Total synthesis of the potent antitumor polyketide (–)-callystatin A#

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 # Dedicated to Prof. Peter Bakuzis for his outstanding contributions to the field of synthetic organic chemistry in Brazil

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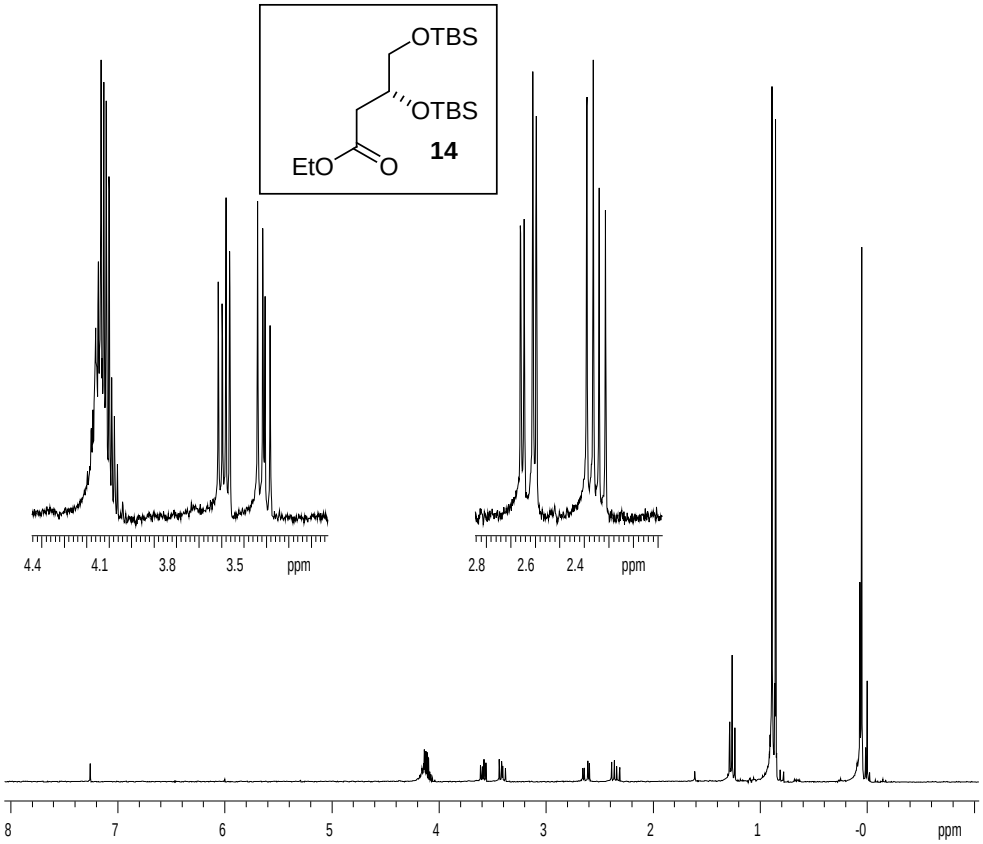
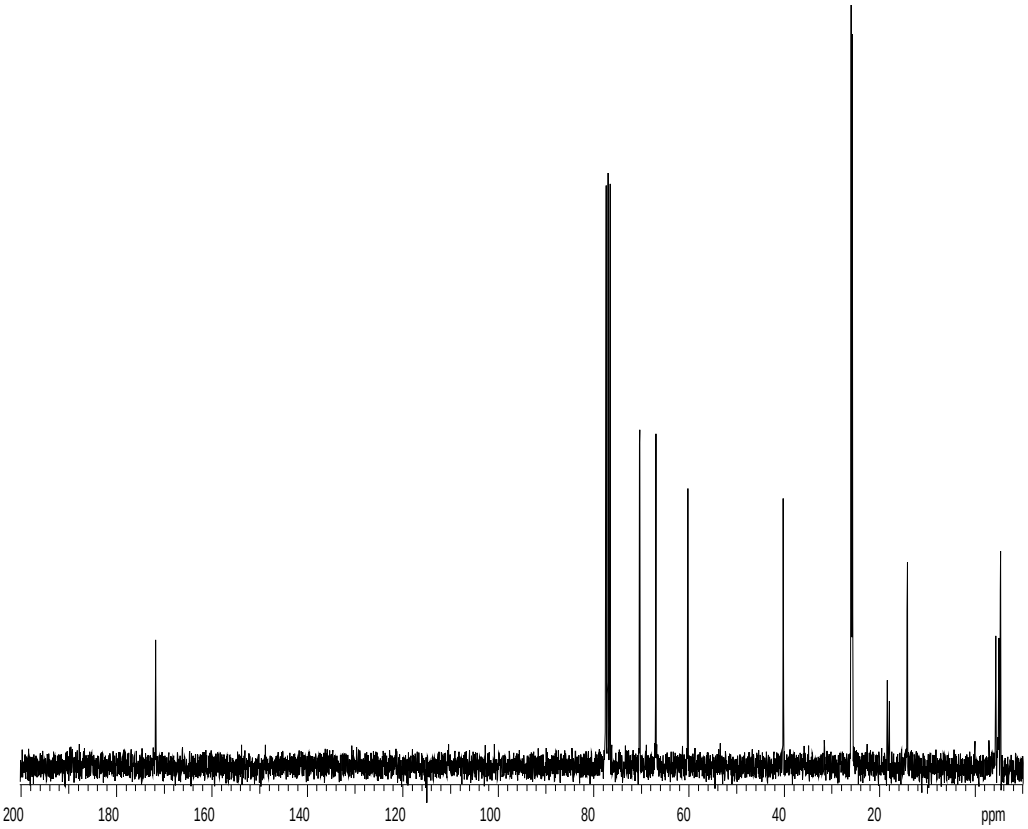


^{1}H NMR (300 MHz, $CDCl_3$) – Ester (14)



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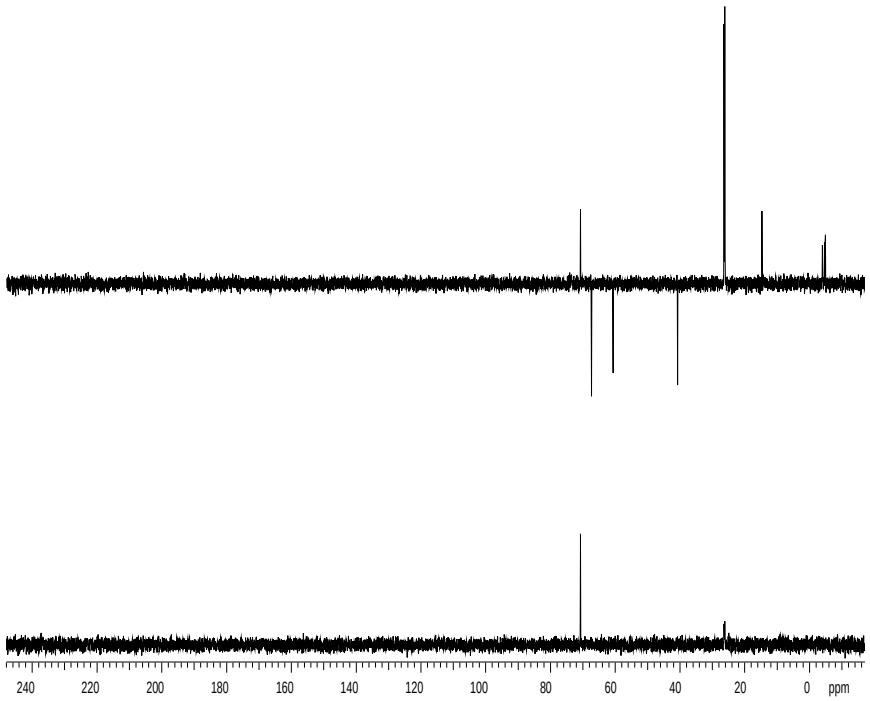

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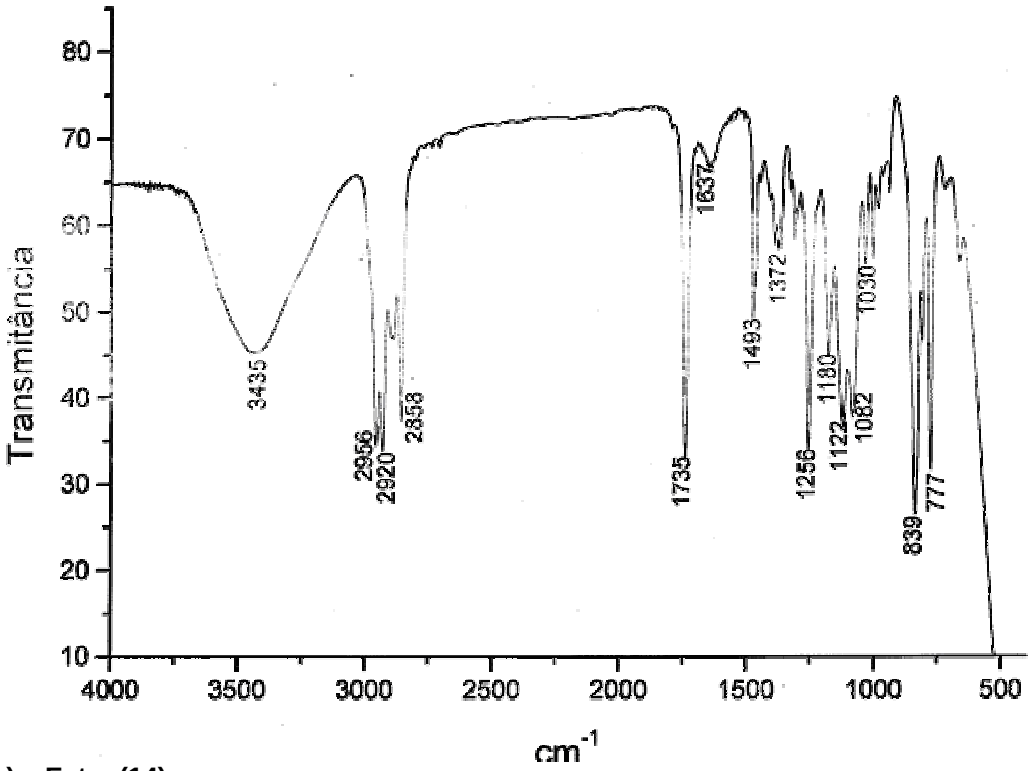

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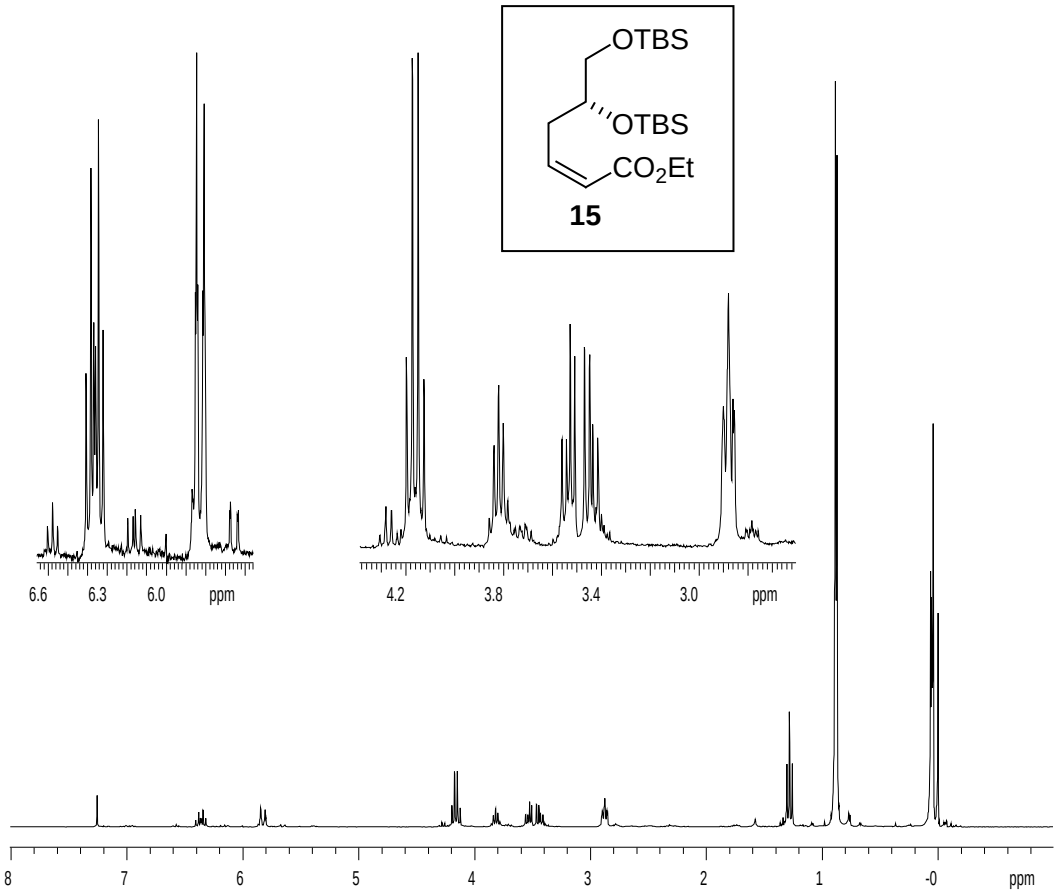

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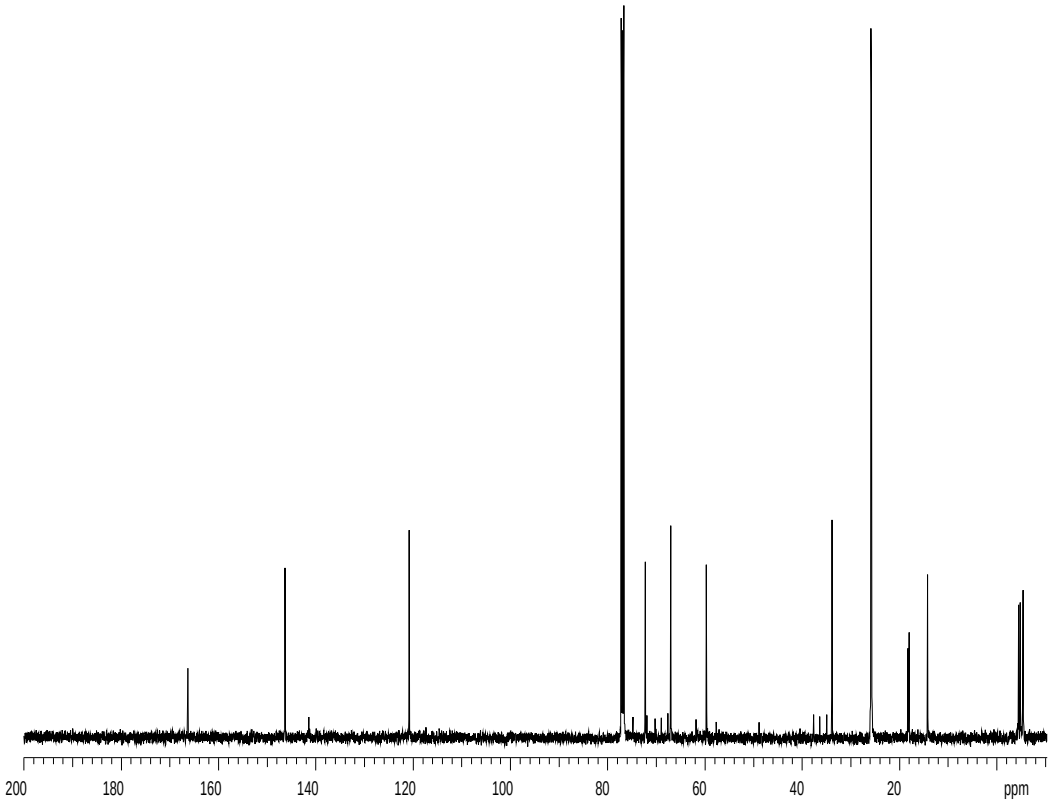

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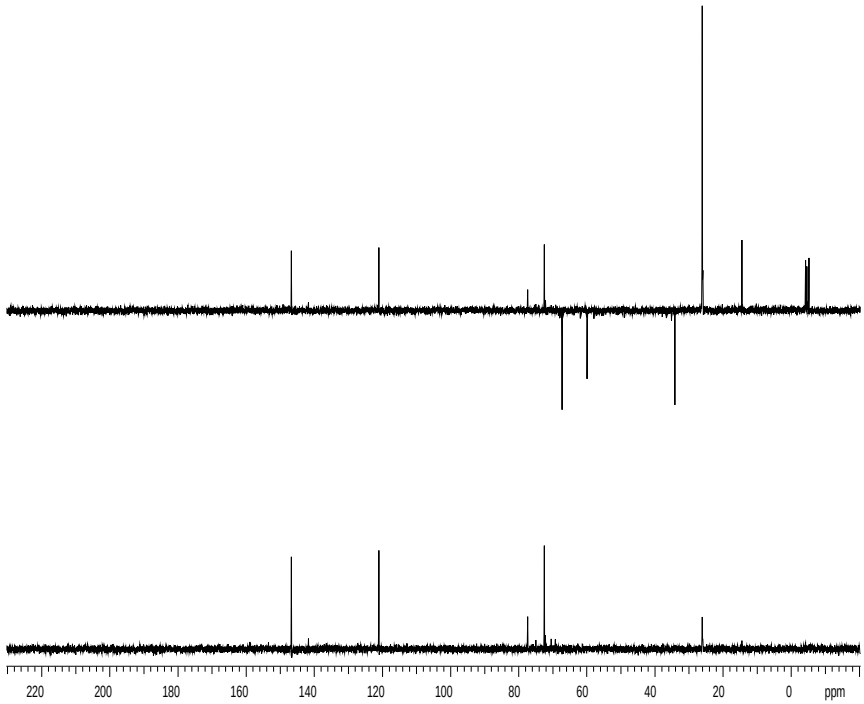

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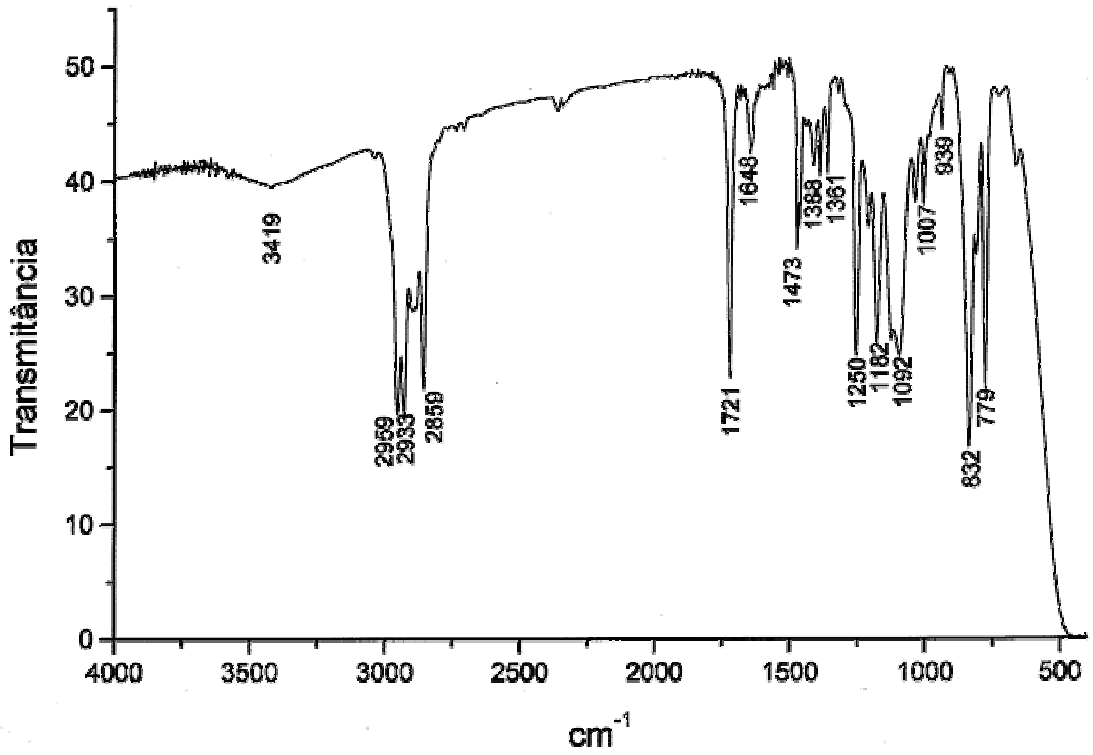

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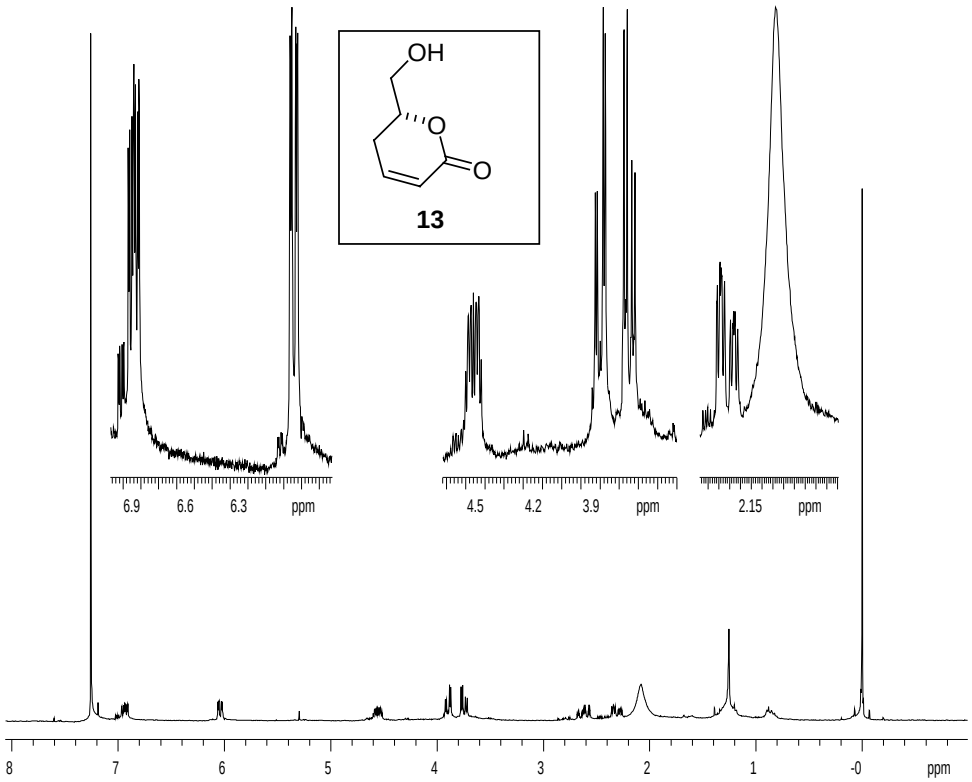

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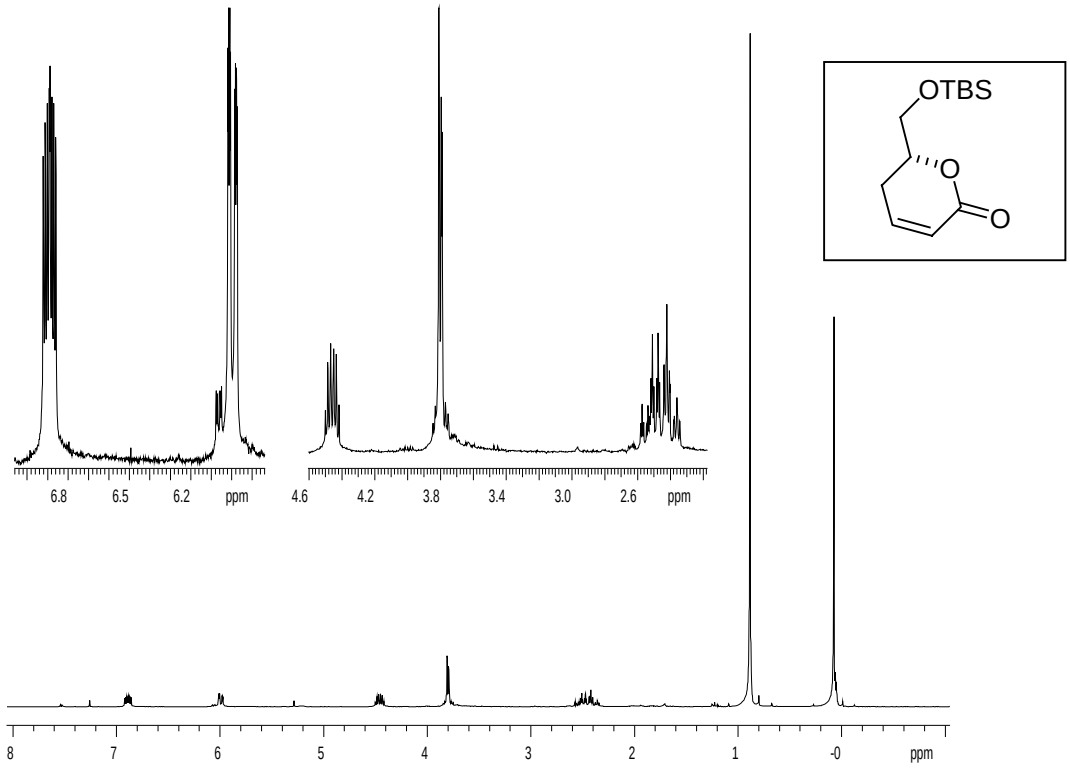
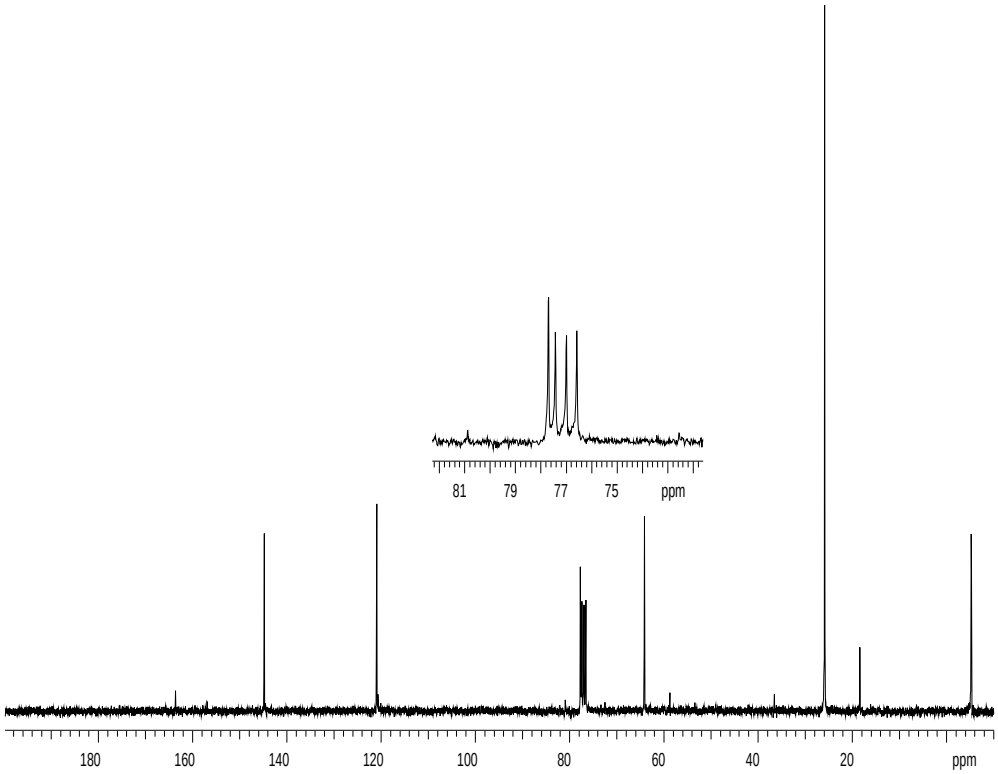


^{1}H NMR (300 MHz, $CDCl_3$) – TBS-Lactone from (13)



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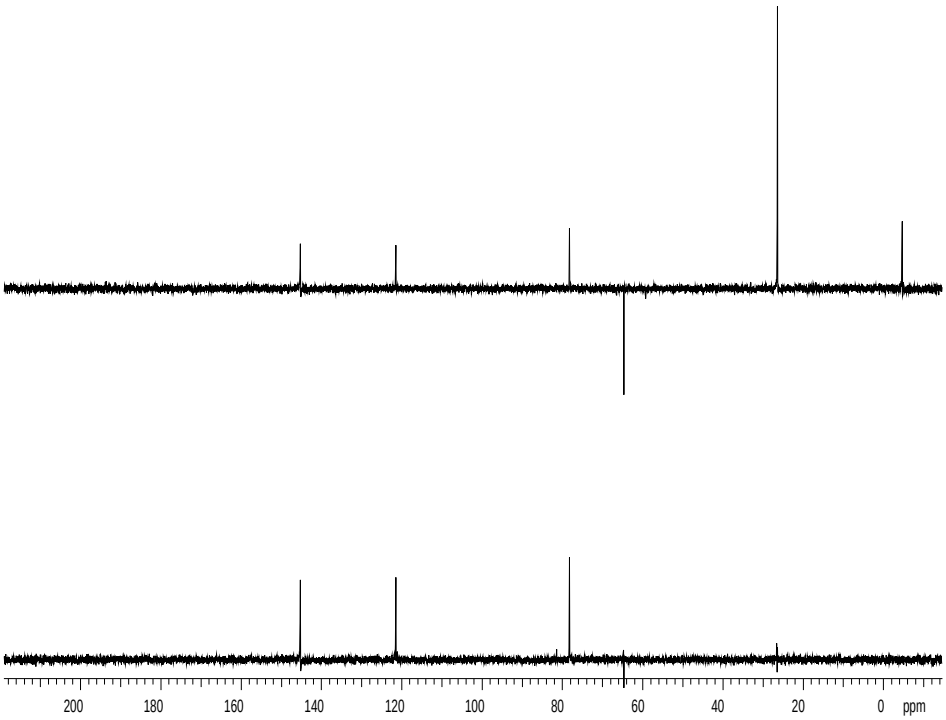

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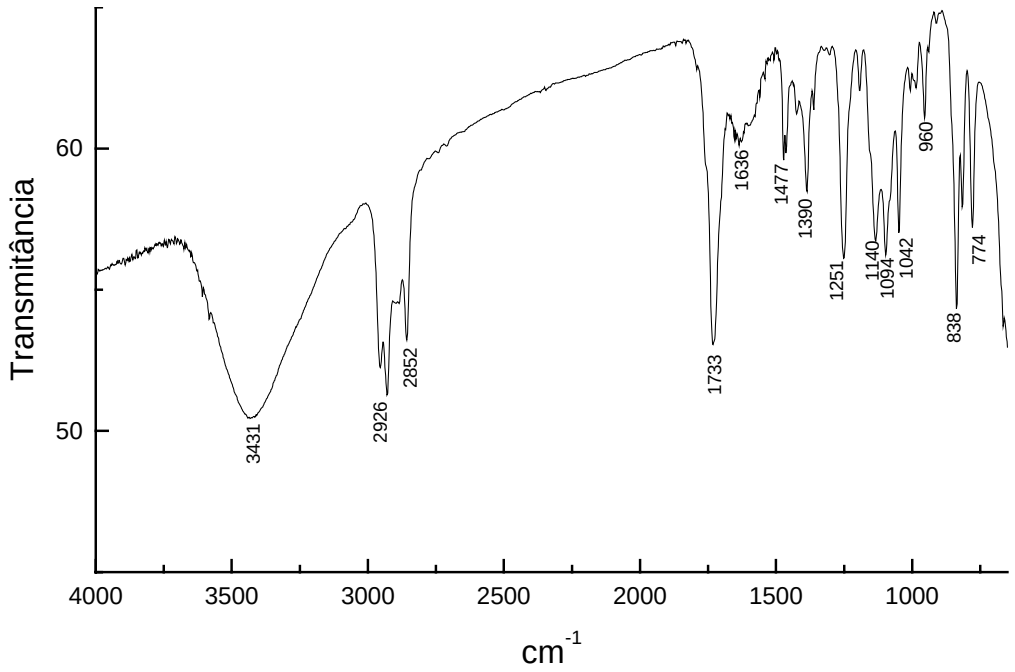

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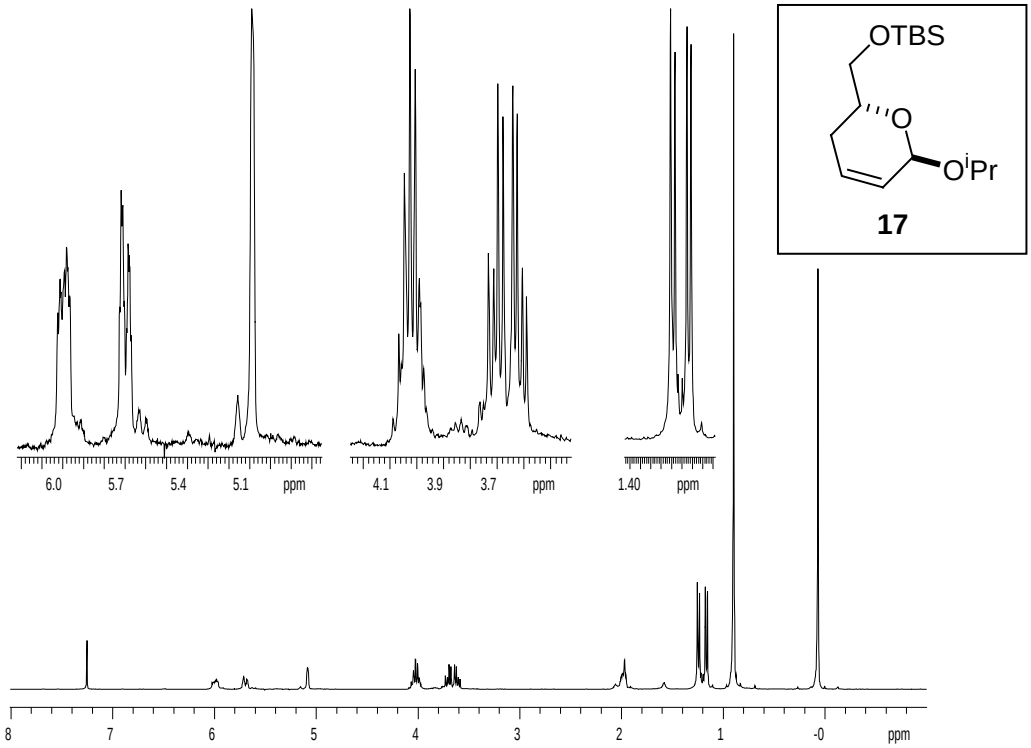
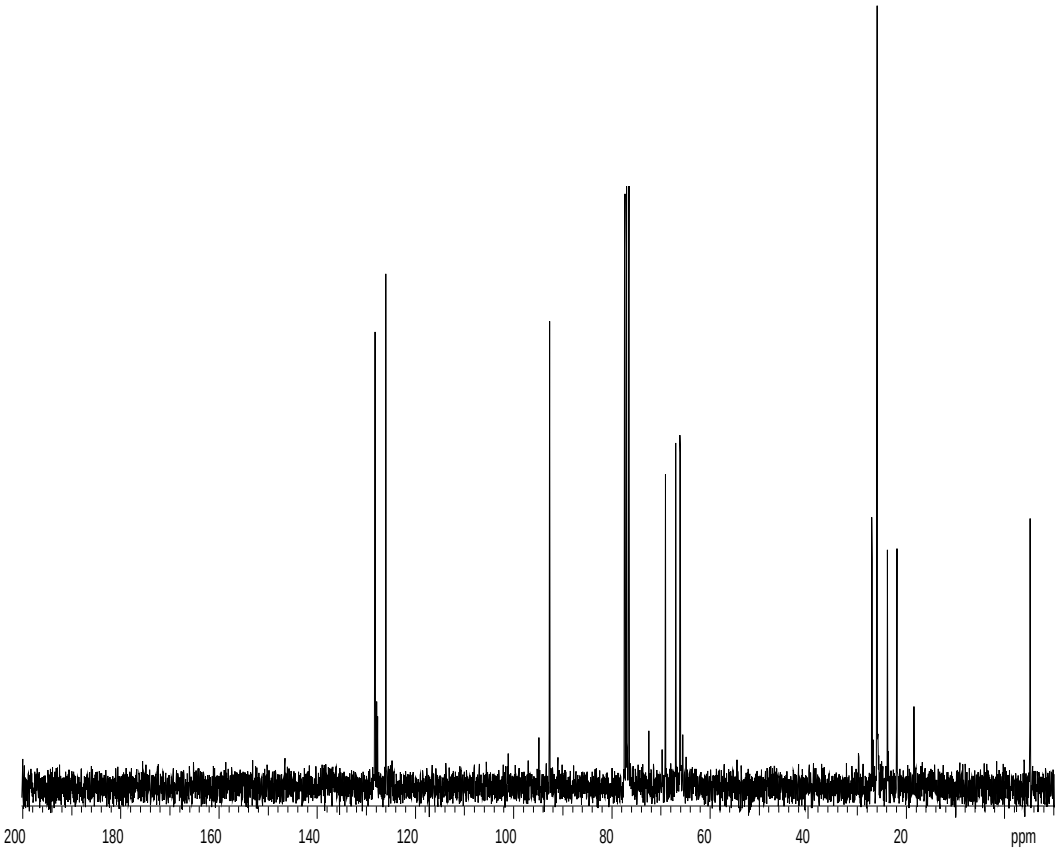
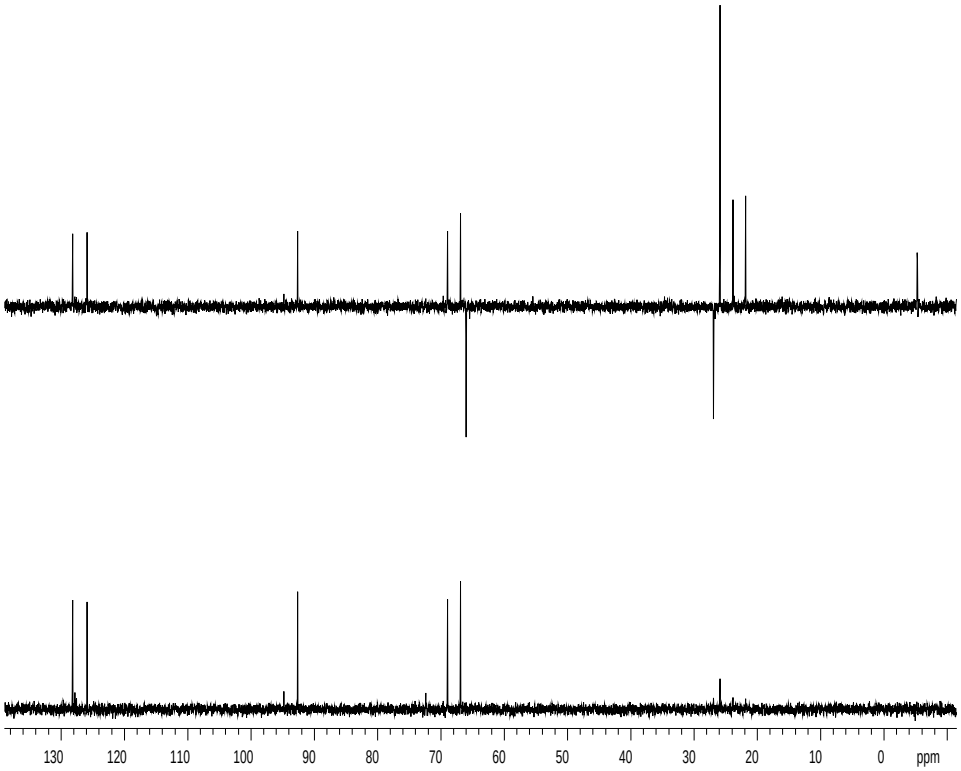


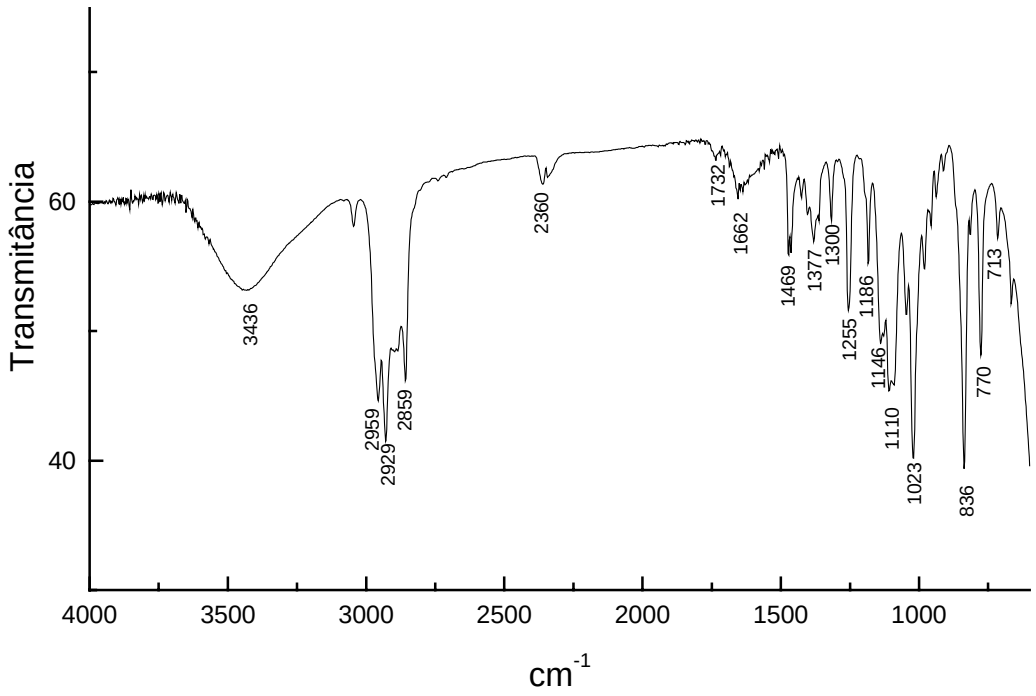
^{1}H NMR (300 MHz, $CDCl_3$) – iPr-Lactol (17)



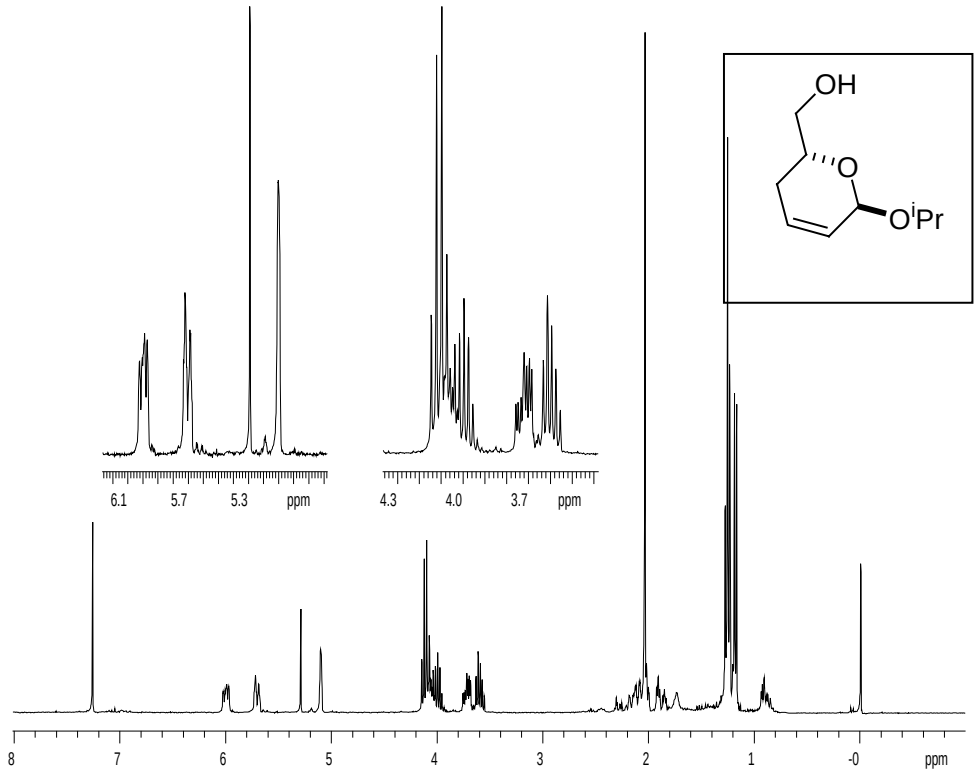
^{13}C NMR (75 MHz, $CDCl_3$) – iPr-Lactol (17)



DEPT 90/135 (75 MHz, $CDCl_3$) – iPr-Lactol (17)



IR (Film) – iPr-Lactol (17)



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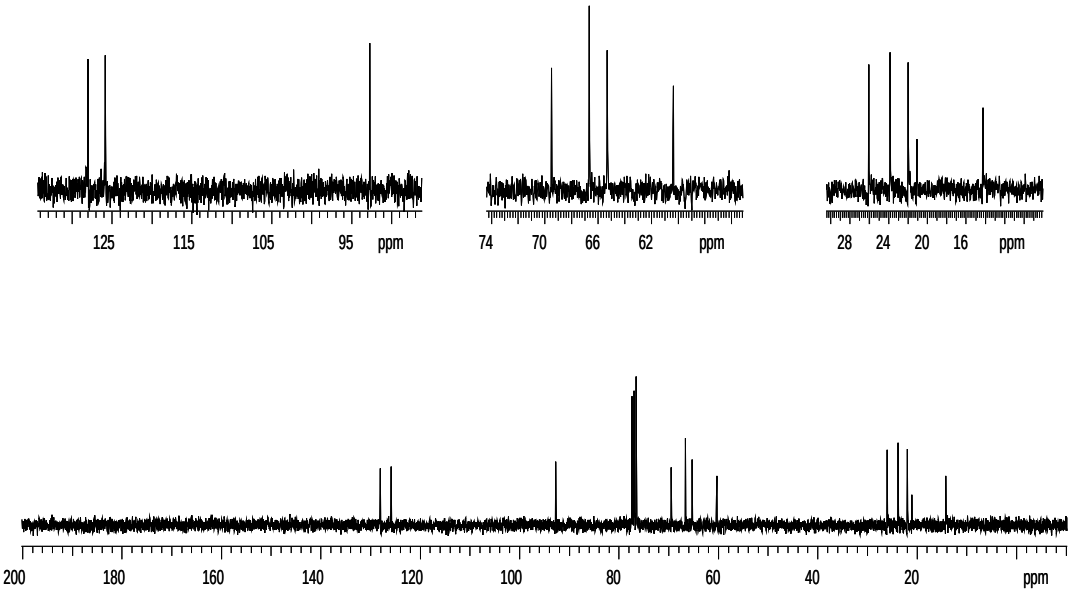

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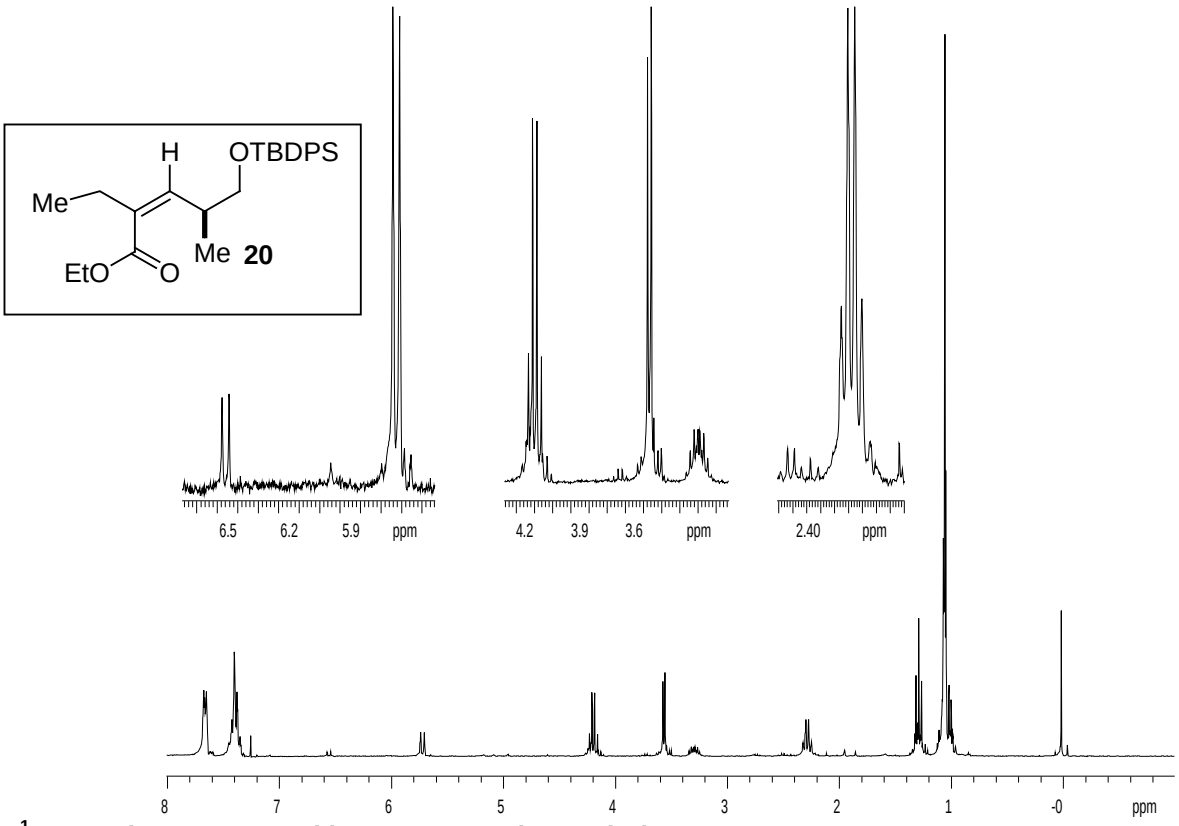
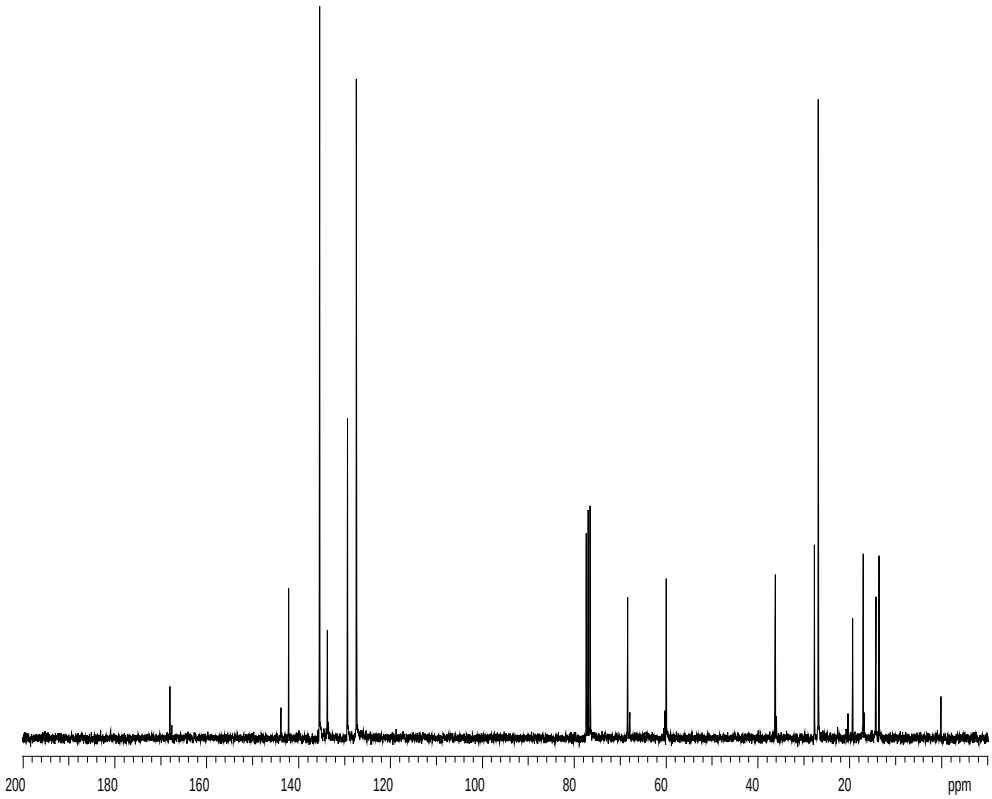
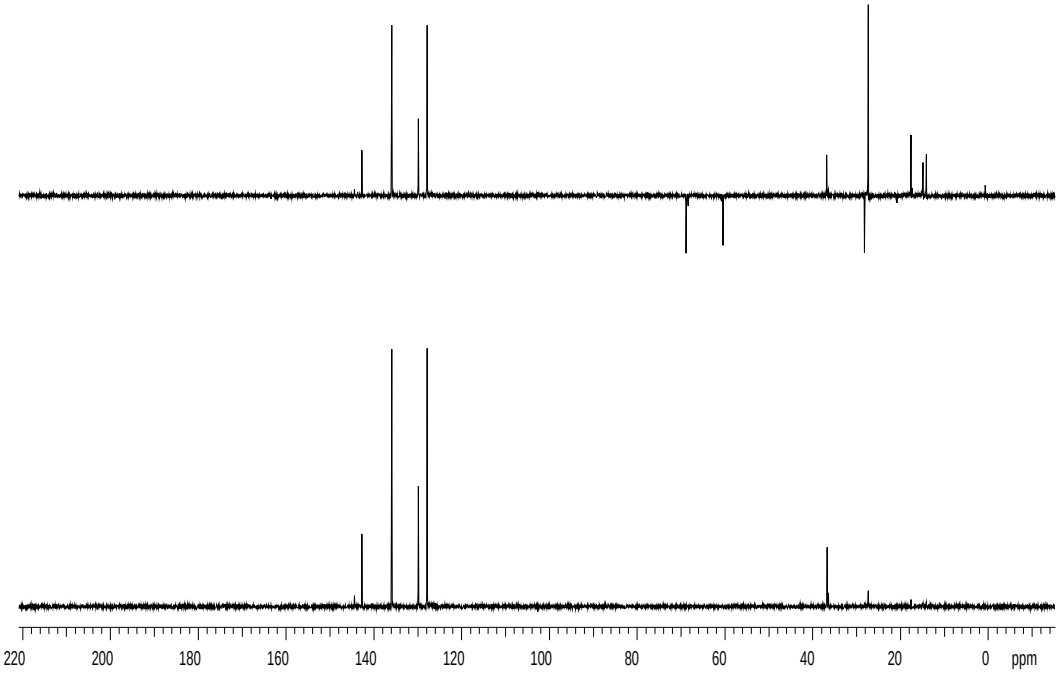


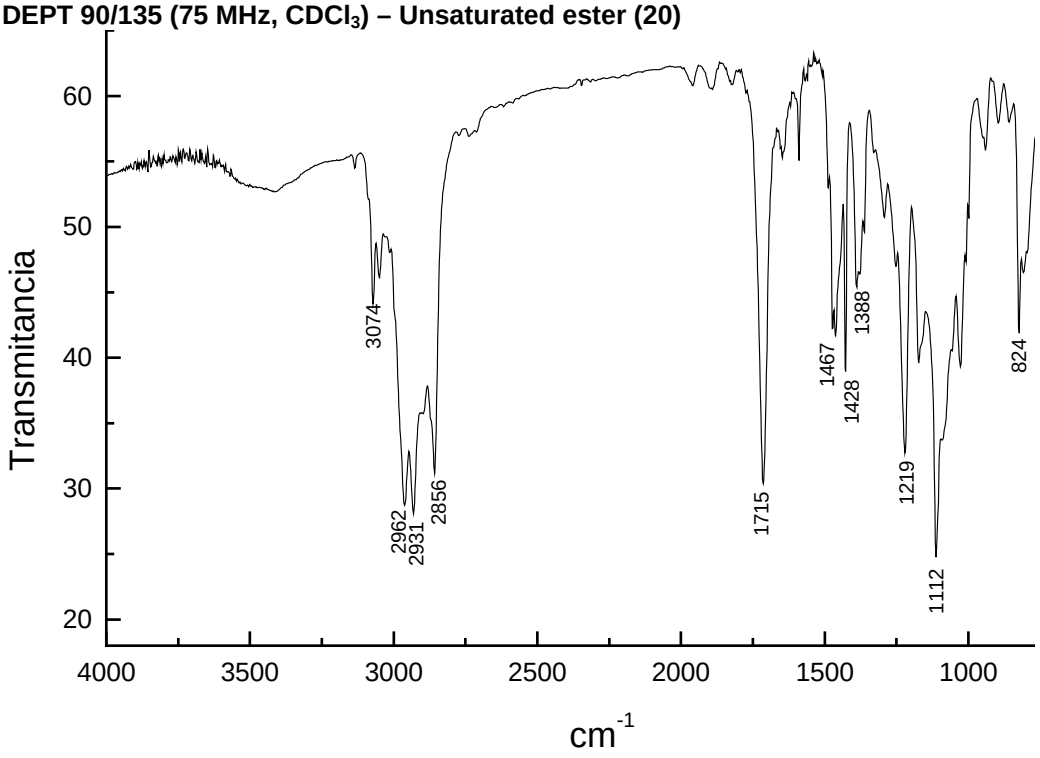
^{1}H NMR (300 MHz, $CDCl_3$) – Unsaturated ester (20)



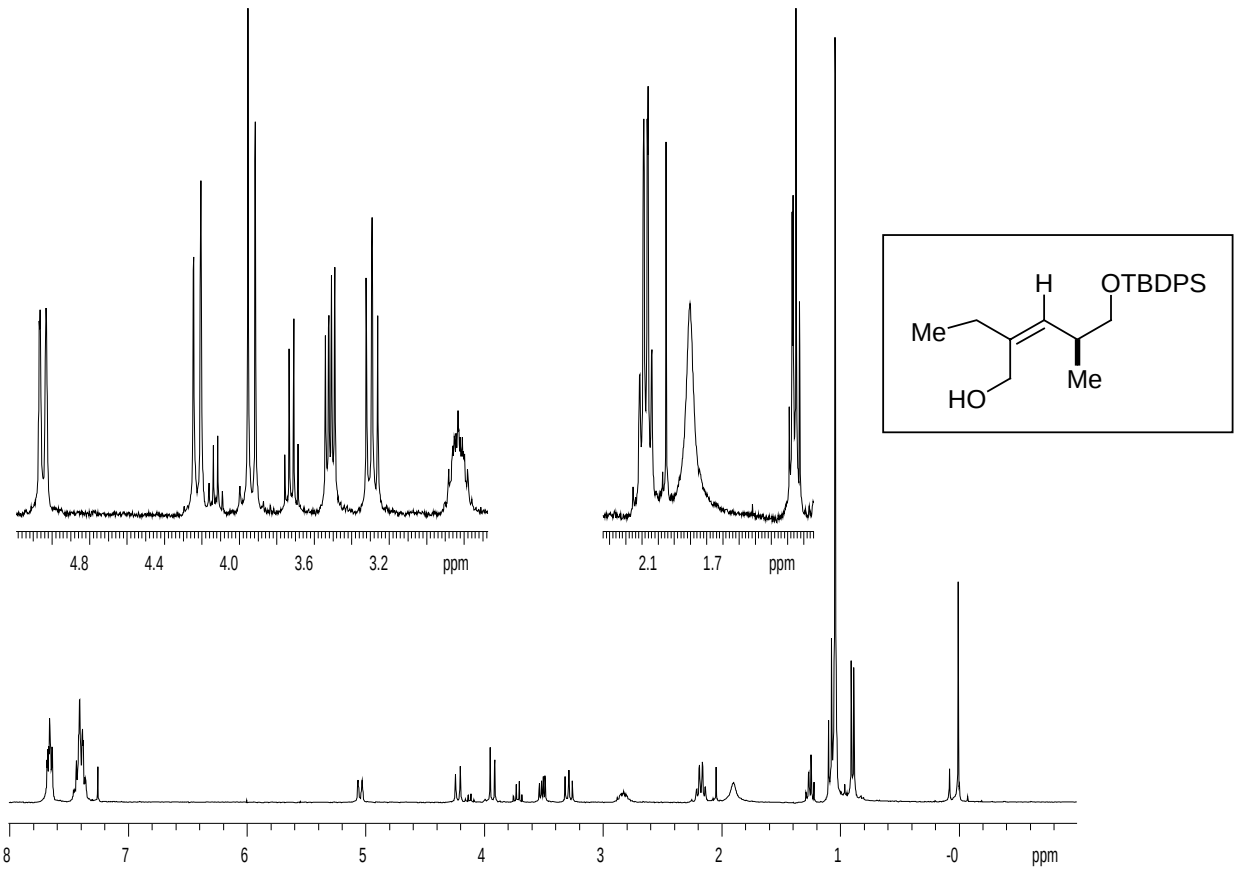
^{13}C NMR (75 MHz, $CDCl_3$) – Unsaturated ester (20)



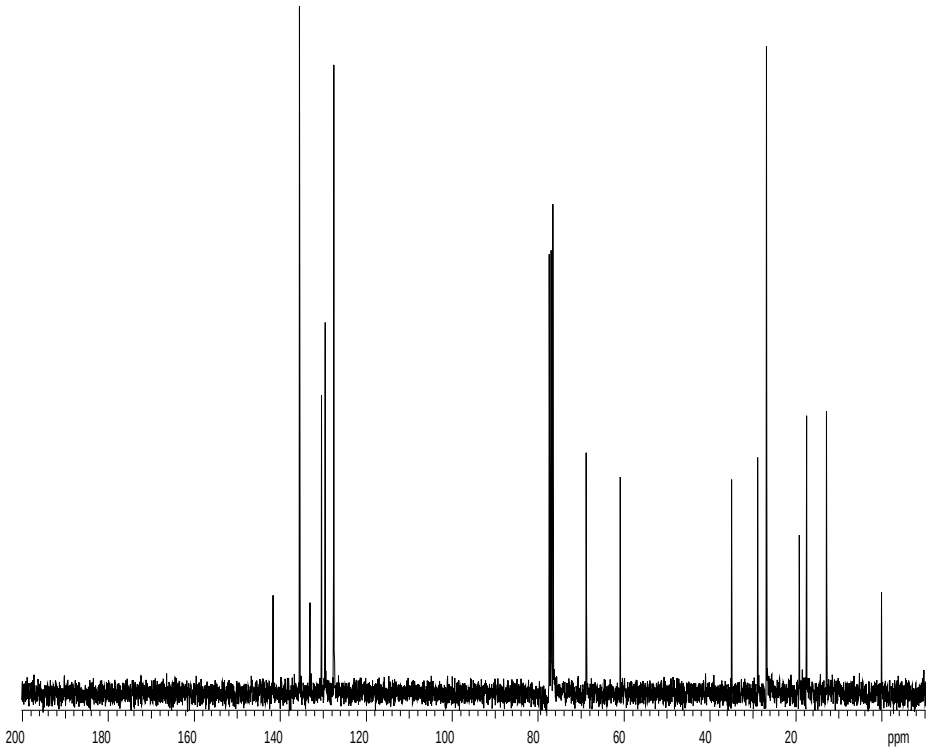
DEPT 90/135 (75 MHz, $CDCl_3$) – Unsaturated ester (20)



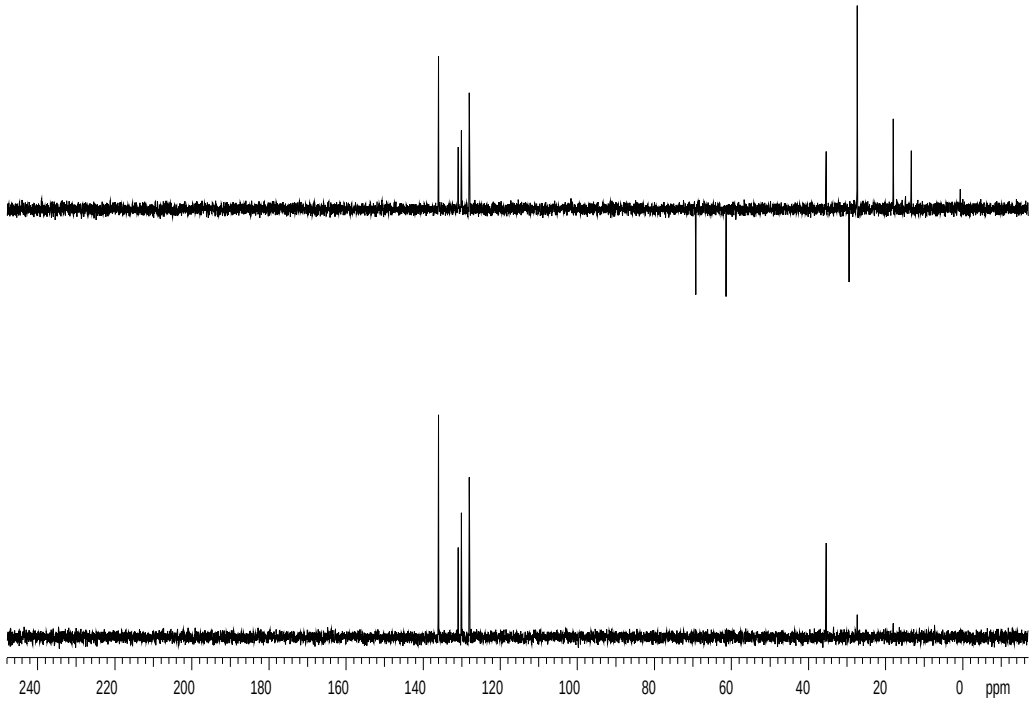
IR (Film) – Unsaturated ester (20)



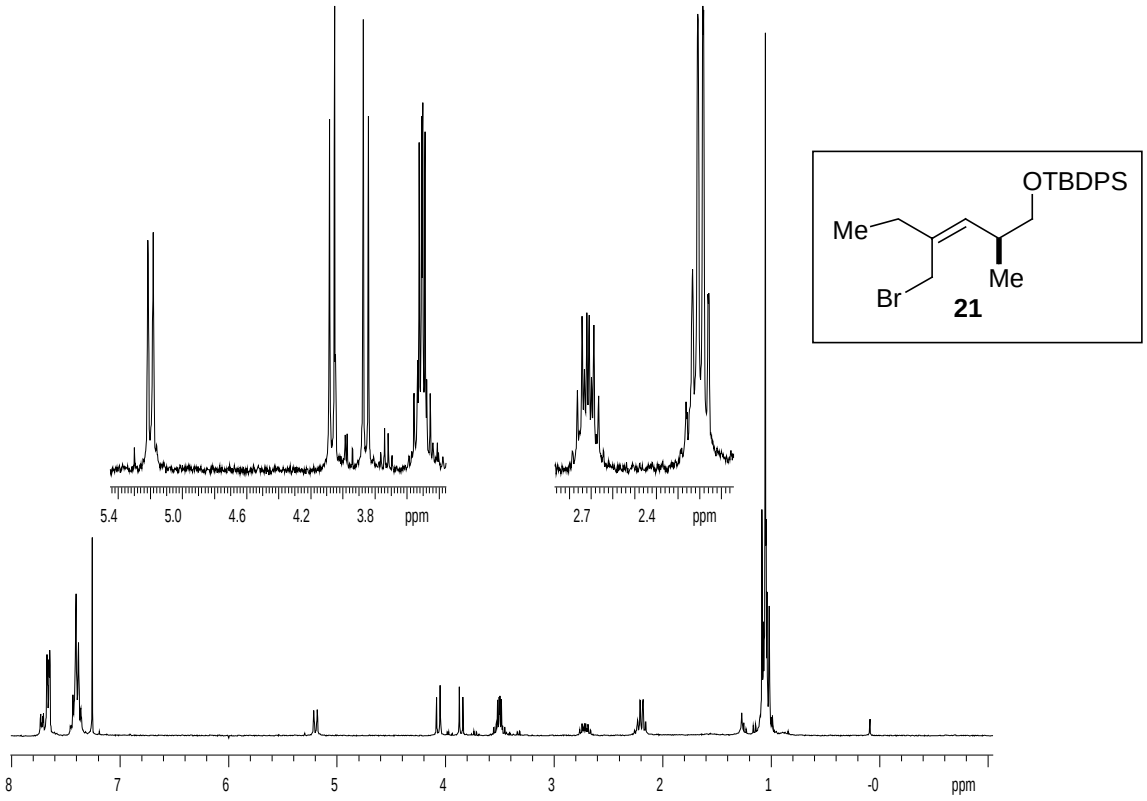
^{1}H NMR (300 MHz, $CDCl_3$) – Allylic Alcohol from (20)



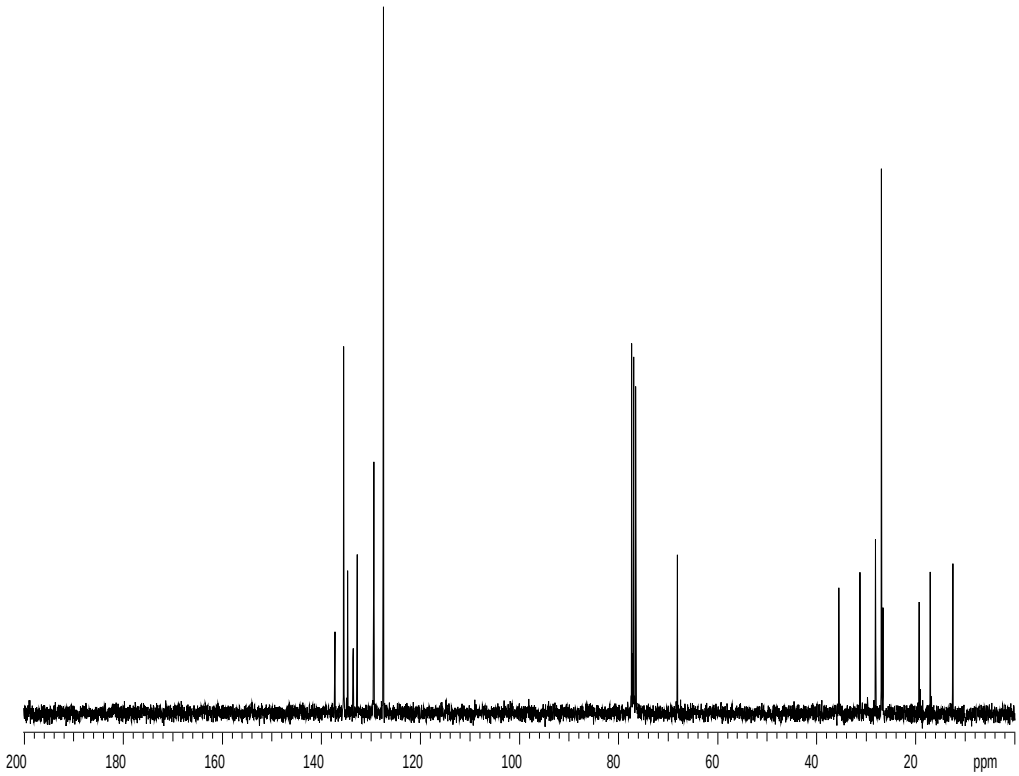
^{13}C NMR (75 MHz, $CDCl_3$) – Allylic Alcohol from (20)



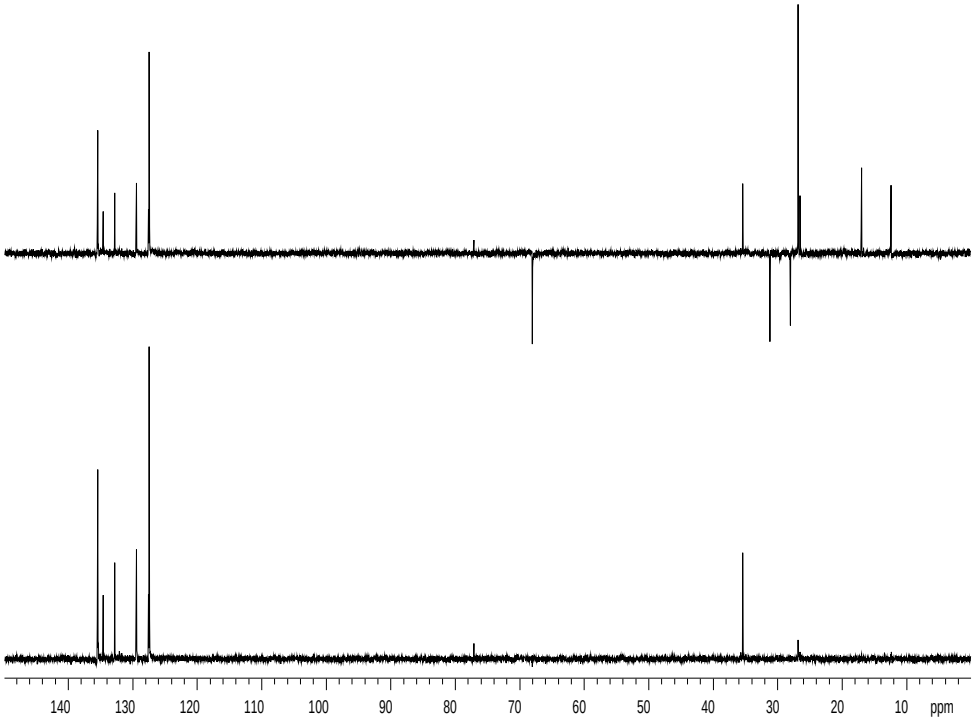
DEPT 90/135 (75 MHz, $CDCl_3$) – Allylic Alcohol from (20)



^{1}H NMR (300 MHz, $CDCl_3$) – Bromide (21)



^{13}C NMR (75 MHz, $CDCl_3$) – Bromide (21)



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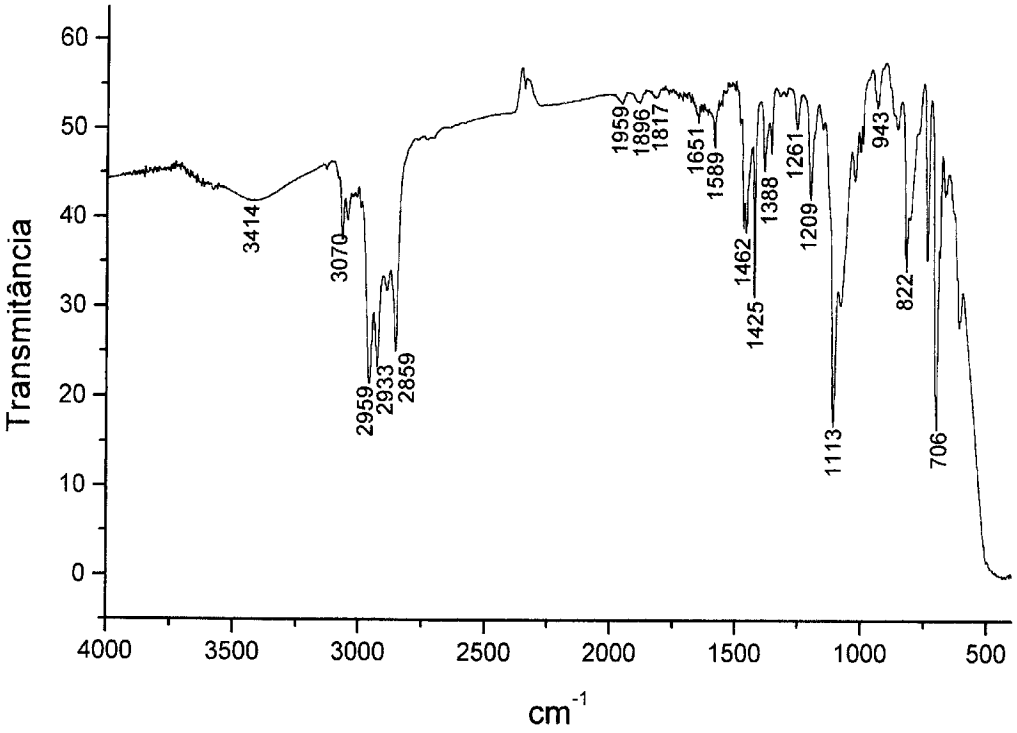
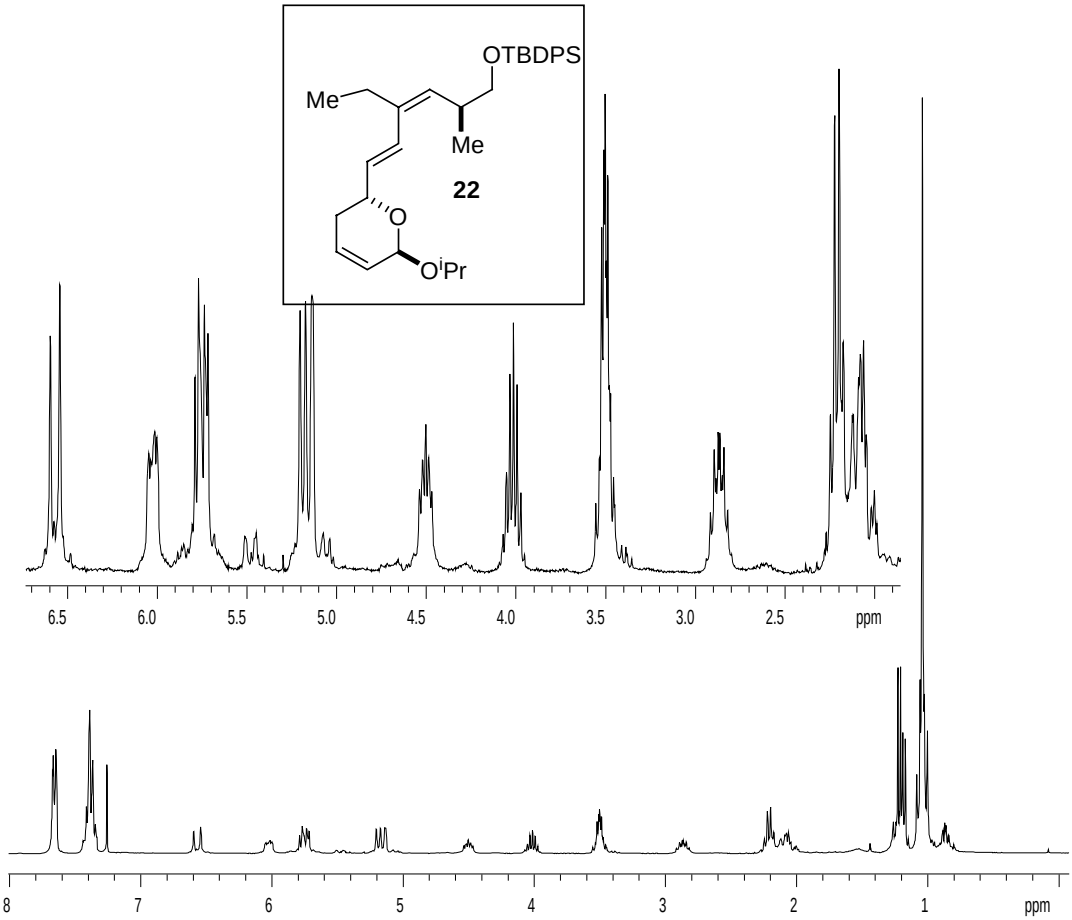
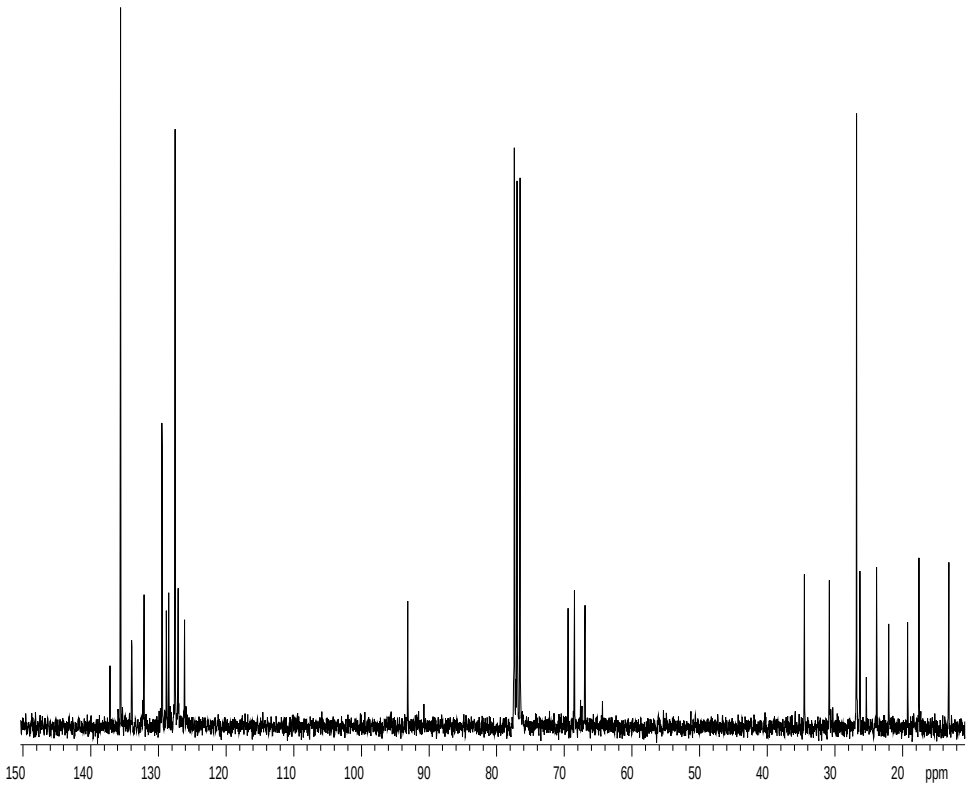


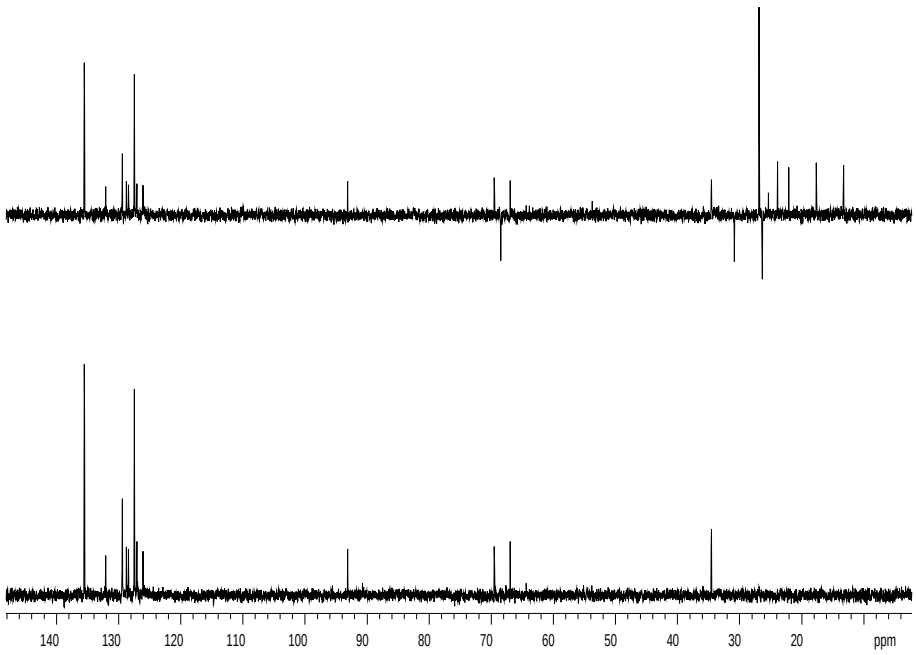
IR (Film) – Bromide (21)



^{1}H NMR (300 MHz, $CDCl_3$) – Diene (22)



^{13}C NMR (75 MHz, $CDCl_3$) – Diene (22)



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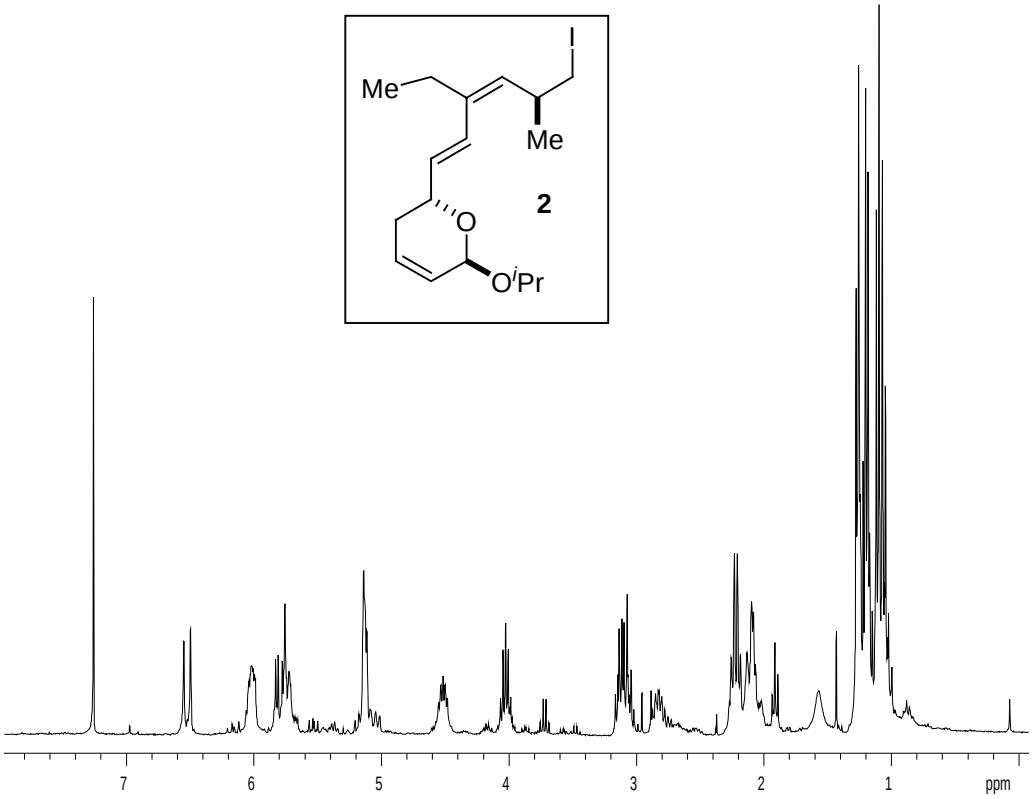

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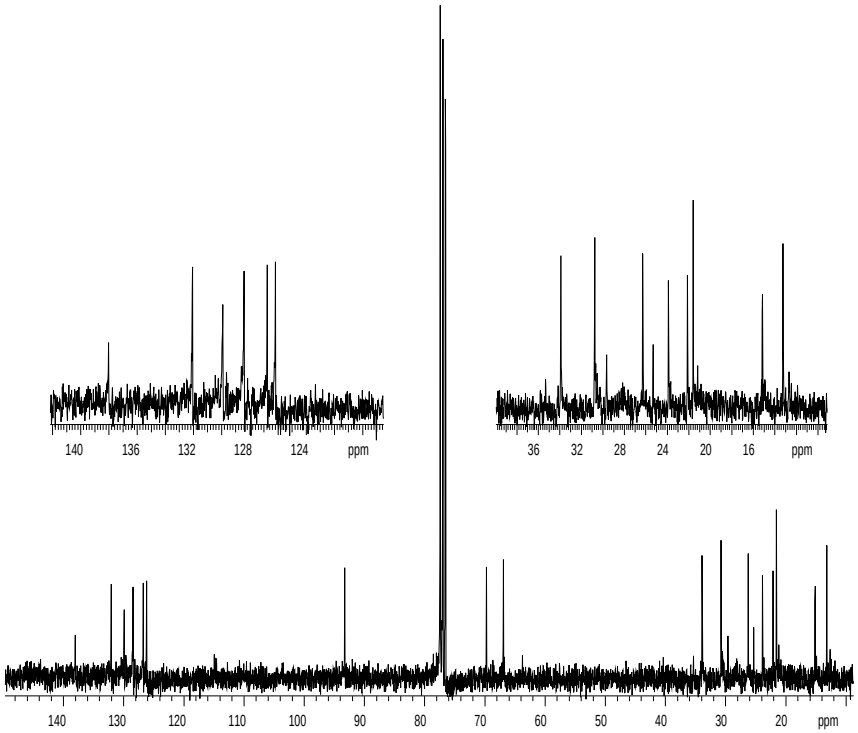

^{13}C NMR (75 MHz, $CDCl_3$) – Alkyl iodide (2)