Electronic Supporting Information

Non-classical donor-acceptor-donor chromophores. A strategy for high two-photon brightness

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Table of Contents

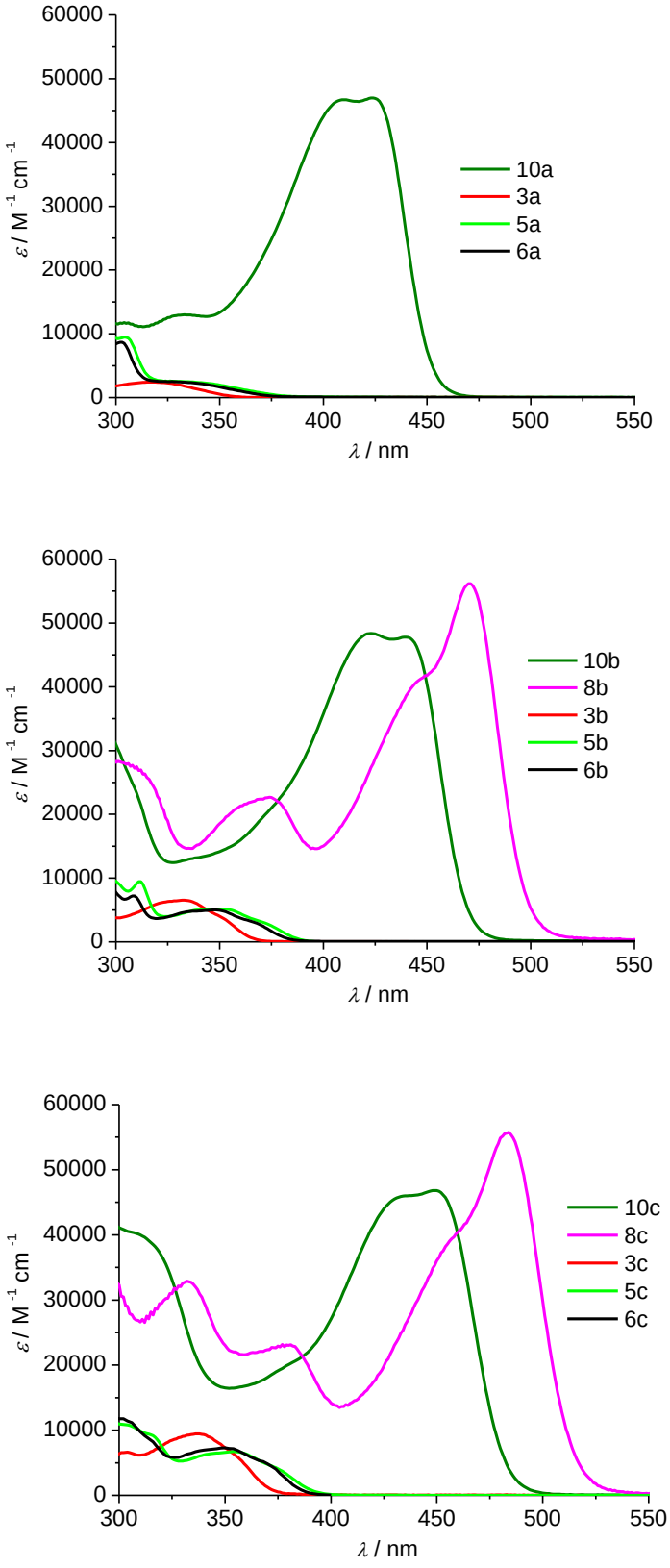
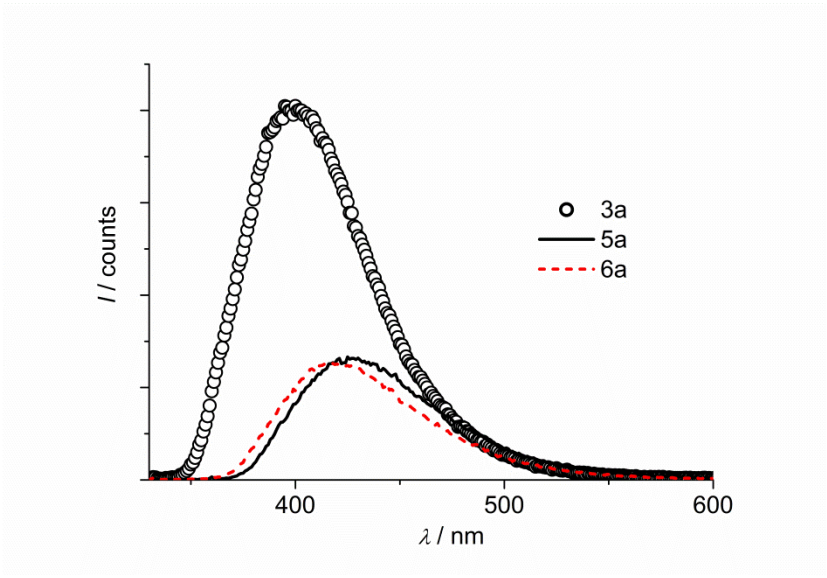
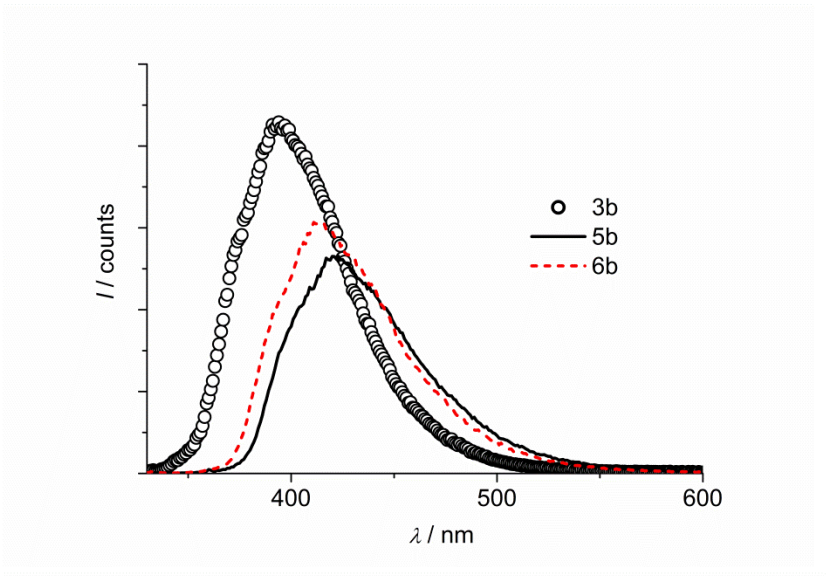


Fig. S1 Absorption spectra of the studied compounds in DCM.





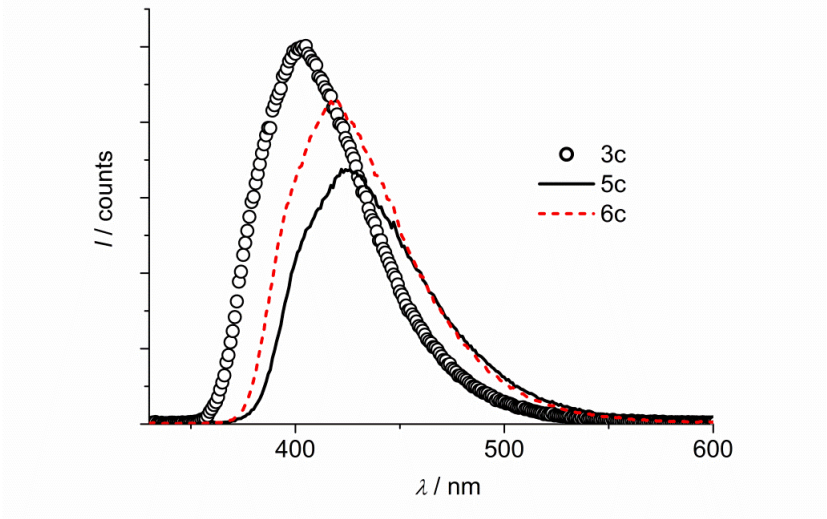
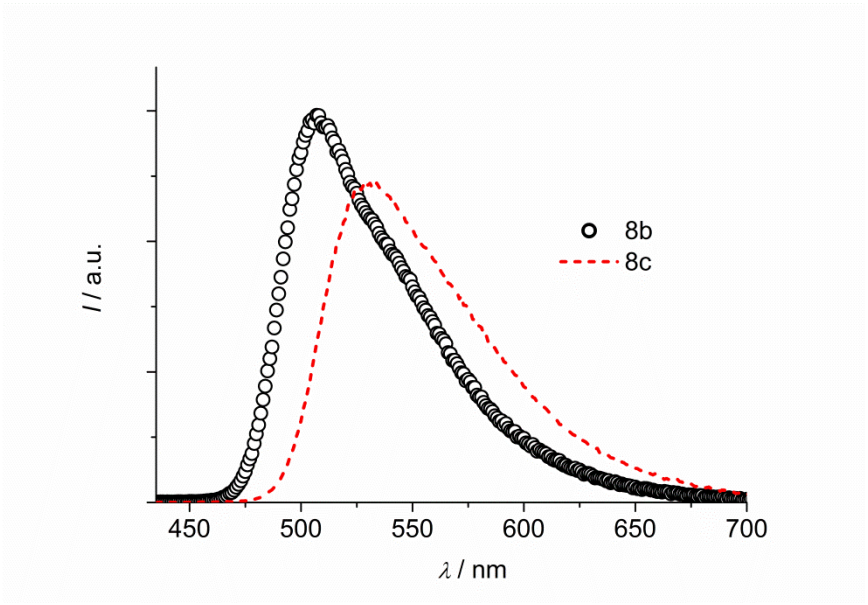


Fig. S2 Luminescence spectra of optically matched solutions of reference monomers in DCM at room temperature. Excitation wavelength was 325 nm and $A_{325\ nm} = 0.07$.



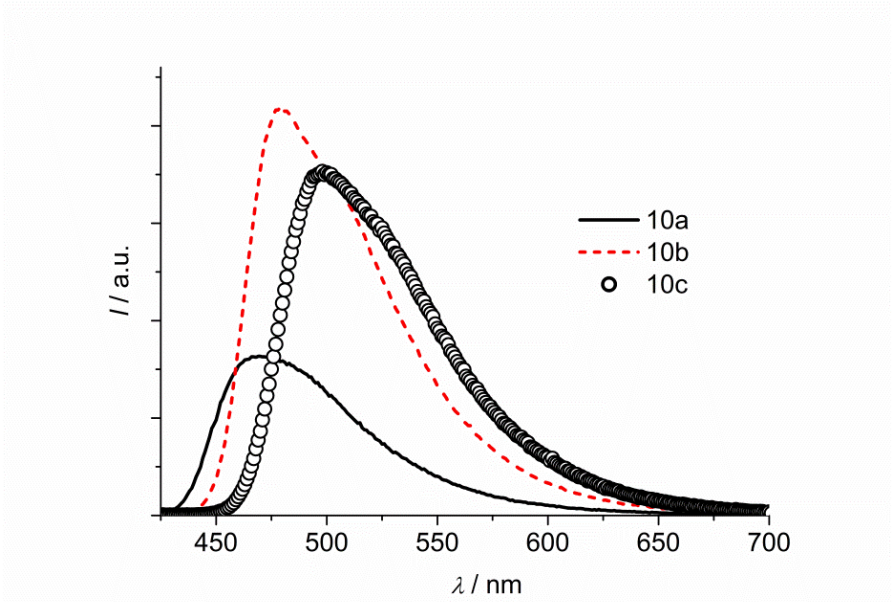
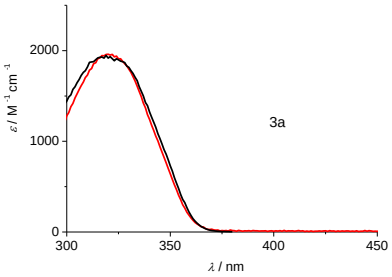
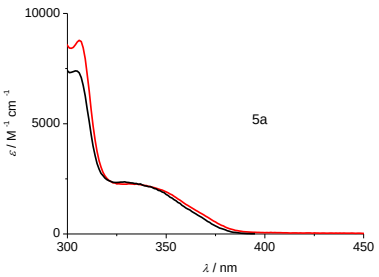
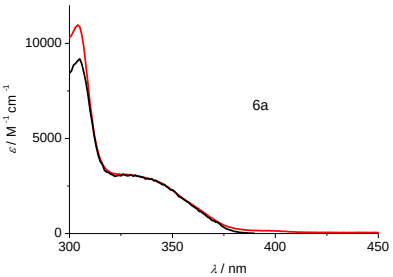


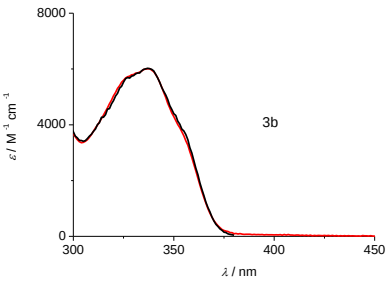
Fig. S3 Luminescence spectra of optically matched solutions of the dimers **8b-c** and **10a-c** in DCM at room temperature. Excitation wavelength was 424 nm and $A_{424\ nm} = 0.07$ for **10a-c** and $A_{424\ nm} = 0.03$ for **8b-c**.

TOL


3a
ε / M⁻¹ cm⁻¹
λ / nm


5a
ε / M⁻¹ cm⁻¹
λ / nm


6a
ε / M⁻¹ cm⁻¹
λ / nm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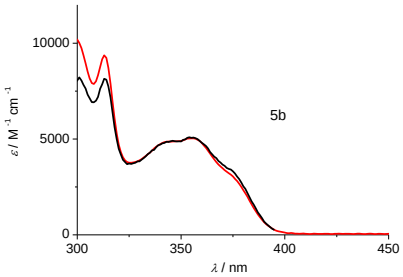
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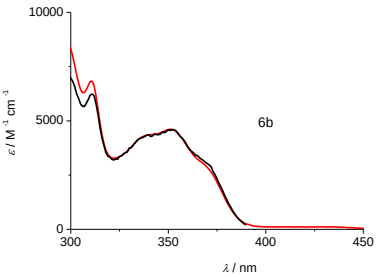
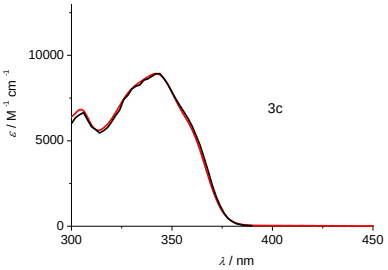
ε / M⁻¹ cm⁻¹
λ / nm


6b
ε / M⁻¹ cm⁻¹
λ / nm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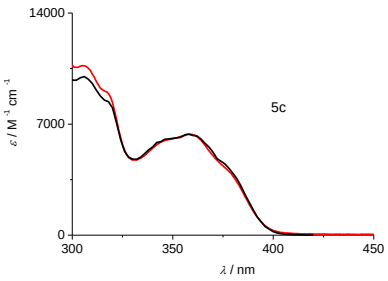
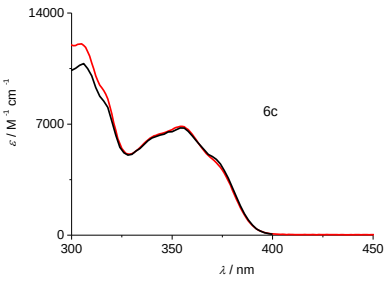
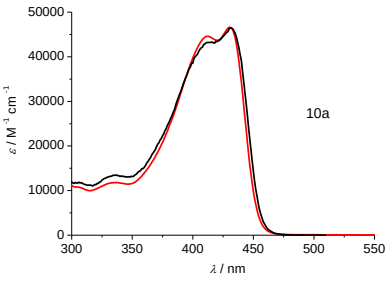
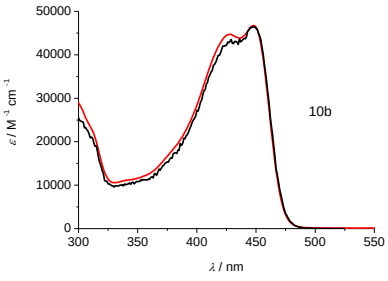
λ / nm


5c
ε / M⁻¹ cm⁻¹
λ / nm


6c
ε / M⁻¹ cm⁻¹
λ / nm


10a
ε / M⁻¹ cm⁻¹
λ / nm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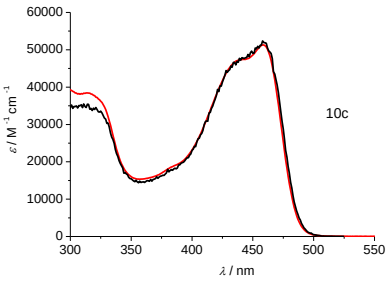
ε / M⁻¹ cm⁻¹
λ / nm


10c
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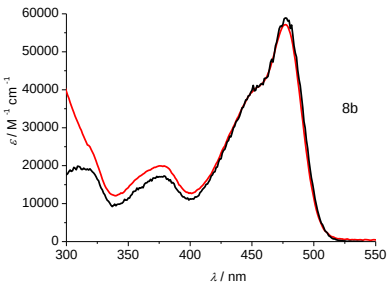
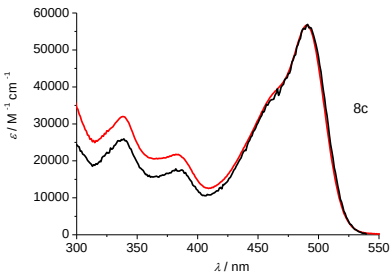
λ / nm


8b
ε / M⁻¹ cm⁻¹
λ / nm


8c
ε / M⁻¹ cm⁻¹
λ / nm

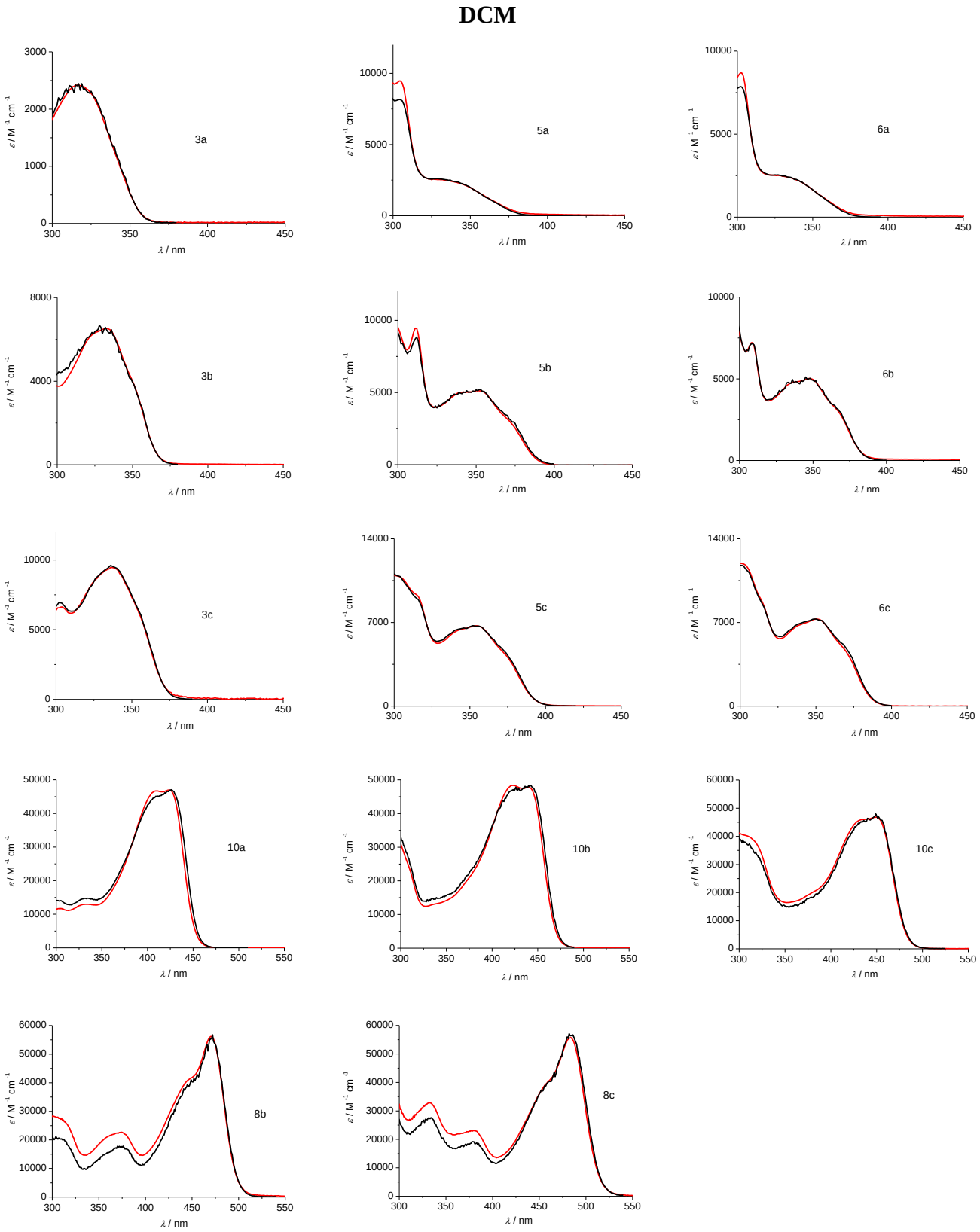


Fig. S4 Excitation spectra (black) overlaid with the corresponding absorption spectra (red) in TOL and DCM.

Table S1 Absorption and fluorescence properties of compounds **8c** and **10c** in water and dimethyl sulfoxide.

Compound	Solvent	λ_{abs}^{max}/ nm	λ_{em}^{max}/nm	Stokes shift/ cm^{-1}	ϕ_{fl}[a]
8c	DMSO	480	567	3200	0.54
	H_2O	488	655	5220	0.04
10c	DMSO	451	518	2870	0.43
	H_2O	494	556	2260	0.13

[a] ϕ_{fl} = fluorescence quantum yield, standard Rhodamine 6G in EtOH (ϕ_{fl} =0.94)

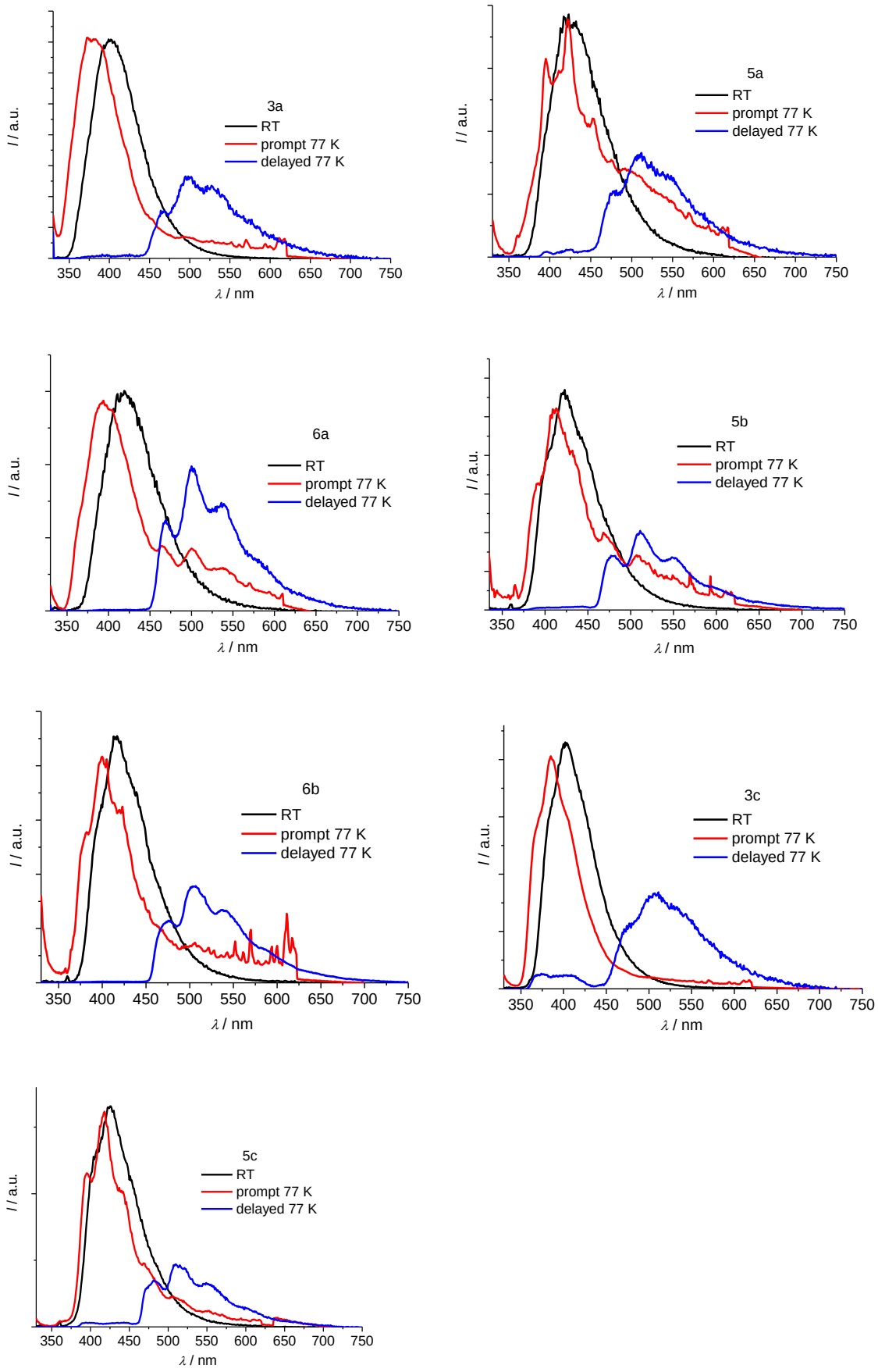


Fig. S5 Arbitrary scaled RT and 77K total and delayed luminescence of monomers in TOL, upon excitation at 325 nm.

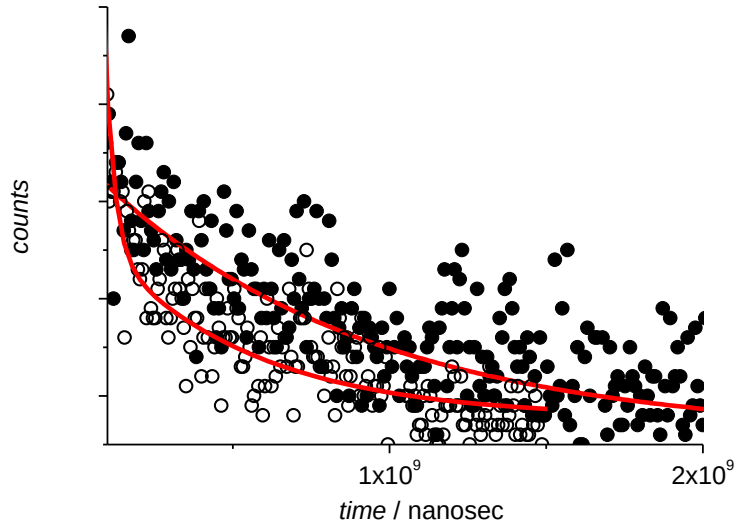


Fig. S6 Lifetime measured for **3c** at 77 K in TOL rigid matrixes in the phosphorescence region (full circles), λ = 507 nm, and in the delayed fluorescence region (empty circles), λ = 406 nm.

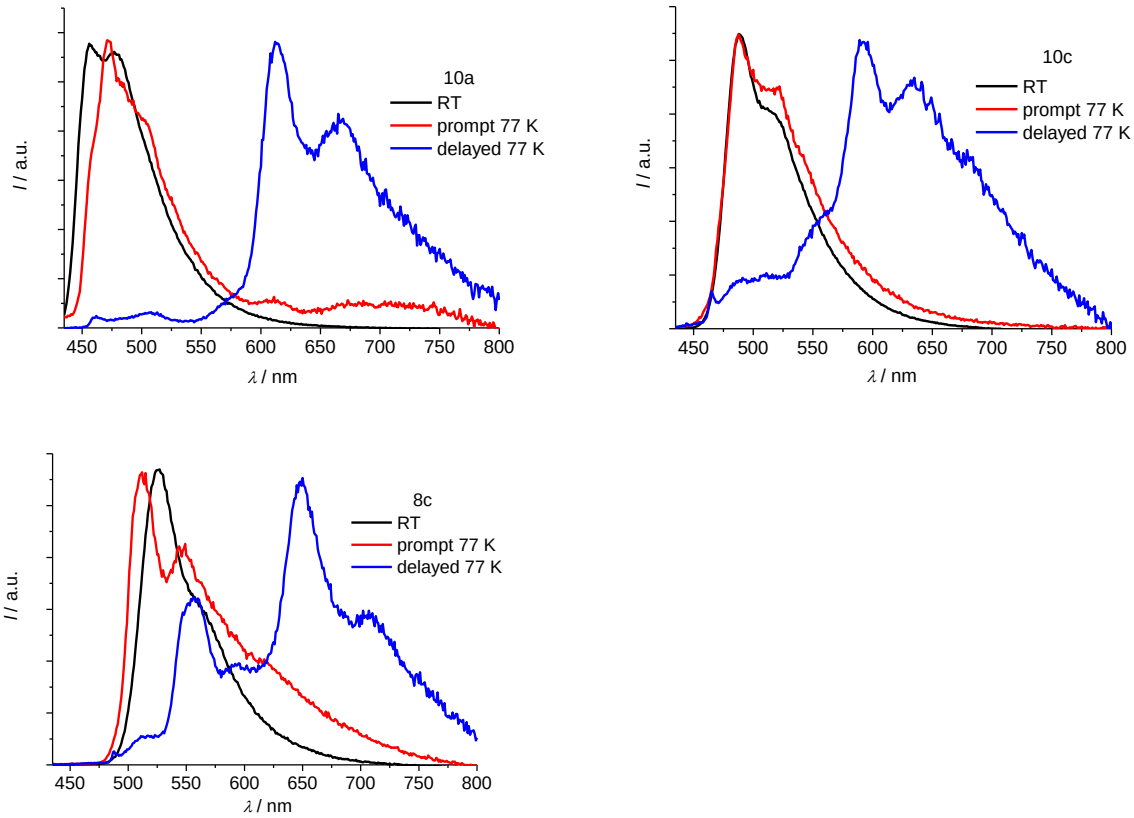


Fig. S7 Arbitrary scaled RT luminescence in TOL and 77 K total and delayed luminescence of **8c** and **10a, 10c** in TOL with 50% EtI, upon excitation at 424 nm.

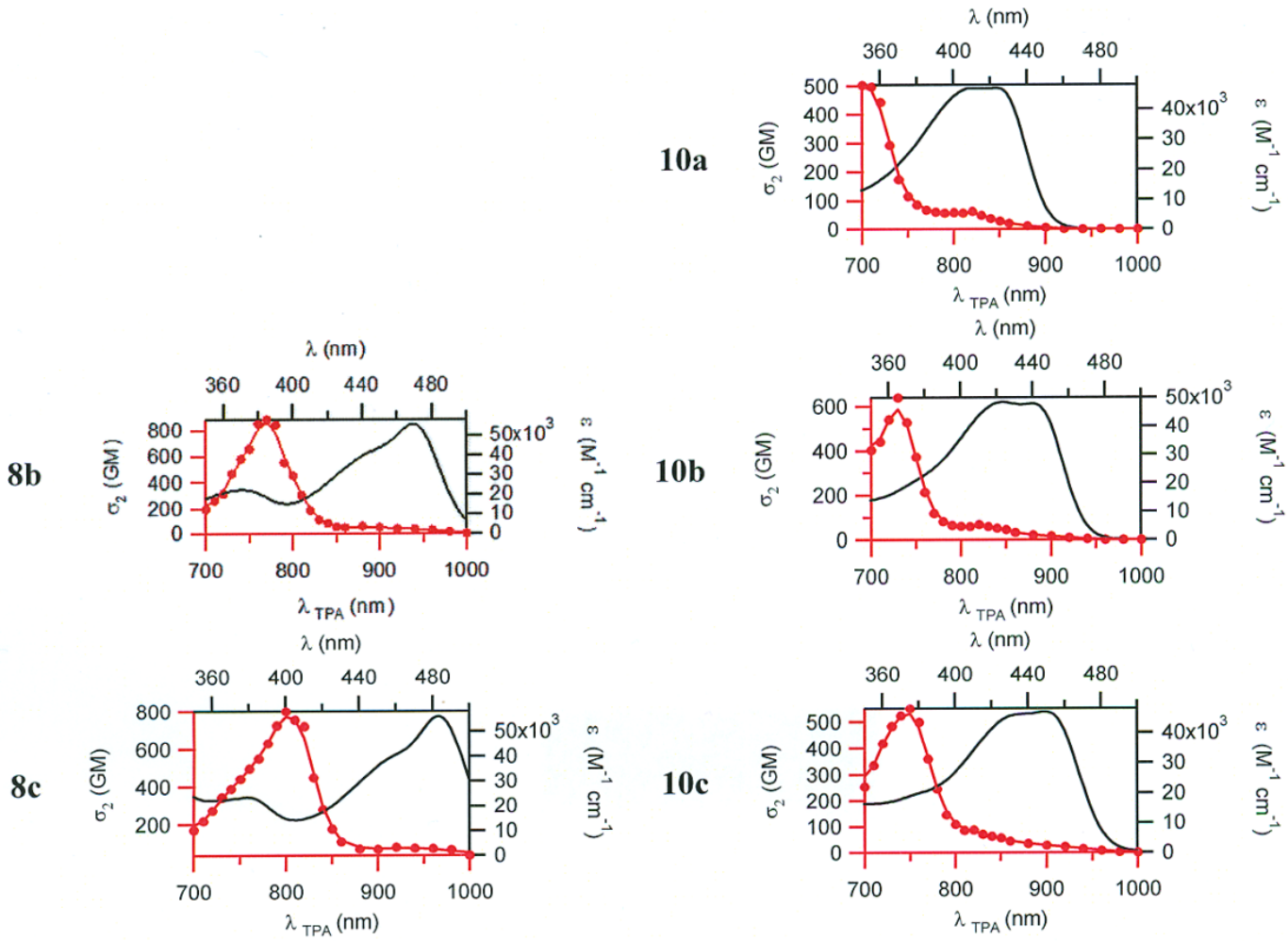
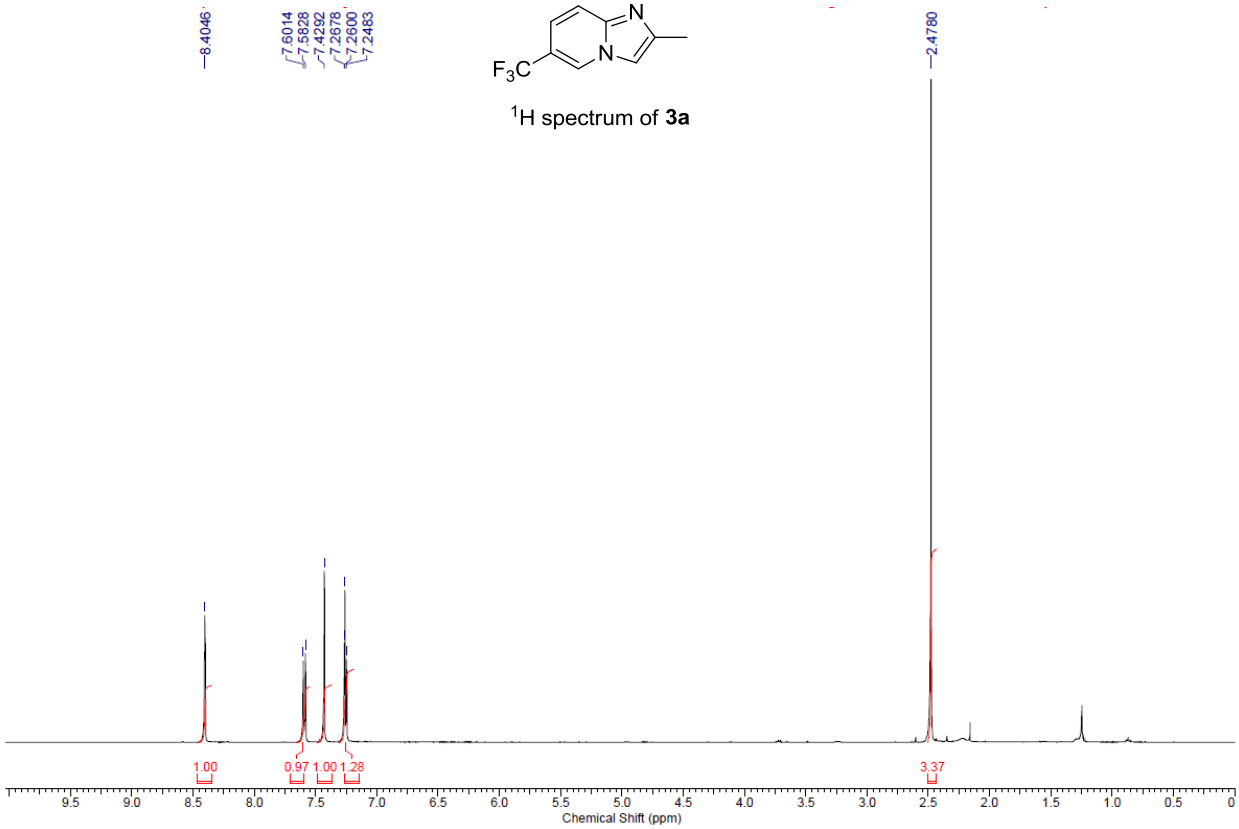
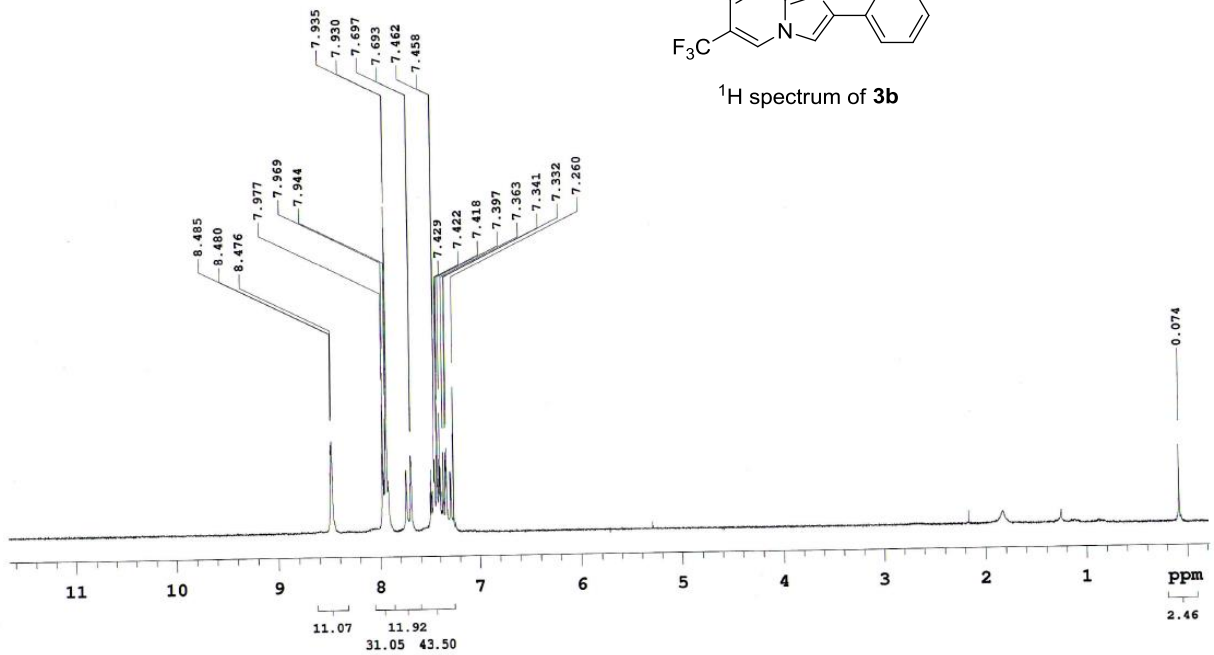


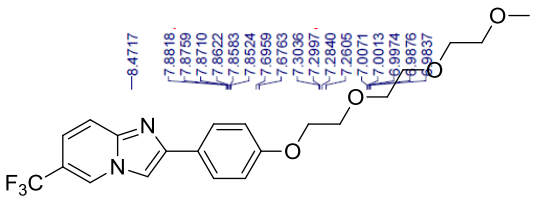
Fig. S8 Comparison of one photon and 2PA absorption spectra for the bis-imidazo[1,2-*a*]pyridines (recorded in DCM) .



^{1}H spectrum of **3a**

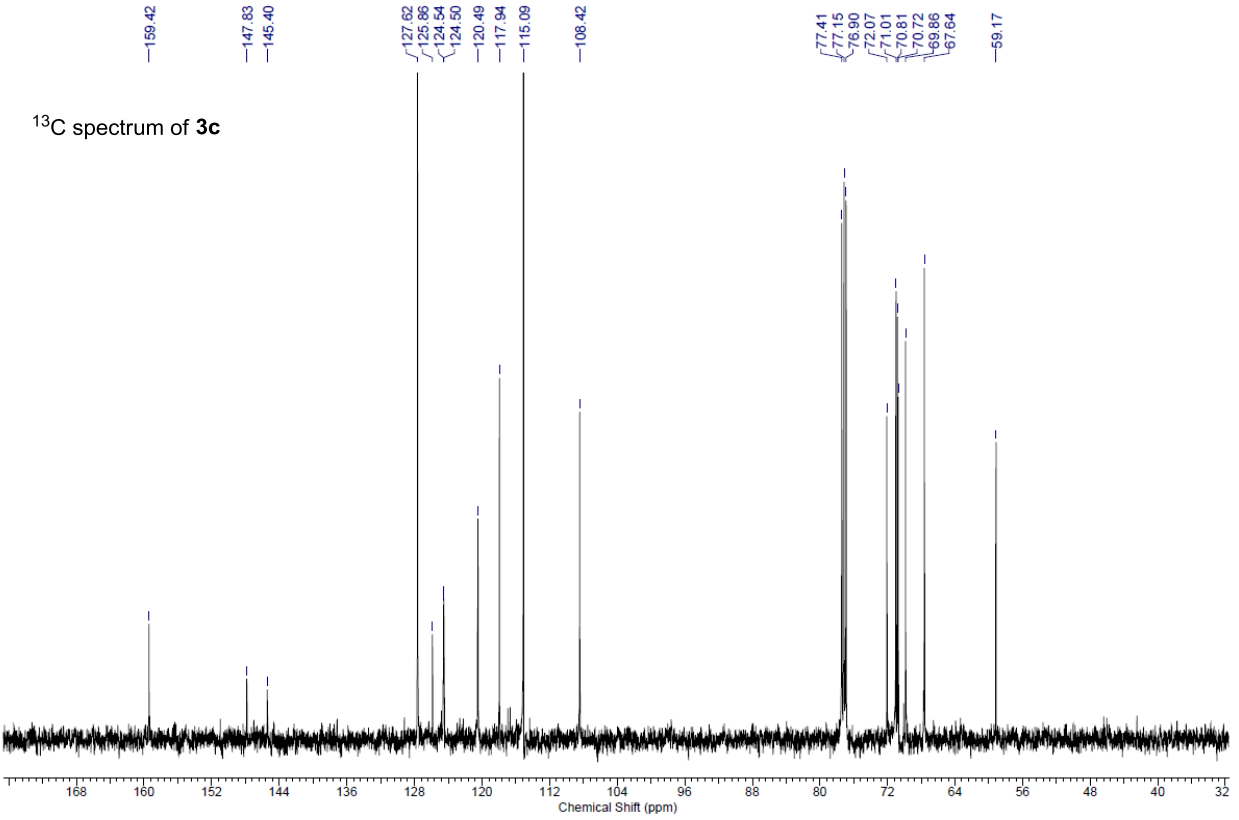


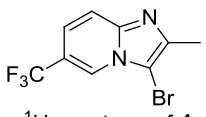
^{1}H spectrum of **3b**



^{1}H spectrum of **3c**

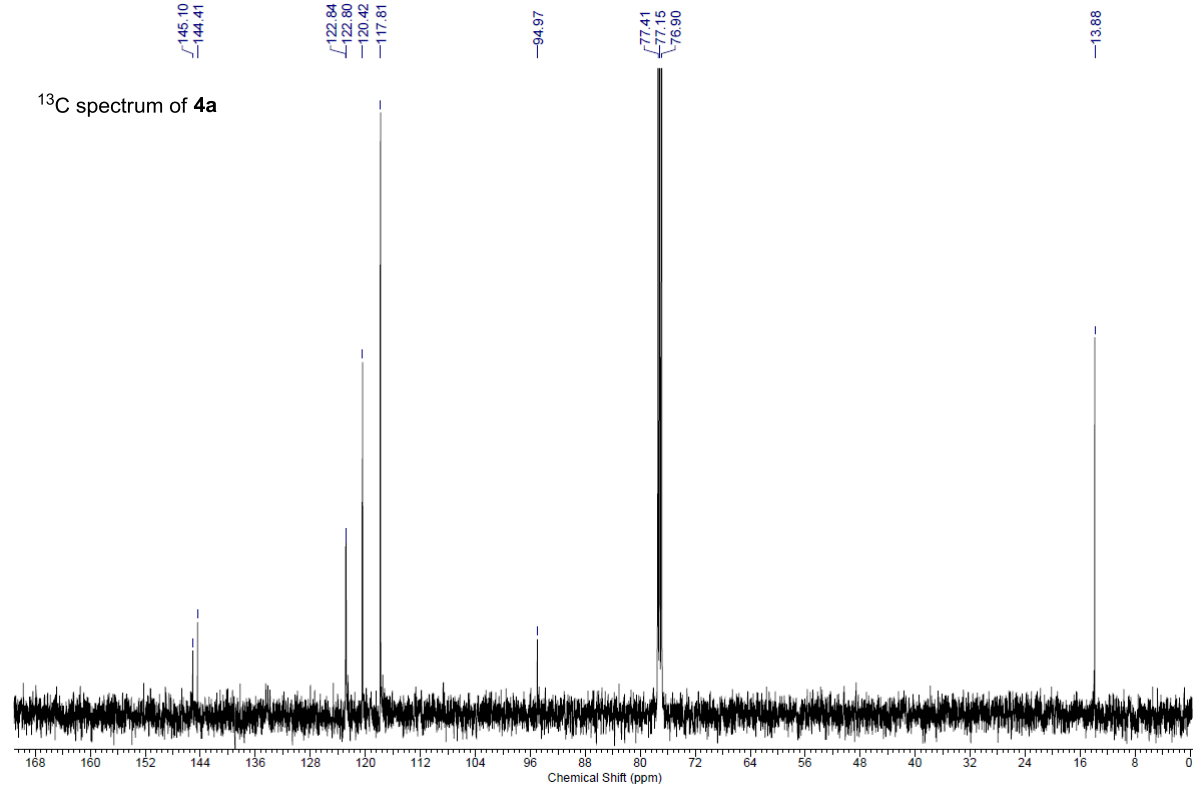
^{13}C spectrum of **3c**

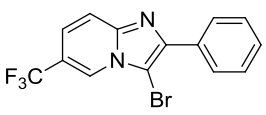




^{1}H spectrum of **4a**

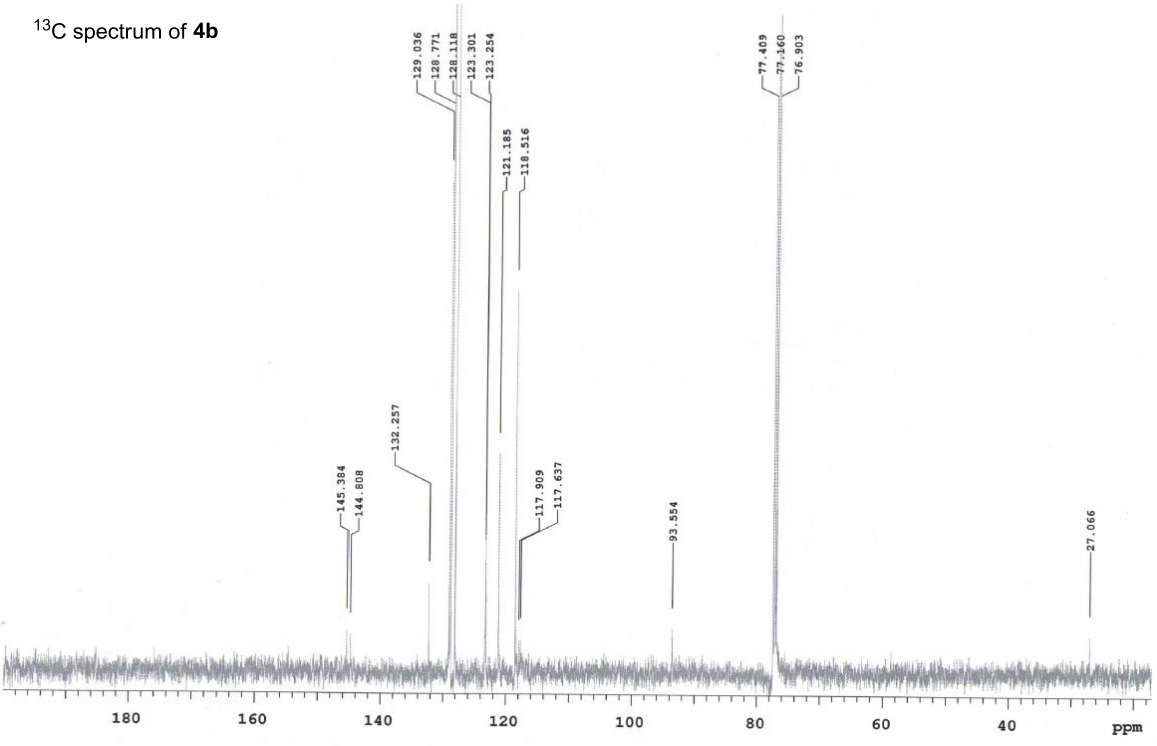
^{13}C spectrum of **4a**

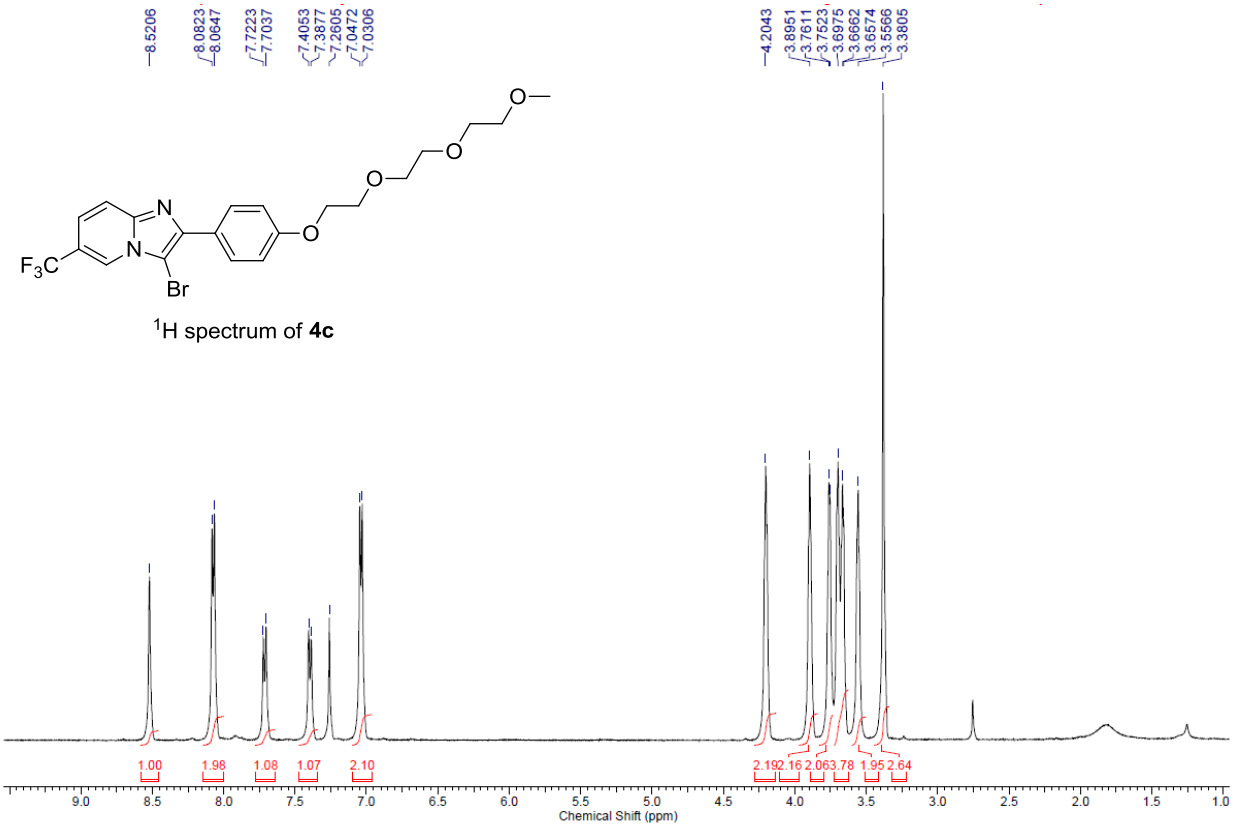




^{1}H spectrum of **4b**

^{13}C spectrum of **4b**





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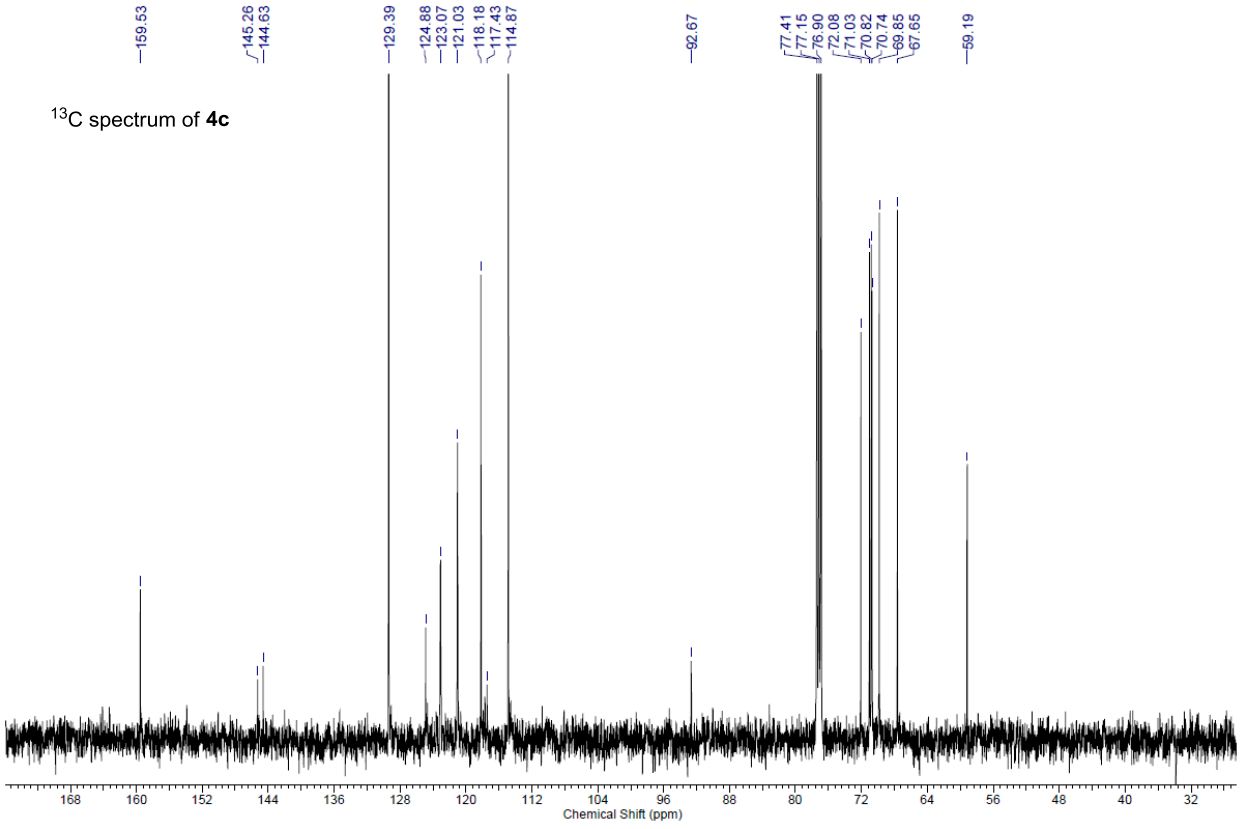

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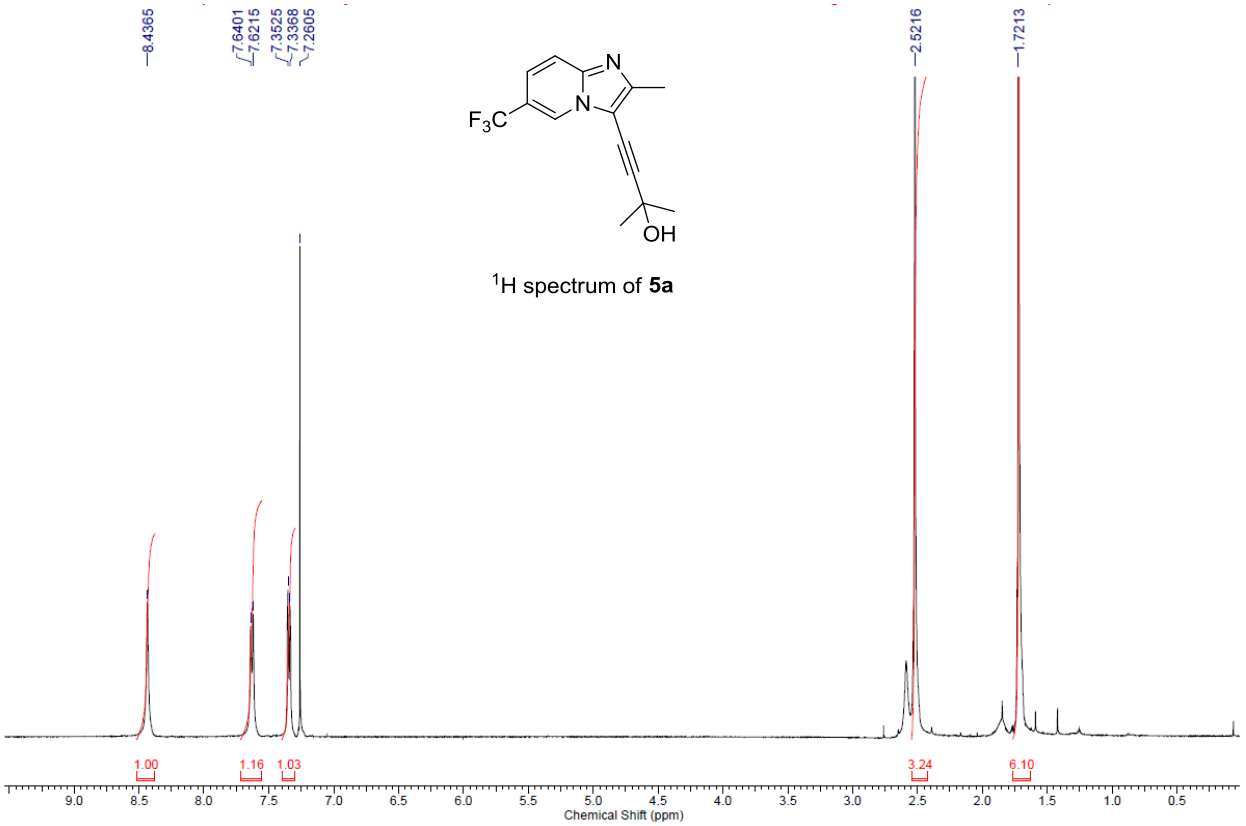

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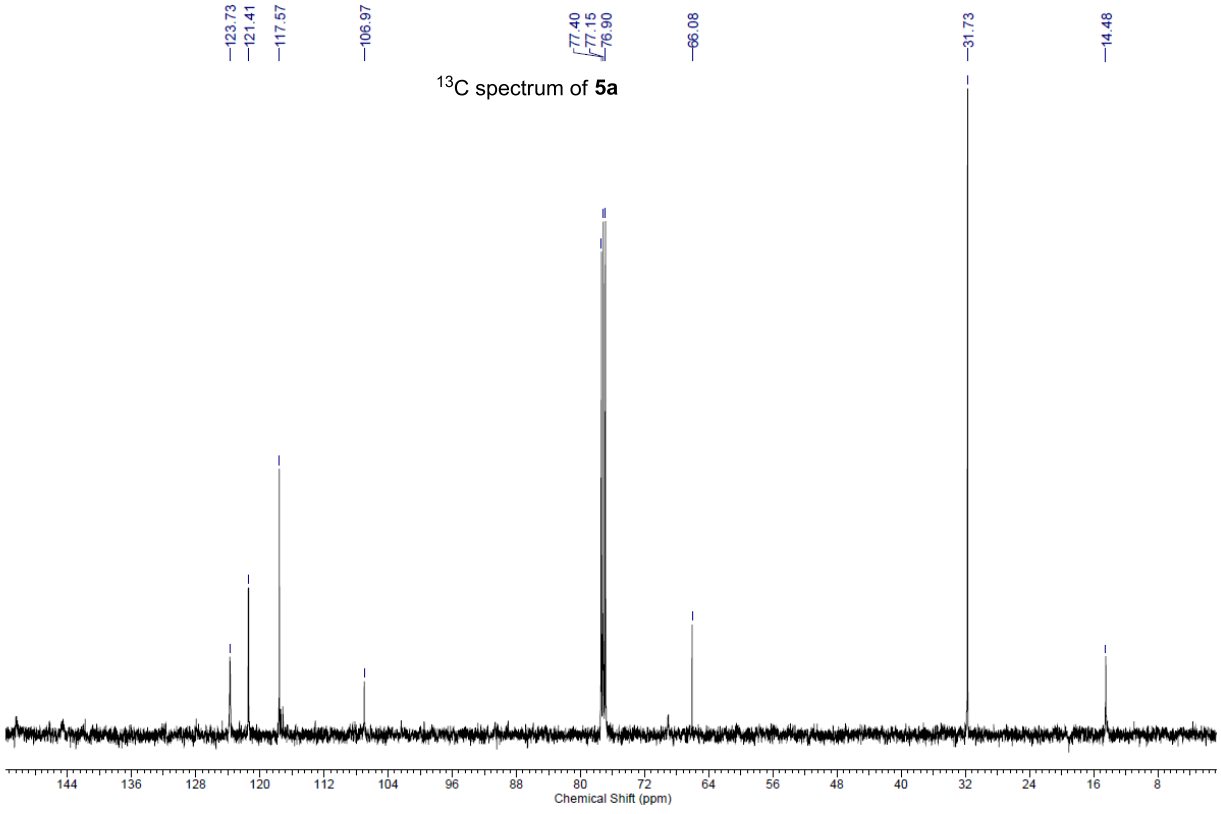

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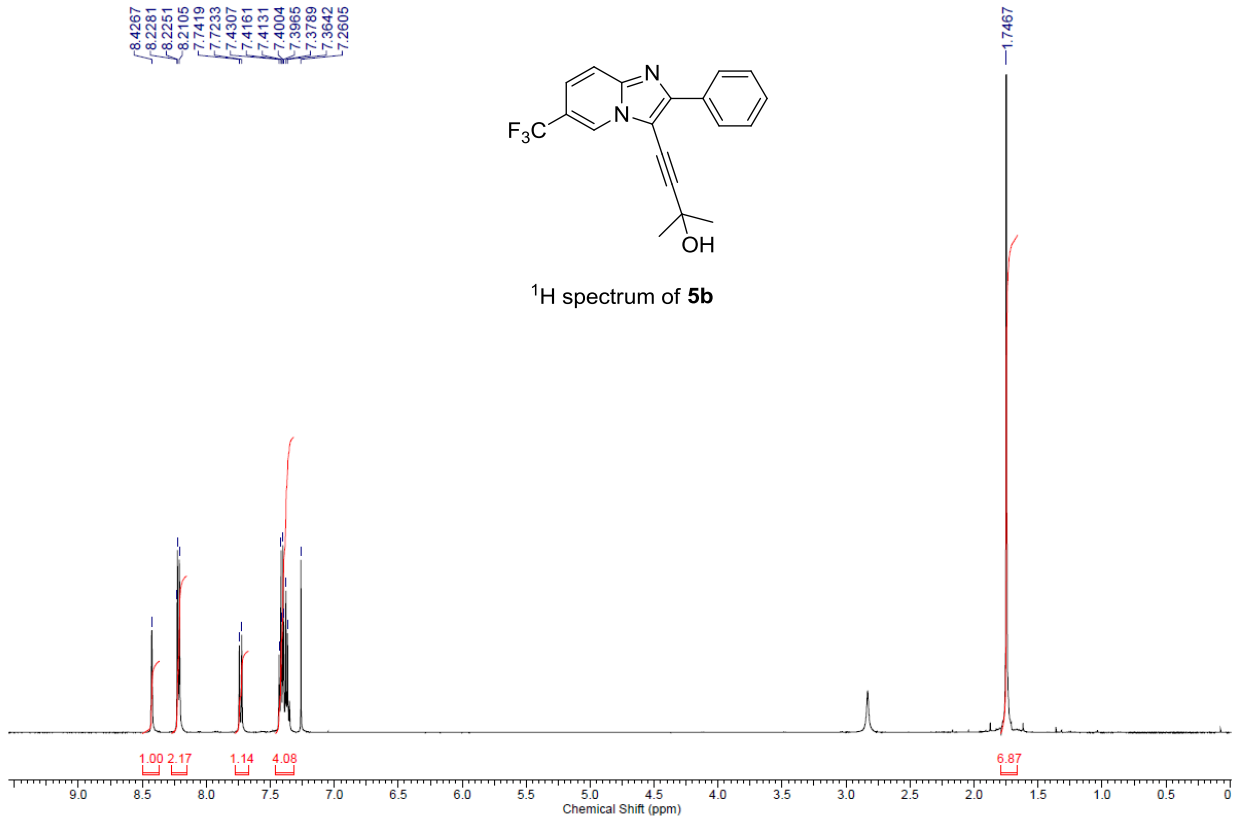

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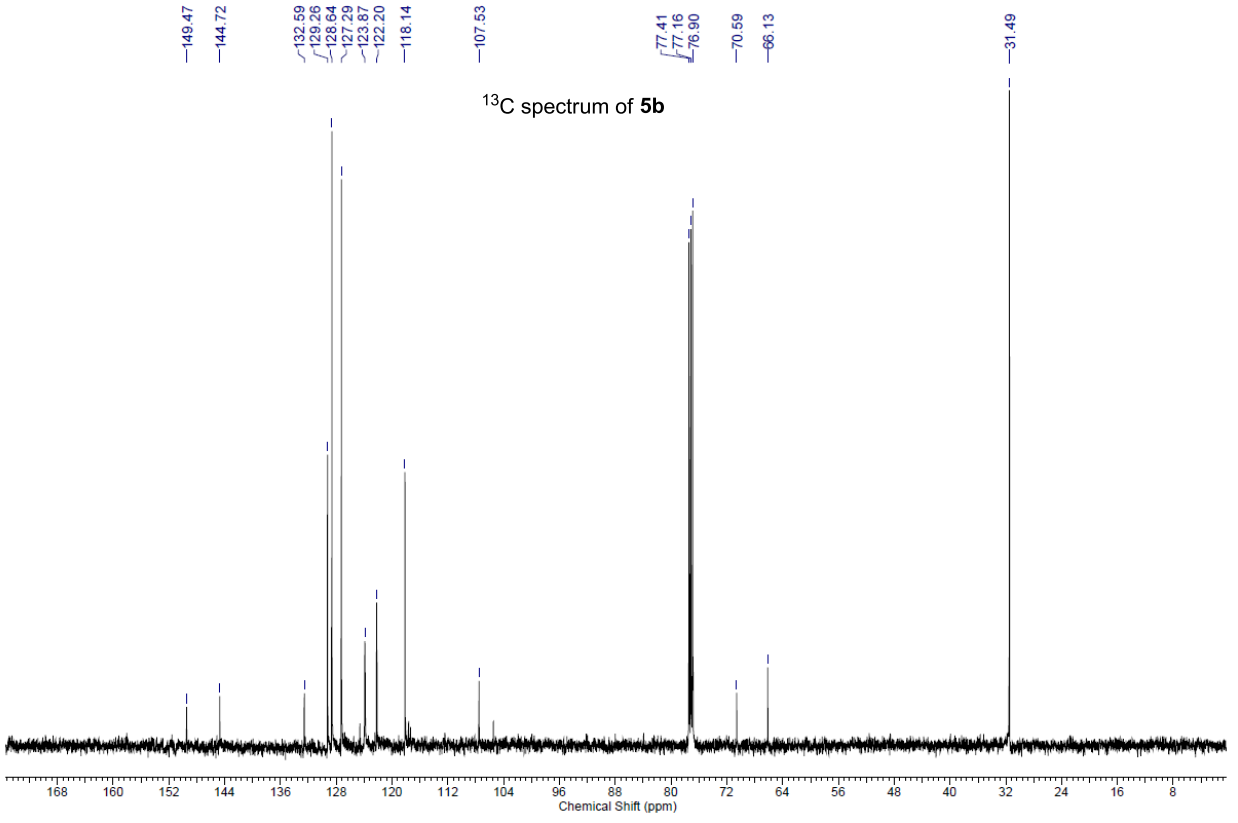

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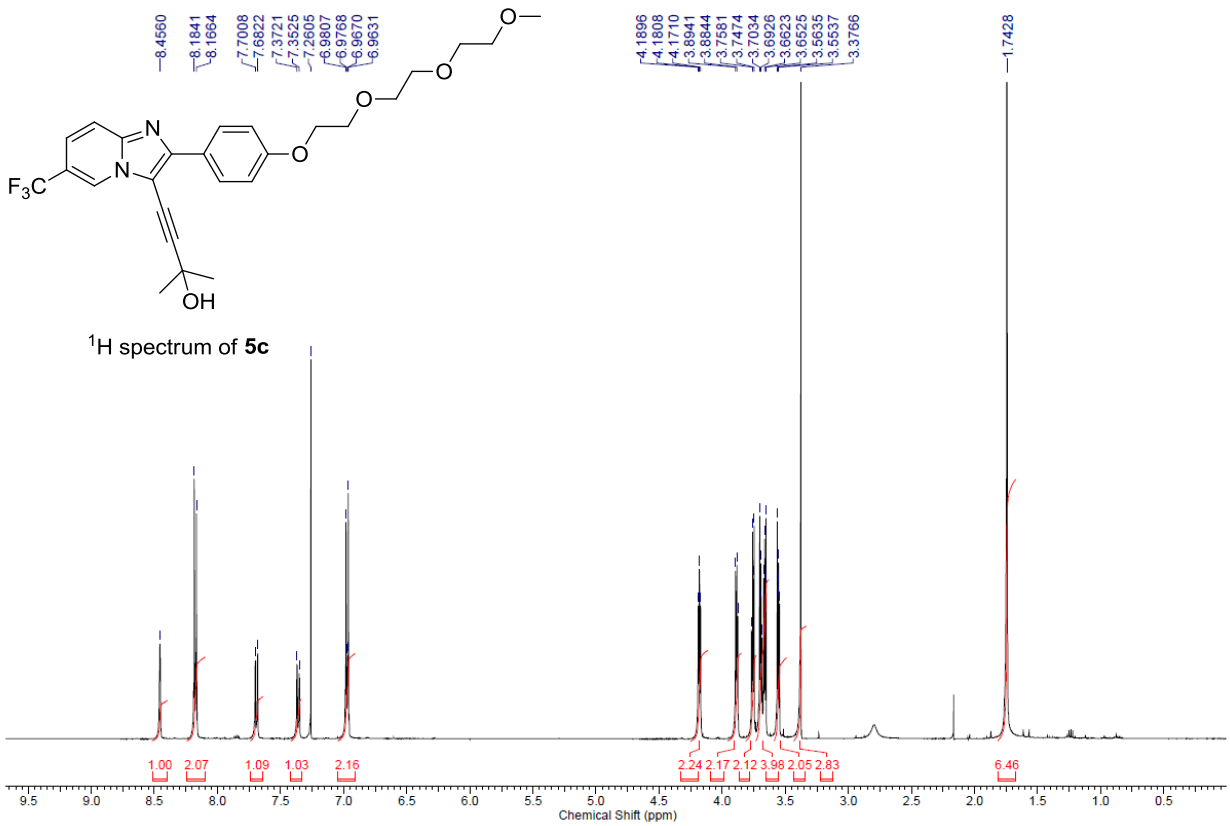

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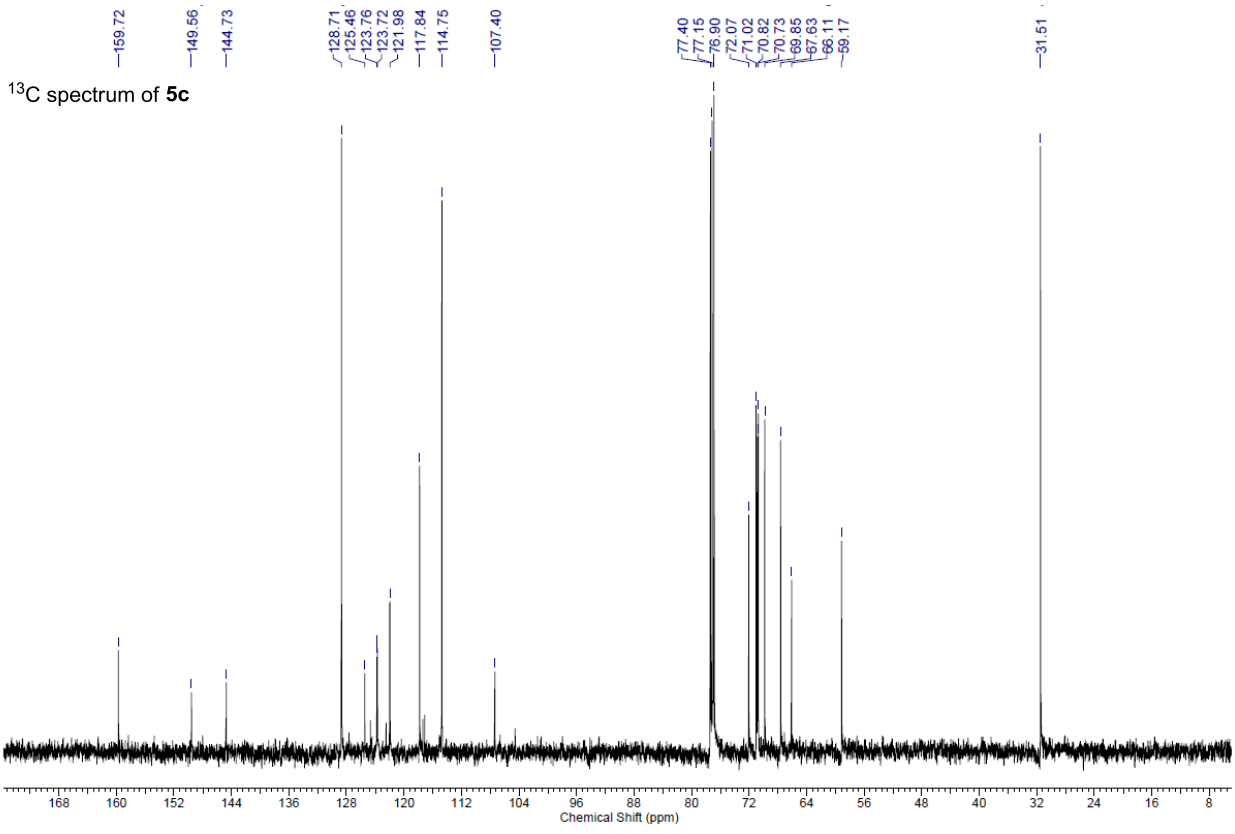

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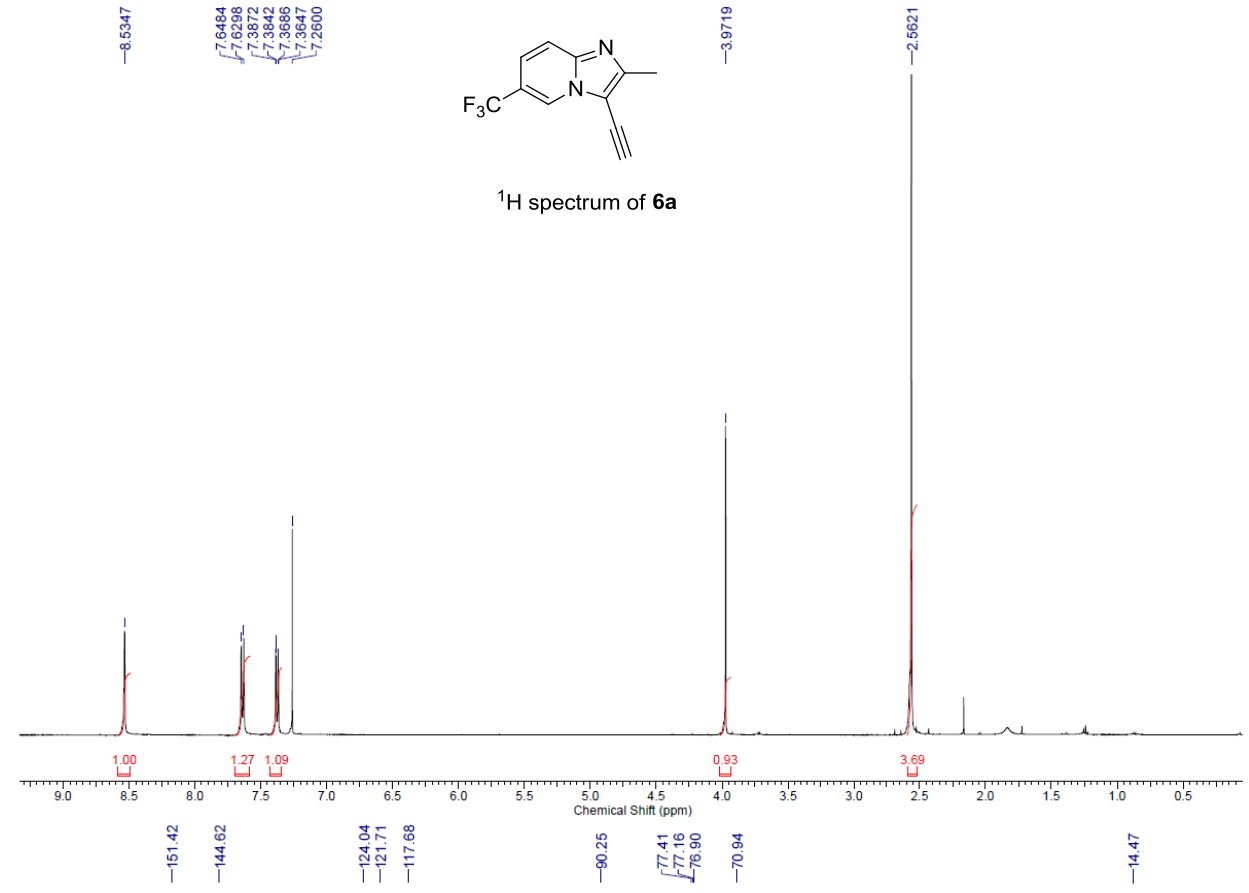

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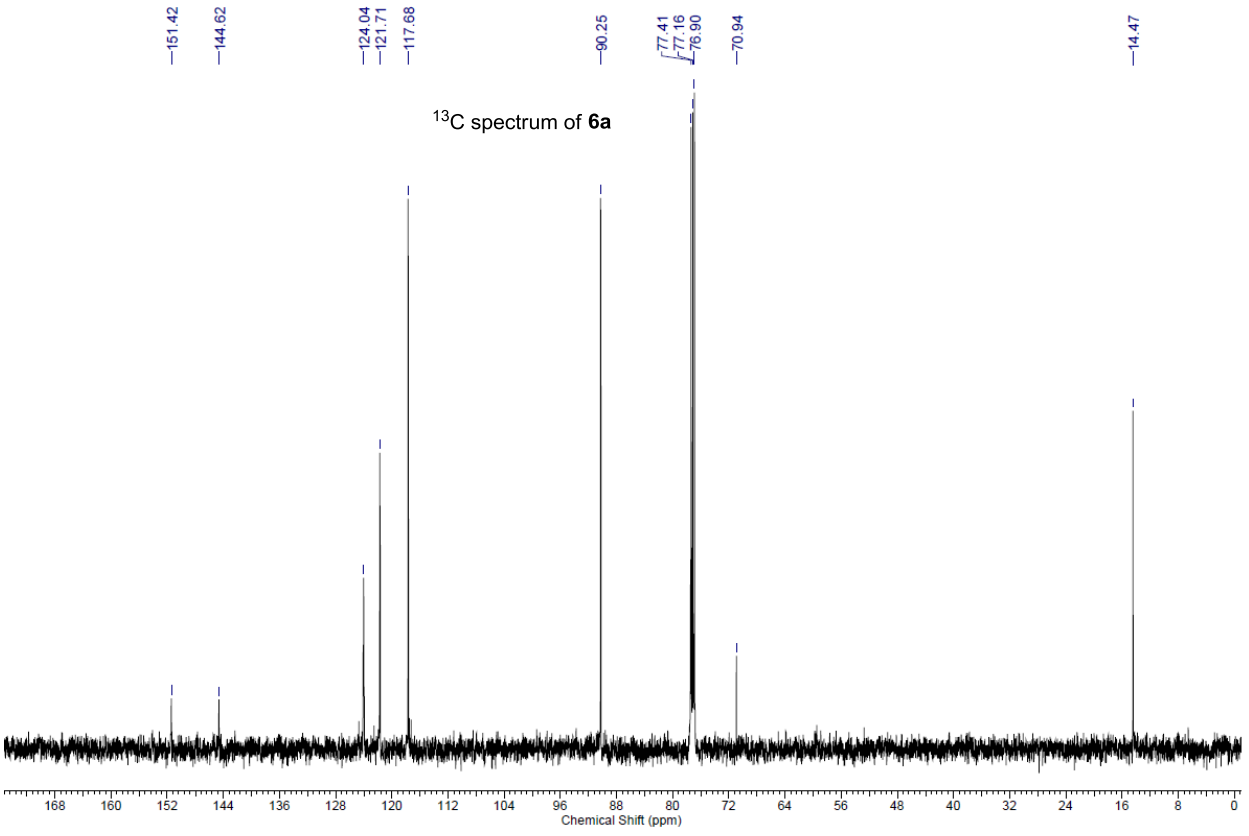

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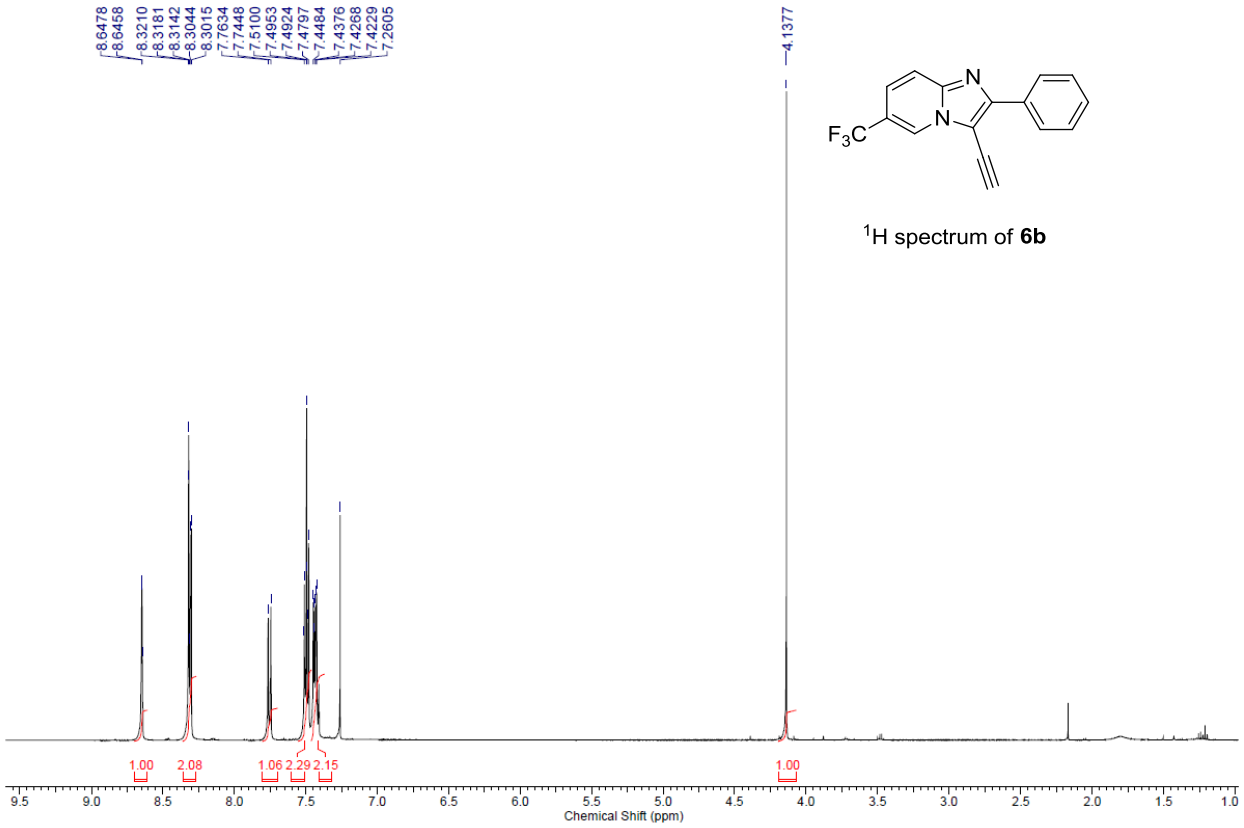

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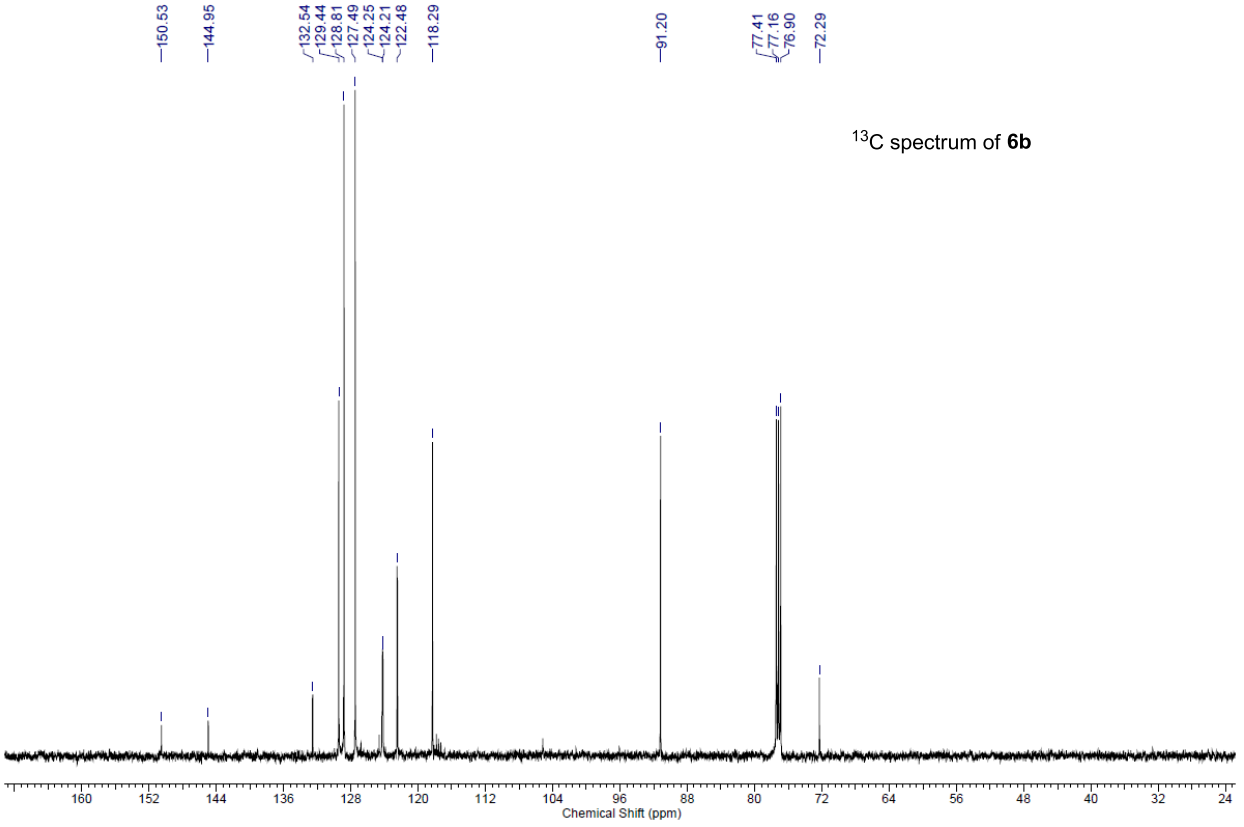

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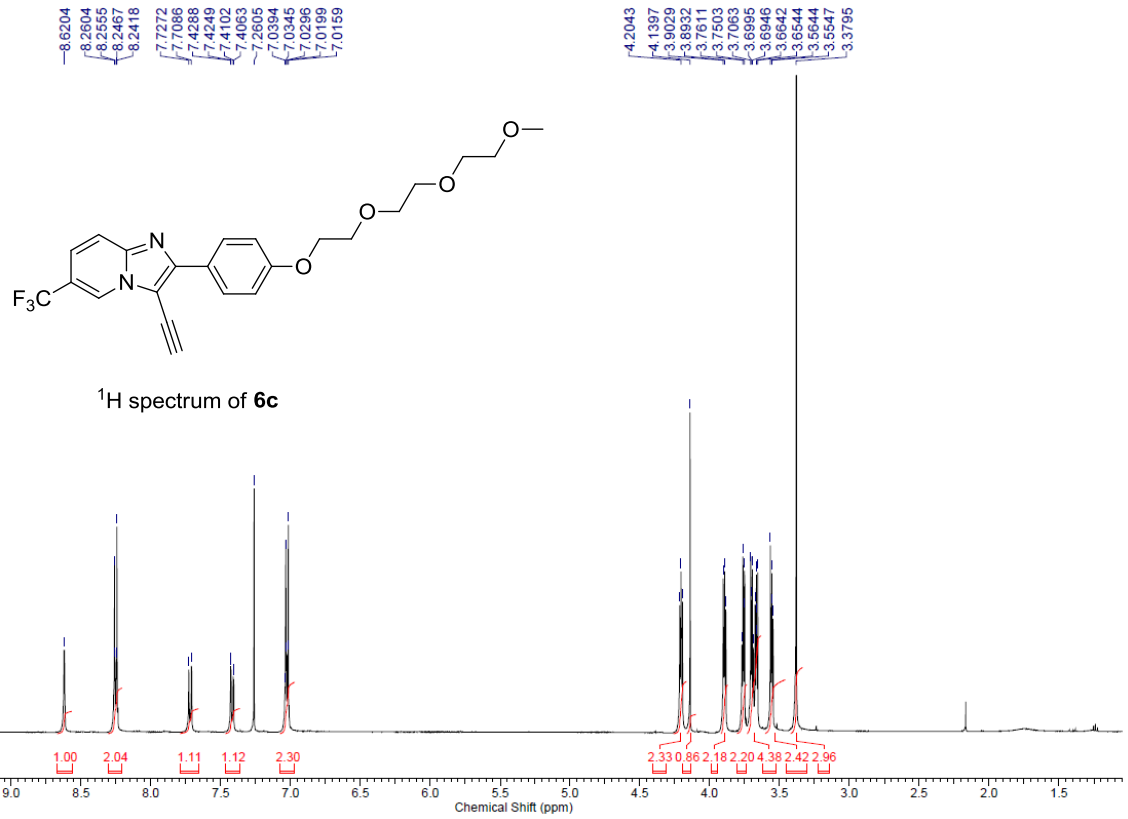
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7.2605
7.0394
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7.0296
7.0199
7.0159
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O
O
O
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N
N
F3C
1H spectrum of 6c
1.00
2.04
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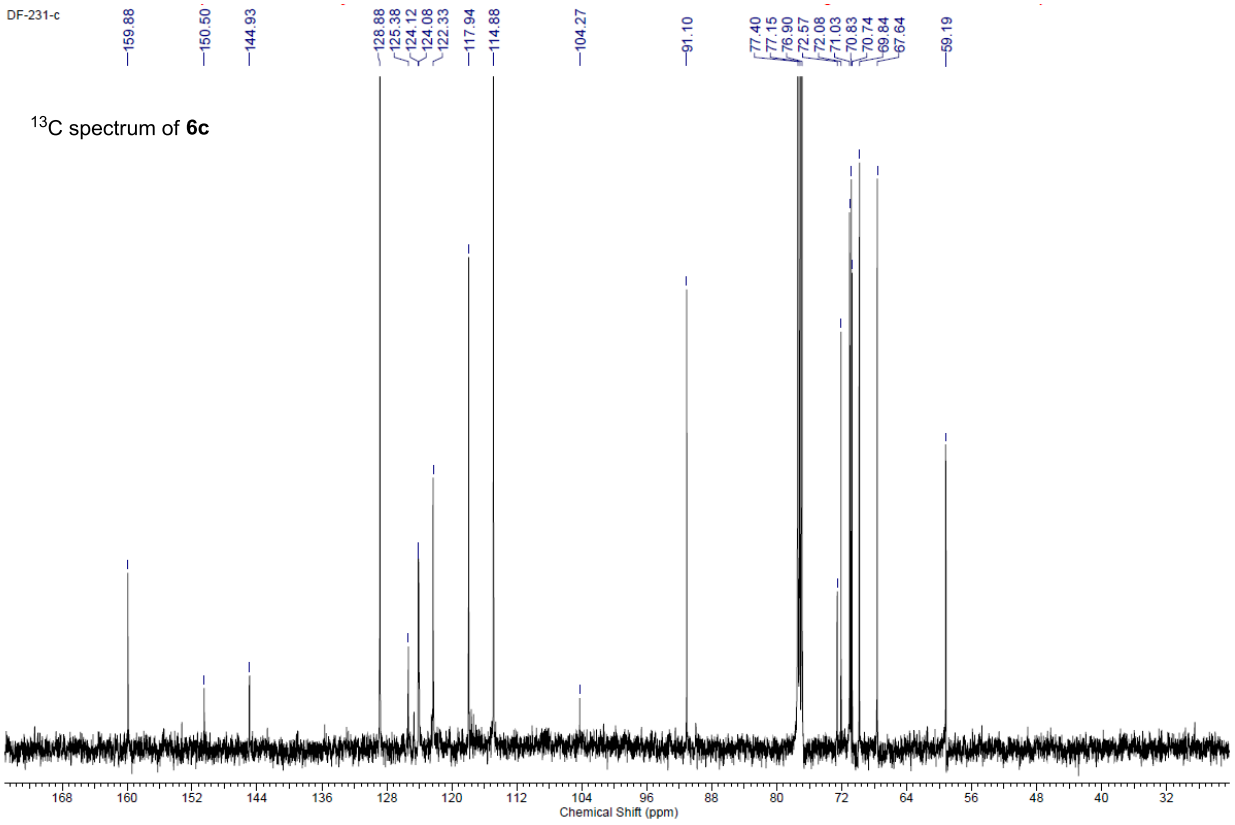
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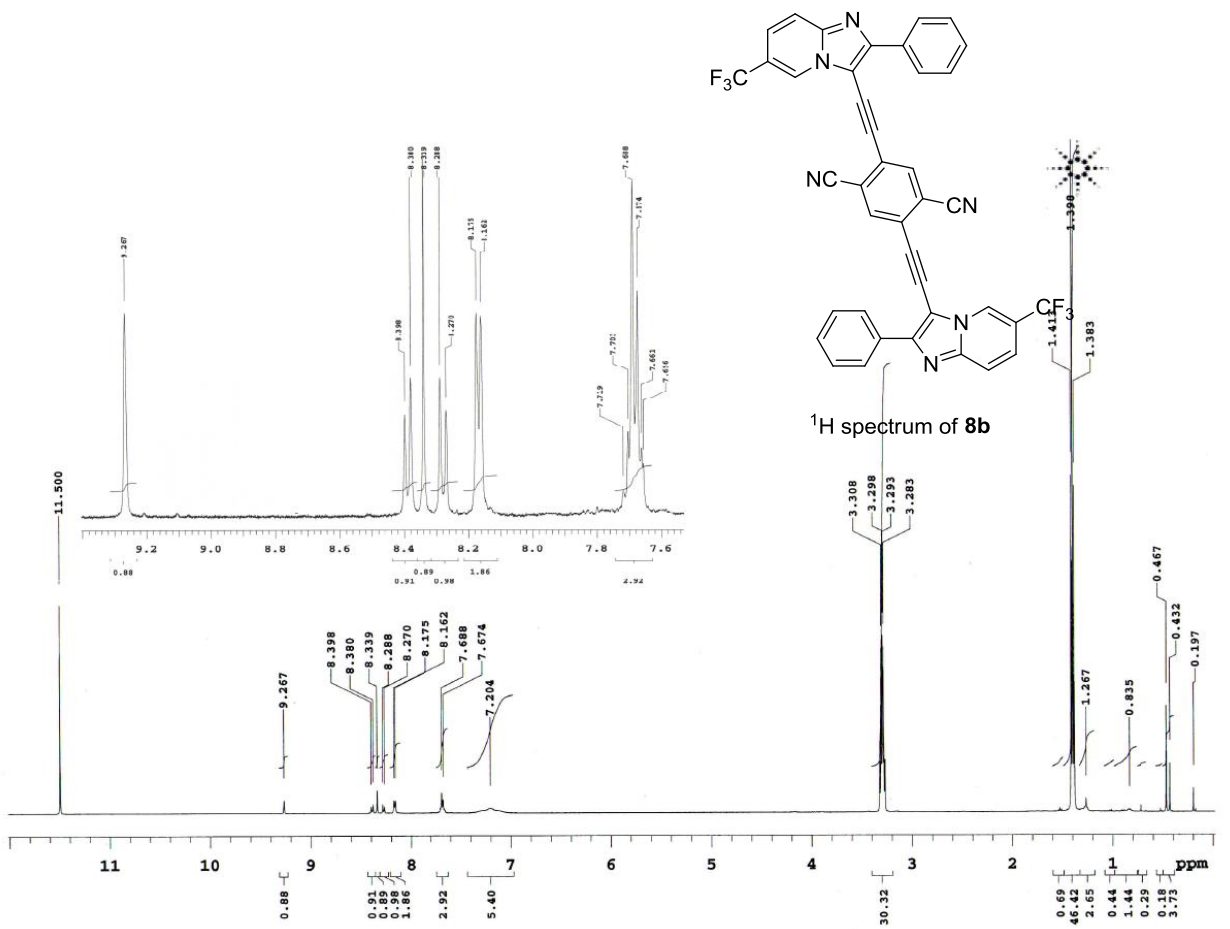
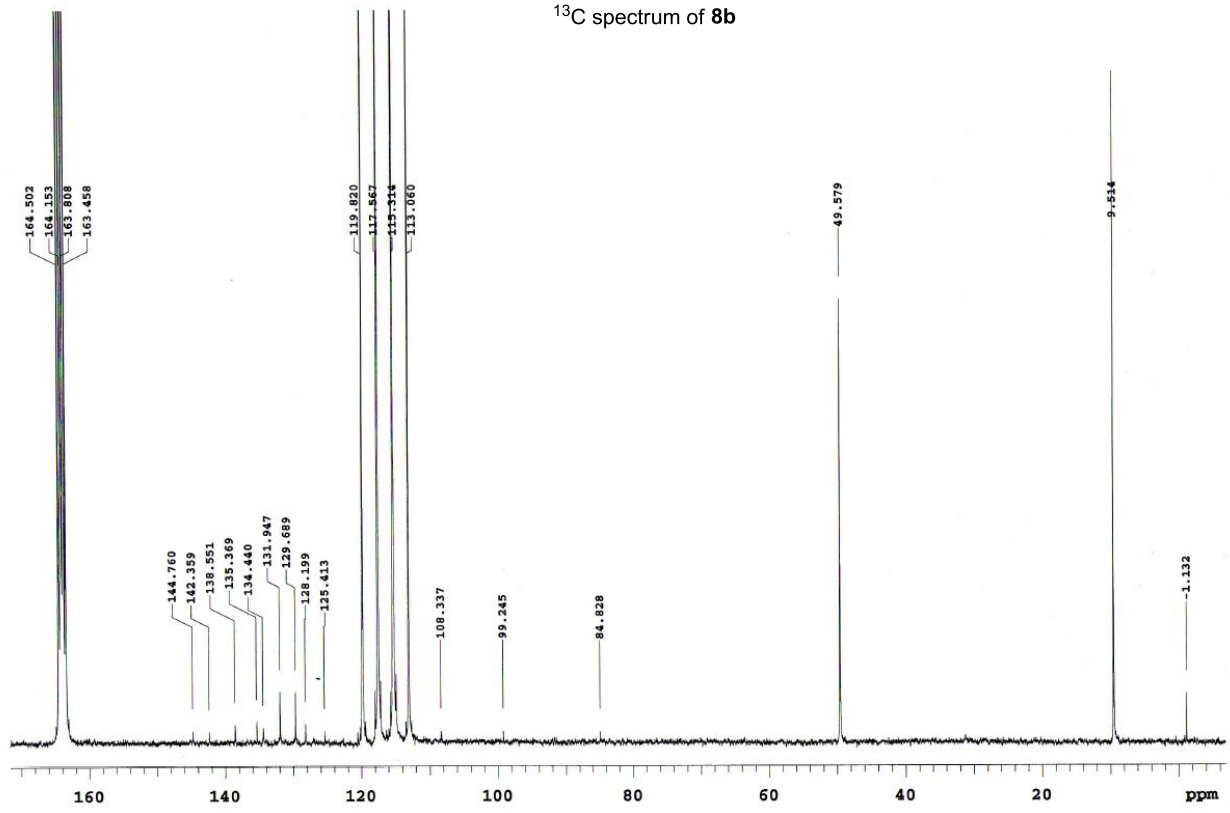
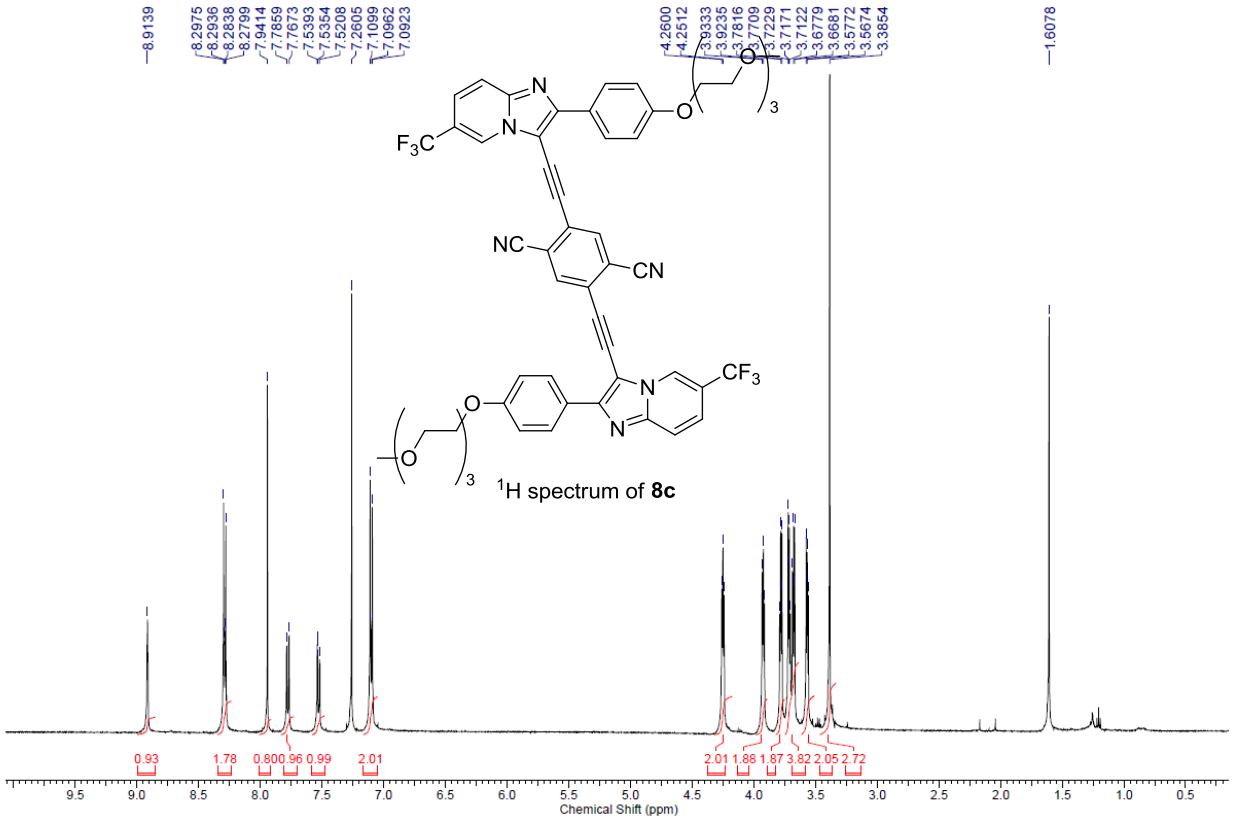


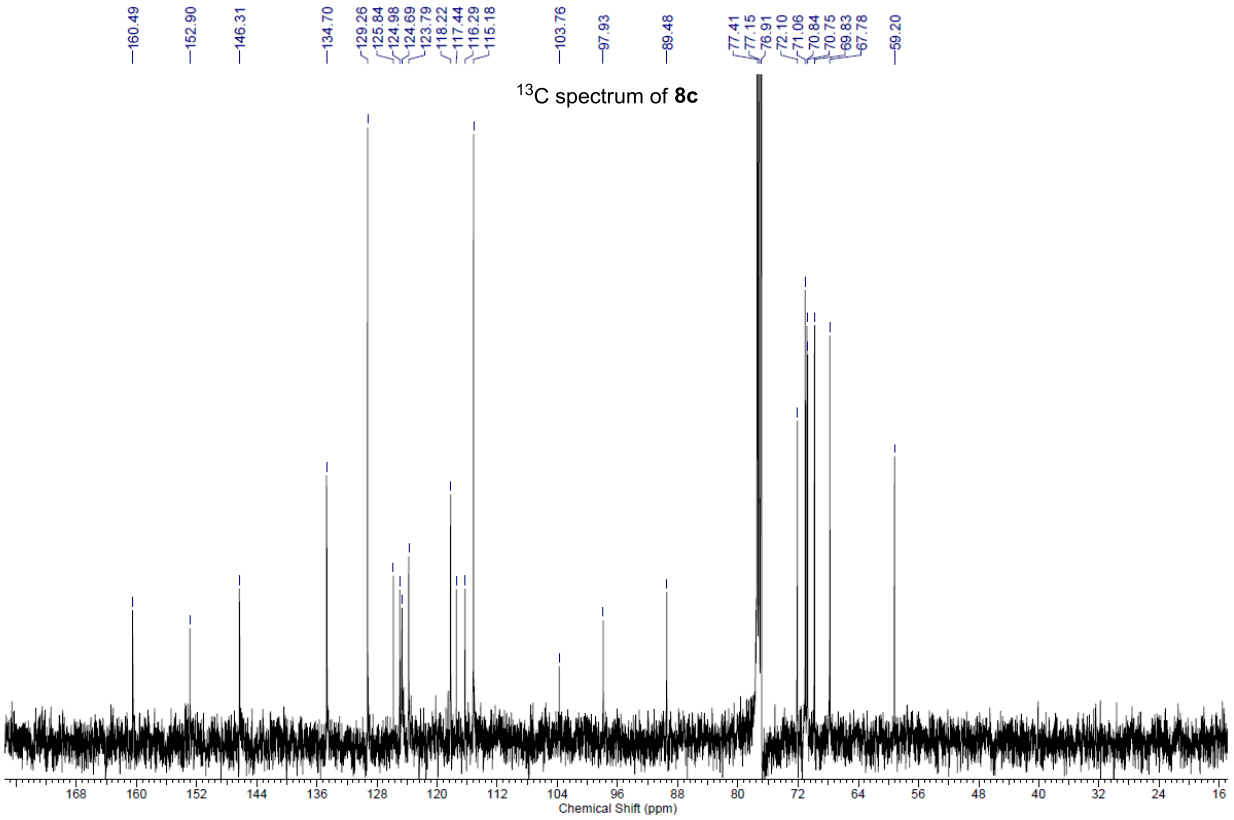
^{1}H spectrum of **8b**



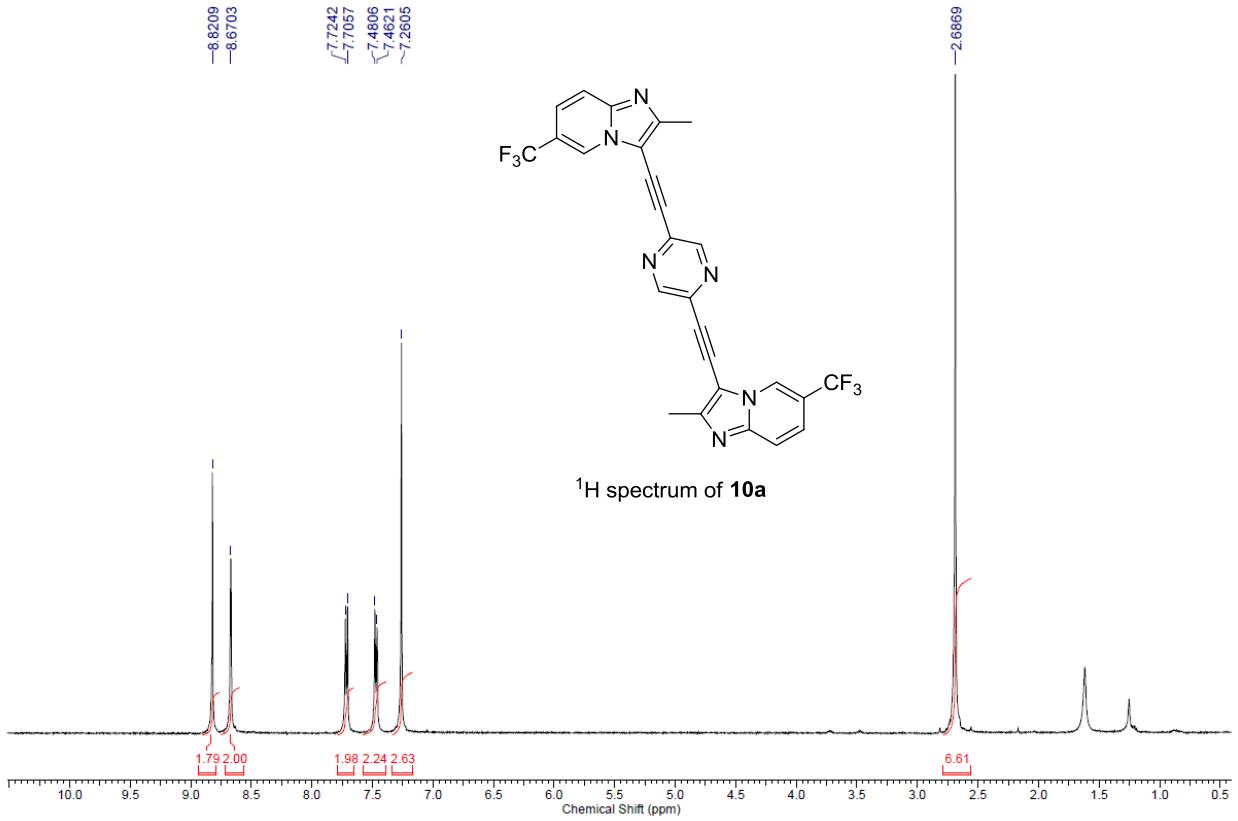
^{13}C spectrum of **8b**



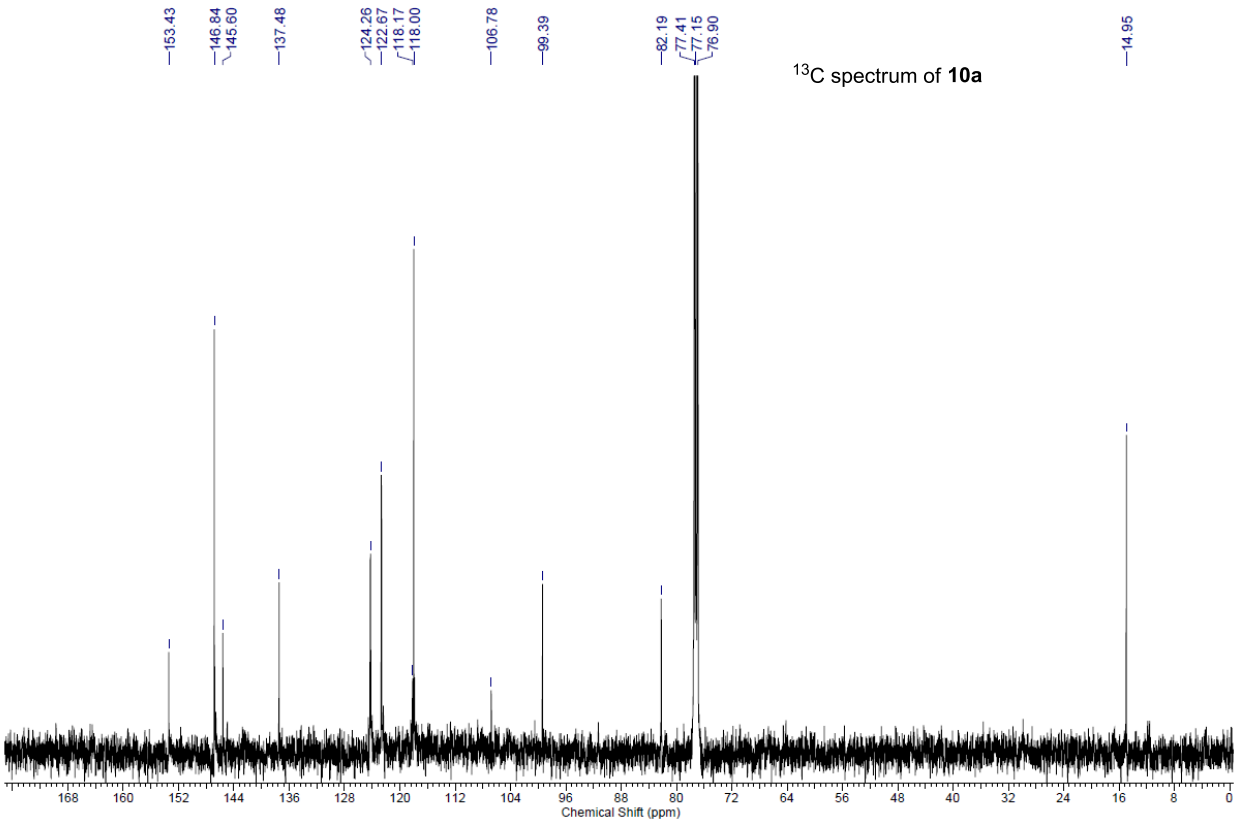
^{1}H spectrum of **8c**



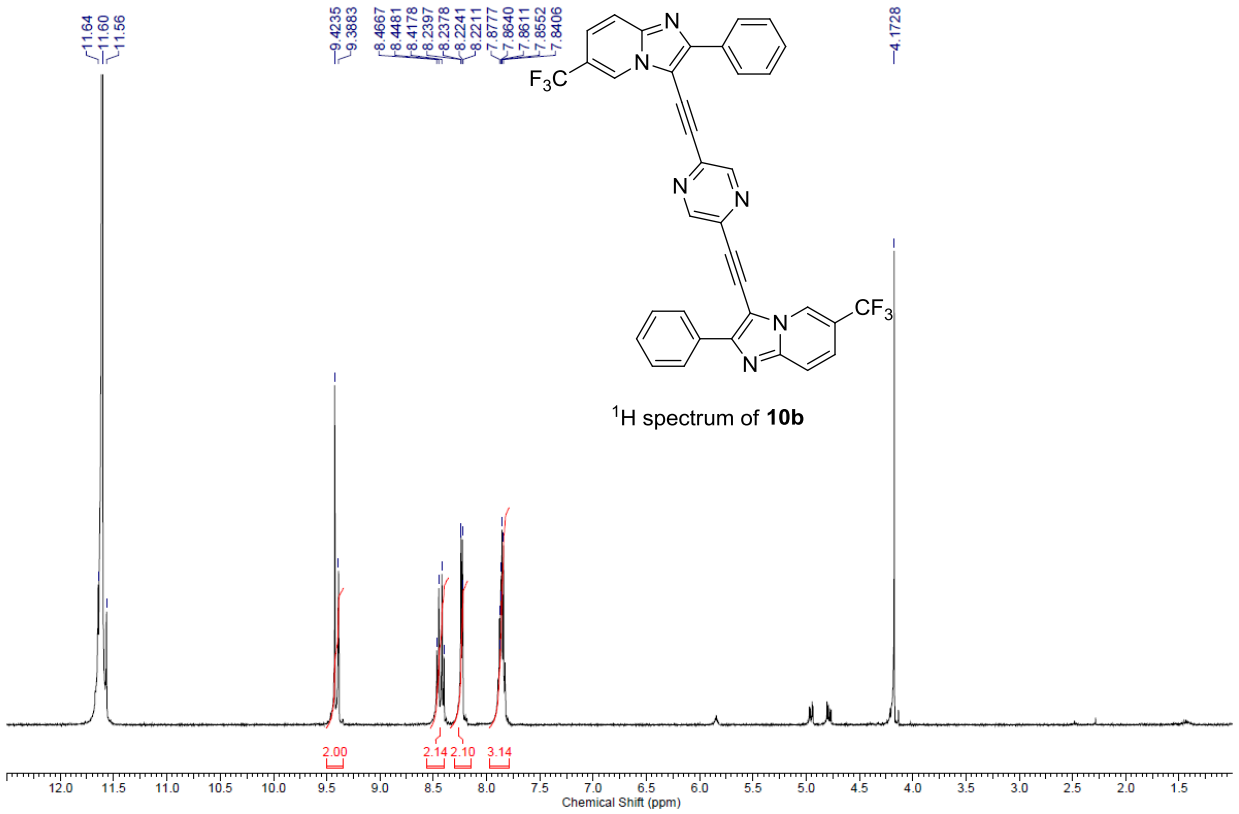
^{13}C spectrum of **8c**



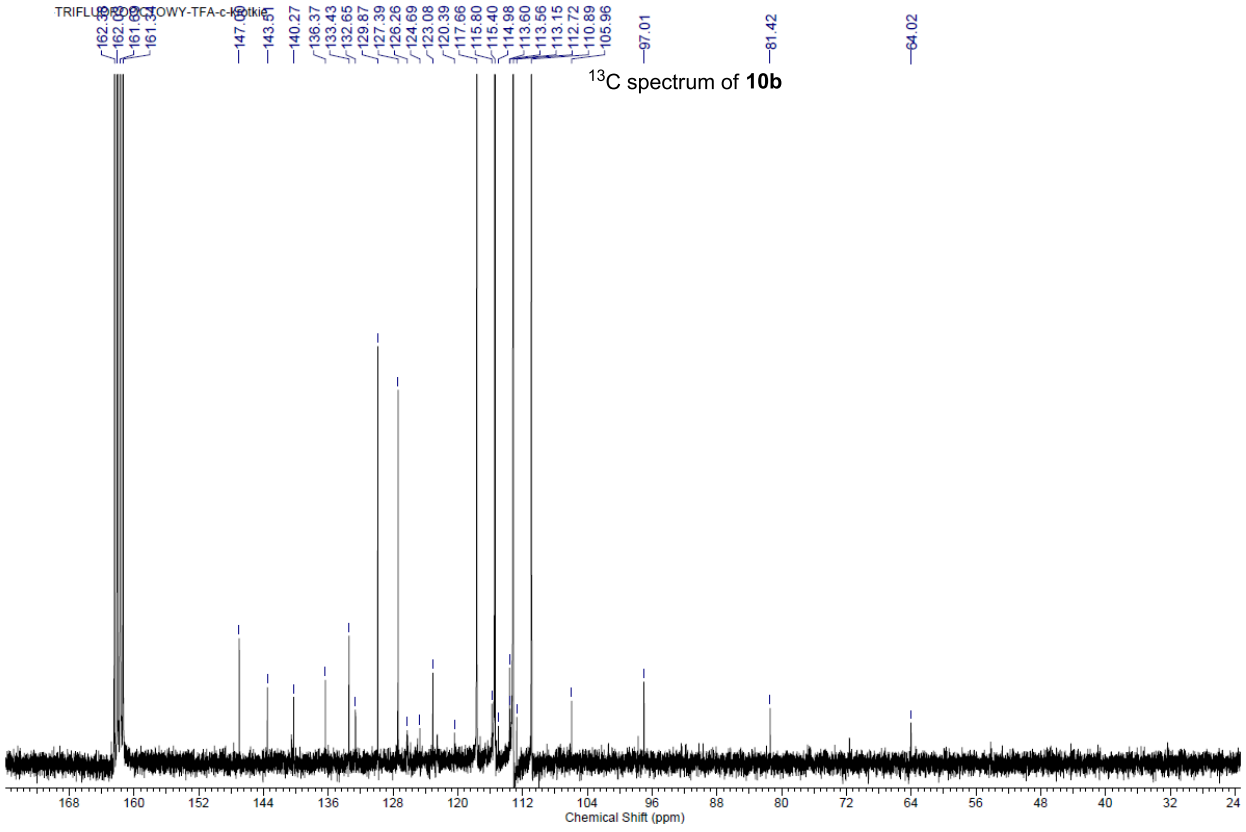
^{1}H spectrum of **10a**



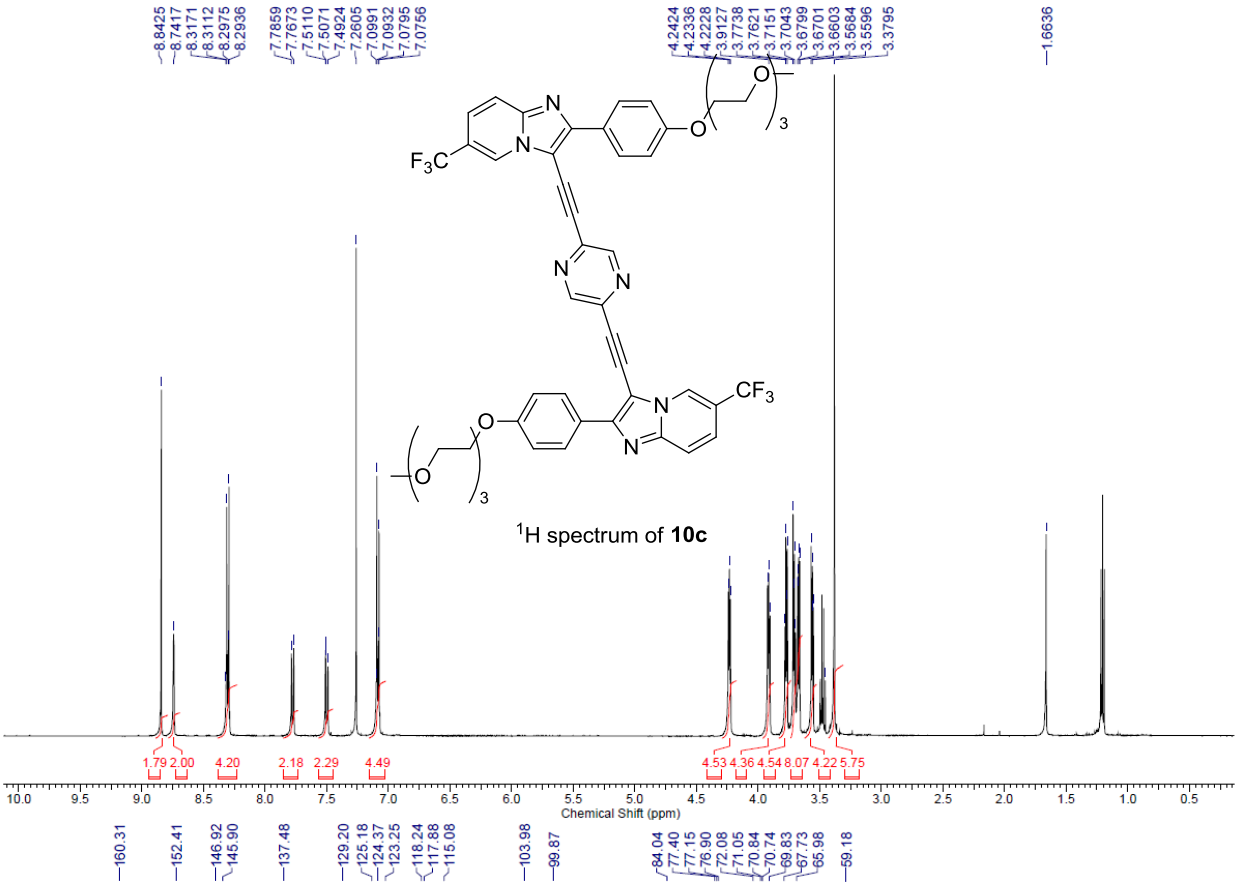
^{13}C spectrum of **10a**



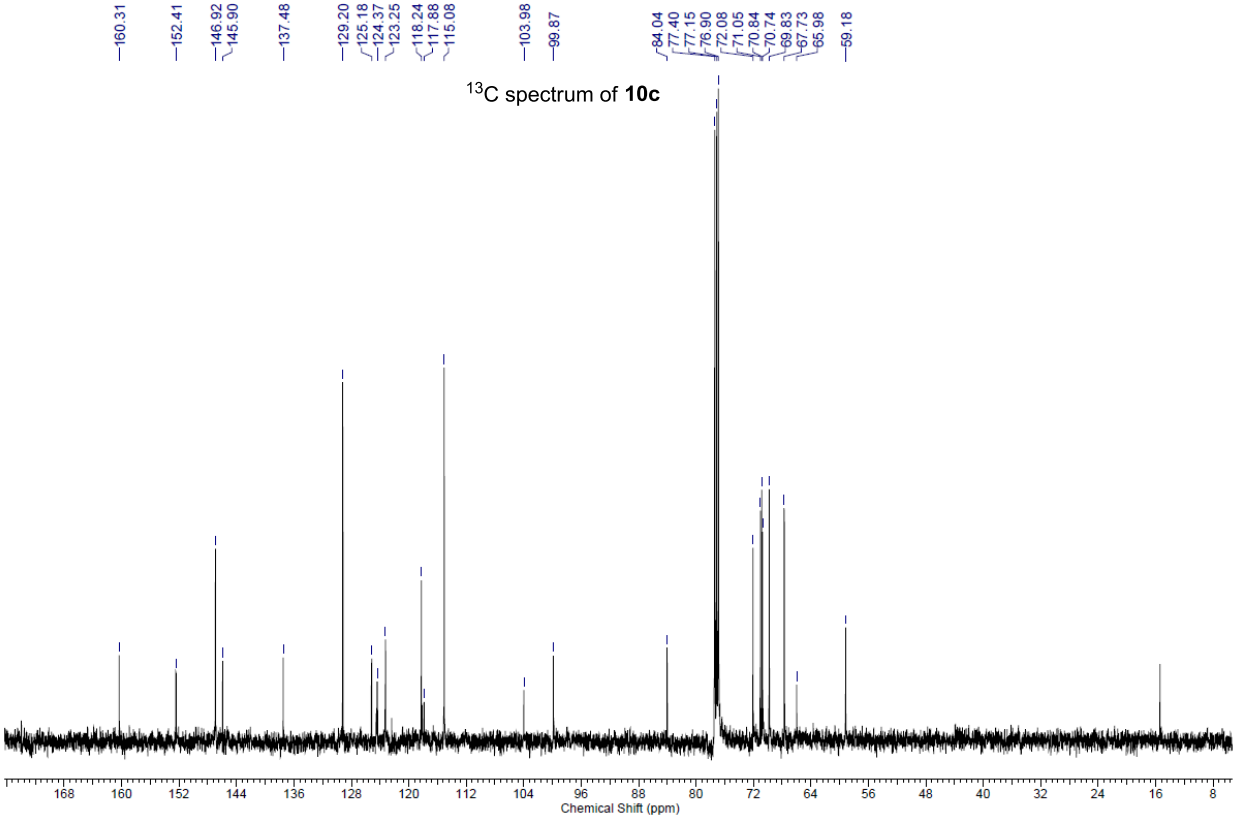
^{1}H spectrum of **10b**



^{13}C spectrum of **10b**



^{1}H spectrum of **10c**



^{13}C spectrum of **10c**