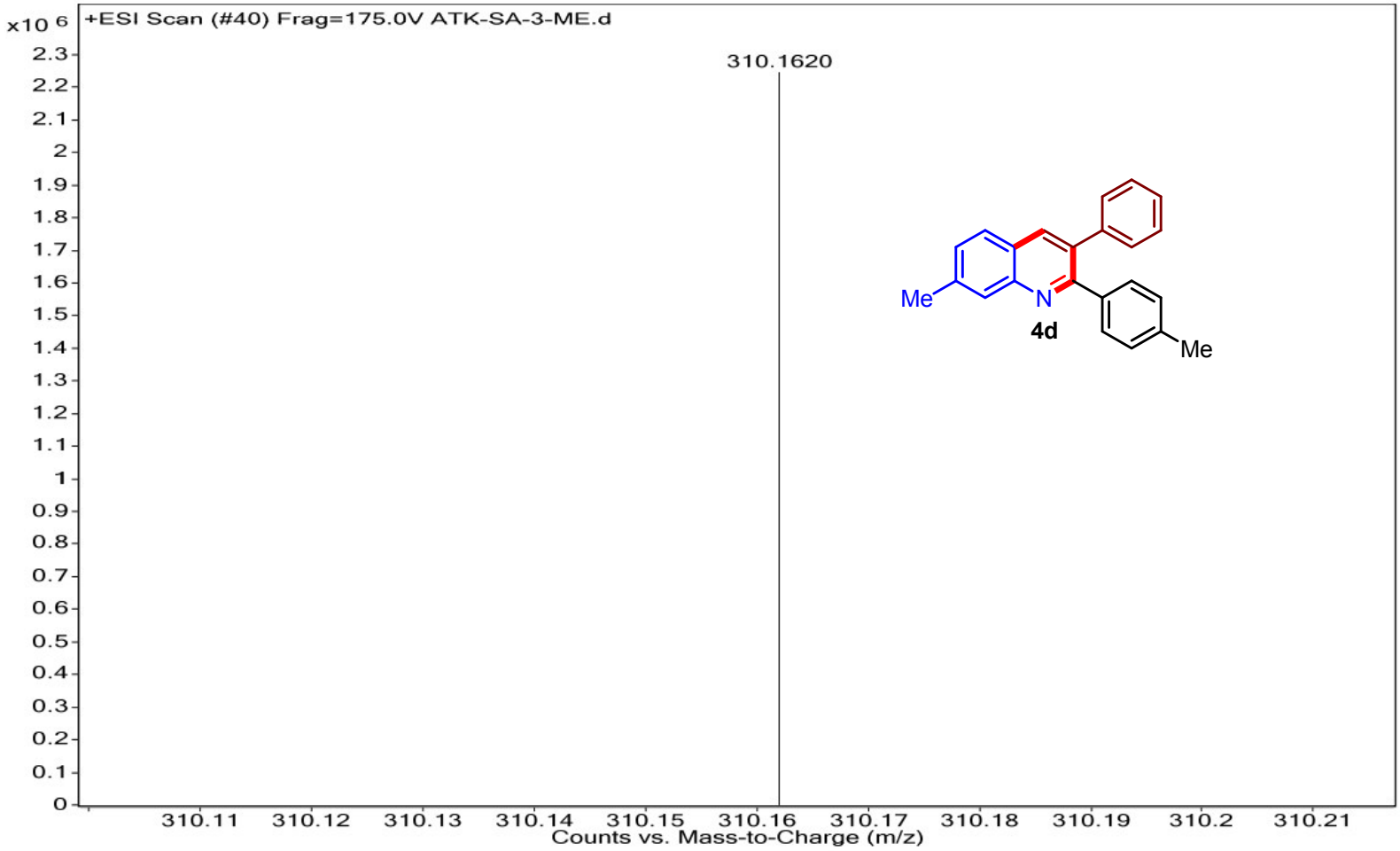


^{13}CNMR spectrum of compound: 4d

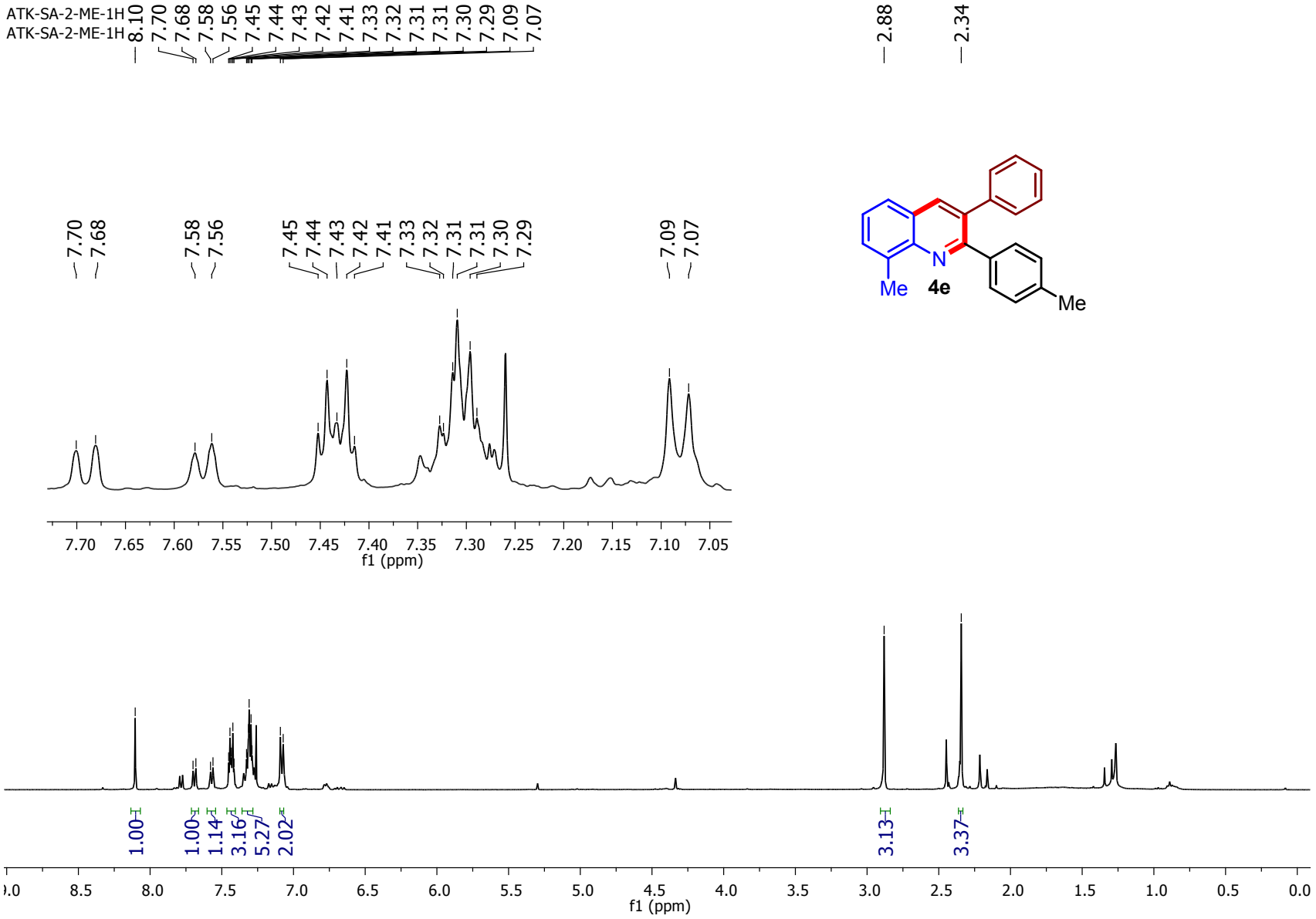


HRMS spectrum of compound: 4d

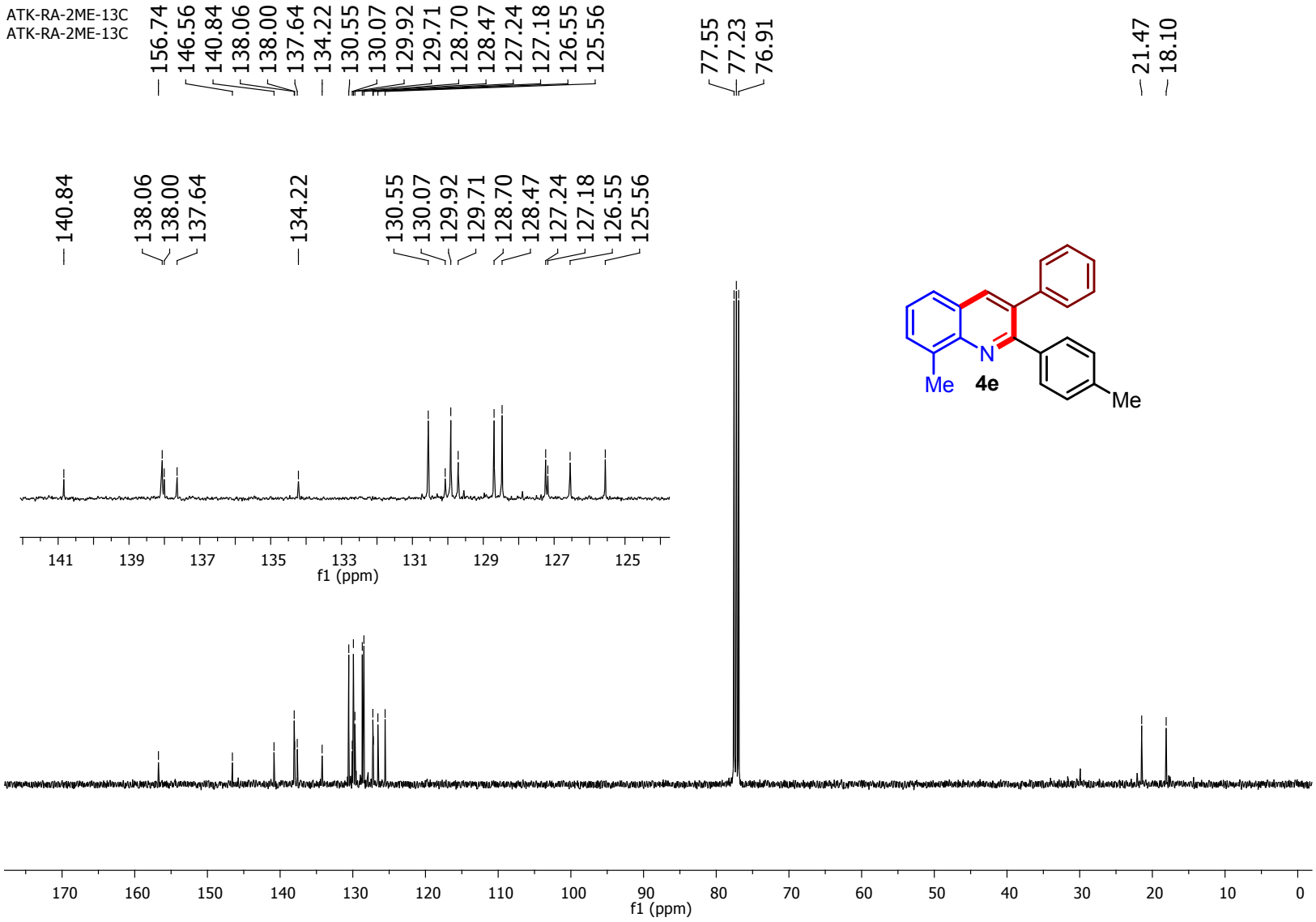
Sample Name	SAMPLE 29	**Position**	P2-C8	**Instrument Name**	Instrument 1	**User Name**	
Inj Vol	20	**InjPosition**		**SampleType**	Sample	**IRM Calibration Status**	Success
Data Filename	ATK-SA-3-ME.d	**ACQ Method**	ESI ALS 100-1000.m	**Comment**		**Acquired Time**	8/9/2019 6:04:33 PM



^{1}HNMR spectrum of compound: 4e

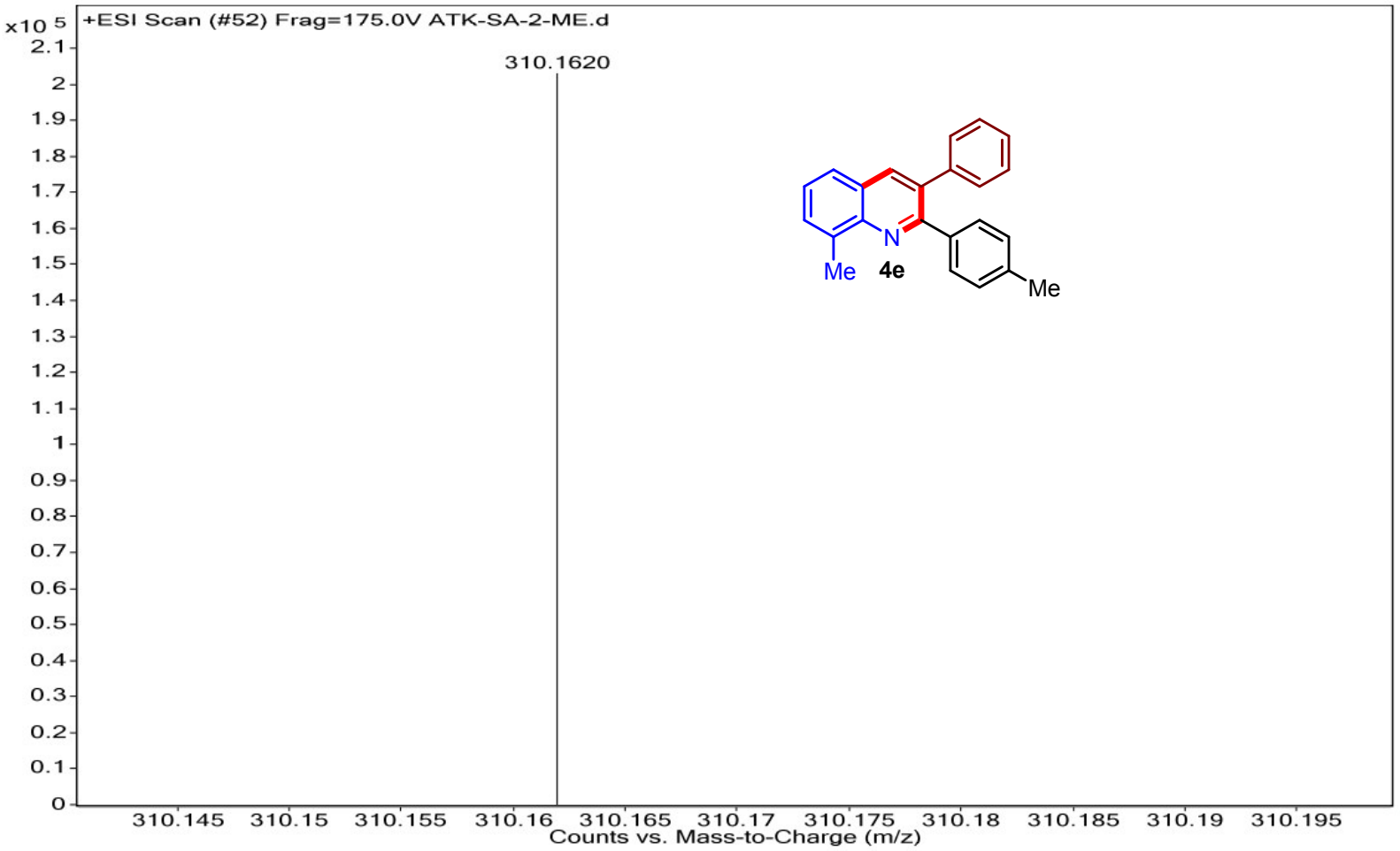


^{13}CNMR spectrum of compound: 4e

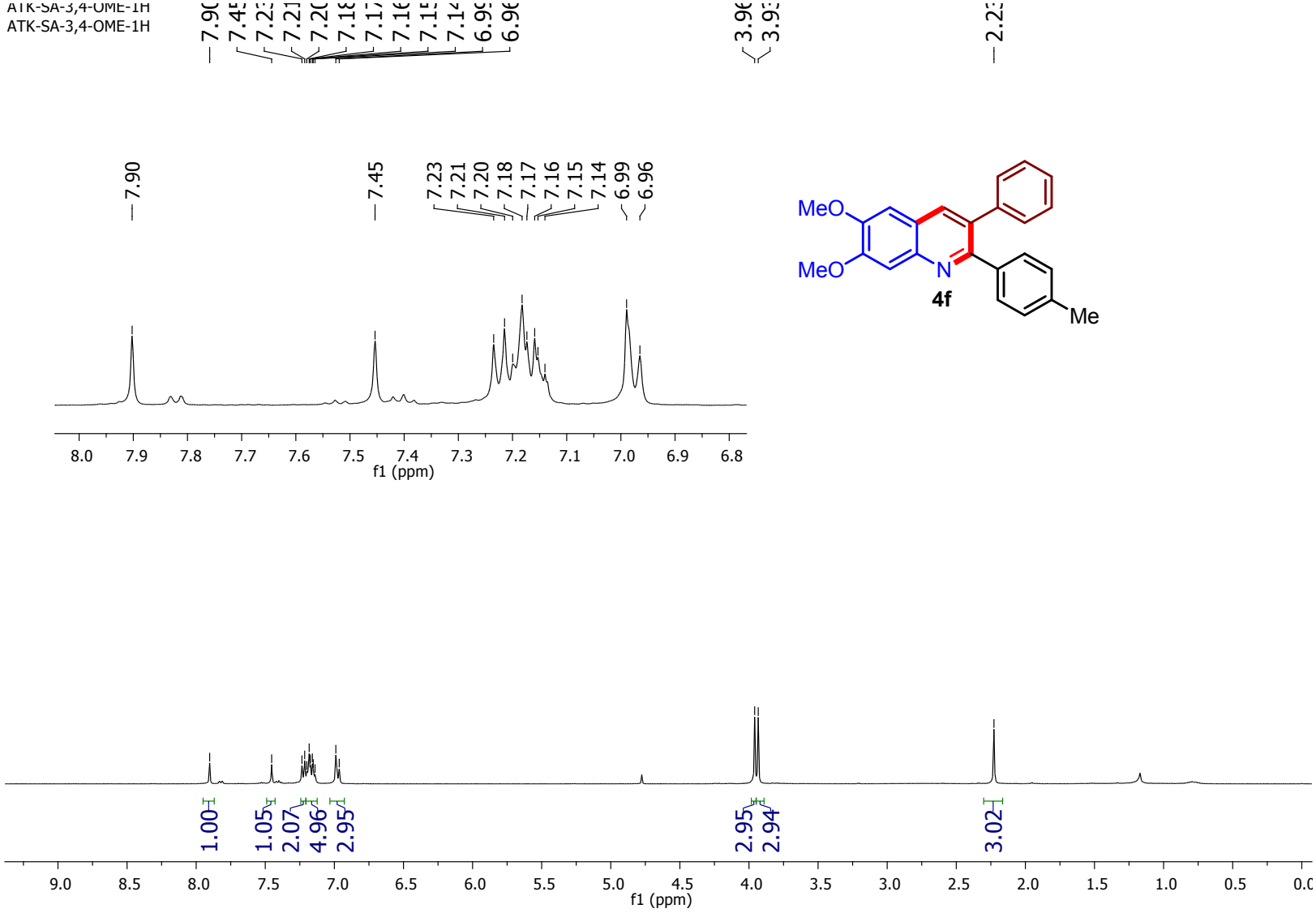


HRMS spectrum of compound: 4e

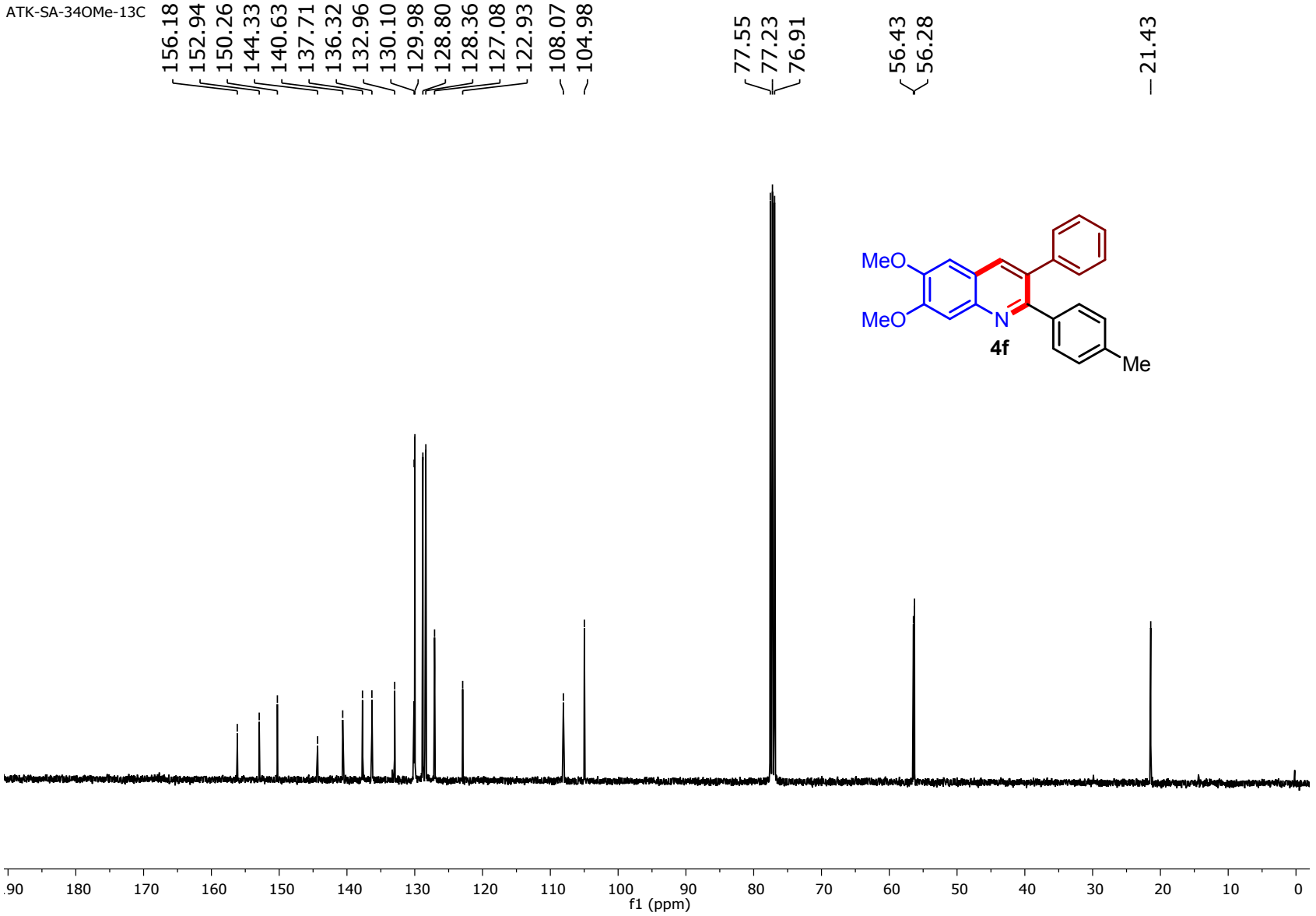
Sample Name	SAMPLE 30	**Position**	P2-C9	**Instrument Name**	Instrument 1	**User Name**	
Inj Vol	20	**InjPosition**		**SampleType**	Sample	**IRM Calibration Status**	Success
Data Filename	ATK-SA-2-ME.d	**ACQ Method**	ESI ALS 100-1000.m	**Comment**		**Acquired Time**	8/9/2019 6:14:19 PM



^{1}HNMR spectrum of compound: 4f



^{13}CNMR spectrum of compound: 4f



HRMS spectrum of compound: 4f

Sample Name	SAMPLE	**Position**	P2-C7	**Instrument Name**	Instrument 1	**User Name**	
Inj Vol	20	**InjPosition**		**SampleType**	Sample	**IRM Calibration Status**	Success
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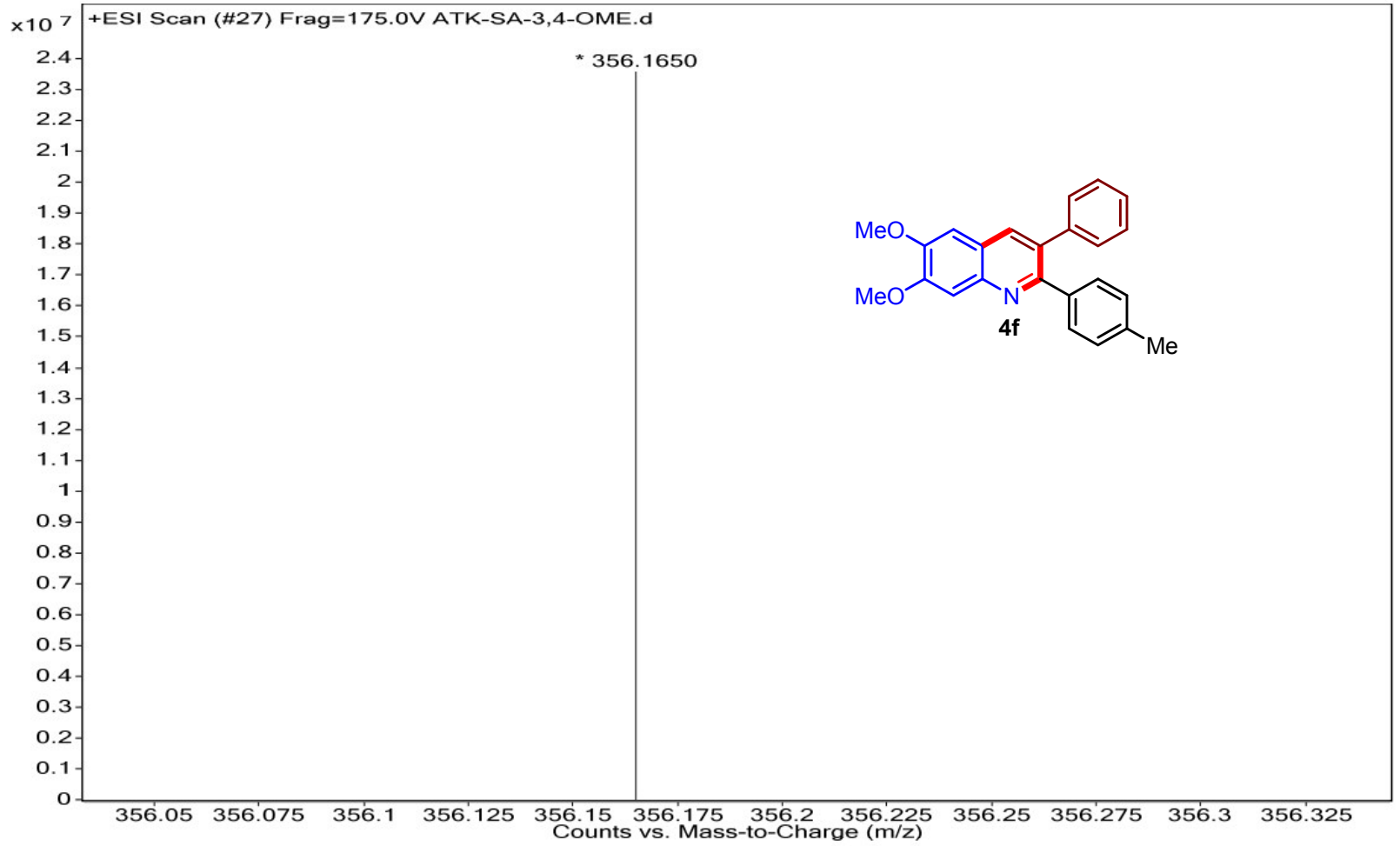
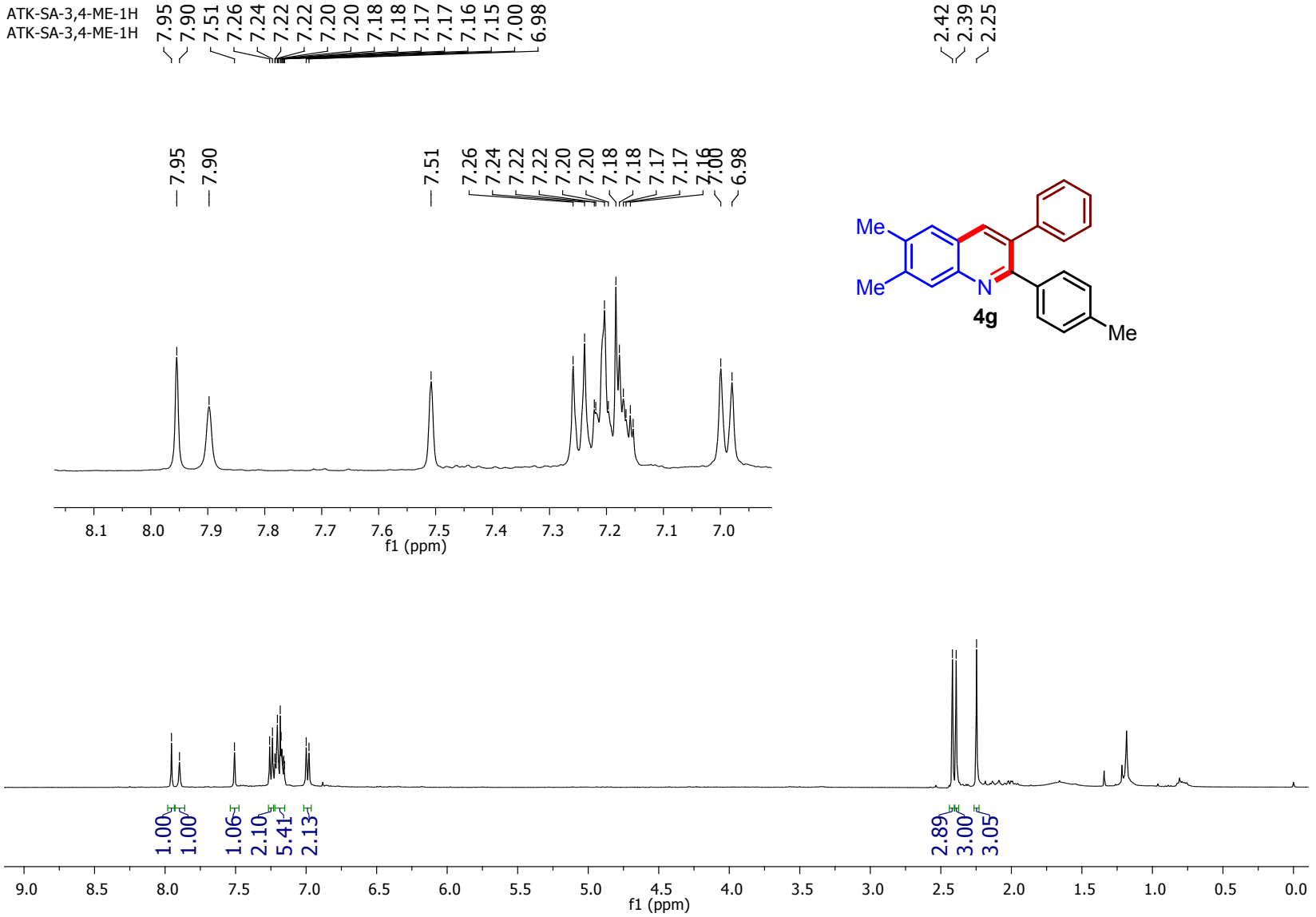
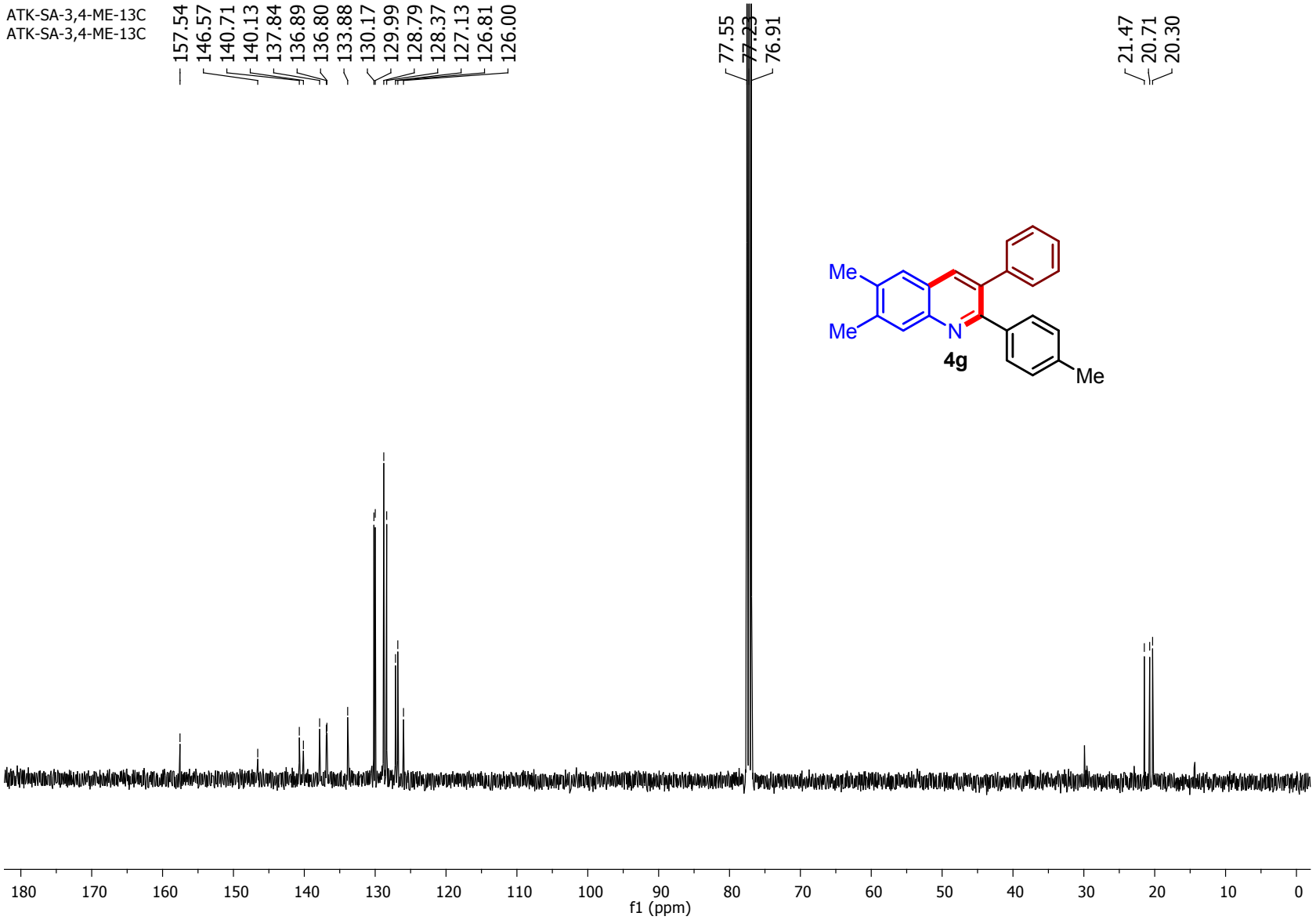


^{1}HNMR spectrum of compound: 4g

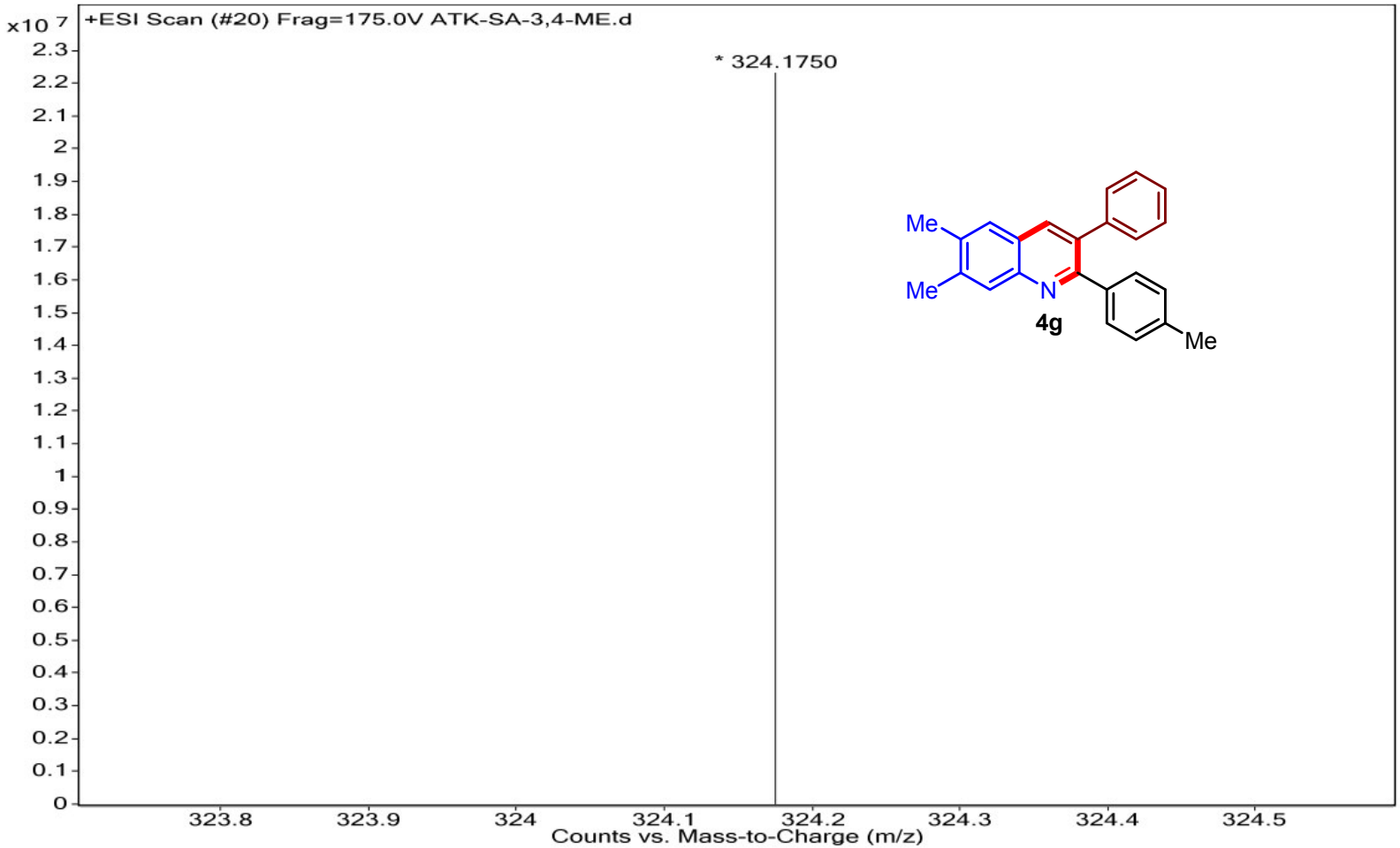


^{13}CNMR spectrum of compound: 4g

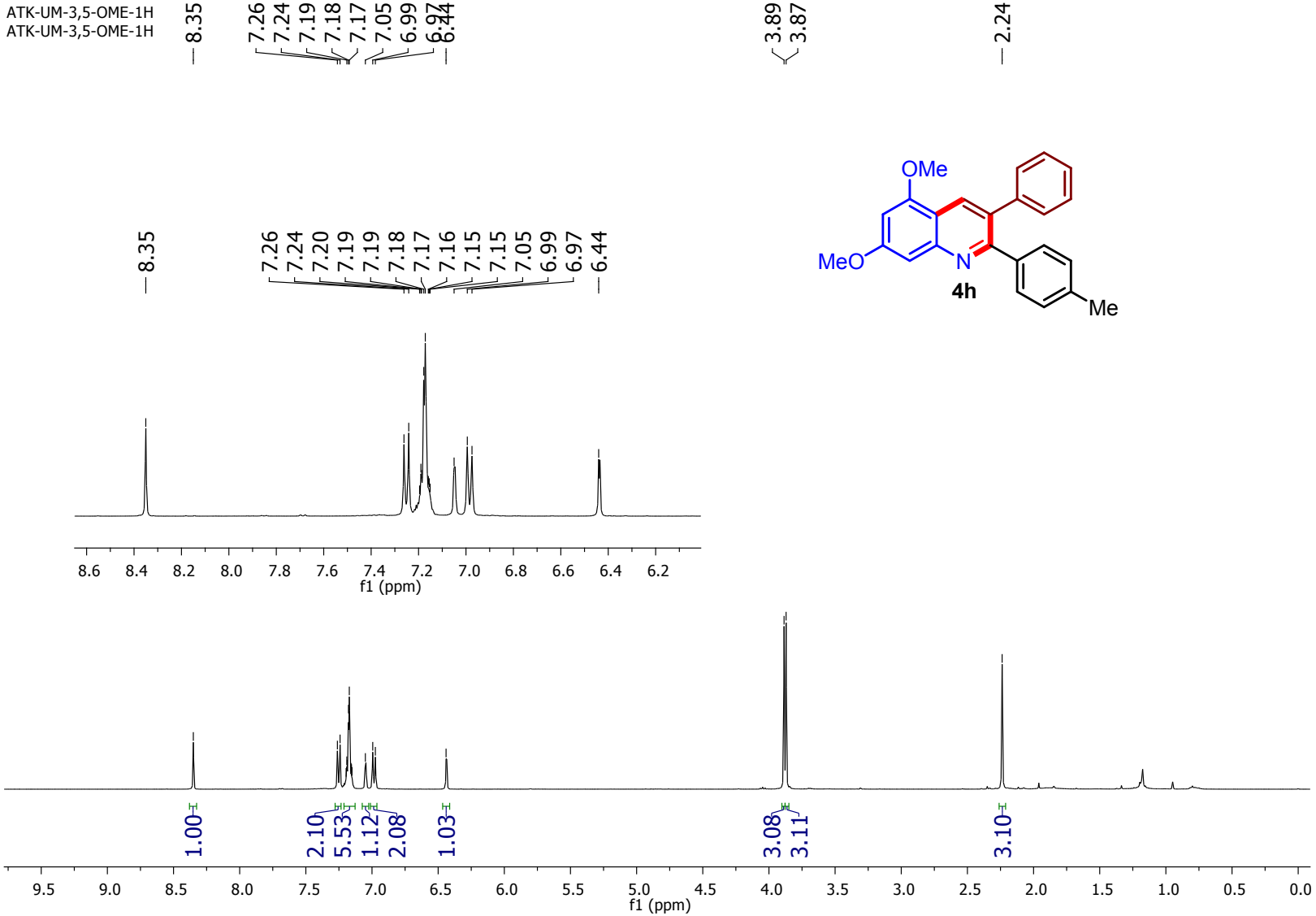


HRMS spectrum of compound: 4g

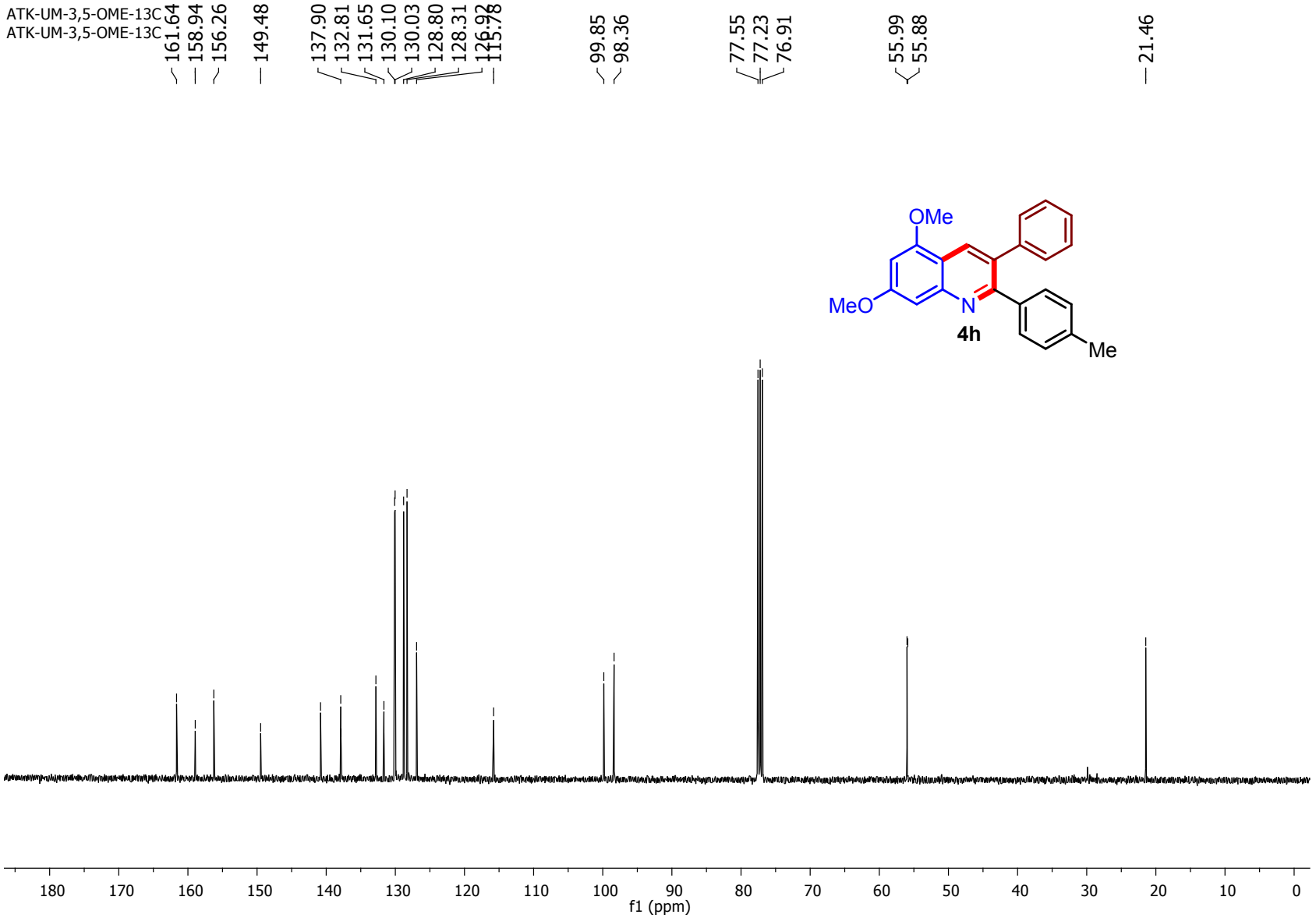
Sample Name	SAMPLE	**Position**	P2-C8	**Instrument Name**	Instrument 1	**User Name**	
Inj Vol	20	**InjPosition**		**SampleType**	Sample	**IRM Calibration Status**	Success
Data Filename	ATK-SA-3,4-ME.d	**ACQ Method**	ESI ALS 100-800.m	**Comment**		**Acquired Time**	8/1/2019 5:50:41 PM



^{1}HNMR spectrum of compound: 4h

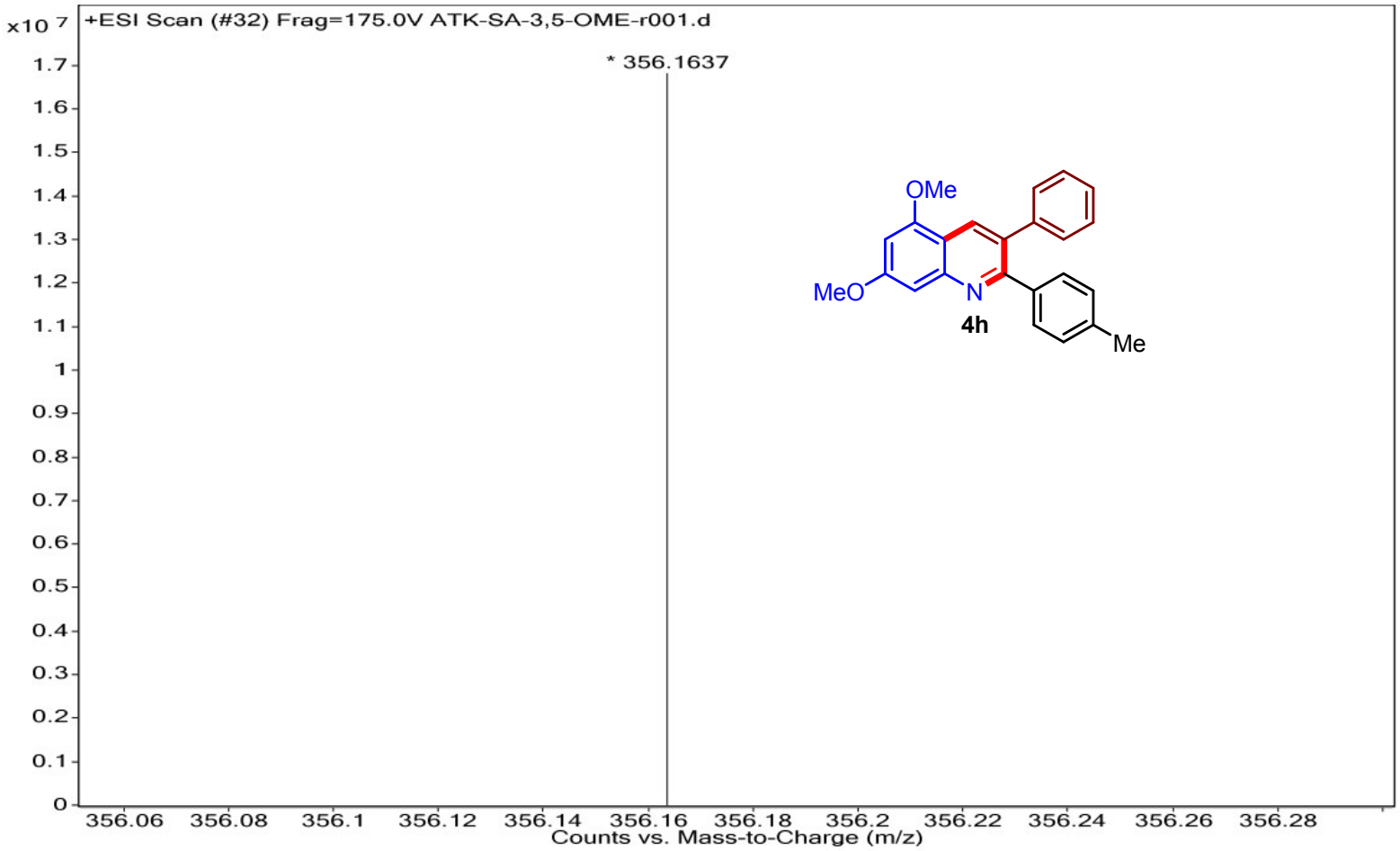


^{13}CNMR spectrum of compound: 4h

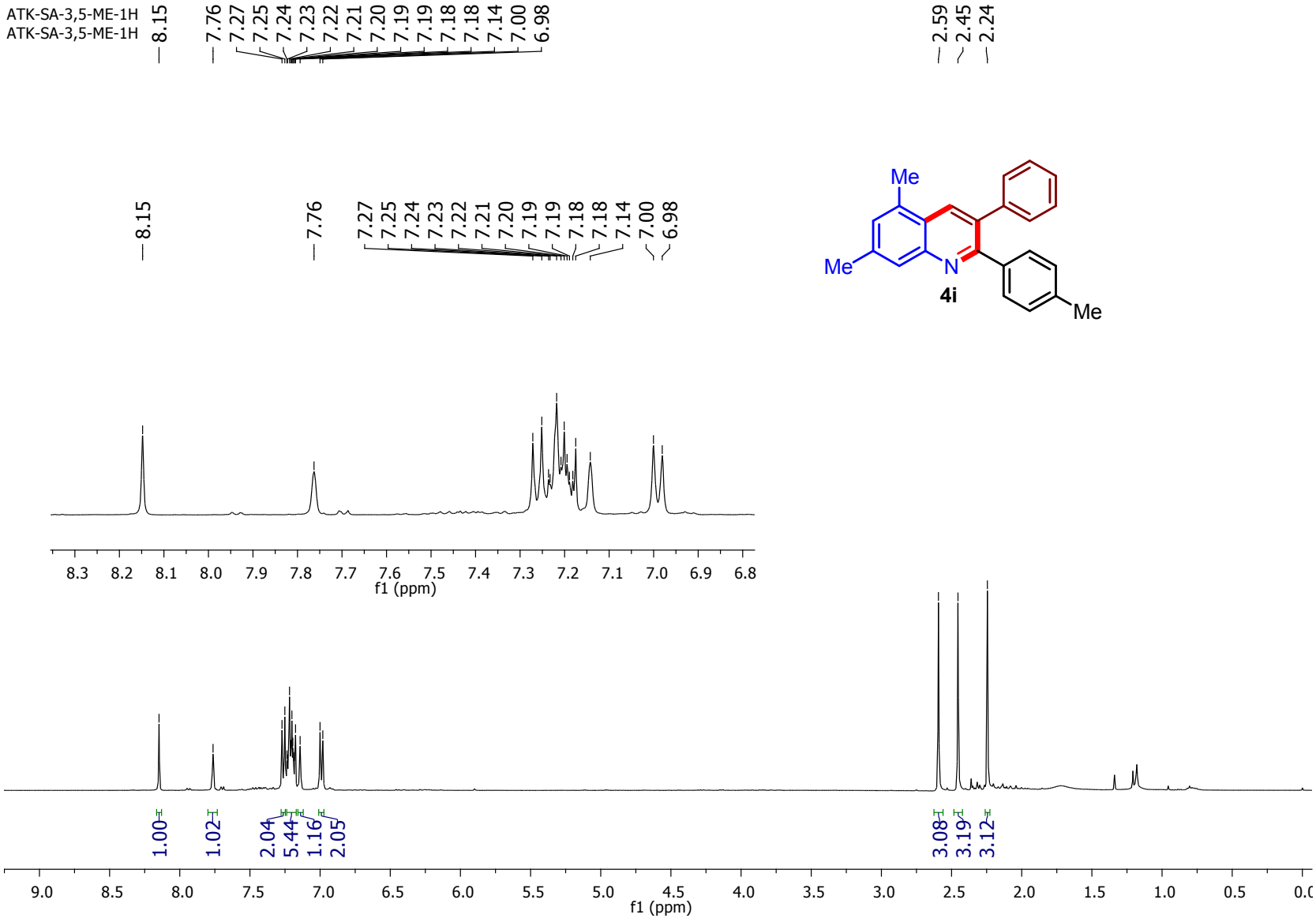


HRMS spectrum of compound: 4h

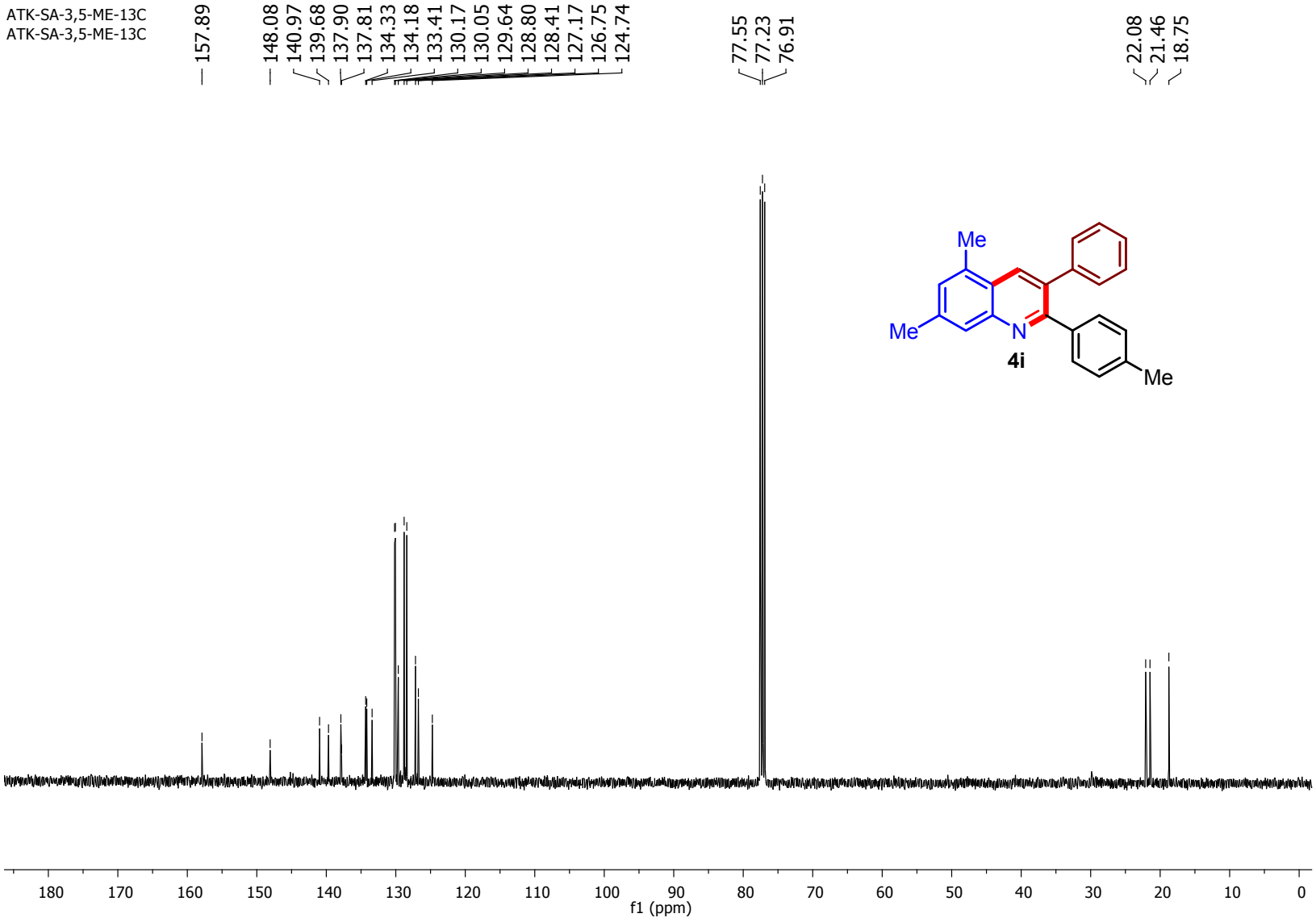
Sample Name	SAMPLE	**Position**	P2-C6	**Instrument Name**	Instrument 1	**User Name**	
Inj Vol	20	**InjPosition**		**SampleType**	Sample	**IRM Calibration Status**	Success
Data Filename	ATK-SA-3,5-OME-r001.	**ACQ Method**	ESI ALS 100-800.m	**Comment**		**Acquired Time**	8/1/2019 5:45:00 PM



[1]HNMR spectrum of compound: 4i



^{13}CNMR spectrum of compound: 4i



HRMS spectrum of compound: 4i

Sample Name	SAMPLE	**Position**	P2-C9	**Instrument Name**	Instrument 1	**User Name**	
Inj Vol	20	**InjPosition**		**SampleType**	Sample	**IRM Calibration Status**	Success
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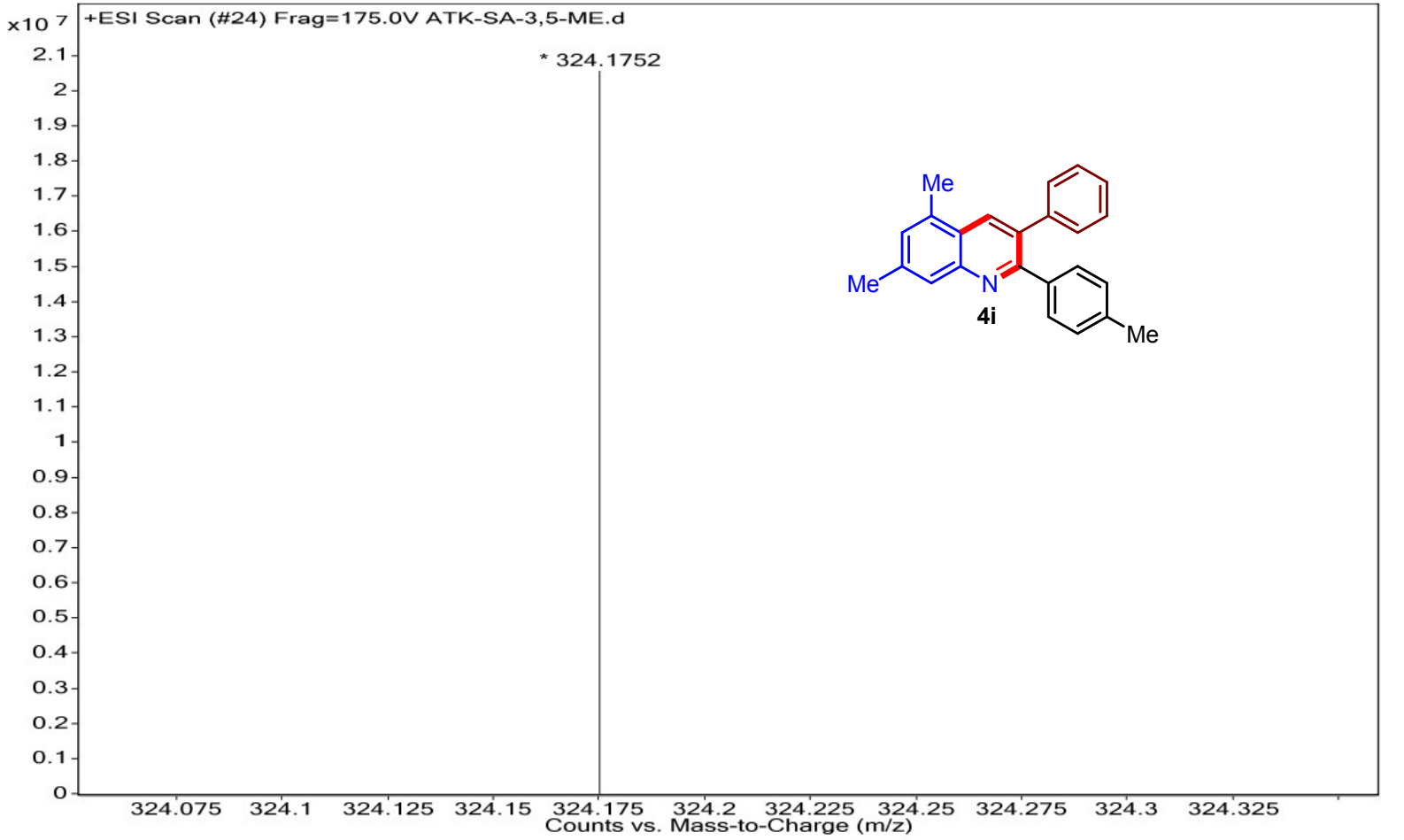
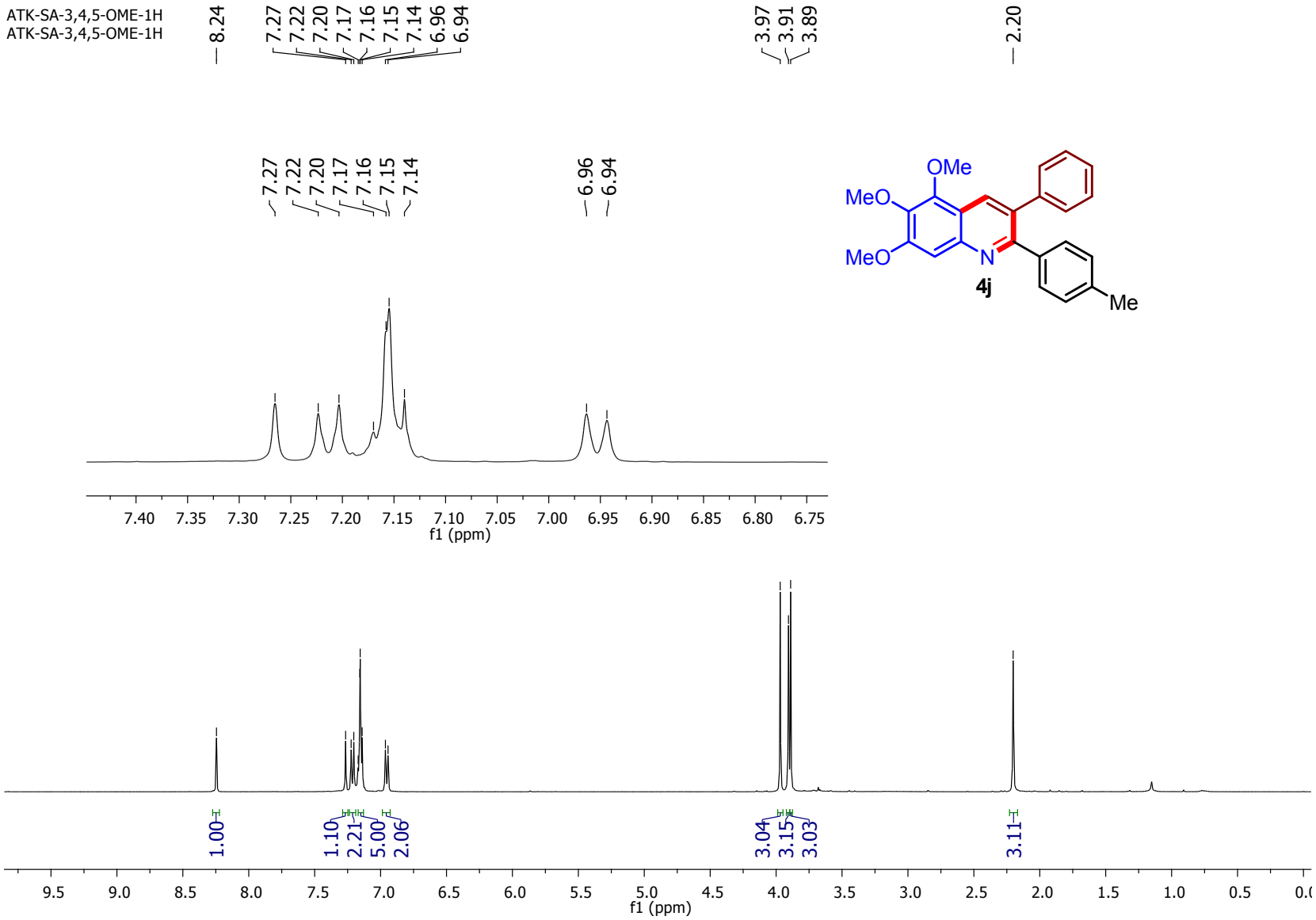
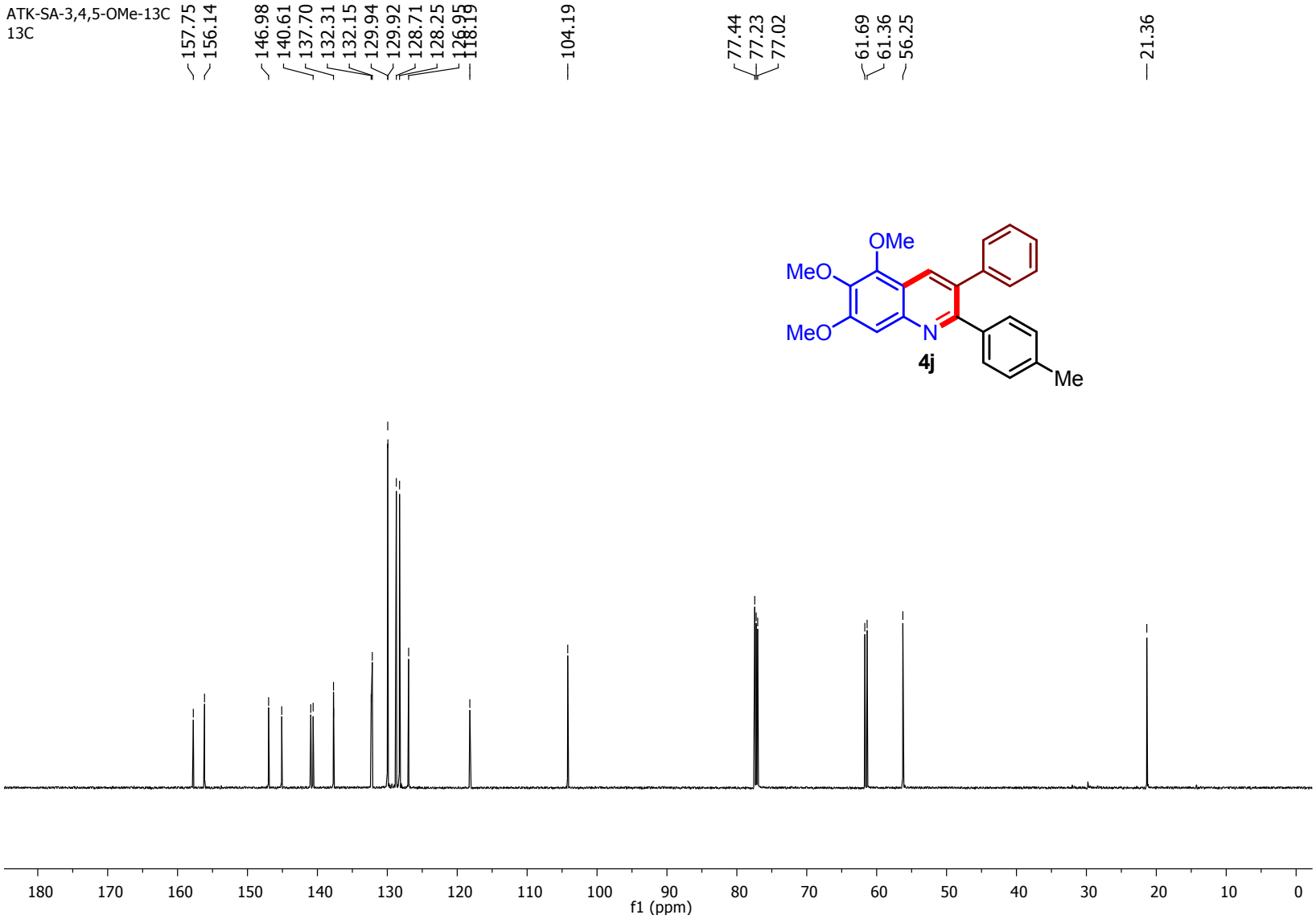


^{1}HNMR spectrum of compound: 4j

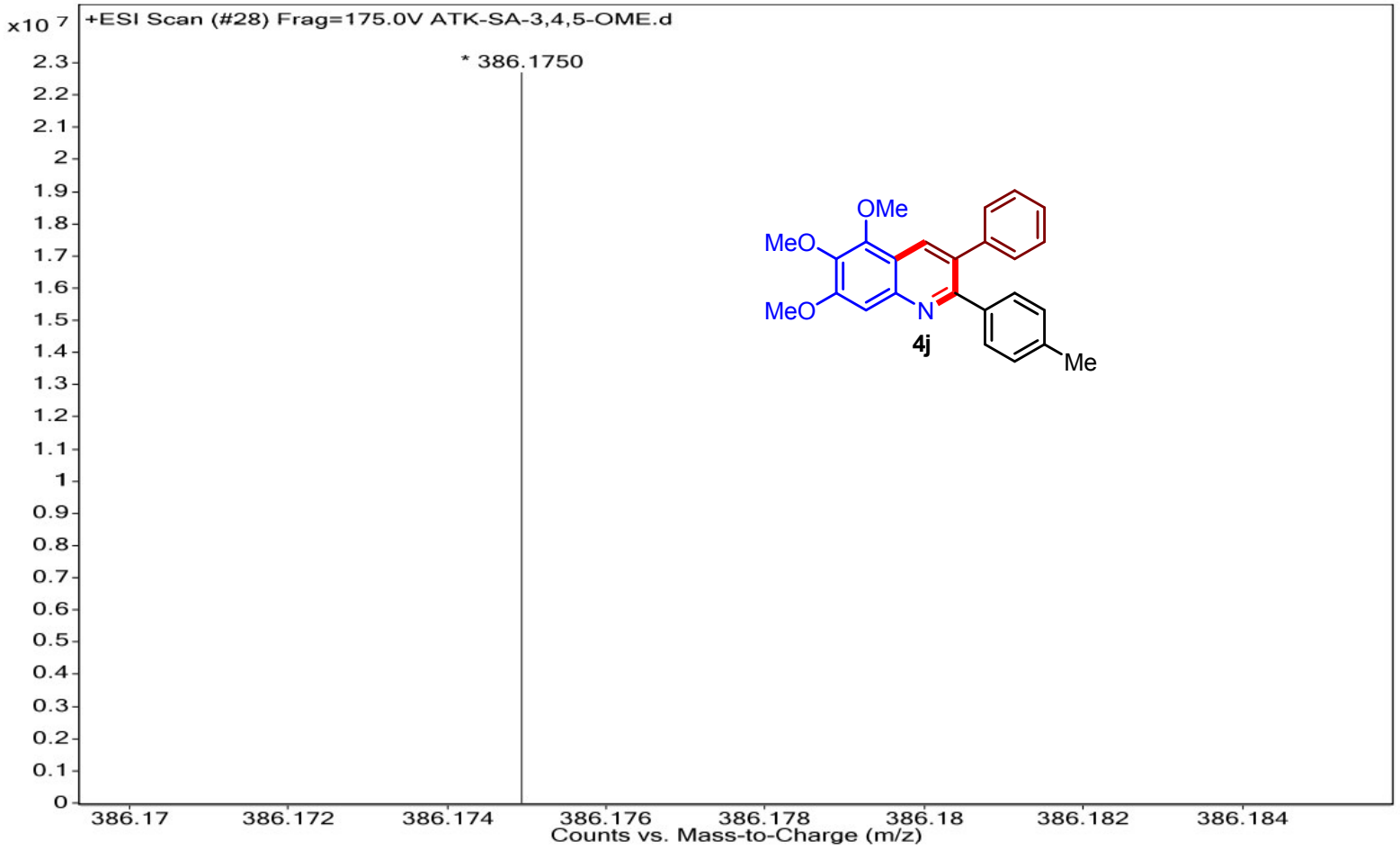


^{13}CNMR spectrum of compound: 4j

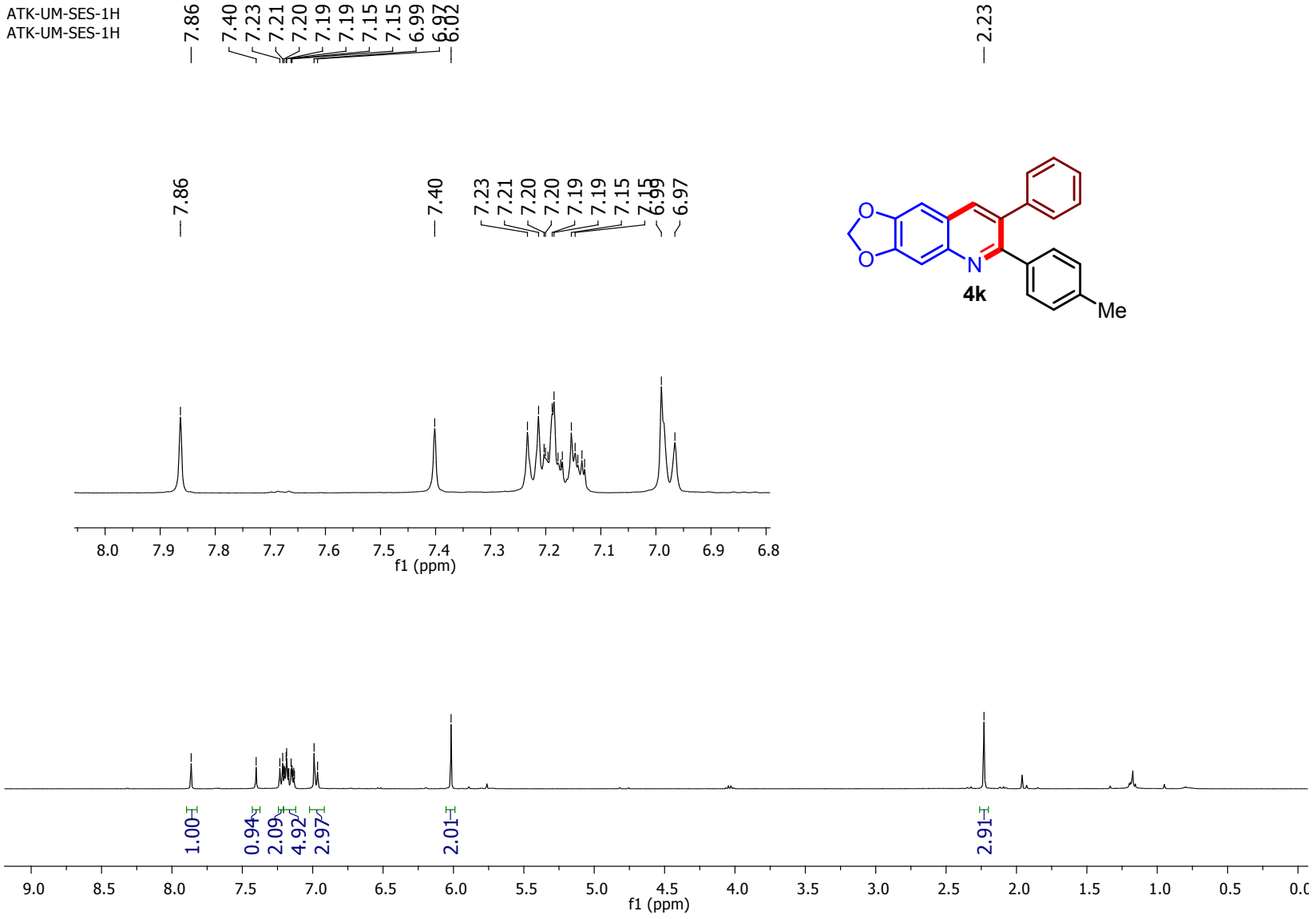


HRMS spectrum of compound: 4j

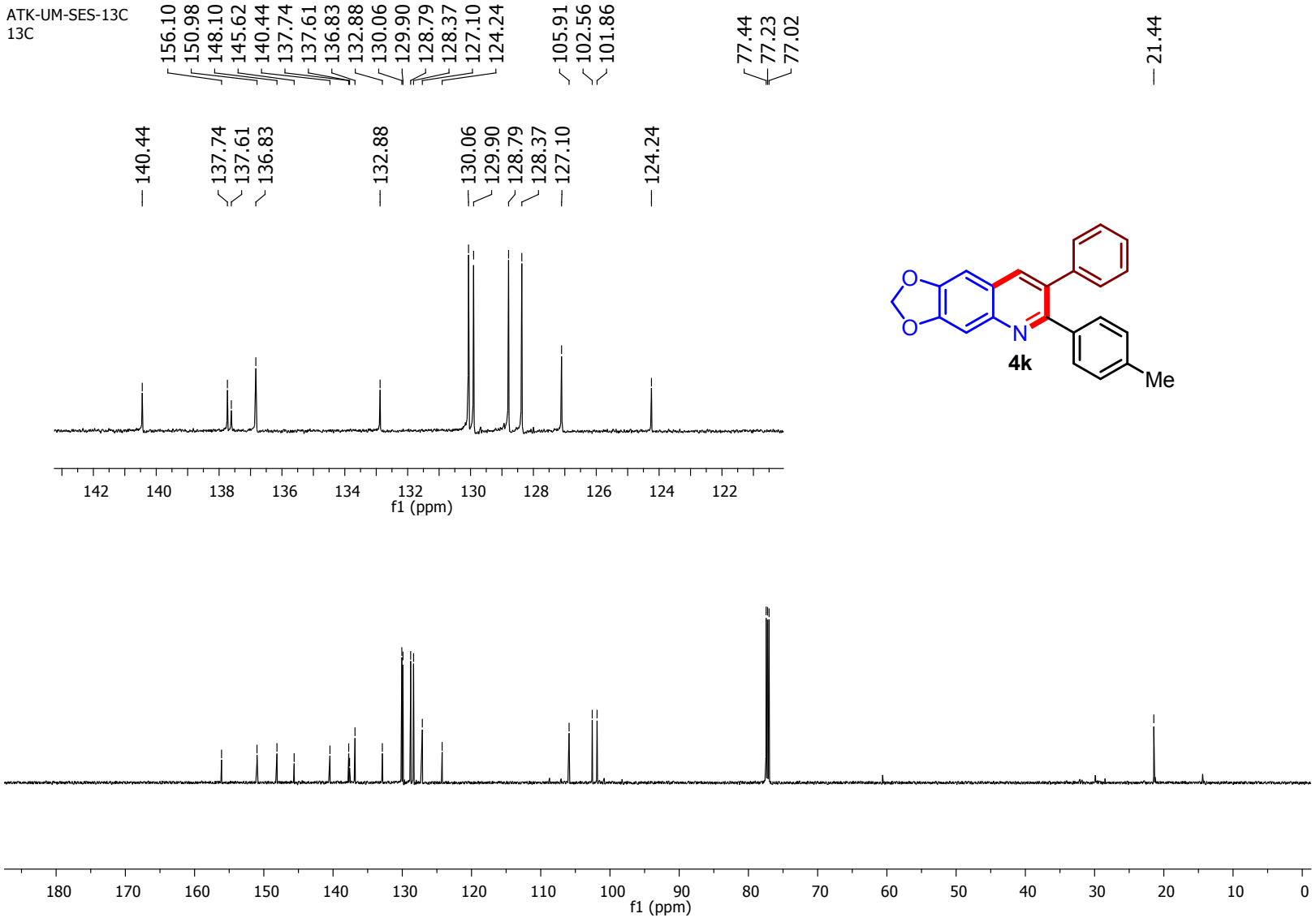
Sample Name	SAMPLE	**Position**	P2-C10	**Instrument Name**	Instrument 1	**User Name**	
Inj Vol	20	**InjPosition**		**SampleType**	Sample	**IRM Calibration Status**	Success
Data Filename	ATK-SA-3,4,5-OME.d	**ACQ Method**	ESI ALS 100-800.m	**Comment**		**Acquired Time**	8/1/2019 5:54:24 PM



^{1}HNMR spectrum of compound: 4k



^{13}CNMR spectrum of compound: 4k



HRMS spectrum of compound: 4k

Sample Name	ATK-UM-SES	**Position**	P1-D5	**Instrument Name**	Instrument 1	**User Name**	
Inj Vol	20	**InjPosition**		**SampleType**	Sample	**IRM Calibration Status**	Success
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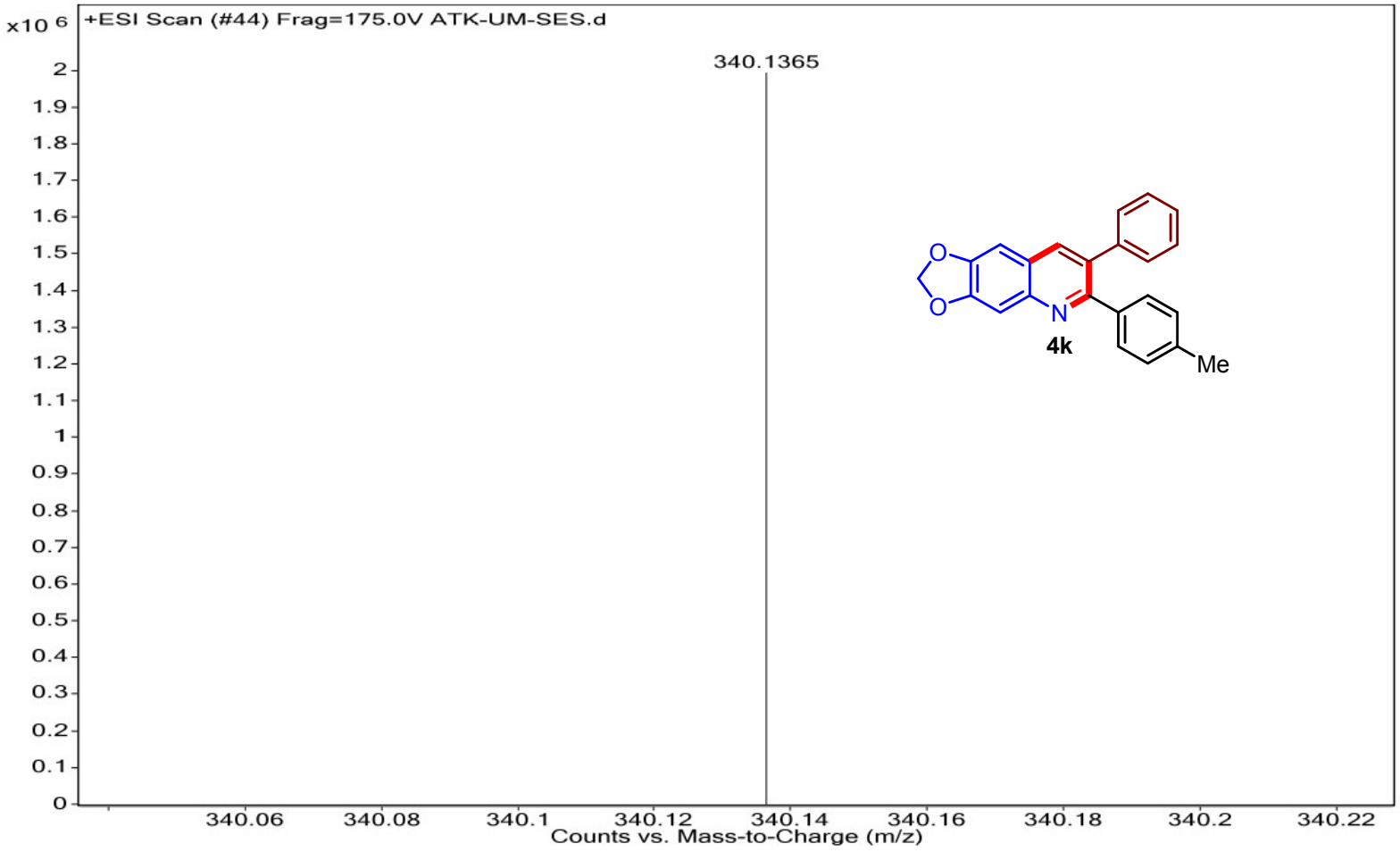
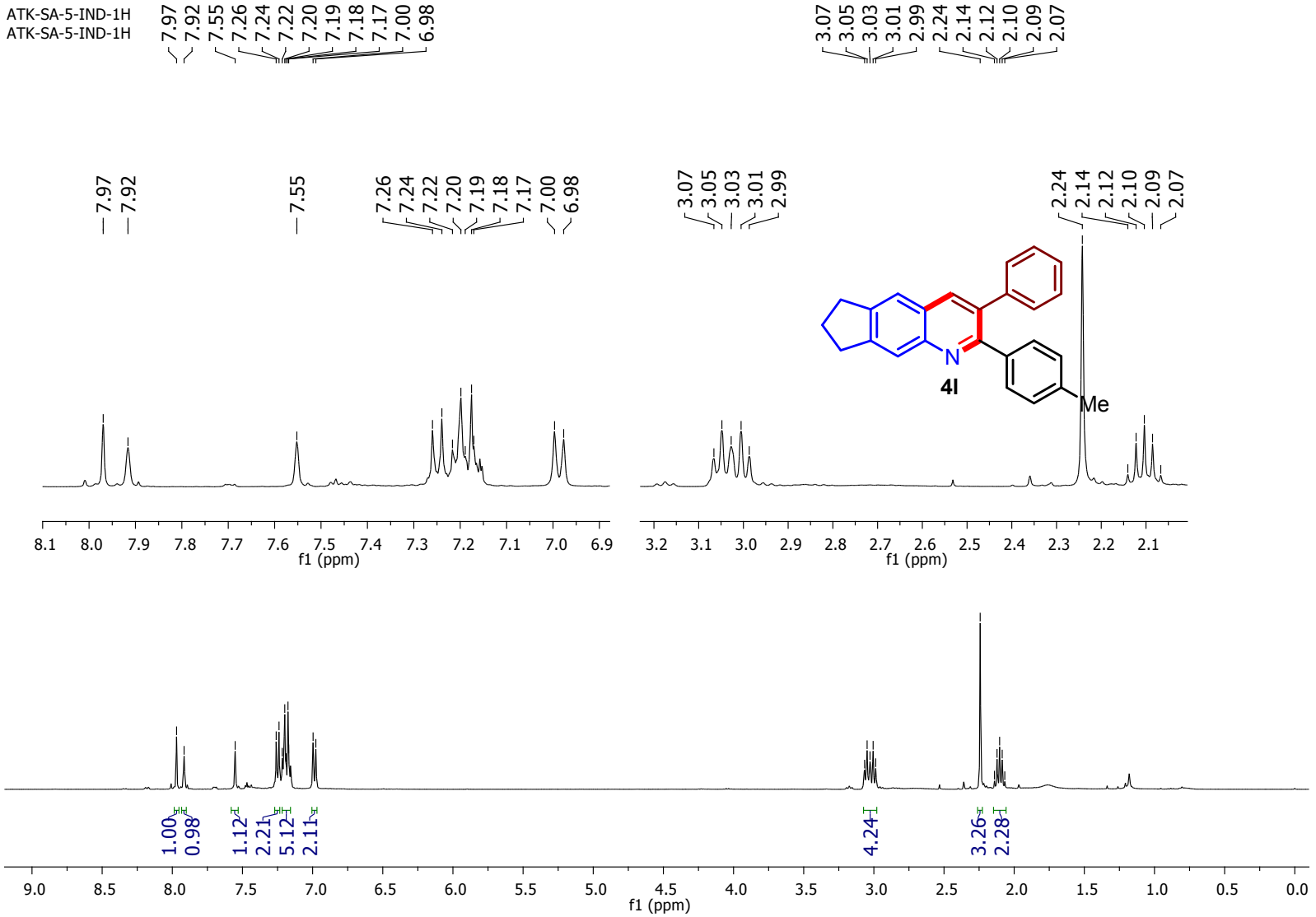
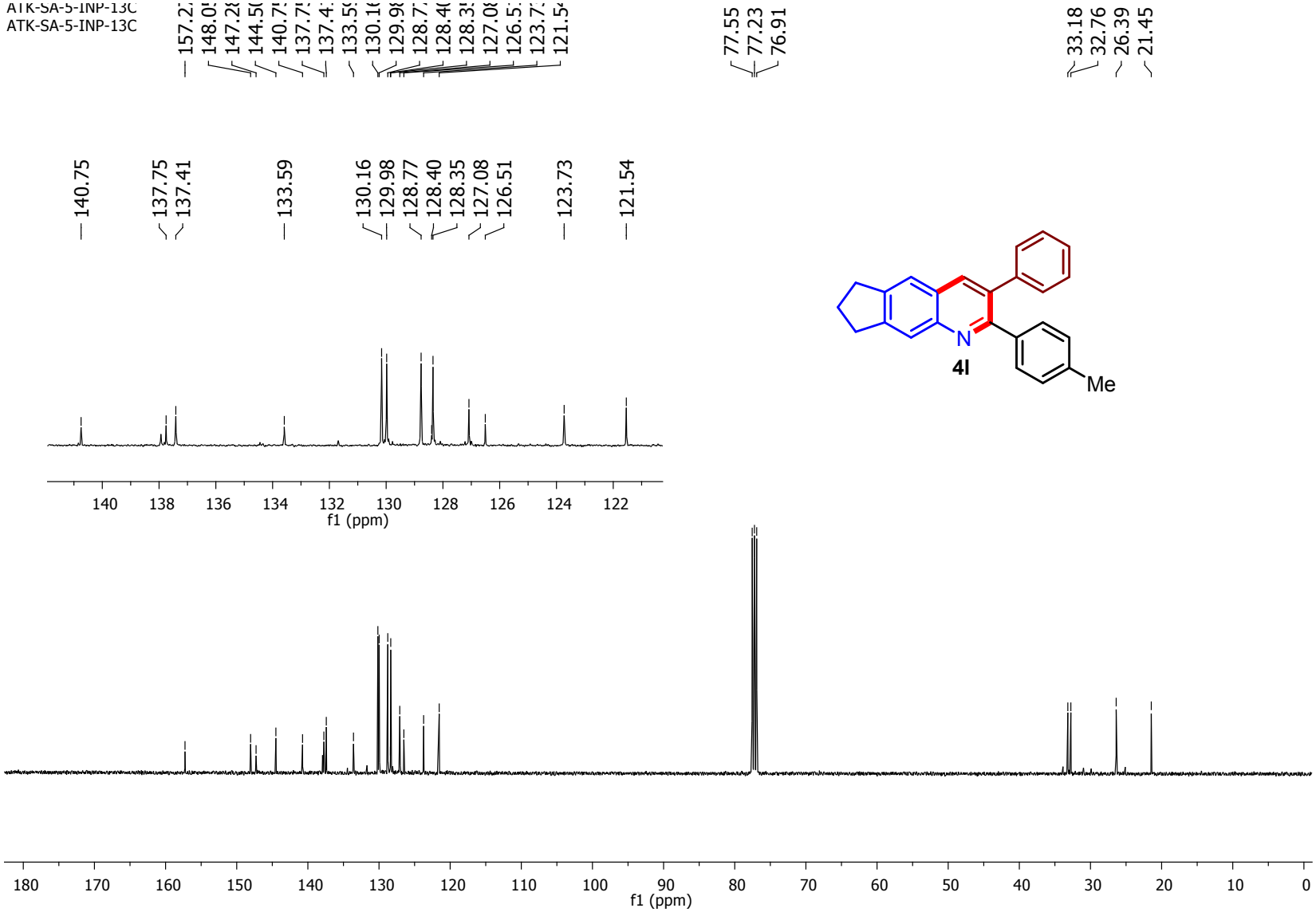


^{1}HNMR spectrum of compound: 4l

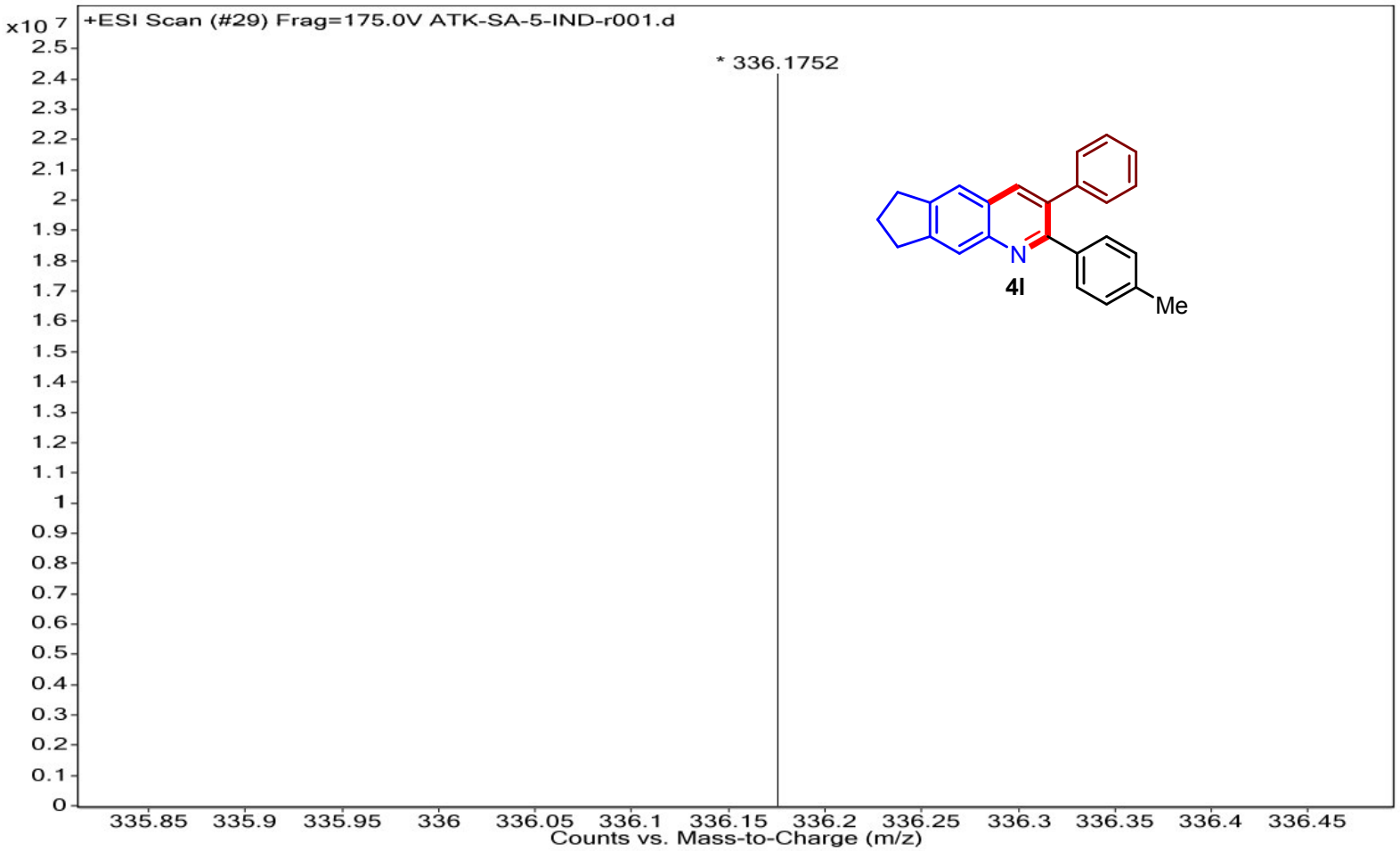


^{13}CNMR spectrum of compound: 4l

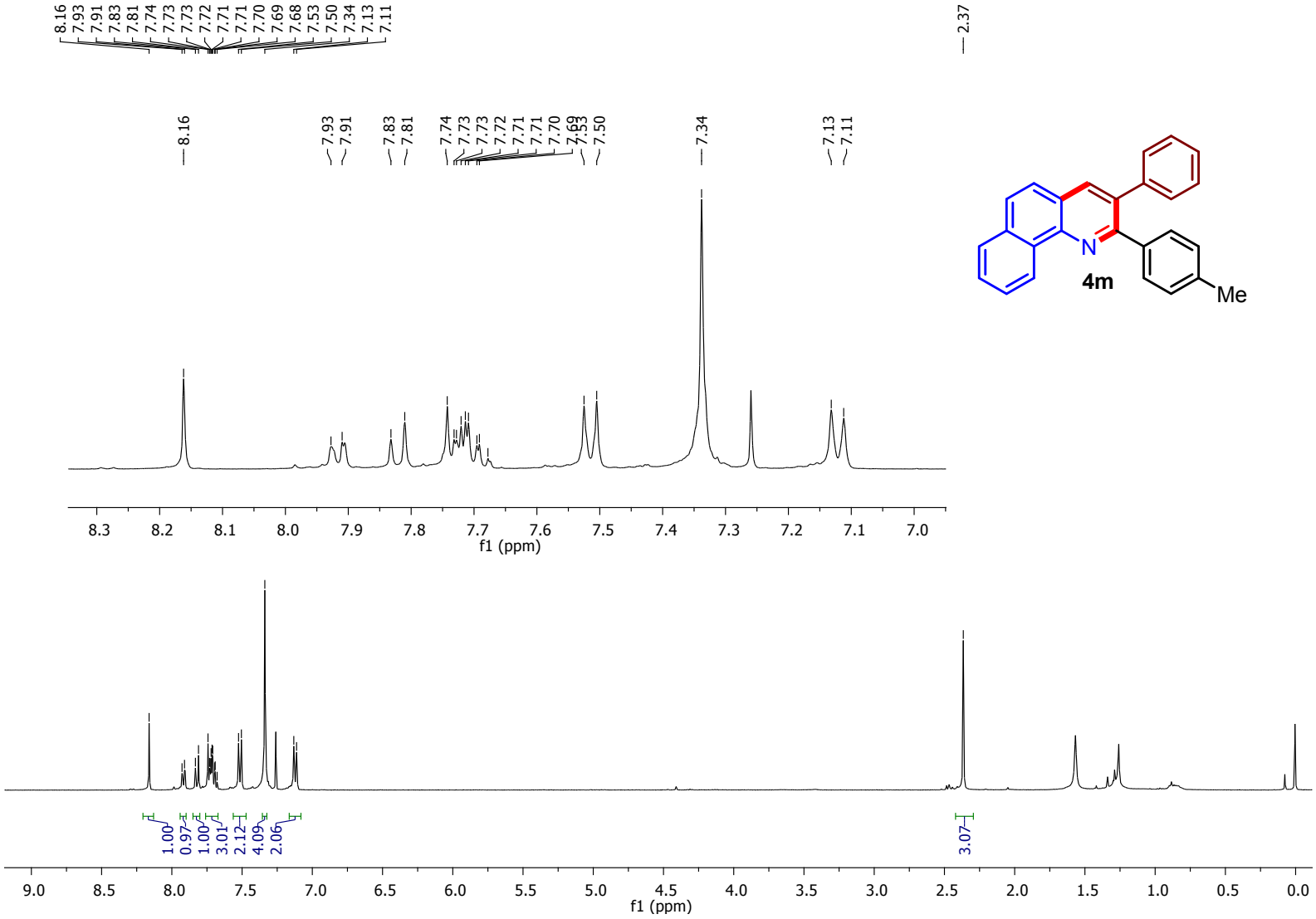


HRMS spectrum of compound: 4l

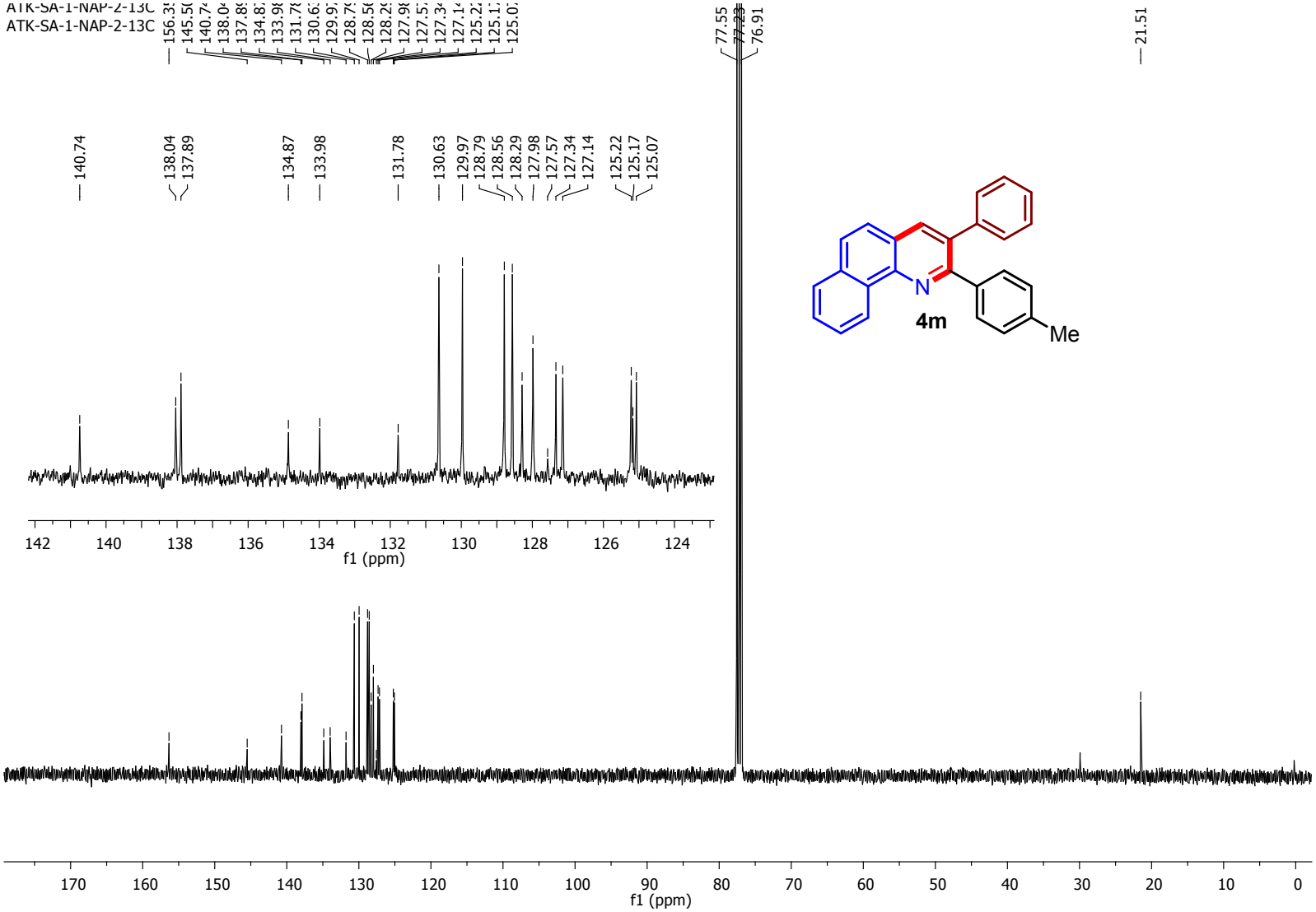
Sample Name	SAMPLE	**Position**	P2-D2	**Instrument Name**	Instrument 1	**User Name**	
Inj Vol	20	**InjPosition**		**SampleType**	Sample	**IRM Calibration Status**	Success
Data Filename	ATK-SA-5-IND-r001.d	**ACQ Method**	ESI ALS 100-800.m	**Comment**		**Acquired Time**	8/1/2019 5:58:06 PM



[1]HNMR spectrum of compound: 4m

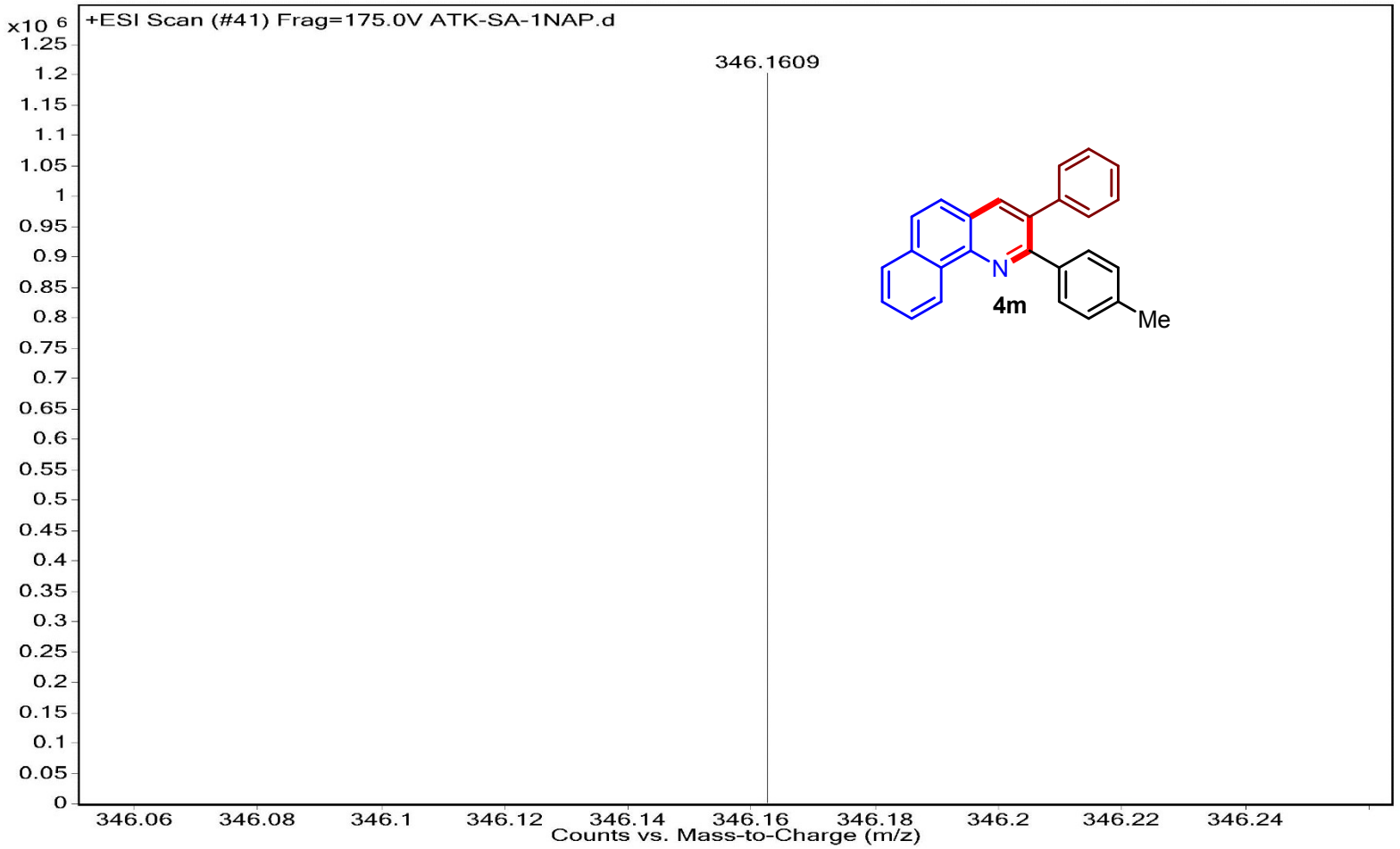


^{13}CNMR spectrum of compound: 4m

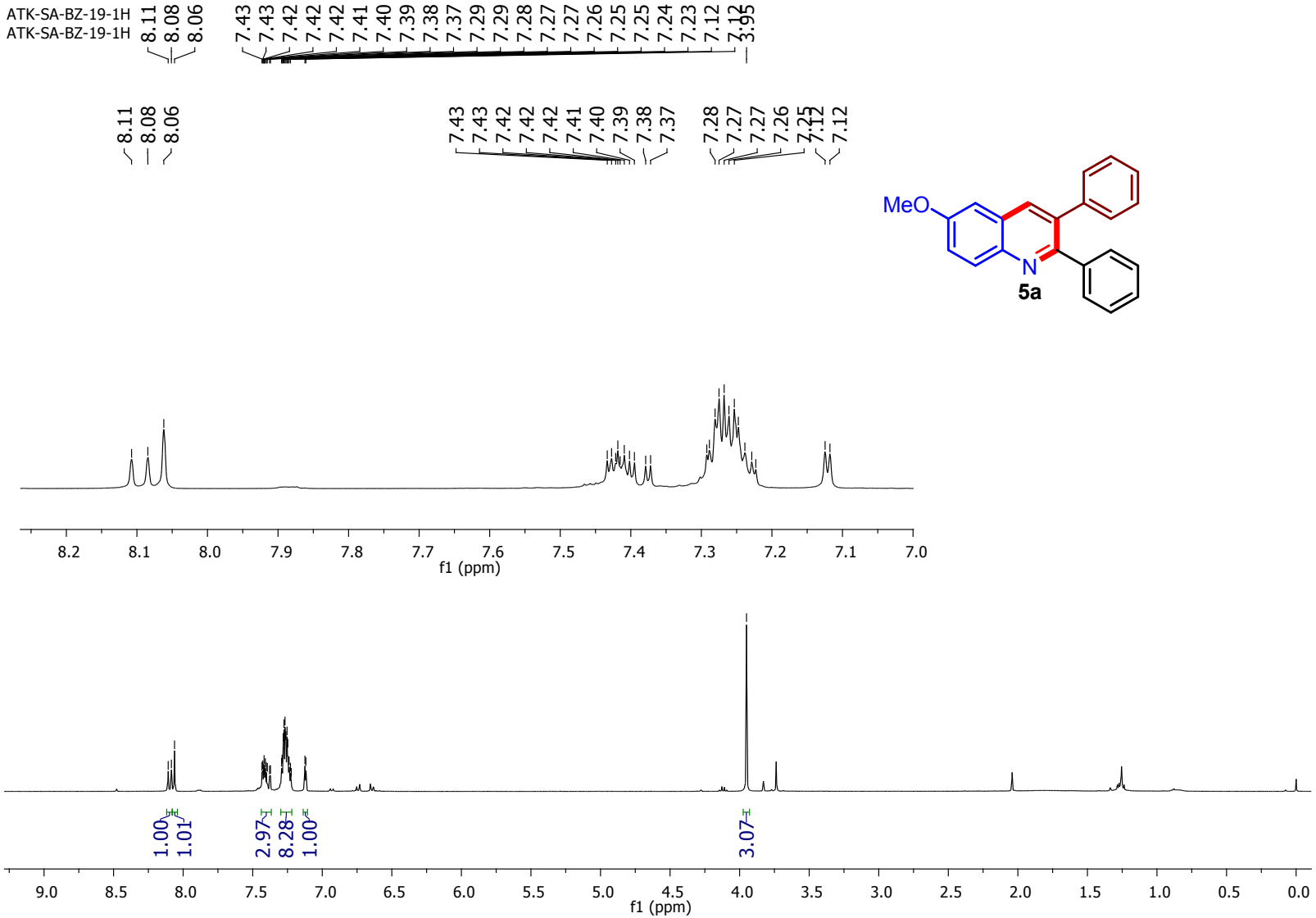


HRMS spectrum of compound: 4m

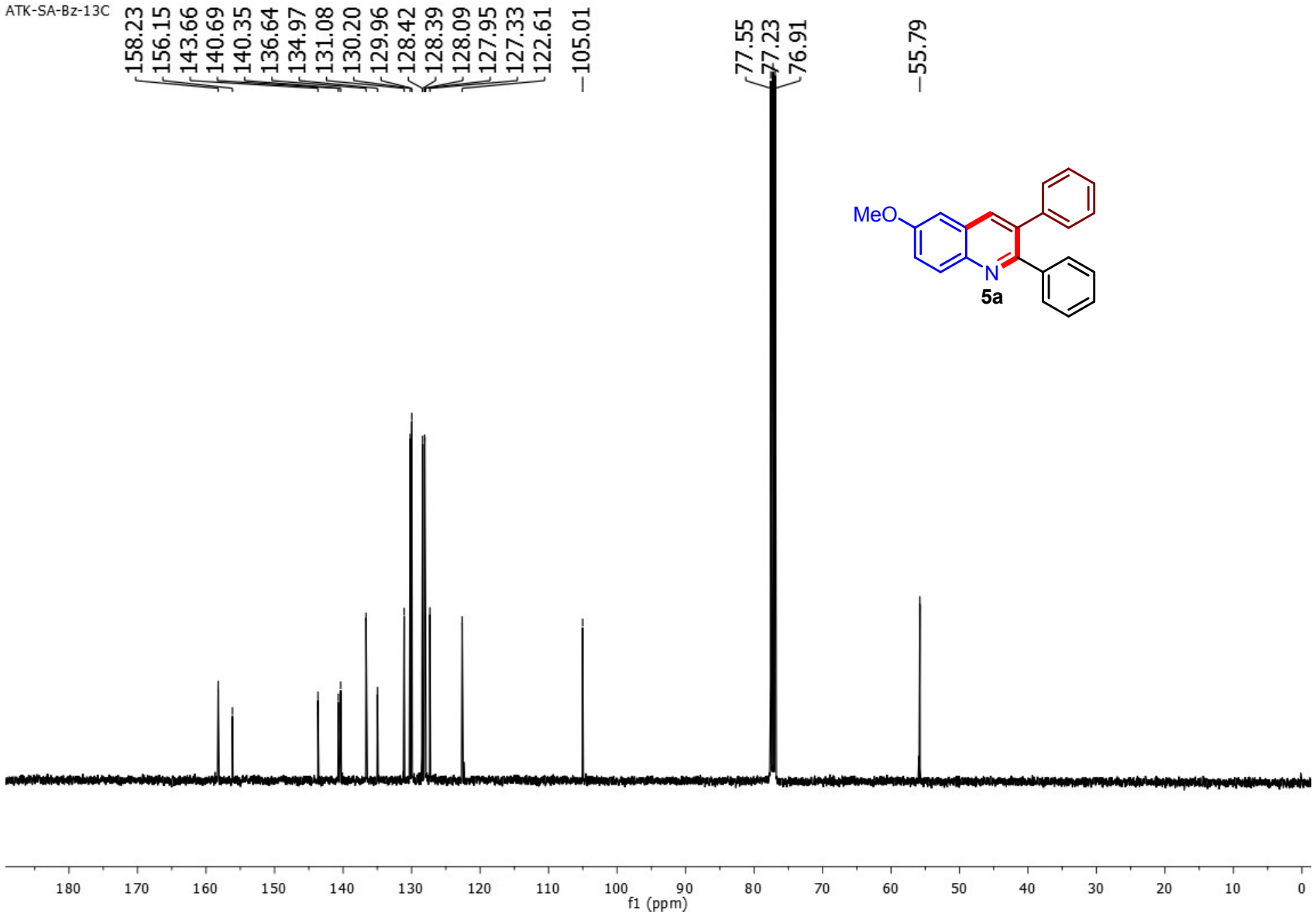
Sample Name	ATK-SA-1NAP	**Position**	P1-D7	**Instrument Name**	Instrument 1	**User Name**	
Inj Vol	20	**InjPosition**		**SampleType**	Sample	**IRM Calibration Status**	Success
Data Filename	ATK-SA-2NAP.d	**ACQ Method**	ESI ALS 200-700.m	**Comment**		**Acquired Time**	4/11/2019 12:23:34 PM



^{1}HNMR spectrum of compound: 5a

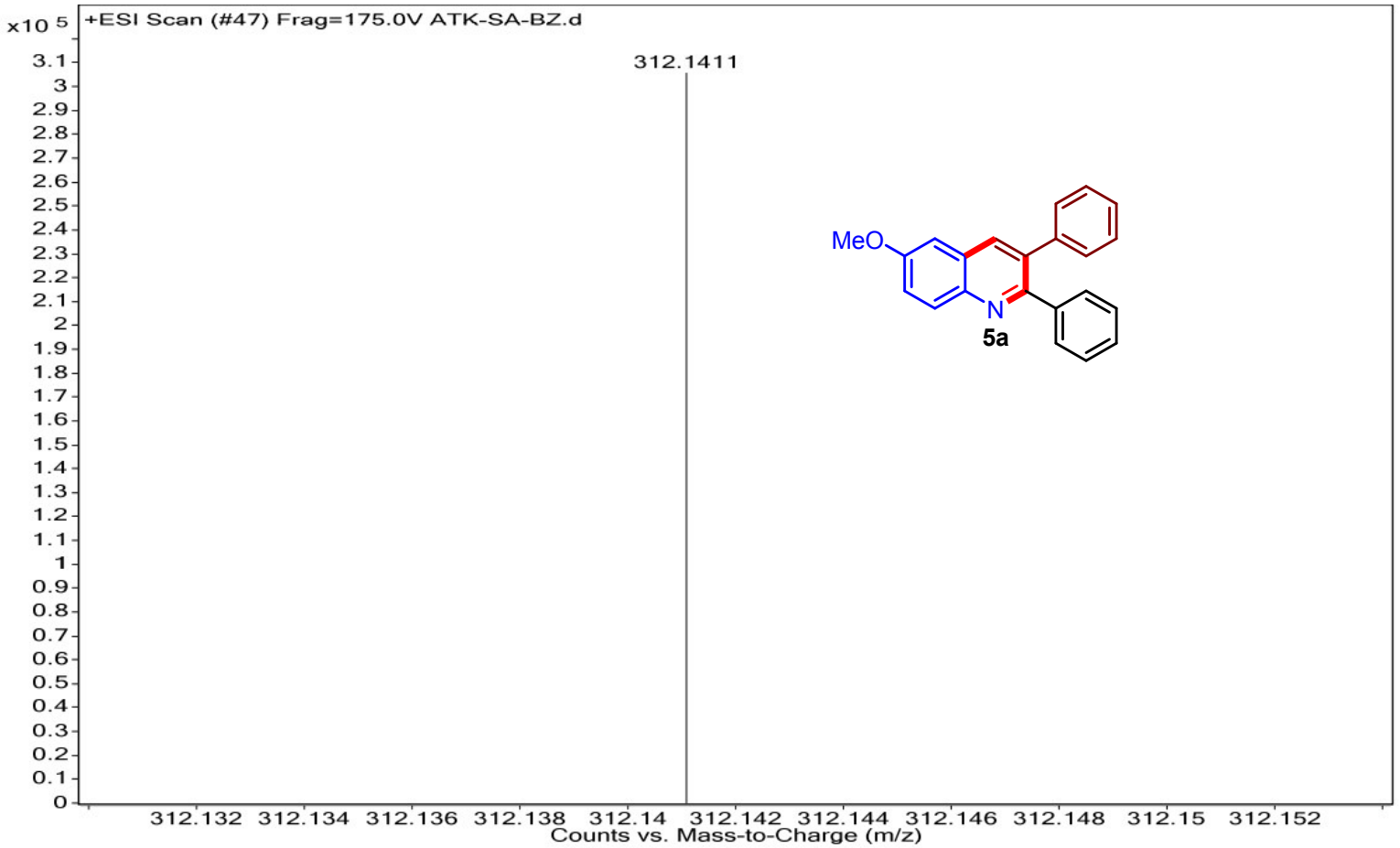


^{13}CNMR spectrum of compound: 5a

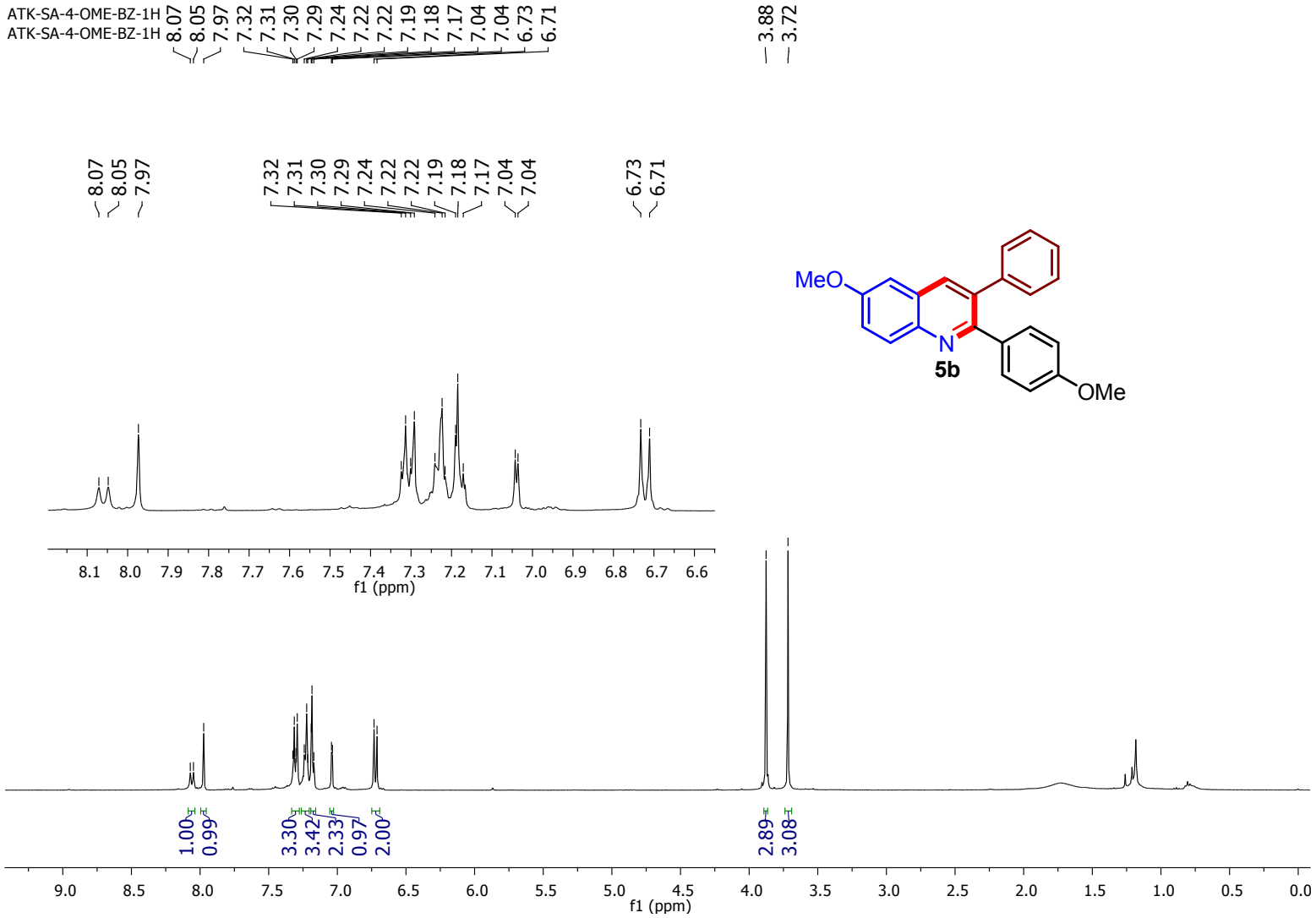


HRMS spectrum of compound: 5a

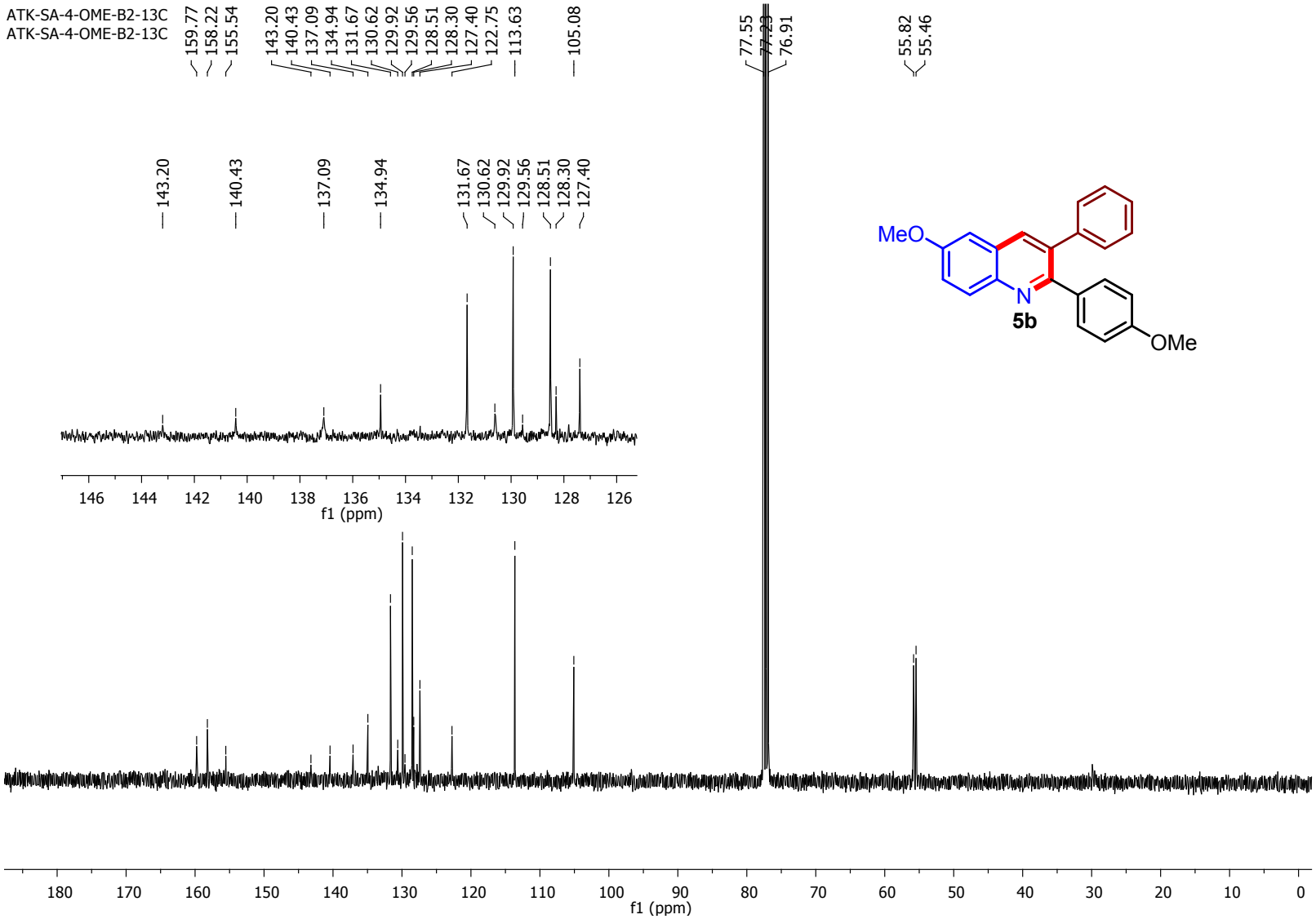
Sample Name	SAMPLE 34	**Position**	P2-D2	**Instrument Name**	Instrument 1	**User Name**	
Inj Vol	20	**InjPosition**		**SampleType**	Sample	**IRM Calibration Status**	Success
Data Filename	ATK-SA-BZ.d	**ACQ Method**	ESI ALS 100-1000.m	**Comment**		**Acquired Time**	8/9/2019 6:12:22 PM



^{1}HNMR spectrum of compound: 5b

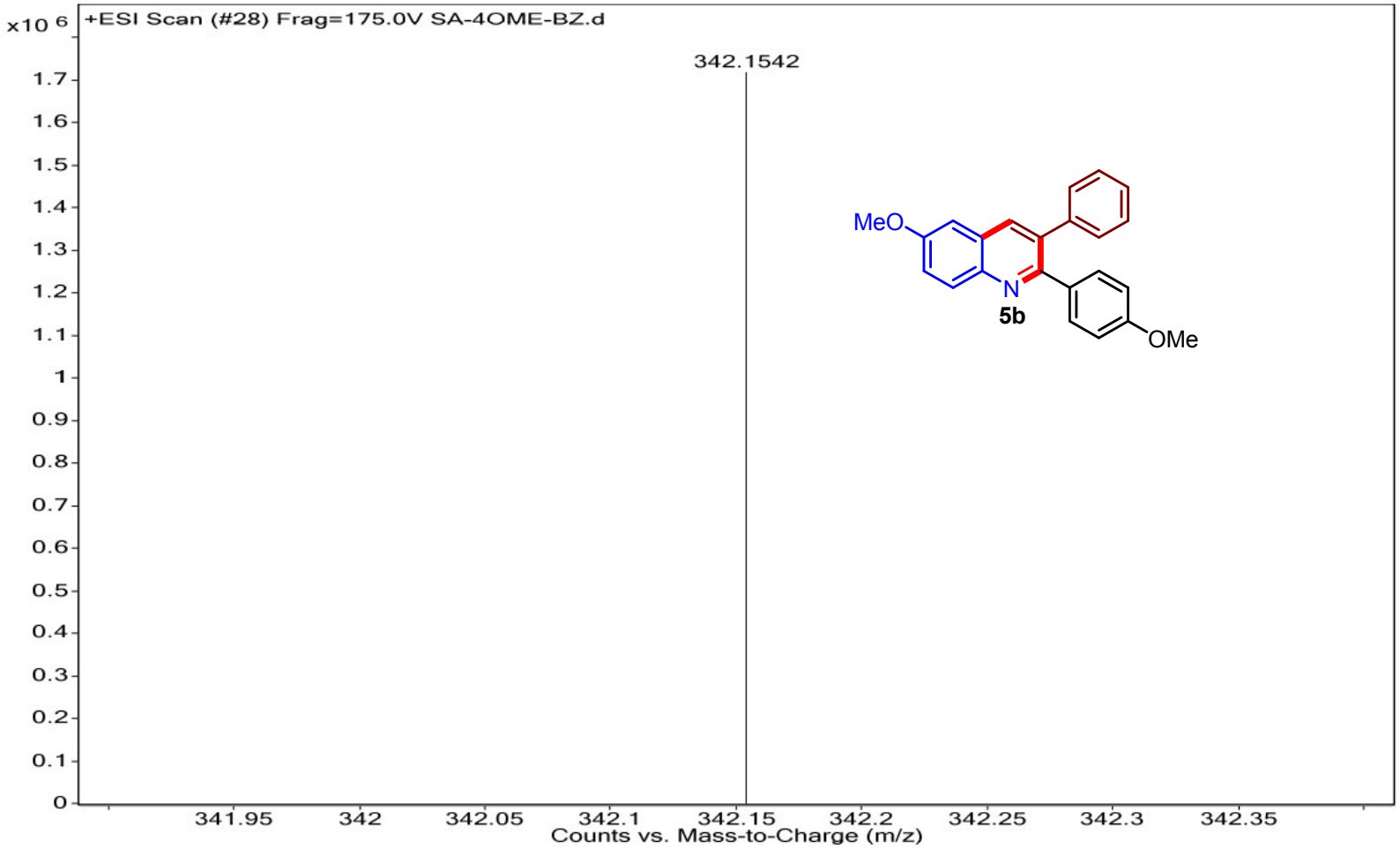


^{13}CNMR spectrum of compound: 5b

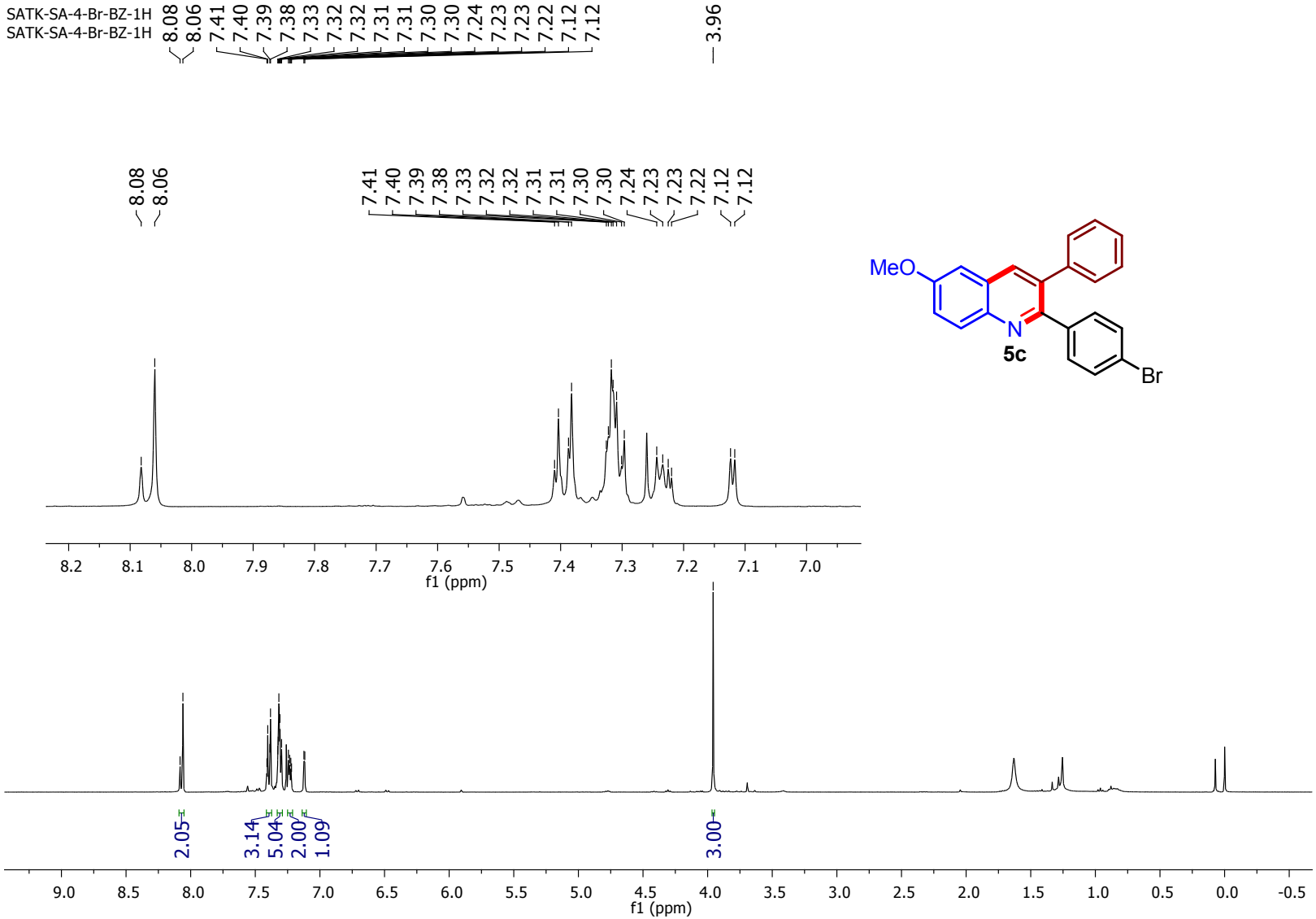


HRMS spectrum of compound: 5b

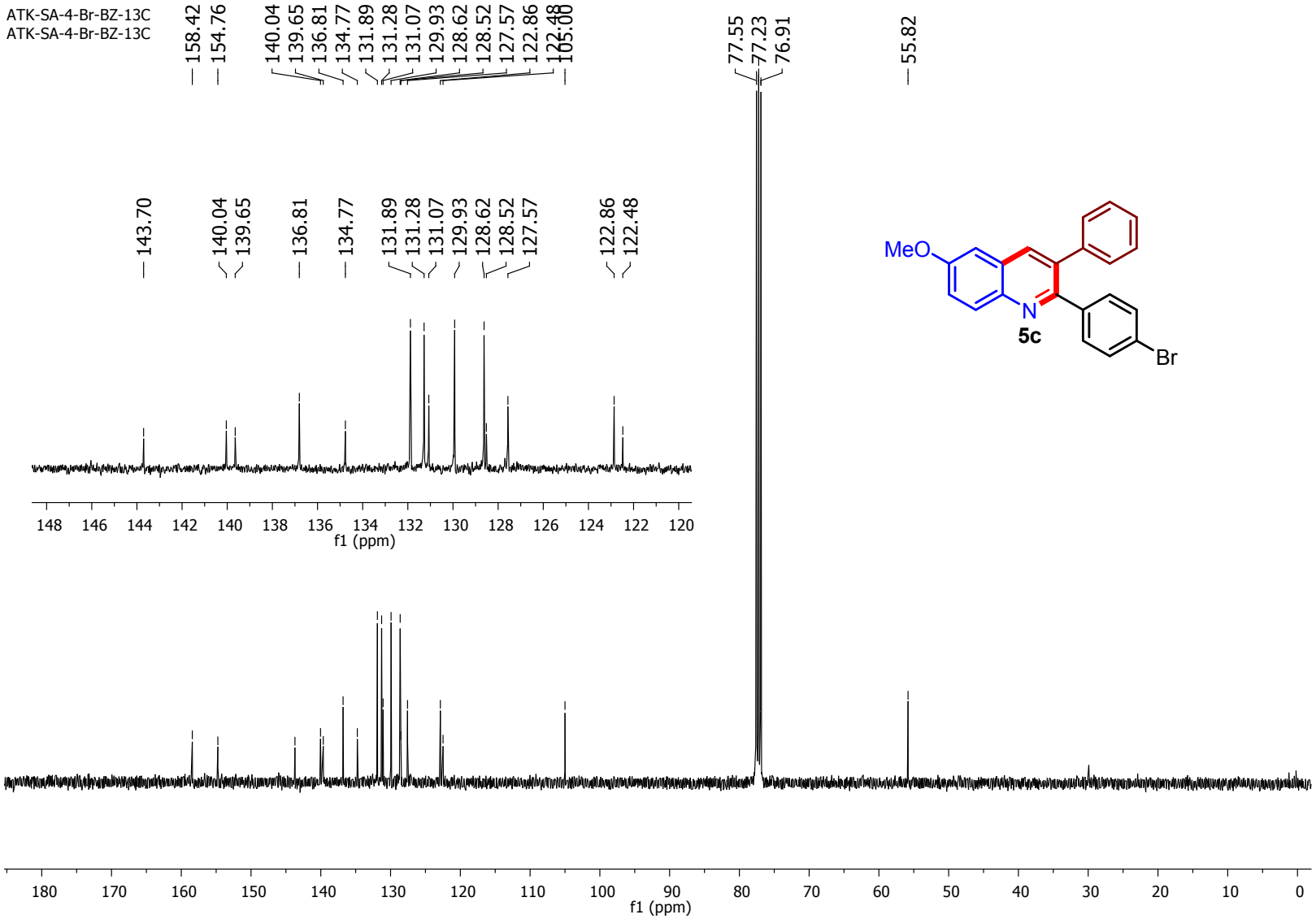
Sample Name	SAMPLE	**Position**	P1-F6	**Instrument Name**	Instrument 1	**User Name**	
Inj Vol	20	**InjPosition**		**SampleType**	Sample	**IRM Calibration Status**	Success
Data Filename	SA-4OME-BZ.d	**ACQ Method**	ESI ALS 100-500.m	**Comment**		**Acquired Time**	2/6/2020 6:17:47 PM



^{1}HNMR spectrum of compound: 5c

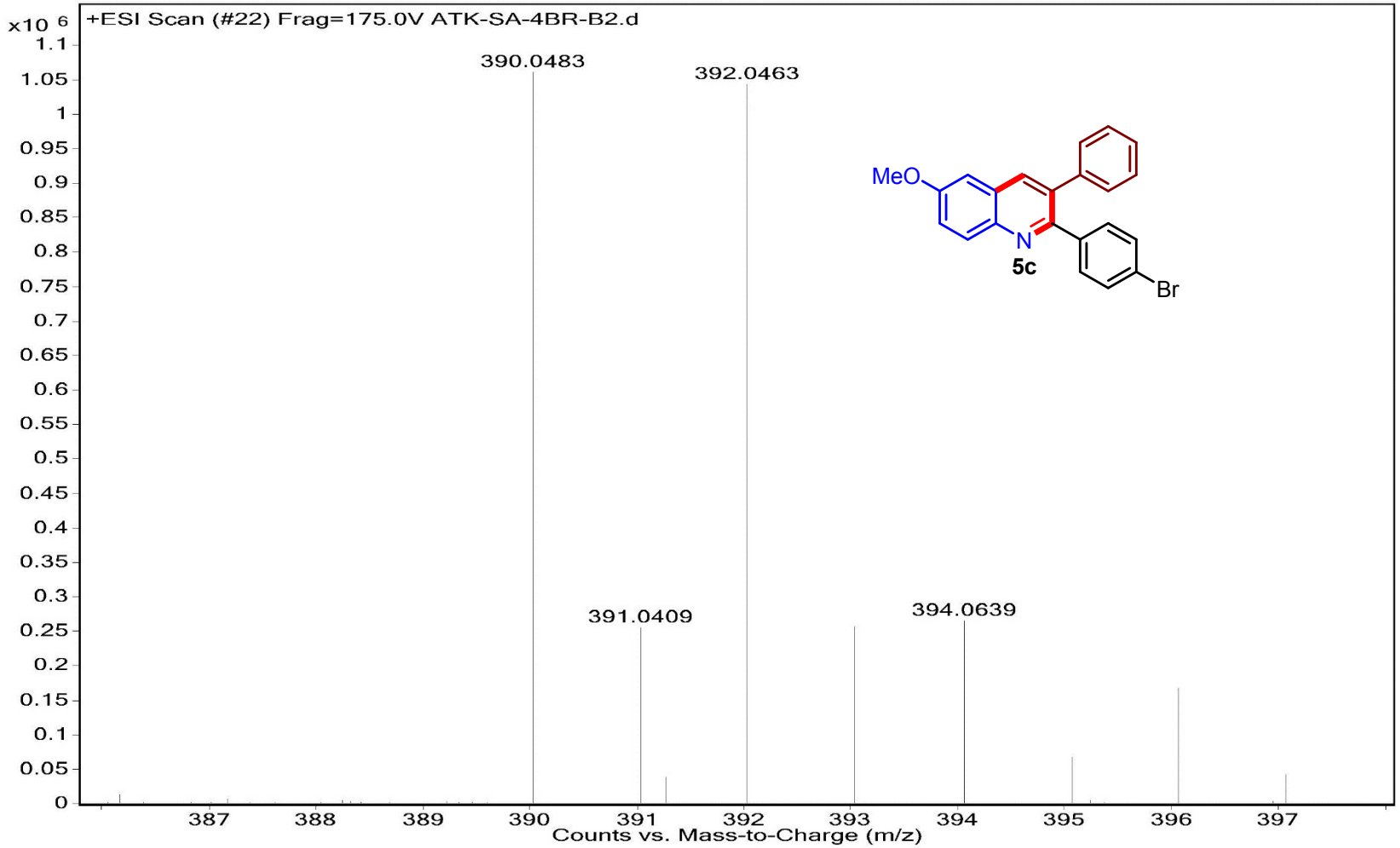


^{13}CNMR spectrum of compound: 5c

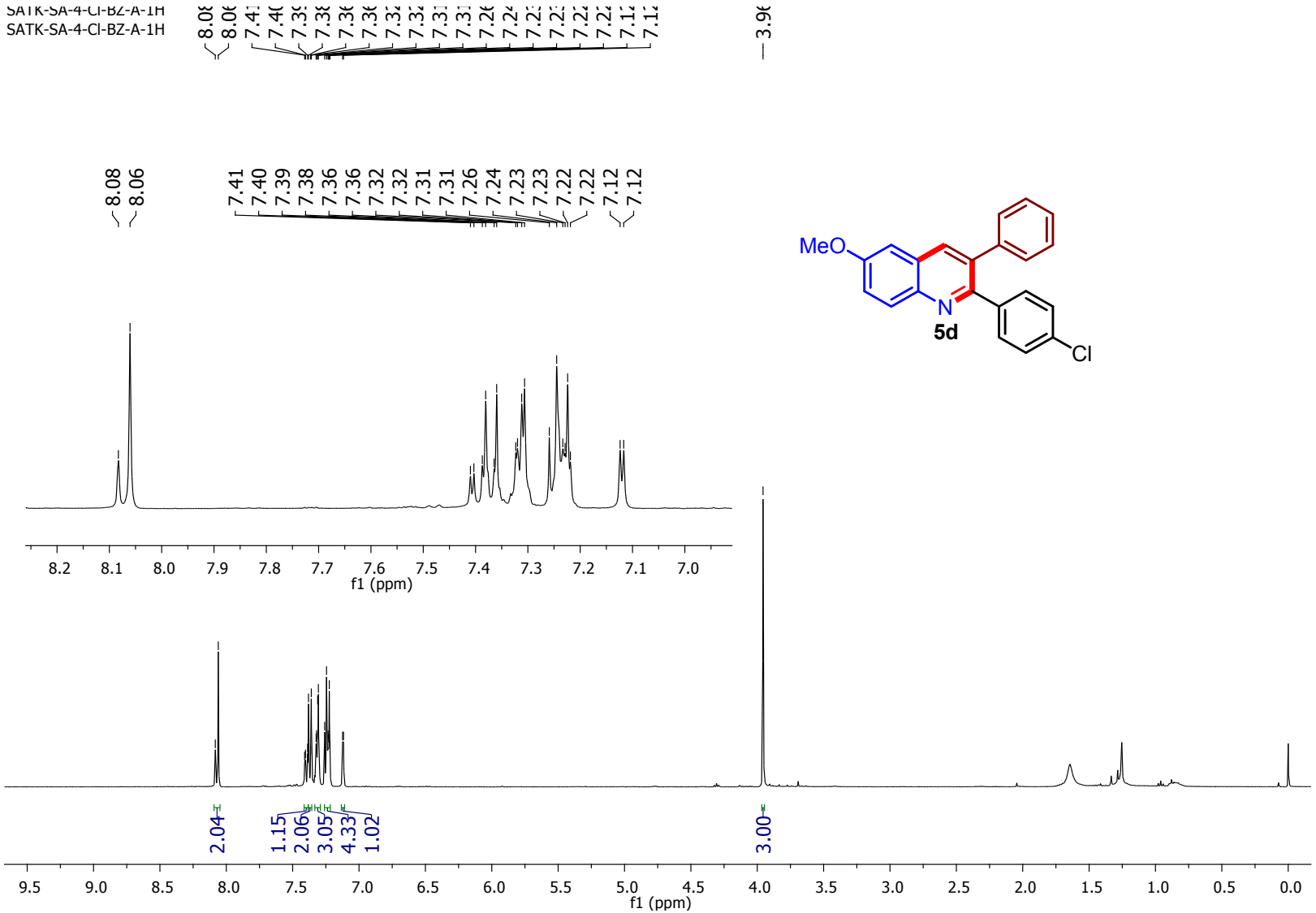


HRMS spectrum of compound: 5c

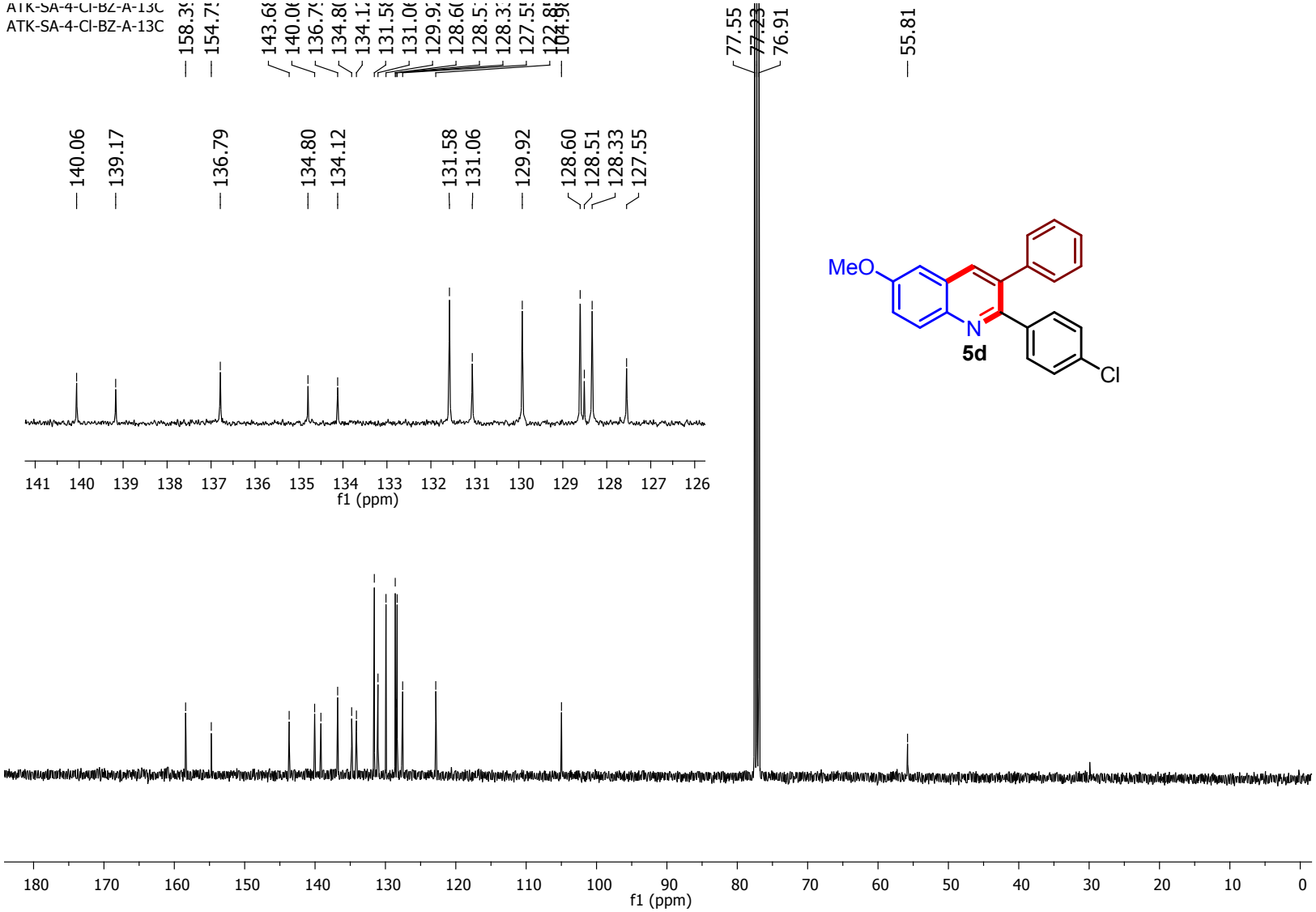
Sample Name	SAMPLE 21	**Position**	P1-D4	**Instrument Name**	Instrument 1	**User Name**	
Inj Vol	20	**InjPosition**		**SampleType**	Sample	**IRM Calibration Status**	Success
Data Filename	ATK-SA-4BR-B2.d	**ACQ Method**	ESI ALS 100-600.m	**Comment**		**Acquired Time**	10/29/2019 5:12:51 PM



^{1}HNMR spectrum of compound: 5d

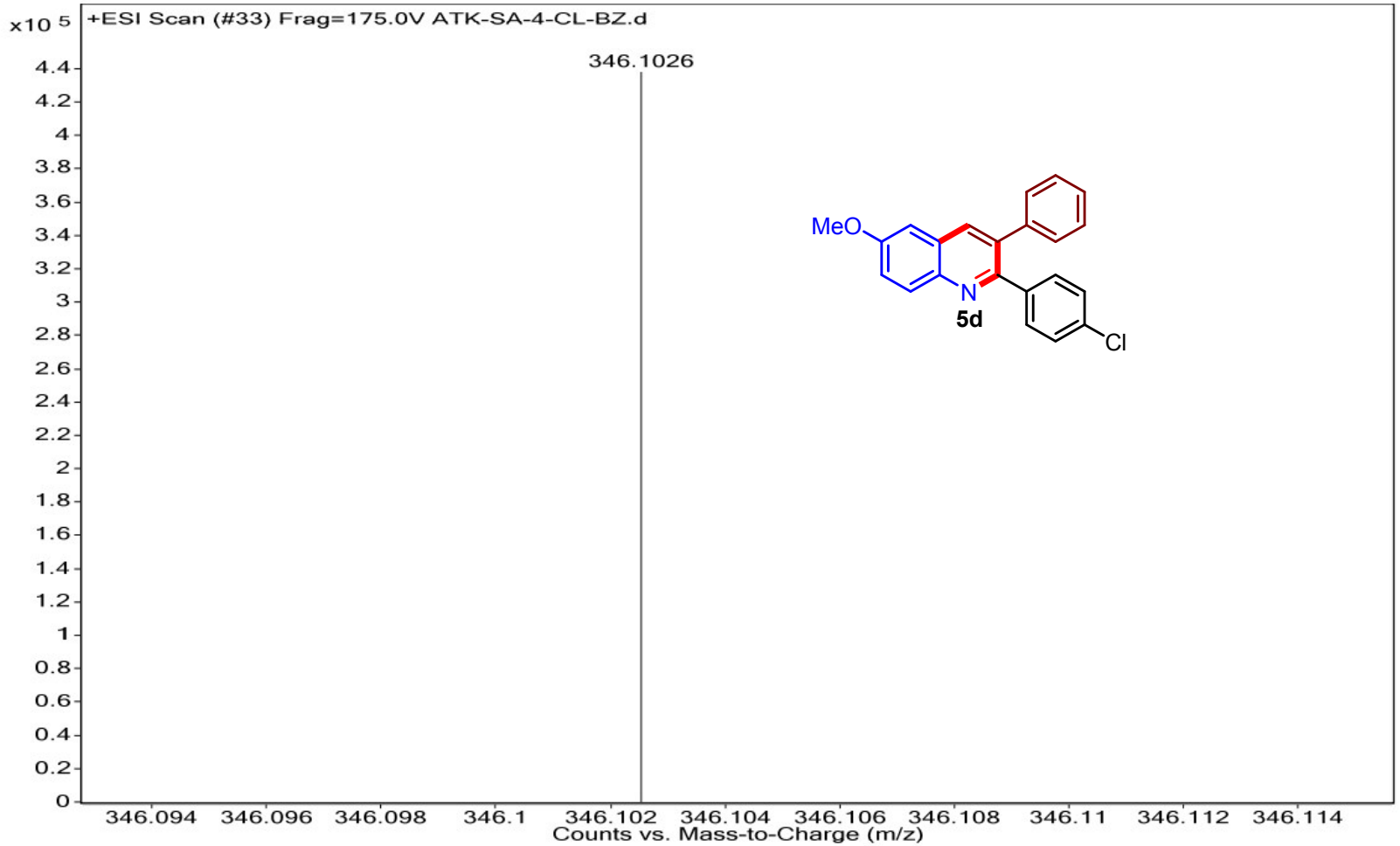


^{13}CNMR spectrum of compound: 5d

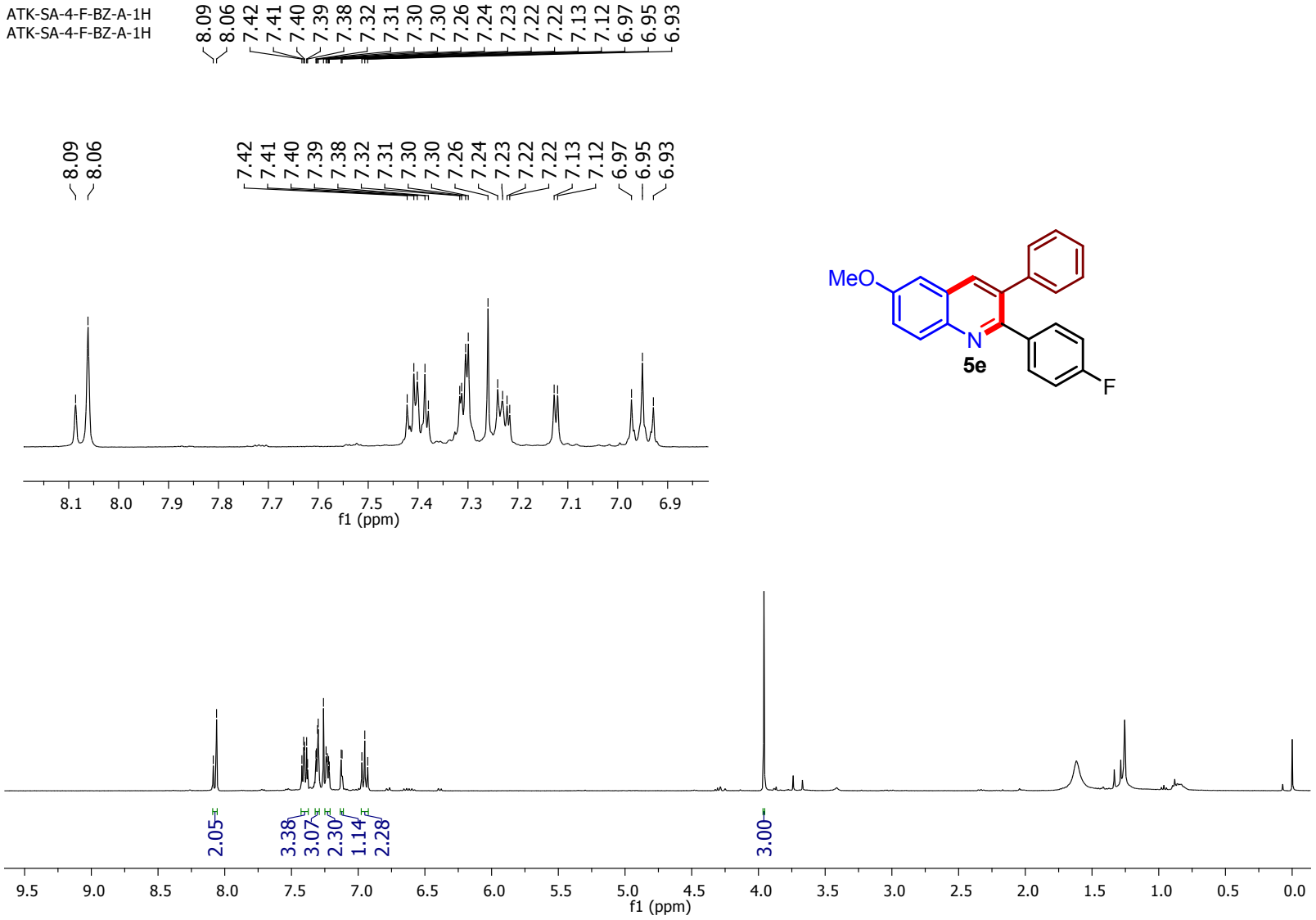


HRMS spectrum of compound: 5d

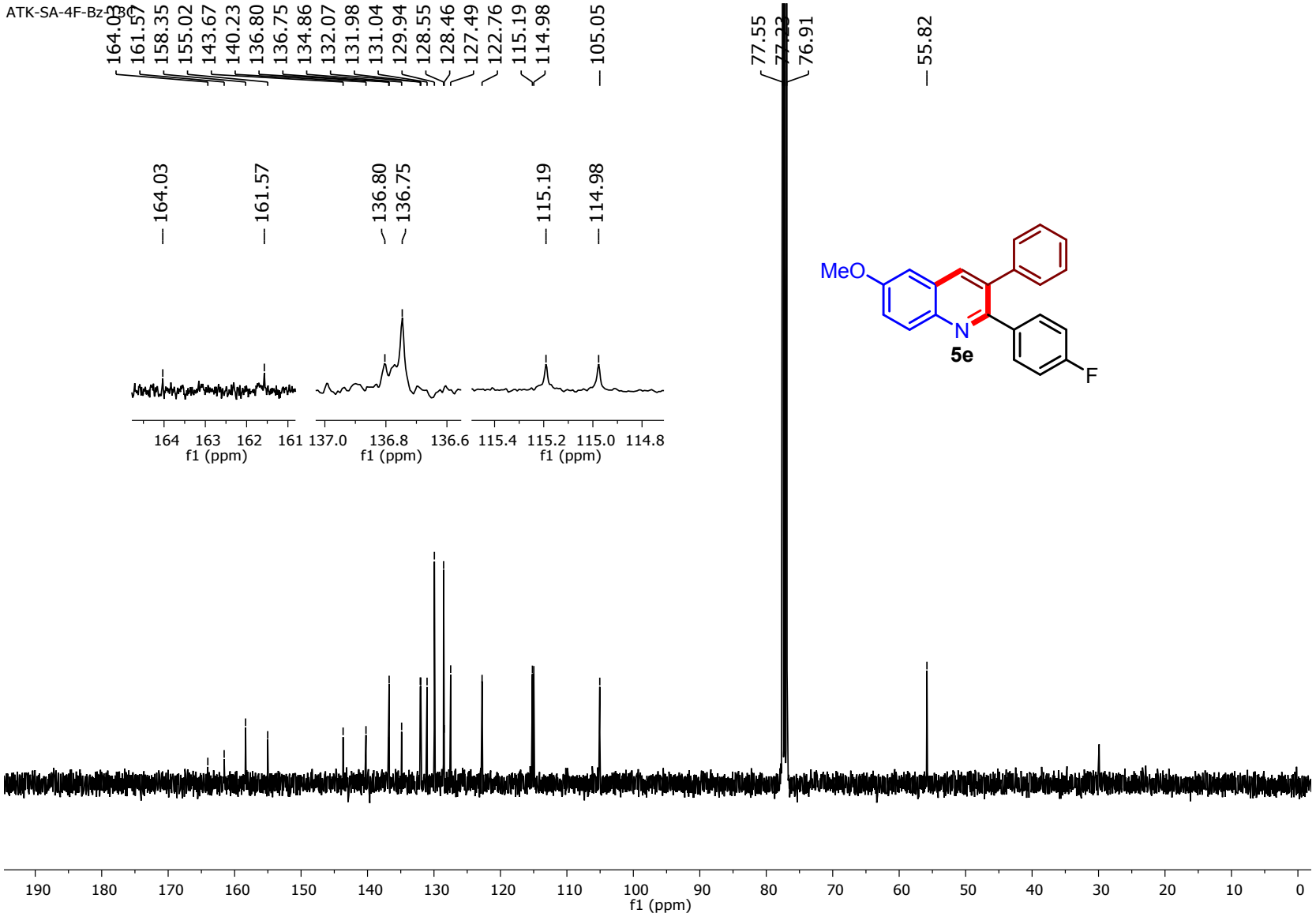
Sample Name	SAMPLE 31	**Position**	P2-C10	**Instrument Name**	Instrument 1	**User Name**	
Inj Vol	20	**InjPosition**		**SampleType**	Sample	**IRM Calibration Status**	Success
Data Filename	ATK-SA-4-CL-BZ.d	**ACQ Method**	ESI ALS 100-1000.m	**Comment**		**Acquired Time**	8/9/2019 6:08:28 PM



^{1}HNMR spectrum of compound: 5e

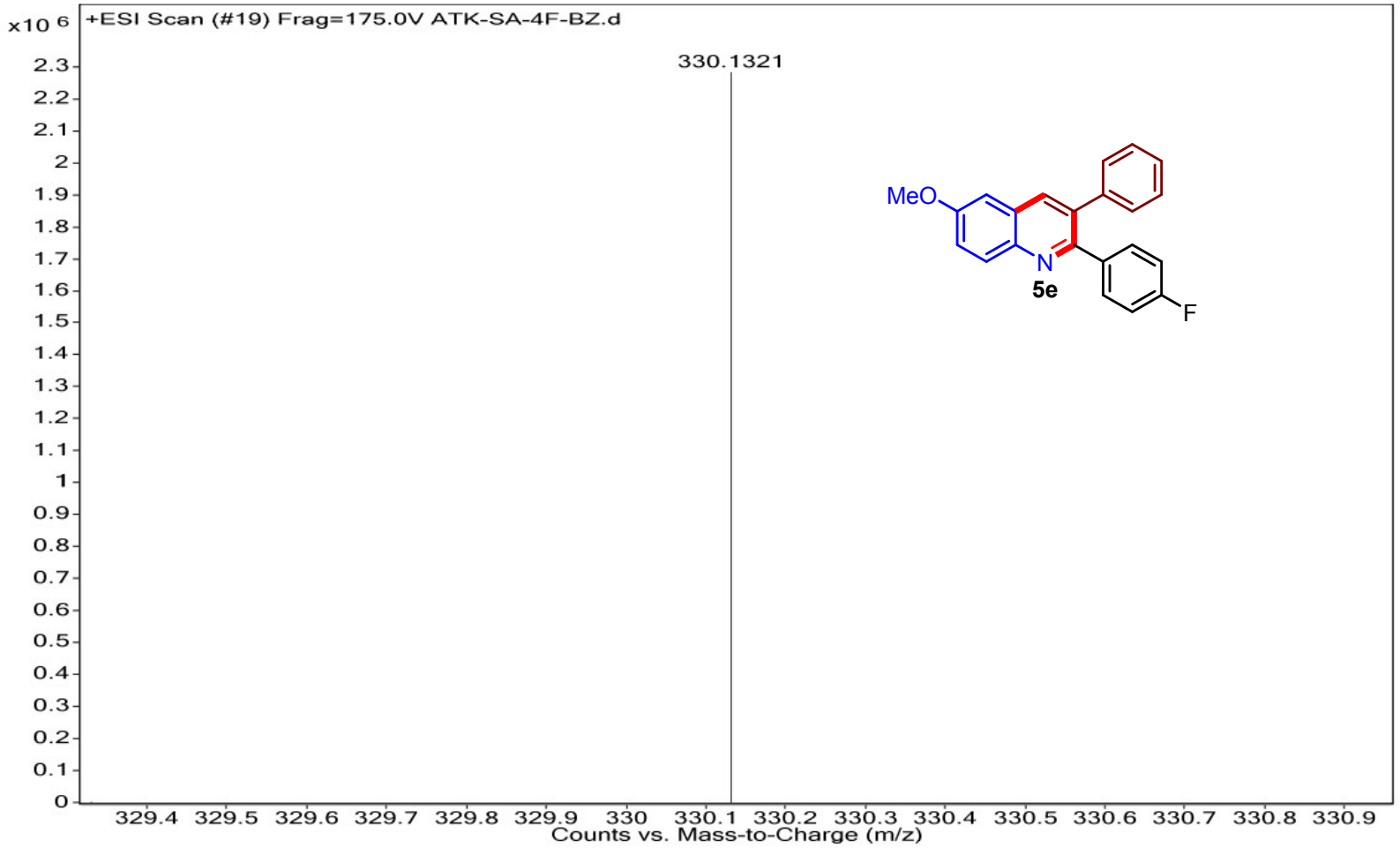


^{13}CNMR spectrum of compound: 5e

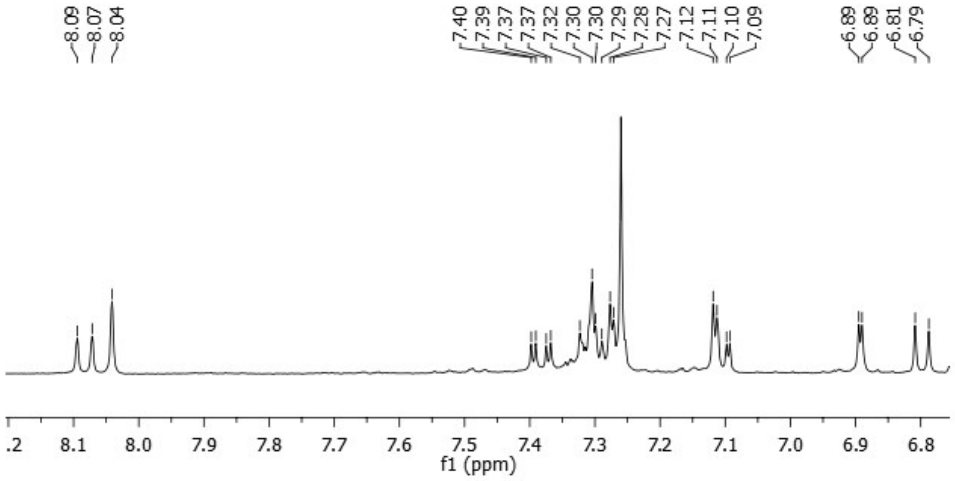


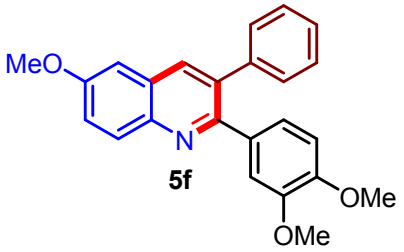
HRMS spectrum of compound: 5e

Sample Name	SAMPLE 23	**Position**	P2-C5	**Instrument Name**	Instrument 1	**User Name**	
Inj Vol	20	**InjPosition**		**SampleType**	Sample	**IRM Calibration Status**	Success
Data Filename	ATK-SA-4F-BZ.d	**ACQ Method**	ESI ALS 100-1000.m	**Comment**		**Acquired Time**	8/9/2019 6:06:32 PM

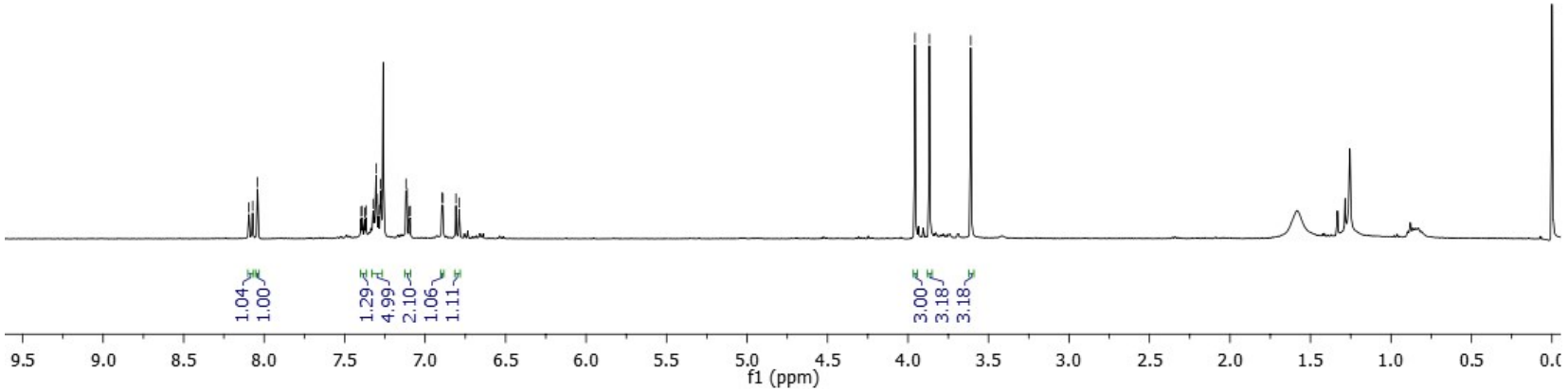


[1]HNMR spectrum of compound: 5f

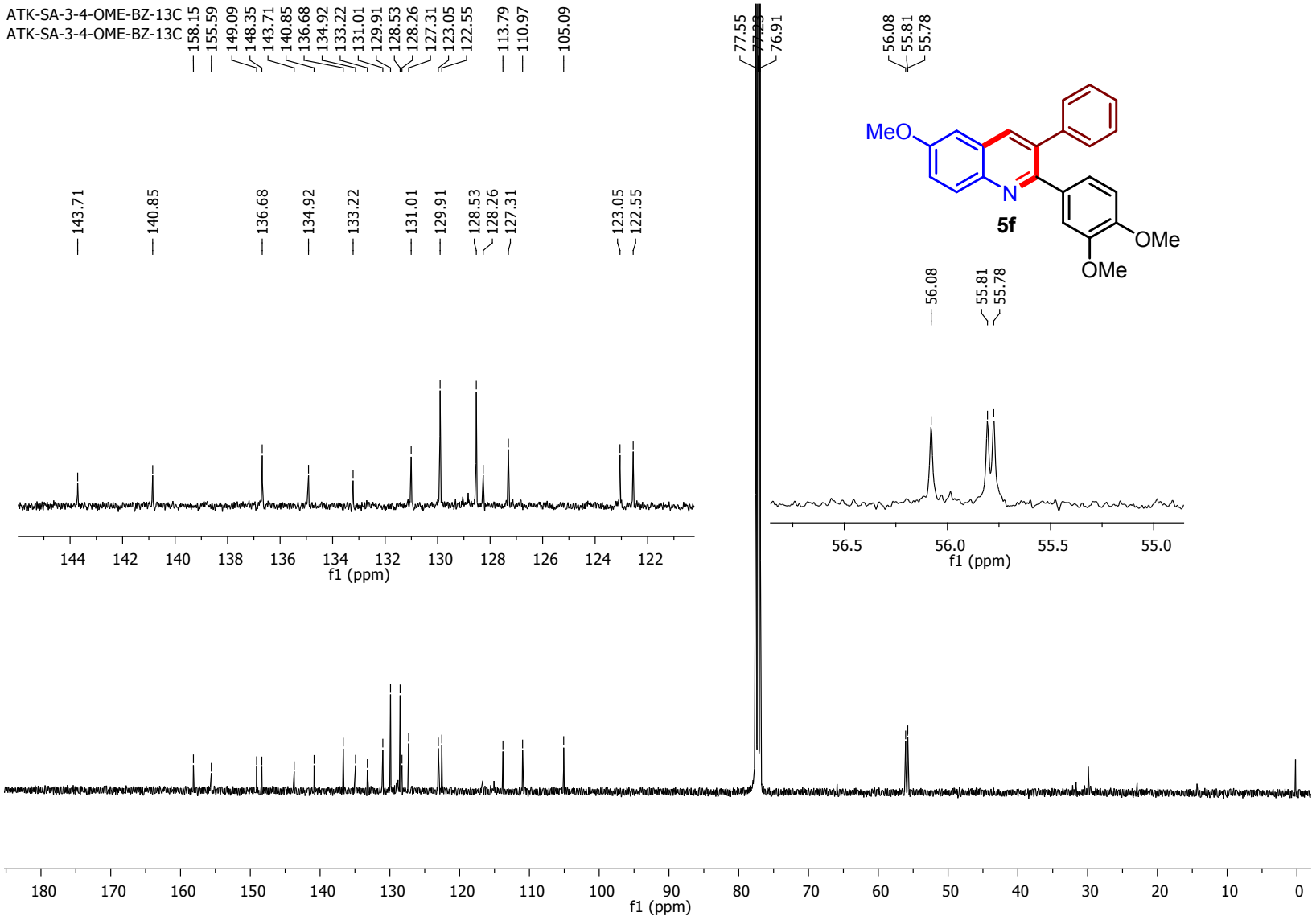




5f

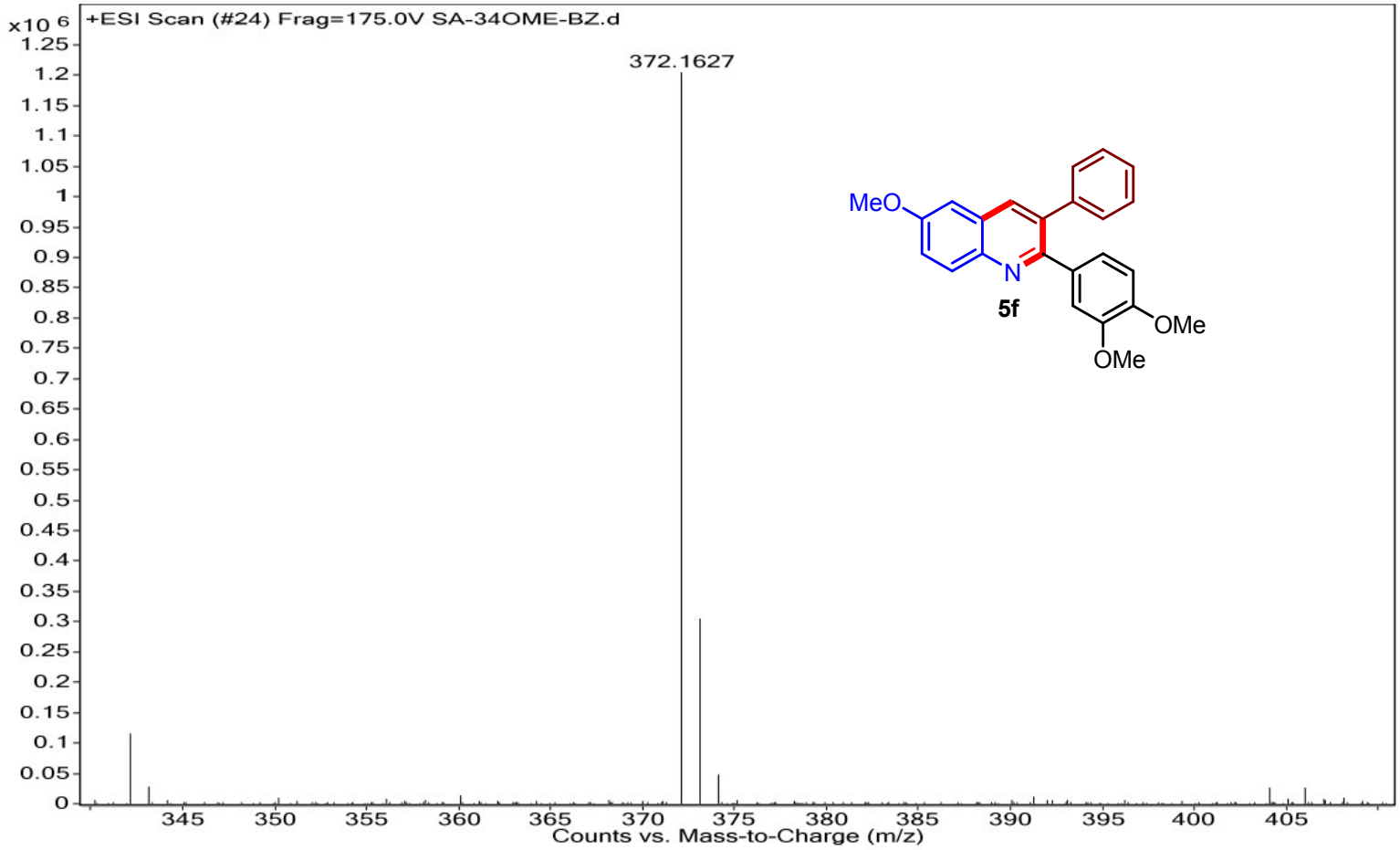


^{13}CNMR spectrum of compound: 5f

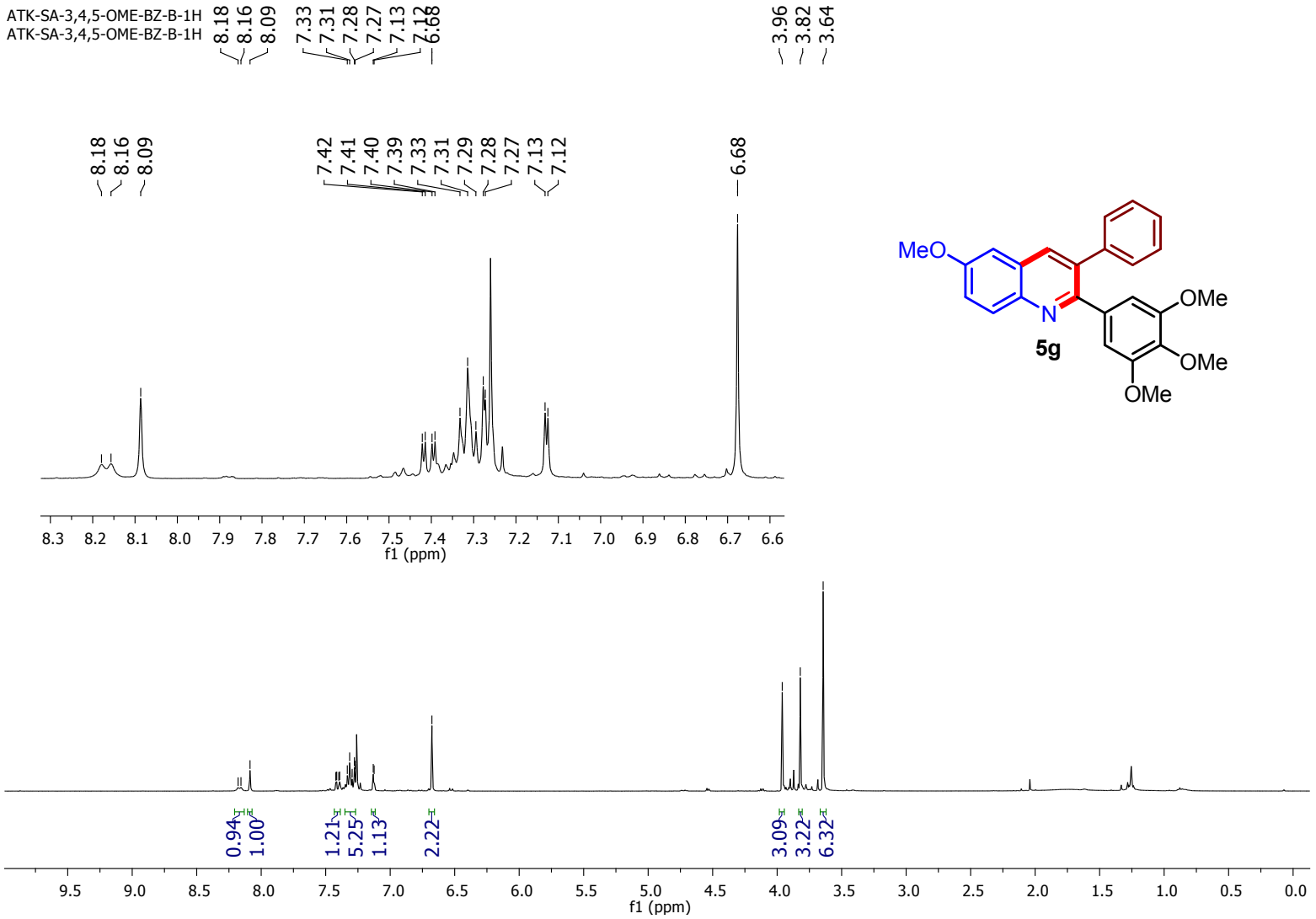


HRMS spectrum of compound: 5f

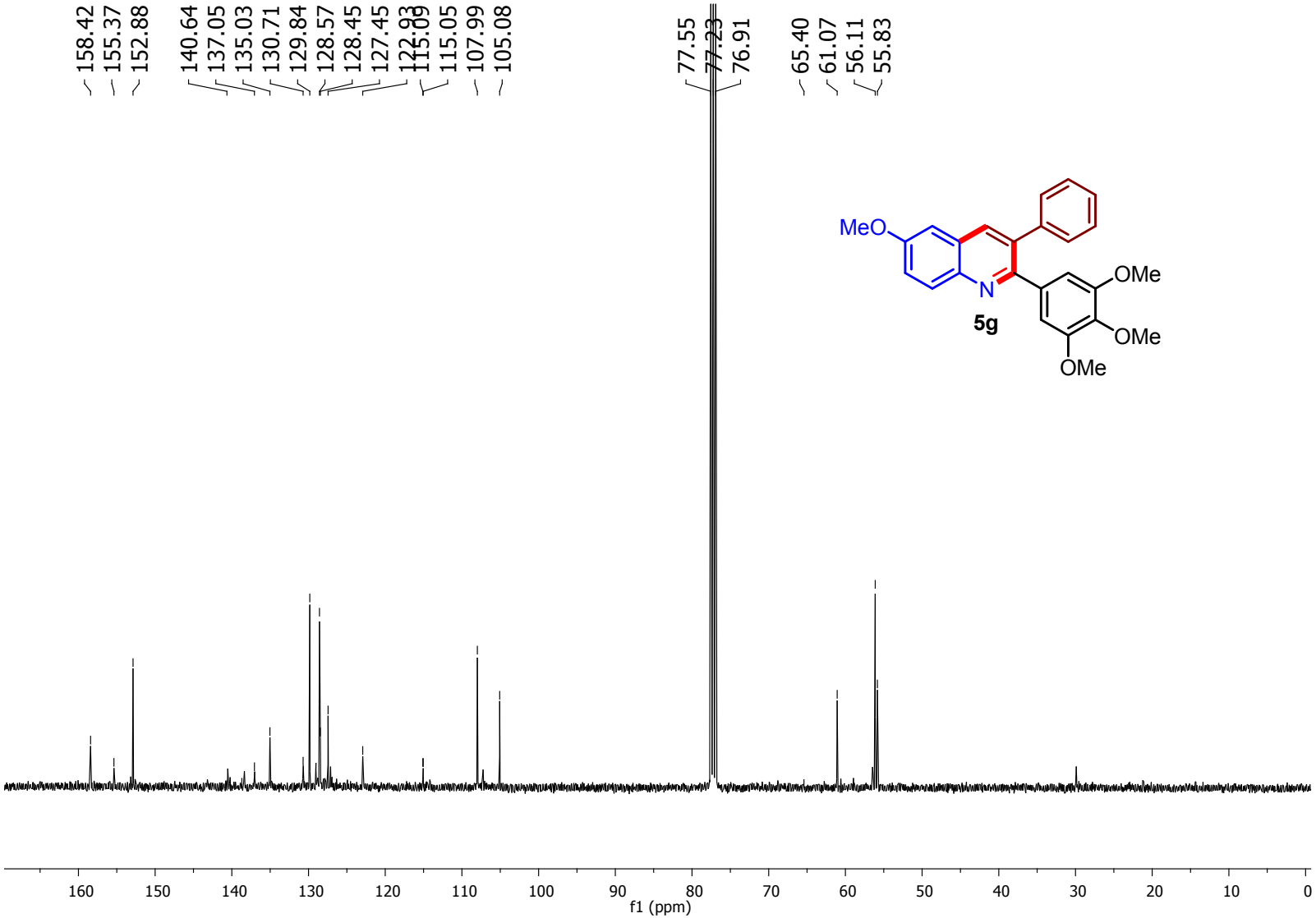
Sample Name	SAMPLE	**Position**	P1-F2	**Instrument Name**	Instrument 1	**User Name**	
Inj Vol	20	**InjPosition**		**SampleType**	Sample	**IRM Calibration Status**	Success
Data Filename	SA-34OME-BZ.d	**ACQ Method**	ESI ALS 100-500.m	**Comment**		**Acquired Time**	2/6/2020 6:06:17 PM



^{1}HNMR spectrum of compound: 5g

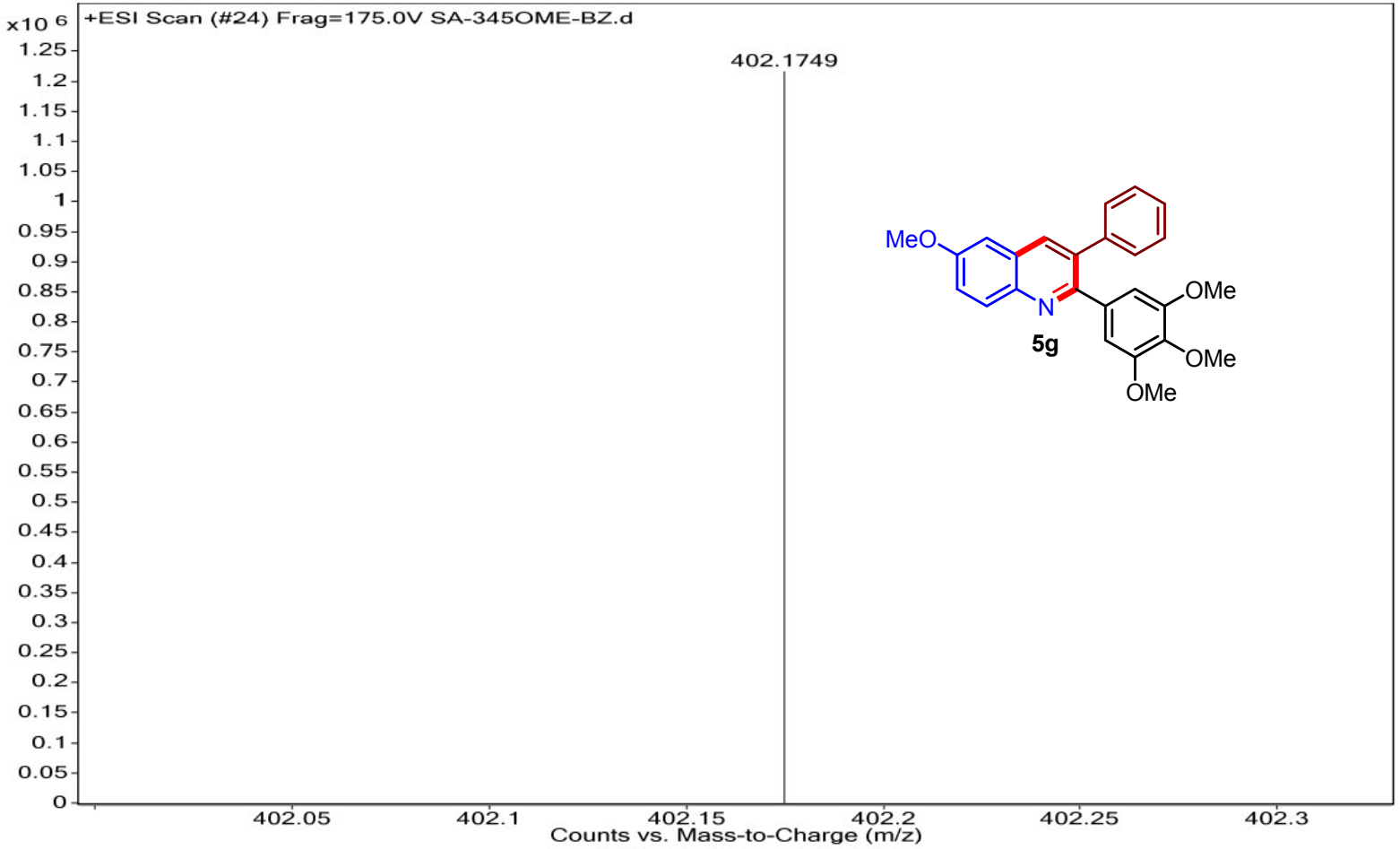


^{13}CNMR spectrum of compound: 5g

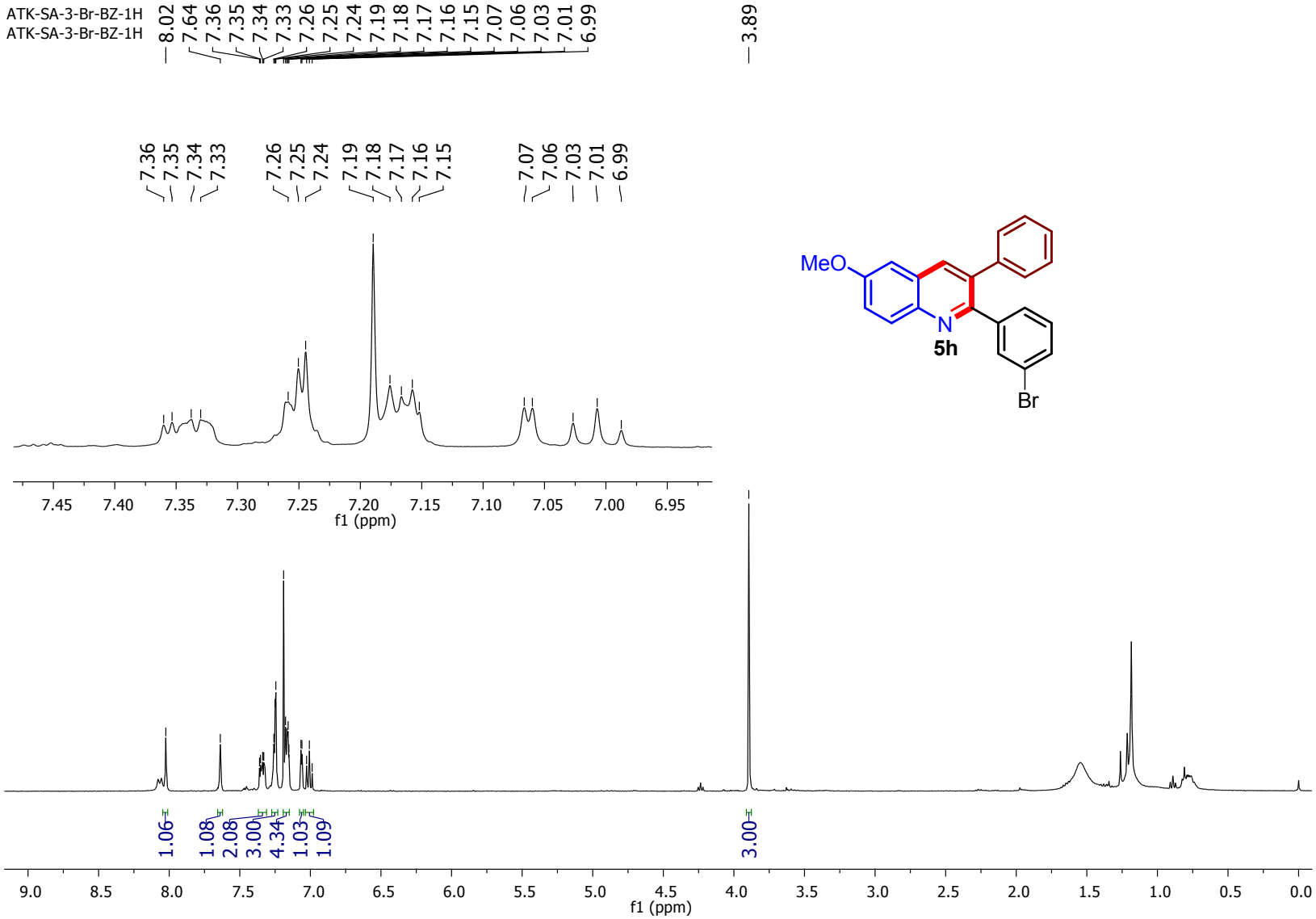


HRMS spectrum of compound: 5g

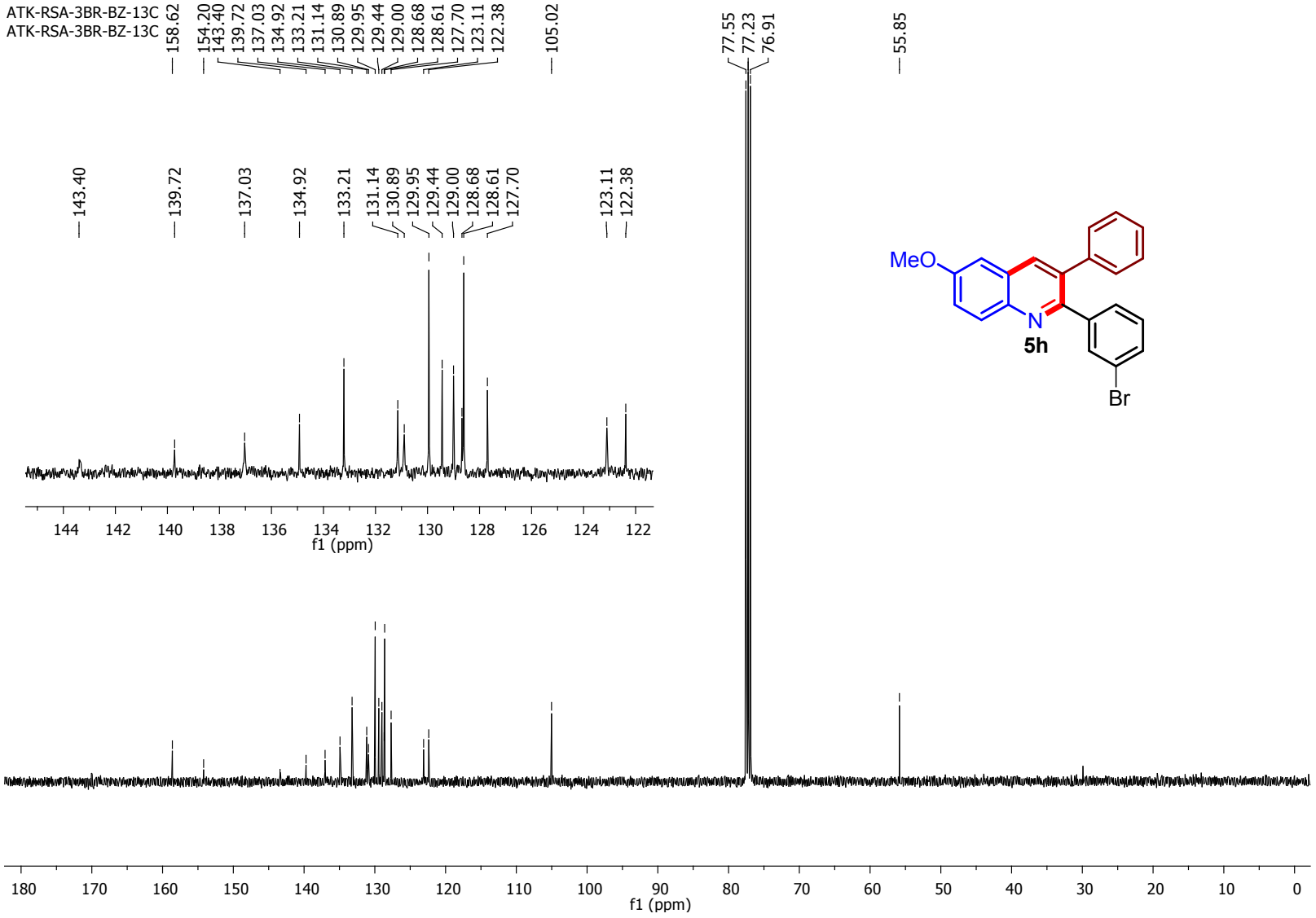
Sample Name	SAMPLE	**Position**	P1-F4	**Instrument Name**	Instrument 1	**User Name**	
Inj Vol	20	**InjPosition**		**SampleType**	Sample	**IRM Calibration Status**	Success
Data Filename	SA-345OME-BZ.d	**ACQ Method**	ESI ALS 100-500.m	**Comment**		**Acquired Time**	2/6/2020 6:11:57 PM



^{1}HNMR spectrum of compound: 5h

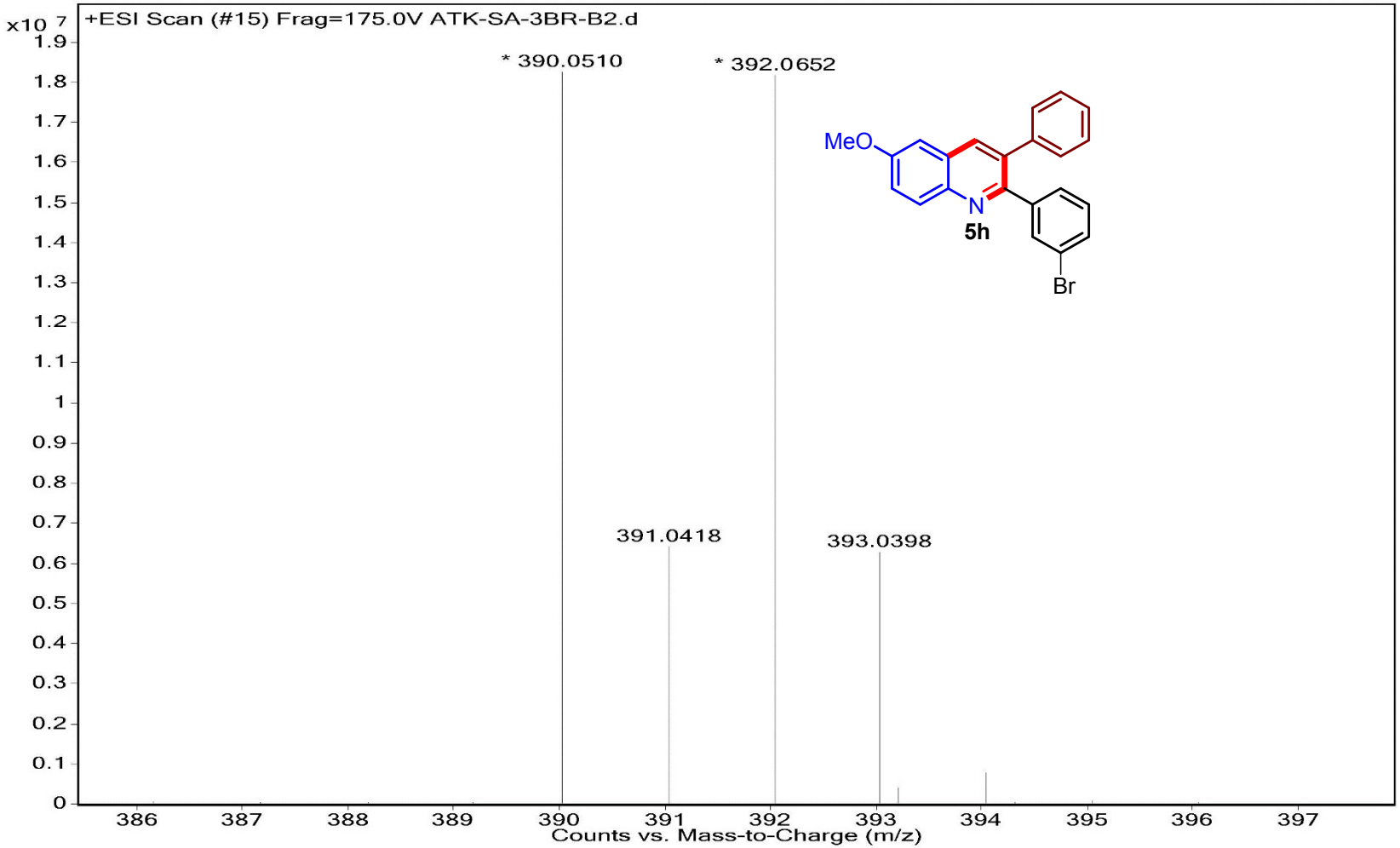


^{13}CNMR spectrum of compound: 5h

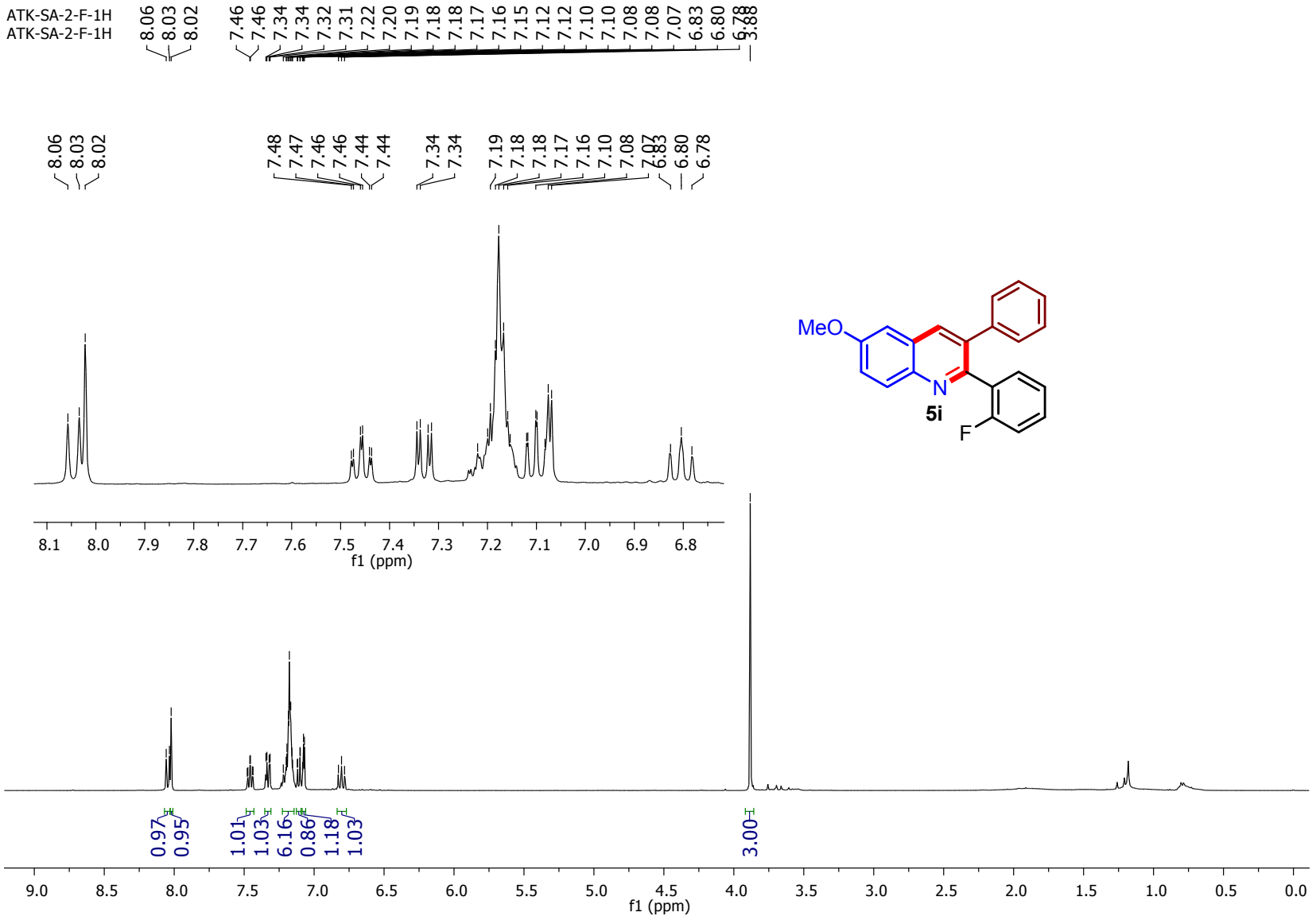


HRMS spectrum of compound: 5h

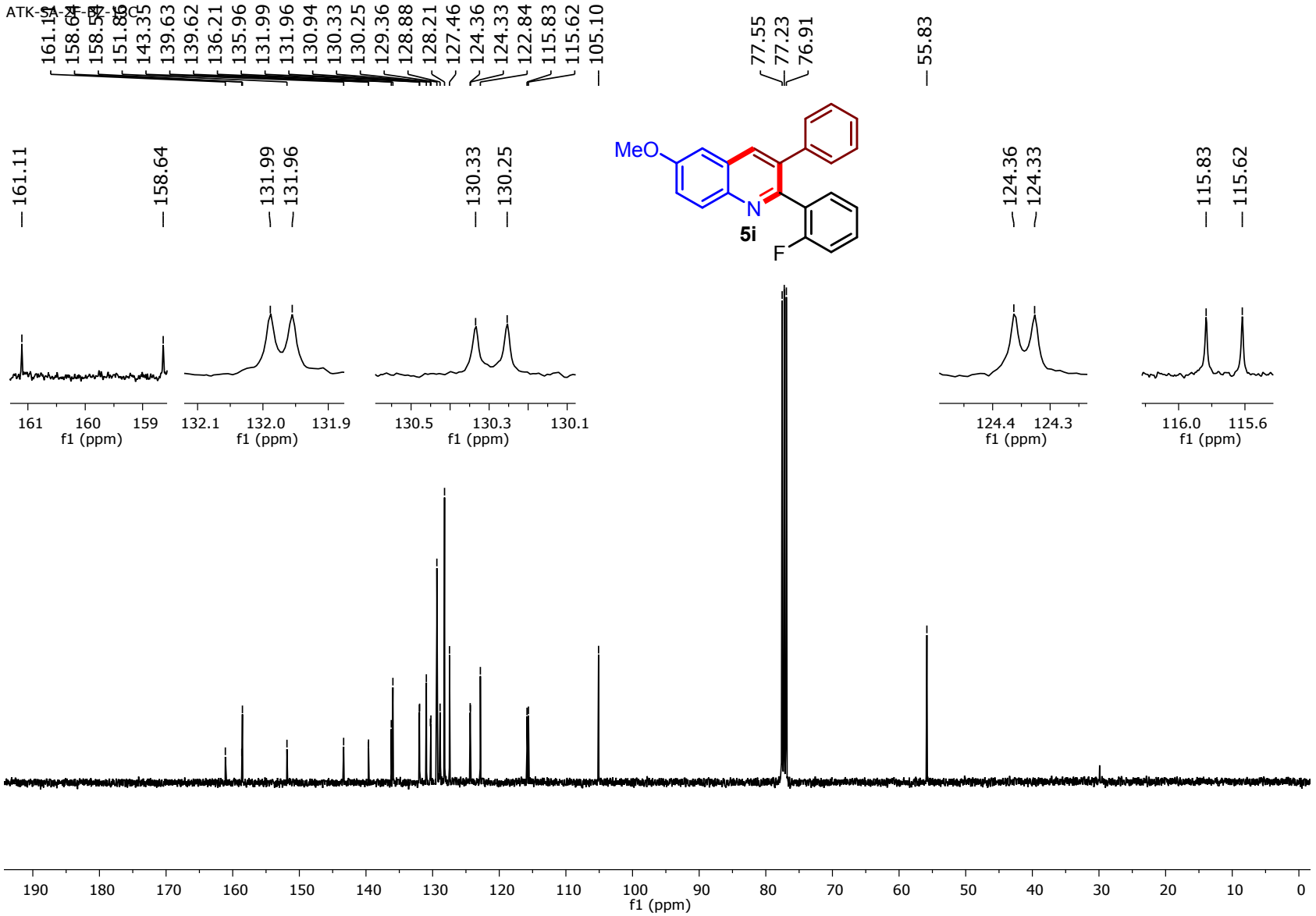
Sample Name	SAMPLE 22	**Position**	P1-D5	**Instrument Name**	Instrument 1	**User Name**	
Inj Vol	20	**InjPosition**		**SampleType**	Sample	**IRM Calibration Status**	Success
Data Filename	ATK-SA-3BR-B2.d	**ACQ Method**	ESI ALS 100-600.m	**Comment**		**Acquired Time**	10/29/2019 5:14:43 PM



^{1}HNMR spectrum of compound: 5i

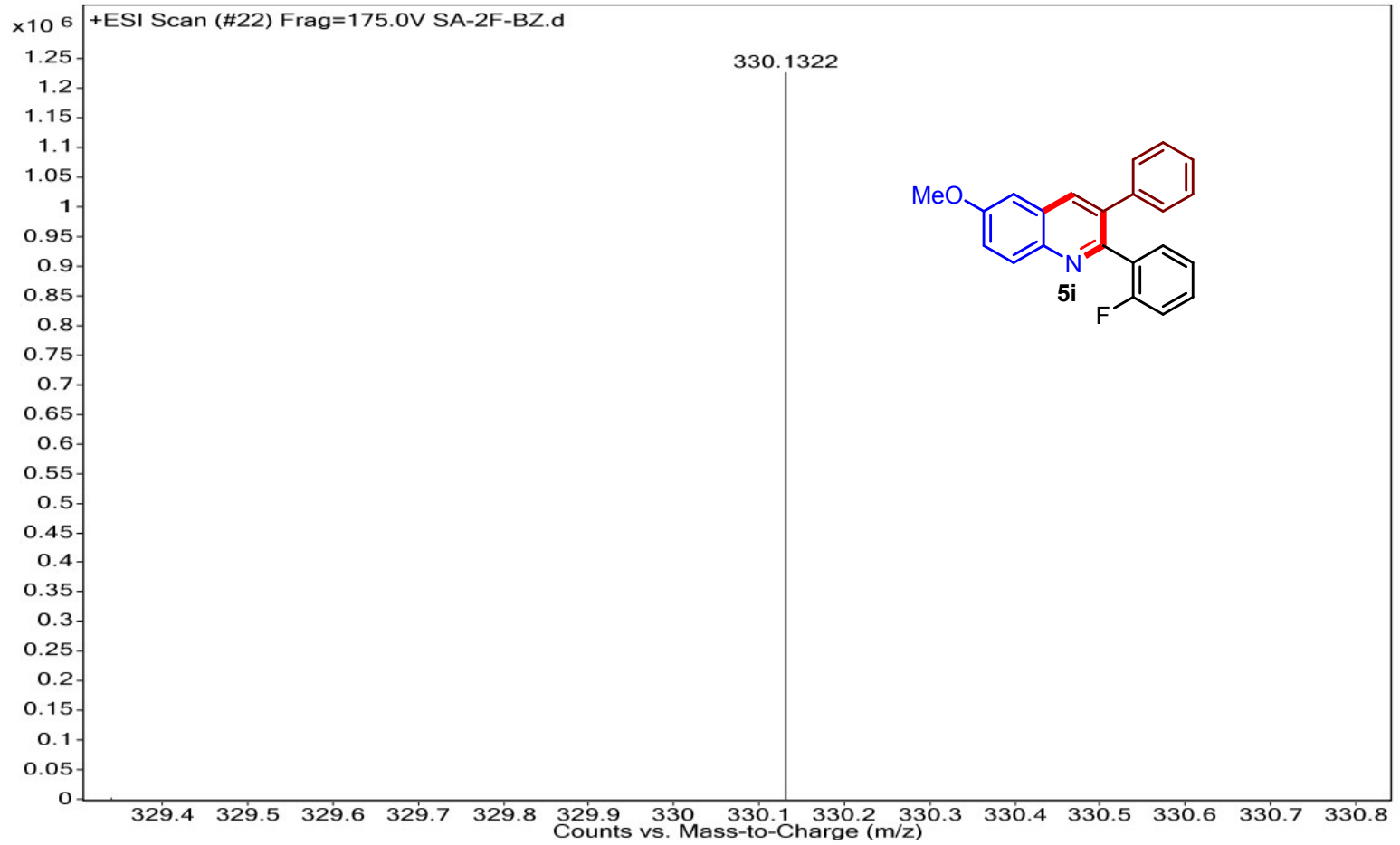


^{13}CNMR spectrum of compound: 5i

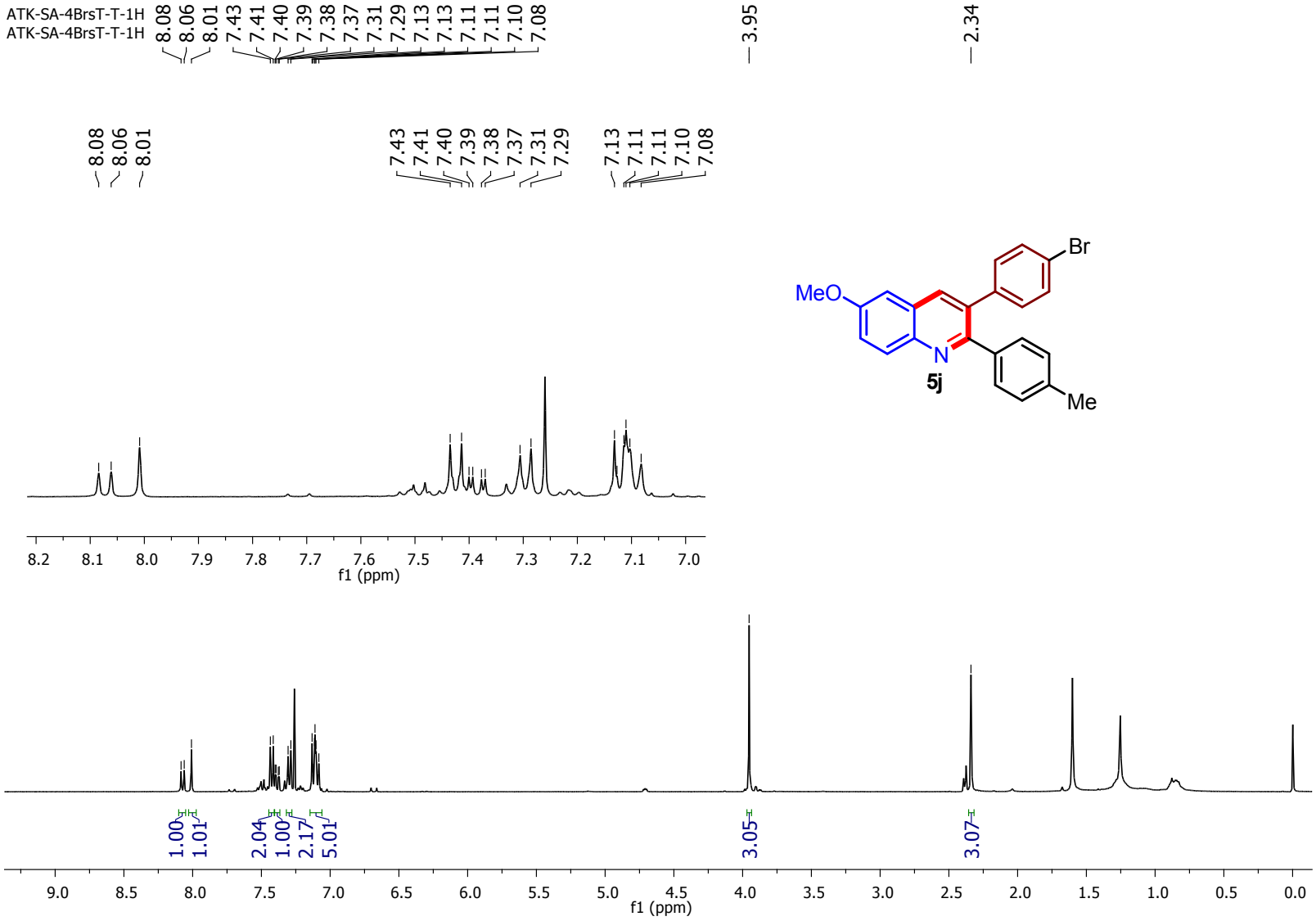


HRMS spectrum of compound: 5i

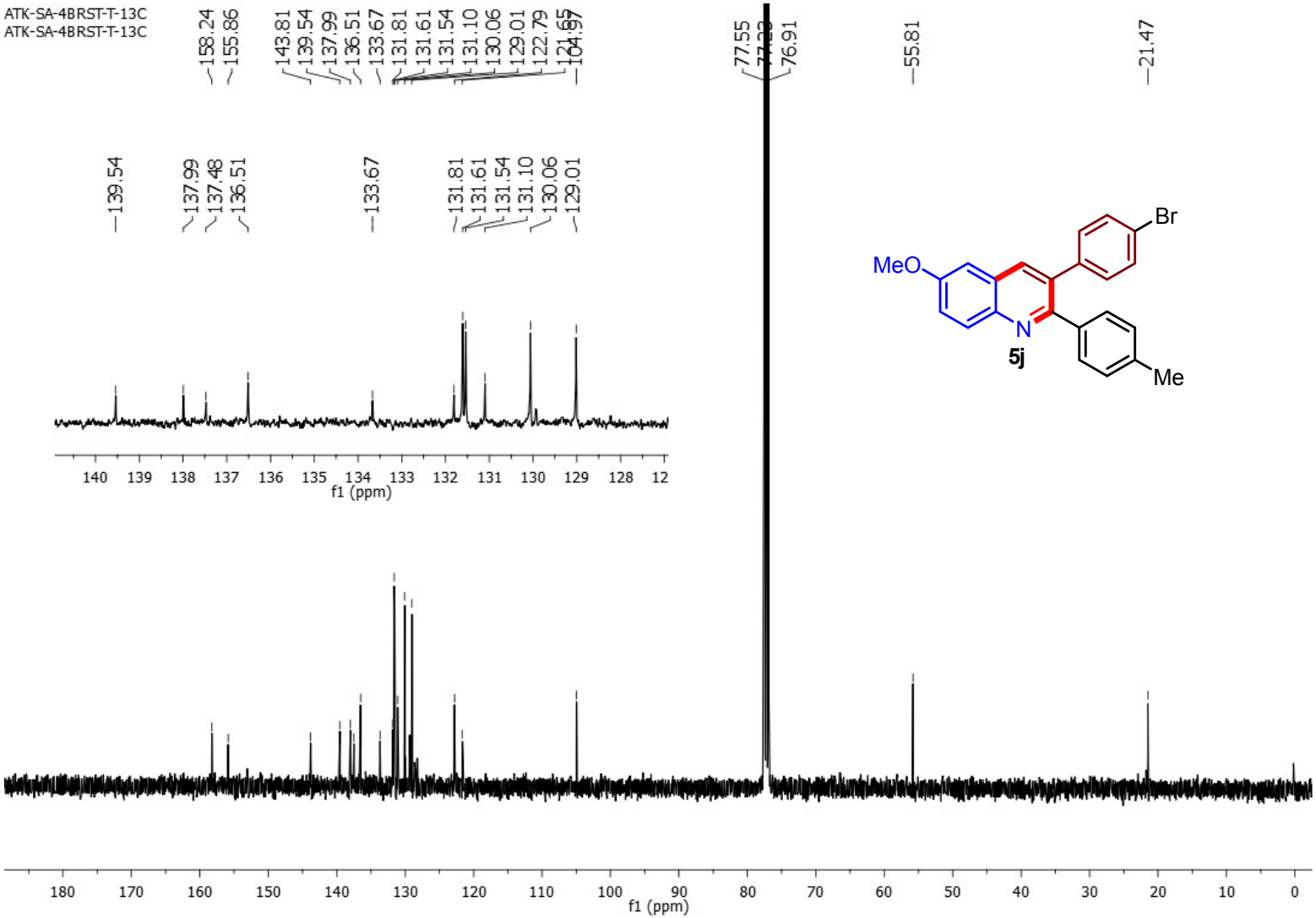
Sample Name	SAMPLE	**Position**	P1-F3	**Instrument Name**	Instrument 1	**User Name**	
Inj Vol	20	**InjPosition**		**SampleType**	Sample	**IRM Calibration Status**	Success
Data Filename	SA-2F-BZ.d	**ACQ Method**	ESI ALS 100-500.m	**Comment**		**Acquired Time**	2/6/2020 6:08:12 PM



^{1}HNMR spectrum of compound: 5j

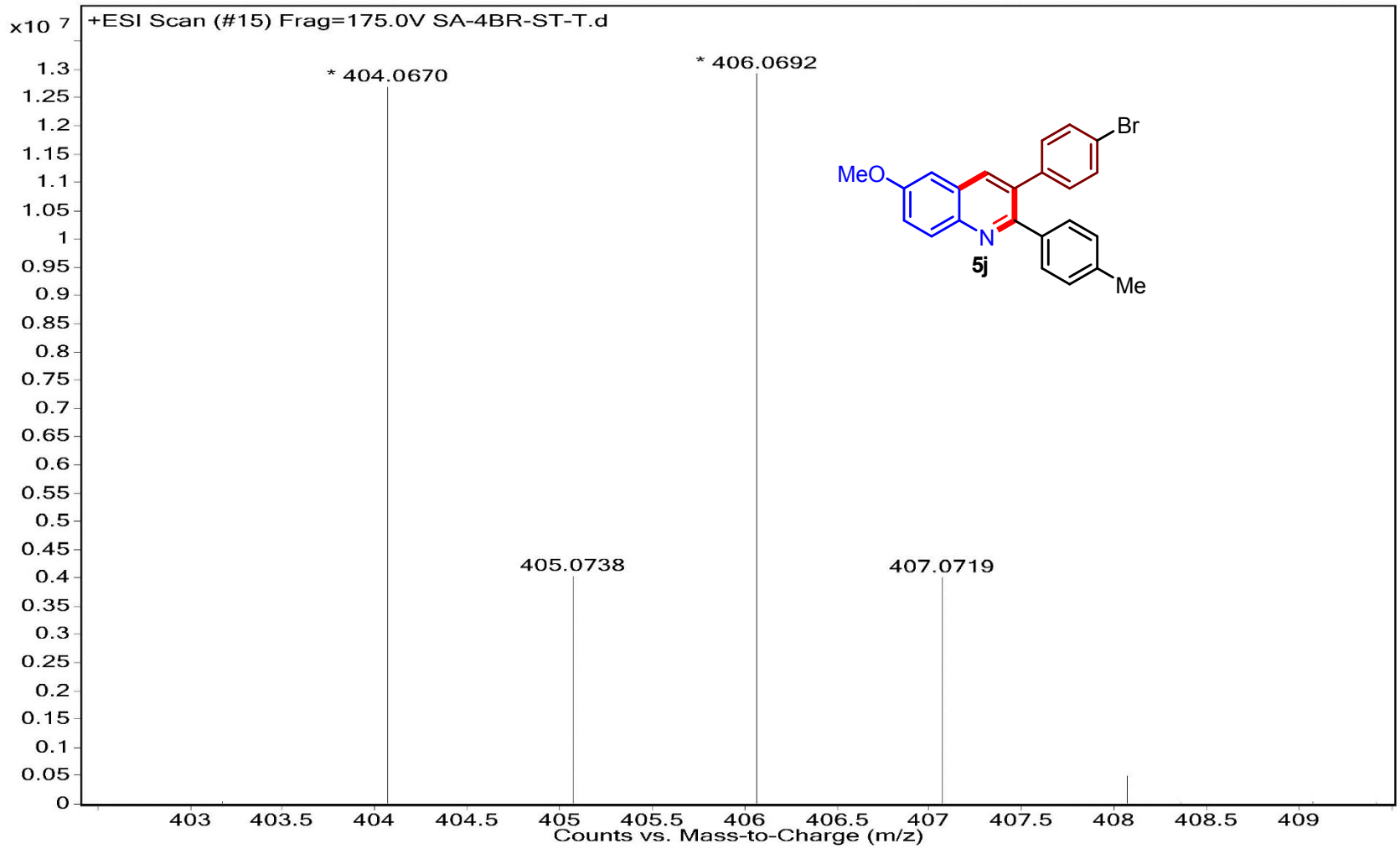


^{13}CNMR spectrum of compound: 5j

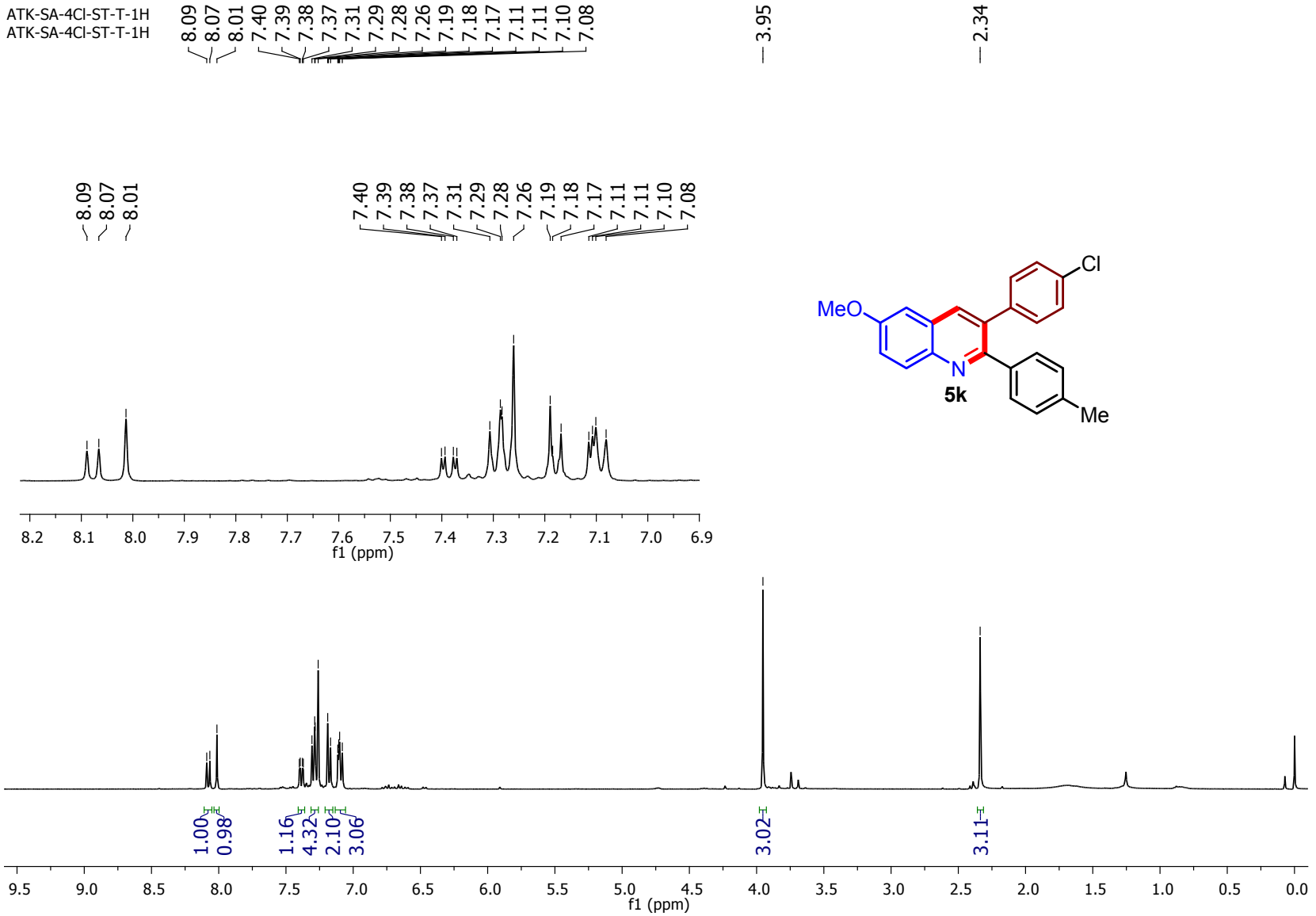


HRMS spectrum of compound: 5j

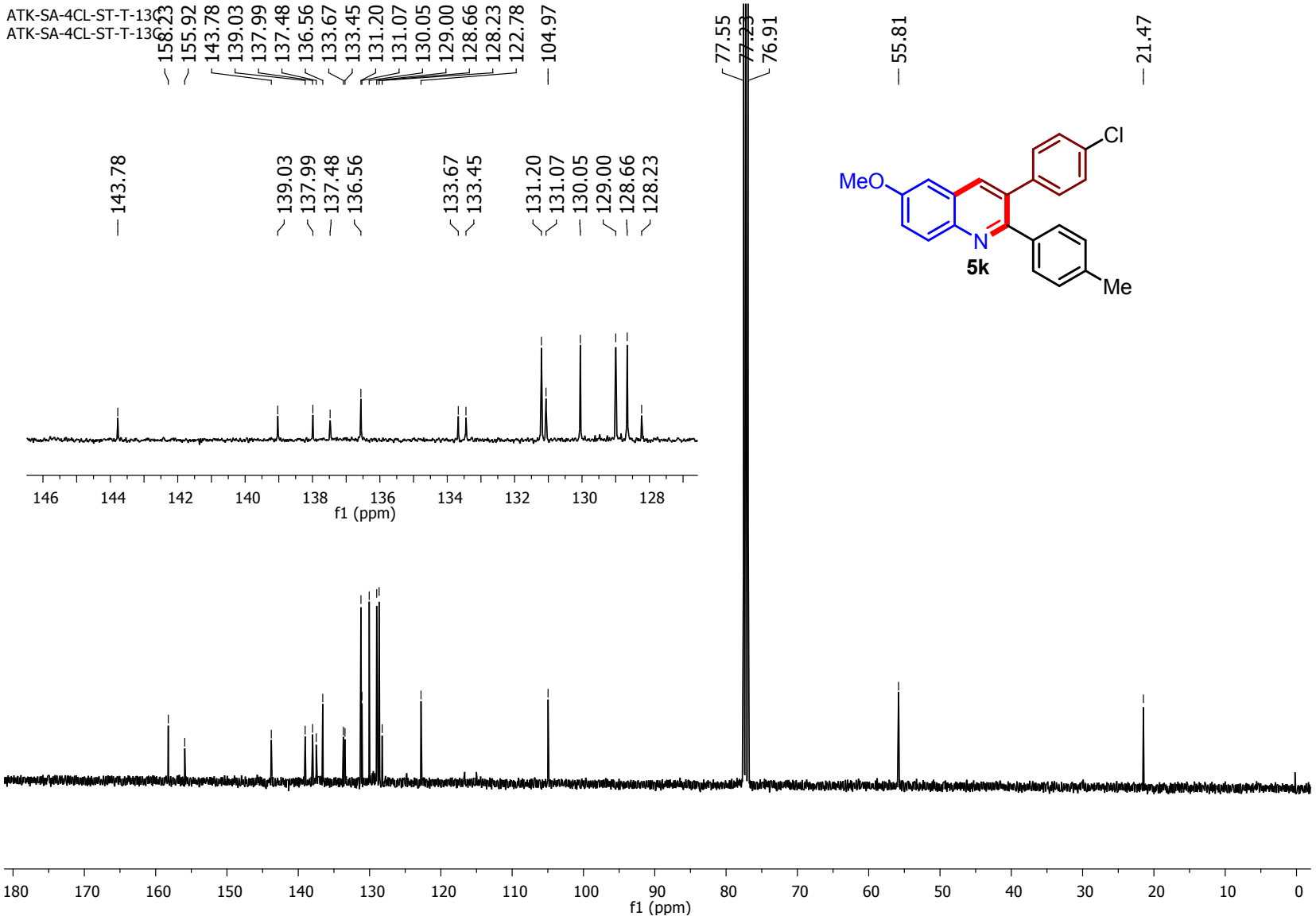
Sample Name	SAMPLE	**Position**	P1-F5	**Instrument Name**	Instrument 1	**User Name**	
Inj Vol	20	**InjPosition**		**SampleType**	Sample	**IRM Calibration Status**	Success
Data Filename	SA-4BR-ST-T.d	**ACQ Method**	ESI ALS 100-500.m	**Comment**		**Acquired Time**	2/6/2020 6:13:49 PM



^{1}HNMR spectrum of compound: 5k

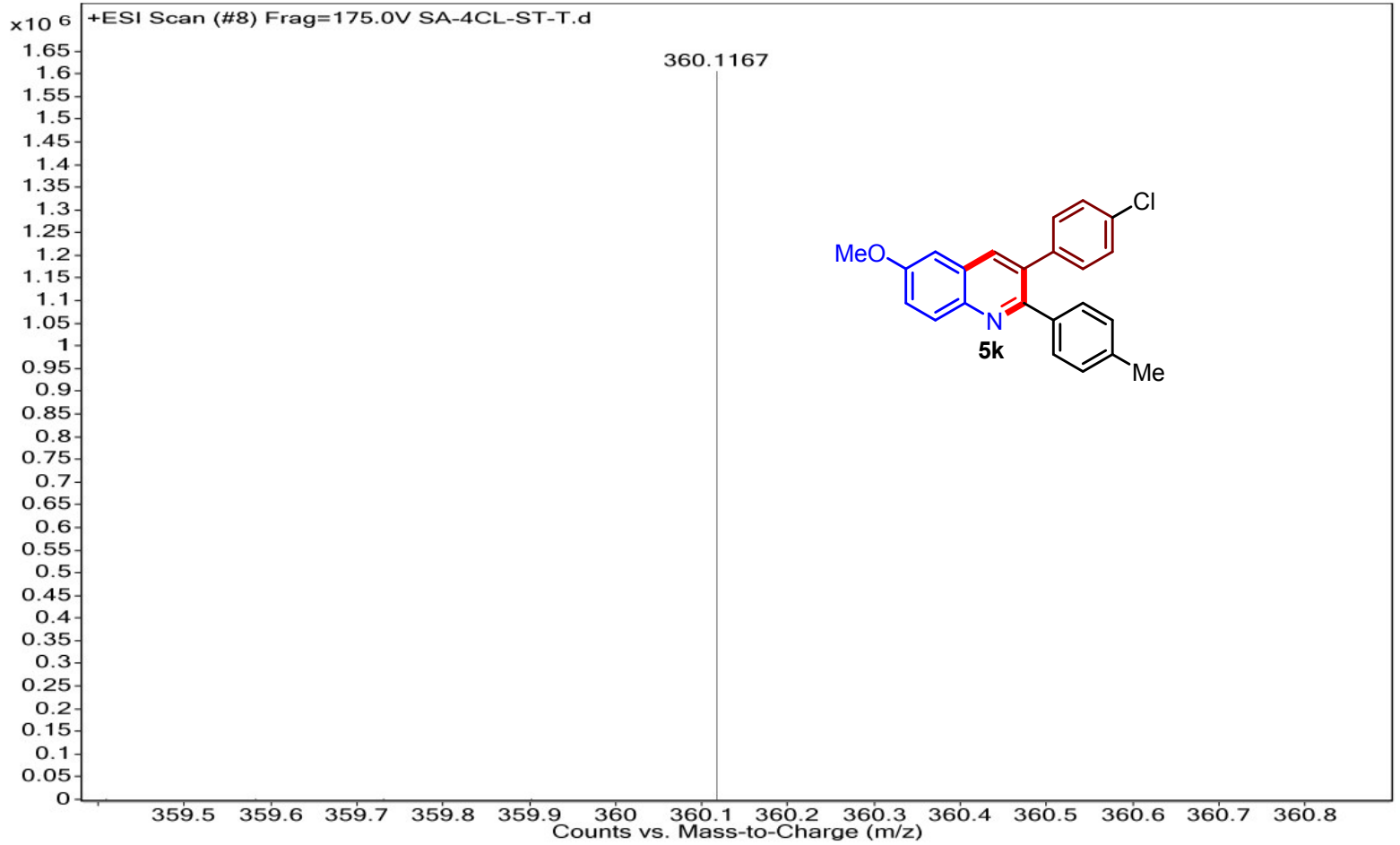


^{13}CNMR spectrum of compound: 5k

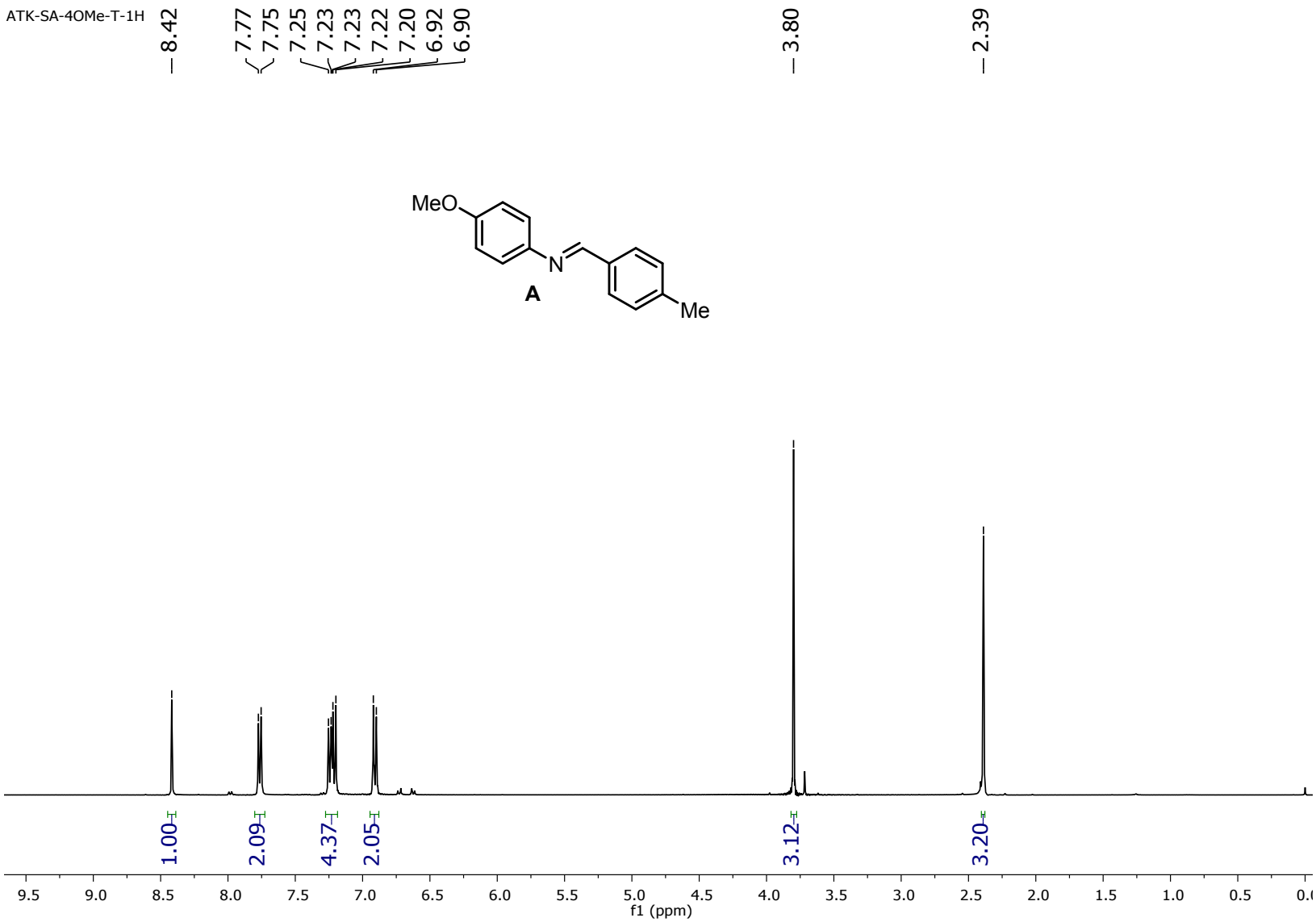


HRMS spectrum of compound: 5k

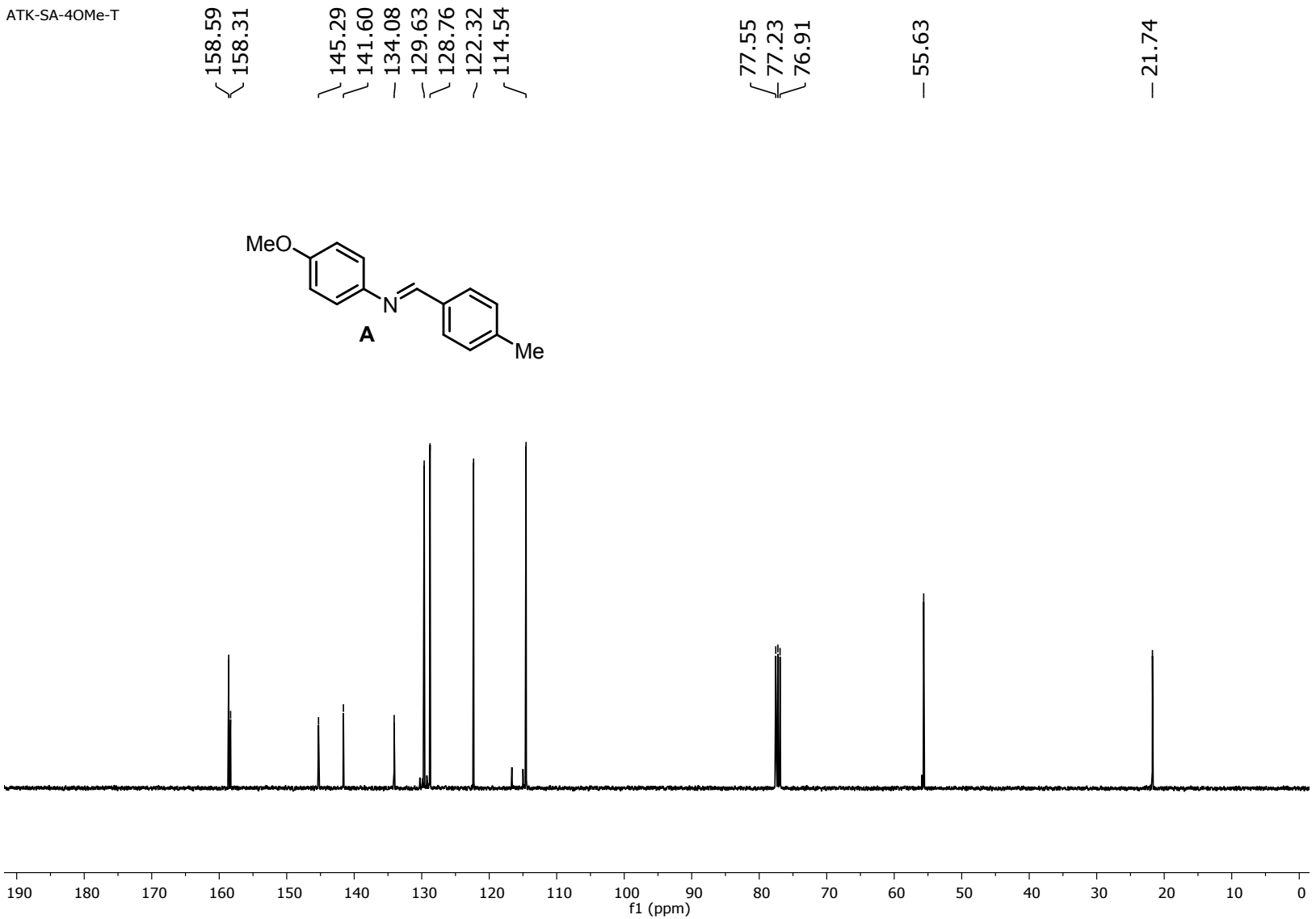
Sample Name	SAMPLE	**Position**	P1-F1	**Instrument Name**	Instrument 1	**User Name**	
Inj Vol	20	**InjPosition**		**SampleType**	Sample	**IRM Calibration Status**	Success
Data Filename	SA-4CL-ST-T.d	**ACQ Method**	ESI ALS 100-500.m	**Comment**		**Acquired Time**	2/6/2020 5:58:31 PM



^{1}H NMR spectrum of intermediate: A

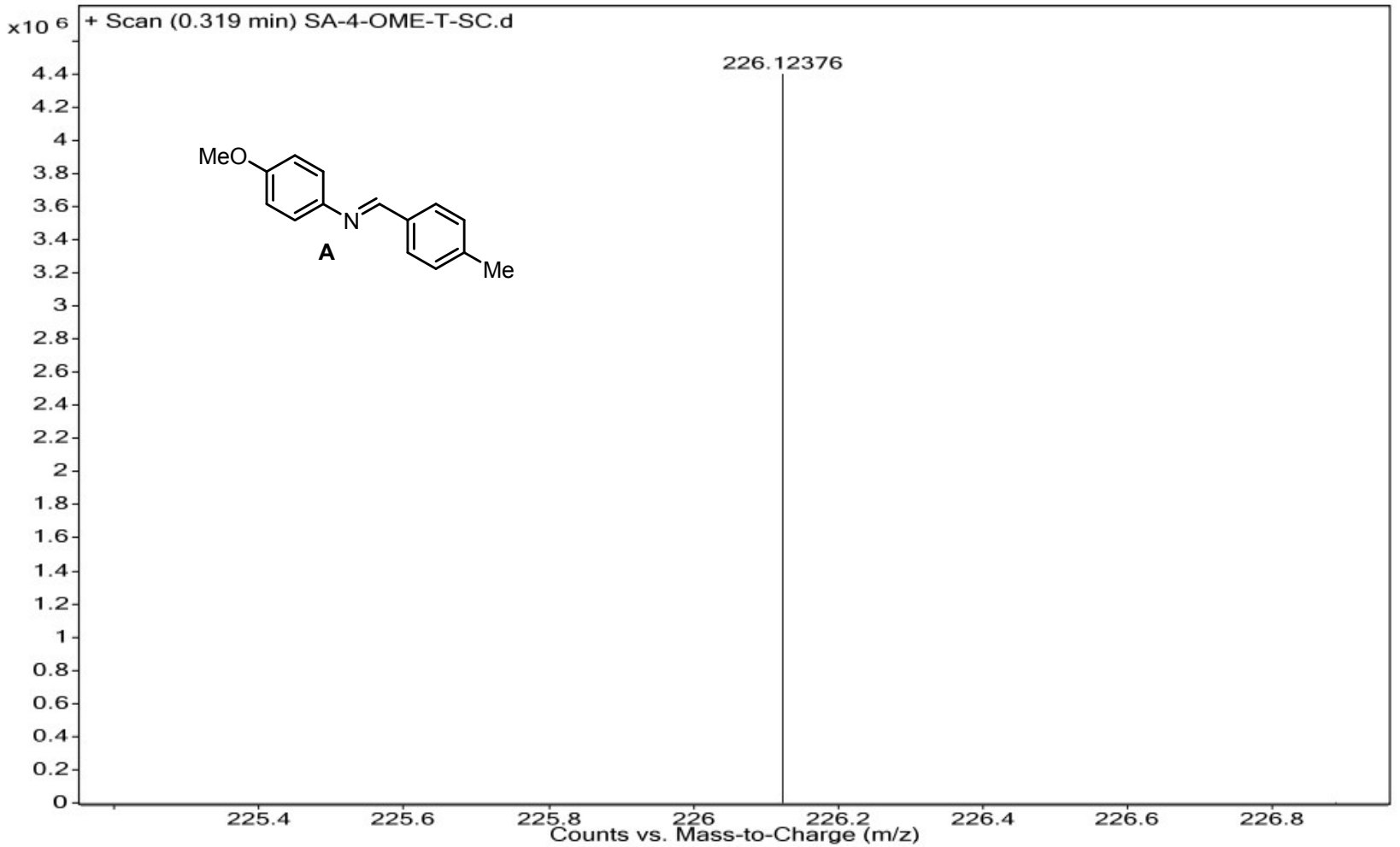


^{13}C NMR spectrum of intermediate: A



HRMS spectrum of intermediate: A

Sample Name	WASH	**Position**	P1-B8	**Instrument Name**	Instrument 1	**User Name**	
Inj Vol	20	**InjPosition**		**SampleType**	Sample	**IRM Calibration Status**	Success
Data Filename	SA-4-OME-T-SC.d	**ACQ Method**	ESI ALS 100-1000.m	**Comment**		**Acquired Time**	3/1/2021 1:09:38 PM



HRMS spectrum of intermediate: C

Sample Name	SA-IMP-1	**Position**	P1-C9	**Instrument Name**	Instrument 1	**User Name**	
Inj Vol	20	**InjPosition**		**SampleType**	Sample	**IRM Calibration Status**	Success
Data Filename	SA-IMP-1.d	**ACQ Method**	ESI ALS 100-2000-NEG	**Comment**		**Acquired Time**	3/2/2021 6:26:37 PM