

Supplementary Materials: A Green Approach for Allylations of Aldehydes and Ketones: Combining Allylborate, Mechanochemistry and Lanthanide Catalyst

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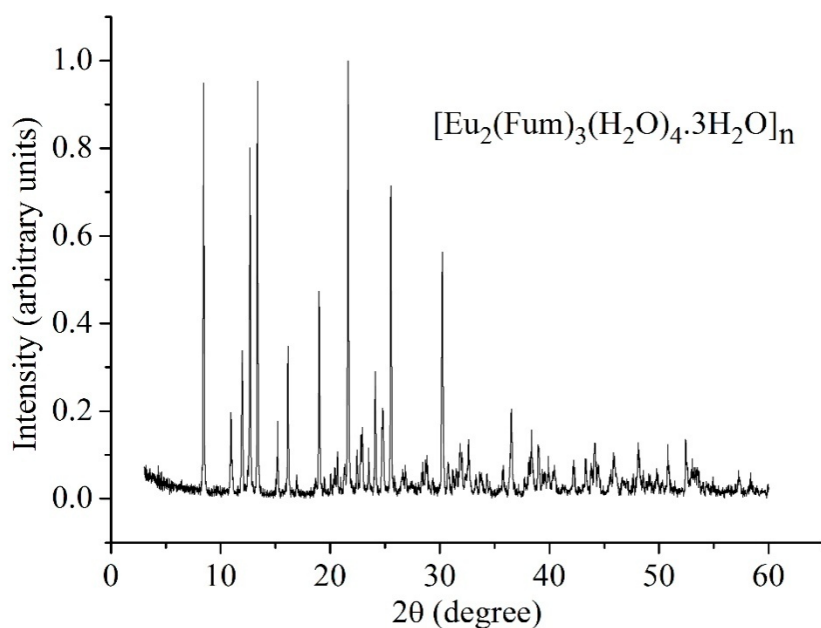


Figure S1. X-ray powder diffraction (XRPD) patterns for MOF-[Eu₂(Fum)₃(H₂O)₄·3H₂O]_n: EuFum.

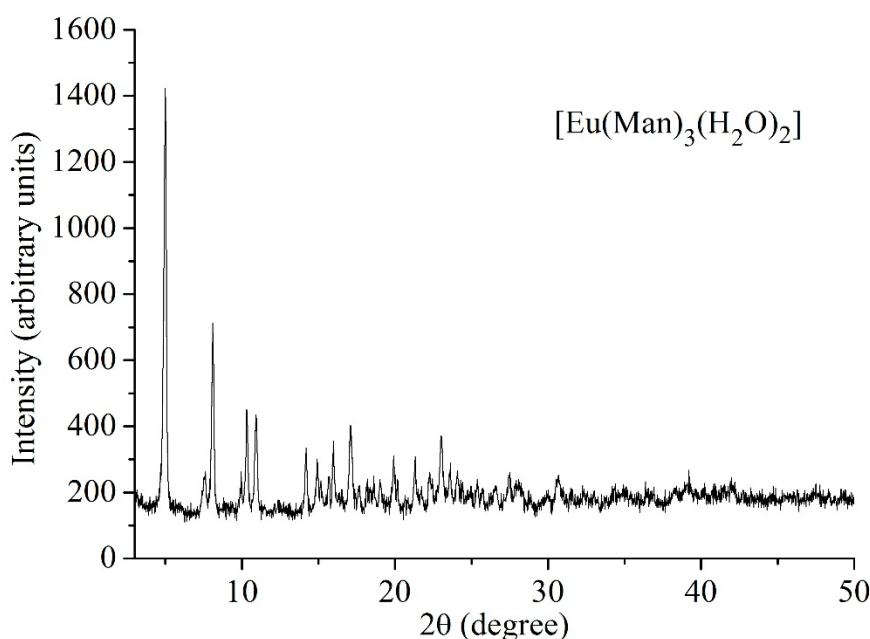
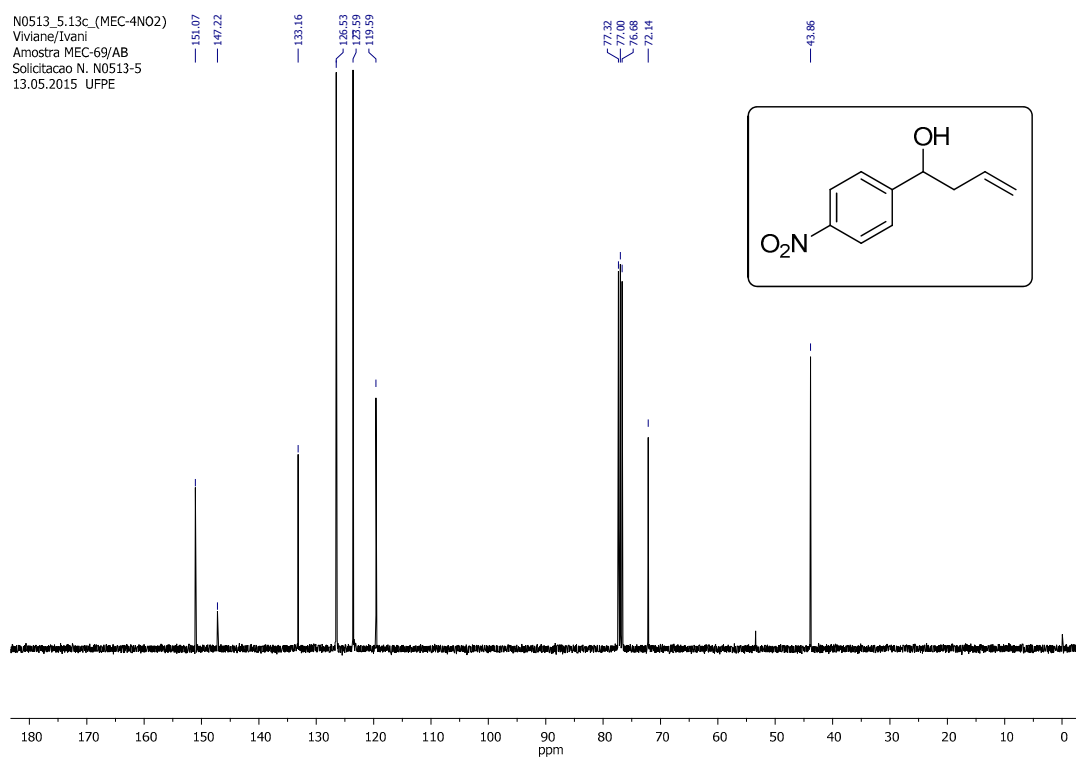
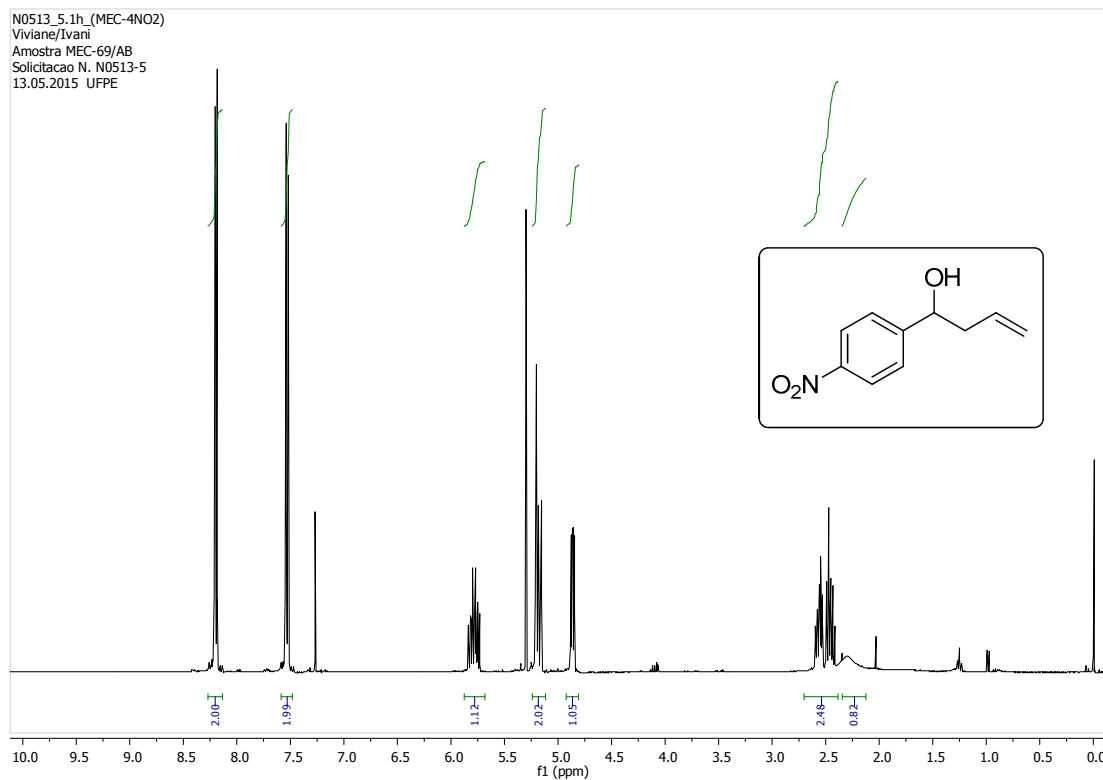


Figure S2. X-ray powder diffraction (XRPD) patterns for [Eu₂(Man)₃(H₂O)₂]: MandEu.



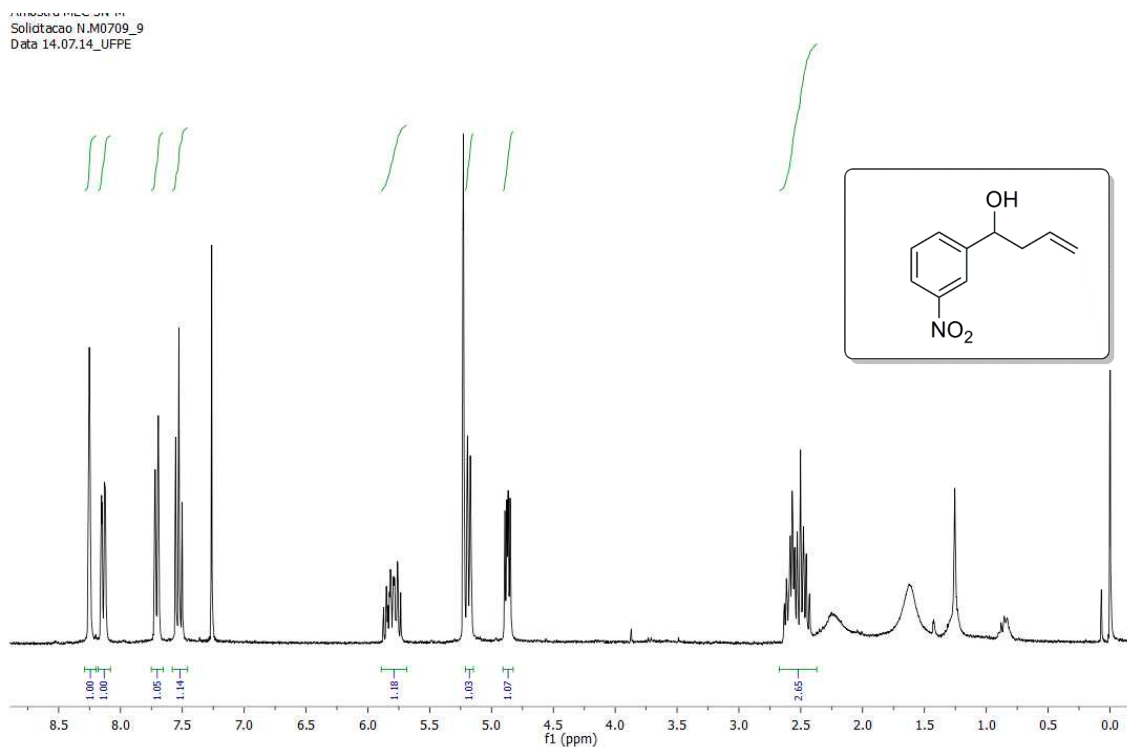


Figure S5. ^1H -NMR (300 MHz, CDCl_3) of 1-(3-Nitrophenyl)but-3-en-1-ol (3b).

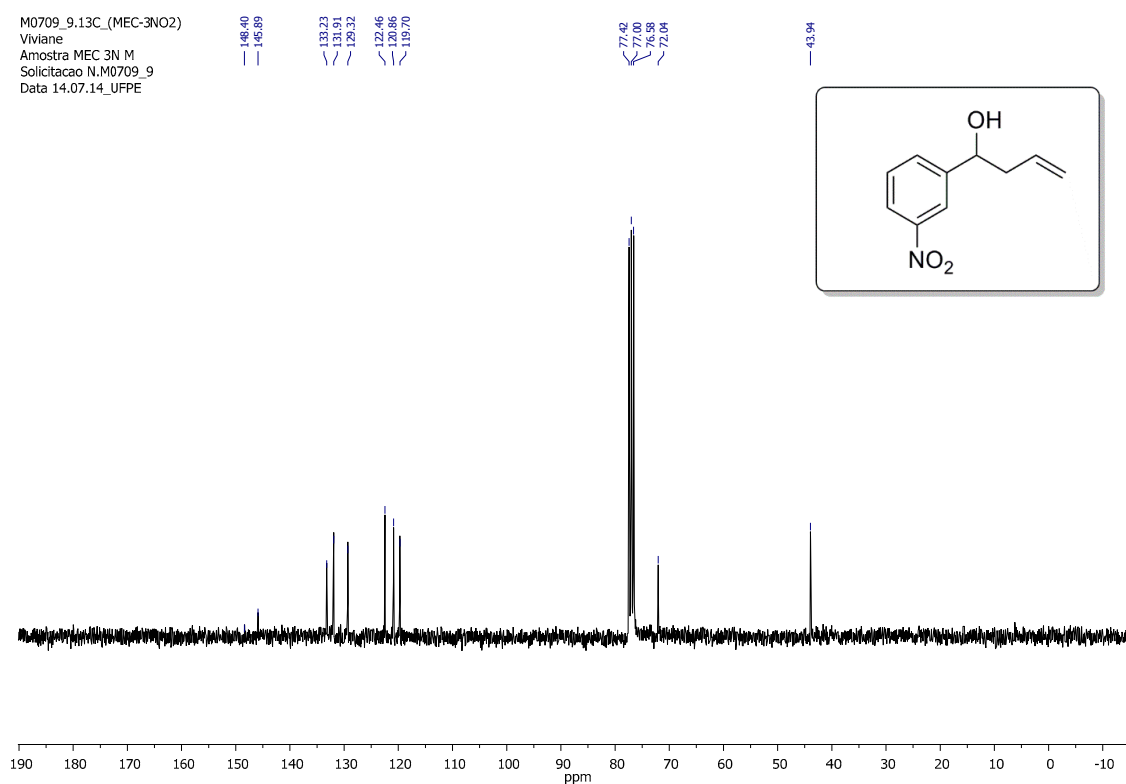
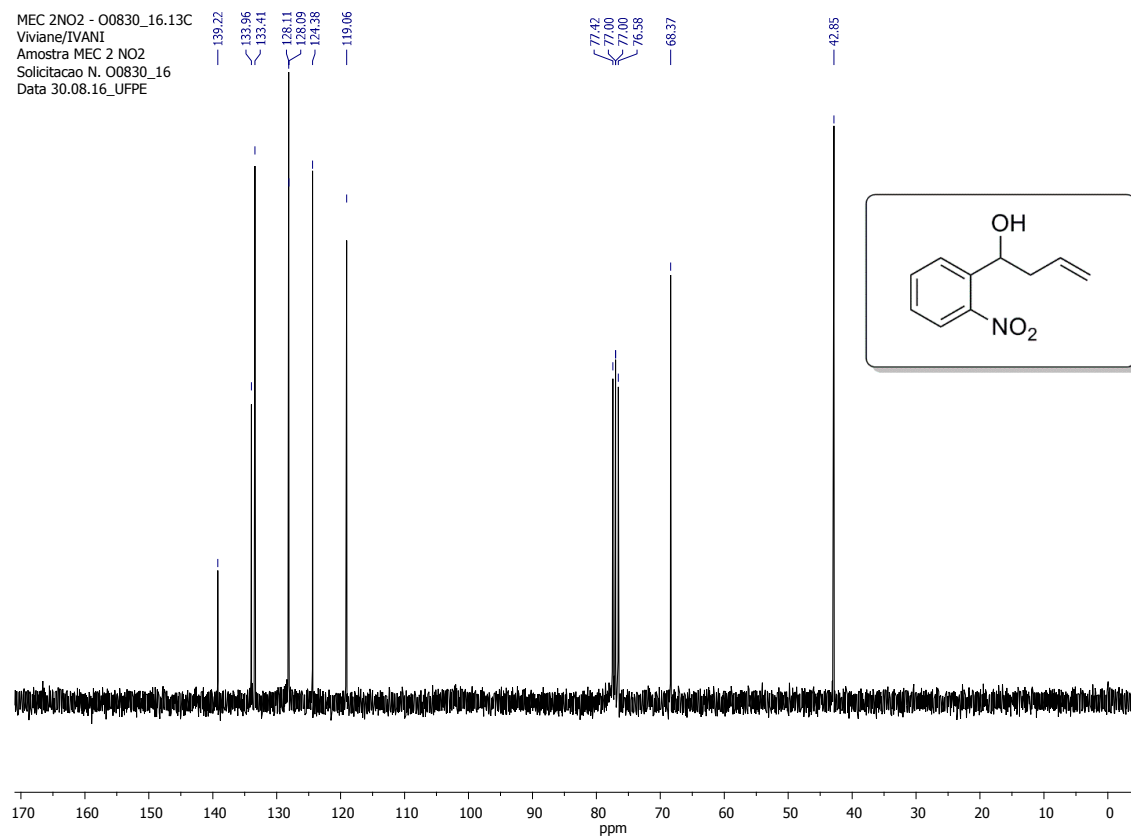
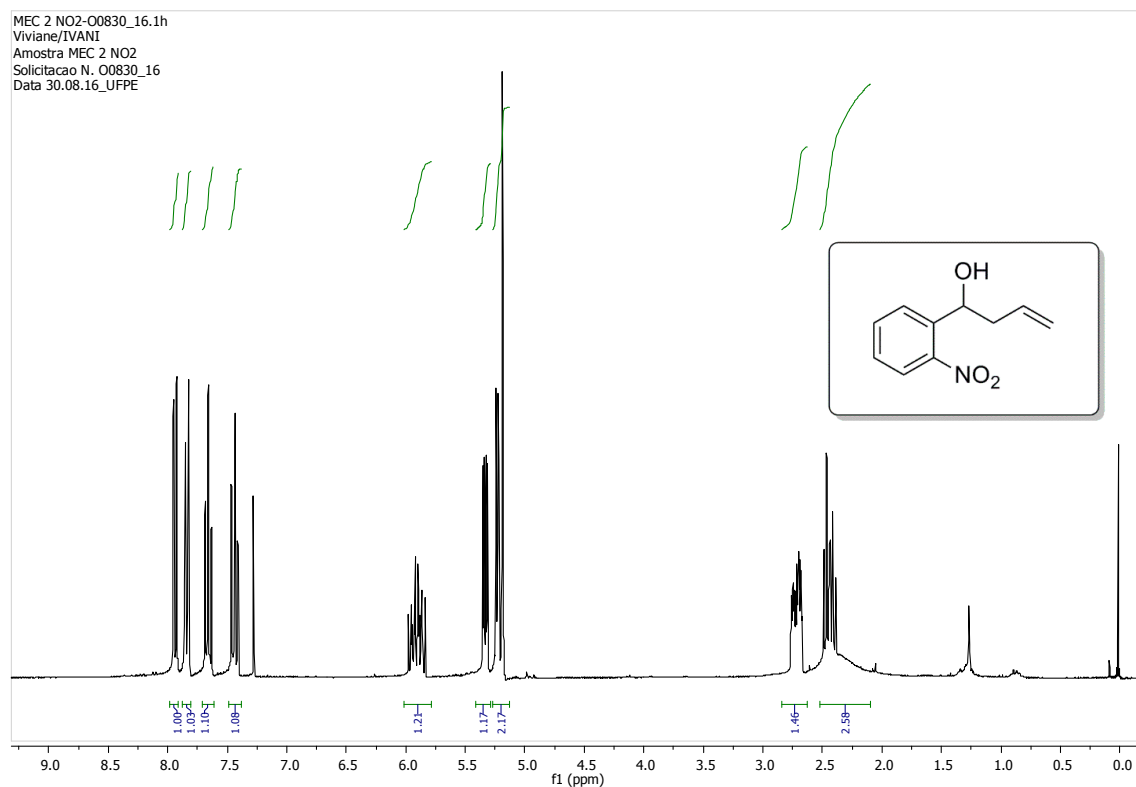
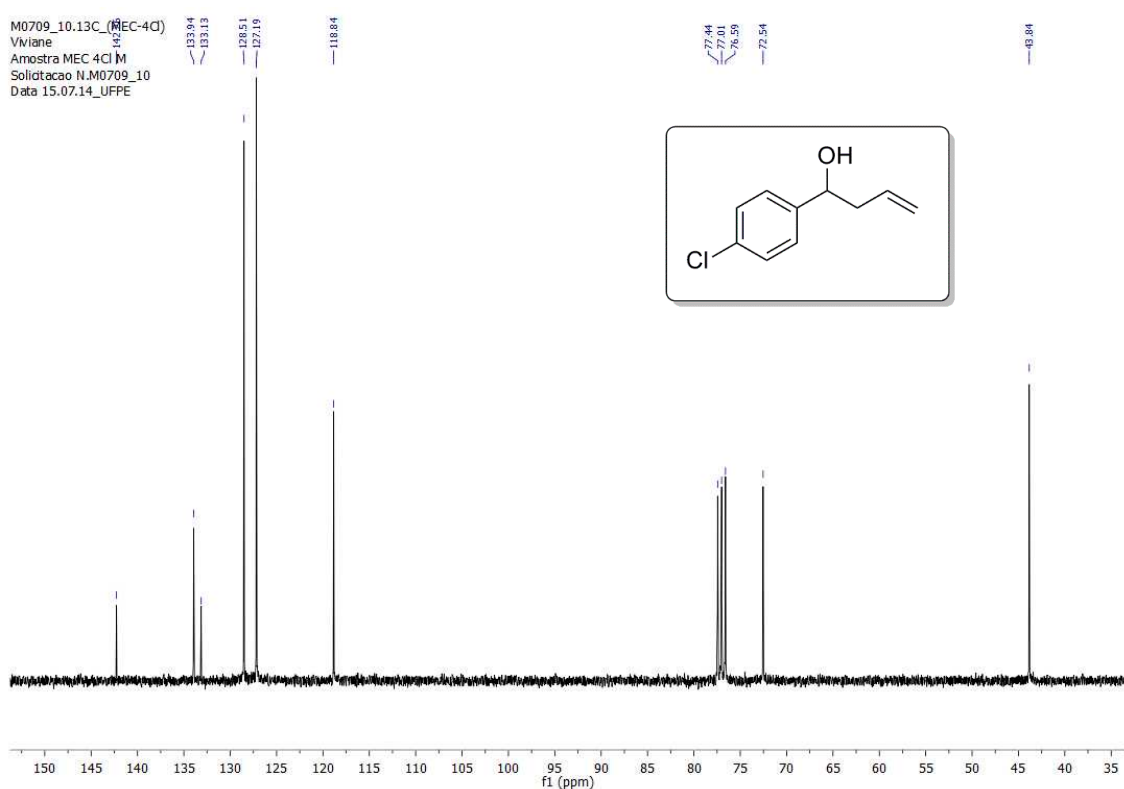
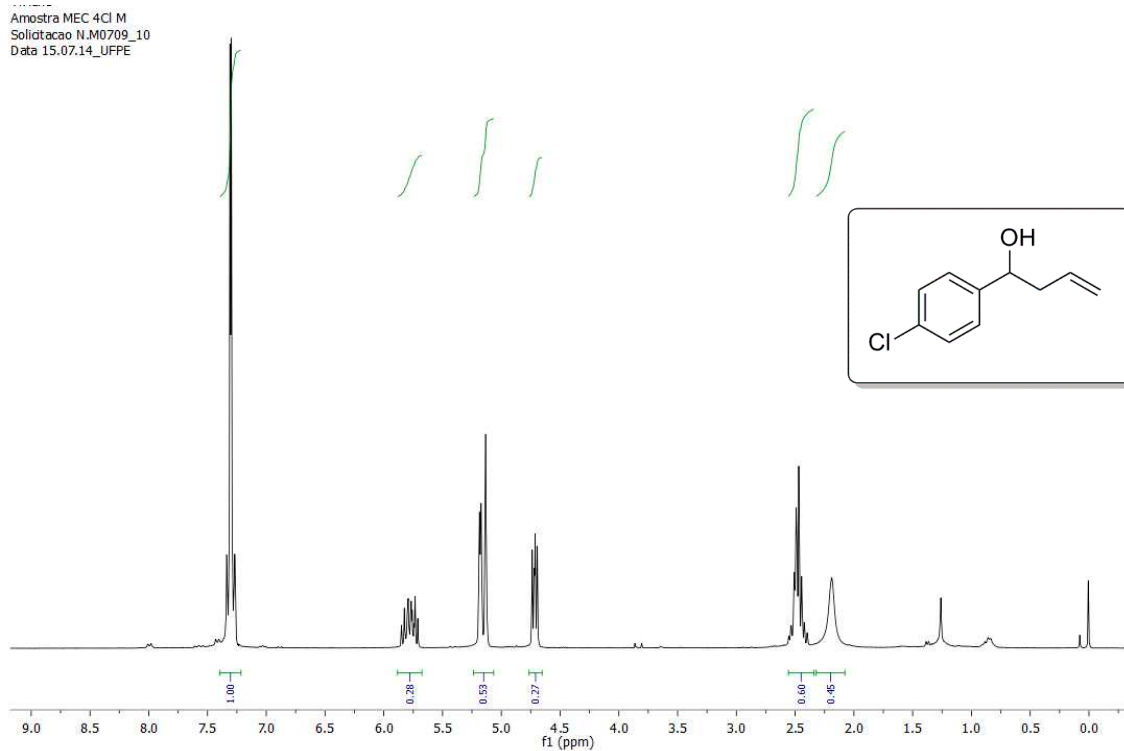
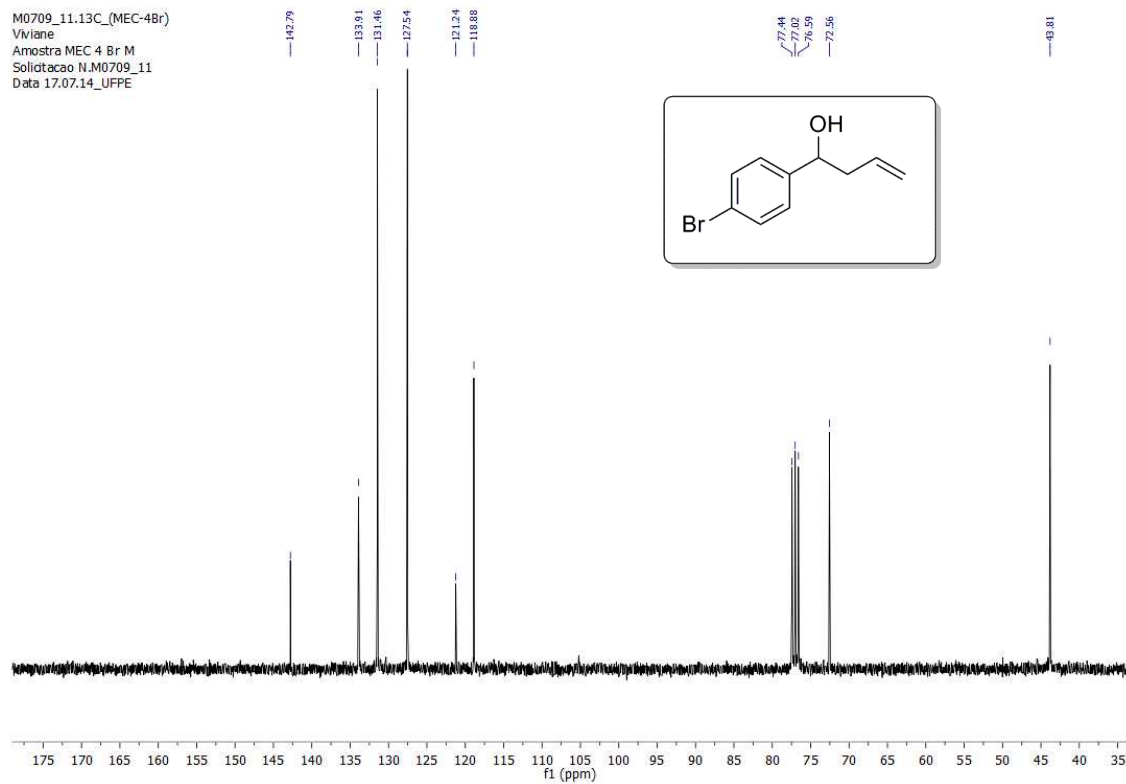
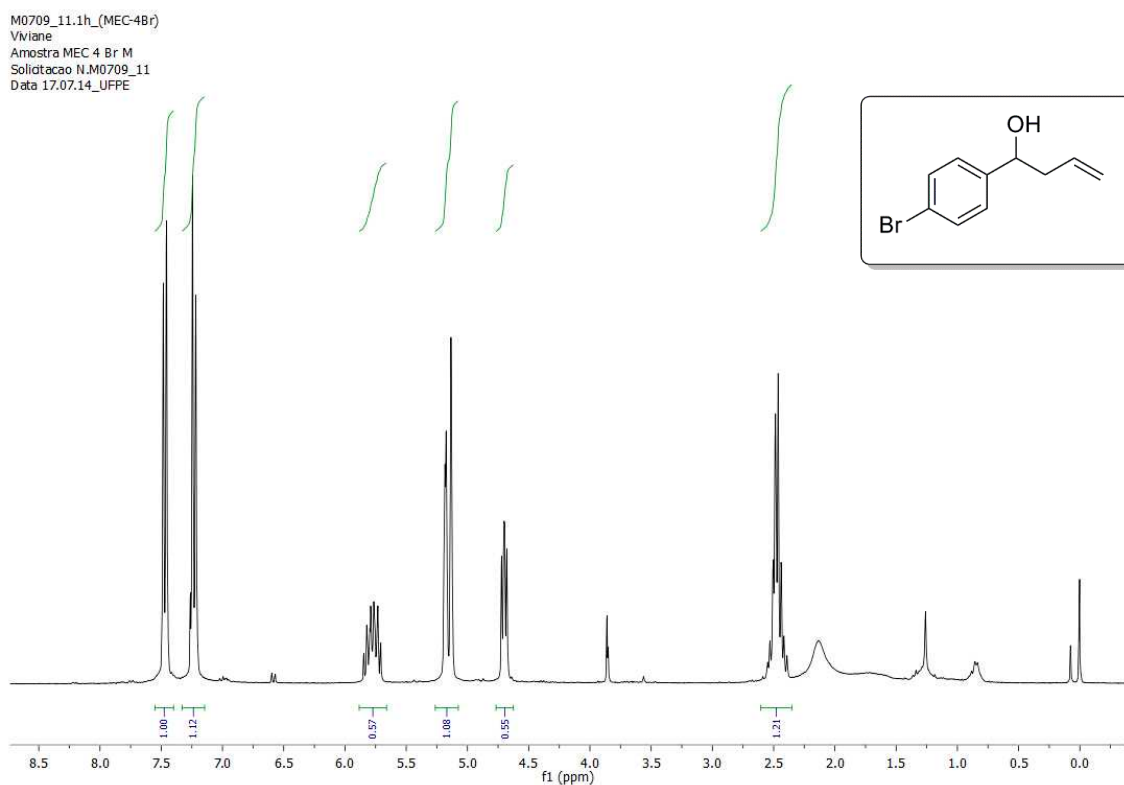


Figure S6. ^{13}C -NMR (75 MHz, CDCl_3) of 1-(3-Nitrophenyl)but-3-en-1-ol (3b).







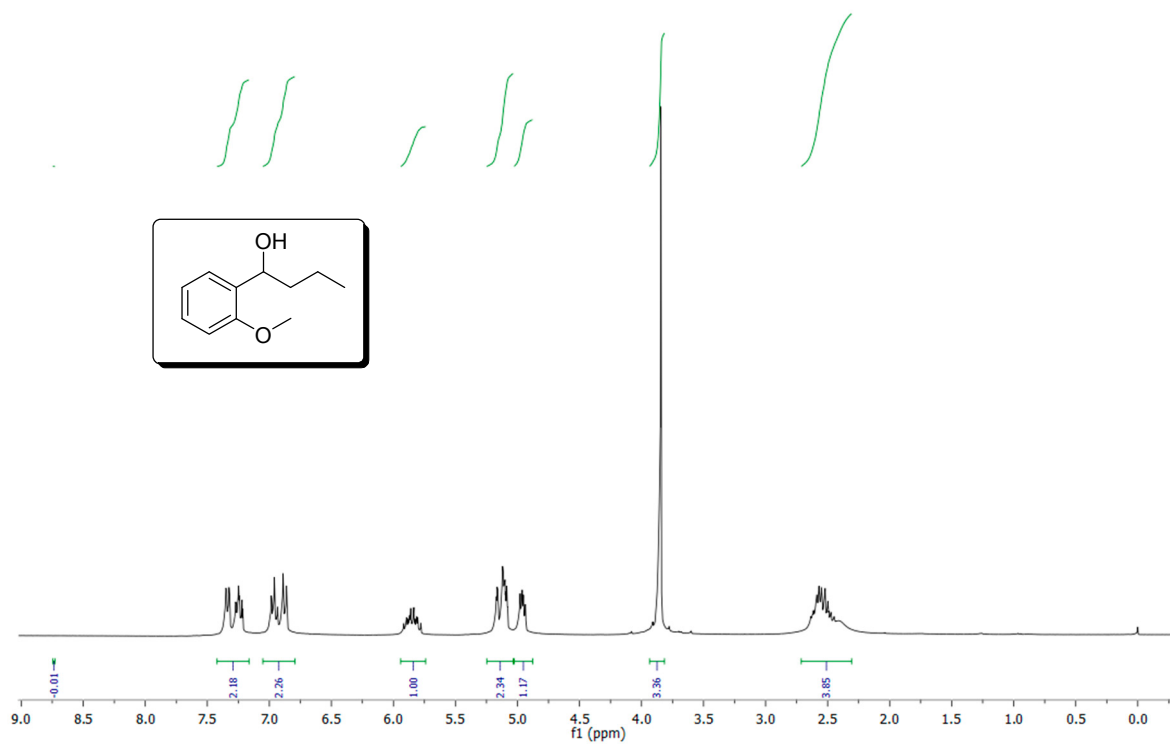


Figure S13. ^1H -NMR (300 MHz, CDCl_3) of 1-(2-Methoxyphenyl)but-3-en-1-ol (3f).

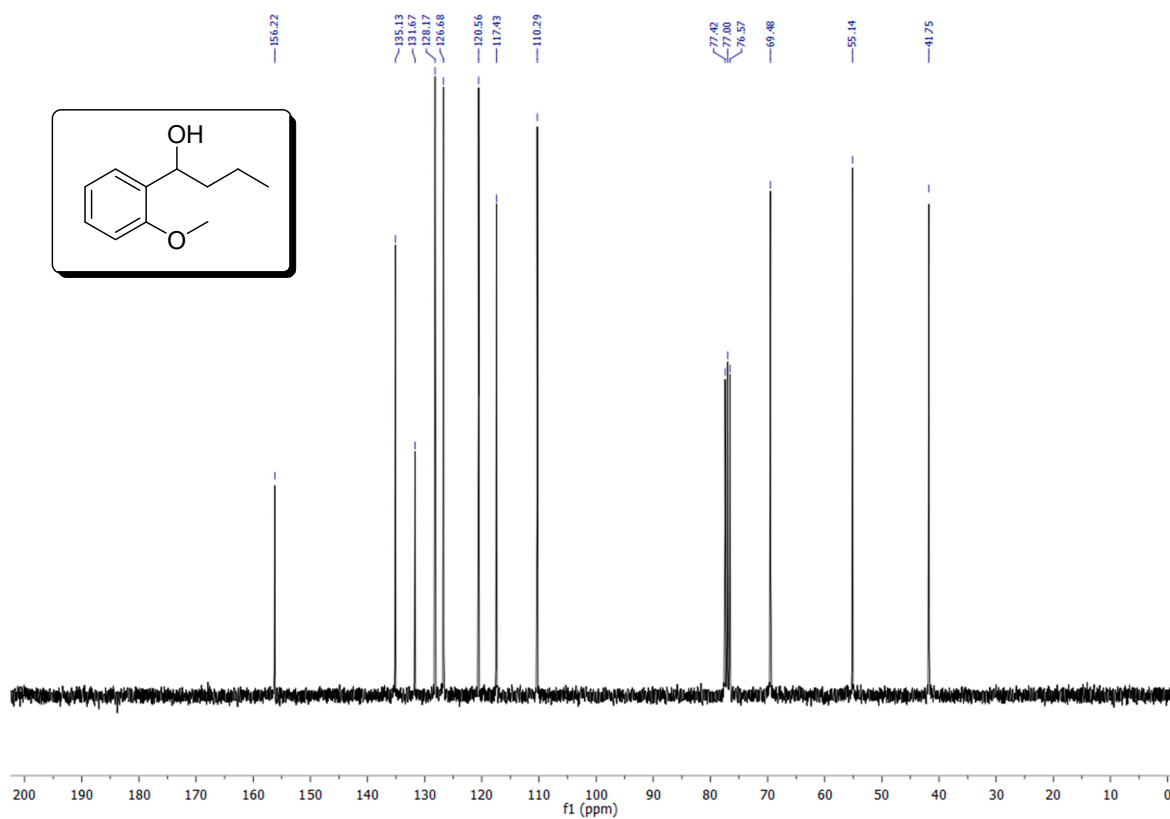
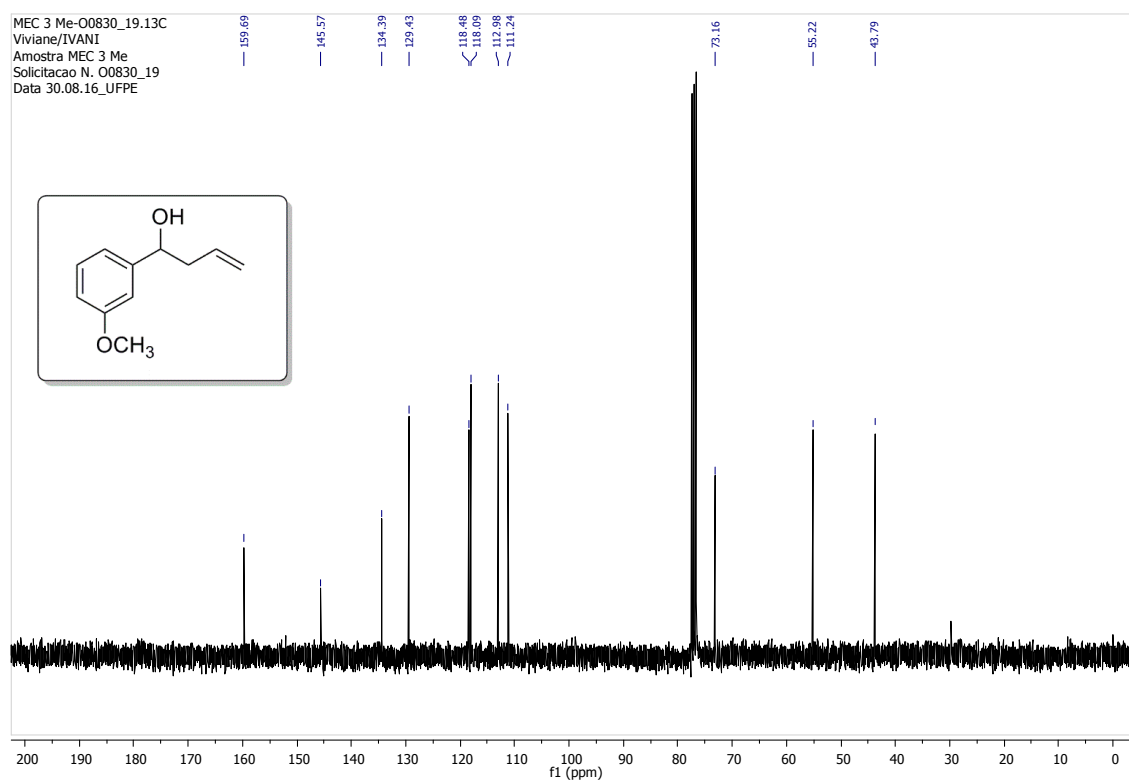
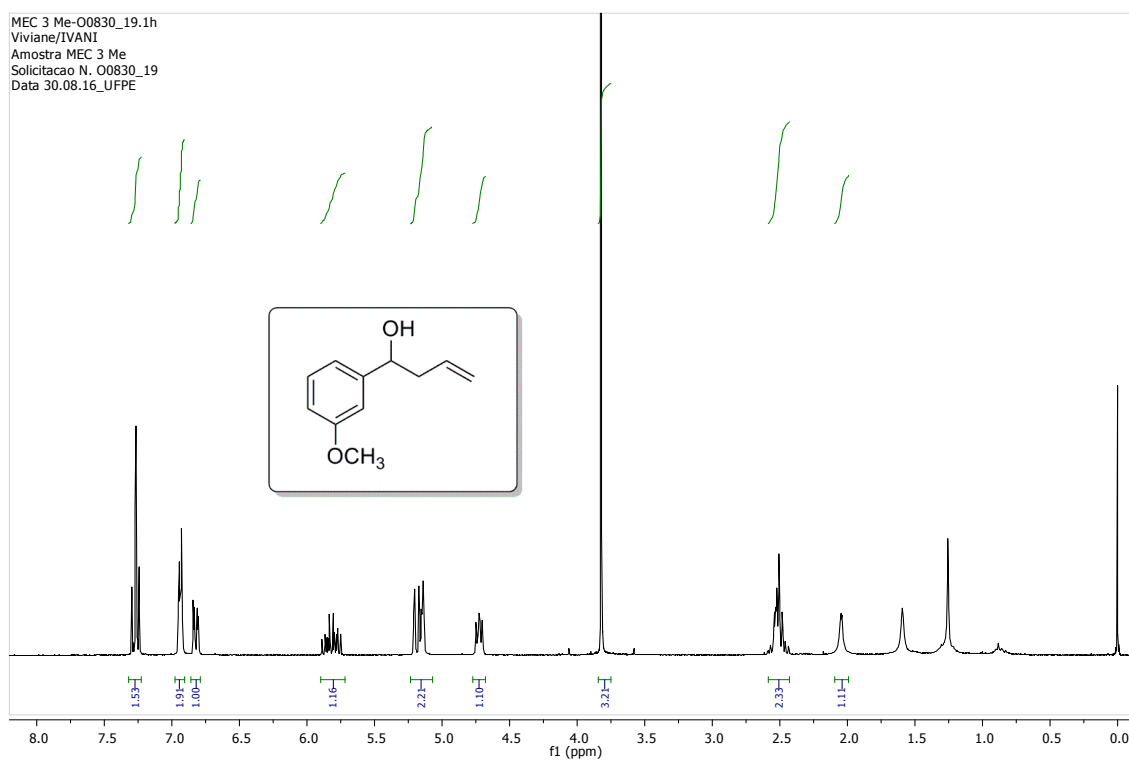


Figure S14. ^{13}C -NMR (75 MHz, CDCl_3) of 1-(2-Methoxyphenyl)but-3-en-1-ol (3f).



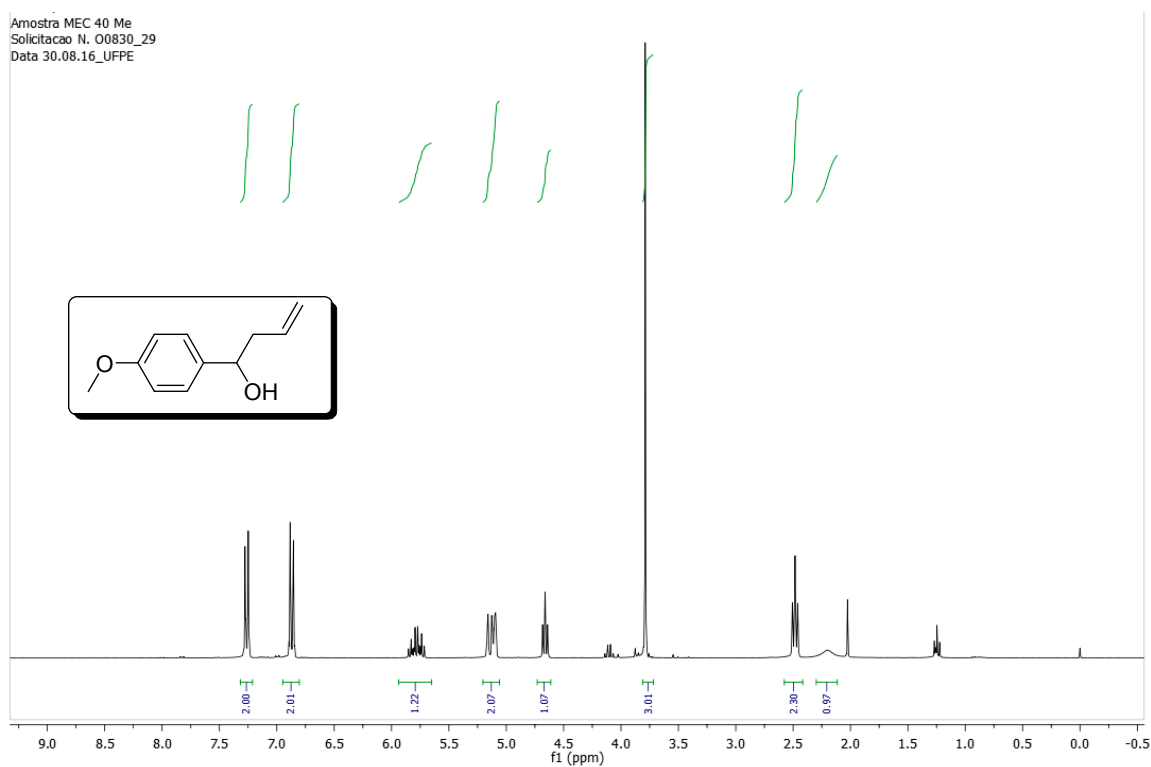


Figure S17. ¹H-NMR (300 MHz, CDCl₃) of 1-(4-Methoxyphenyl)but-3-en-1-ol (3h).

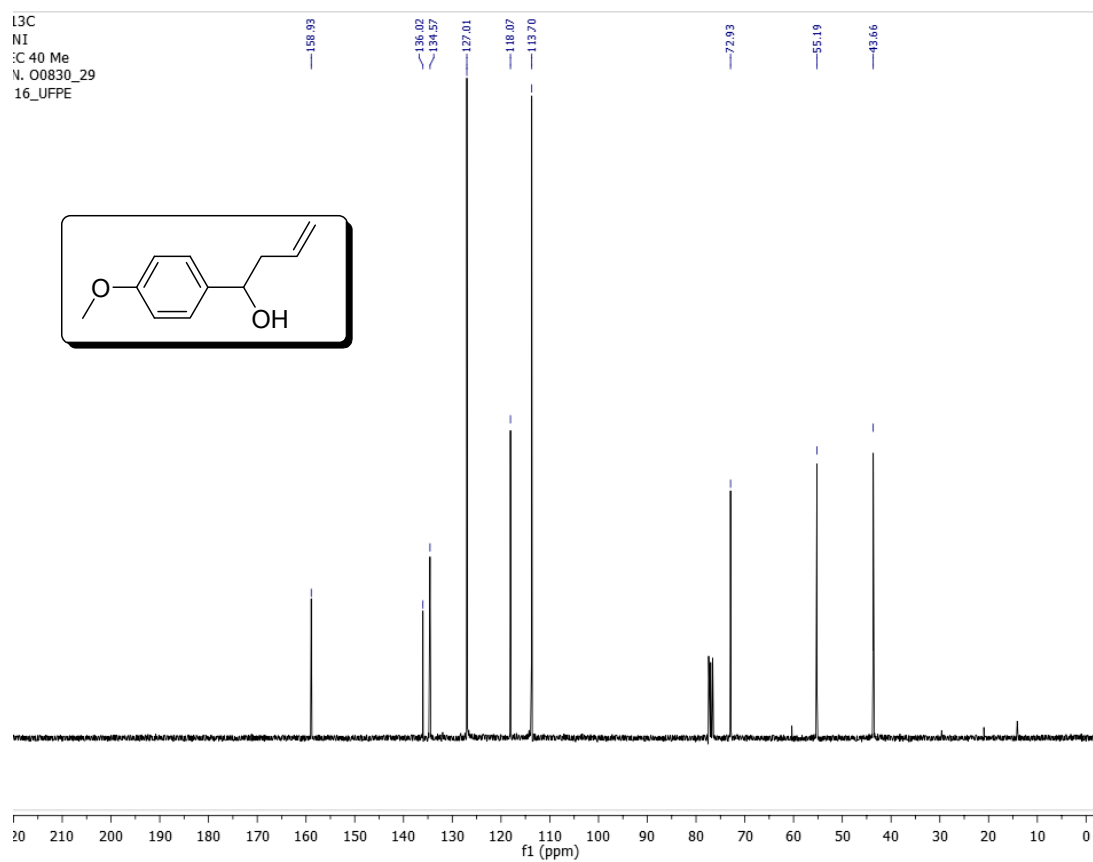


Figure S18. ¹³C-NMR (75 MHz, CDCl₃) of 1-(4-Methoxyphenyl)but-3-en-1-ol (3h).

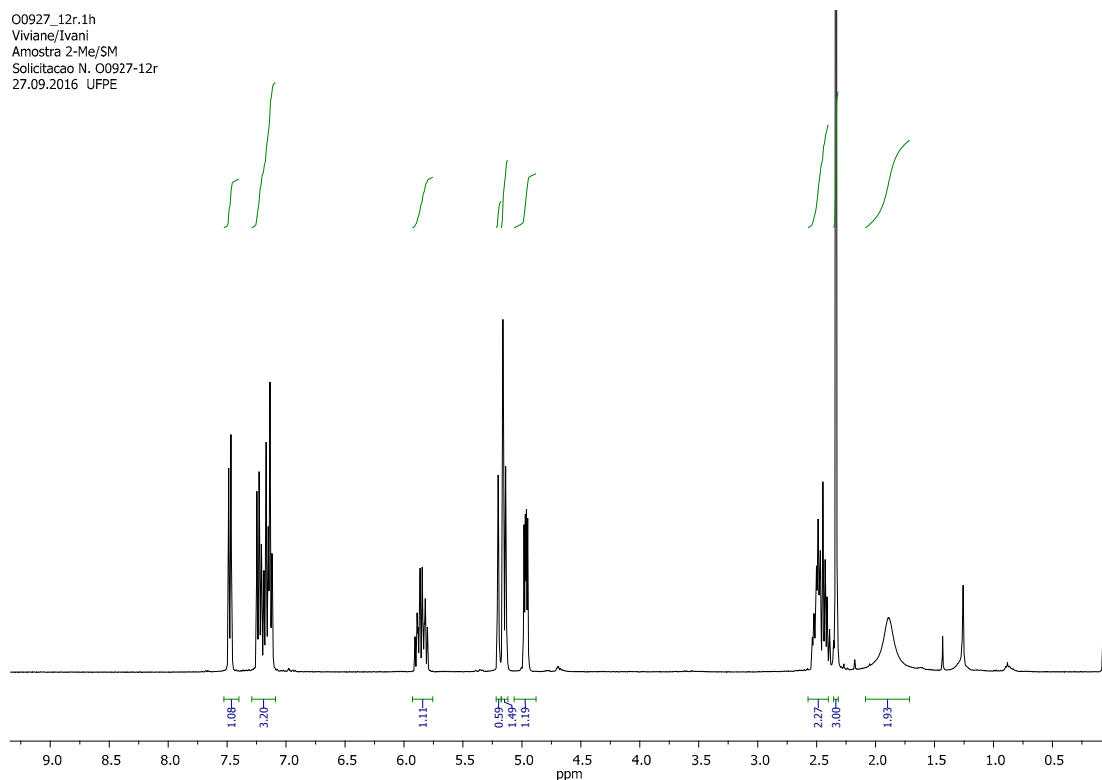


Figure S19. ^1H -NMR (300 MHz, CDCl_3) of 1-(2-Methylphenyl)but-3-en-1-ol (3i).

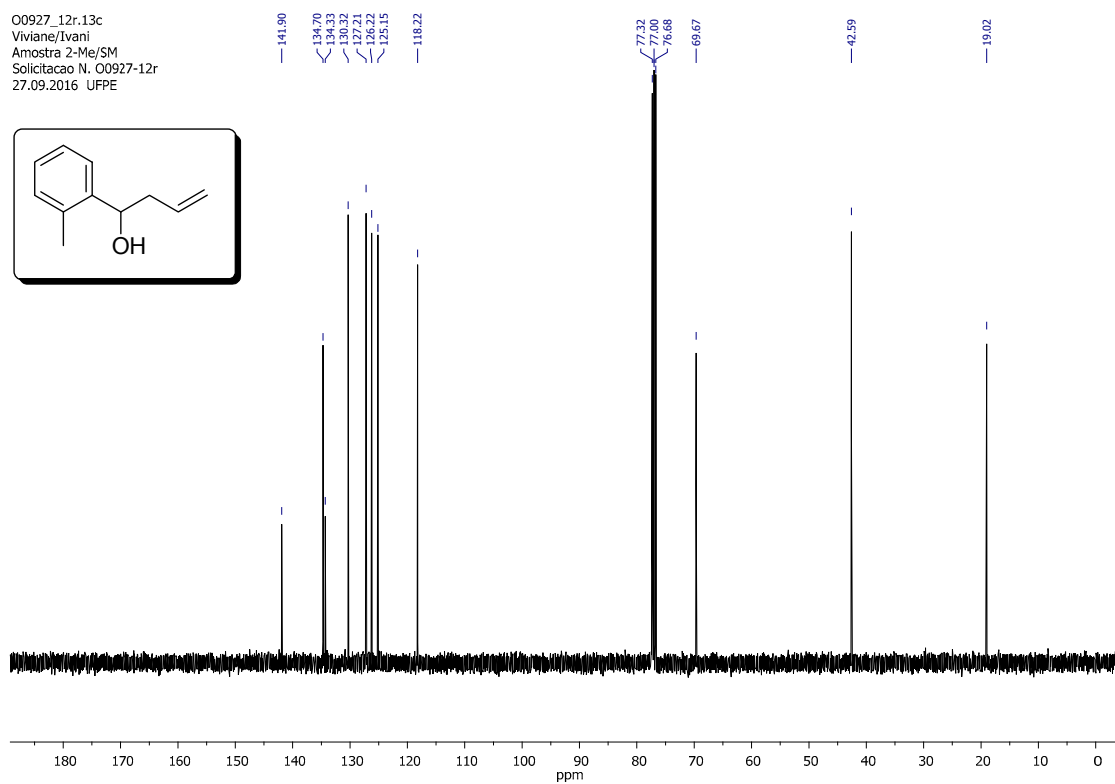


Figure S20. ^{13}C -NMR (75 MHz, CDCl_3) of 1-(2-Methylphenyl)but-3-en-1-ol (3i).

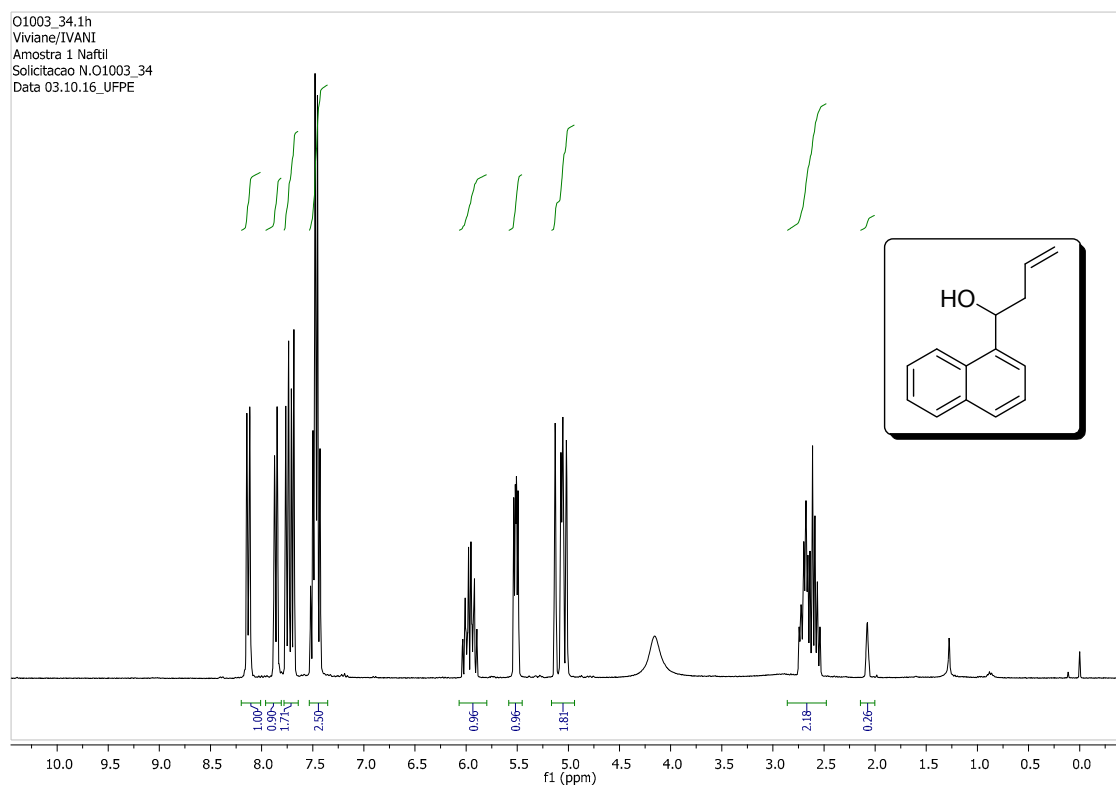


Figure S21. ^1H -NMR (300 MHz, CDCl_3) of 1-(naphtho-1-yl)but-3-en-1-ol (3j).

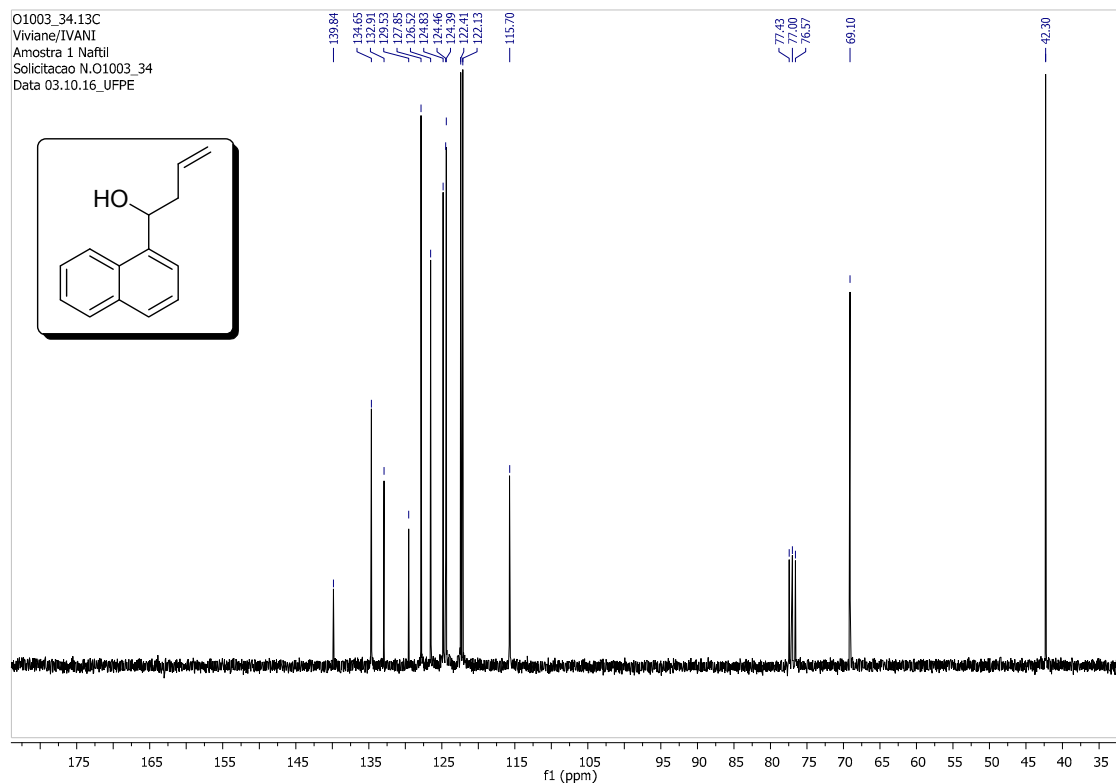
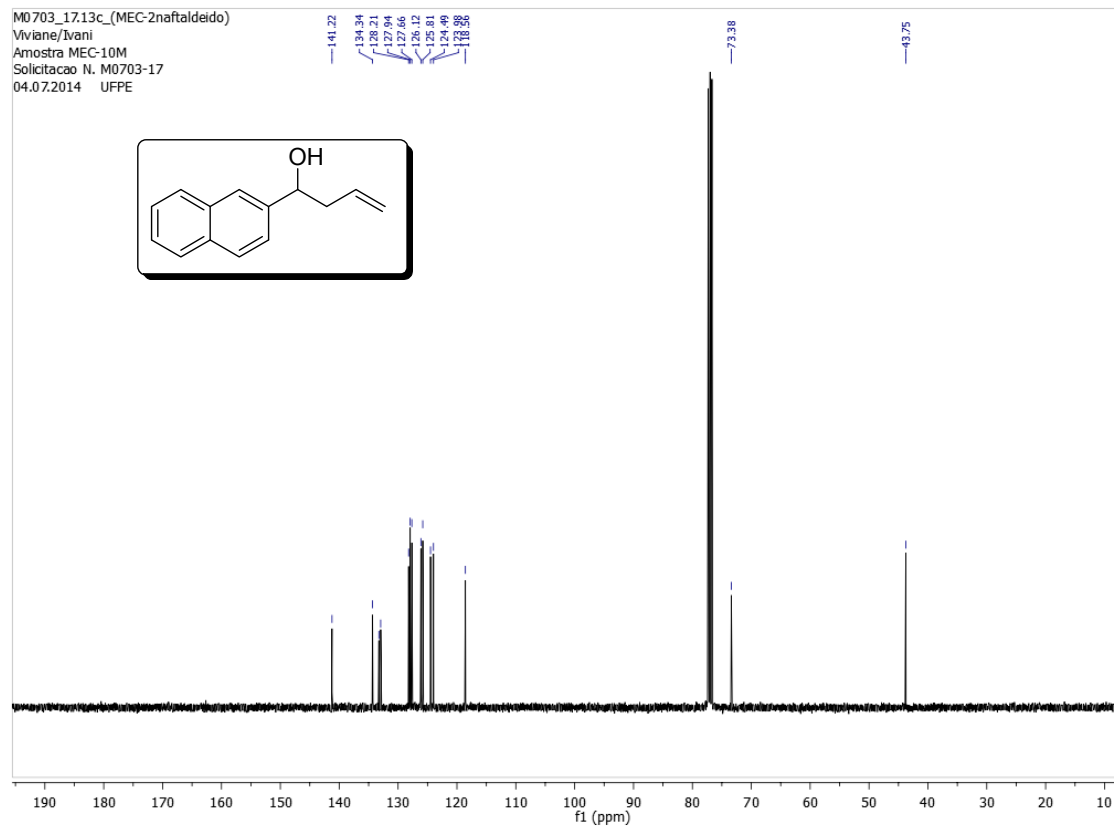
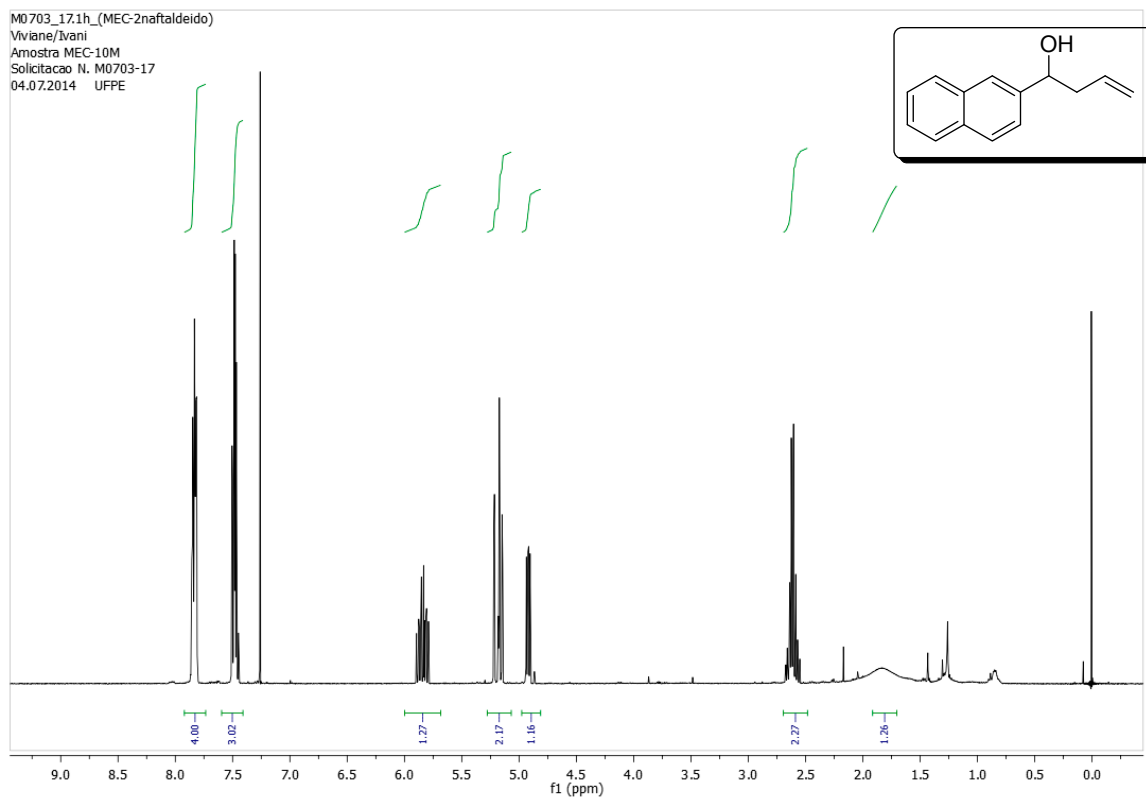
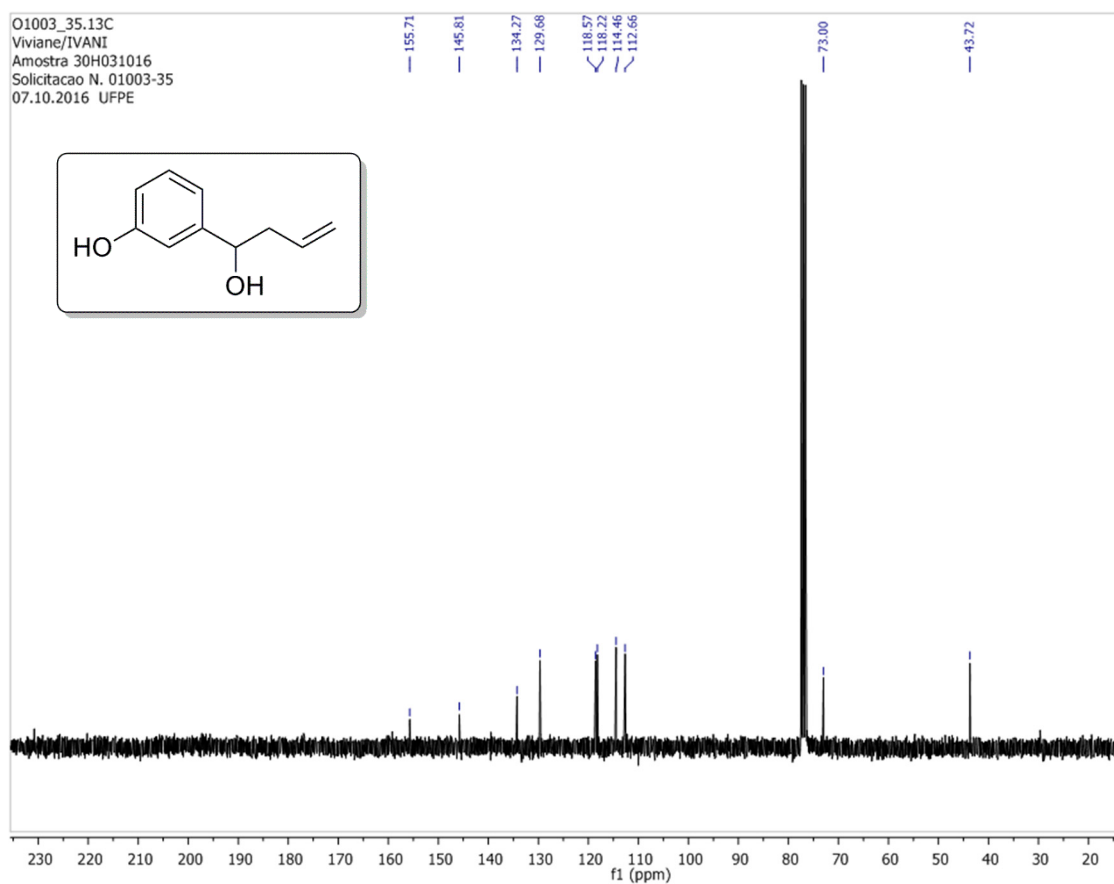
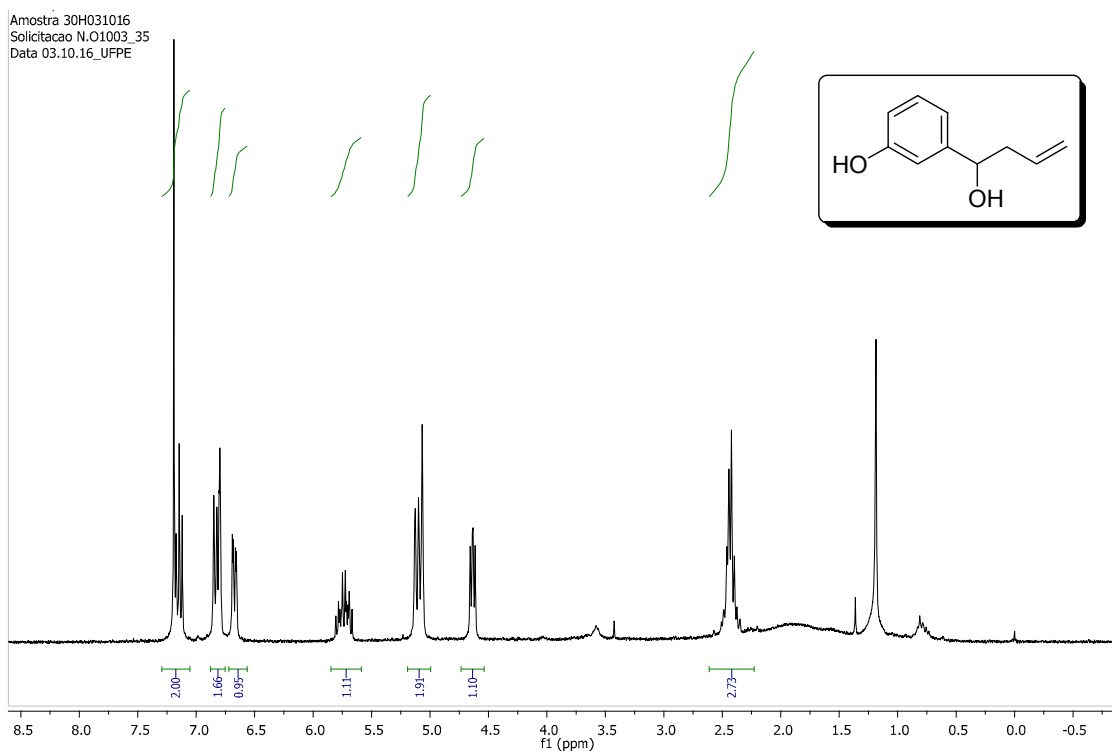


Figure S22. ^{13}C -NMR (300 MHz, CDCl_3) of 1-(naphtho-1-yl)but-3-en-1-ol (3j).





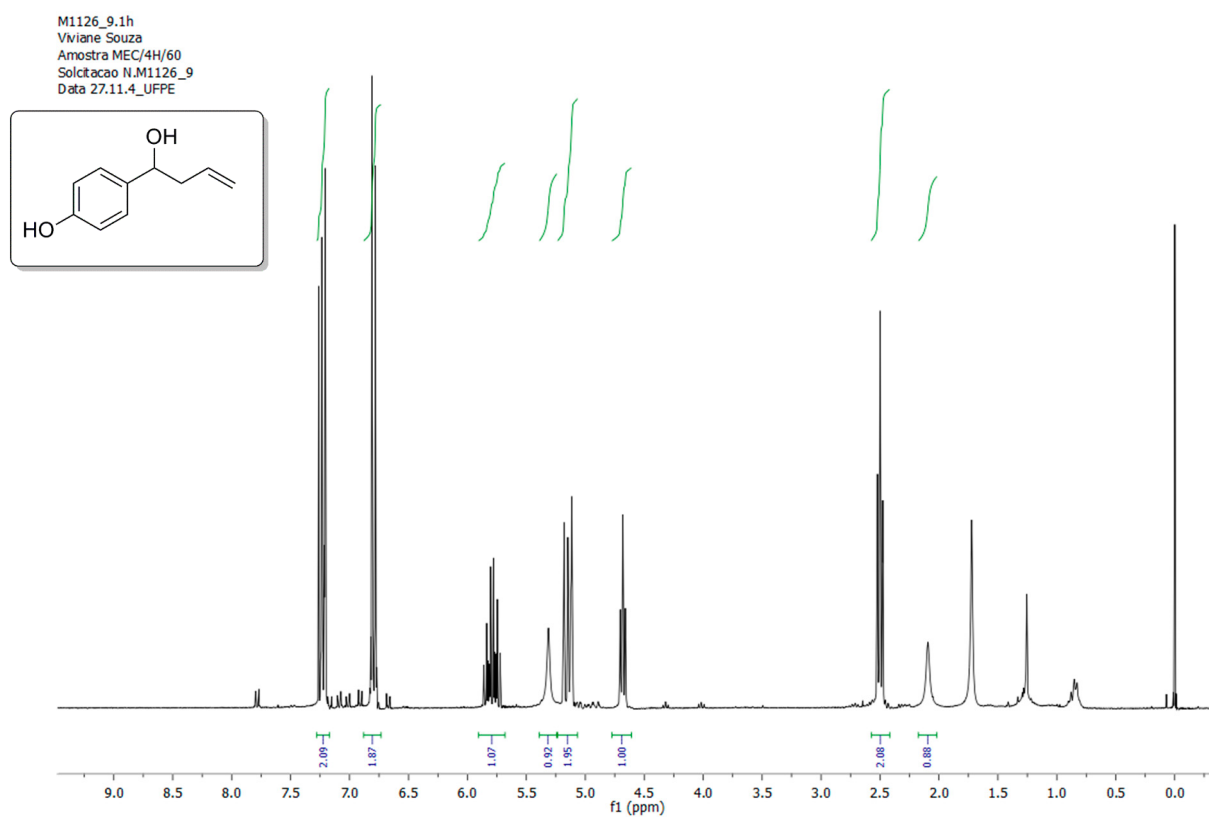


Figure S27. $^1\text{H-NMR}$ (300 MHz, CDCl_3) of 1-(4-Hydroxyphenyl)but-3-en-1-ol (3m)

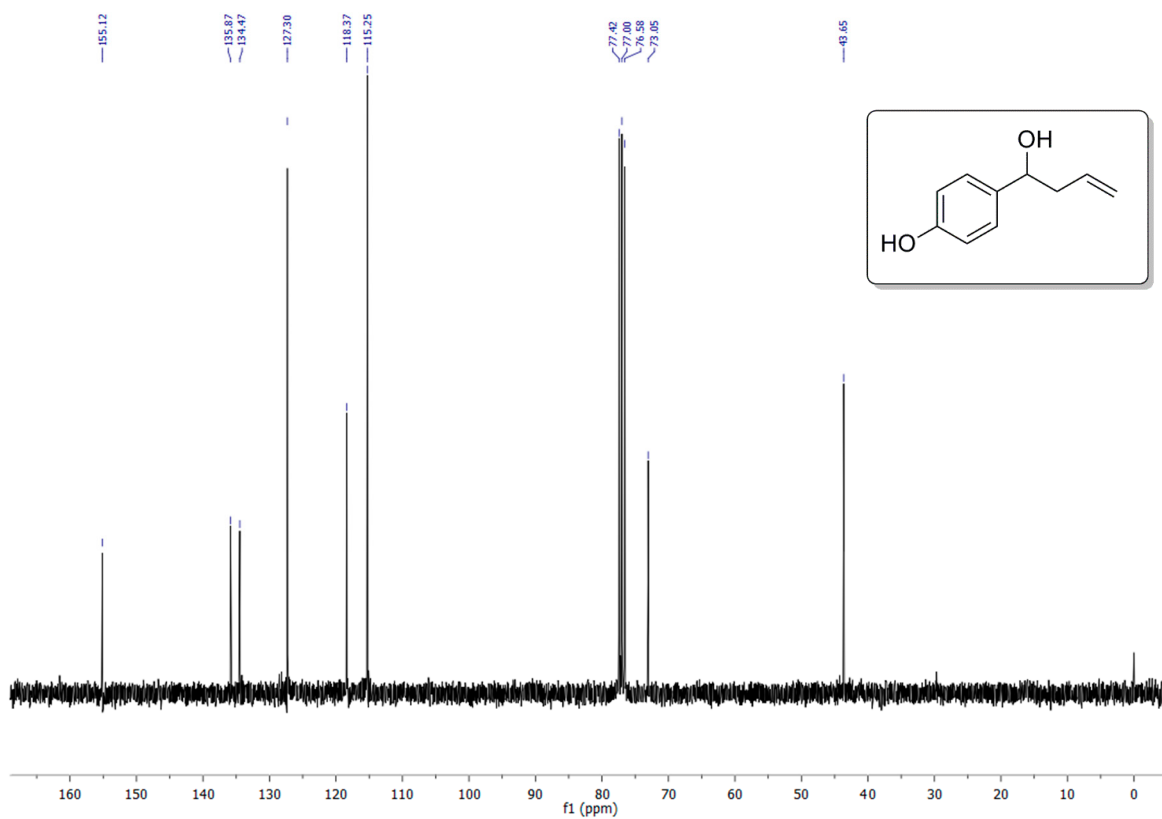


Figure S28. $^{13}\text{C-NMR}$ (75 MHz, CDCl_3) of 1-(4-Hydroxyphenyl)but-3-en-1-ol (3m).

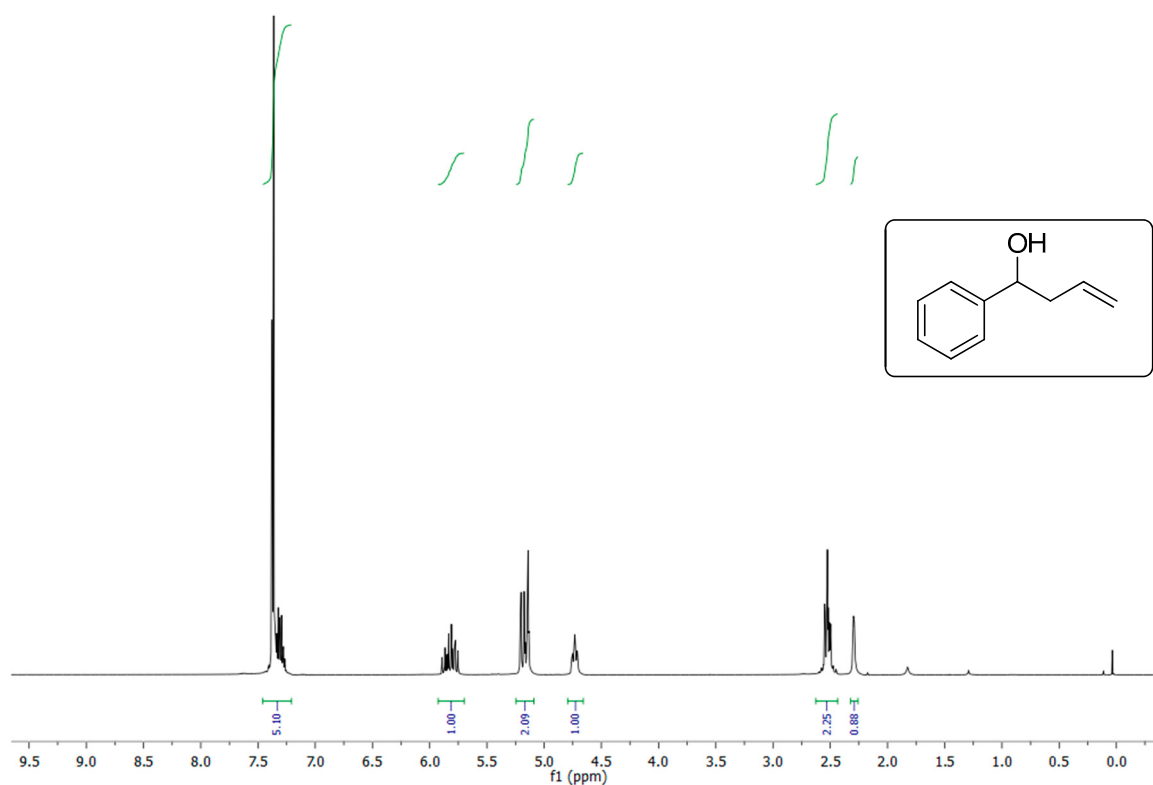


Figure S29. ^1H -NMR (300 MHz, CDCl_3) of 1-Phenylbut-3-en-1-ol (3n).

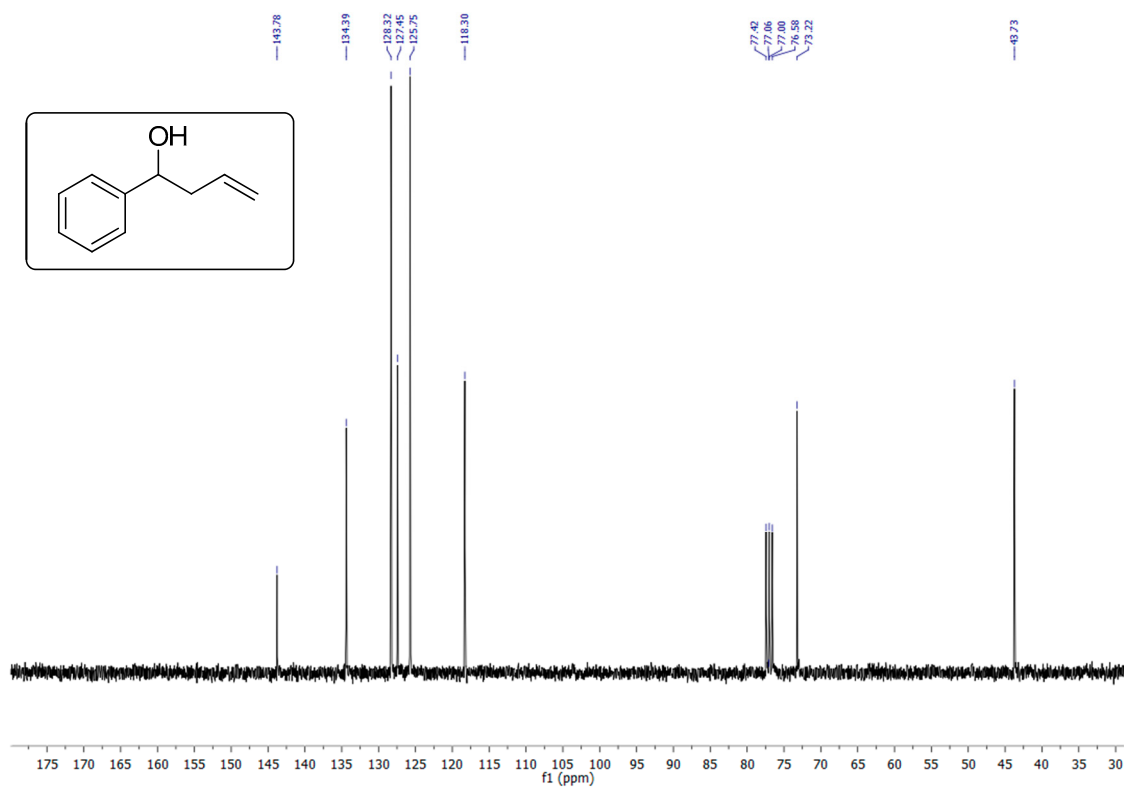


Figure S30. ^{13}C -NMR (75 MHz, CDCl_3) of 1-Phenylbut-3-en-1-ol (3n).

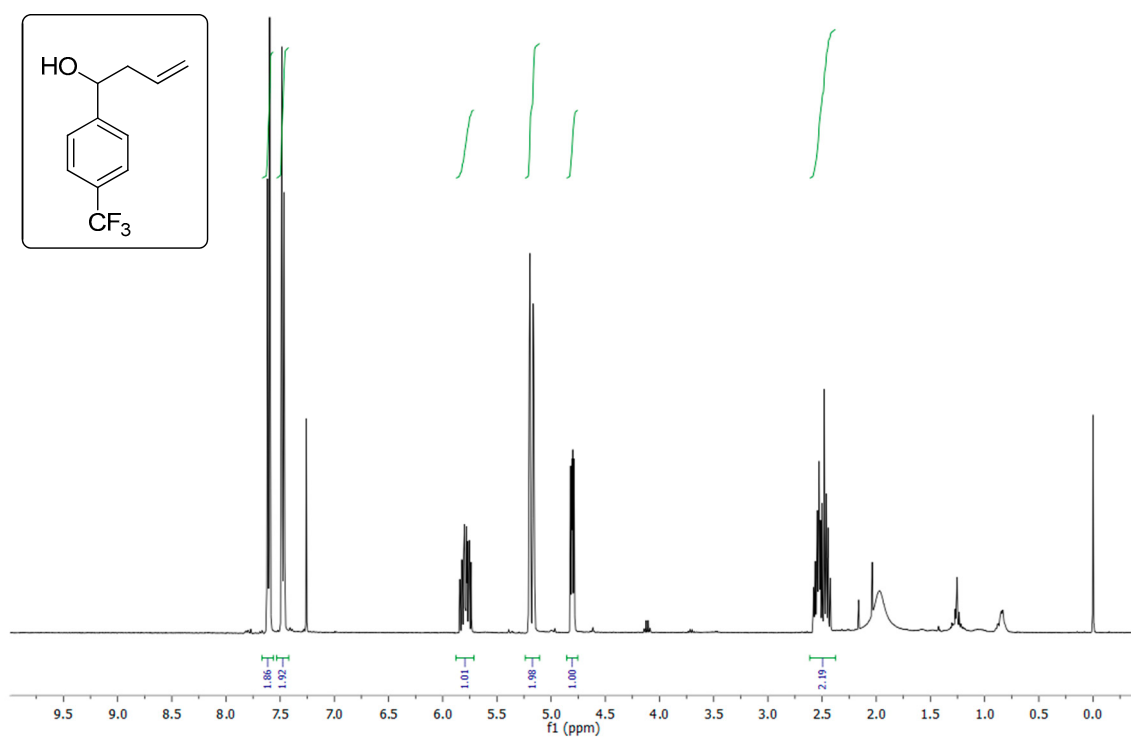


Figure S31. ¹H-NMR (400 MHz, CDCl₃) 1-(4-(trifluoromethyl)phenyl)but-3-en-1-ol (3o).

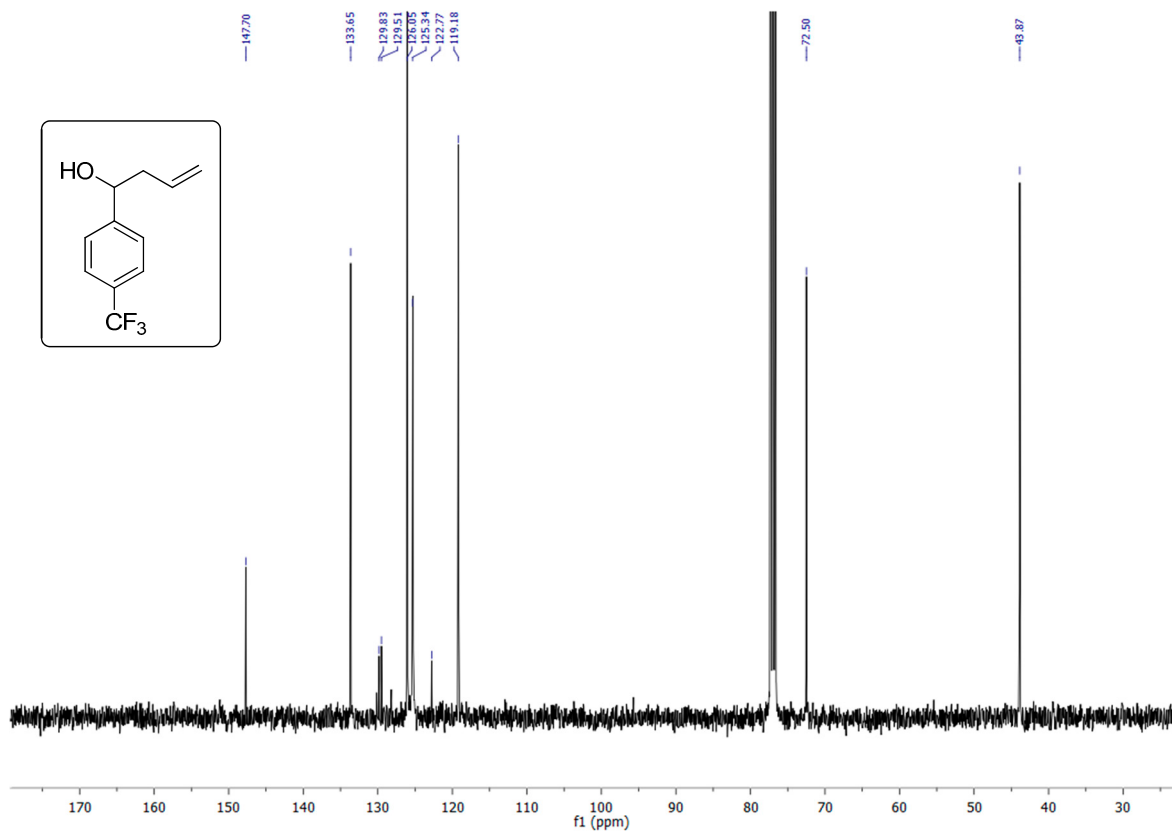


Figure S32. ¹³C-NMR (100 MHz, CDCl₃) 1-(4-(trifluoromethyl)phenyl)but-3-en-1-ol (3o).

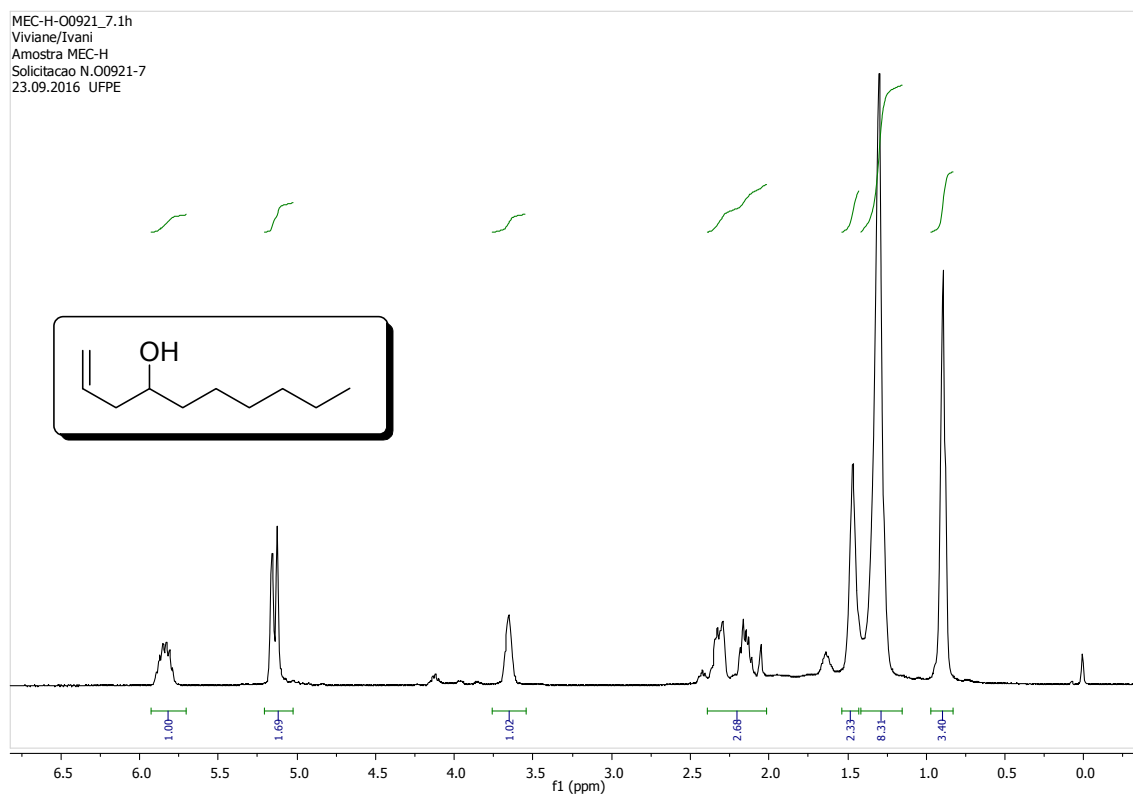


Figure S33. ^1H -NMR (300 MHz, CDCl_3) of Dec-1-en-4-ol (3p).

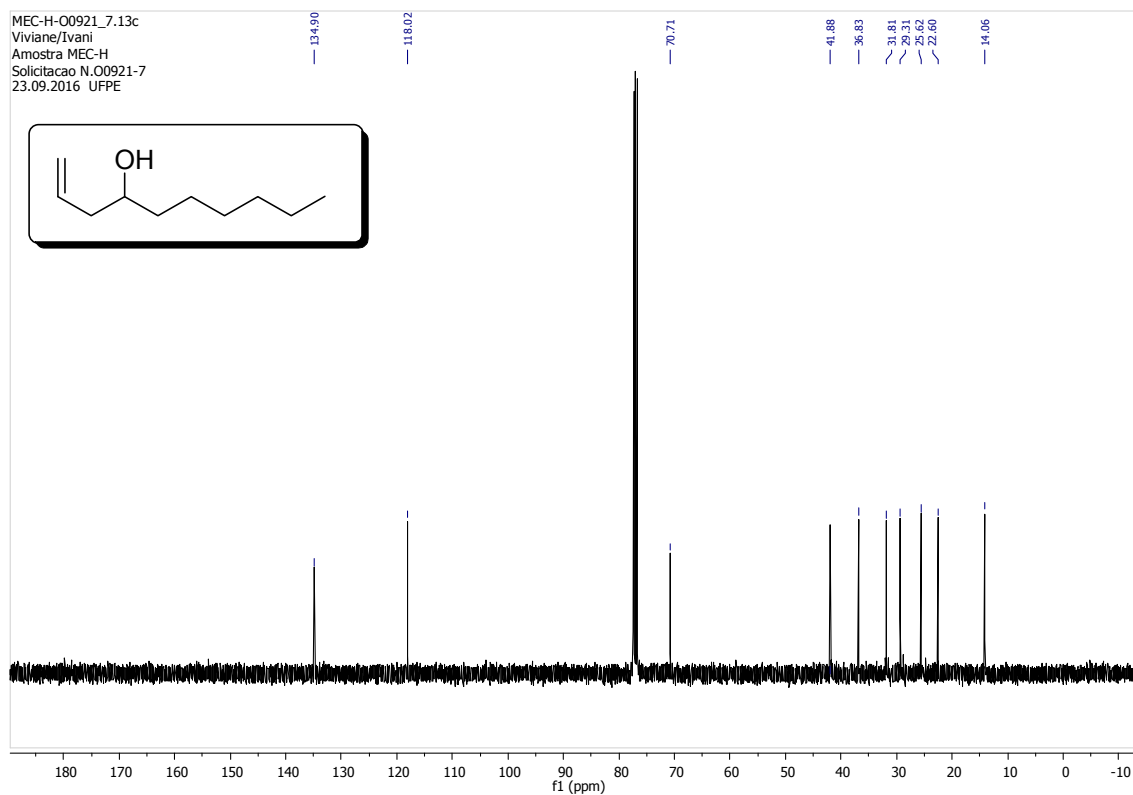
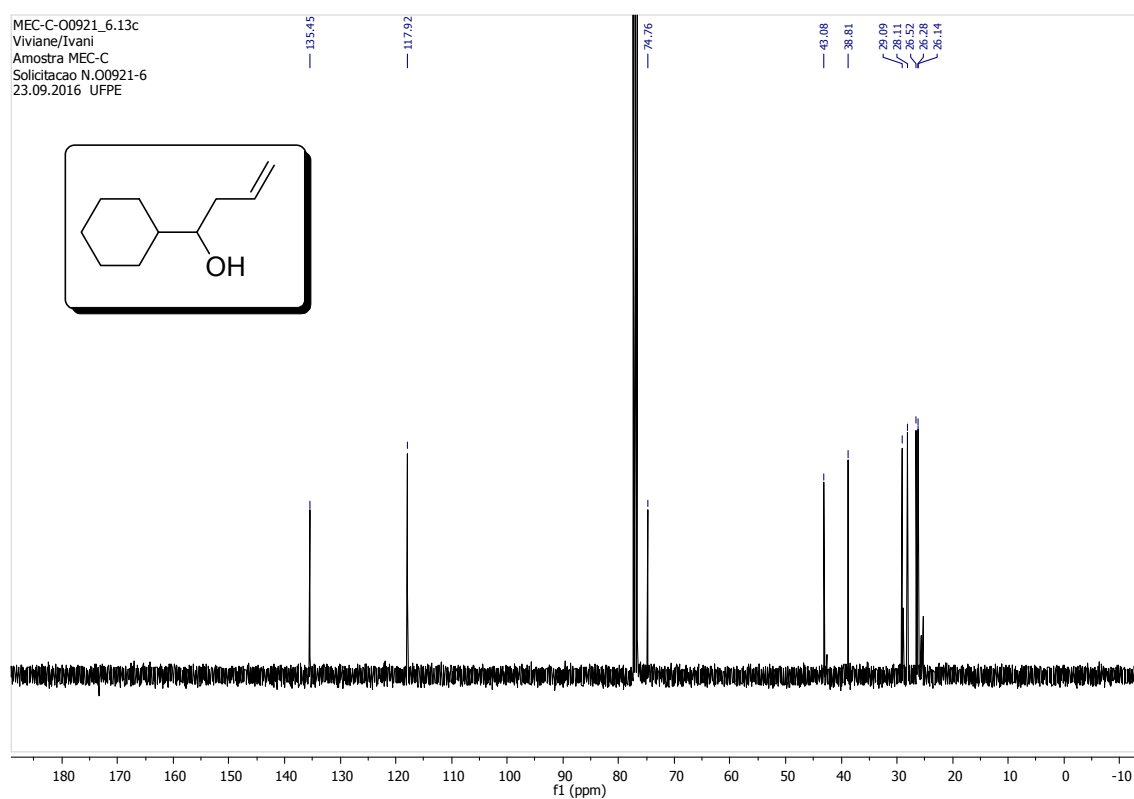
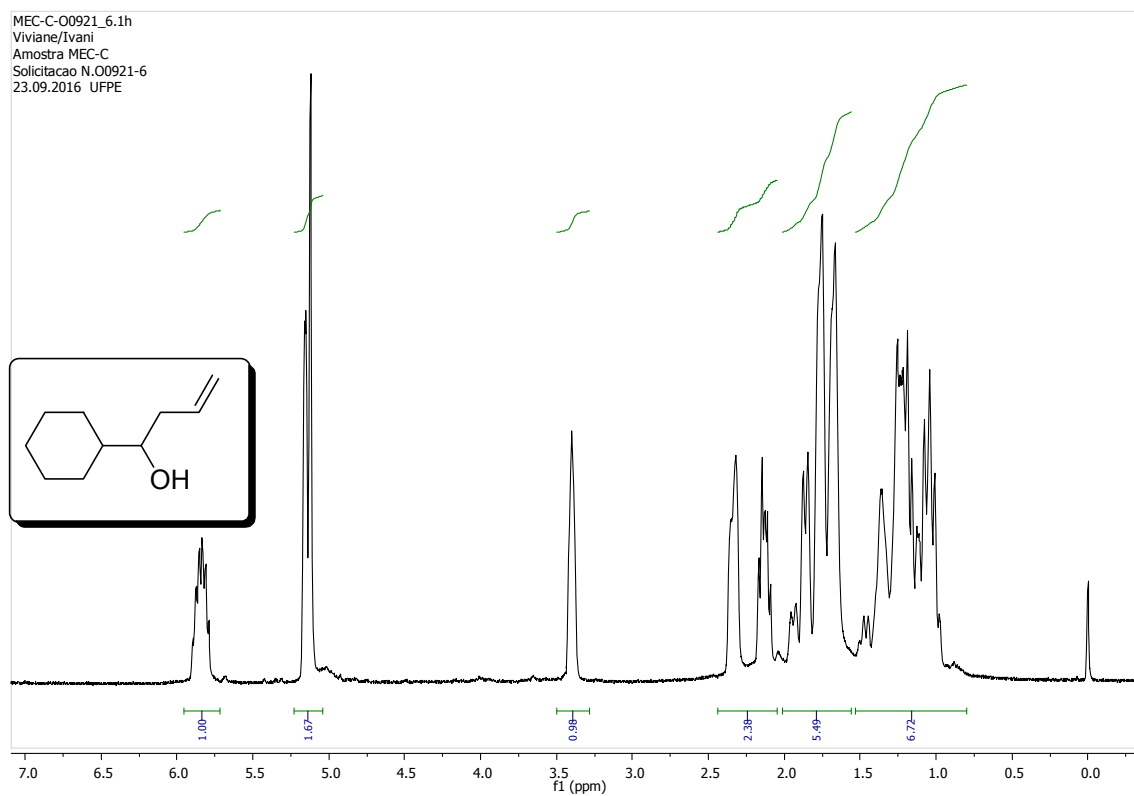
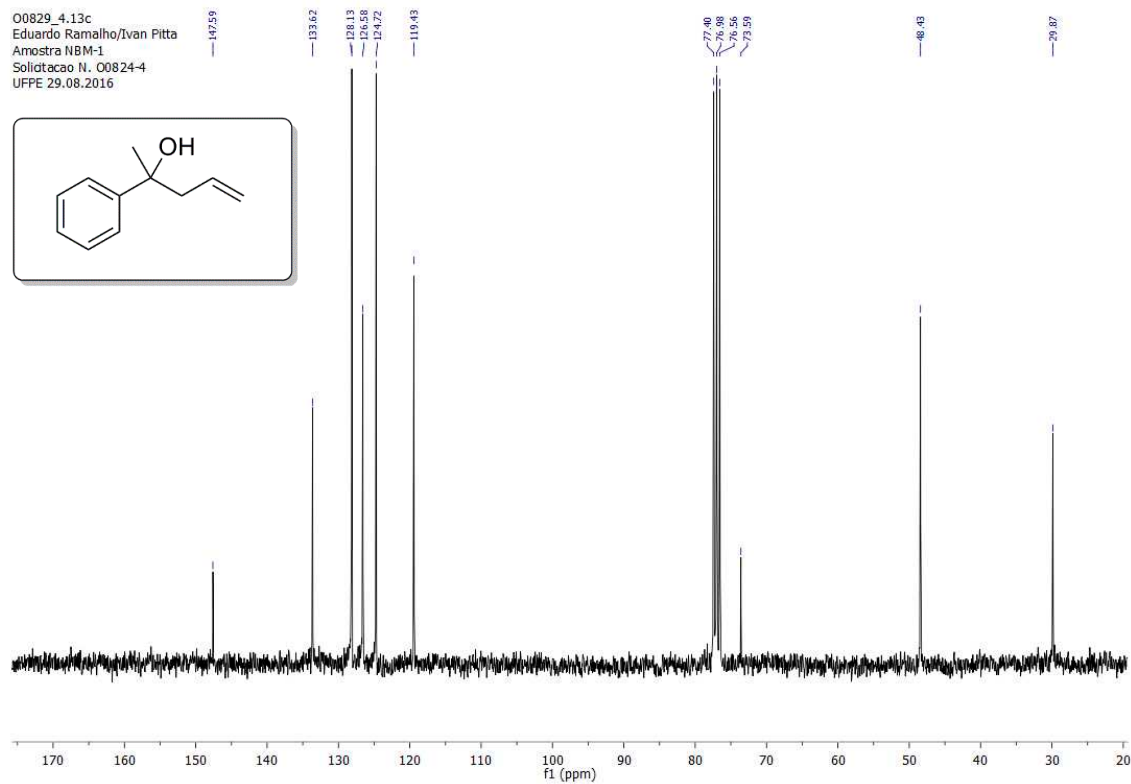
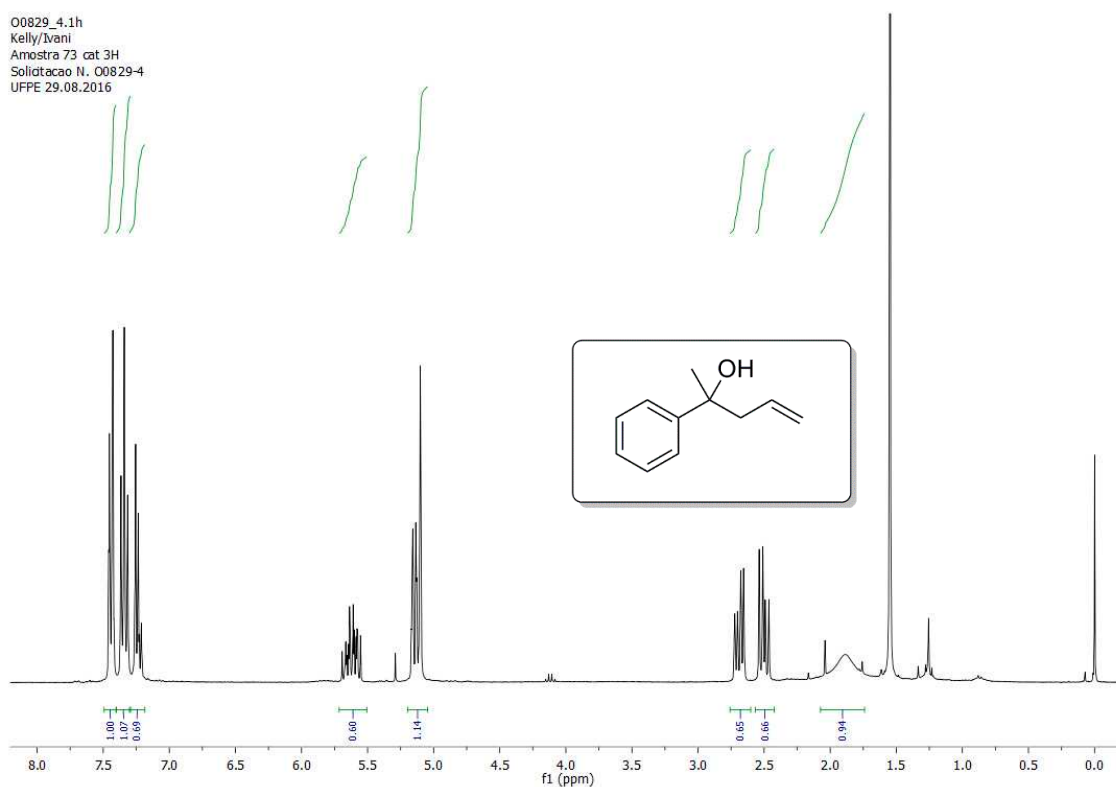


Figure S34. ^{13}C -NMR (75 MHz, CDCl_3) of Dec-1-en-4-ol (3p).





O0830_1.1h
Kelly/Ivani
Amostra 4NO2
Solicitacao N. O0830-1
UFPE 31.08.2016

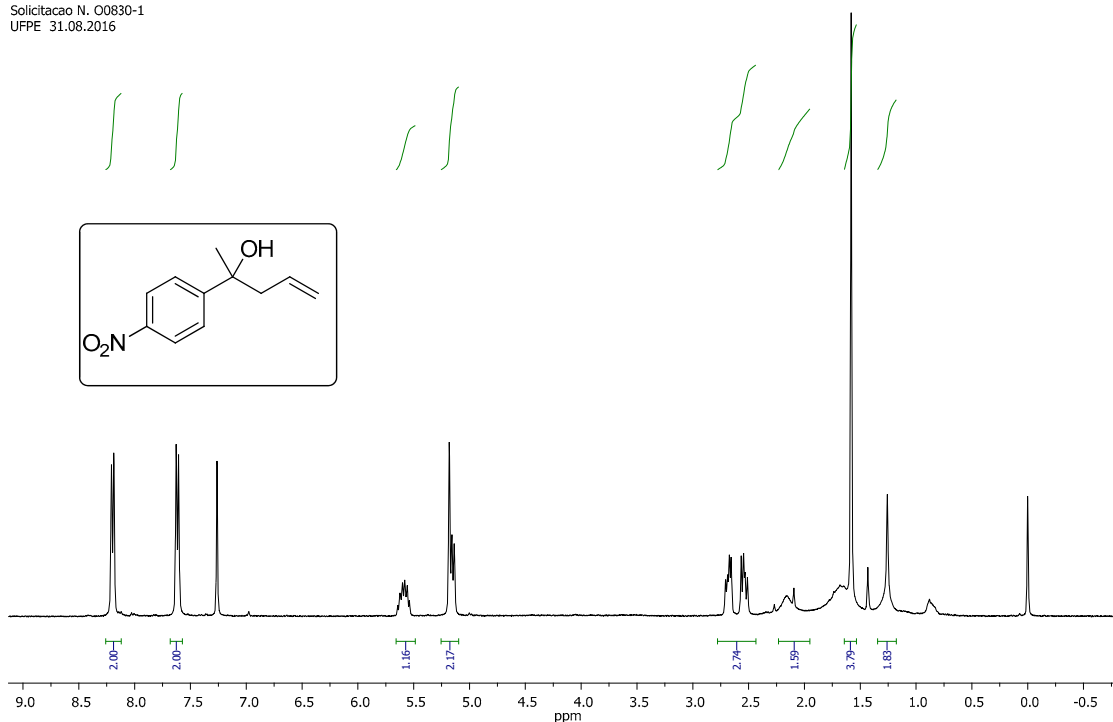


Figure S39. ¹H-NMR (400 MHz, CDCl₃) of 2-(4-nitrophenyl)pent-4-en-2-ol (5b).

Kelly/Ivani
Amostra 4NO2
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UFPE 31.08.2016

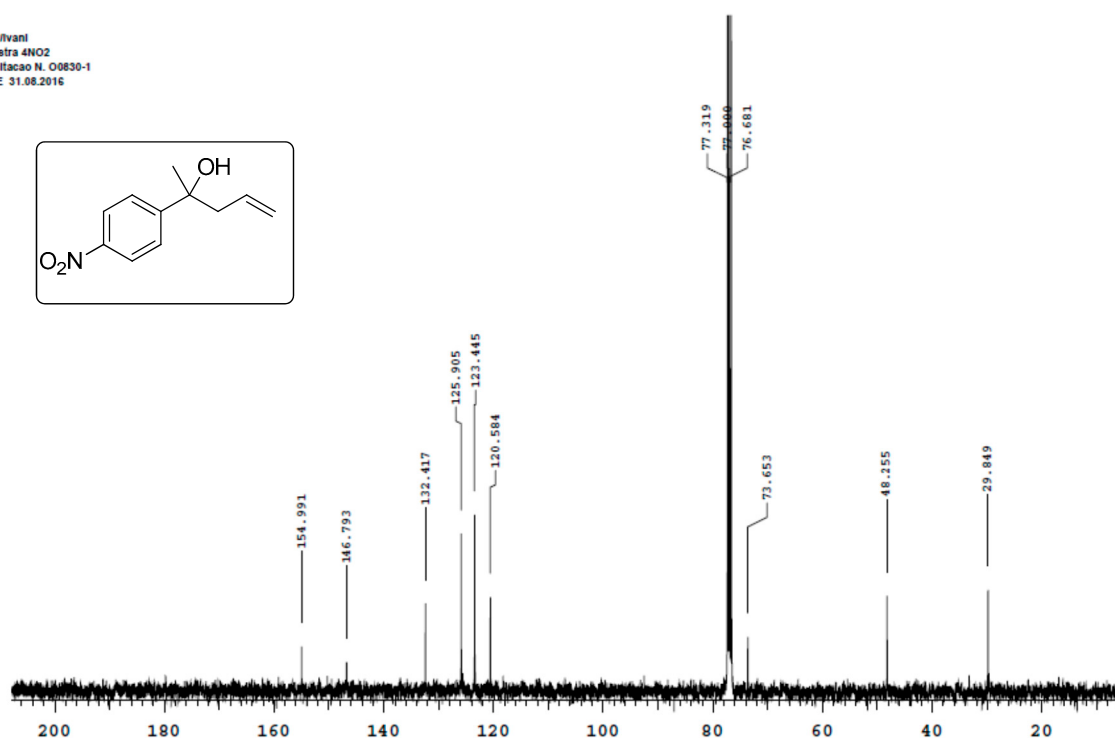
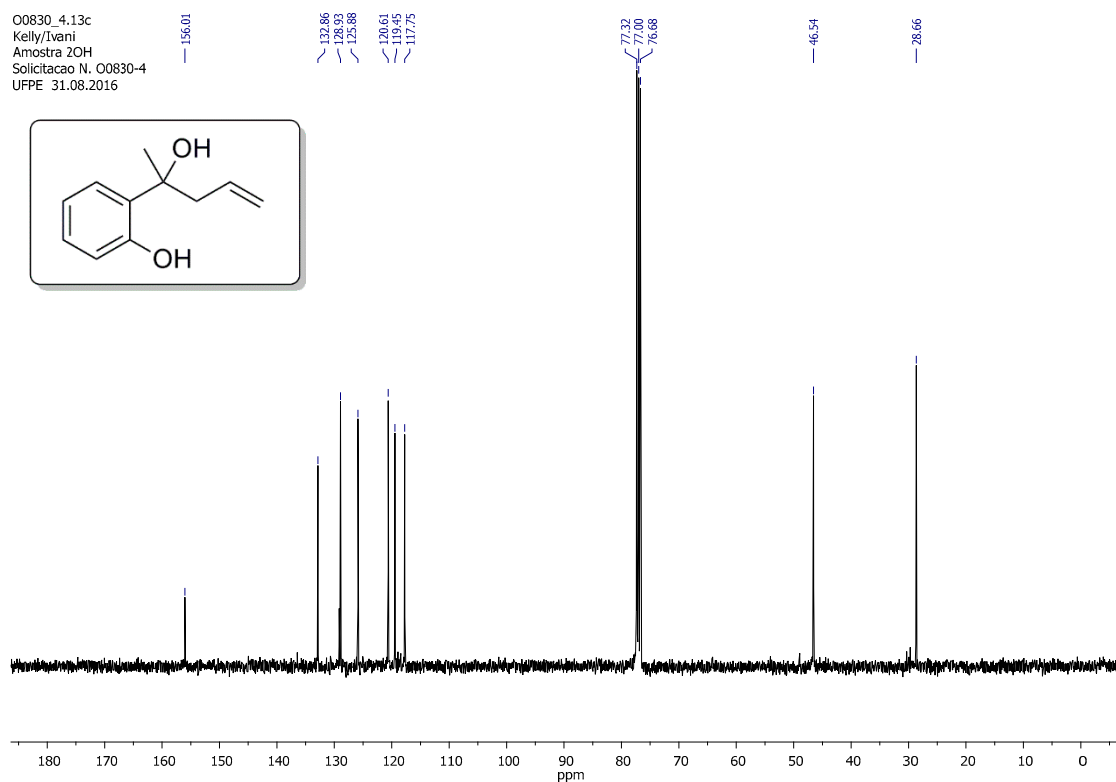
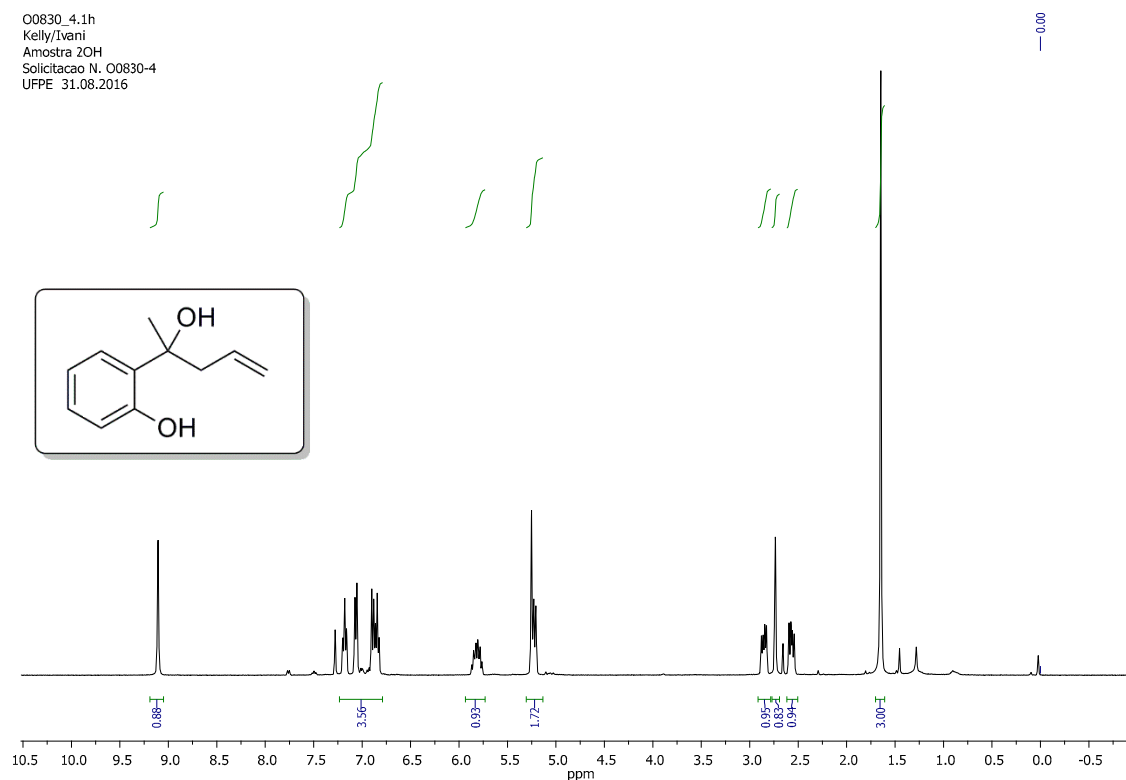


Figure S40. ¹³C-NMR (100 MHz, CDCl₃) of 2-(4-nitrophenyl)pent-4-en-2-ol (5b).



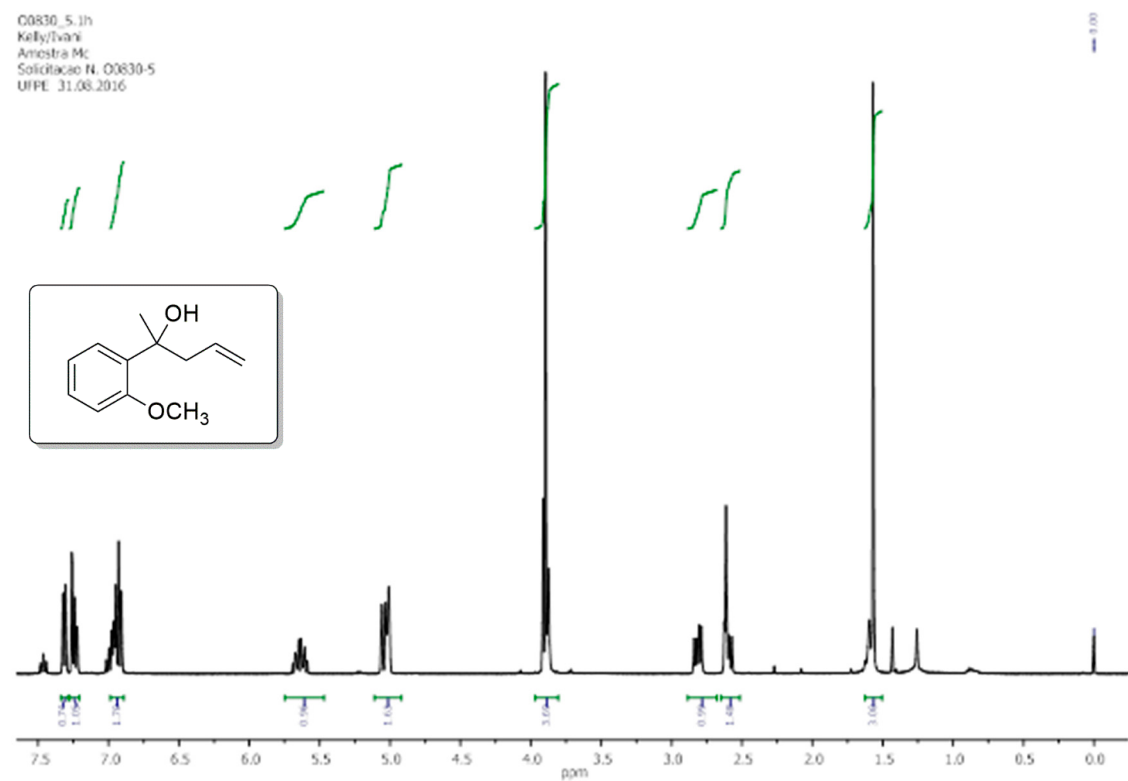


Figure S43. ¹H-NMR (400 MHz, CDCl₃) of 2-(2-methoxyphenyl)pent-4-en-2-ol (5d).

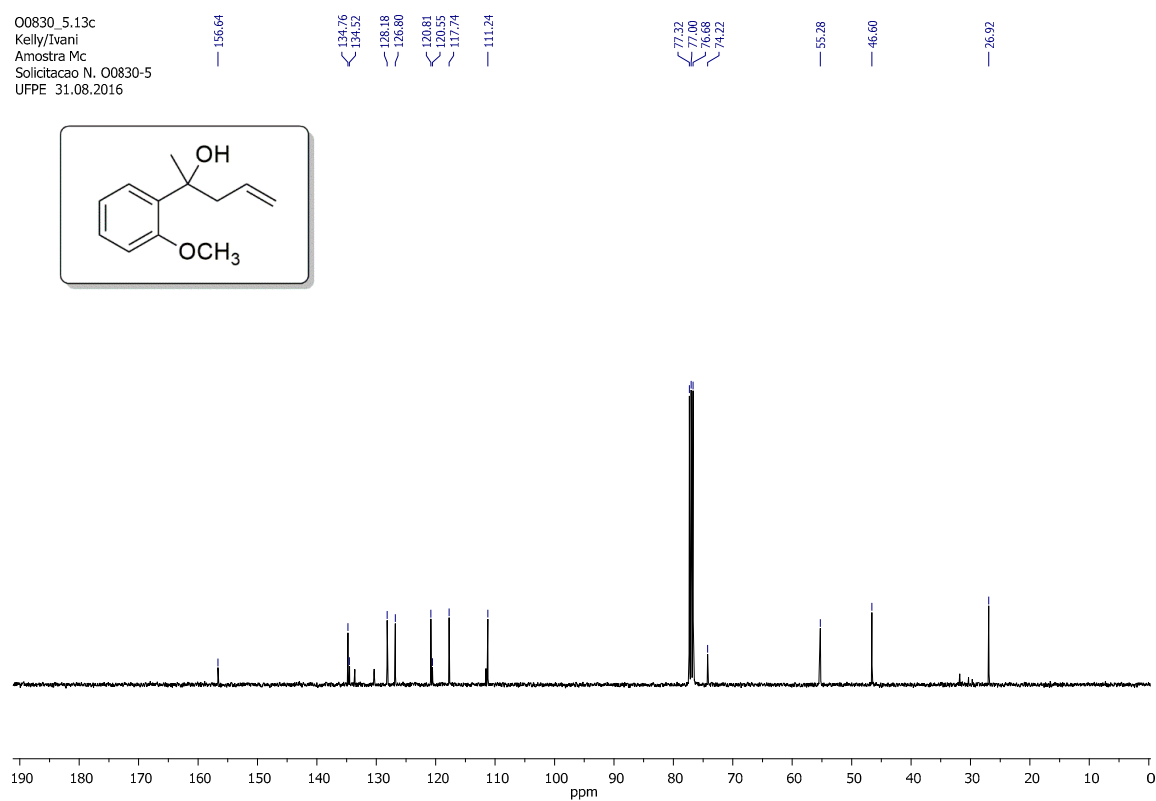


Figure S44. ¹³C-NMR (100 MHz, CDCl₃) of 2-(2-methoxyphenyl)pent-4-en-2-ol (5d).

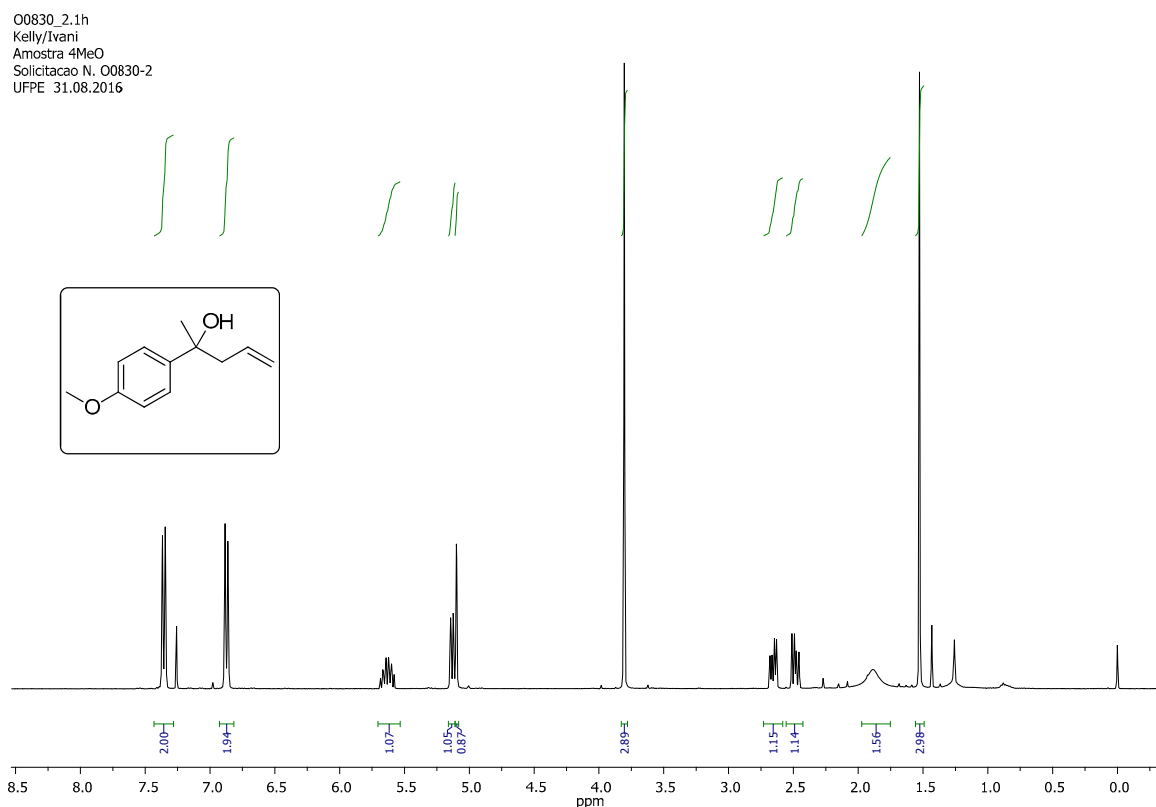


Figure S45. ^1H -NMR (400 MHz, CDCl_3) of 2-(4-methoxyphenyl)pent-4-en-2-ol (5e).

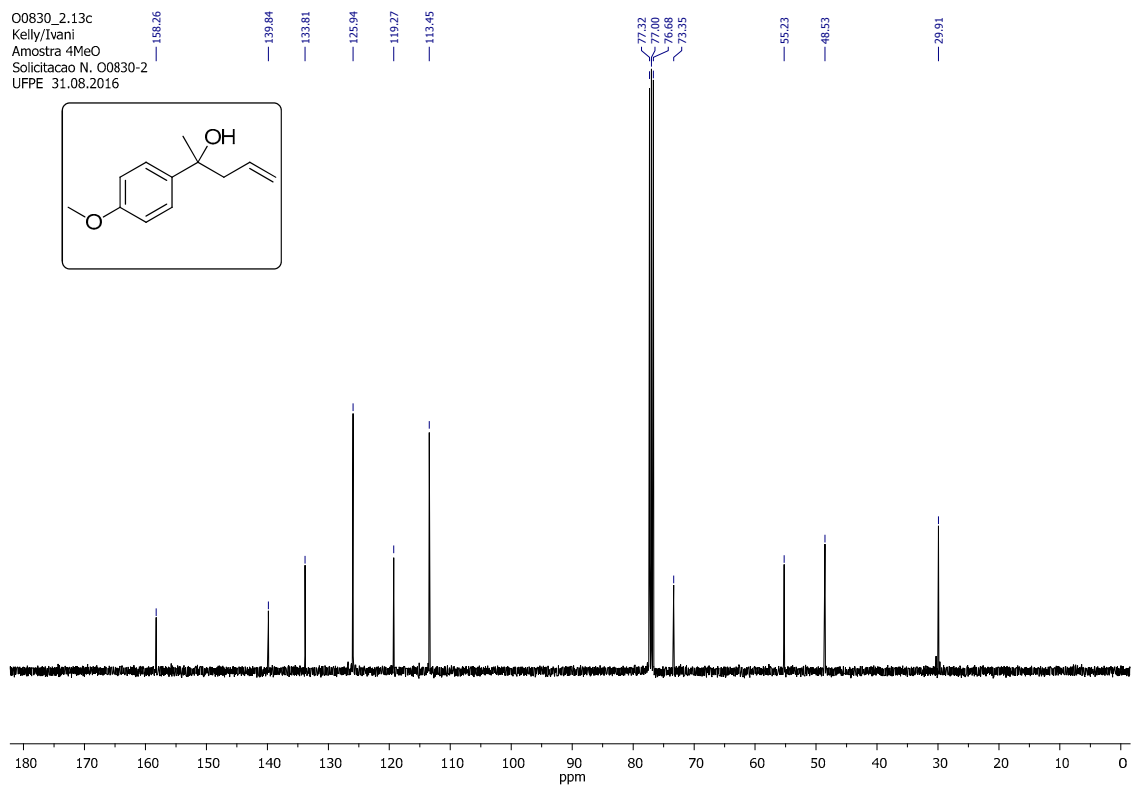


Figure S46. ^{13}C -NMR (100 MHz, CDCl_3) of 2-(4-methoxyphenyl)pent-4-en-2-ol (5e).

O0921_1.1hr
Kelly/Ivani
Amostra CKO74H 3h
Solicitacao N. O0921-1
UFPE 22.09.2016

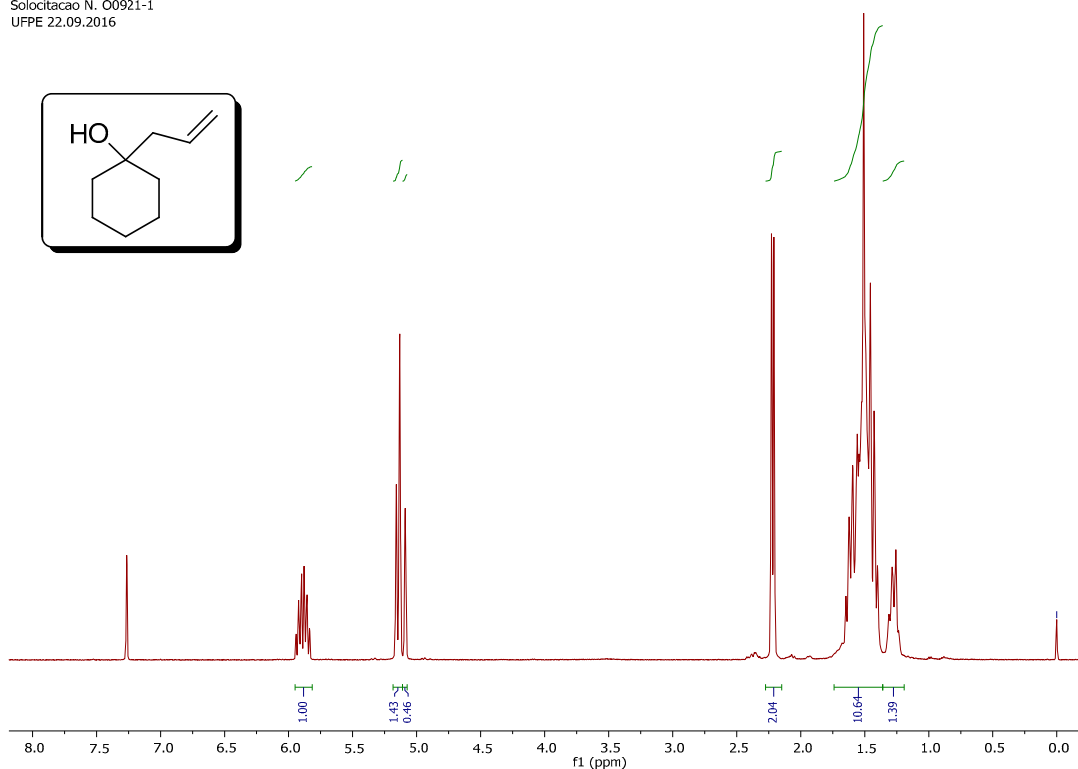


Figure S47. ¹H-NMR (400 MHz, CDCl₃) of 1-allylcyclohexanol (5f).

O0921_1.13cr
Kelly/Ivani
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Solicitacao N. O0921-1
UFPE 22.09.2016

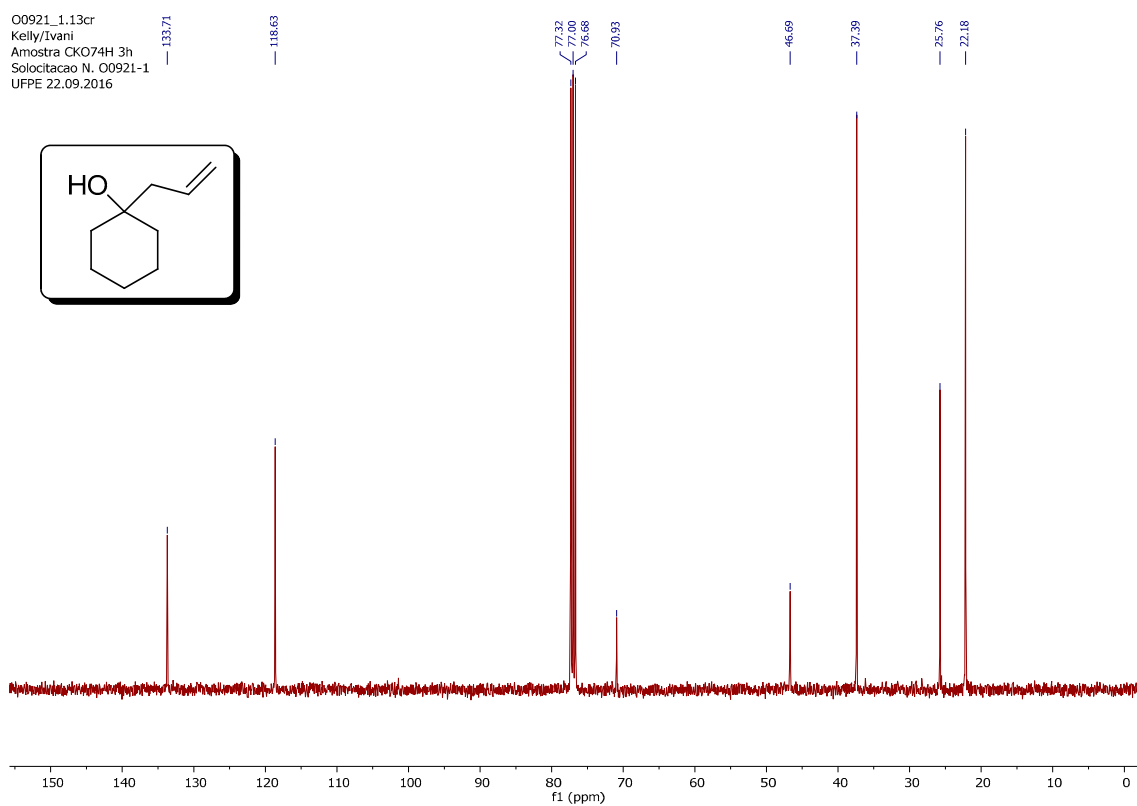


Figure S48. ¹³C-NMR (100 MHz, CDCl₃) of 1-allylcyclohexanol (5f).

