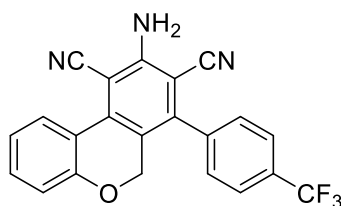
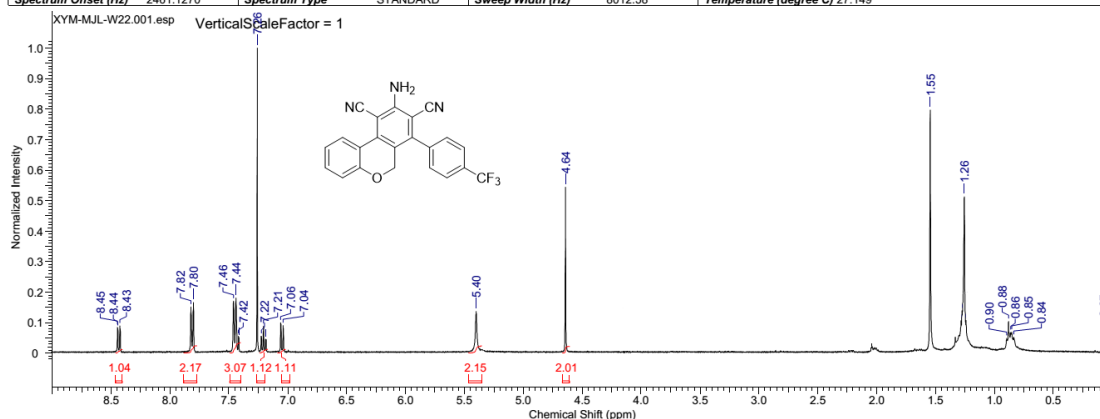


Spectral characterization data for 9-amino-7-(4-(trifluoromethyl)phenyl)-6H-benzo[*c*]chromene-8,10-dicarbonitrile derivatives

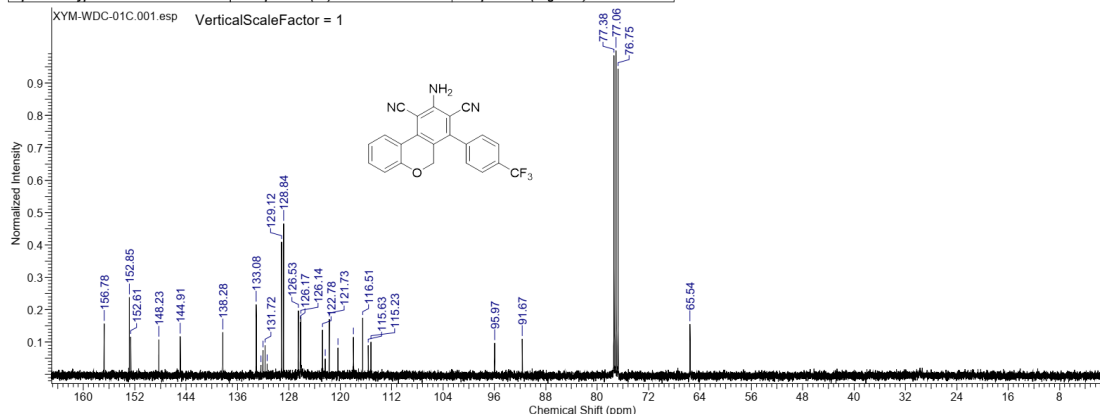


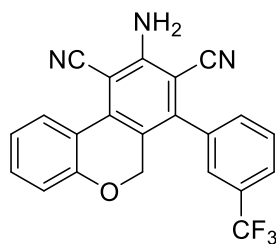
9-Amino-7-(4-(trifluoromethyl)phenyl)-6H-benzo[*c*]chromene-8,10-dicarbonitrile (**4a**): Yellow solid; ^1H NMR (400 MHz, CDCl_3): δ = 4.64 (s, 2H; CH_2), 5.40 (s, 2H; NH_2), 7.04-7.06 (m, 1H; Ar-H), 7.19-7.23 (m, 1H; Ar-H), 7.41-7.46 (m, 3H; Ar-H), 7.80-7.82 (m, 2H; Ar-H), 8.42-8.45 (m, 1H; Ar-H); ^{13}C NMR (100 MHz, CDCl_3) δ (ppm) 65.54, 91.67, 95.97, 115.23, 116.51, 119.04 (q, J = 224 Hz), 121.73, 122.78, 126.16 (q, J = 3.7 Hz), 126.53, 128.84, 129.12, 131.89 (q, J = 32.8 Hz), 133.08, 138.28, 144.91, 148.23, 152.61, 152.85, 156.78. HRMS (ESI) m/z calcd for $\text{C}_{22}\text{H}_{11}\text{F}_3\text{N}_3\text{O}$ [$\text{M}-\text{H}$] 390.0860, found 390.0869.

Acquisition Time (sec)	4.0894	Date	26 Jan 2019 09:12:32	Date Stamp	26 Jan 2019 09:12:32
File Name	D:\1\GI\12018\13-24\13-24\XYM-MJL-W22\XYM-MJL-W22\1.fid	Nucleus	^1H	Number of Transients	8
Frequency (MHz)	400.13	Owner	nmsu	Points Count	32768
Original Points Count	32768	SW(cyclical) (Hz)	8012.82	Solvent	CHLOROFORM-d
Receiver Gain	127.90	Spectrum Type	STANDARD	Sweep Width (Hz)	8012.58
Spectrum Offset (Hz)	2461.1270			Temperature (degree C)	27.149



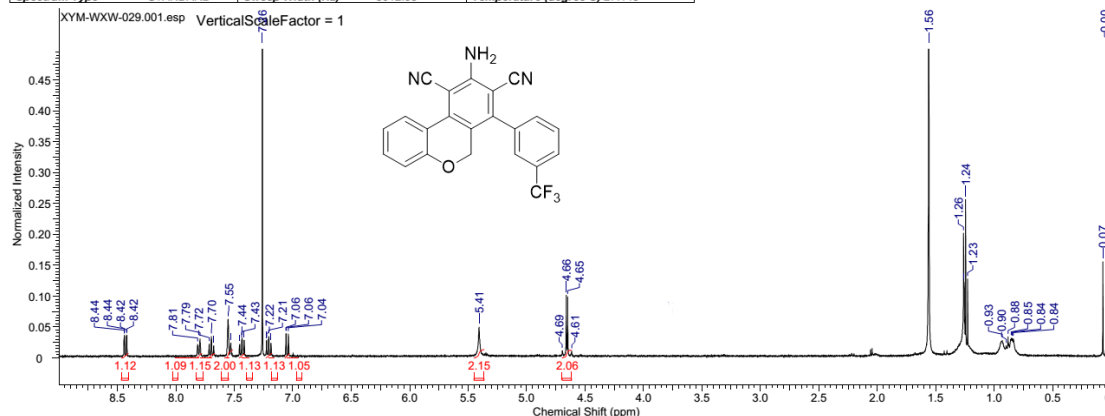
Acquisition Time (sec)	1.3631	Date	16 Apr 2021 09:46:40	Date Stamp	16 Apr 2021 09:46:40
File Name	D:\1\XYM-WDC-01C\1.fid	Nucleus	^{13}C	Frequency (MHz)	100.61
Owner	nmsu	Number of Transients	512	Original Points Count	32768
SW(cyclical) (Hz)	24038.46	Points Count	32768	Pulse Sequence	zgpg30
Spectrum Type	STANDARD	Solvent	CHLOROFORM-d	Receiver Gain	194.26
		Sweep Width (Hz)	24037.73	Spectrum Offset (Hz)	10060.8047
				Temperature (degree C)	25.053



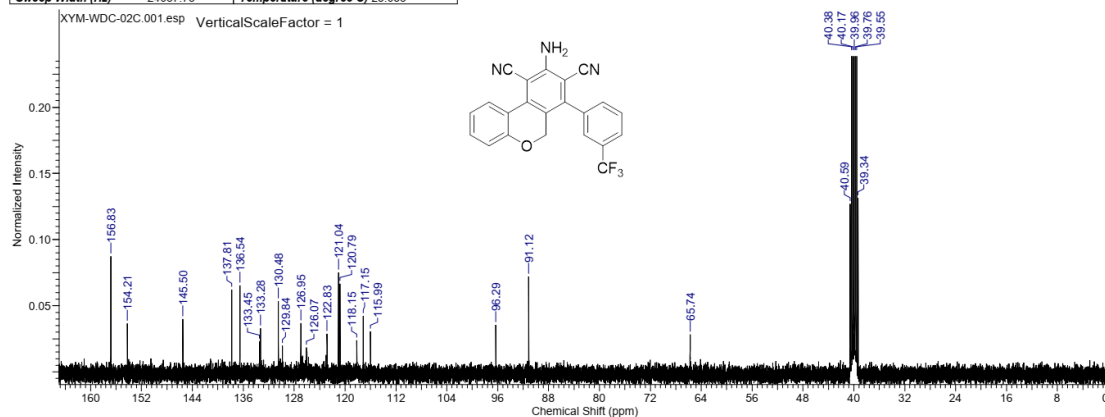


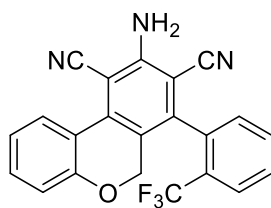
9-Amino-7-(3-(trifluoromethyl)phenyl)-6H-benzo[*c*]chromene-8,10-dicarbonitrile (**4b**): Pale yellow solid; ^1H NMR (400 MHz, CDCl_3): δ = 4.61-4.69 (m, 2H; CH_2), 5.41 (s, 2H; NH_2), 7.04-7.06 (m, 1H; Ar-H), 7.18-7.23 (m, 1H; Ar-H), 7.41-7.46 (m, 1H; Ar-H), 7.53-7.55 (m, 2H; Ar-H), 7.68-7.72 (m, 1H; Ar-H), 7.79-7.81 (m, 1H; Ar-H), 8.42-8.44 (m, 1H; Ar-H); ^{13}C NMR (100 MHz, $\text{DMSO}-d_6$) δ (ppm) 65.74, 91.12, 96.29, 115.99, 117.15, 118.15, 120.79, 121.04, 122.83, 126.07, 126.95, 129.84, 130.48, 133.28, 133.45, 136.54, 137.81, 145.50, 154.21, 156.83 (Coupling with F atom was eliminated). HRMS (ESI) m/z calcd for $\text{C}_{22}\text{H}_{11}\text{F}_3\text{N}_3\text{O}$ [$\text{M}-\text{H}$] 390.0860, found 390.0862.

Acquisition Time (sec)	4.0894	Date	25 Jan 2019 03:18:24	Date Stamp	25 Jan 2019 03:18:24
File Name	D:\1\G\12018\125-36\125-36\XYM-WXW-029\XYM-WXW-029\1.fid	Frequency (MHz)	400.13	Original Points Count	32768
Nucleus	^1H	Number of Transients	8	Origin	spect
Owner	nrmrsu	Points Count	32768	Pulse Sequence	zg30
SW(cyclical) (Hz)	8012.82	Solvent	CH_2Cl_2	Receiver Gain	142.60
Spectrum Type	STANDARD	Sweep Width (Hz)	8012.58	Temperature (degree C)	27.143
				Spectrum Offset (Hz)	2461.4956



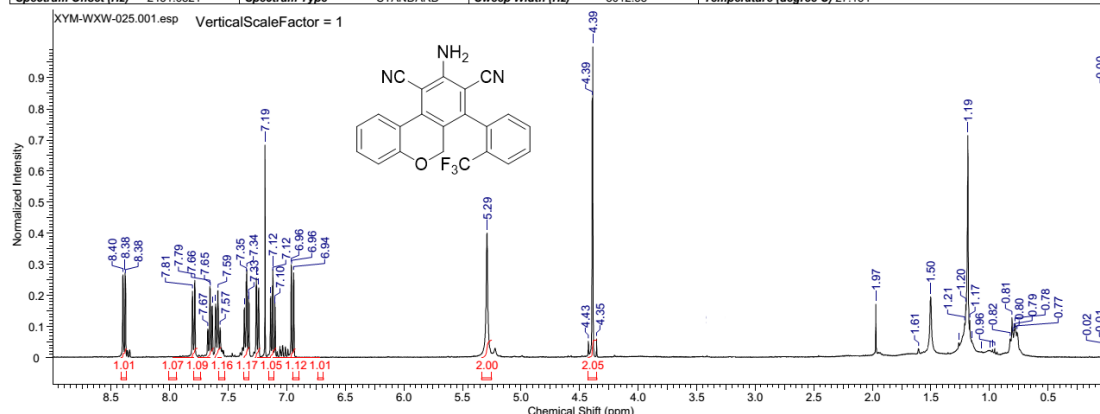
Acquisition Time (sec)	1.3631	Date	17 Apr 2021 21:05:04	Date Stamp	17 Apr 2021 21:05:04
File Name	D:\1\G\12018\125-36\125-36\XYM-WDC-02C\XYM-WDC-02C\1.fid	Frequency (MHz)	100.61	Original Points Count	32768
Nucleus	^{13}C	Number of Transients	512	Origin	spect
Owner	nrmrsu	Points Count	32768	Pulse Sequence	zgpg30
SW(cyclical) (Hz)	24038.46	Solvent	$\text{DMSO}-d_6$	Spectrum Offset (Hz)	10060.8047
Sweep Width (Hz)	24037.73	Temperature (degree C)	25.053	Spectrum Type	STANDARD



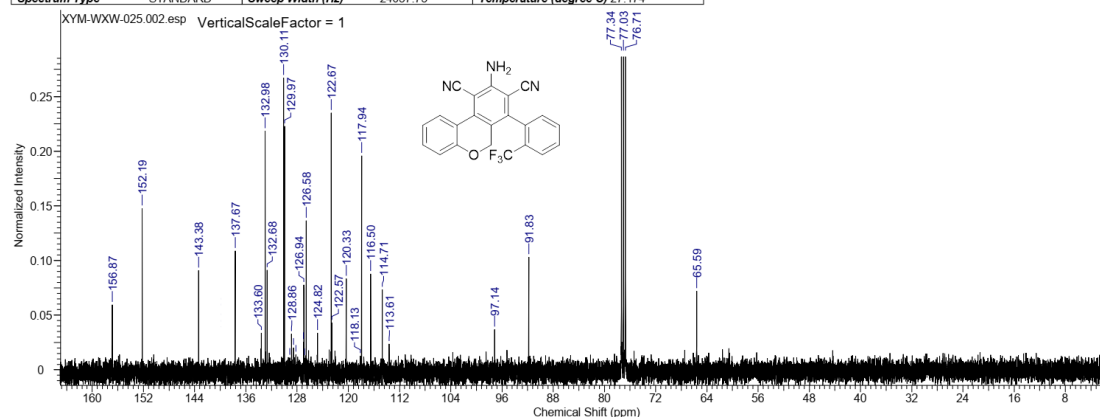


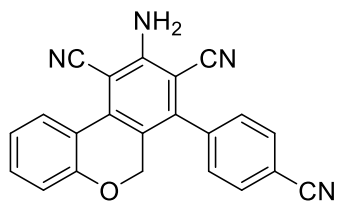
9-Amino-7-(2-(trifluoromethyl)phenyl)-6H-benzo[*c*]chromene-8,10-dicarbonitrile (**4c**): Pale yellow solid; ¹H NMR (400 MHz, CDCl₃): δ = 4.35-4.43 (m, 2H; CH₂), 5.29 (s, 2H; NH₂), 6.94-6.96 (m, 1H; Ar-H), 7.10-7.14 (m, 1H; Ar-H), 7.24-7.26 (m, 1H; Ar-H), 7.32-7.37 (m, 1H; Ar-H), 7.57-7.61 (m, 1H; Ar-H), 7.64-7.67 (m, 1H; Ar-H), 7.79-7.81 (m, 1H; Ar-H), 8.38-8.40 (m, 1H; Ar-H); ¹³C NMR (100 MHz, CDCl₃) δ (ppm) 65.59, 91.83, 97.14, 113.61, 114.71, 116.50, 117.94, 121.45 (q, *J* = 224 Hz), 122.67, 126.58, 126.91 (q, *J* = 5.1 Hz), 128.71 (q, *J* = 30.6 Hz), 129.97, 130.11, 132.68, 132.98, 133.60, 137.67, 143.38, 152.19, 156.87. HRMS (ESI) *m/z* calcd for C₂₂H₁₁F₃N₃O [M-H]⁻ 390.0860, found 390.0866.

Acquisition Time (sec)	4.0894	Date	24 Jan 2019 14:00:32	Date Stamp	24 Jan 2019 14:00:32
File Name	D:\1\G\2018\WDC\WDC\XYM-WXW-025\XYM-WXW-025\1\fid	Nucleus	1H	Number of Transients	8
Frequency (MHz)	400.13	Owner	nmrsu	Points Count	32768
Original Points Count	32768	SW(cyclical) (Hz)	8012.82	Solvent	CHLOROFORM-d
Receiver Gain	70.36	Spectrum Type	STANDARD	Sweep Width (Hz)	8012.58
Spectrum Offset (Hz)	2431.6821			Temperature (degree C)	27.134



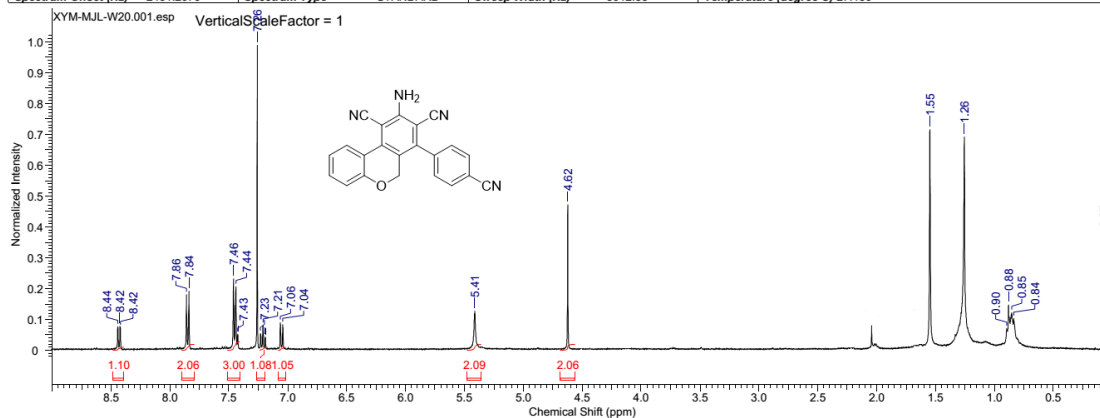
Acquisition Time (sec)	1.3631	Date	24 Jan 2019 14:32:32	Date Stamp	24 Jan 2019 14:32:32
File Name	D:\1\G\2018\WDC\WDC\XYM-WXW-025\XYM-WXW-025\2\fid	Nucleus	13C	Number of Transients	512
Frequency (MHz)	100.61	Owner	nmrsu	Points Count	32768
Original Points Count	32768	SW(cyclical) (Hz)	24038.46	Solvent	CHLOROFORM-d
Receiver Gain	194.26	Spectrum Type	STANDARD	Sweep Width (Hz)	24037.73
Spectrum Offset (Hz)	10060.8047			Temperature (degree C)	27.174



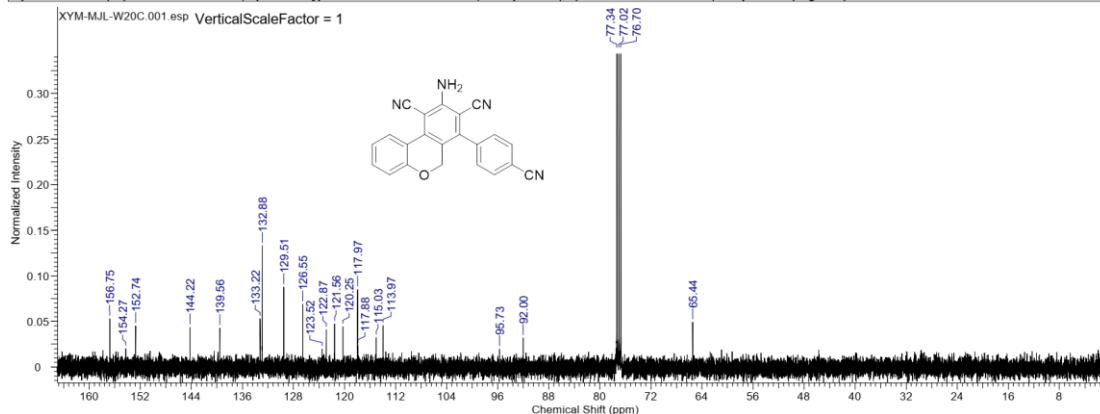


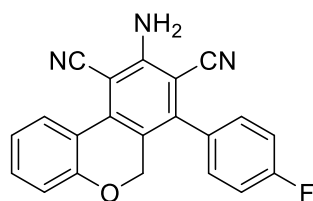
9-Amino-7-(4-cyanophenyl)-6H-benzo[*c*]chromene-8,10-dicarbonitrile (**4d**): Pale yellow solid; ¹H NMR (400 MHz, CDCl₃): δ = 4.62 (s, 2H; CH₂), 5.41 (s, 2H; NH₂), 7.04-7.06 (m, 1H; Ar-H), 7.19-7.23 (m, 1H; Ar-H), 7.42-7.46 (m, 3H; Ar-H), 7.84-7.86 (m, 2H; Ar-H), 8.42-8.44 (m, 1H; Ar-H); ¹³C NMR (100 MHz, CDCl₃) δ (ppm) 65.44, 92.00, 95.73, 113.97, 115.03, 117.88, 117.97, 120.25, 121.56, 122.87, 123.52, 126.55, 129.51, 132.88, 133.22, 139.56, 144.22, 152.74, 154.27, 156.75. HRMS (ESI) *m/z* calcd for C₂₂H₁₁N₄O [M-H]⁻ 347.0938, found 347.0944.

Acquisition Time (sec)	4.0894	Date	26 Jan 2019 07:04:32	Date Stamp	26 Jan 2019 07:04:32
File Name	D:\1\2018\113-24\113-24\XYM-MJL-W20\XYM-MJL-W20\11fid	Nucleus	1H	Number of Transients	8
Frequency (MHz)	400.13	Owner	nmrsu	Points Count	32768
Original Points Count	32768	SW(cyclical) (Hz)	8012.82	Solvent	CHLOROFORM-d
Receiver Gain	127.90	Spectrum Type	STANDARD	Sweep Width (Hz)	8012.58
Spectrum Offset (Hz)	2461.2070			Temperature (degree C)	27.150



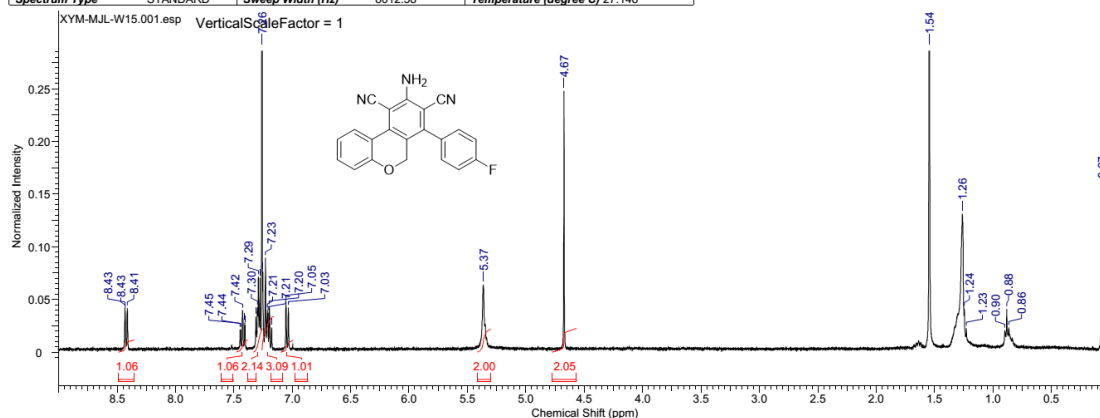
Acquisition Time (sec)	1.3631	Date	23 Feb 2019 18:46:24	Date Stamp	23 Feb 2019 18:46:24
File Name	D:\1\2018\113-24\113-24\XYM-MJL-W20\XYM-MJL-W20\11fid	Nucleus	13C	Number of Transients	512
Frequency (MHz)	100.61	Owner	nmrsu	Points Count	32768
Original Points Count	32768	SW(cyclical) (Hz)	24038.46	Solvent	CHLOROFORM-d
Receiver Gain	194.26	Spectrum Type	STANDARD	Sweep Width (Hz)	24037.73
Spectrum Offset (Hz)	10060.8047			Temperature (degree C)	27.649



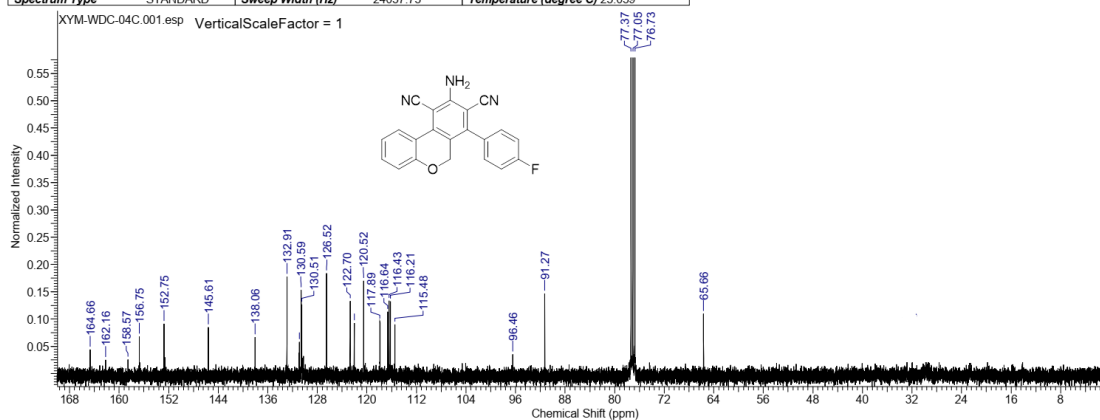


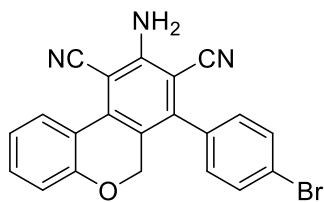
9-Amino-7-(4-fluorophenyl)-6H-benzo[*c*]chromene-8,10-dicarbonitrile (**4e**): Pale yellow solid; ¹H NMR (400 MHz, CDCl₃): δ = 4.67 (s, 2H; CH₂), 5.37 (s, 2H; NH₂), 7.03-7.05 (m, 1H; Ar-H), 7.18-7.25 (m, 3H; Ar-H), 7.28-7.31 (m, 2H; Ar-H), 7.40-7.45 (m, 1H; Ar-H), 8.41-8.43 (m, 1H; Ar-H); ¹³C NMR (100 MHz, CDCl₃) δ (ppm) 65.66, 91.27, 96.46, 115.48, 116.32 (d, *J* = 21.8 Hz), 116.64, 117.89, 120.52, 122.05, 122.70, 126.52, 130.55 (d, *J* = 8.7 Hz), 130.92 (d, *J* = 2.9 Hz), 132.91, 138.06, 145.61, 152.75, 156.75, 158.57, 163.41 (d, *J* = 249.4 Hz). HRMS (ESI) *m/z* calcd for C₂₁H₁₁FN₃O [M-H]⁻ 340.0892, found 340.0902.

Acquisition Time (sec)	4.0894	Date	25 Jan 2019 06:47:28	Date Stamp	25 Jan 2019 06:47:28
File Name	D:\1\2018\WDC13-24\XYM-MJL-W151\1fid	File Name	D:\1\2018\WDC13-24\XYM-MJL-W151\1fid	Frequency (MHz)	400.13
Nucleus	¹ H	Number of Transients	8	Origin	spect
Owner	nmsu	Points Count	32768	Pulse Sequence	zg30
SW(cyclical) (Hz)	8012.82	Solvent	CHLOROFORM-d	Receiver Gain	127.90
Spectrum Type	STANDARD	Sweep Width (Hz)	8012.58	Temperature (degree C)	27.148
				Spectrum Offset (Hz)	2461.0752



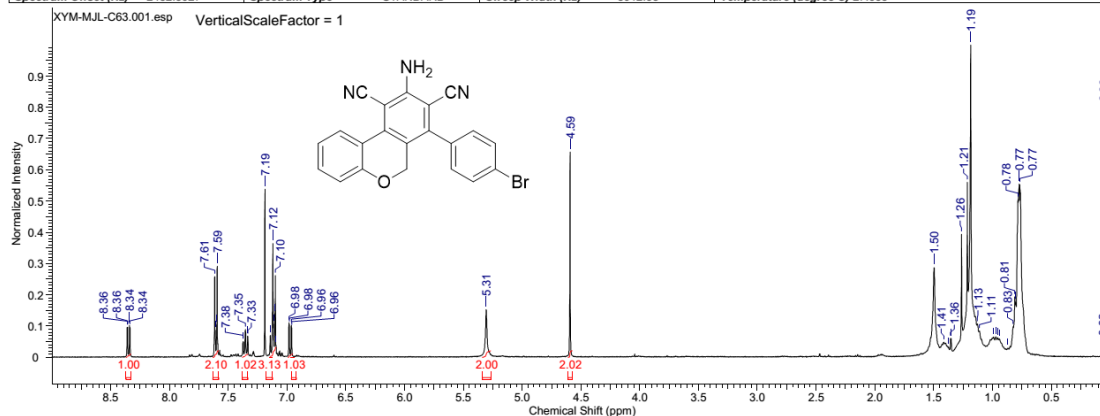
Acquisition Time (sec)	1.3631	Date	18 Apr 2021 09:36:00	Date Stamp	18 Apr 2021 09:36:00
File Name	D:\1\2021\XYM-WDC-04C\XYM-WDC-04C1\1fid	File Name	D:\1\2021\XYM-WDC-04C\XYM-WDC-04C1\1fid	Frequency (MHz)	100.61
Nucleus	¹³ C	Number of Transients	512	Origin	spect
Owner	nmsu	Points Count	32768	Pulse Sequence	zgpg30
SW(cyclical) (Hz)	24038.46	Solvent	CHLOROFORM-d	Receiver Gain	194.26
Spectrum Type	STANDARD	Sweep Width (Hz)	24037.73	Temperature (degree C)	25.039
				Spectrum Offset (Hz)	10060.8047



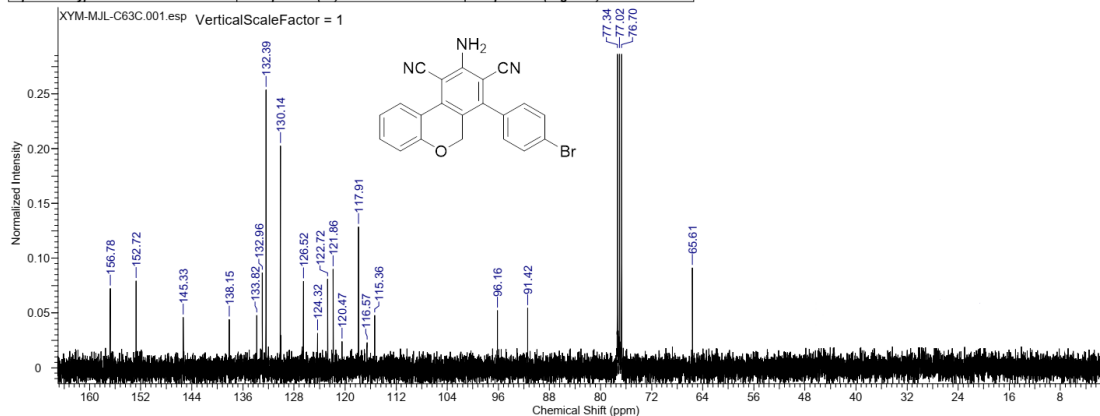


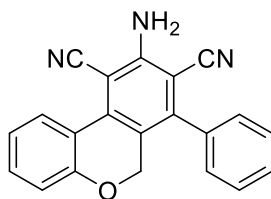
9-Amino-7-(4-bromophenyl)-6H-benzo[*c*]chromene-8,10-dicarbonitrile (**4f**): Pale yellow solid; ¹H NMR (400 MHz, CDCl₃): δ = 4.59 (s, 2H; CH₂), 5.31 (s, 2H; NH₂), 6.96-6.98 (m, 1H; Ar-H), 7.10-7.14 (m, 3H; Ar-H), 7.33-7.38 (m, 1H; Ar-H), 7.59-7.61 (m, 2H; Ar-H), 8.34-8.36 (m, 1H; Ar-H); ¹³C NMR (100 MHz, CDCl₃) δ (ppm) 65.61, 91.42, 96.16, 115.36, 116.57, 117.91, 120.47, 121.86, 122.72, 124.32, 126.52, 130.14, 132.39, 132.96, 133.82, 138.15, 145.33, 152.72, 156.78. HRMS (ESI) *m/z* calcd for C₂₁H₁₁BrN₃O [M-H]⁻ 400.0091, found 400.0096.

Acquisition Time (sec)	4.0894	Date	01 Nov 2019 01:04:00	Date Stamp	01 Nov 2019 01:04:00
File Name	D:\G\2018\XYM-MJL-C63\XYM-MJL-C6311.fid	File Name	D:\G\2018\XYM-MJL-C63\XYM-MJL-C6311.fid	File Name	D:\G\2018\XYM-MJL-C63\XYM-MJL-C6311.fid
Frequency (MHz)	400.13	Nucleus	¹ H	Number of Transients	8
Original Points Count	32768	Owner	nmsru	Points Count	32768
Receiver Gain	70.36	SW(cyclical) (Hz)	8012.82	Solvent	CHLOROFORM-d
Spectrum Offset (Hz)	2432.5027	Spectrum Type	STANDARD	Sweep Width (Hz)	8012.58
				Temperature (degree C)	27.655



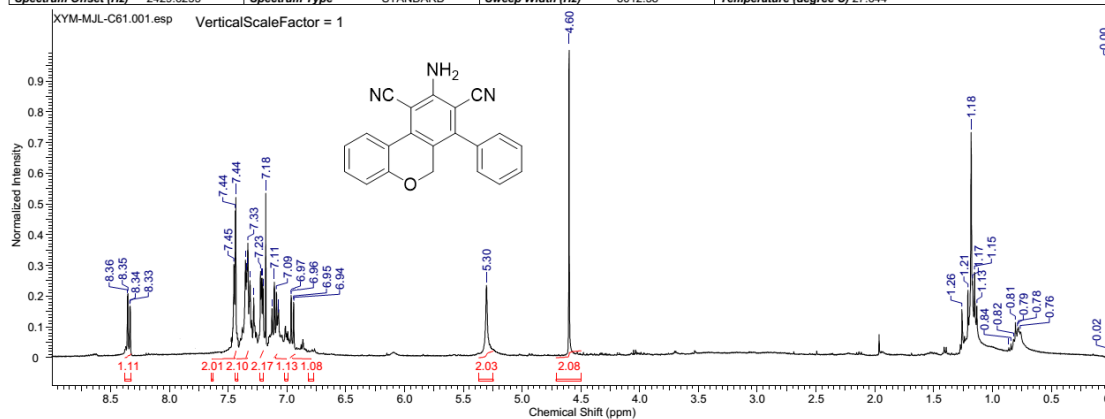
Acquisition Time (sec)	1.3631	Date	16 Nov 2019 10:10:08	Date Stamp	16 Nov 2019 10:10:08
File Name	D:\G\WDC-C\WDC-C\XYM-MJL-C63C\XYM-MJL-C63C11.fid	File Name	D:\G\WDC-C\WDC-C\XYM-MJL-C63C\XYM-MJL-C63C11.fid	File Name	D:\G\WDC-C\WDC-C\XYM-MJL-C63C\XYM-MJL-C63C11.fid
Nucleus	¹³ C	Number of Transients	470	Origin	spect
Owner	nmsru	Points Count	32768	Pulse Sequence	zgpg30
SW(cyclical) (Hz)	24038.46	Solvent	CHLOROFORM-d	Receiver Gain	194.26
Spectrum Type	STANDARD	Sweep Width (Hz)	24037.73	Temperature (degree C)	27.652
				Spectrum Offset (Hz)	10060.8047



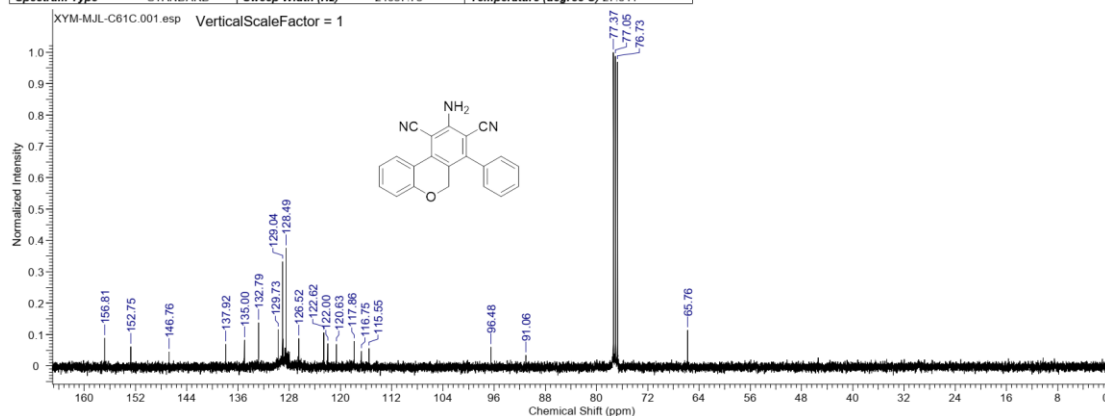


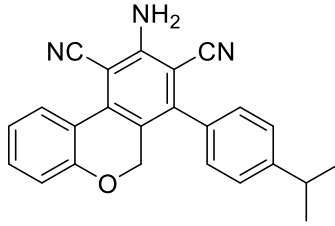
9-Amino-7-phenyl-6H-benzo[*c*]chromene-8,10-dicarbonitrile (**4g**): Yellow solid; ^1H NMR (400 MHz, CDCl_3): δ = 4.60 (s, 2H; CH_2), 5.30 (s, 2H; NH_2), 6.94-6.97 (m, 1H; Ar-H), 7.07-7.13 (m, 1H; Ar-H), 7.20-7.23 (m, 2H; Ar-H), 7.31-7.35 (m, 2H; Ar-H), 7.44-7.45 (m, 2H; Ar-H), 8.33-8.36 (m, 1H; Ar-H); ^{13}C NMR (100 MHz, CDCl_3) δ (ppm) 65.76, 91.06, 96.48, 115.55, 116.75, 117.86, 120.63, 122.00, 122.62, 126.52, 128.49, 129.04, 129.73, 132.79, 135.00, 137.92, 146.76, 152.75, 156.81. HRMS (ESI) m/z calcd for $\text{C}_{21}\text{H}_{12}\text{N}_3\text{O}$ $[\text{M}-\text{H}]^-$ 322.0986, found 322.0991.

Acquisition Time (sec)	4.0894	Date	31 Oct 2019 15:30:08	Date Stamp	31 Oct 2019 15:30:08
File Name	D:\1\GI\2018\1\2\1\XYM-MJL-C61\XYM-MJL-C611.fid	Nucleus	^1H	Number of Transients	8
Frequency (MHz)	400.13	Owner	nmsu	Points Count	32768
Original Points Count	32768	SW(cyclical) (Hz)	8012.82	Solvent	CHLOROFORM-d
Receiver Gain	70.36	Spectrum Type	STANDARD	Sweep Width (Hz)	8012.58
Spectrum Offset (Hz)	2429.6255	Temperature (degree C)	27.644		



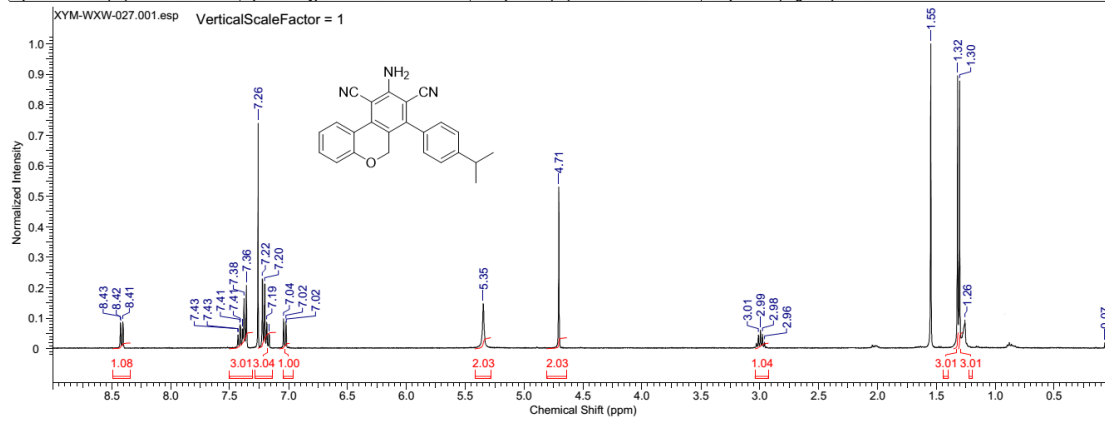
Acquisition Time (sec)	1.3631	Date	10 Nov 2019 09:23:12	Date Stamp	10 Nov 2019 09:23:12
File Name	D:\1\GI\WDC-C\WDC-C\XYM-MJL-C61\XYM-MJL-C611.fid	Nucleus	^{13}C	Number of Transients	512
Frequency (MHz)	100.61	Owner	nmsu	Points Count	32768
Original Points Count	32768	SW(cyclical) (Hz)	24038.46	Solvent	CHLOROFORM-d
Receiver Gain	194.26	Spectrum Type	STANDARD	Sweep Width (Hz)	24037.73
Spectrum Offset (Hz)	10060.8047	Temperature (degree C)	27.641		



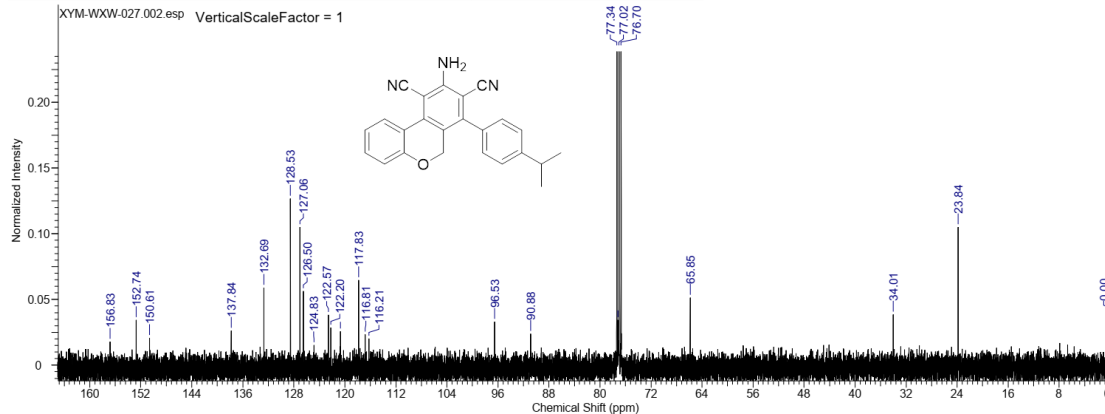


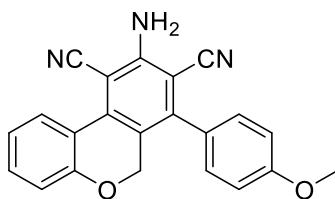
9-Amino-7-(4-isopropylphenyl)-6H-benzo[*c*]chromene-8,10-dicarbonitrile (**4h**): Pale yellow solid; ¹H NMR (400 MHz, CDCl₃): δ = 1.31 (d, *J* = 8 Hz, 6H; 2CH₃), 2.96-3.03 (m, 1H; CH), 4.71 (s, 2H; CH₂), 5.35 (s, 2H; NH₂), 7.02-7.04 (m, 1H; Ar-H), 7.16-7.22 (m, 3H; Ar-H), 7.36-7.43 (m, 3H; Ar-H), 8.40-8.43 (m, 1H; Ar-H); ¹³C NMR (100 MHz, CDCl₃) δ (ppm) 23.84, 34.01, 65.85, 90.88, 96.53, 116.21, 116.81, 117.83, 120.71, 122.20, 122.57, 124.83, 126.50, 127.06, 128.53, 132.69, 137.84, 150.61, 152.74, 156.83. HRMS (ESI) *m/z* calcd for C₂₄H₁₈N₃O [M-H]⁻ 364.1455, found 364.1446.

Acquisition Time (sec)	4.0894	Date	25 Jan 2019 02:08:00	Date Stamp	25 Jan 2019 02:08:00
File Name	D:\G\2018\25-36\25-36XYM-WXW-027\XYM-WXW-0271.fid				
Frequency (MHz)	400.13	Nucleus	1H	Number of Transients	8
Original Points Count	32768	Owner	nmsu	Points Count	32768
Receiver Gain	127.90	SW(cyclical) (Hz)	8012.82	Solvent	CHLOROFORM-d
Spectrum Offset (Hz)	2461.0674	Spectrum Type	STANDARD	Sweep Width (Hz)	8012.58
				Temperature (degree C)	27.149



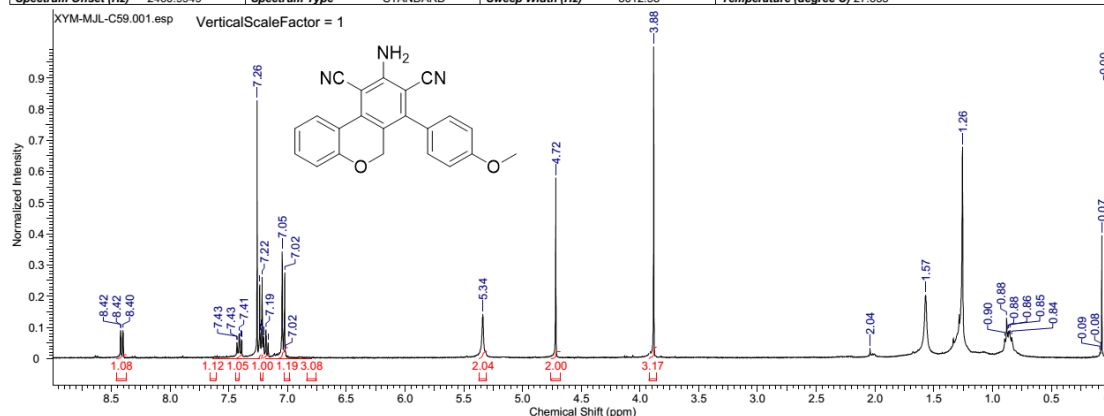
Acquisition Time (sec)	1.3631	Date	25 Jan 2019 02:37:52	Date Stamp	25 Jan 2019 02:37:52	
File Name	D:\G\2018\WDC\WDC\XYM-WXW-027\XYM-WXW-0272.fid					
Nucleus	13C	Number of Transients	512	Origin	spect	
Owner	nmsu	Points Count	32768	Pulse Sequence	zpgp30	
SW(cyclical) (Hz)	24038.46	Solvent	CHLOROFORM-d	Original Points Count	32768	
Spectrum Type	STANDARD	Sweep Width (Hz)	24037.73	Receiver Gain	194.26	
			Temperature (degree C)	27.152	Spectrum Offset (Hz)	10060.8047



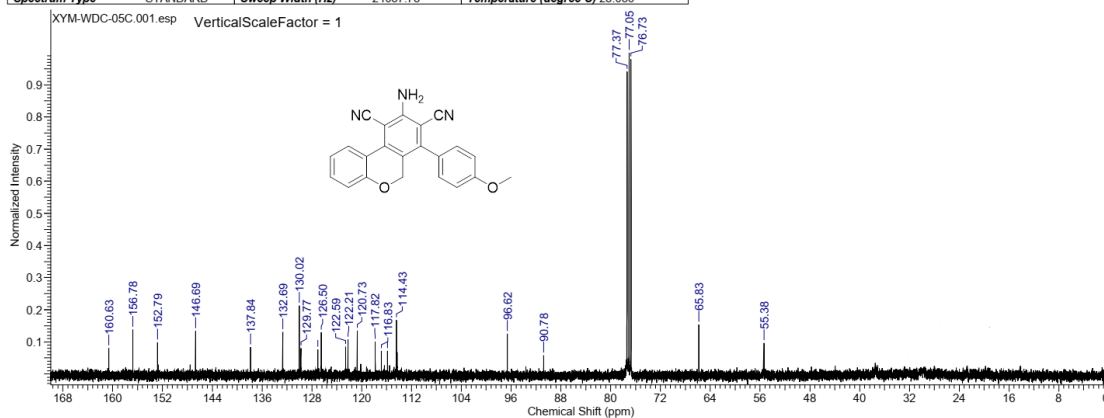


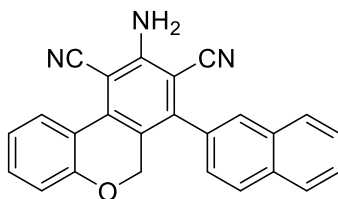
9-Amino-7-(4-methoxyphenyl)-6H-benzo[c]chromene-8,10-dicarbonitrile (**4i**): Yellow solid; ^1H NMR (400 MHz, CDCl_3): δ = 3.88 (s, 3H; OCH_3), 4.72 (s, 2H; CH_2), 5.34 (s, 2H; NH_2), 7.02-7.05 (m, 3H; Ar-H), 7.16-7.21 (m, 1H; Ar-H), 7.22-7.24 (m, 2H; Ar-H), 7.39-7.43 (m, 1H; Ar-H), 8.40-8.42 (m, 1H; Ar-H); ^{13}C NMR (100 MHz, CDCl_3) δ (ppm) 55.38, 65.83, 90.78, 96.62, 114.43, 115.84, 116.83, 117.82, 120.73, 122.21, 122.59, 126.50, 127.04, 129.77, 130.02, 132.69, 137.84, 146.69, 152.79, 156.78, 160.63. HRMS (ESI) m/z calcd for $\text{C}_{22}\text{H}_{14}\text{N}_3\text{O}_2$ $[\text{M}-\text{H}]^-$ 352.1092, found 352.1102.

Acquisition Time (sec)	4.0894	Date	30 Oct 2019 20:28:48	Date Stamp	30 Oct 2019 20:28:48
File Name	D:\G\12018\ (2)\XYM-MJL-C59\XYM-MJL-C59\11fid	Nucleus	^1H	Number of Transients	8
Frequency (MHz)	400.13	Owner	nmsu	Points Count	32768
Original Points Count	32768	SW(cyclical) (Hz)	8012.82	Solvent	CHLOROFORM-d
Receiver Gain	127.90	Spectrum Type	STANDARD	Sweep Width (Hz)	8012.58
Spectrum Offset (Hz)	2460.9949	Temperature (degree C)	27.655		



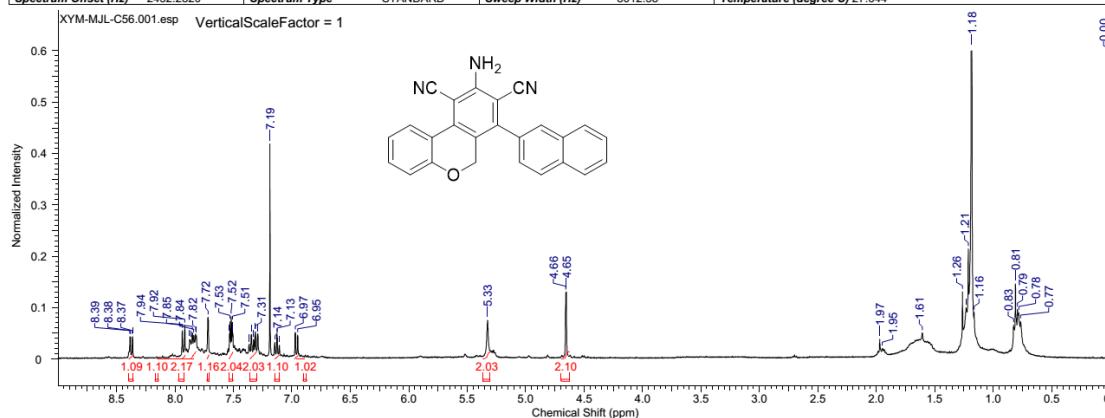
Acquisition Time (sec)	1.3631	Date	19 Apr 2021 10:35:44	Date Stamp	19 Apr 2021 10:35:44
File Name	D:\G\XYM-WDC-05C\XYM-WDC-05C\11fid	Nucleus	^{13}C	Frequency (MHz)	100.61
Owner	nmsu	Number of Transients	512	Original Points Count	32768
SW(cyclical) (Hz)	24038.46	Points Count	32768	Pulse Sequence	zpgq30
Spectrum Type	STANDARD	Solvent	CHLOROFORM-d	Receiver Gain	194.26
		Sweep Width (Hz)	24037.73	Spectrum Offset (Hz)	10060.8047
		Temperature (degree C)	25.036		



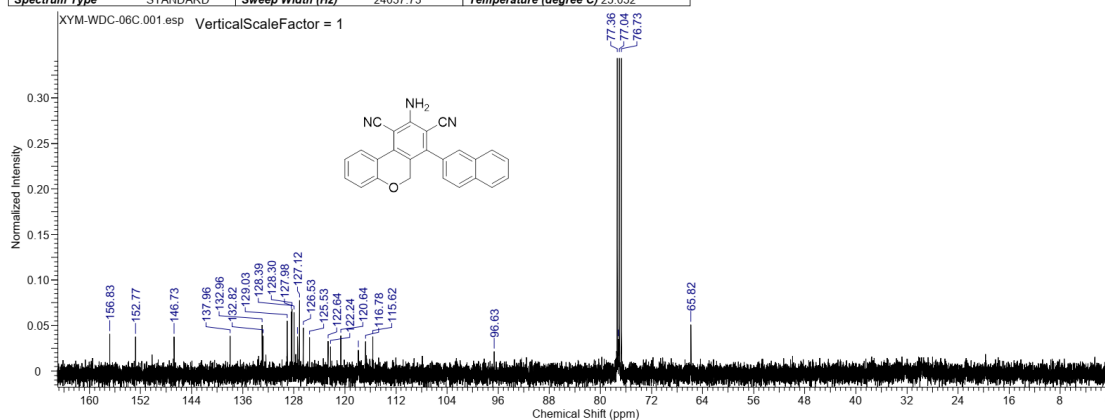


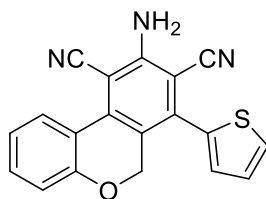
9-Amino-7-(naphthalen-2-yl)-6H-benzo[*c*]chromene-8,10-dicarbonitrile (**4j**): Pale yellow solid; ¹H NMR (400 MHz, CDCl₃): δ = 4.65-4.66 (m, 2H; CH₂), 5.33 (s, 2H; NH₂), 6.95-6.97 (m, 1H; Ar-H), 7.11-7.14 (m, 1H; Ar-H), 7.29-7.37 (m, 2H; Ar-H), 7.50-7.53 (m, 2H; Ar-H), 7.72 (s, 1H; Ar-H), 7.82-7.87 (m, 2H; Ar-H), 7.92-7.94 (m, 1H; Ar-H), 8.36-8.39 (m, 1H; Ar-H); ¹³C NMR (100 MHz, CDCl₃) δ (ppm) 65.82, 96.63, 115.62, 116.78, 117.88, 120.64, 122.24, 122.64, 125.53, 126.53, 127.12, 127.40, 127.98, 128.30, 128.39, 129.03, 132.82, 132.96, 137.96, 146.73, 152.77, 156.83. HRMS (ESI) *m/z* calcd for C₂₅H₁₄N₃O [M-H]⁻ 372.1142, found 372.1148.

Acquisition Time (sec)	4.0894	Date	30 Oct 2019 20:16:00	Date Stamp	30 Oct 2019 20:16:00
File Name	D:\G\2018\ (2)\XYM-MJL-C56\XYM-MJL-C56\1.fid	Nucleus	¹ H	Number of Transients	8
Frequency (MHz)	400.13	Owner	nmsu	Points Count	32768
Original Points Count	32768	SW(cyclical) (Hz)	8012.82	Solvent	CHLOROFORM-d
Receiver Gain	70.36	Spectrum Type	STANDARD	Sweep Width (Hz)	8012.58
Spectrum Offset (Hz)	2432.2820	Temperature (degree C)	27.644		



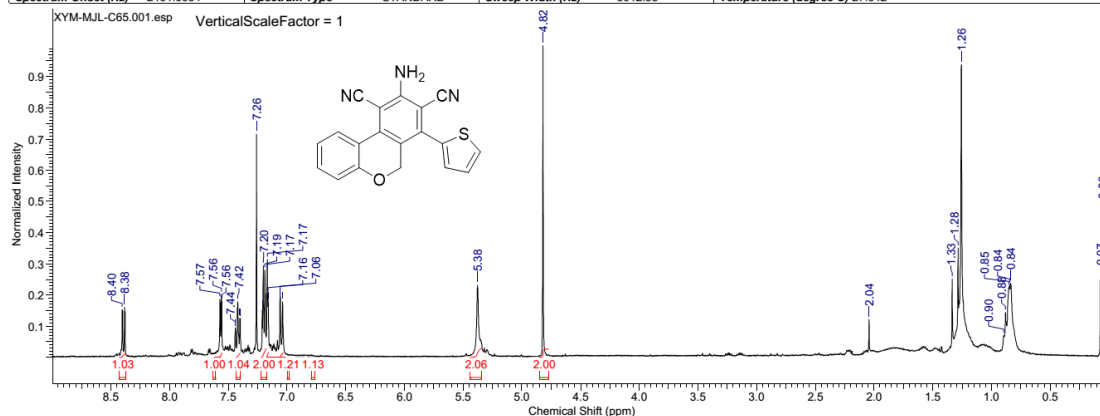
Acquisition Time (sec)	1.3631	Date	18 Apr 2021 11:09:52	Date Stamp	18 Apr 2021 11:09:52
File Name	D:\G\XYM-WDC-06C\XYM-WDC-06C\1.fid	Nucleus	¹³ C	Number of Transients	512
Frequency (MHz)	100.61	Owner	nmsu	Points Count	32768
Original Points Count	32768	SW(cyclical) (Hz)	24038.46	Solvent	CHLOROFORM-d
Receiver Gain	194.26	Spectrum Type	STANDARD	Sweep Width (Hz)	24037.73
Spectrum Offset (Hz)	10060.8047	Temperature (degree C)	25.052		



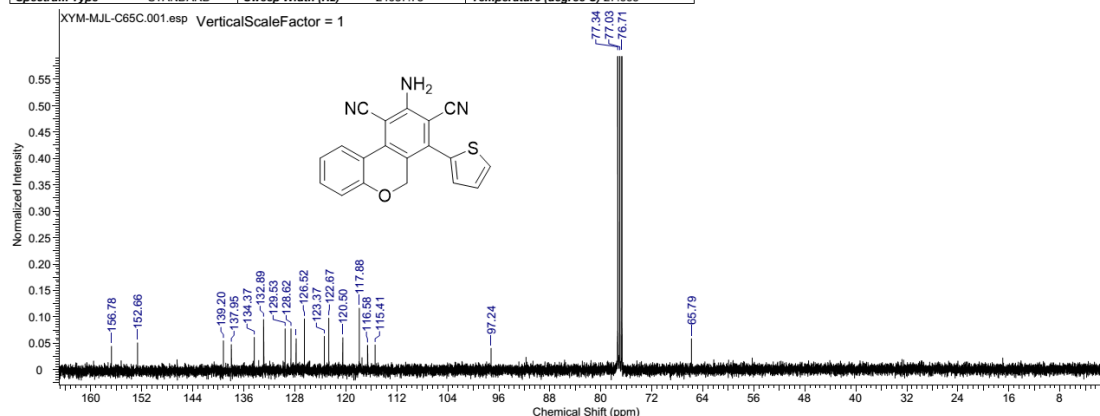


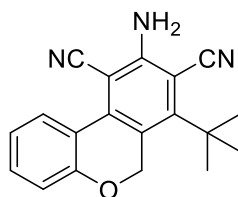
9-Amino-7-(thiophen-2-yl)-6H-benzo[*c*]chromene-8,10-dicarbonitrile (**4k**): Tawny fawn solid; ^1H NMR (400 MHz, CDCl_3): δ = 4.82 (s, 2H; CH_2), 5.38 (s, 2H; NH_2), 7.04-7.06 (m, 1H; Ar-H), 7.16-7.21 (m, 3H; Ar-H), 7.40-7.44 (m, 1H; Ar-H), 7.56-7.57 (m, 1H; Ar-H), 8.38-8.40 (m, 1H; Ar-H); ^{13}C NMR (100 MHz, CDCl_3) δ (ppm) 65.79, 97.24, 115.41, 116.58, 117.88, 120.50, 122.67, 123.37, 126.52, 127.82, 128.62, 129.53, 132.89, 134.37, 137.95, 139.20, 152.66, 156.78. HRMS (ESI) m/z calcd for $\text{C}_{19}\text{H}_{10}\text{N}_3\text{OS}$ [$\text{M}-\text{H}$] $^-$ 328.0550, found 328.0559.

Acquisition Time (sec)	4.0894	Date	01 Nov 2019 01:12:32	Date Stamp	01 Nov 2019 01:12:32
File Name	D:\1\G\2018\1\2\1\XYM-MJL-C65\XYM-MJL-C65\1.fid	Nucleus	^1H	Number of Transients	8
Frequency (MHz)	400.13	Owner	nmrsu	Points Count	32768
Original Points Count	32768	SW(cyclical) (Hz)	8012.82	Solvent	CHLOROFORM-d
Receiver Gain	70.36	Spectrum Type	STANDARD	Sweep Width (Hz)	8012.58
Spectrum Offset (Hz)	2461.0034	Temperature (degree C)	27.642		



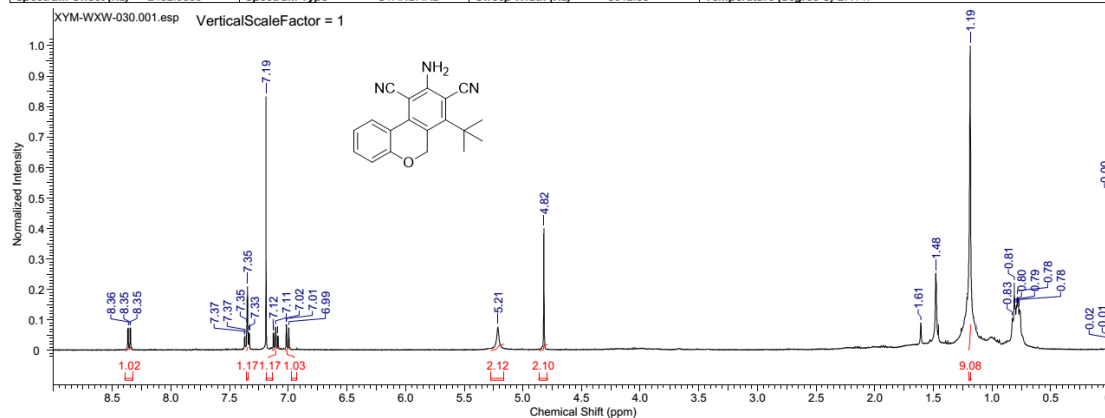
Acquisition Time (sec)	1.3631	Date	16 Nov 2019 11:09:52	Date Stamp	16 Nov 2019 11:09:52
File Name	D:\1\G\WDC-C\WDC-C\XYM-MJL-C65C\XYM-MJL-C65C\1.fid	Nucleus	^{13}C	Number of Transients	512
Frequency (MHz)	100.61	Owner	nmrsu	Points Count	32768
Original Points Count	32768	SW(cyclical) (Hz)	24038.46	Solvent	CHLOROFORM-d
Receiver Gain	194.26	Spectrum Type	STANDARD	Sweep Width (Hz)	24037.73
Spectrum Offset (Hz)	10060.8047	Temperature (degree C)	27.665		



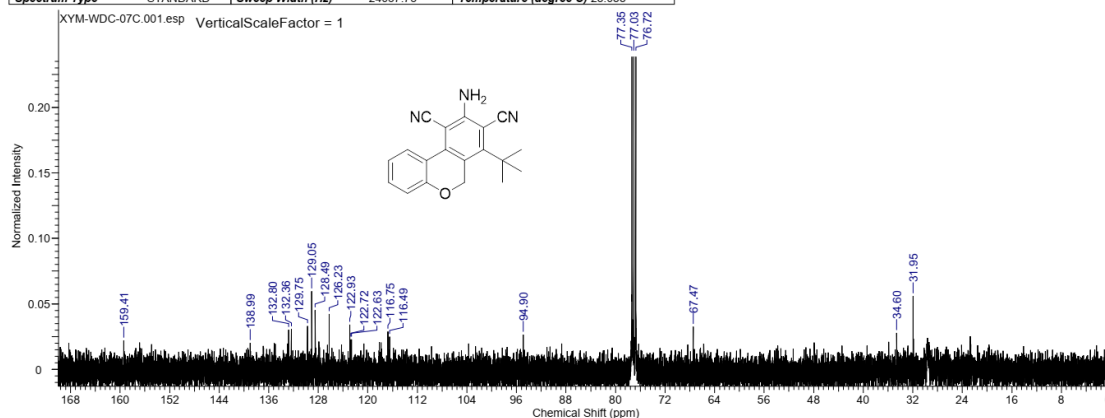


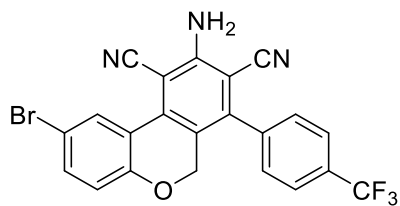
9-Amino-7-(*tert*-butyl)-6*H*-benzo[*c*]chromene-8,10-dicarbonitrile (**4I**): Pale yellow solid; ^1H NMR (400 MHz, CDCl_3): δ = 1.19 (s, 9H; 3 CH_3), 4.82 (s, 2H; CH_2), 5.21 (s, 2H; NH_2), 6.99-7.02 (m, 1H; Ar-H), 7.09-7.12 (m, 1H; Ar-H), 7.33-7.37 (m, 1H; Ar-H), 8.35-8.36 (m, 1H; Ar-H); ^{13}C NMR (100 MHz, CDCl_3) δ (ppm) 31.95, 34.60, 67.47, 94.90, 116.49, 116.75, 122.63, 122.72, 122.93, 126.23, 128.49, 129.05, 129.75, 132.36, 132.80, 138.99, 159.41. HRMS (ESI) m/z calcd for $\text{C}_{19}\text{H}_{18}\text{N}_3\text{O}$ [$\text{M}+\text{H}$] $^+$ 304.1444, found 304.1441.

Acquisition Time (sec)	4.0894	Date	25 Jan 2019 03:52:32	Date Stamp	25 Jan 2019 03:52:32
File Name	D:\G\2018\25-36\25-36XYM-WXW-030\XYM-WXW-030.1.fid	Nucleus	^1H	Number of Transients	8
Frequency (MHz)	400.13	Owner	nmrsu	Points Count	32768
Original Points Count	32768	SW(cyclical) (Hz)	8012.82	Solvent	CHLOROFORM-d
Receiver Gain	70.36	Spectrum Type	STANDARD	Sweep Width (Hz)	8012.58
Spectrum Offset (Hz)	2432.9866			Temperature (degree C)	27.147



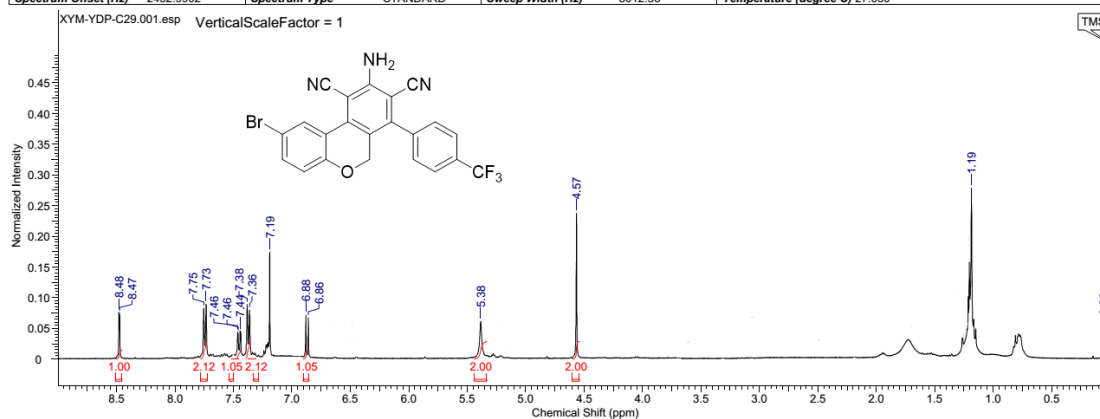
Acquisition Time (sec)	1.3631	Date	15 Apr 2021 08:23:28	Date Stamp	15 Apr 2021 08:23:28
File Name	D:\G\2021\15-04\15-04XYM-WDC-07C\1.fid	Nucleus	^{13}C	Number of Transients	512
Frequency (MHz)	100.61	Owner	nmrsu	Points Count	32768
Original Points Count	32768	SW(cyclical) (Hz)	24038.46	Solvent	CHLOROFORM-d
Receiver Gain	194.26	Spectrum Type	STANDARD	Sweep Width (Hz)	24037.73
Spectrum Offset (Hz)	10060.8047			Temperature (degree C)	25.055



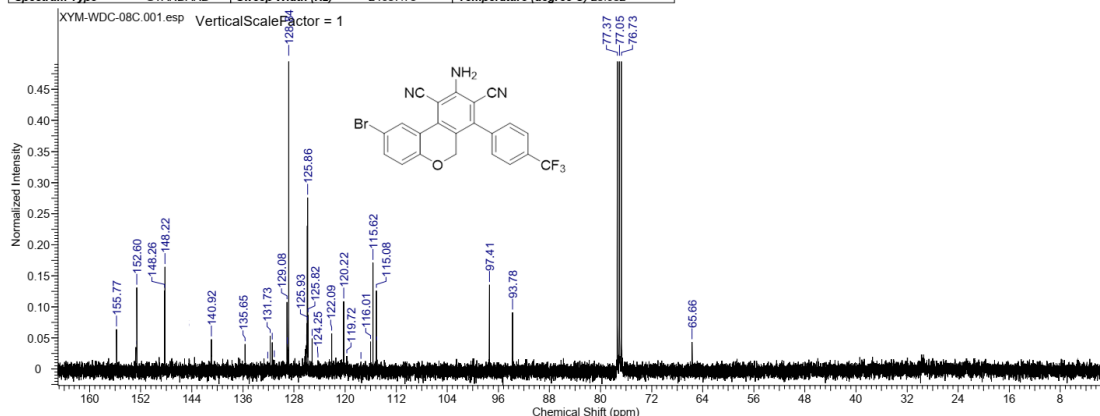


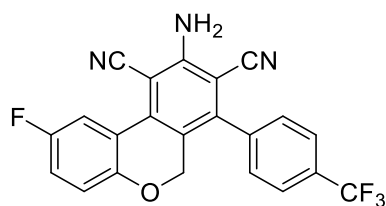
9-Amino-2-bromo-7-(4-(trifluoromethyl)phenyl)-6H-benzo[*c*]chromene-8,10-dicarbonitrile (**4m**): Bright yellow solid; ¹H NMR (400 MHz, CDCl₃): δ = 4.57 (s, 2H; CH₂), 5.38 (s, 2H; NH₂), 6.86-6.88 (m, 1H; Ar-H), 7.36-7.38 (m, 2H; Ar-H), 7.44-7.46 (m, 1H; Ar-H), 7.73-7.75 (m, 2H; Ar-H), 8.47-8.48 (m, 1H; Ar-H); ¹³C NMR (100 MHz, CDCl₃) δ (ppm) 65.66, 93.78, 97.41, 115.08, 115.62, 116.01, 120.22, 120.25, 120.91 (q, *J* = 224 Hz), 125.18, 125.88 (q, *J* = 3.6 Hz), 128.84, 129.08, 131.57 (q, *J* = 33.8 Hz), 135.65, 140.92, 148.22, 148.26, 152.60, 155.77. HRMS (ESI) *m/z* calcd for C₂₂H₁₀BrF₃N₃O [M-H]⁻ 467.9965, found 467.9966.

Acquisition Time (sec)	4.0894	Date	20 Sep 2019 18:25:04	Date Stamp	20 Sep 2019 18:25:04
File Name	D:\GL\2018\9-27\XYM-YDP-C29\XYM-YDP-C29(1).fid				
Frequency (MHz)	400.13	Nucleus	¹ H	Number of Transients	8
Original Points Count	32768	Owner	nmsu	Points Count	32768
Receiver Gain	70.36	SW(cyclical) (Hz)	8012.82	Solvent	CHLOROFORM-d
Spectrum Offset (Hz)	2432.9902	Spectrum Type	STANDARD	Sweep Width (Hz)	8012.58
				Temperature (degree C)	27.630



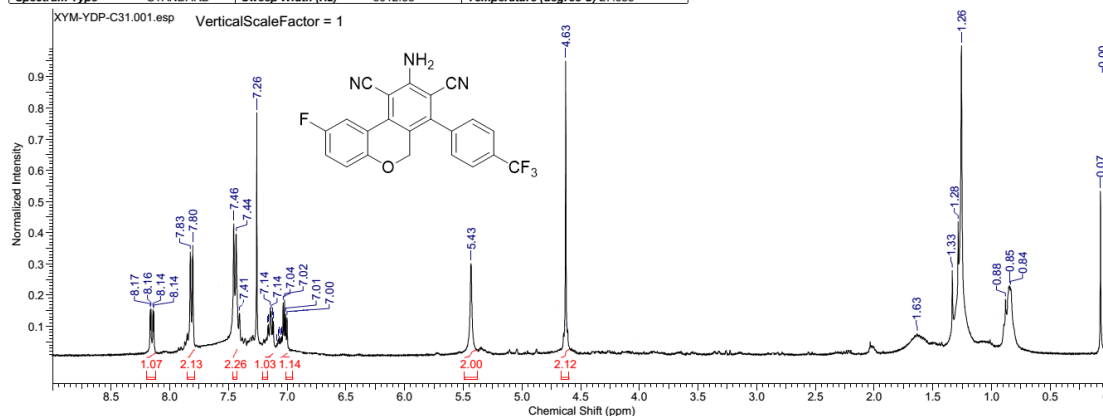
Acquisition Time (sec)	1.3631	Date	15 Apr 2021 08:55:28	Date Stamp	15 Apr 2021 08:55:28
File Name	D:\GL\XYM-WDC-08C\1.fid				
Nucleus	¹³ C	Number of Transients	512	Origin	spect
Owner	nmsu	Points Count	32768	Pulse Sequence	zgpq30
SW(cyclical) (Hz)	24038.46	Solvent	CHLOROFORM-d	Receiver Gain	194.26
Spectrum Type	STANDARD	Sweep Width (Hz)	24037.73	Temperature (degree C)	25.052
				Spectrum Offset (Hz)	10060.8047





9-Amino-2-fluoro-7-(4-(trifluoromethyl)phenyl)-6H-benzo[*c*]chromene-8,10-dicarbonitrile (**4n**): Yellow solid; ^1H NMR (400 MHz, CDCl_3): δ = 4.63 (s, 2H; CH_2), 5.43 (s, 2H; NH_2), 7.00-7.04 (m, 1H; Ar-H), 7.12-7.17 (m, 1H; Ar-H), 7.44-7.46 (m, 2H; Ar-H), 7.80-7.83 (m, 2H; Ar-H), 8.14-8.17 (m, 1H; Ar-H); ^{13}C NMR (100 MHz, CDCl_3) δ (ppm) 65.72, 93.77, 97.40, 112.81 (d, J = 25.5 Hz), 115.08, 115.62, 119.22 (d, J = 8 Hz), 120.22 (d, J = 2.9 Hz), 121.15 (d, J = 8.8 Hz), 121.35 (q, J = 224 Hz), 121.75, 125.88 (q, J = 3.6 Hz), 128.84, 129.08, 131.57 (q, J = 32.8 Hz), 137.21, 140.93, 145.12, 148.24 (d, J = 3.7 Hz), 152.62, 157.67 (d, J = 239.9 Hz). HRMS (ESI) m/z calcd for $\text{C}_{22}\text{H}_{10}\text{F}_4\text{N}_3\text{O}$ [$\text{M}-\text{H}$] $^-$ 408.0765, found 408.0766.

Acquisition Time (sec)	4.0894	Date	09 Oct 2019 01:31:44	Date Stamp	09 Oct 2019 01:31:44
File Name	D:\GI\ -9.27 \XYM-YDP-C311\XYM-YDP-C3111.fid	Frequency (MHz)	400.13	Original Points Count	32768
Nucleus	^1H	Number of Transients	8	Origin	spect
Owner	nmsu	Points Count	32768	Pulse Sequence	zg30
SW (cyclical) (Hz)	8012.82	Solvent	CHLOROFORM-d	Receiver Gain	70.36
Spectrum Type	STANDARD	Sweep Width (Hz)	8012.58	Temperature (degree C)	27.655
				Spectrum Offset (Hz)	2460.8828



Acquisition Time (sec)	1.3631	Date	18 Apr 2021 11:37:36	Date Stamp	18 Apr 2021 11:37:36
File Name	D:\GI\XYM-WDC-09C\XYM-WDC-09C1.fid	Frequency (MHz)	100.61	Original Points Count	32768
Nucleus	^{13}C	Number of Transients	461	Origin	spect
Owner	nmsu	Points Count	32768	Pulse Sequence	zpgp30
SW (cyclical) (Hz)	24038.46	Solvent	CHLOROFORM-d	Receiver Gain	194.26
Spectrum Type	STANDARD	Sweep Width (Hz)	24037.73	Temperature (degree C)	25.037
				Spectrum Offset (Hz)	10060.8047

