Supporting Information

Asymmetric synthesis of methoxylated ether lipids: Total synthesis of polyunsaturated C18:3 omega-3 and omega-6 MEL triene derivatives

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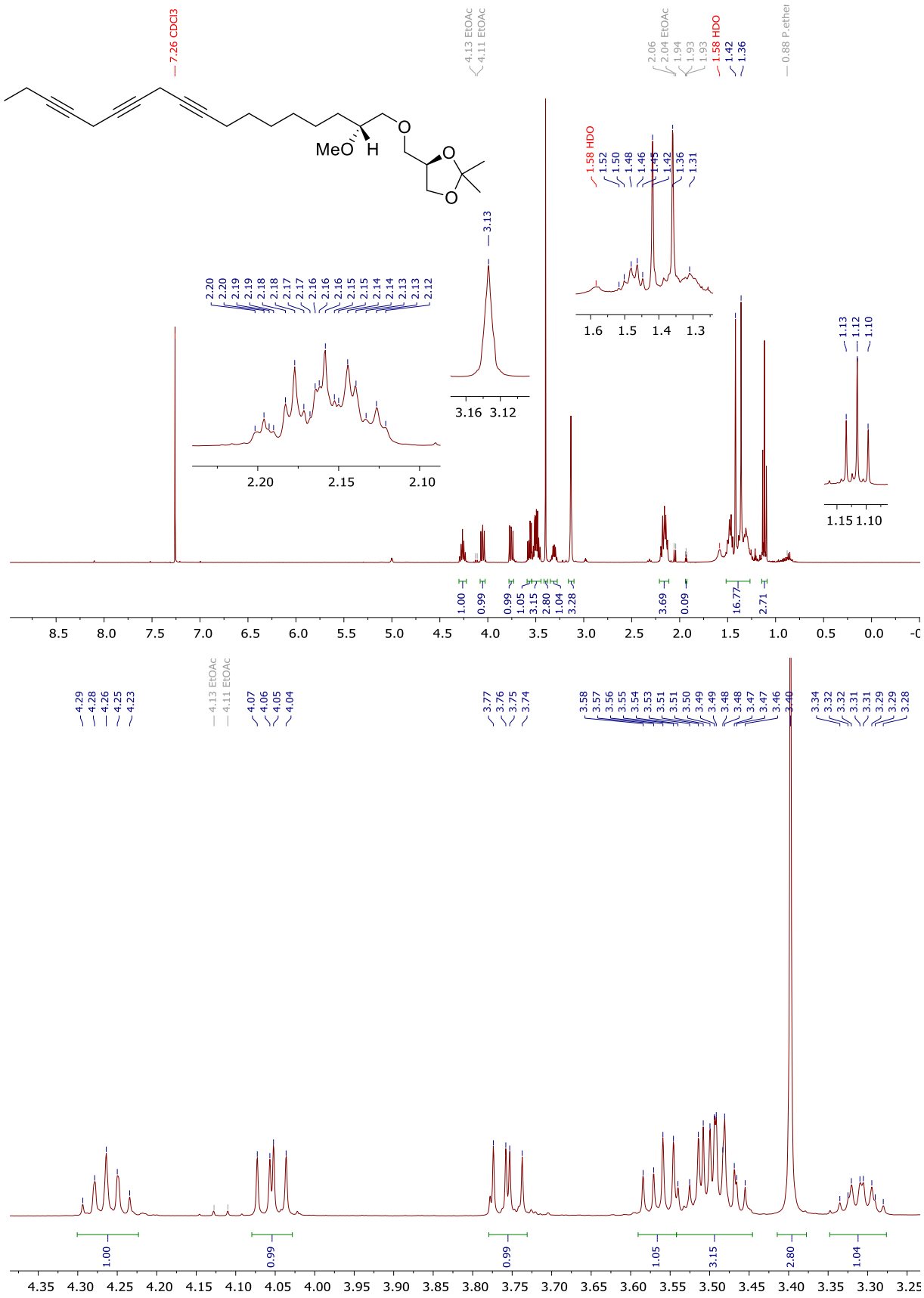
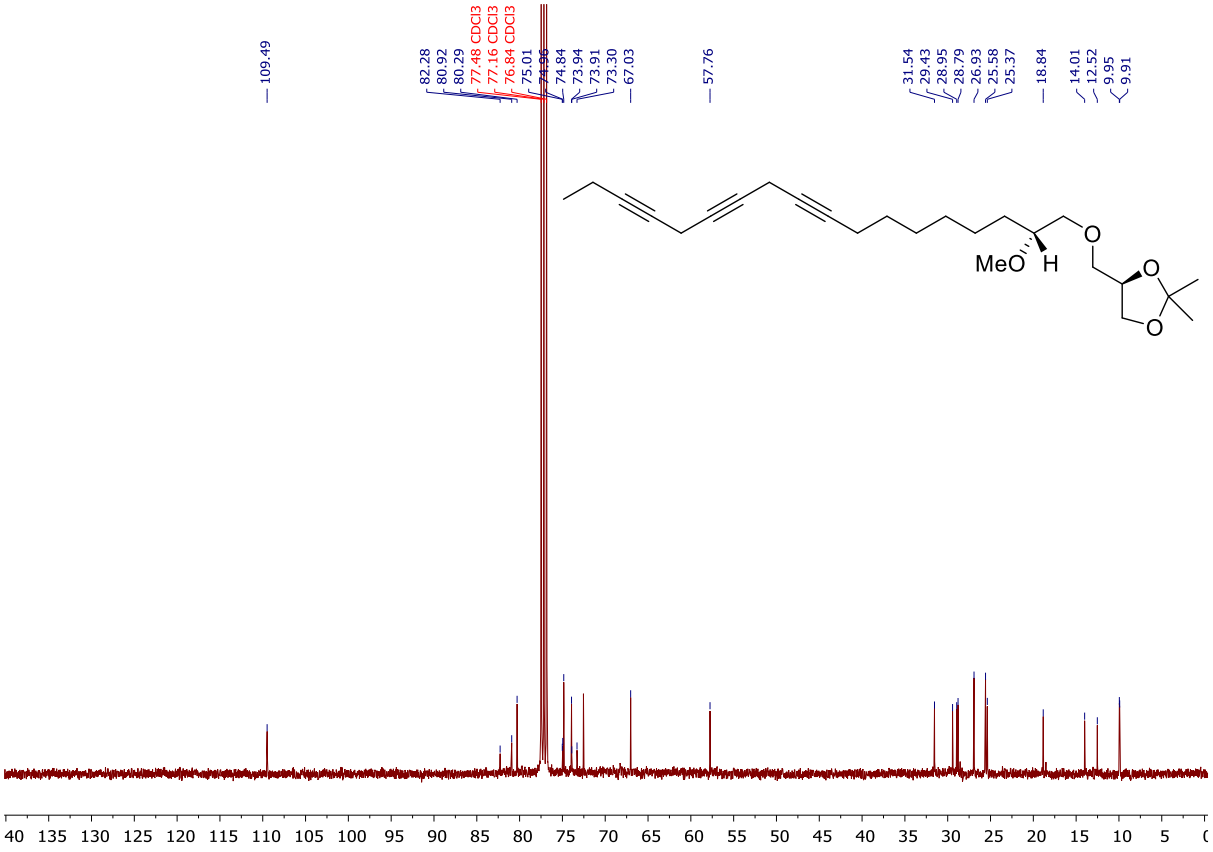
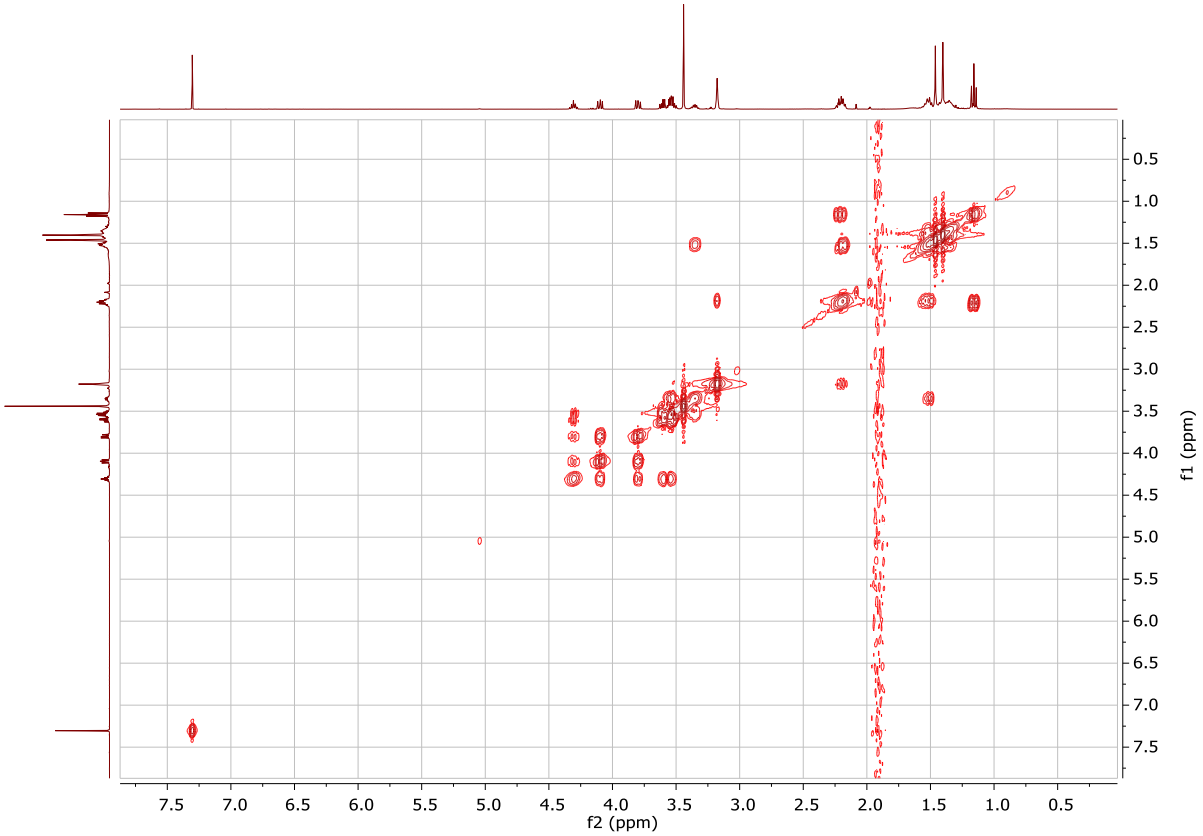
^{1}H NMR (400 MHz, $CDCl_3$) of compound **12**

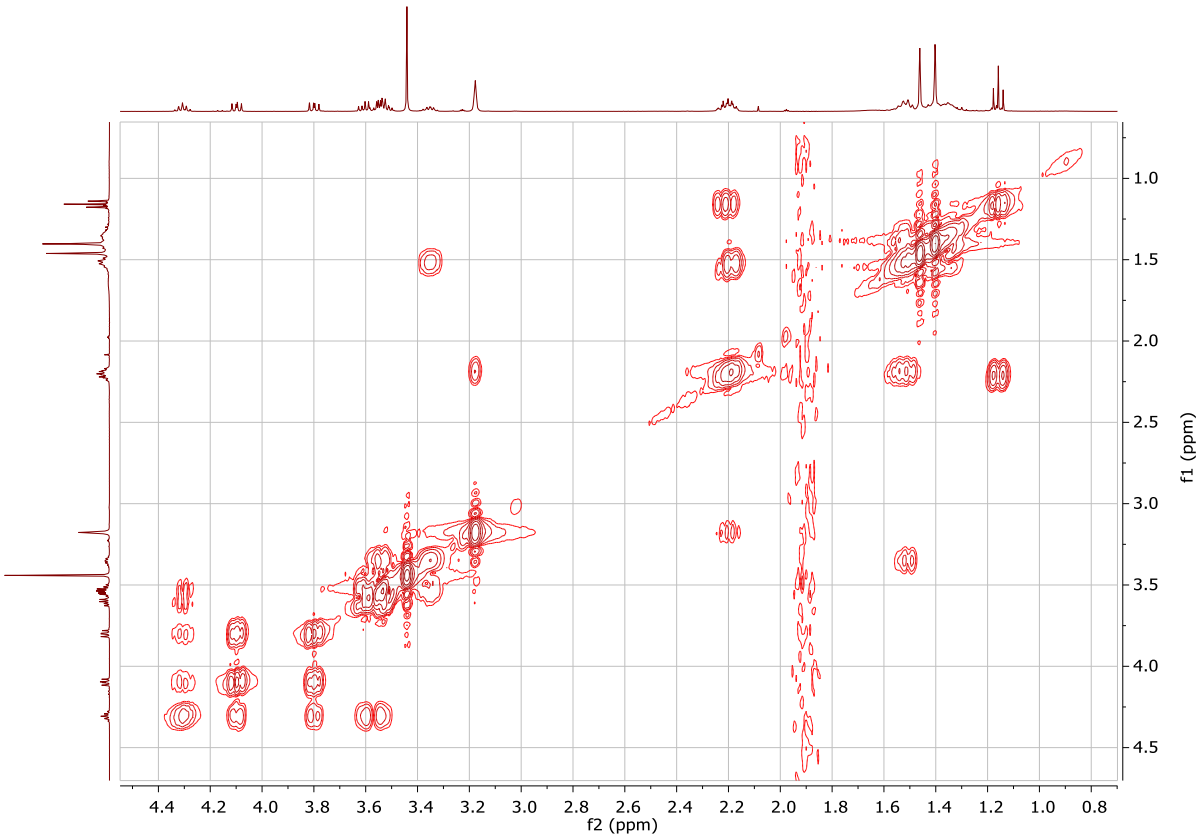


$^{13}C\{H\}$ NMR (101 MHz, $CDCl_3$) of compound **12**

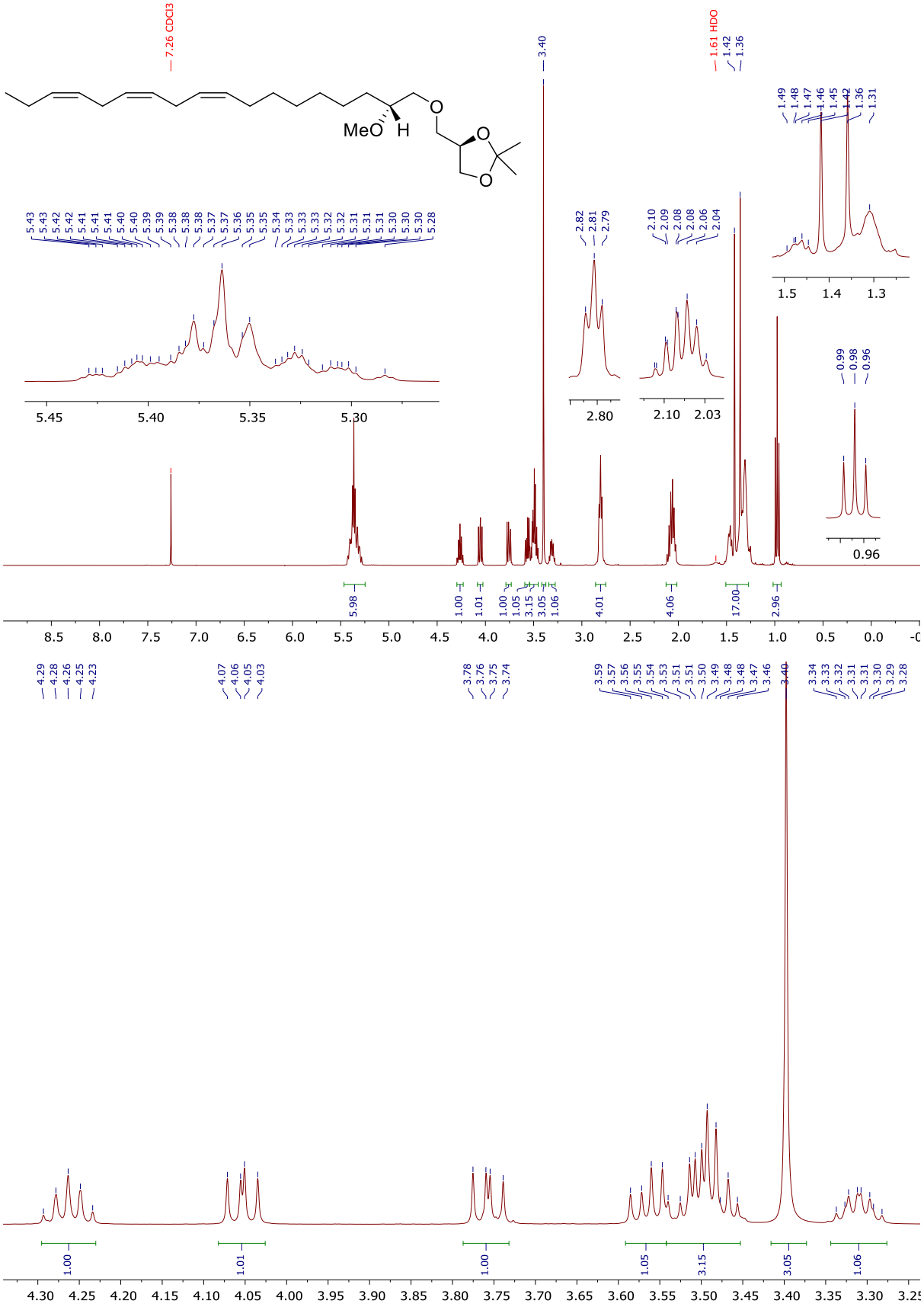


^{1}H-^{1}H COSY spectrum of compound **12**

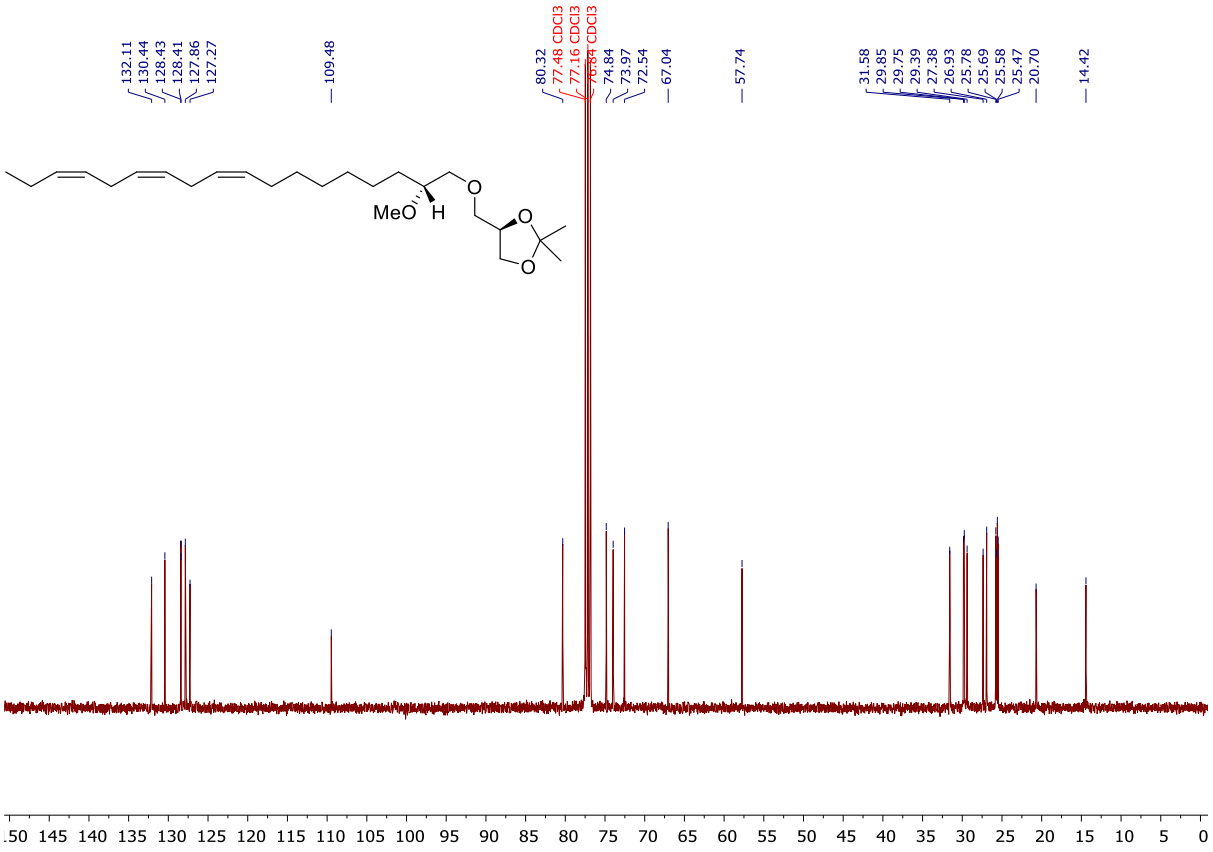




^{1}H NMR (400 MHz, $CDCl_3$) of compound **13**



$^{13}C\{H\}$ NMR (101 MHz, $CDCl_3$) of compound **13**



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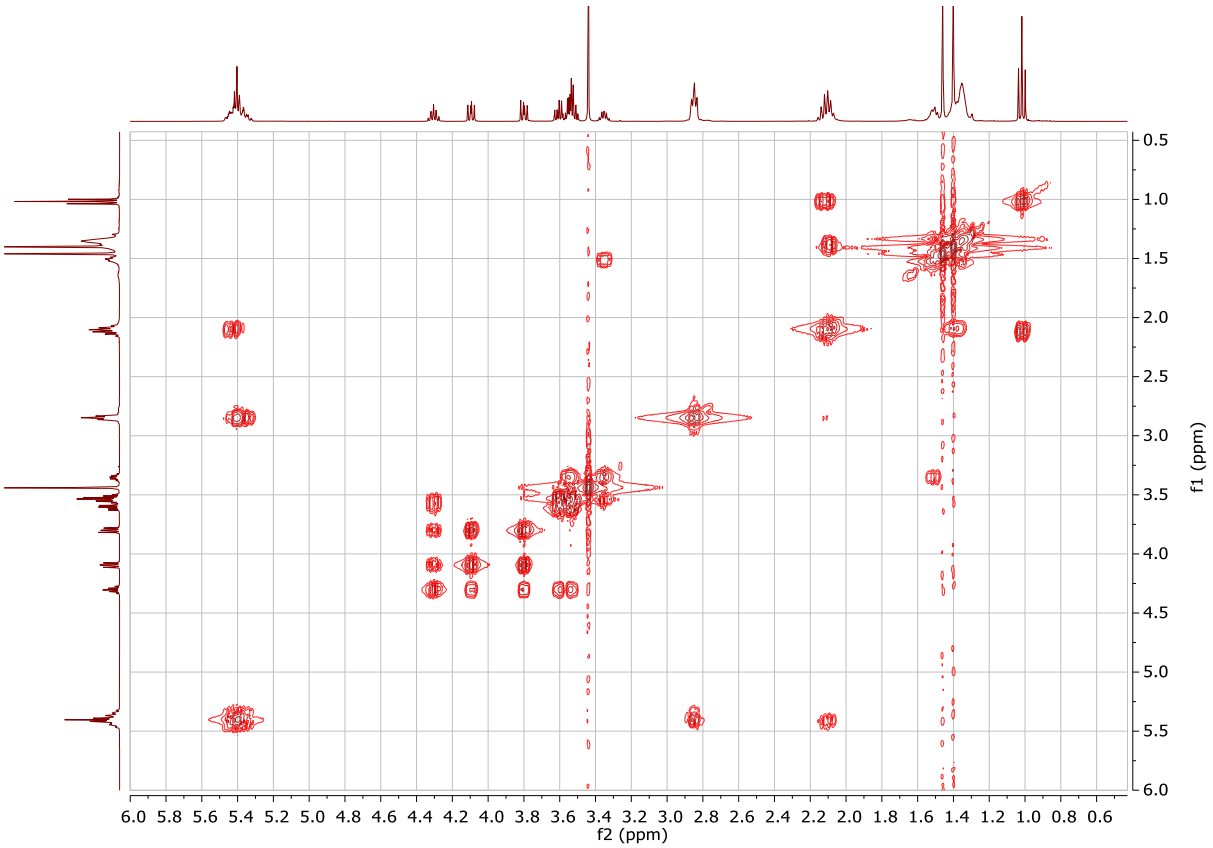
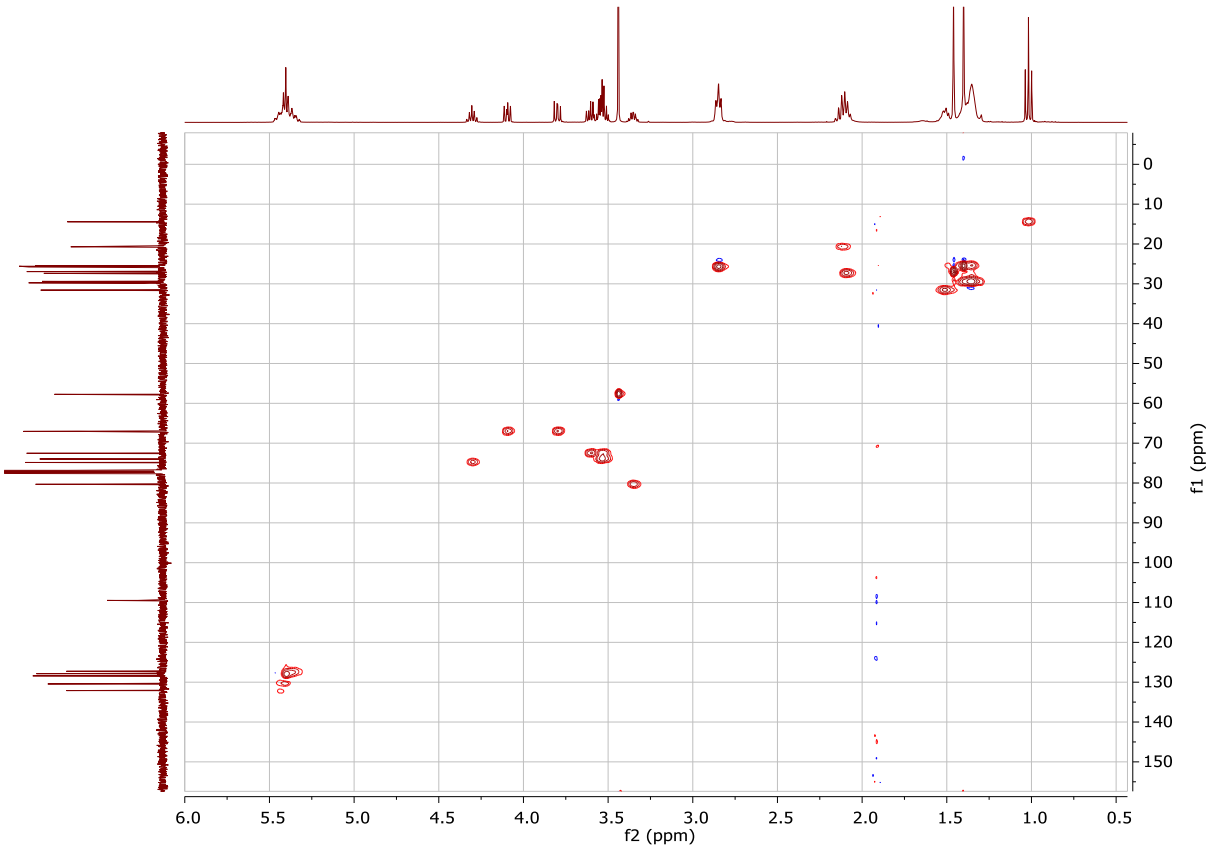
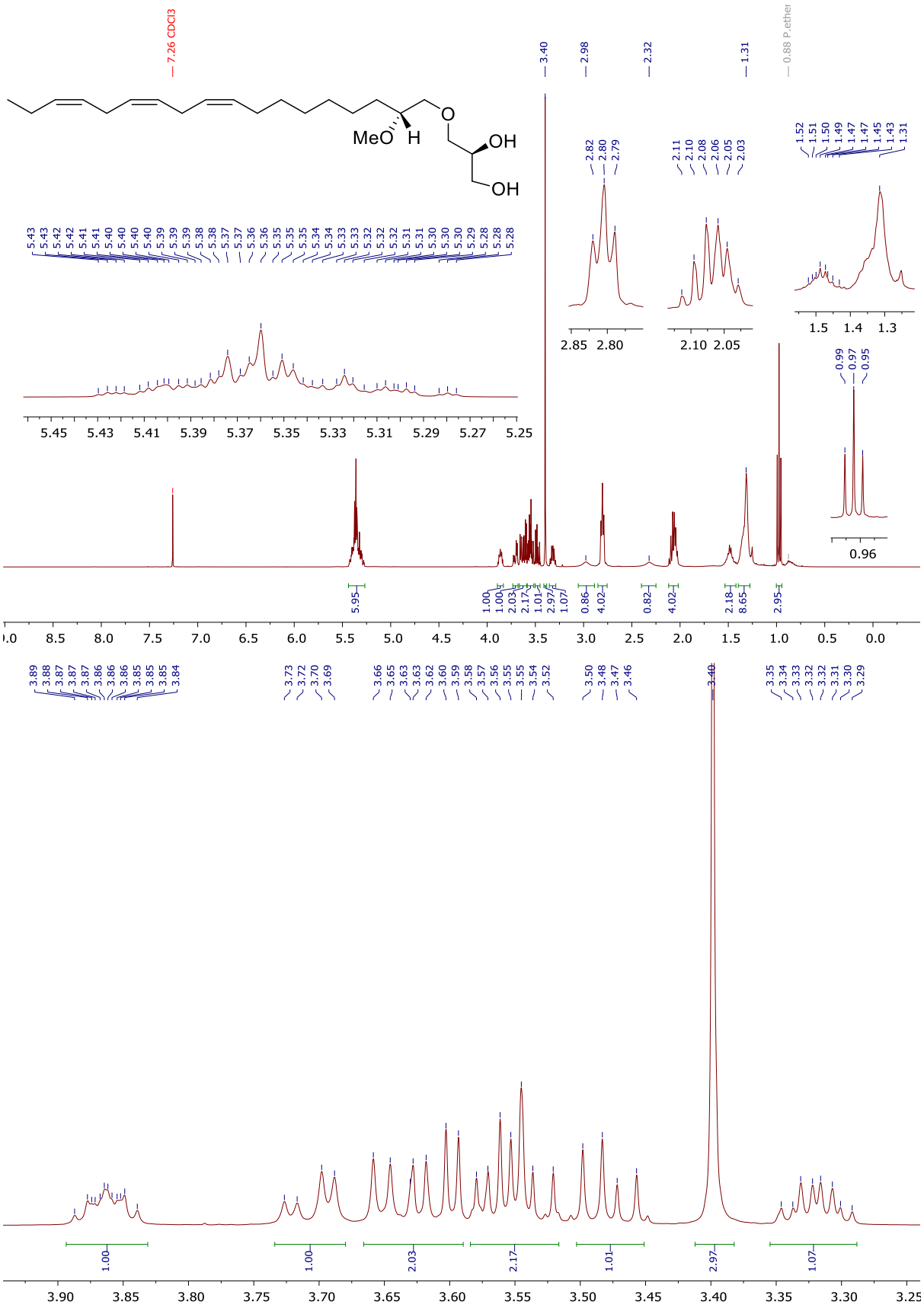


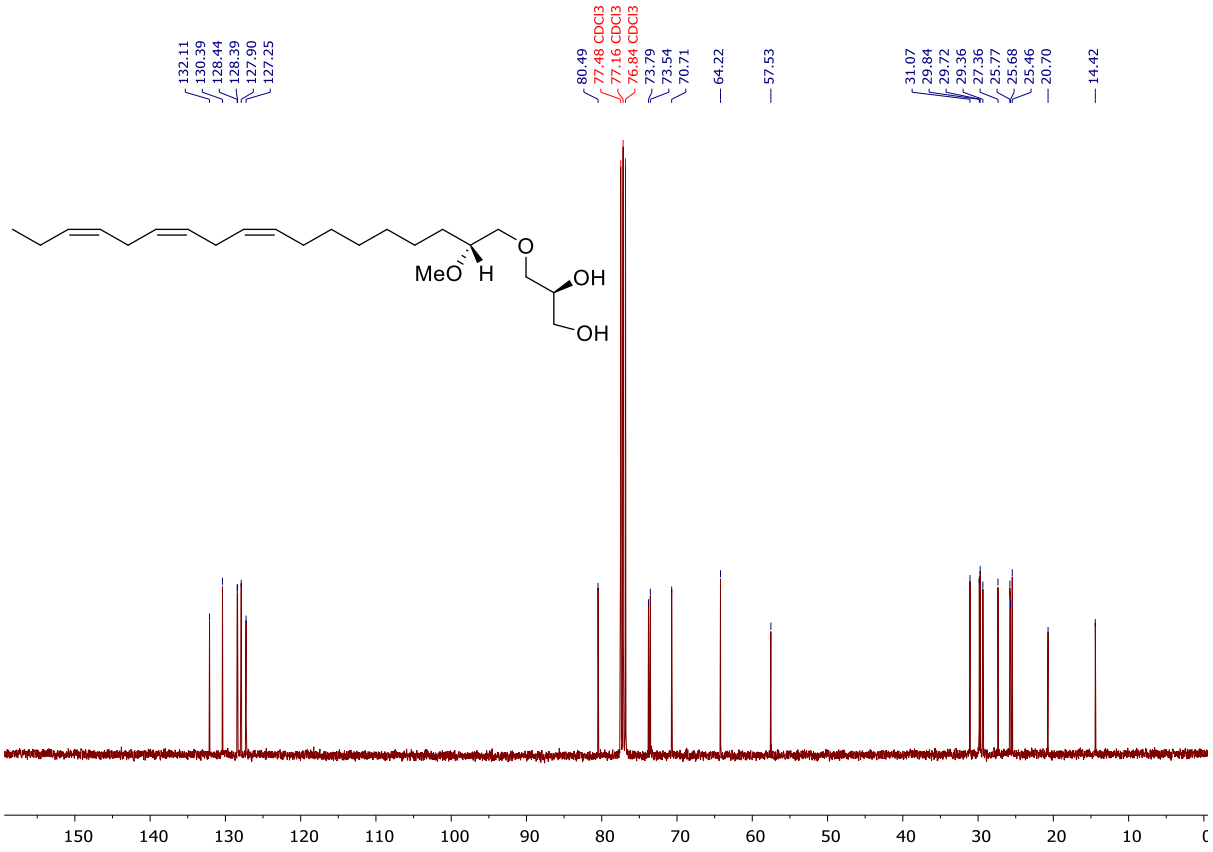
^{13}C-^{1}H HSQC spectrum of compound **13**



^{1}H NMR (400 MHz, $CDCl_3$) of MEL **5**



$^{13}C\{H\}$ NMR (101 MHz, $CDCl_3$) of MEL **5**



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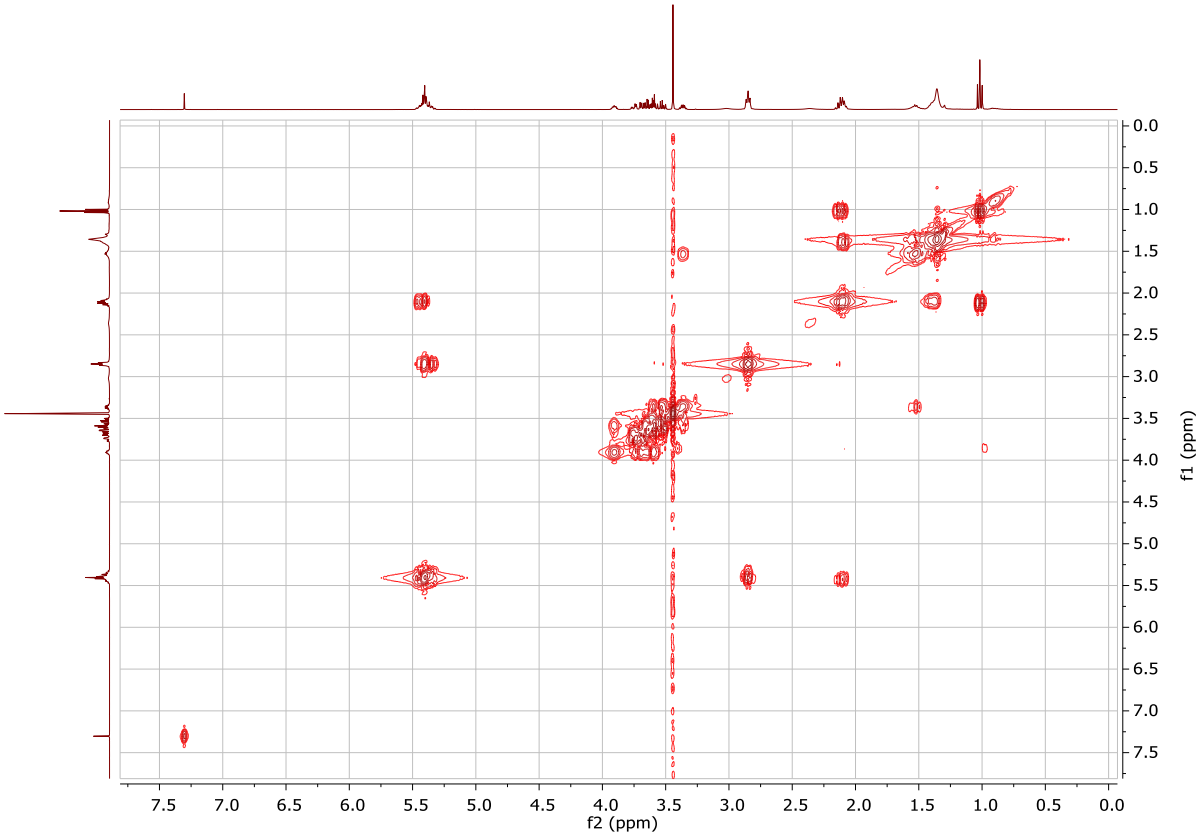
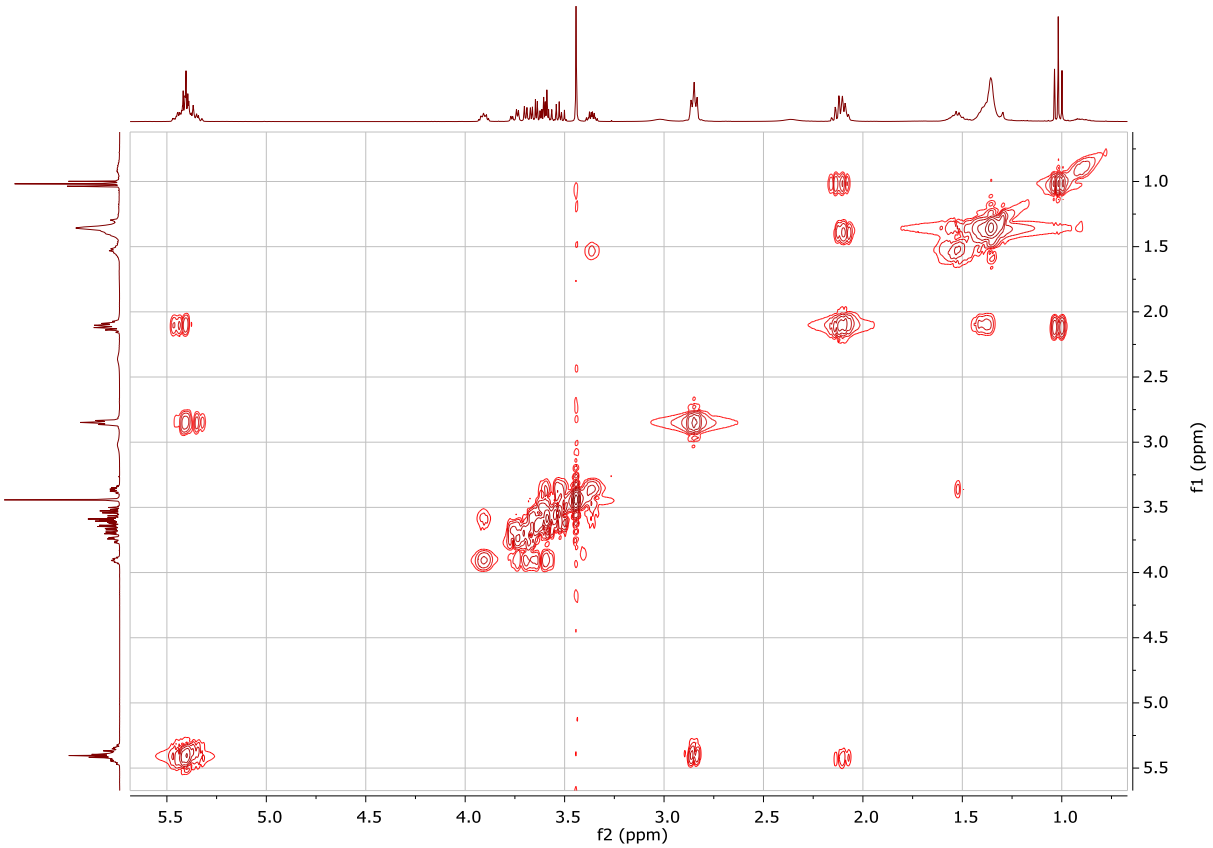
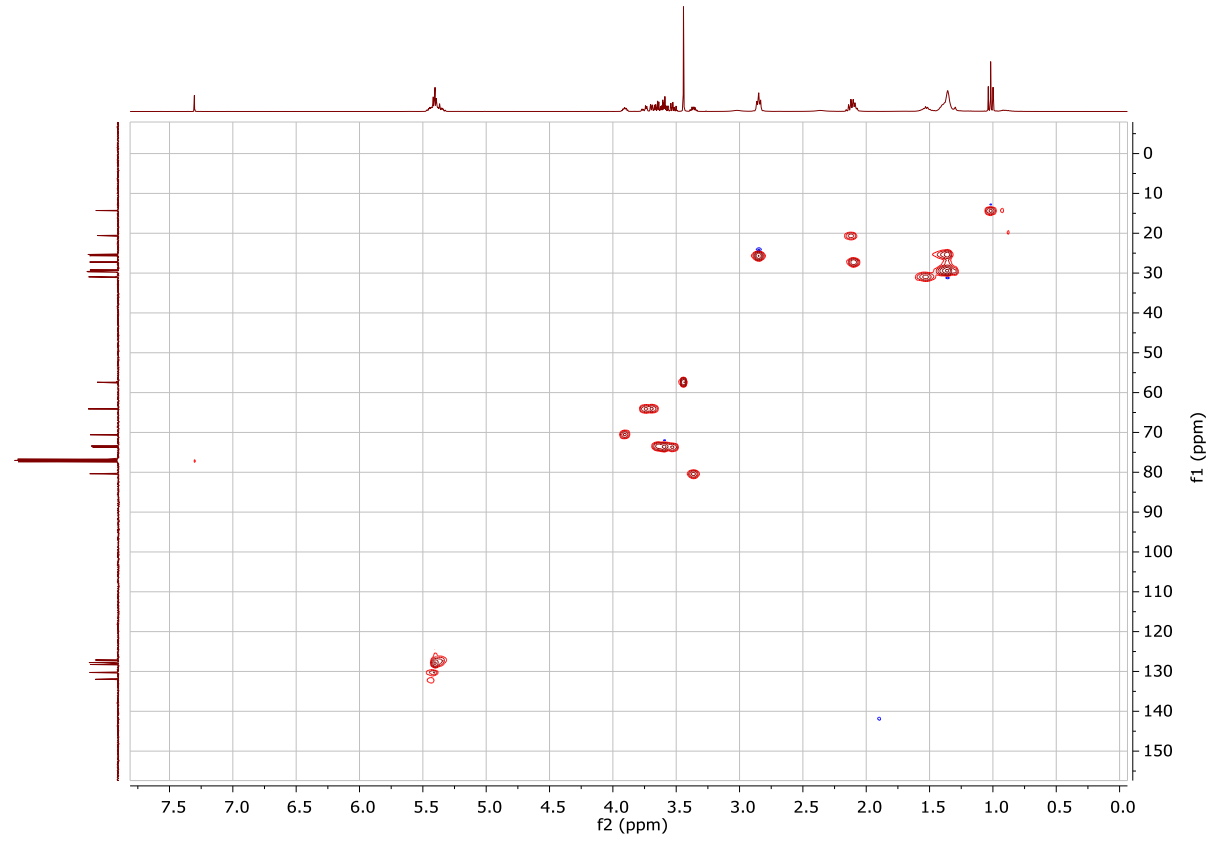
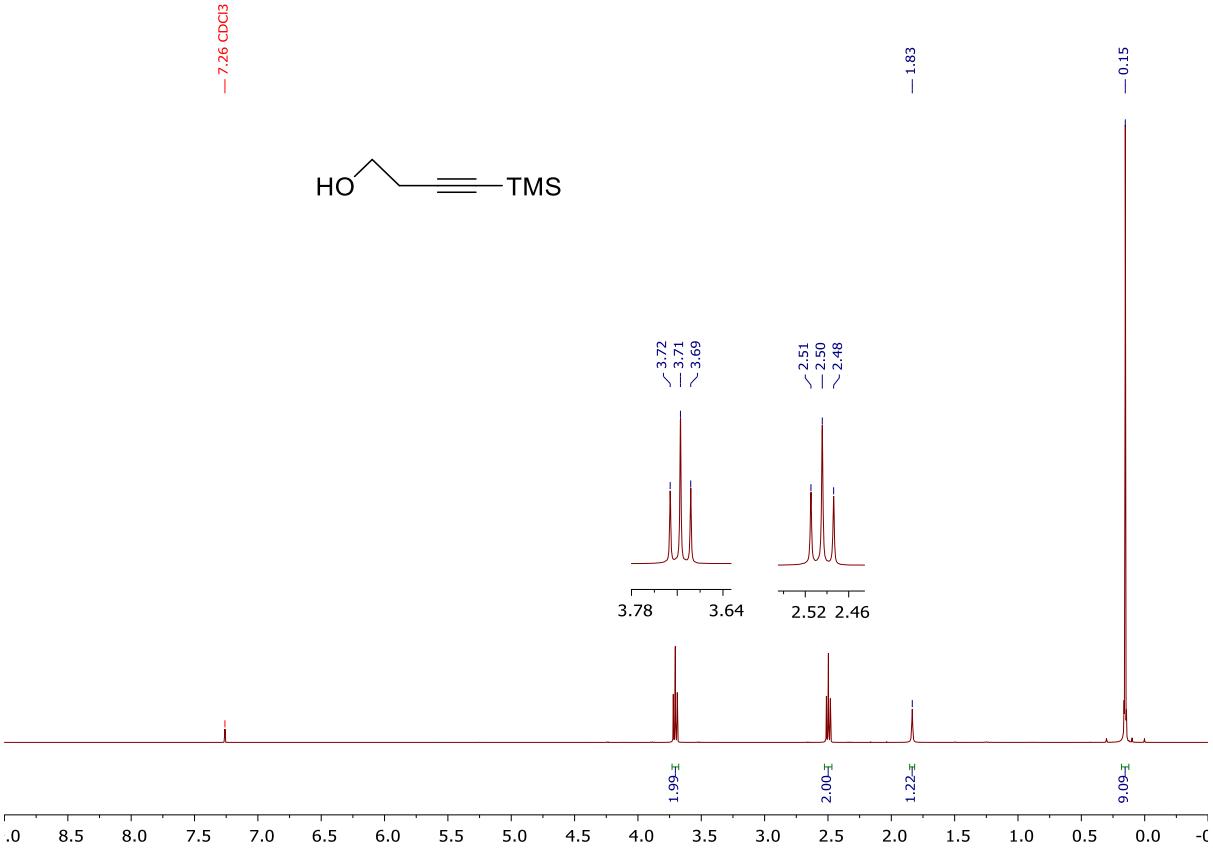




^{13}C-^{1}H HSQC spectrum of MEL **5**



^{1}H NMR (400 MHz, $CDCl_3$) of compound **14**



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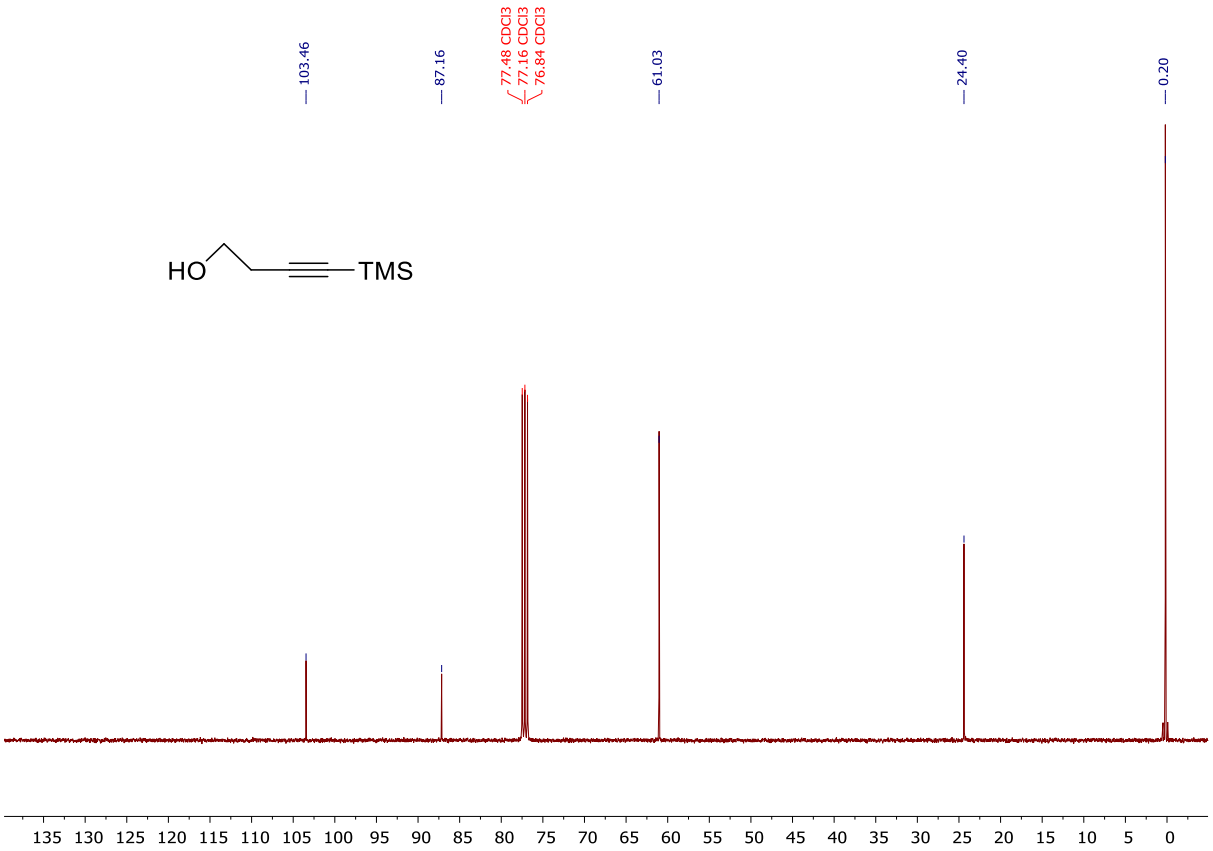

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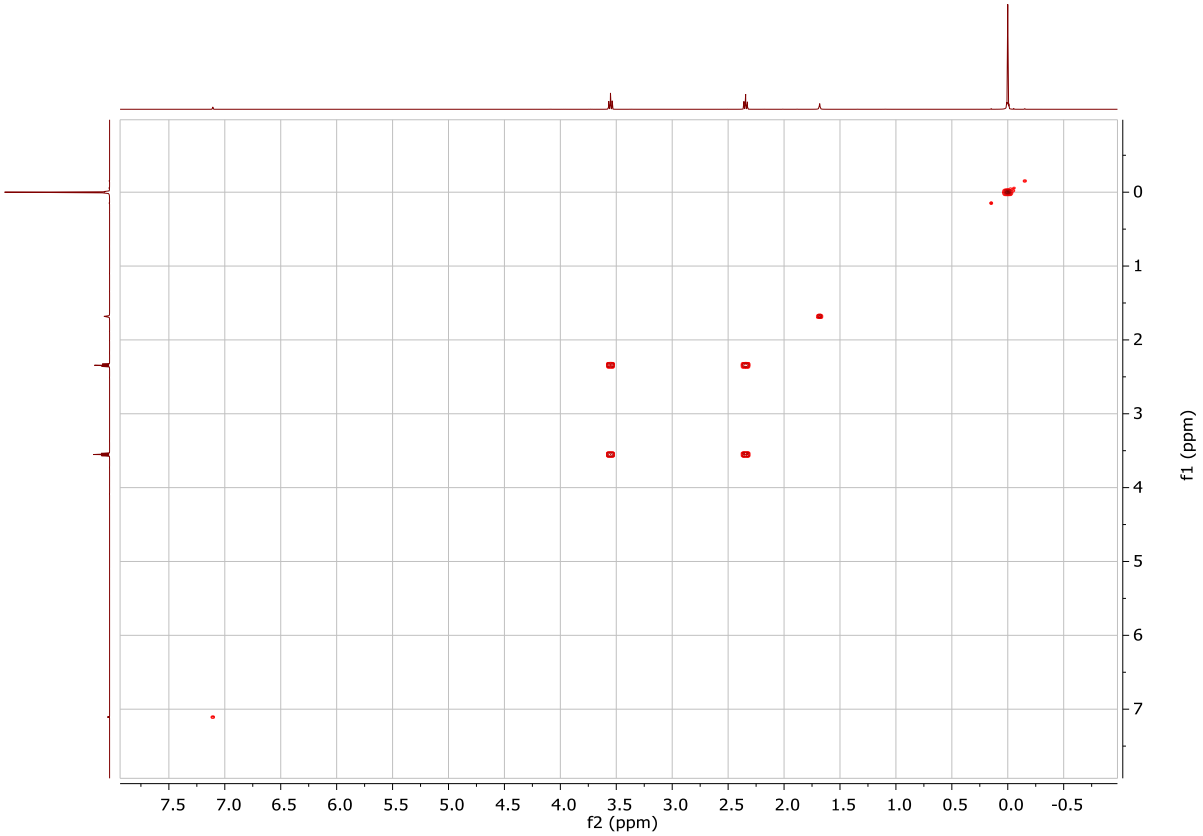

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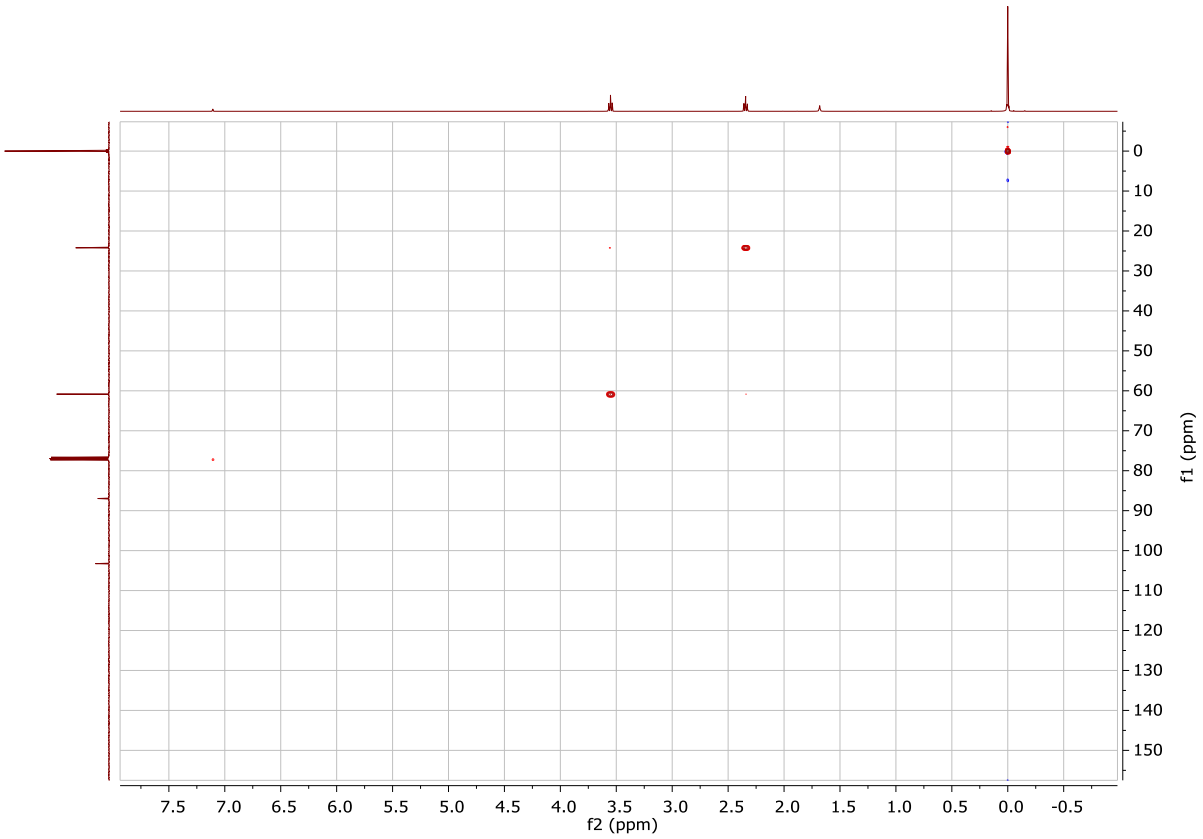
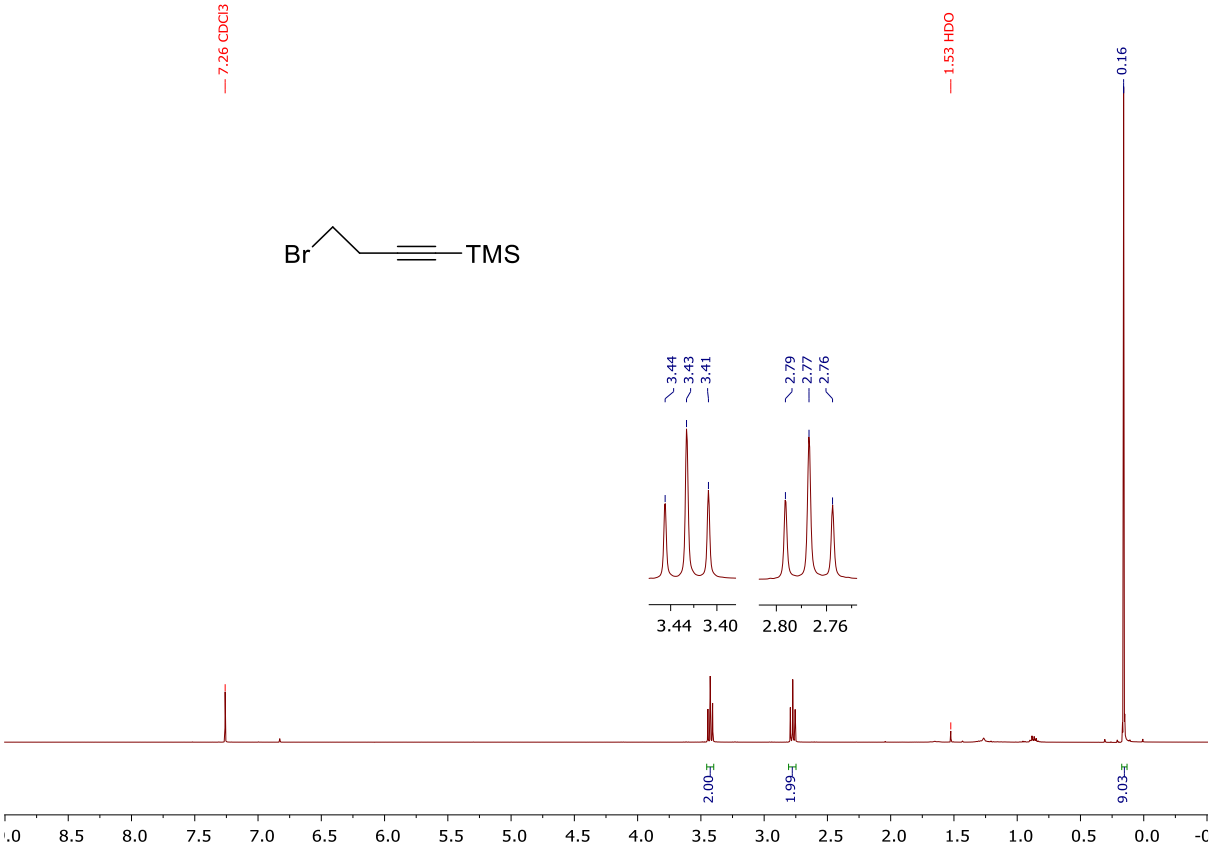


^{1}H NMR (400 MHz, $CDCl_3$) of compound **15**



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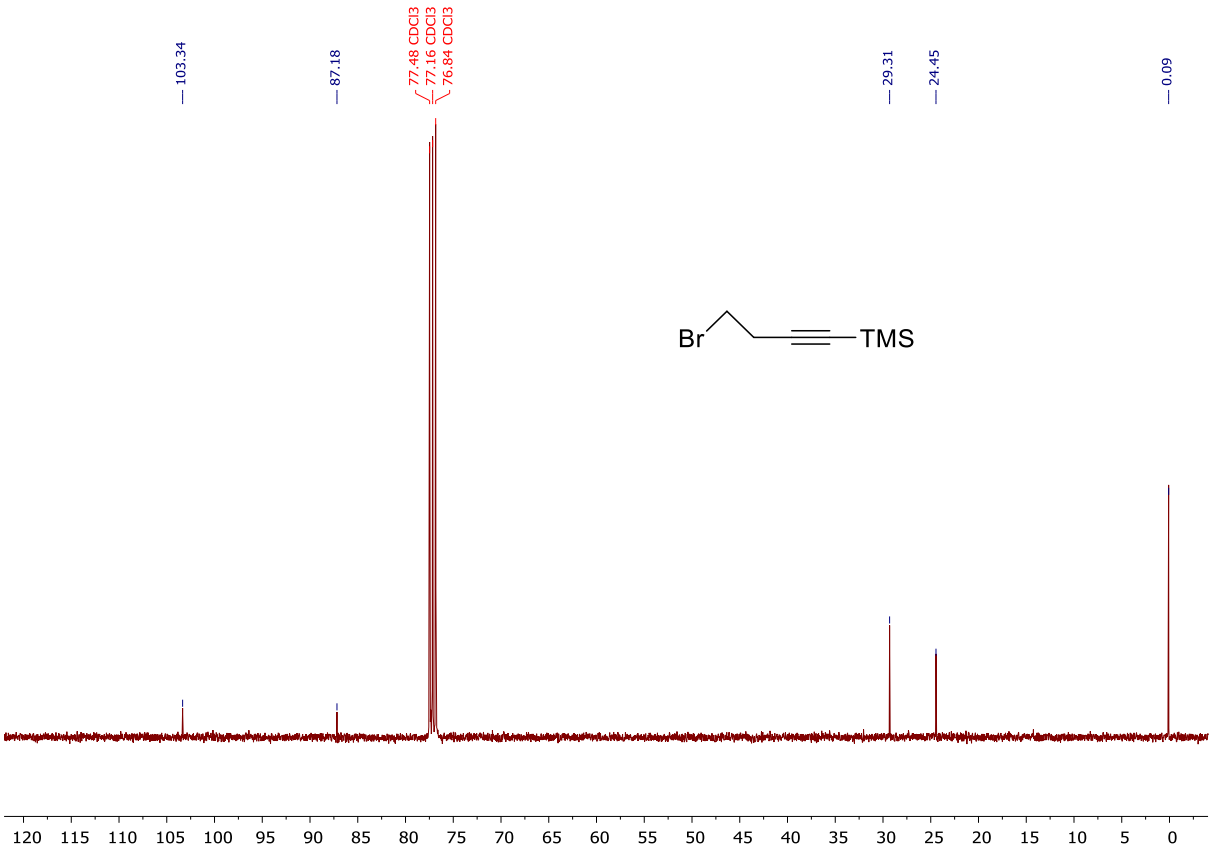
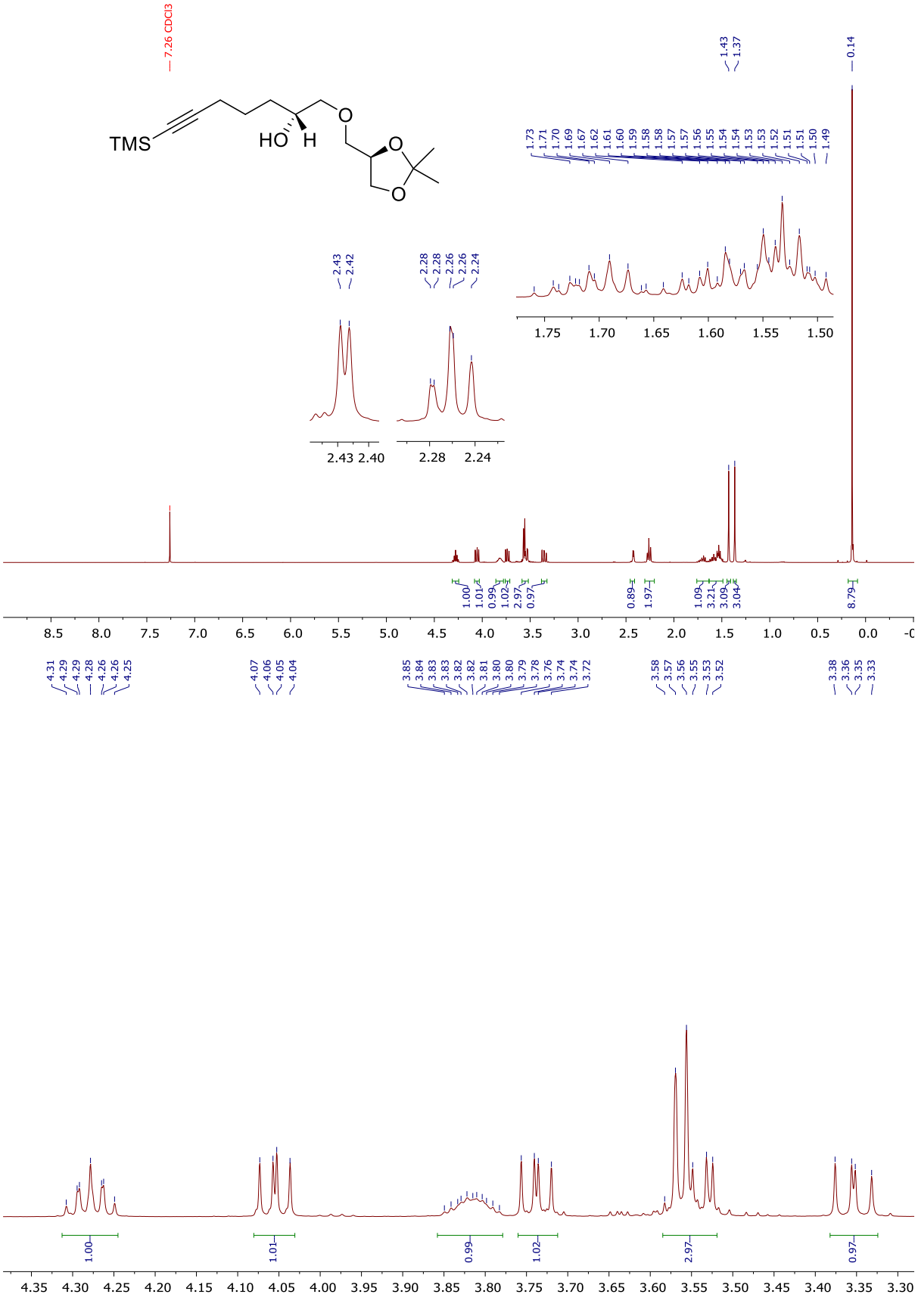
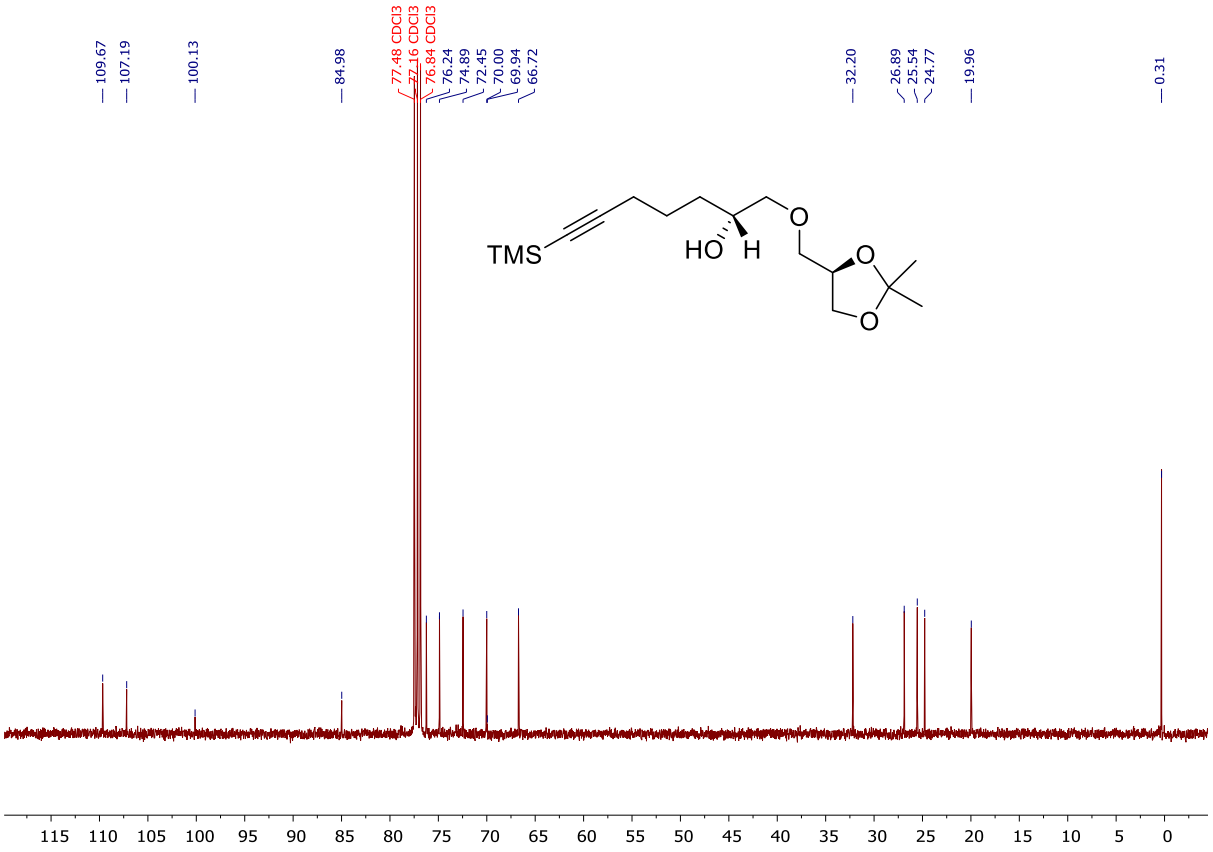


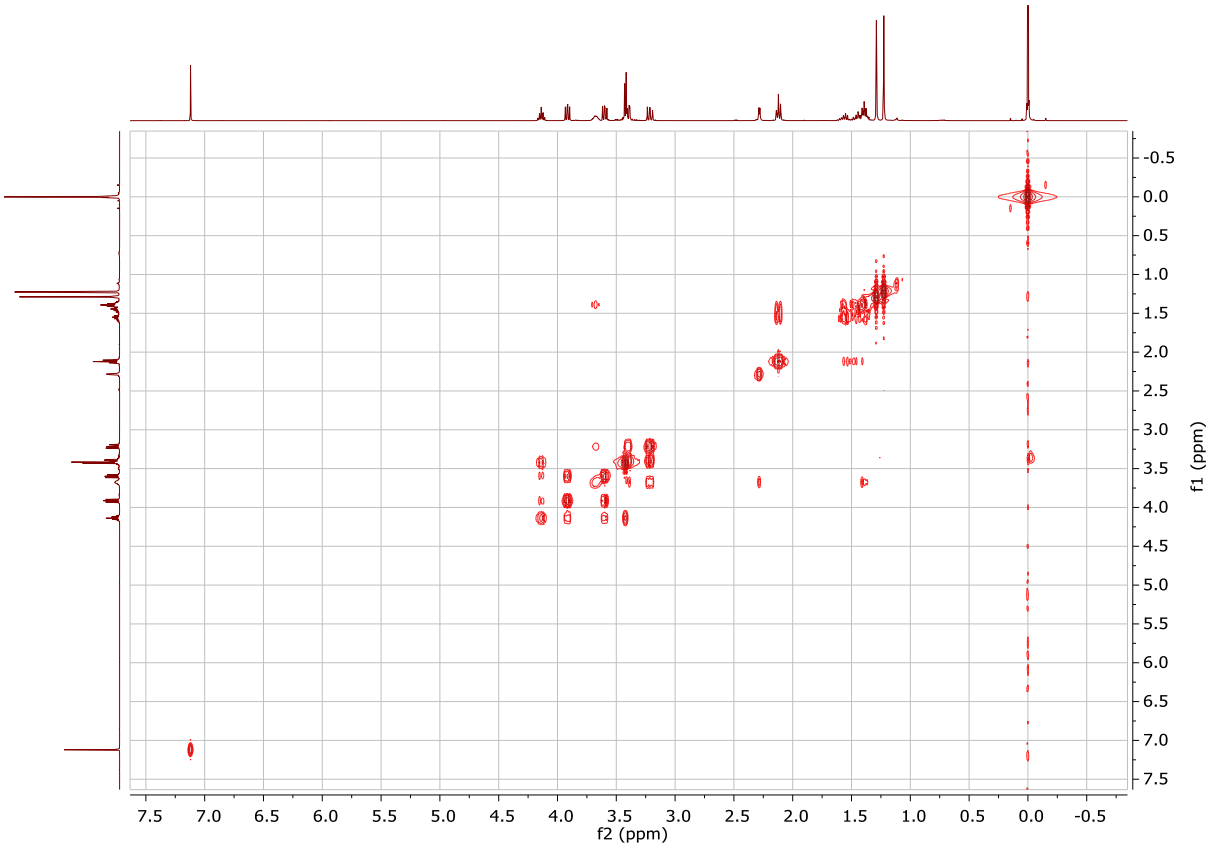
^{1}H NMR (400 MHz, $CDCl_3$) of compound **16**

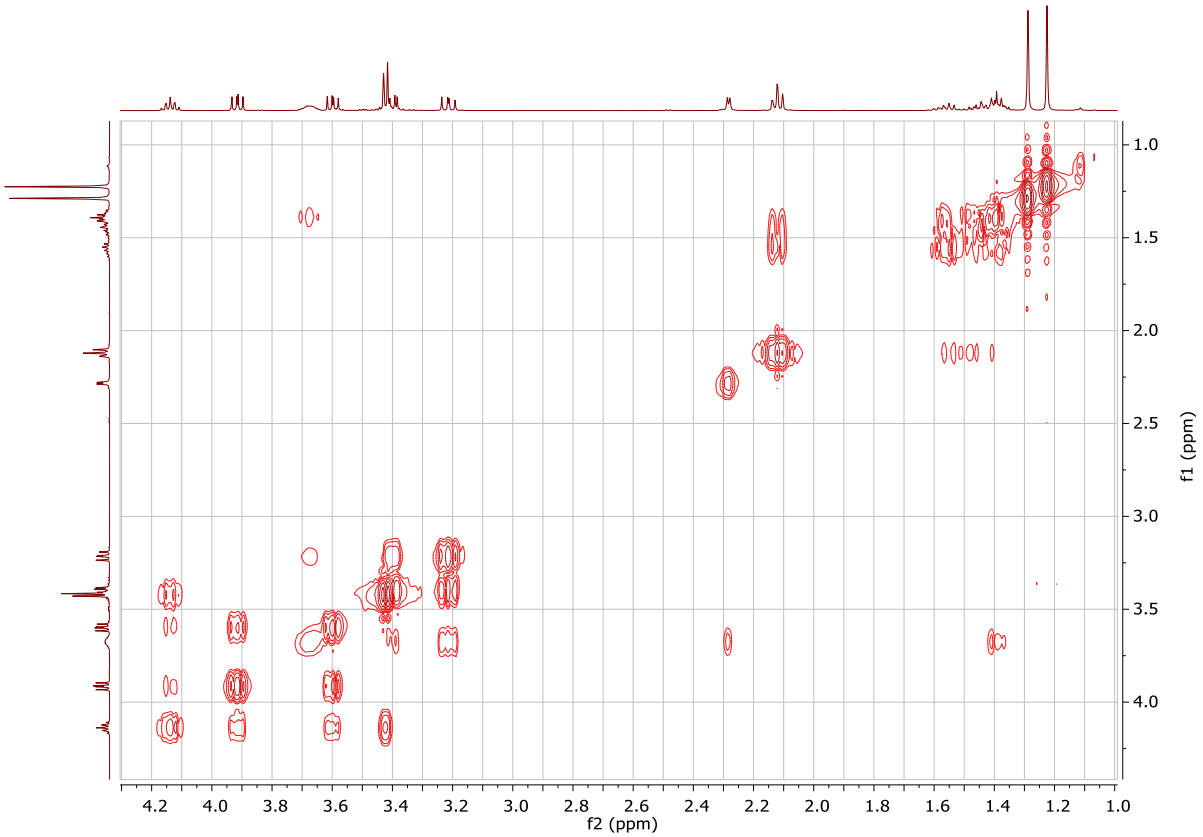


$^{13}C\{H\}$ NMR (101 MHz, $CDCl_3$) of compound **16**



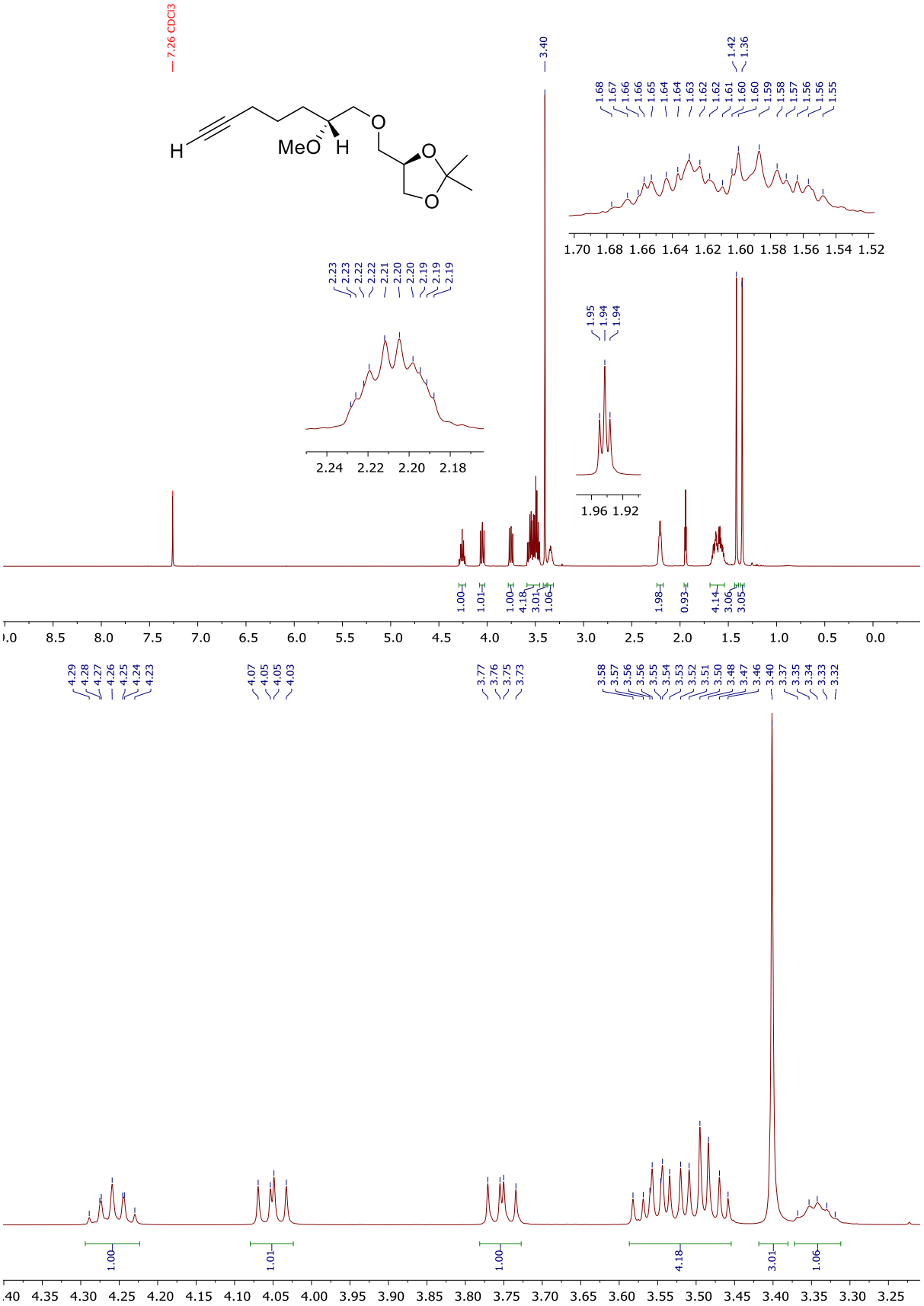
^{1}H-^{1}H COSY spectrum of compound **16**



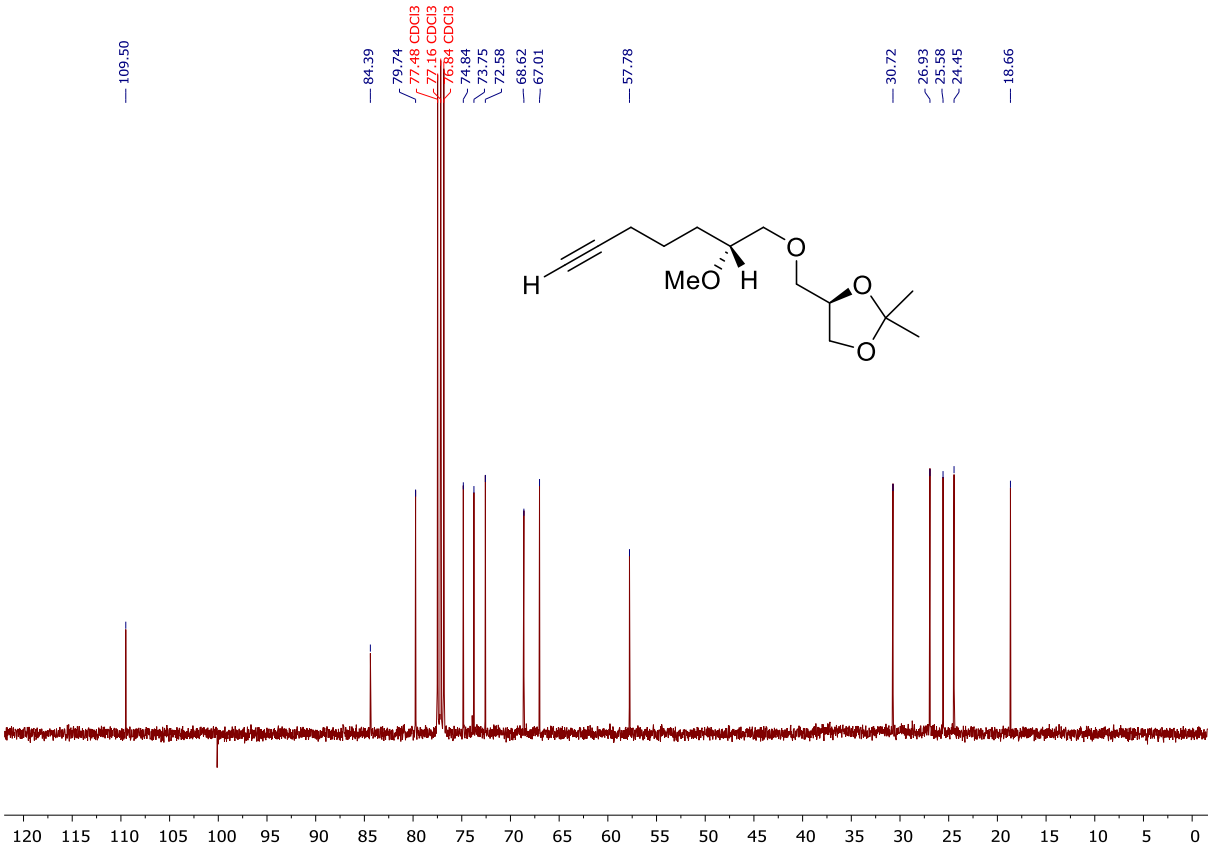


^{13}C-^{1}H HSQC spectrum of compound **16**

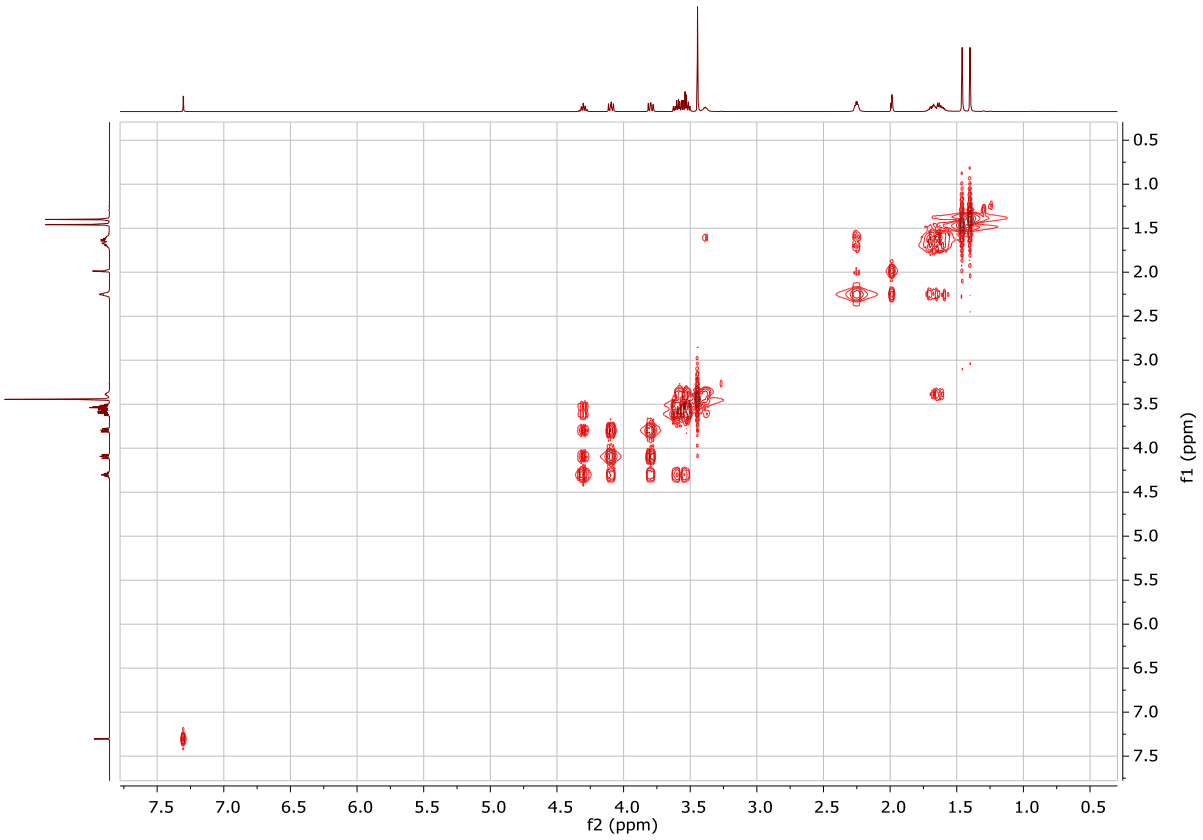
^{1}H NMR (400 MHz, $CDCl_3$) of compound **17**

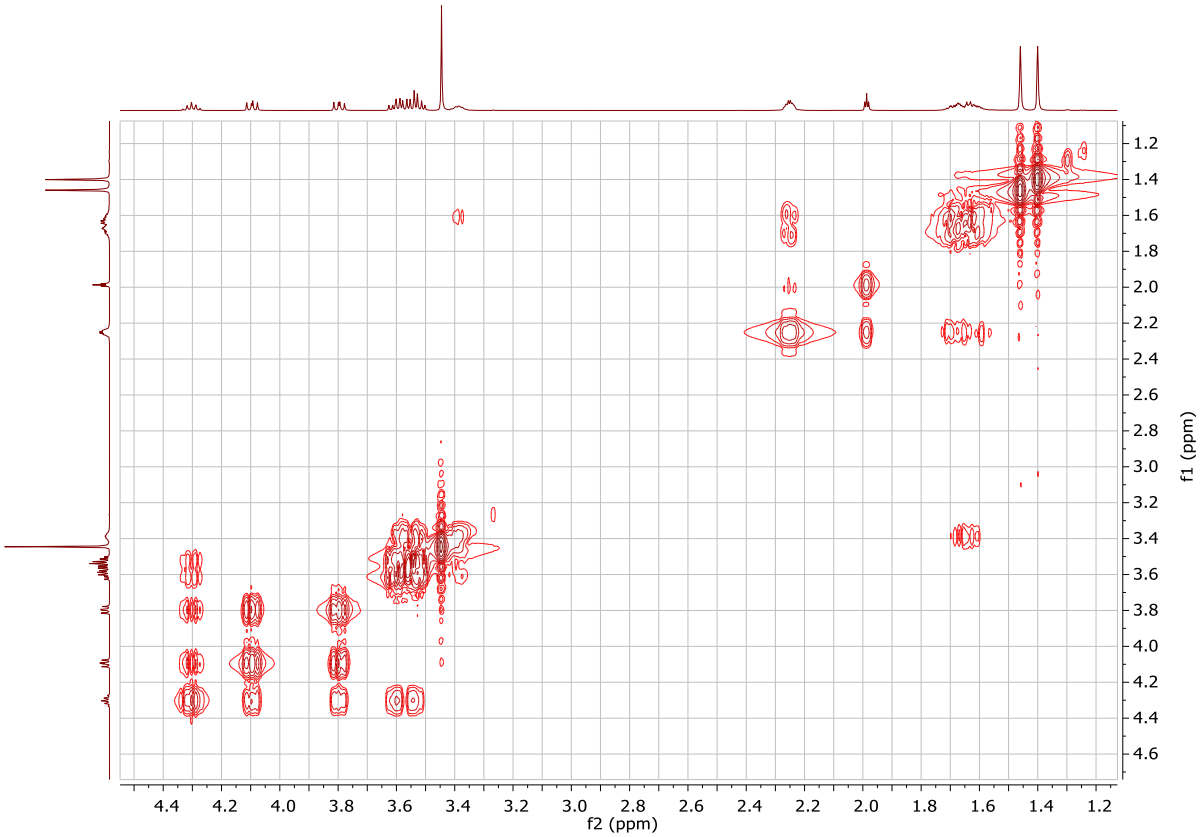


$^{13}C\{H\}$ NMR (101 MHz, $CDCl_3$) of compound **17**



^{1}H-^{1}H COSY spectrum of compound **17**





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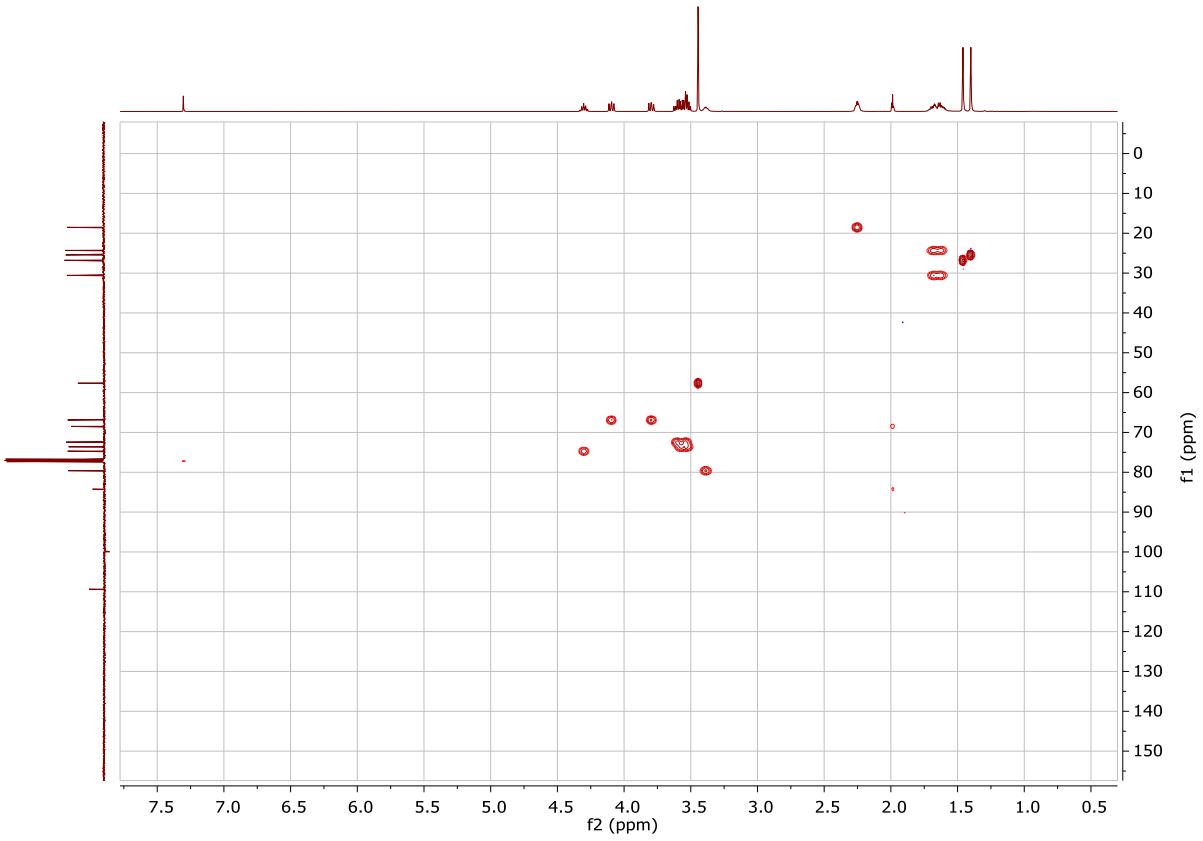
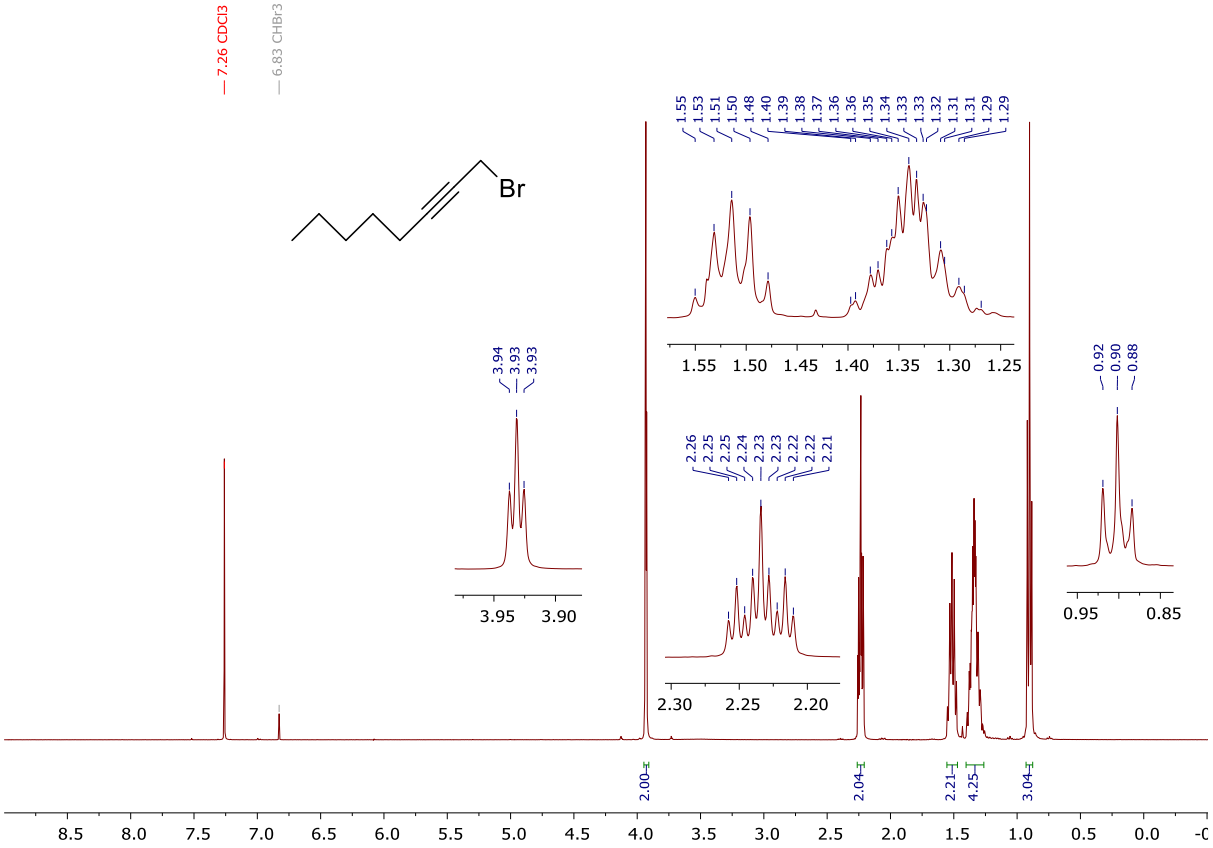
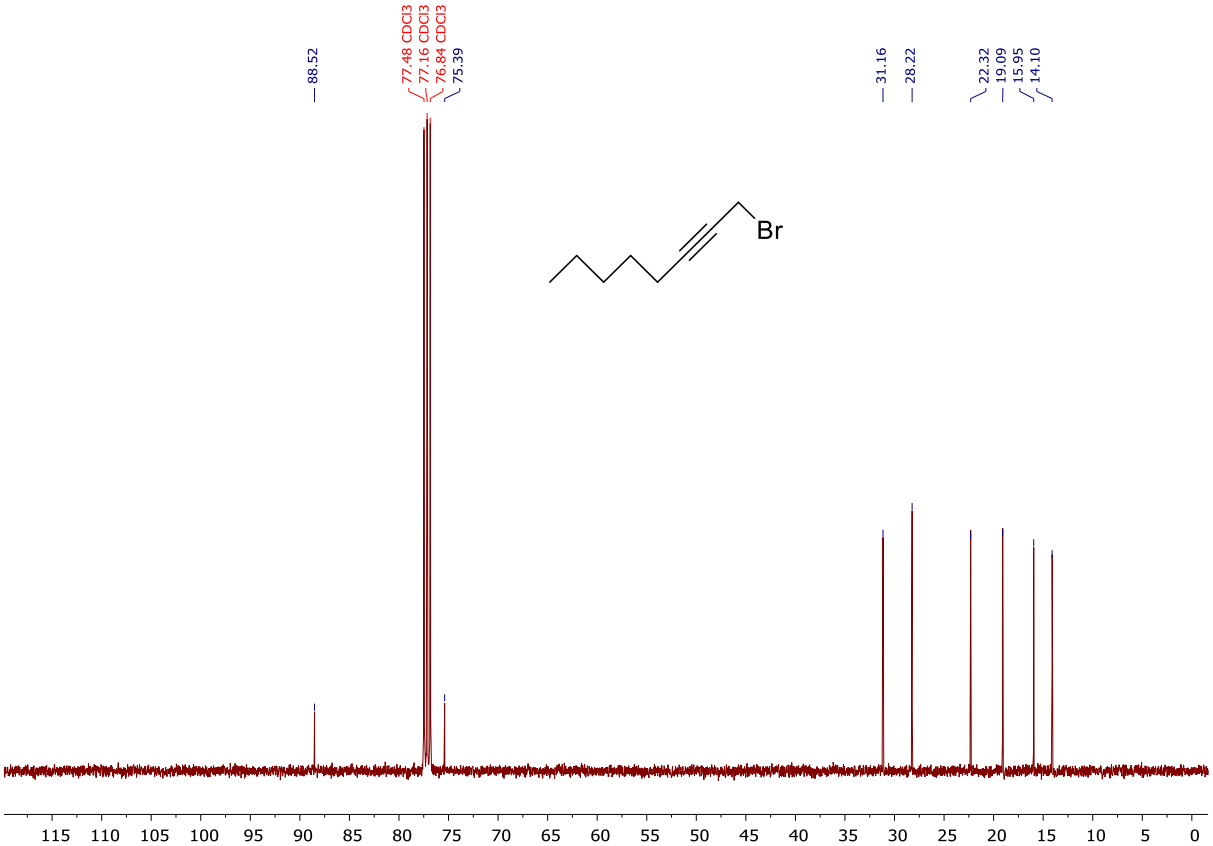


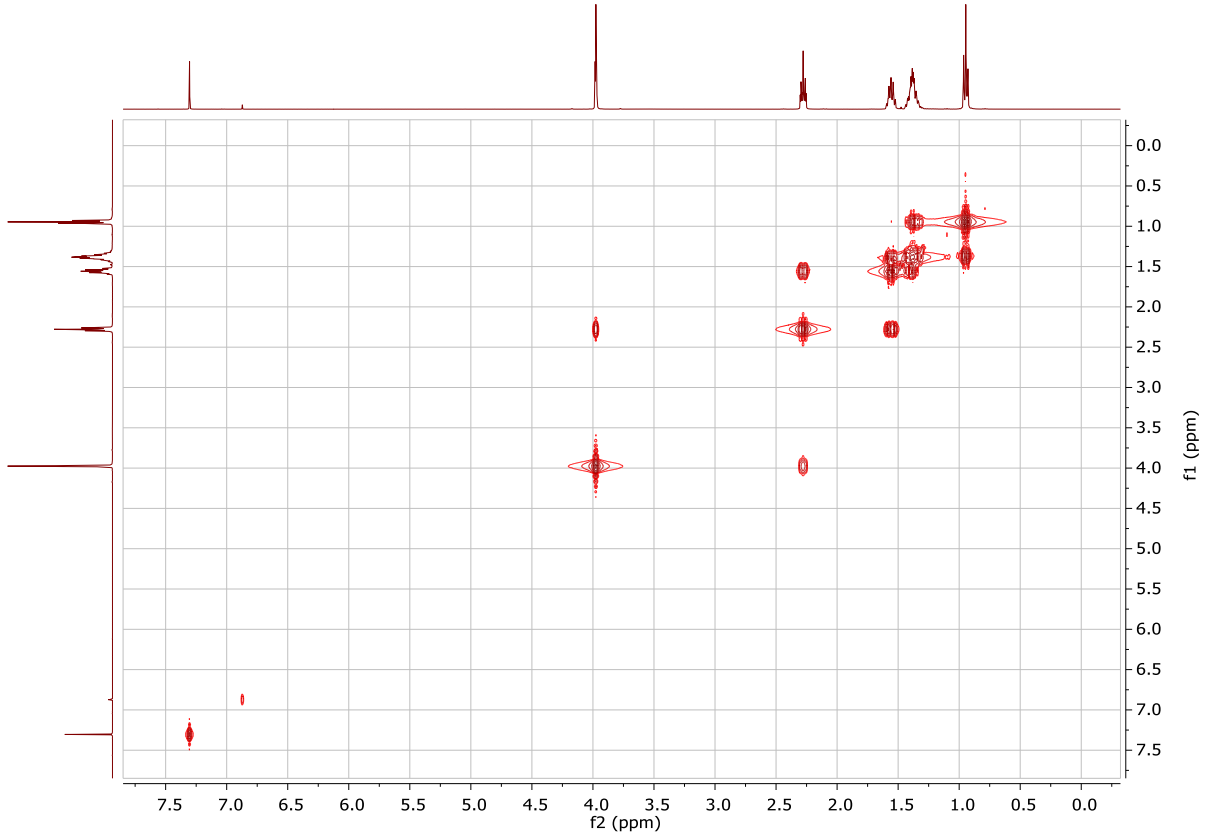
^{1}H NMR (400 MHz, $CDCl_3$) of compound **18**



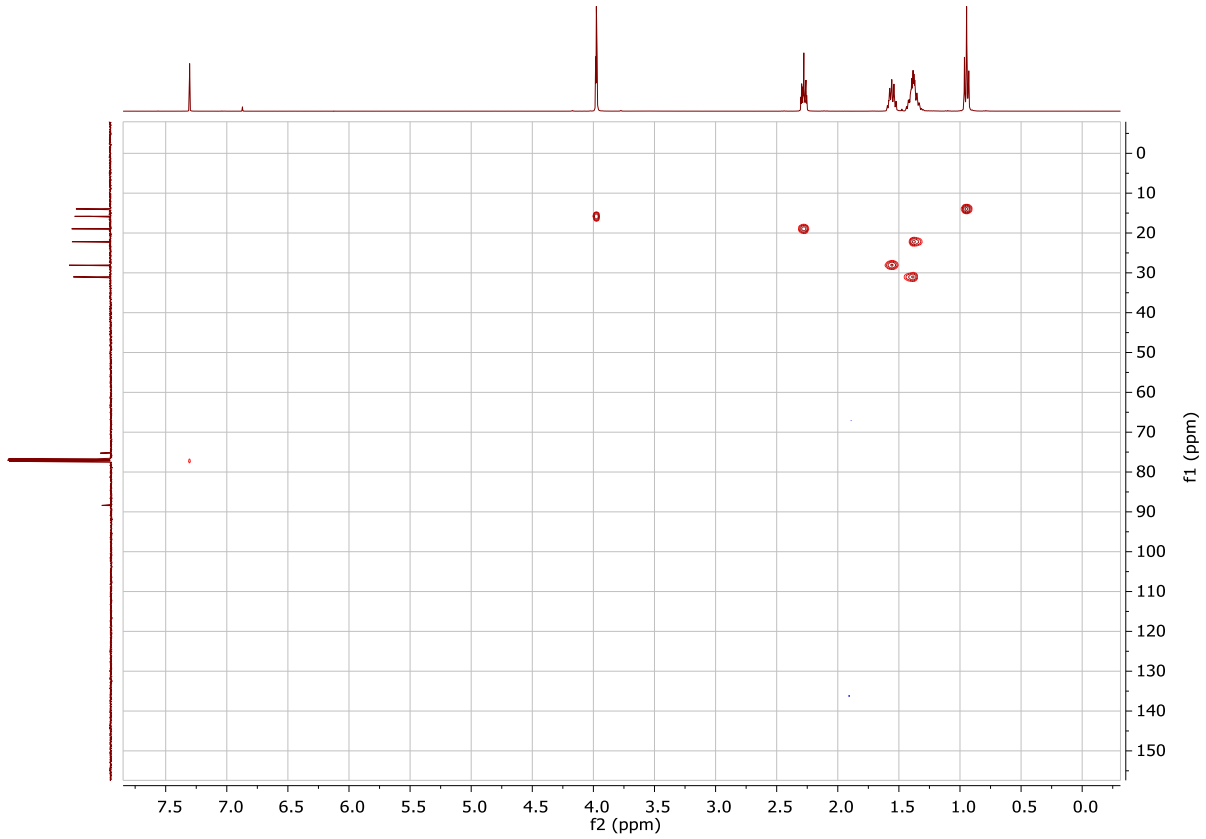
^{13}C{H} NMR (101 MHz, $CDCl_3$) of compound **18**



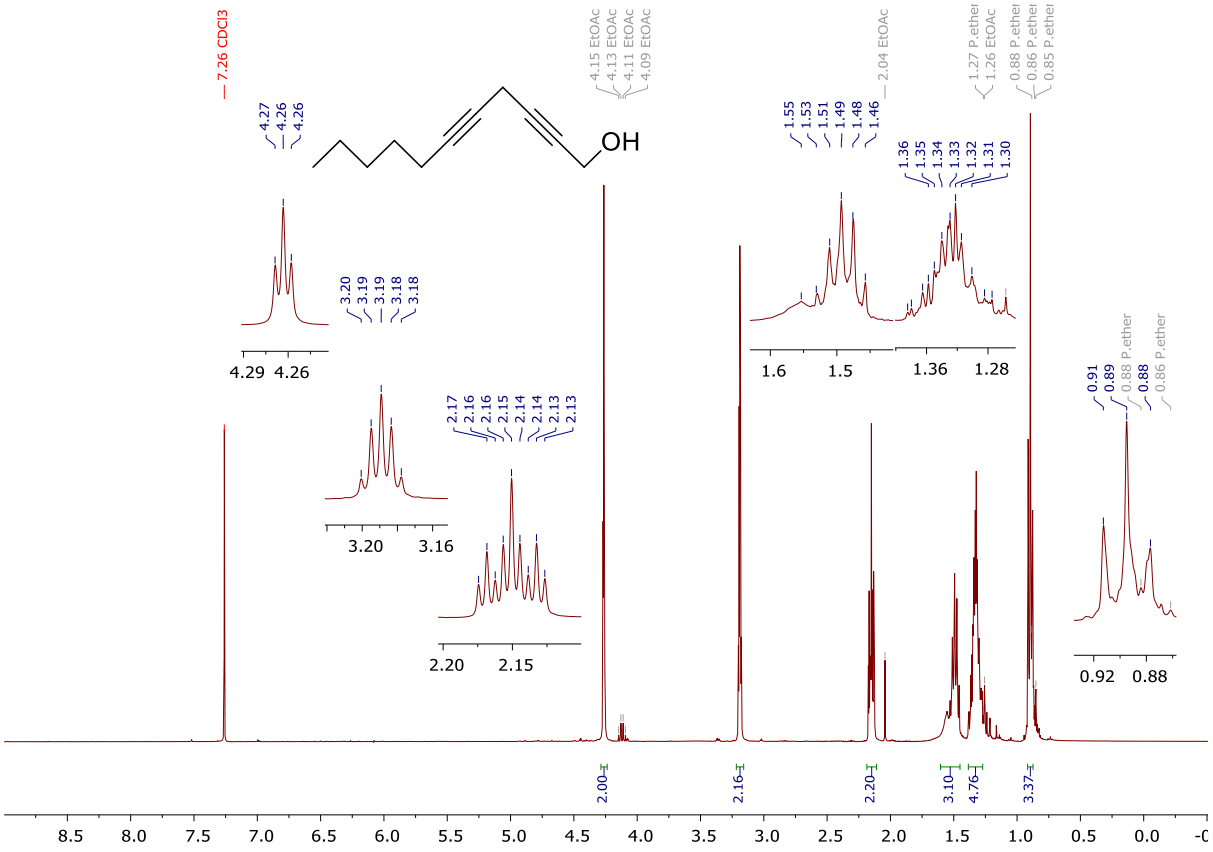
^{1}H-^{1}H COSY spectrum of compound **18**



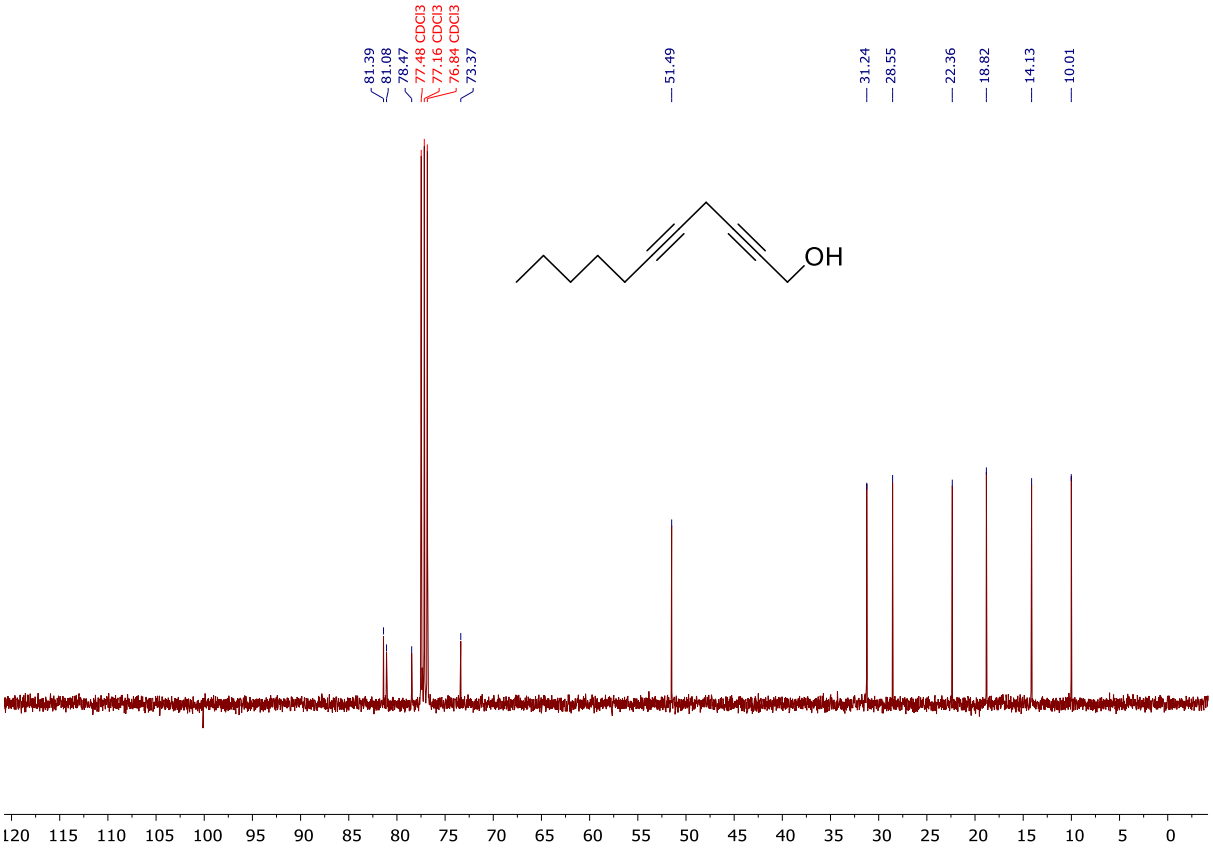
^{13}C-^{1}H HSQC spectrum of compound **18**



^{1}H NMR (400 MHz, $CDCl_3$) of compound **19**



^{13}C{H} NMR (101 MHz, $CDCl_3$) of compound **19**



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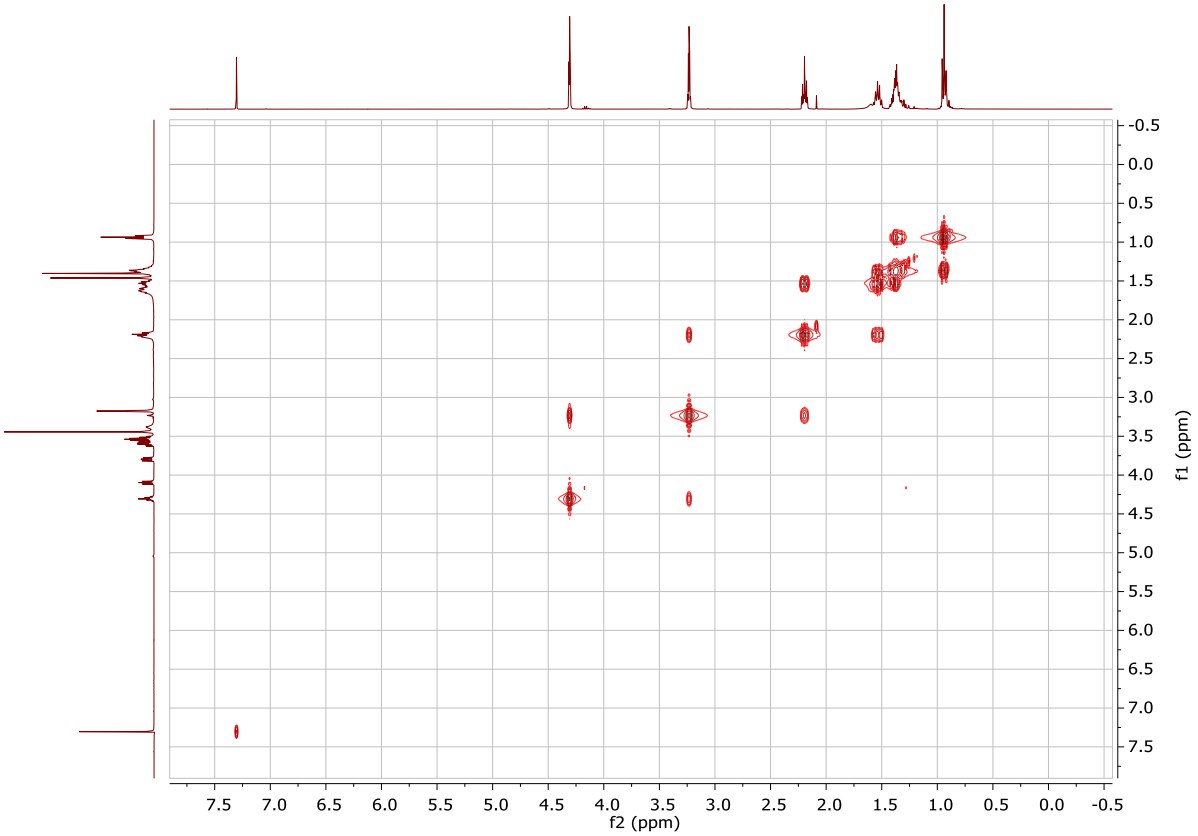

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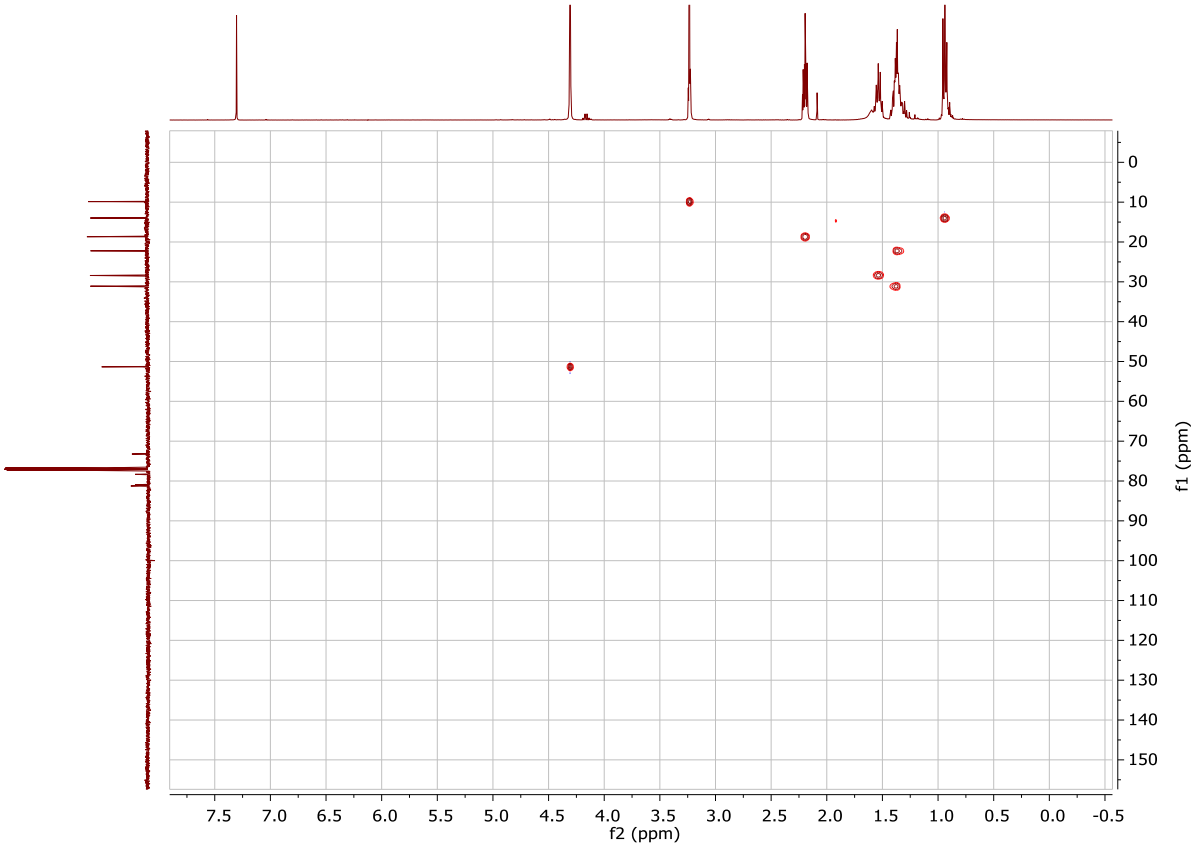

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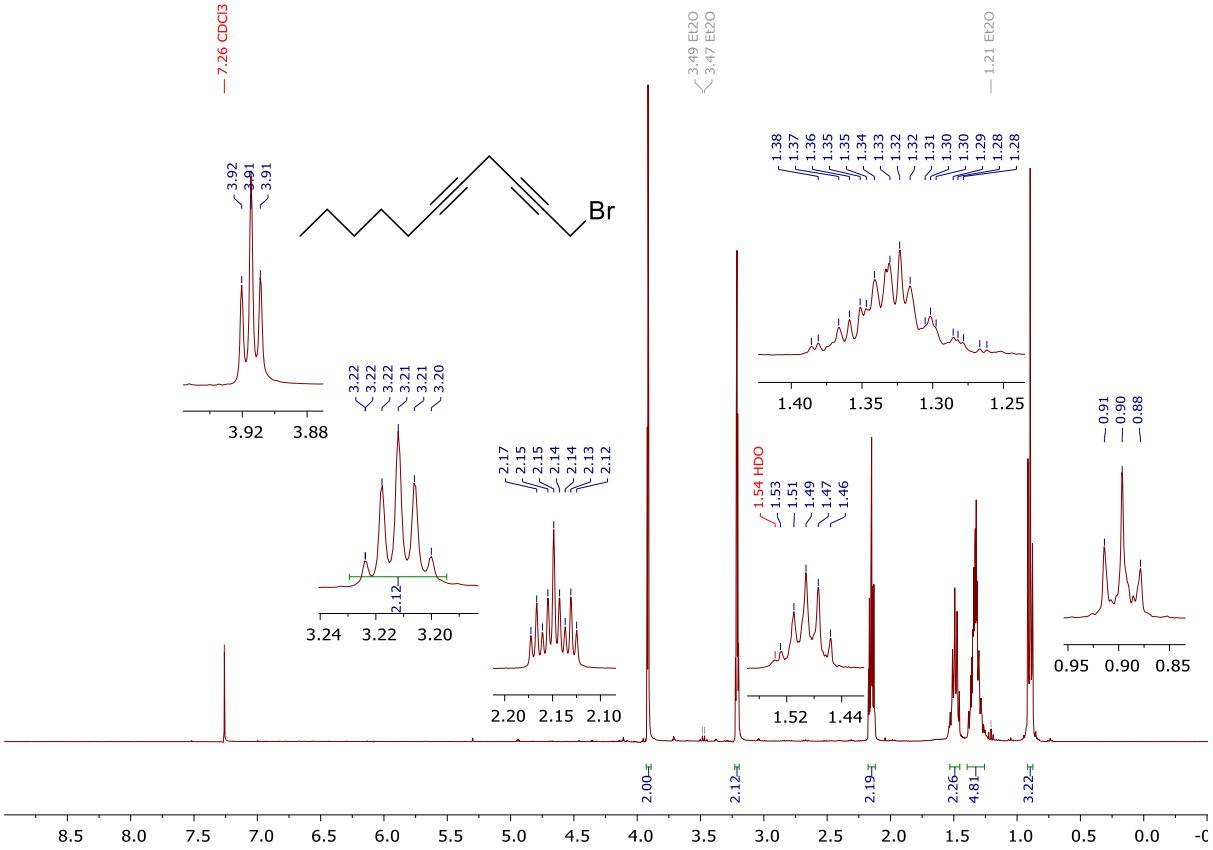

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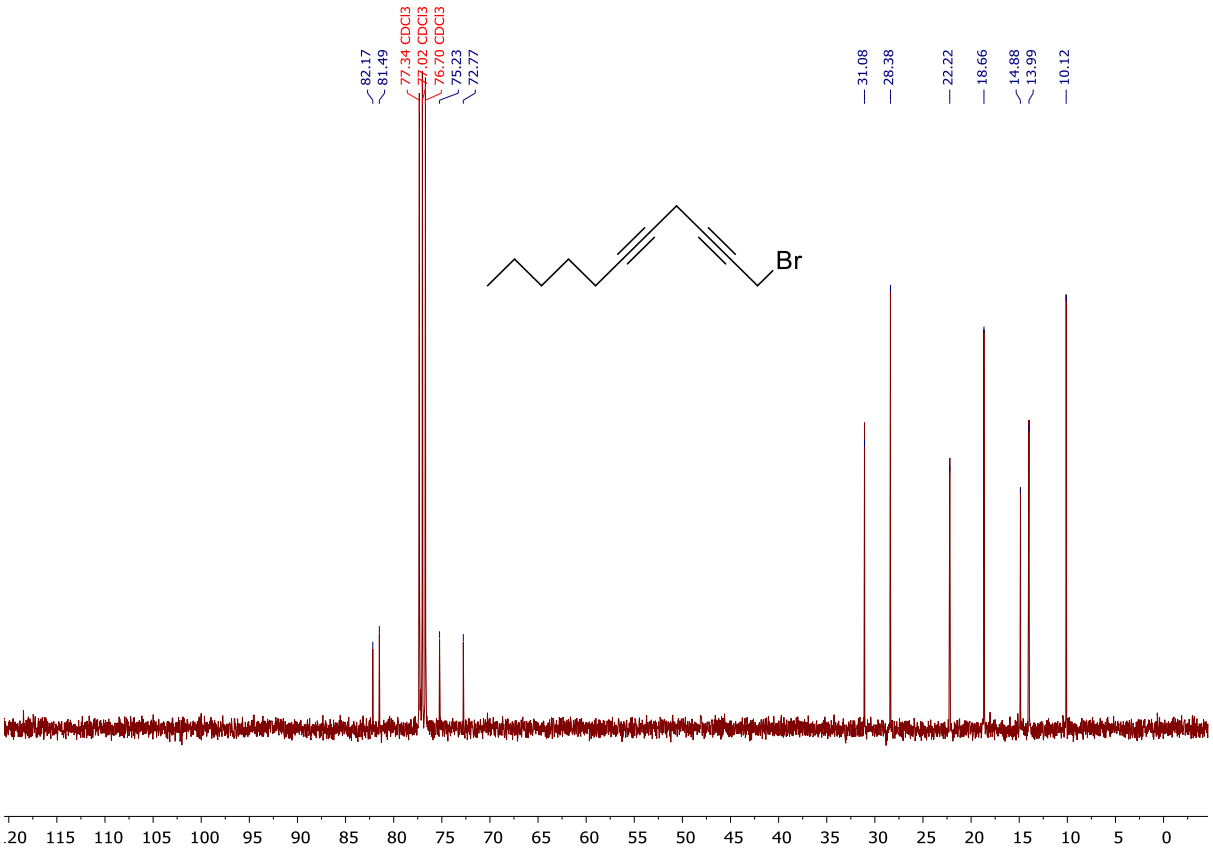

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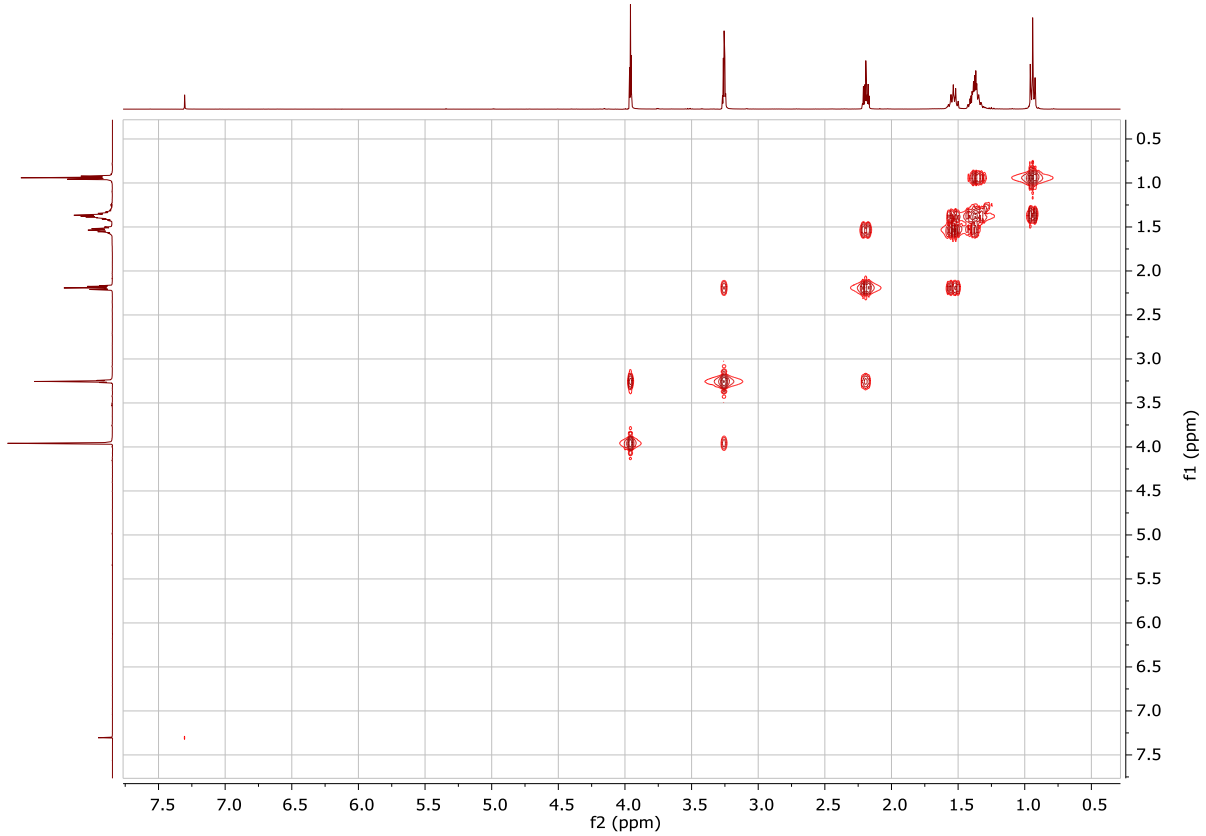

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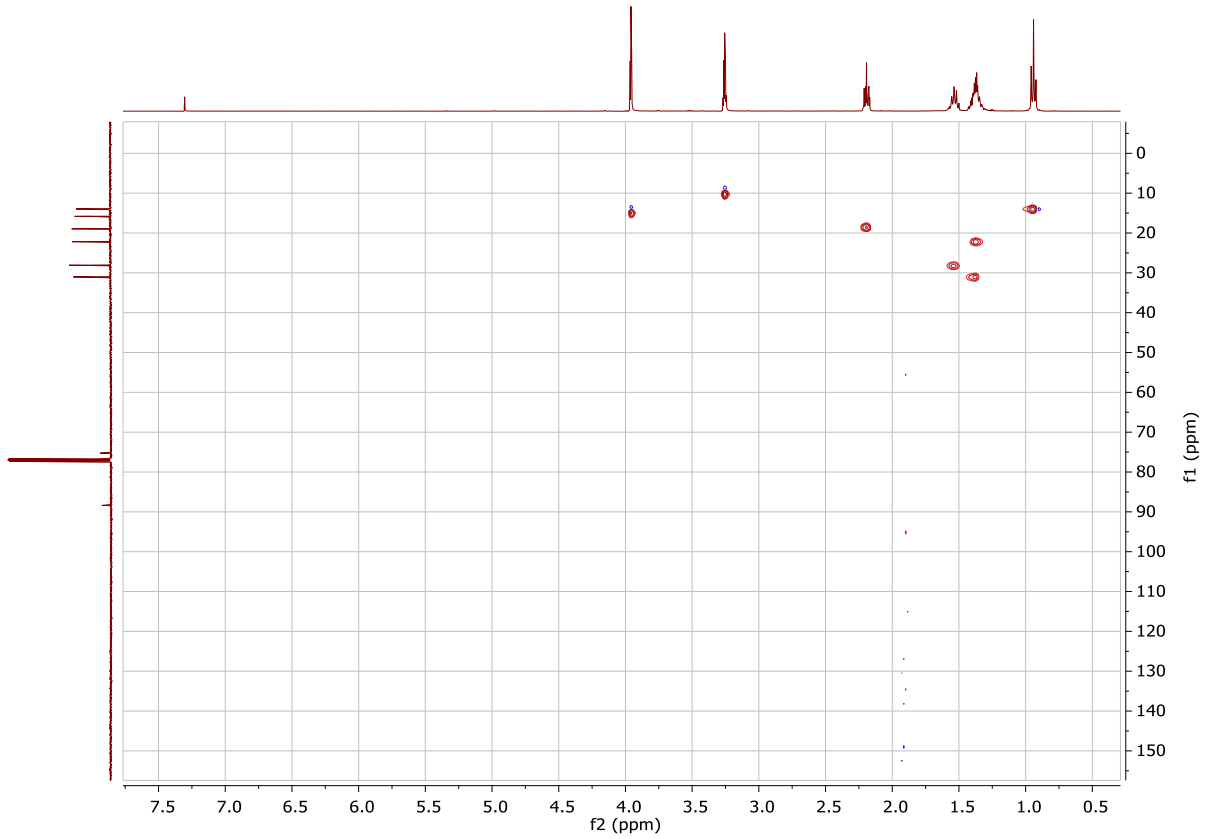
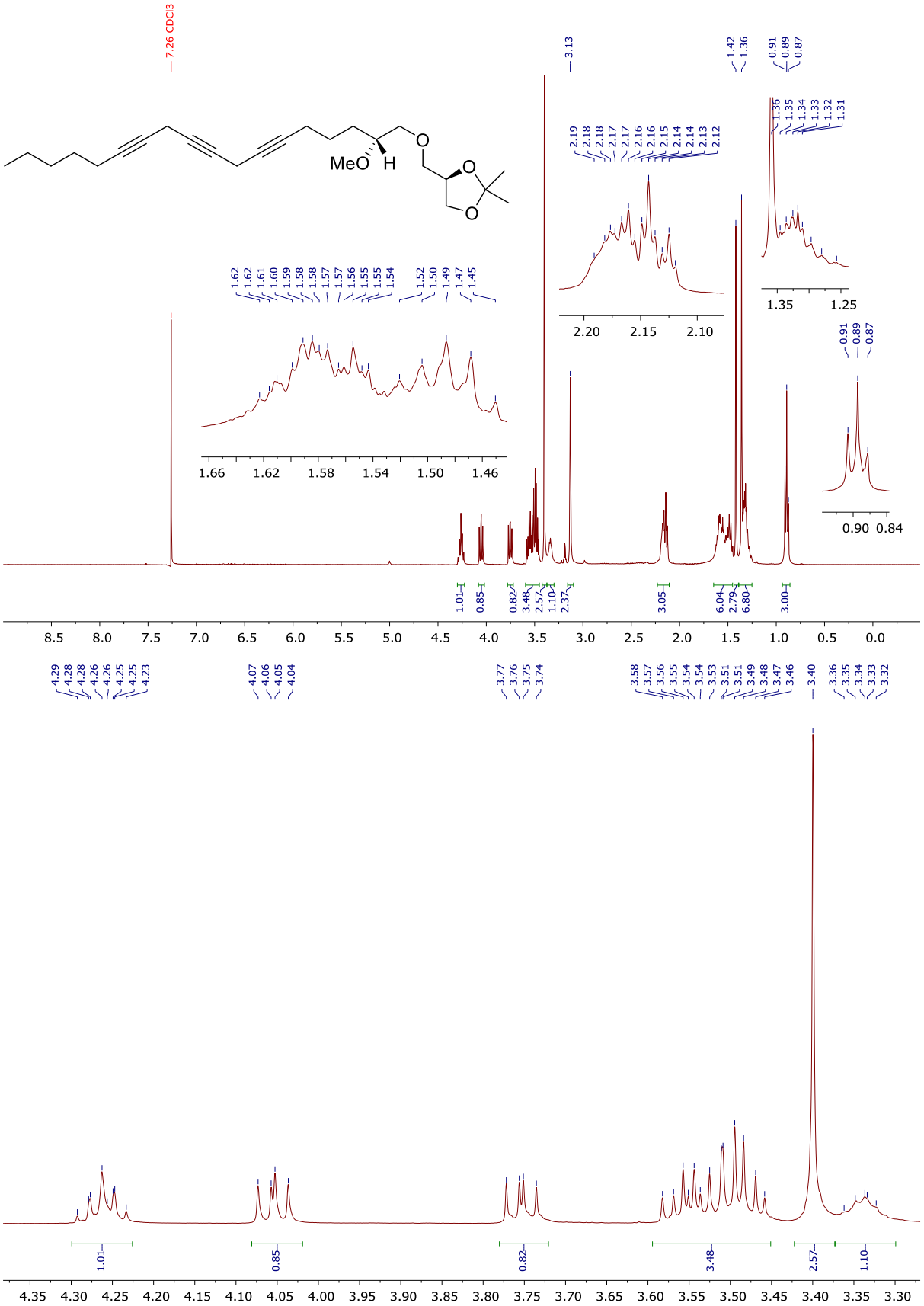
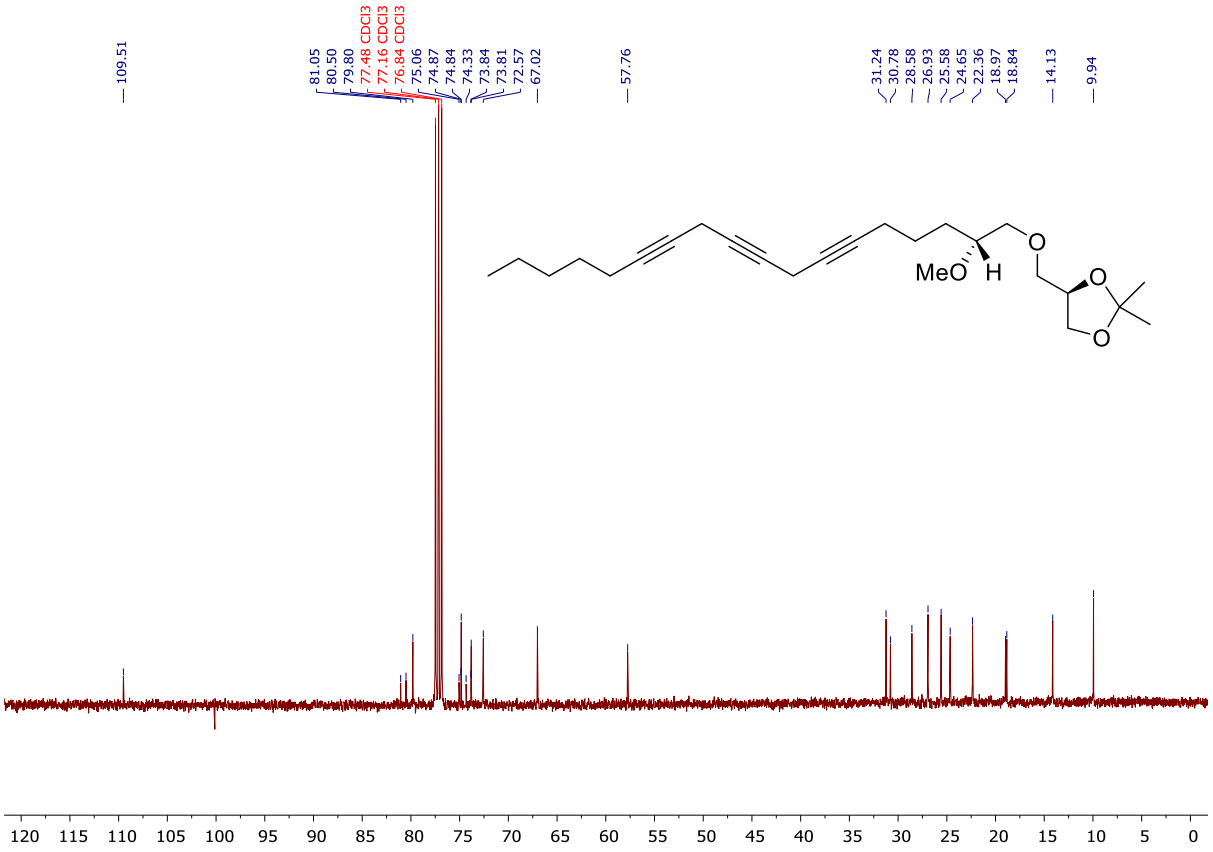


^{1}H NMR (400 MHz, $CDCl_3$) of compound **21**



$^{13}C\{H\}$ NMR (101 MHz, $CDCl_3$) of compound **21**



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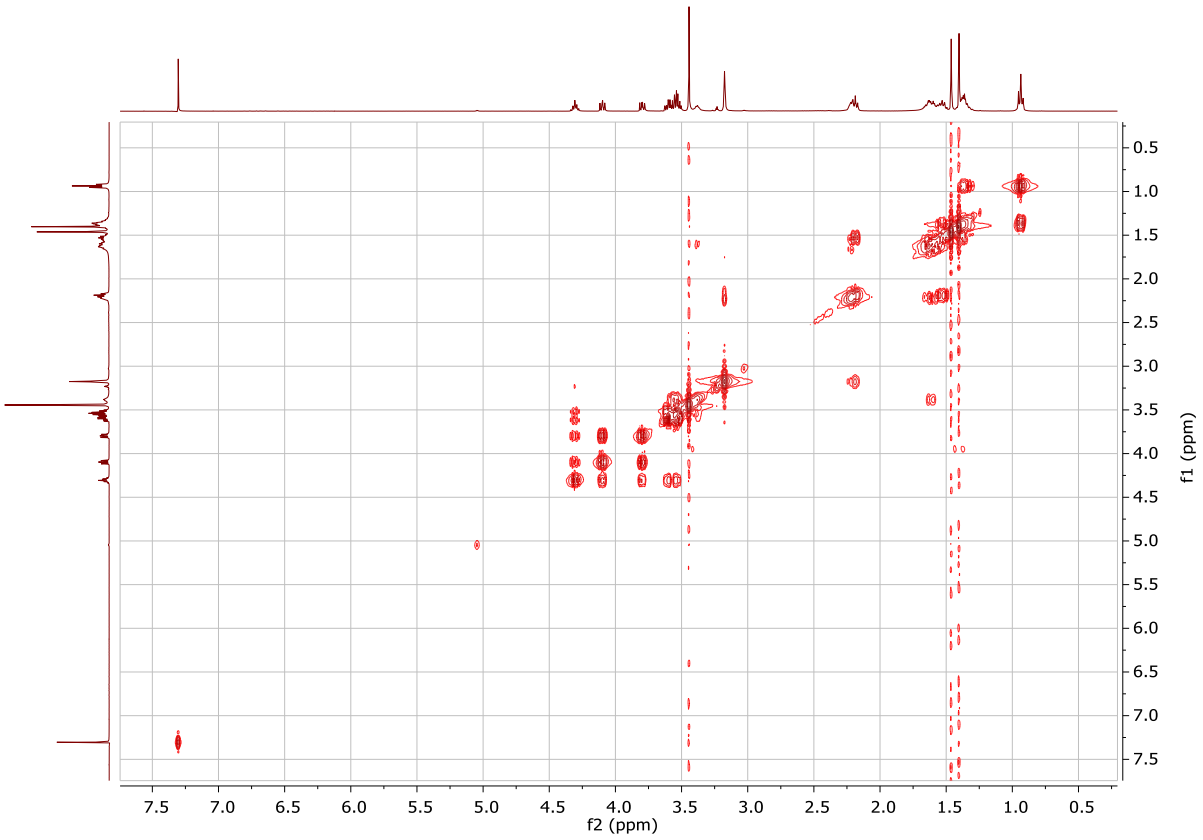

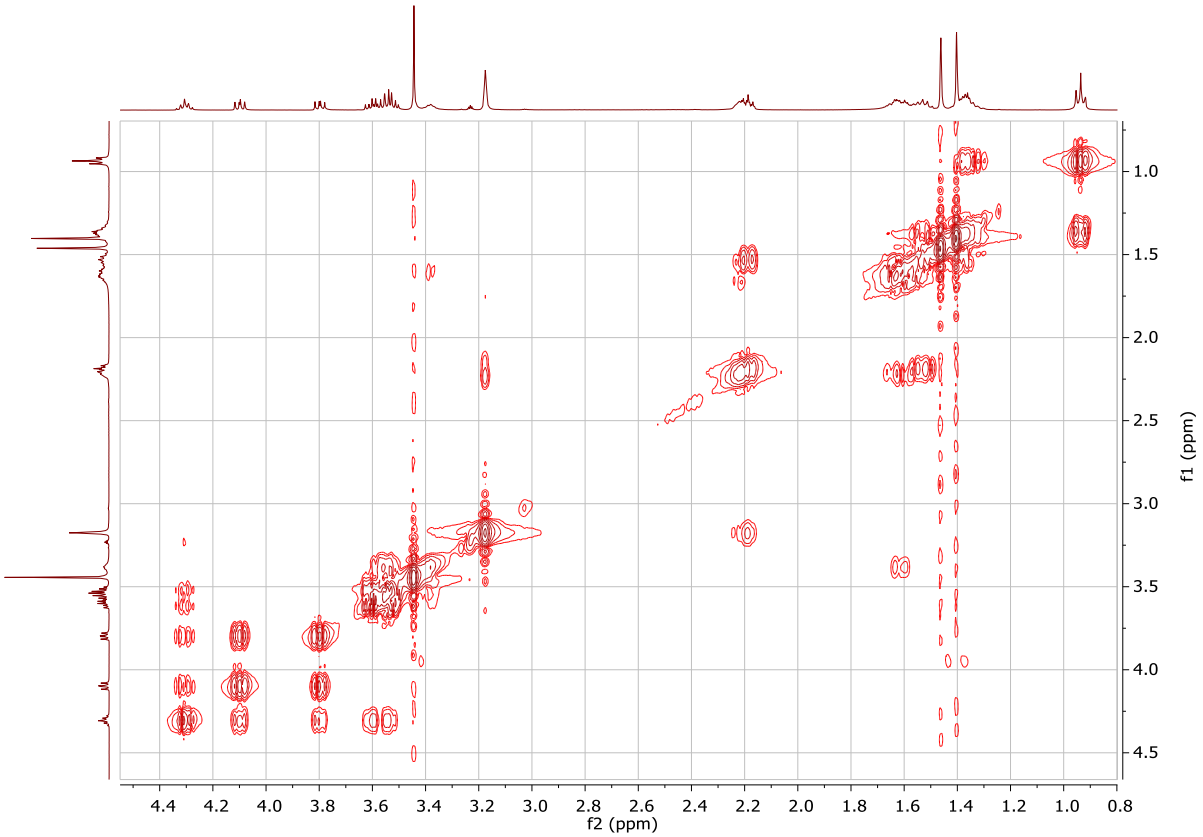

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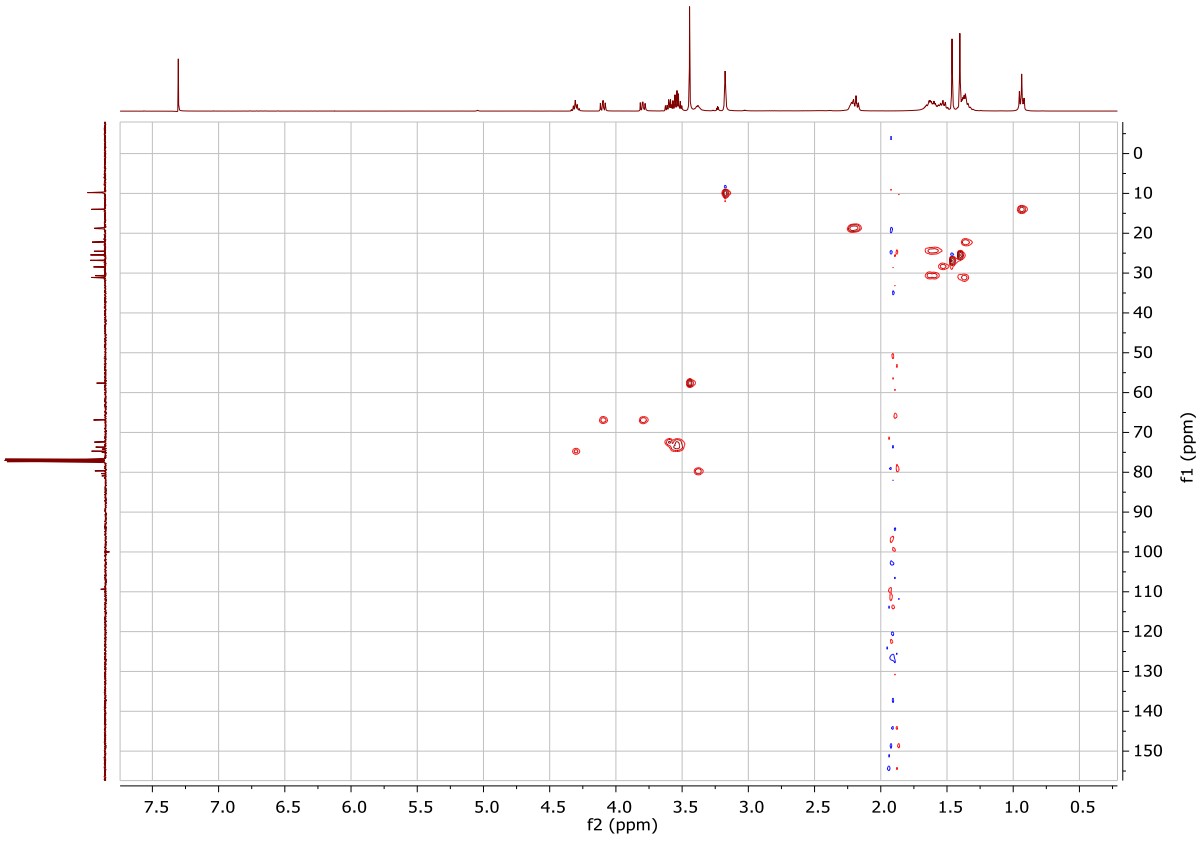
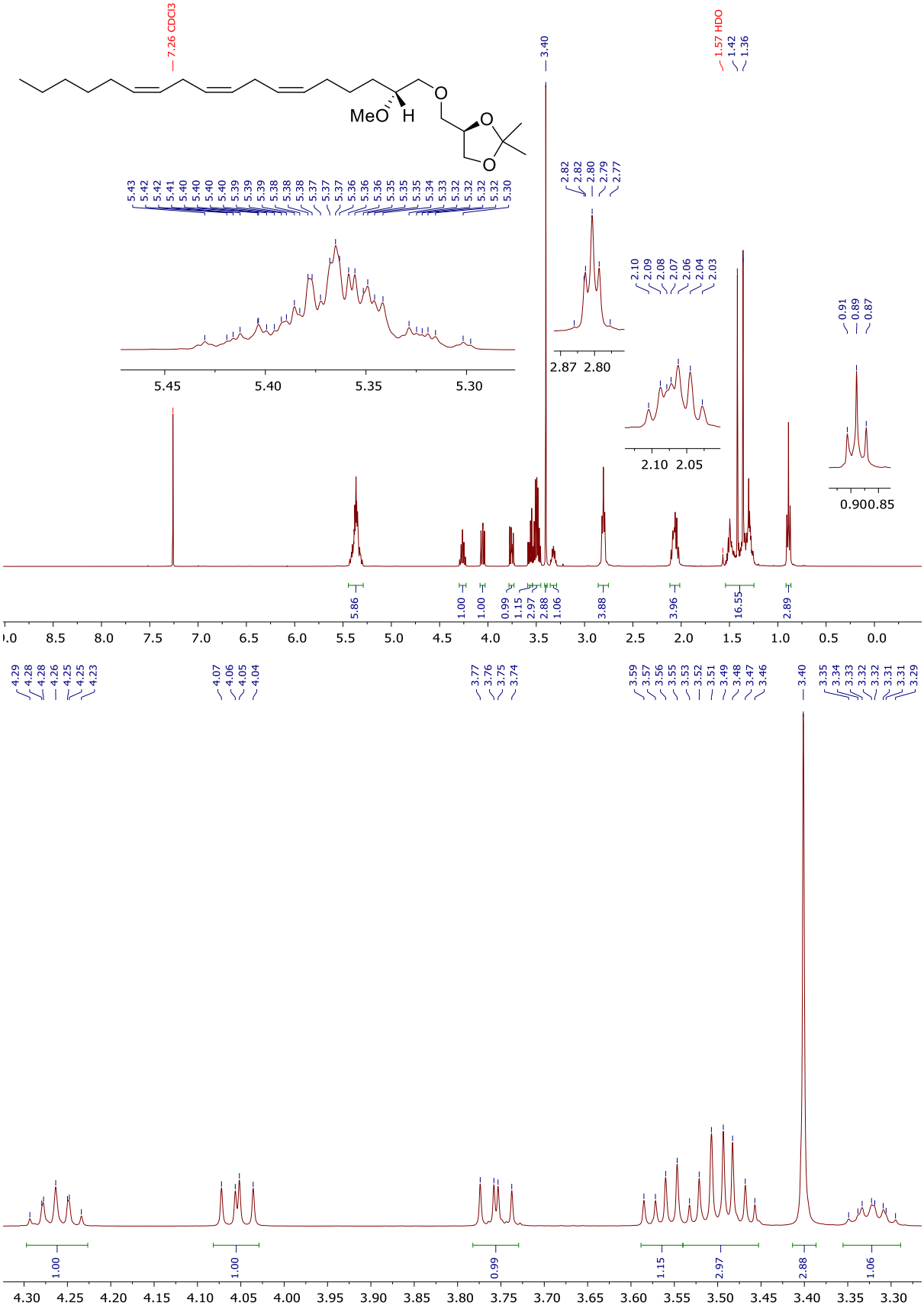
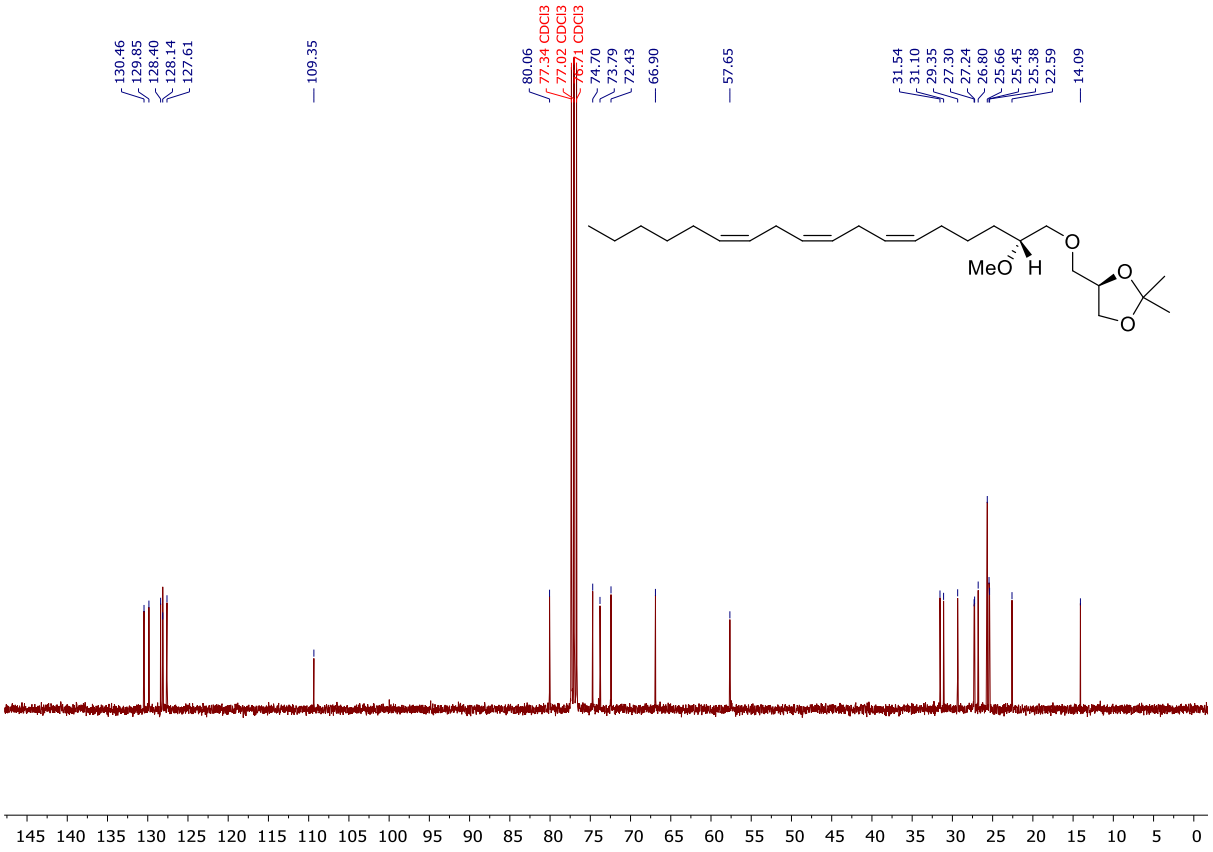


^{1}H NMR (400 MHz, $CDCl_3$) of compound **22**



$^{13}C\{H\}$ NMR (101 MHz, $CDCl_3$) of compound **22**



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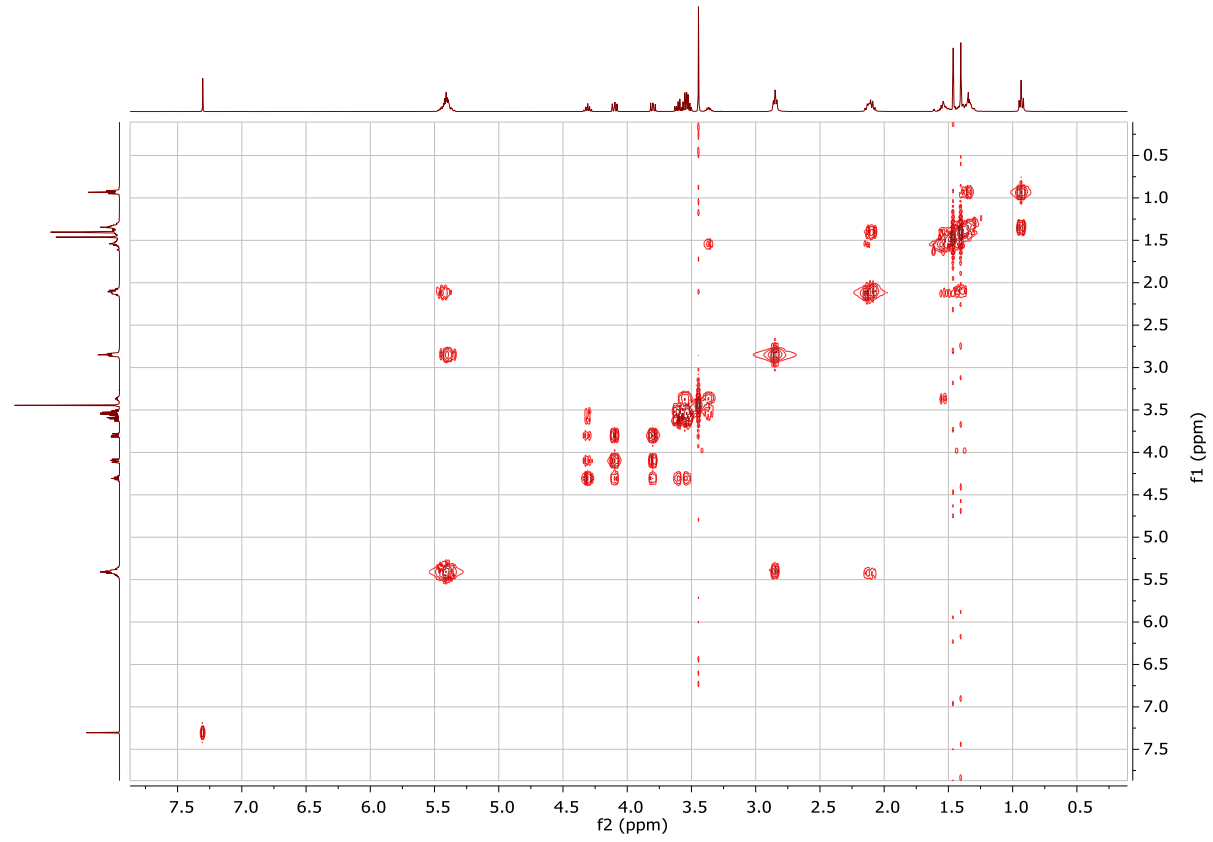

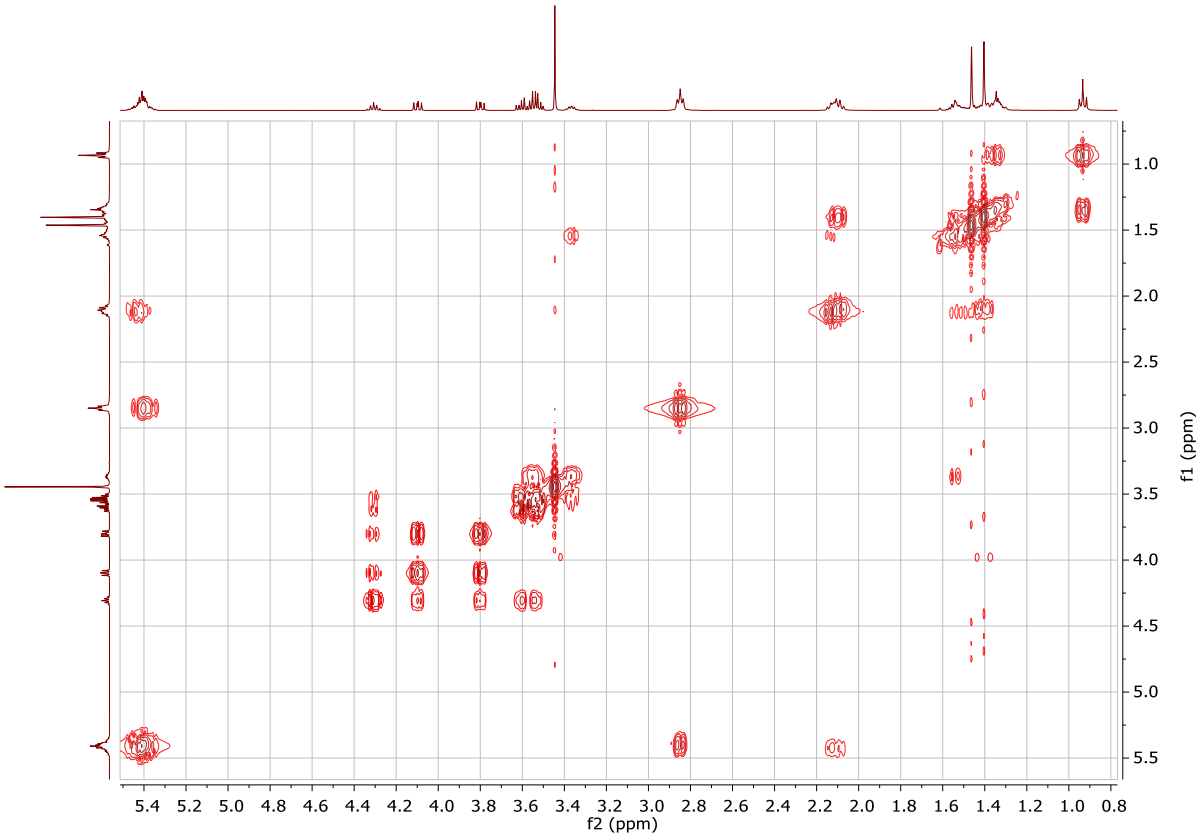

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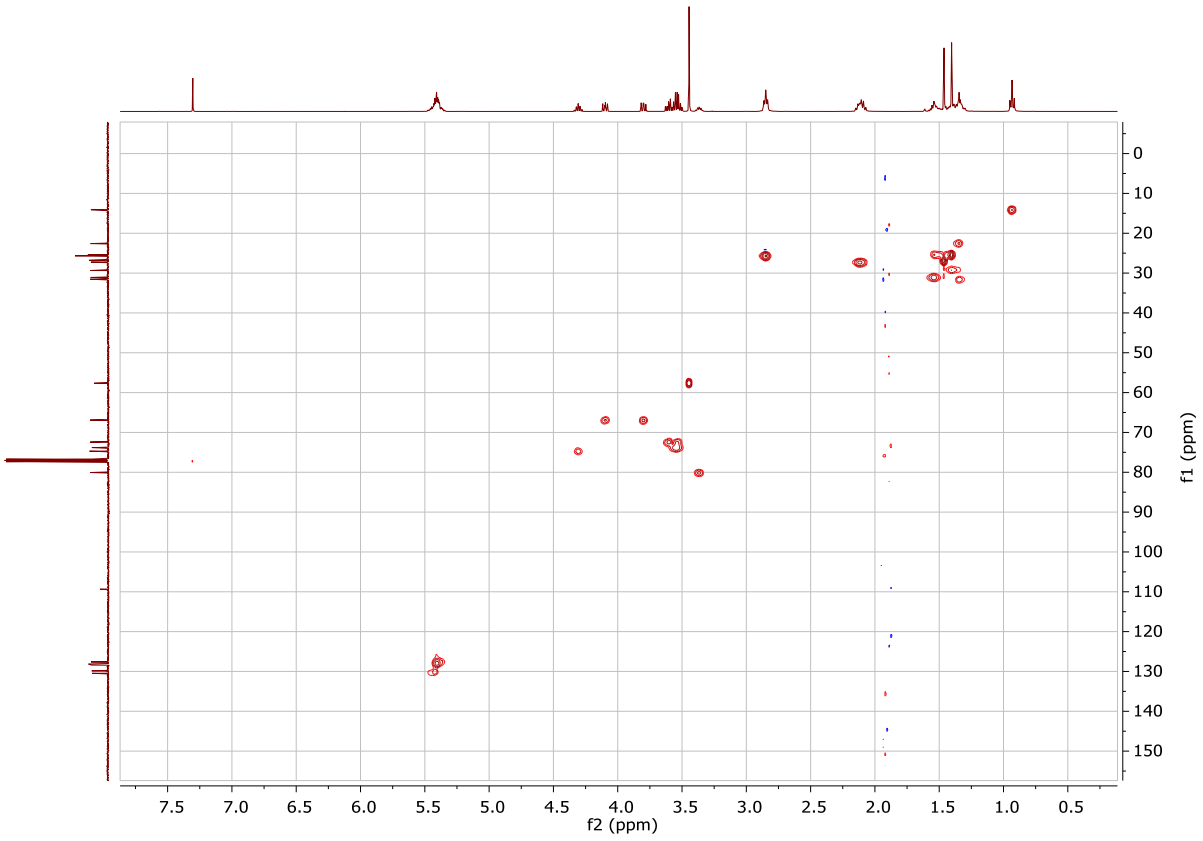
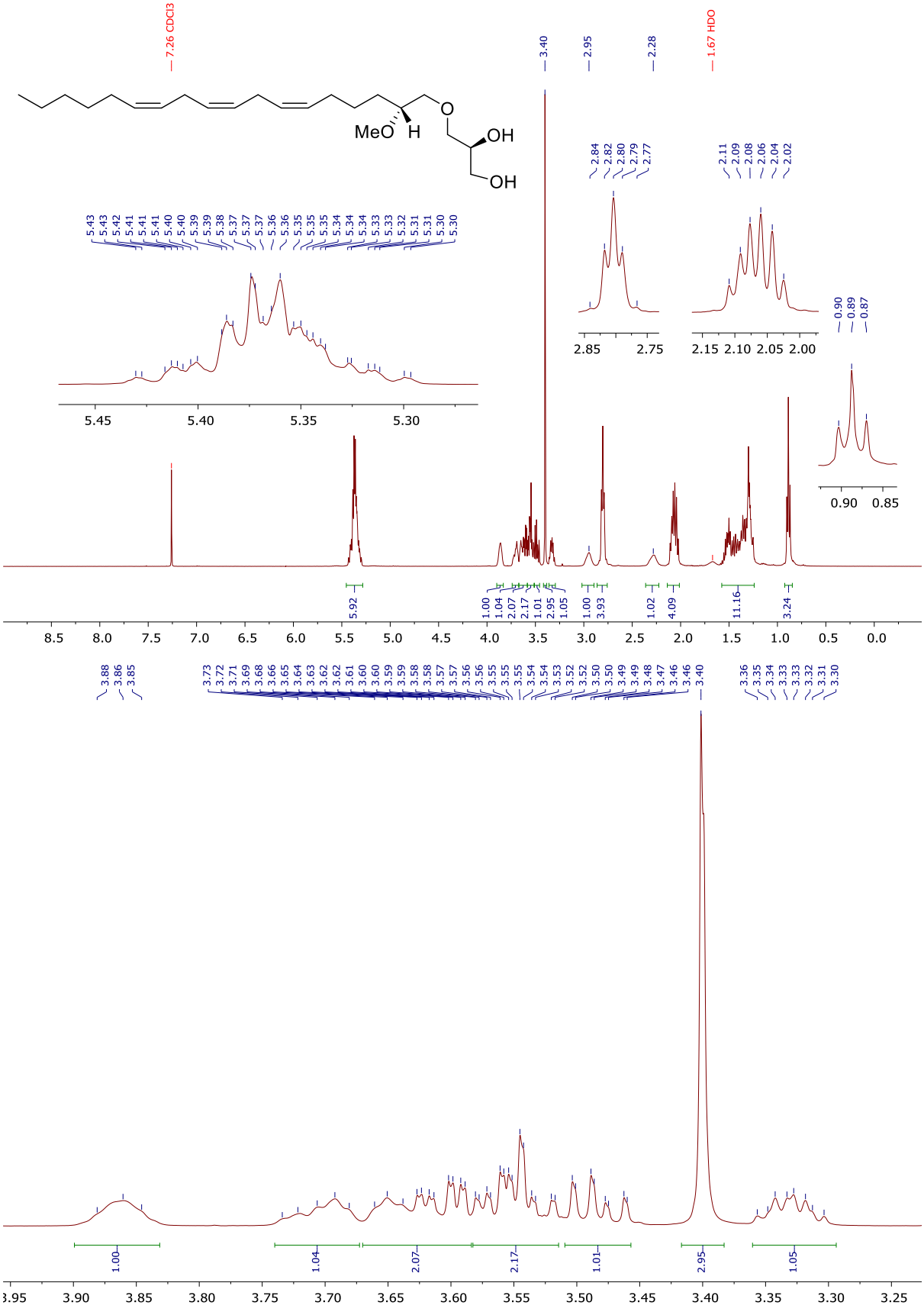
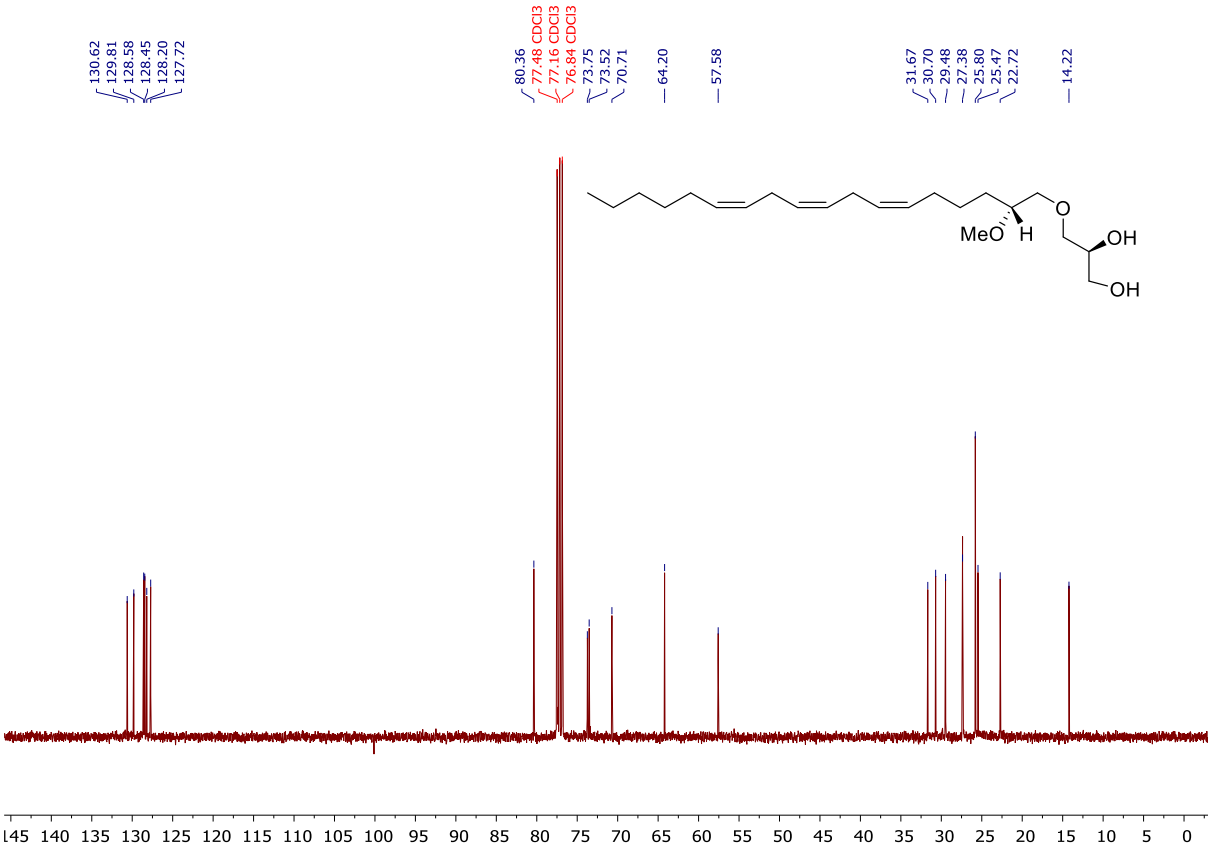


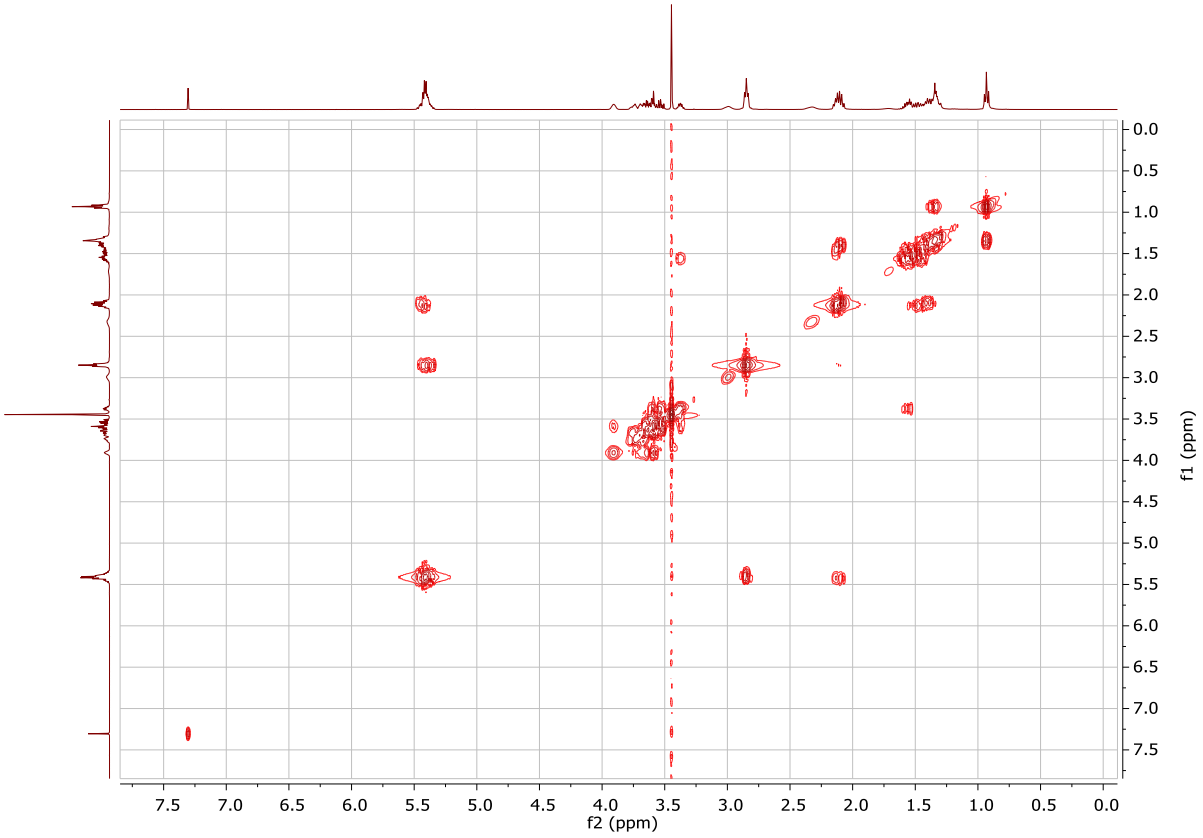
^{1}H NMR (400 MHz, $CDCl_3$) of MEL **6**



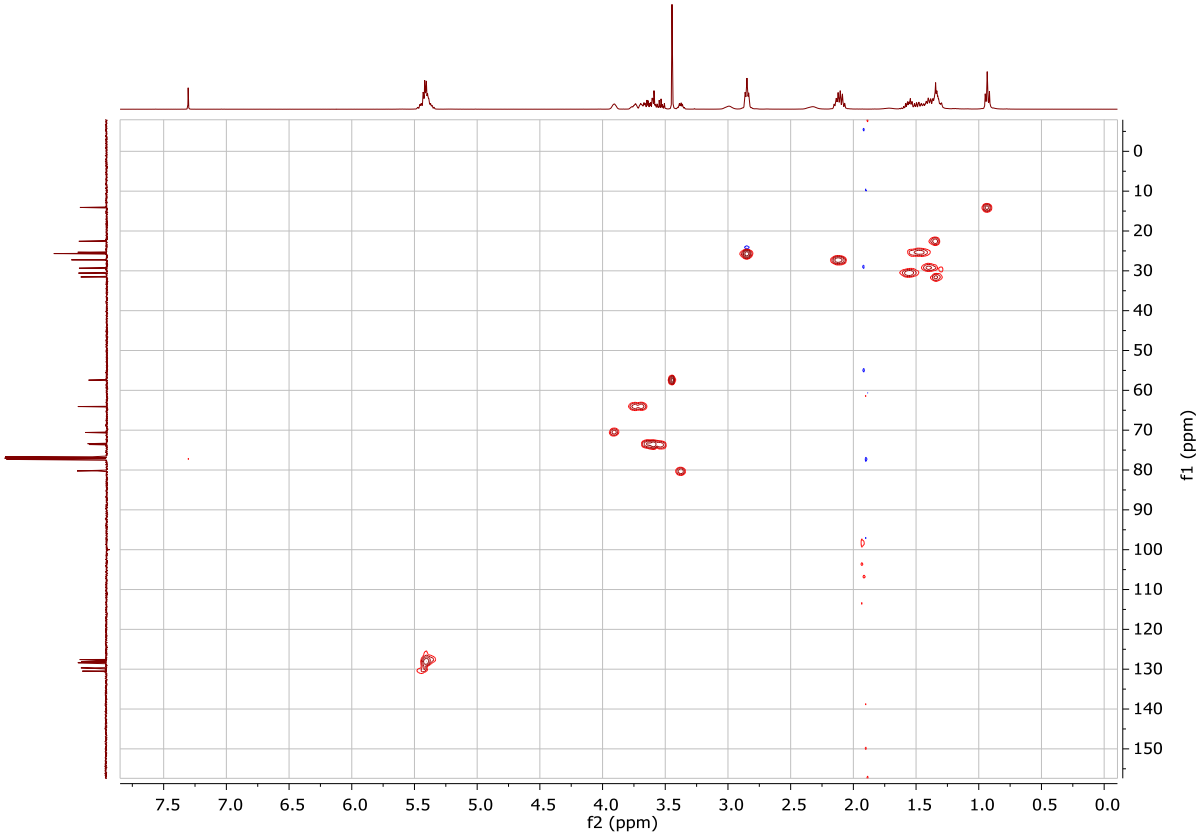
$^{13}C\{H\}$ NMR (101 MHz, $CDCl_3$) of MEL **6**



^{1}H-^{1}H COSY spectrum of MEL **6**



^{13}C-^{1}H HSQC spectrum of MEL **6**



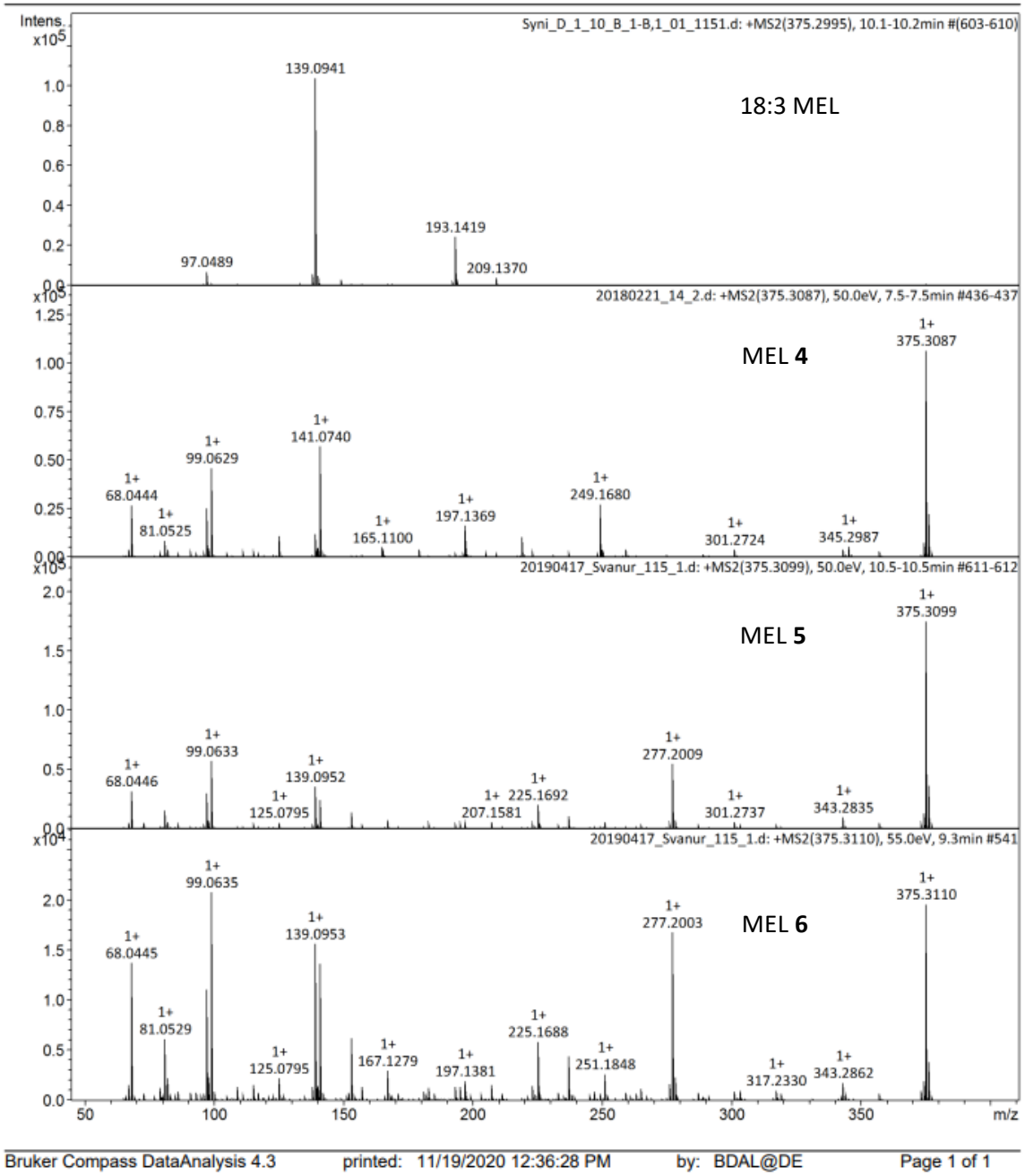


Figure S*1*. Comparison of the $[M+Li]^+$ MS/MS fragmentation spectra of the synthesized MELs **4**, **5**, **6** and the 18:3 MEL found in the shark and dogfish liver oil sample (top).