

Supplementary Materials

Gold(I) Complexes with Ferrocenylphosphino Sulfonate Ligands: Synthesis and Application in the Catalytic Addition of Carboxylic Acids to Internal Alkynes in Water

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Contents

Figures S1-S9: NMR spectra of the gold(I) complexes 2a-c .	S2-S6
Figures S10-S44: NMR spectra of the enol esters 5aa-ea .	S6-S23

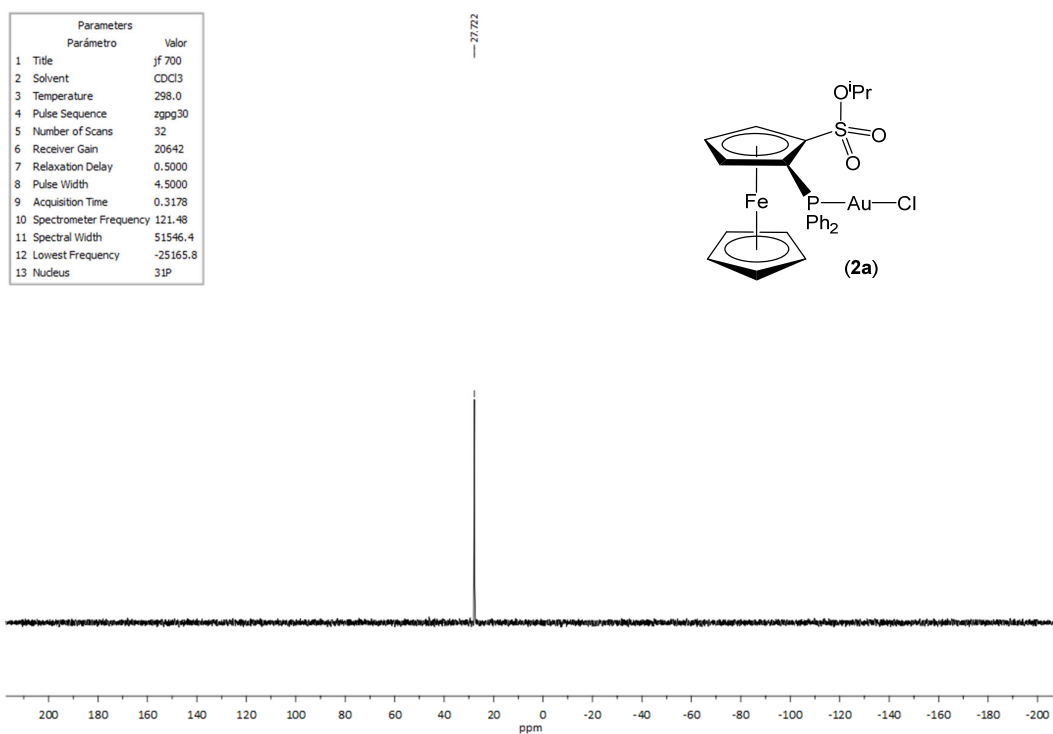


Figure S1: ³¹P{¹H} NMR spectrum (121 MHz, CDCl₃) of complex **2a**.

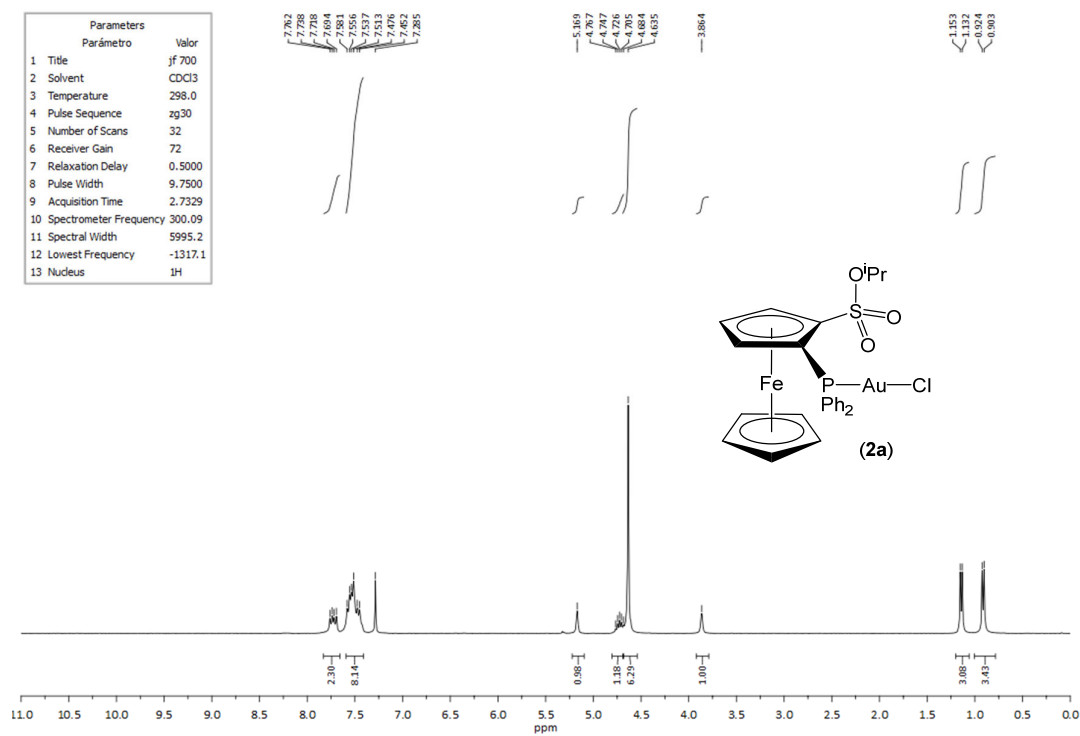


Figure S2: ¹H NMR spectrum (300 MHz, CDCl₃) of complex **2a**.

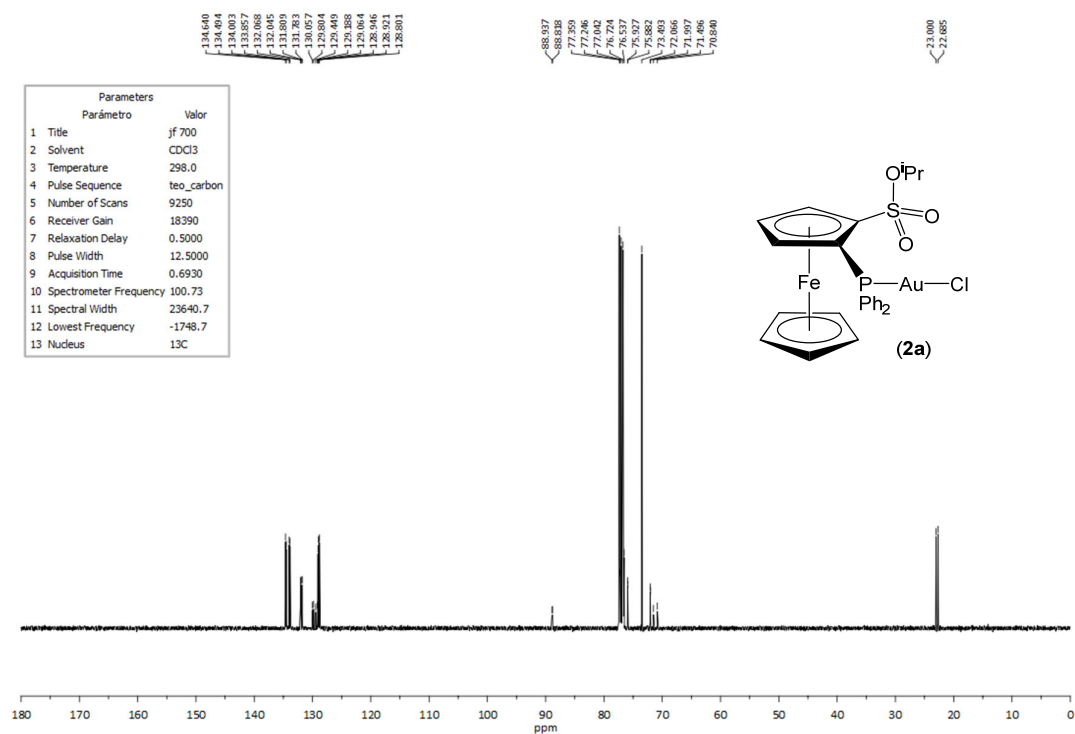


Figure S3: ¹³C{¹H} NMR spectrum (100 MHz, CDCl₃) of complex **2a**.

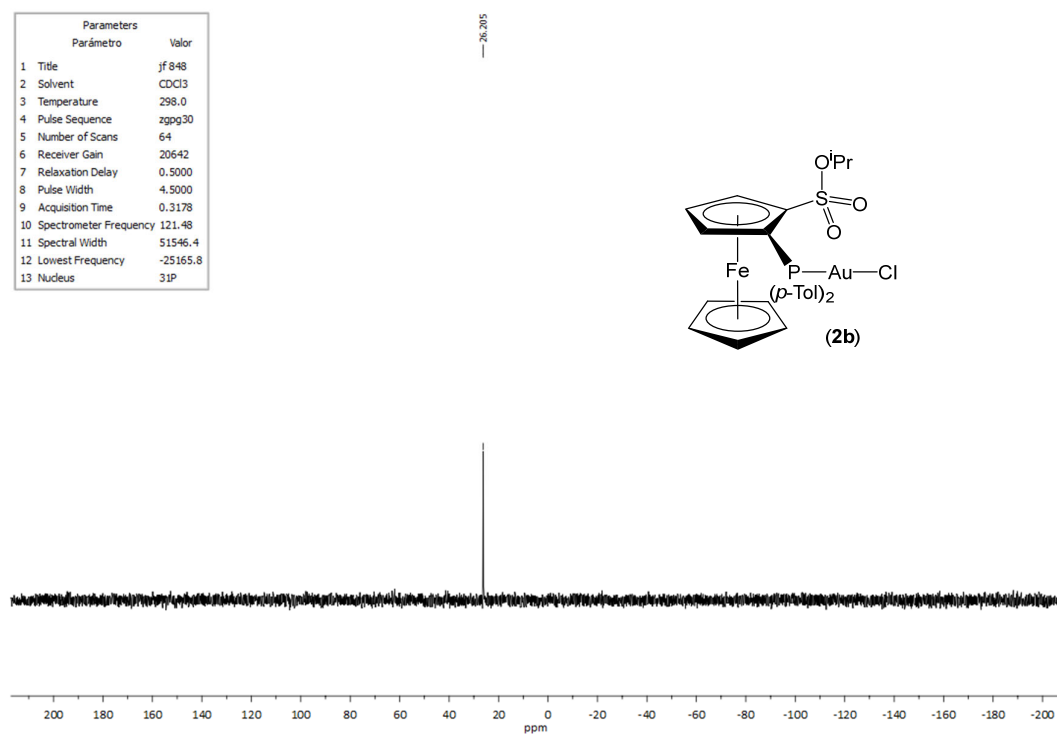


Figure S4: ³¹P{¹H} NMR spectrum (121 MHz, CDCl₃) of complex **2b**.

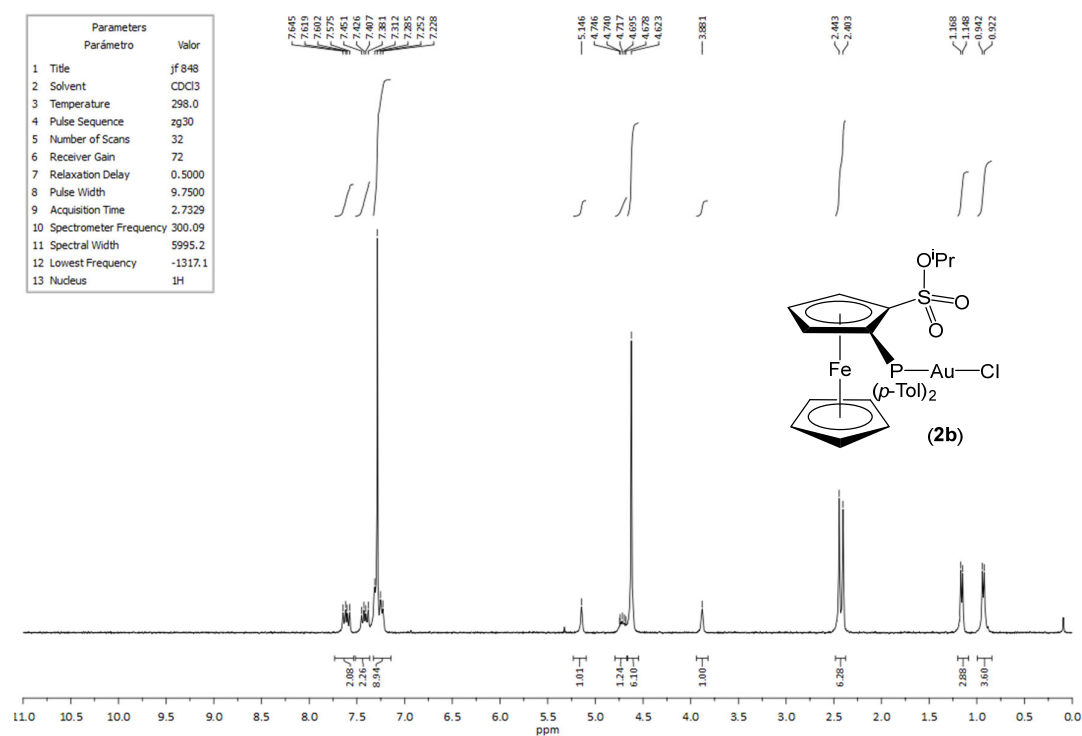


Figure S5: ¹H NMR spectrum (300 MHz, CDCl₃) of complex **2b**.

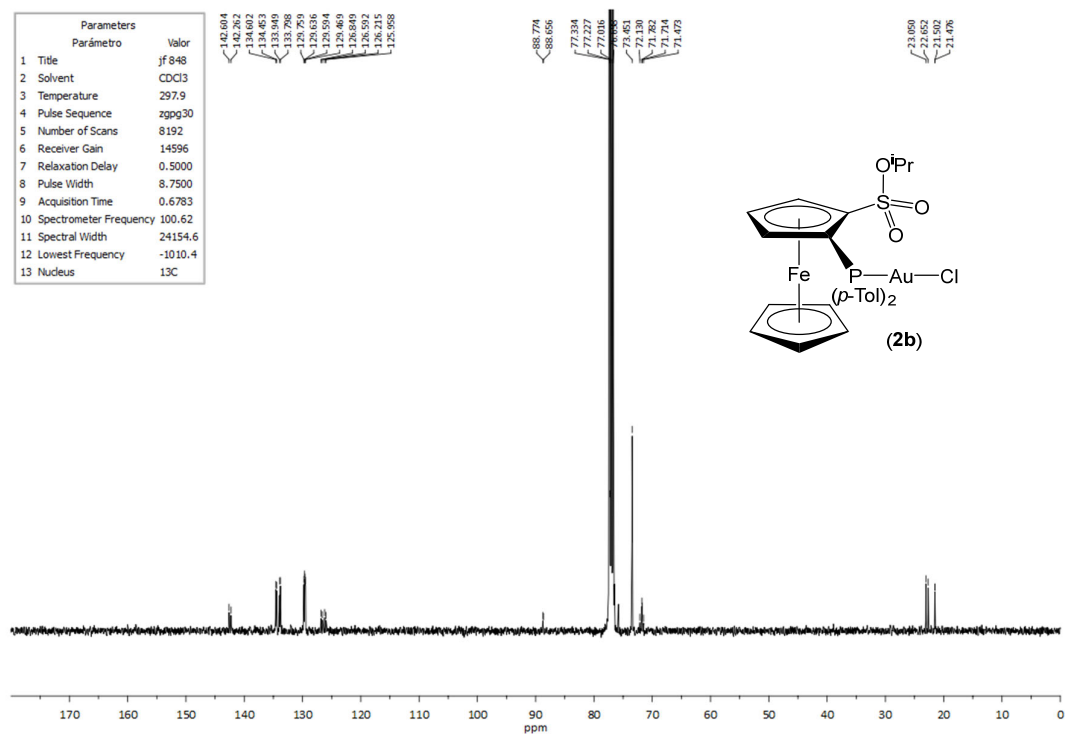


Figure S6: ¹³C{¹H} NMR spectrum (100 MHz, CDCl₃) of complex **2b**.

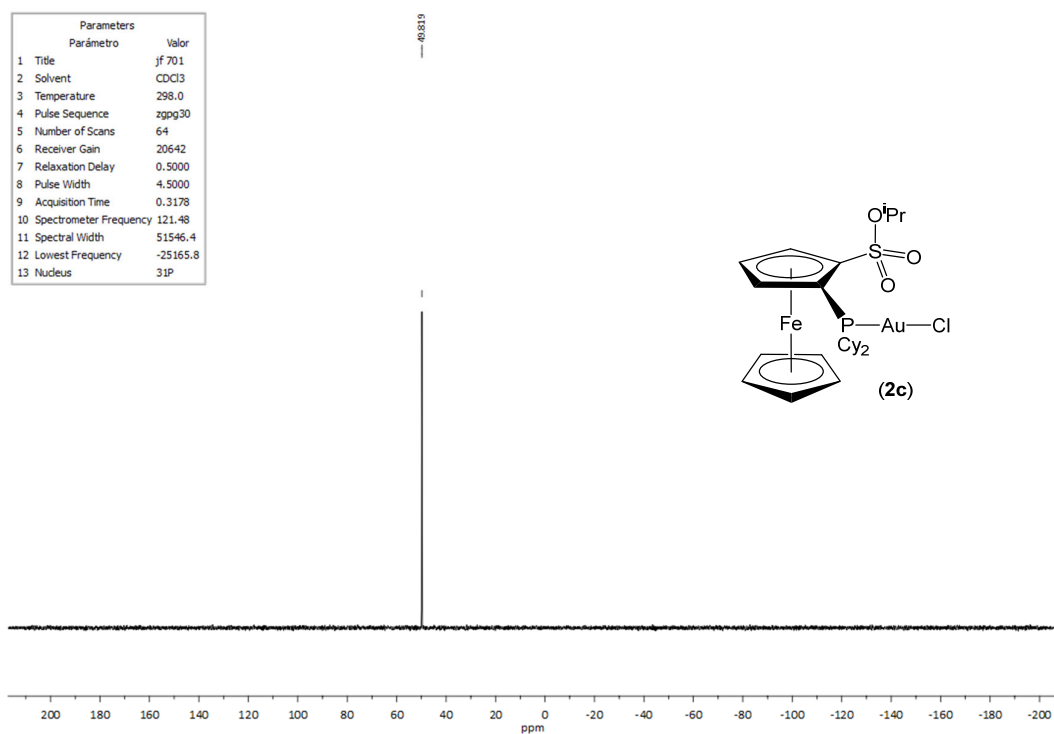


Figure S7: $^{31}\text{P}\{^1\text{H}\}$ NMR spectrum (121 MHz, CDCl_3) of complex **2c**.

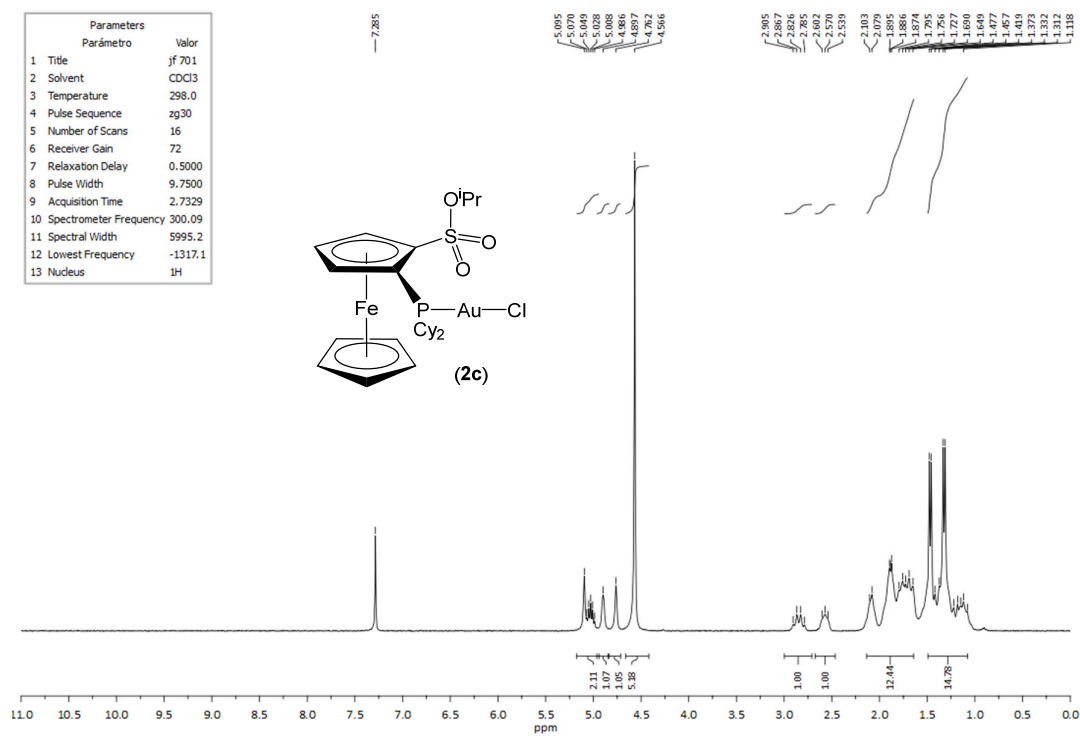


Figure S8: ^1H NMR spectrum (300 MHz, CDCl_3) of complex **2c**.

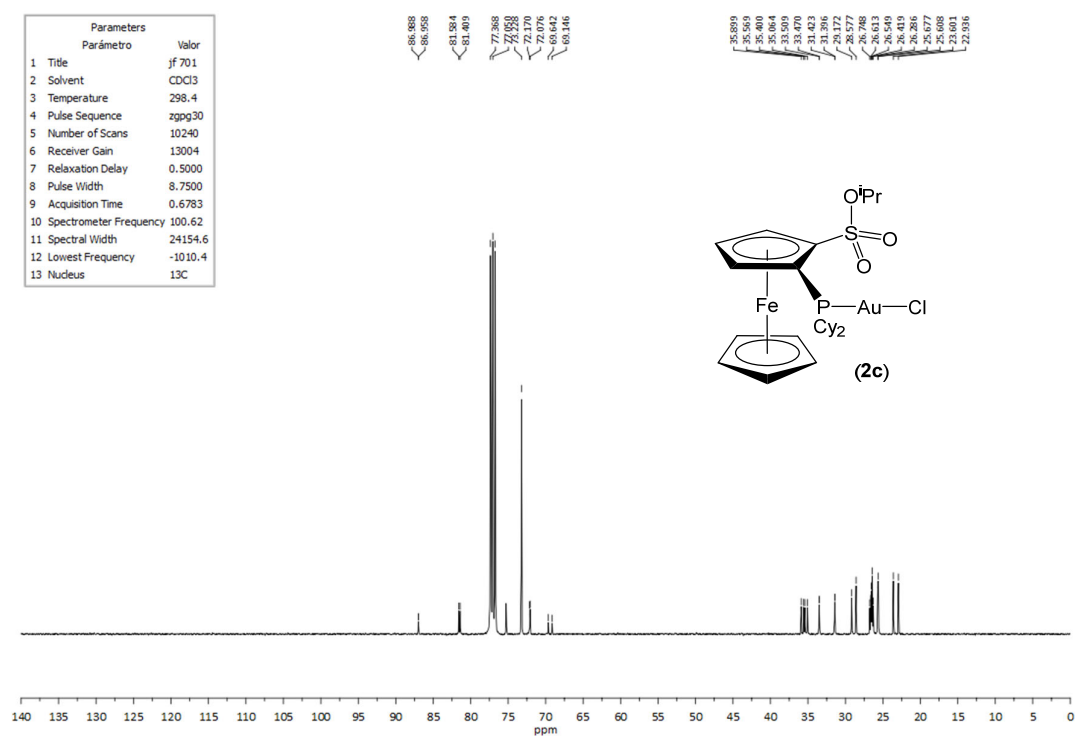


Figure S9: $^{13}\text{C}\{^1\text{H}\}$ NMR spectrum (100 MHz, CDCl_3) of complex **2c**.

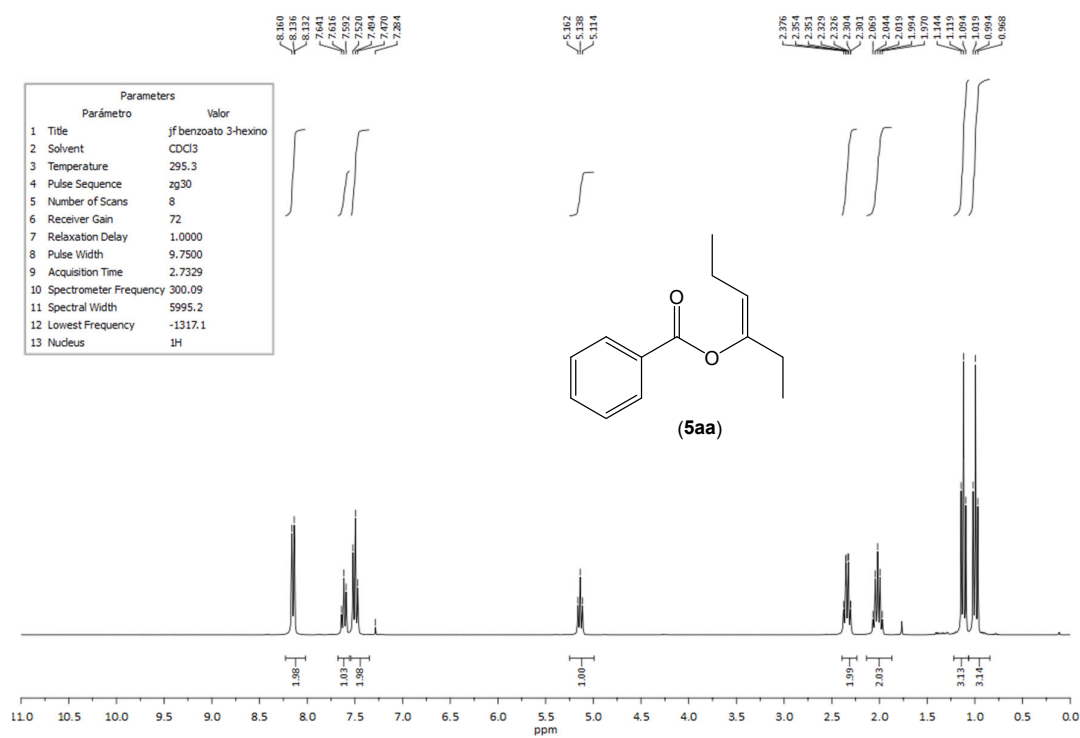


Figure S10: ^1H NMR spectrum (300 MHz, CDCl_3) of enol ester **5aa**.

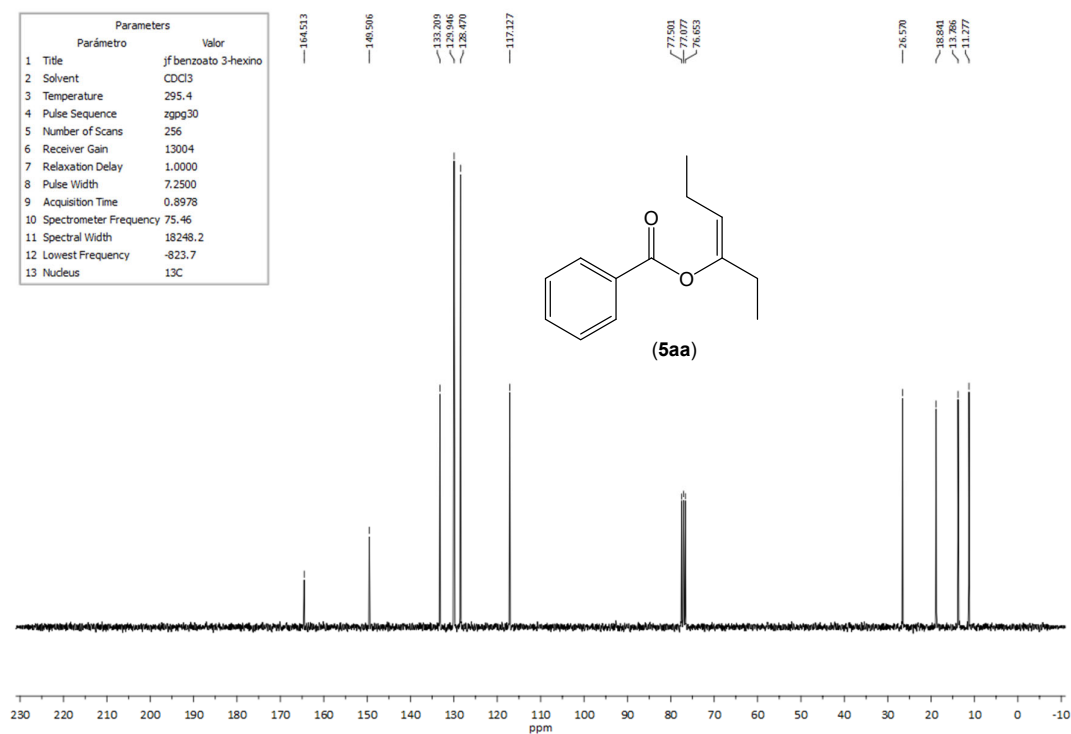


Figure S11: $^{13}\text{C}\{^1\text{H}\}$ NMR spectrum (75 MHz, CDCl_3) of enol ester **5aa**.

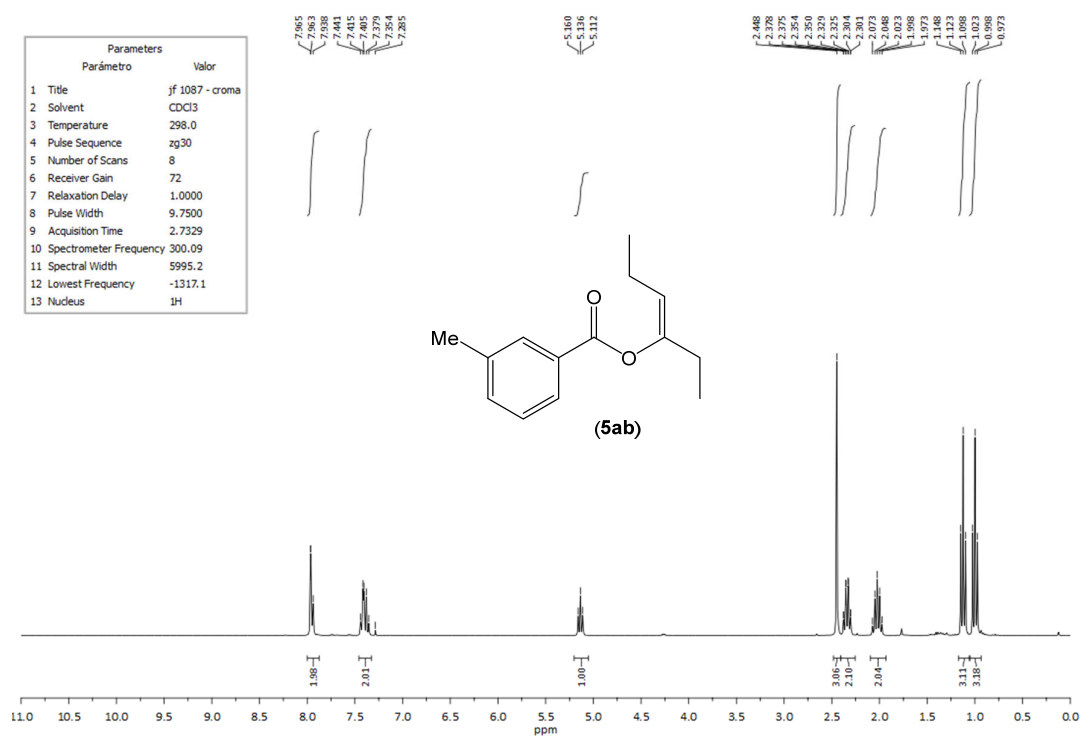


Figure S12: ^1H NMR spectrum (300 MHz, CDCl_3) of enol ester **5ab**.

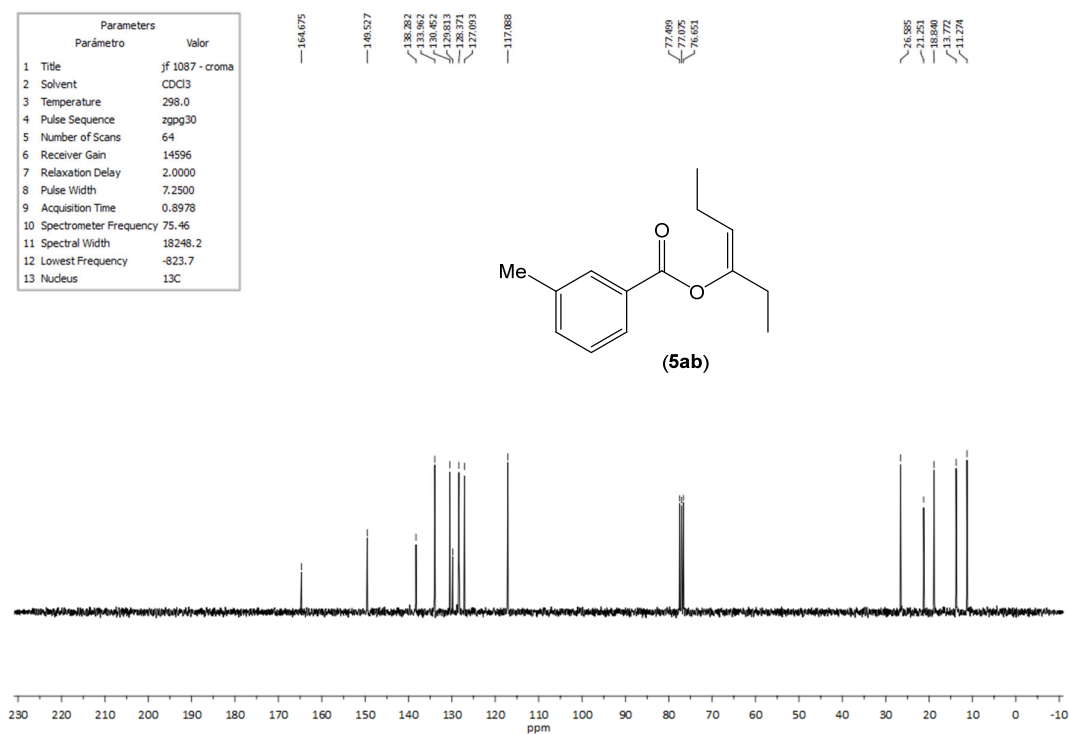


Figure S13: ¹³C{¹H} NMR spectrum (75 MHz, CDCl₃) of enol ester **5ab**.

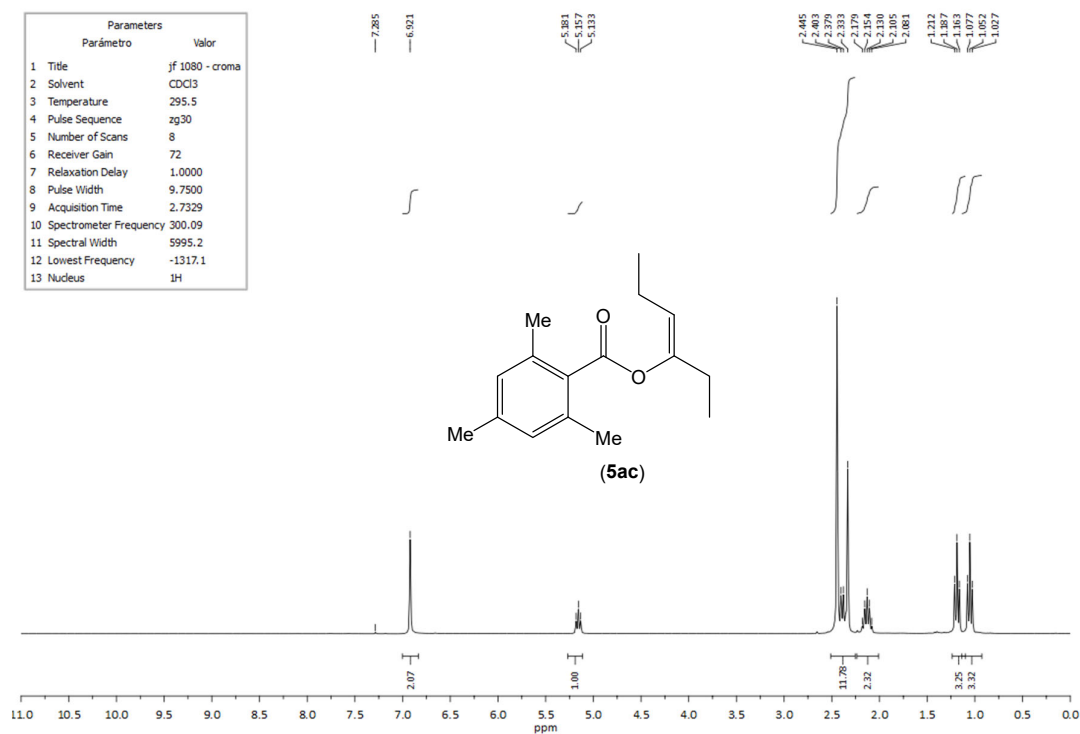


Figure S14: ¹H NMR spectrum (300 MHz, CDCl₃) of enol ester **5ac**.

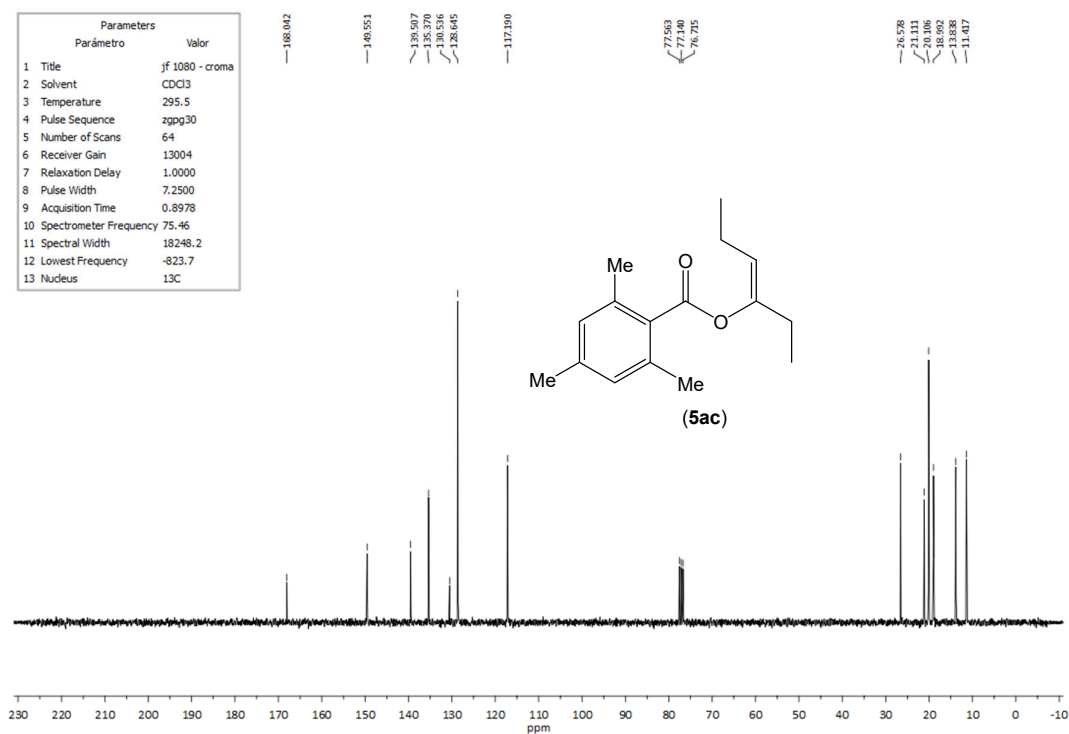


Figure S15: ¹³C{¹H} NMR spectrum (75 MHz, CDCl₃) of enol ester **5ac**.

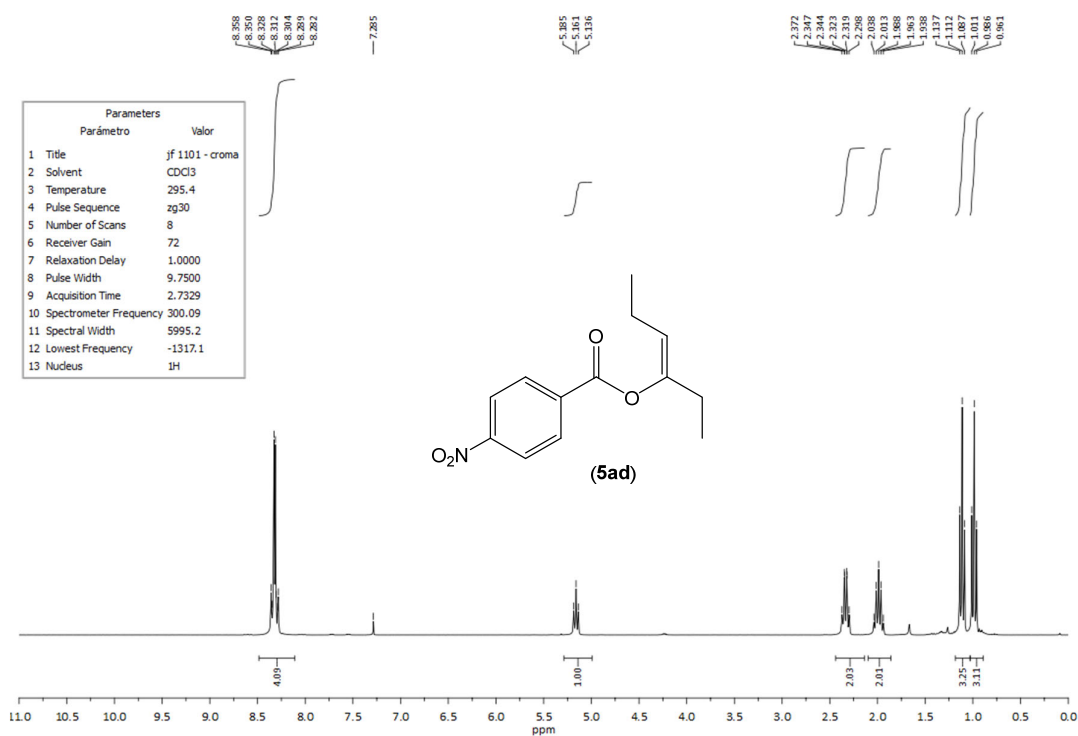


Figure S16: ¹H NMR spectrum (300 MHz, CDCl₃) of enol ester **5ad**.

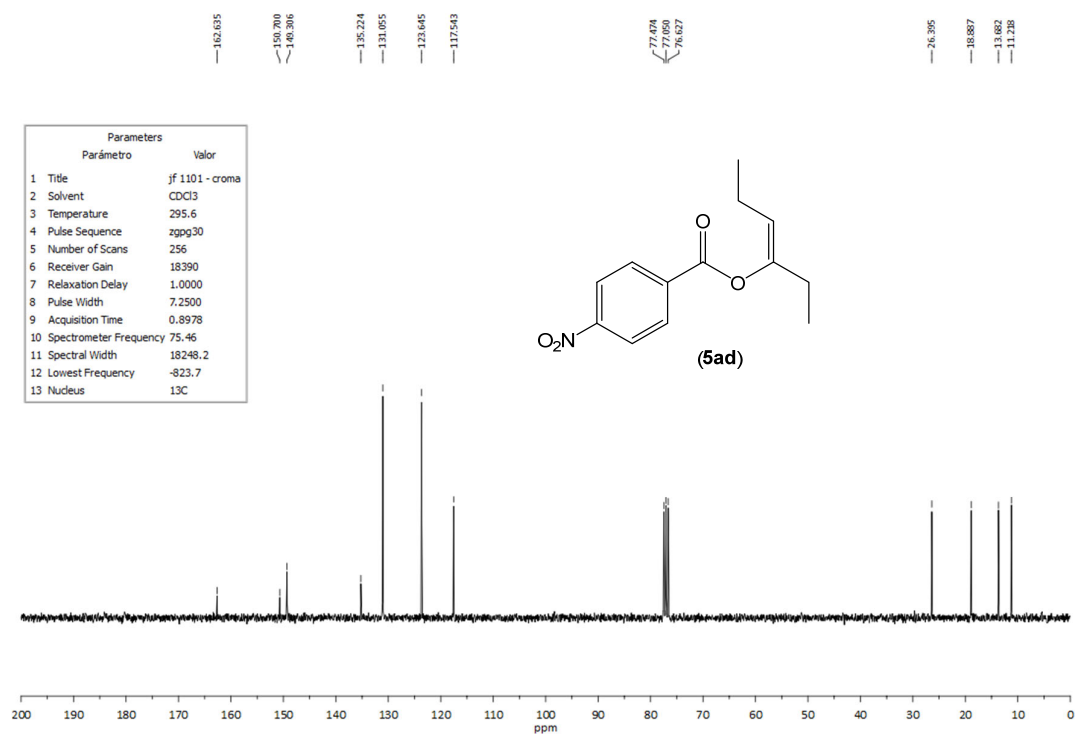


Figure S17: ¹³C{¹H} NMR spectrum (75 MHz, CDCl₃) of enol ester **5ad**.

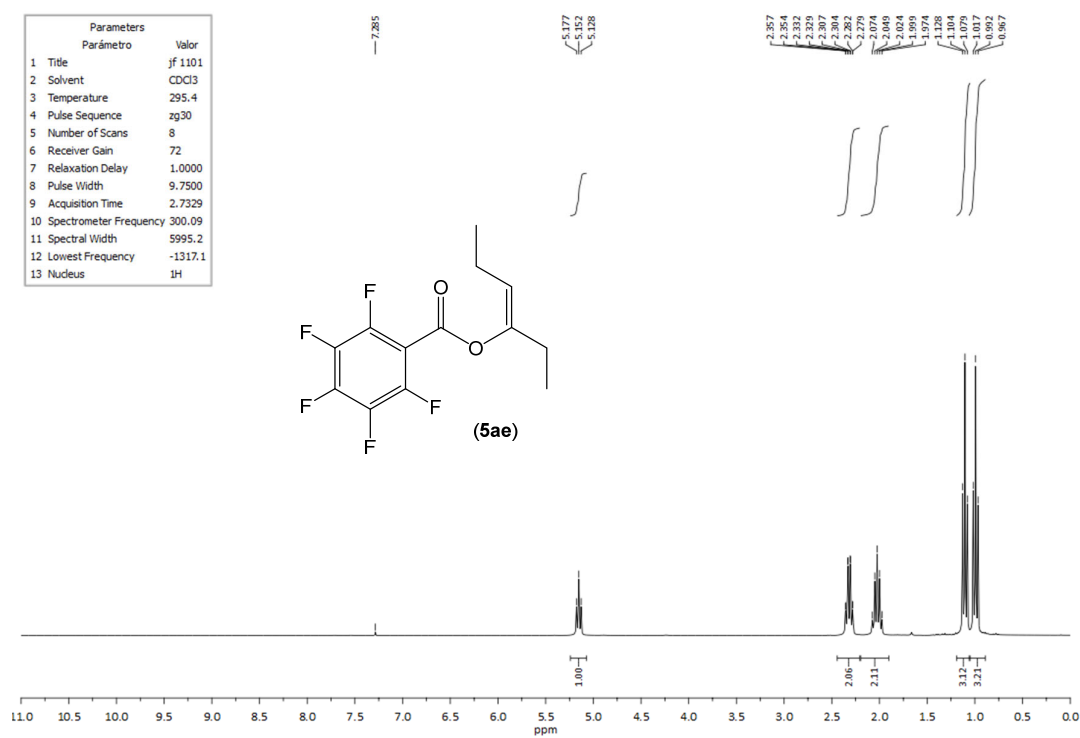


Figure S18: ¹H NMR spectrum (300 MHz, CDCl₃) of enol ester **5ae**.

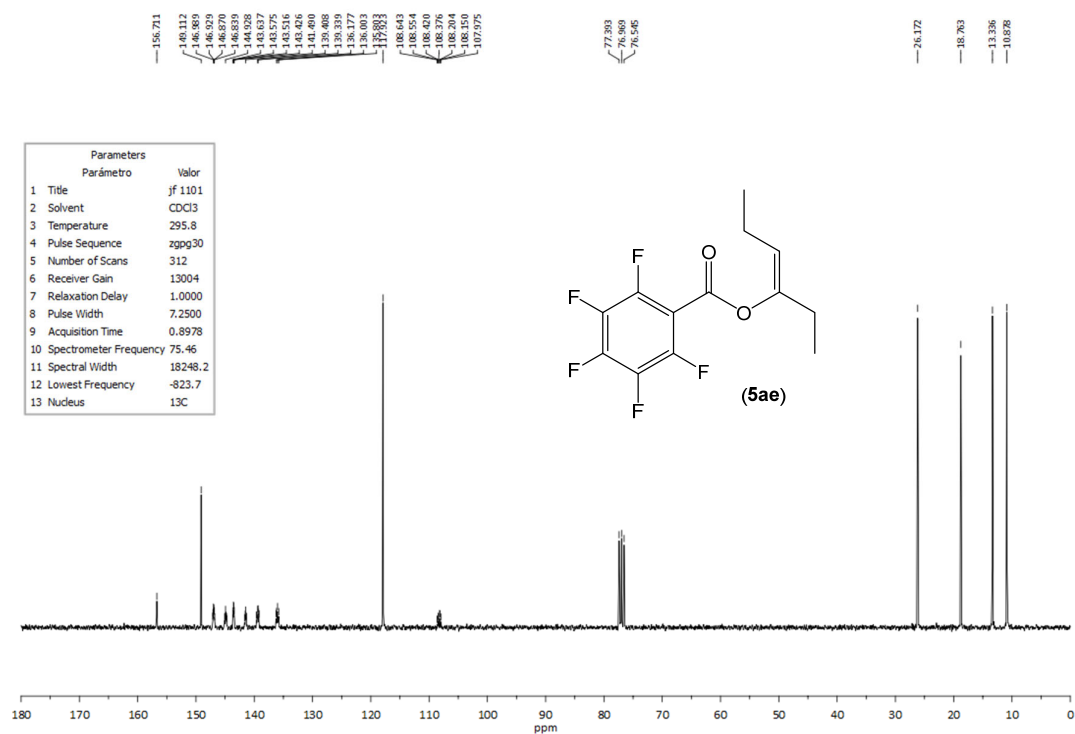


Figure S19: $^{13}\text{C}\{^1\text{H}\}$ NMR spectrum (75 MHz, CDCl_3) of enol ester **5ae**.

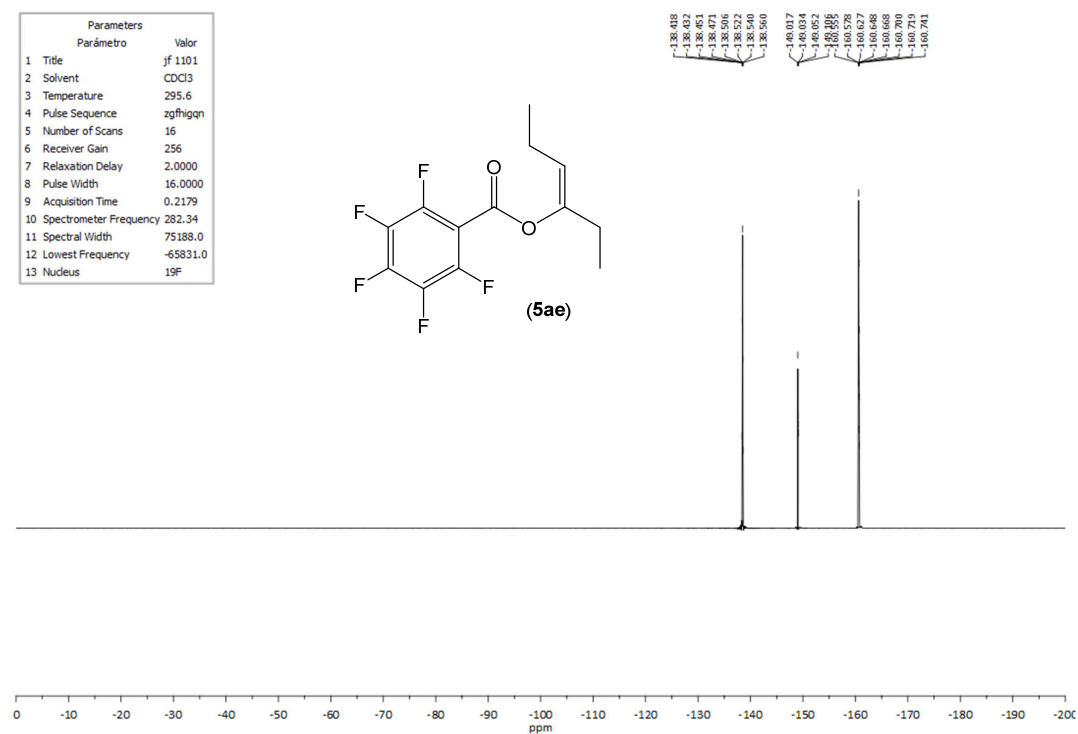


Figure S20: $^{19}\text{F}\{^1\text{H}\}$ NMR spectrum (282 MHz, CDCl_3) of enol ester **5ae**.

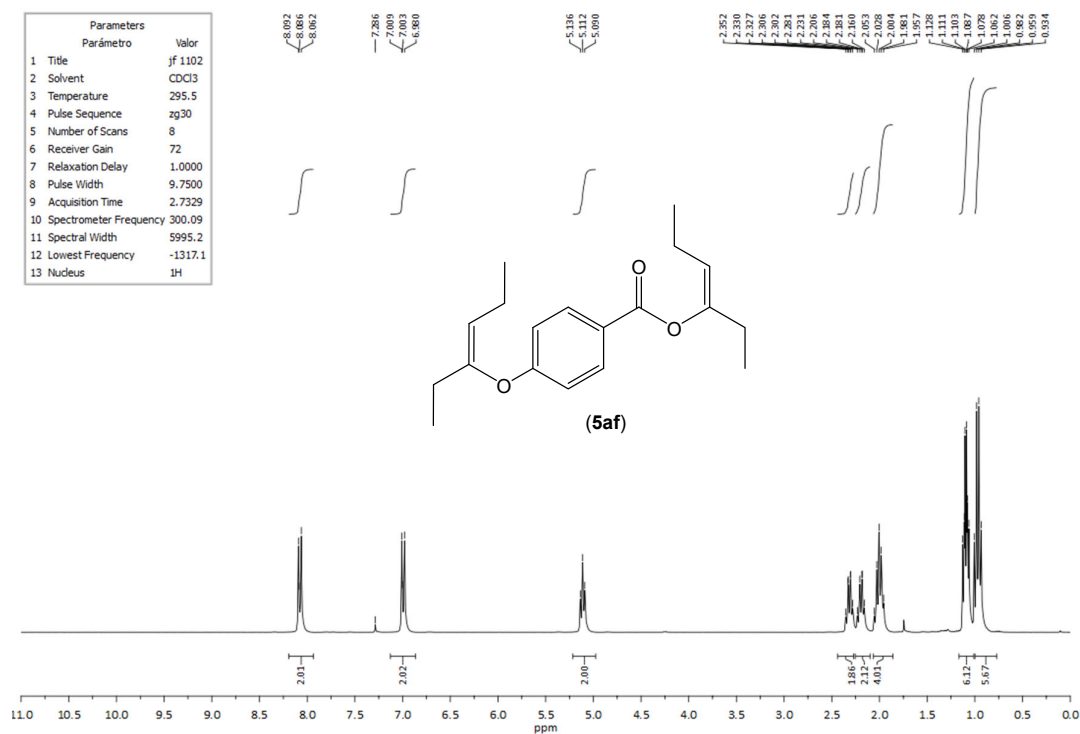


Figure S21: ¹H NMR spectrum (300 MHz, CDCl₃) of enol ester **5af**.

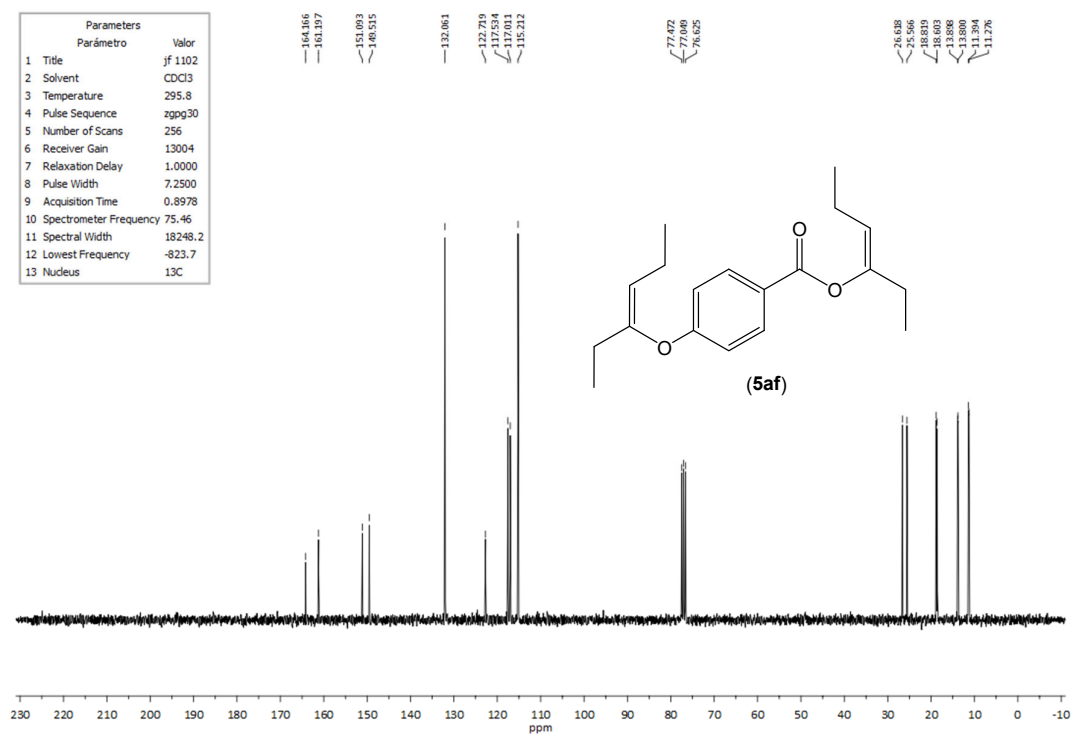


Figure S22: ¹³C{¹H} NMR spectrum (75 MHz, CDCl₃) of enol ester **5af**.

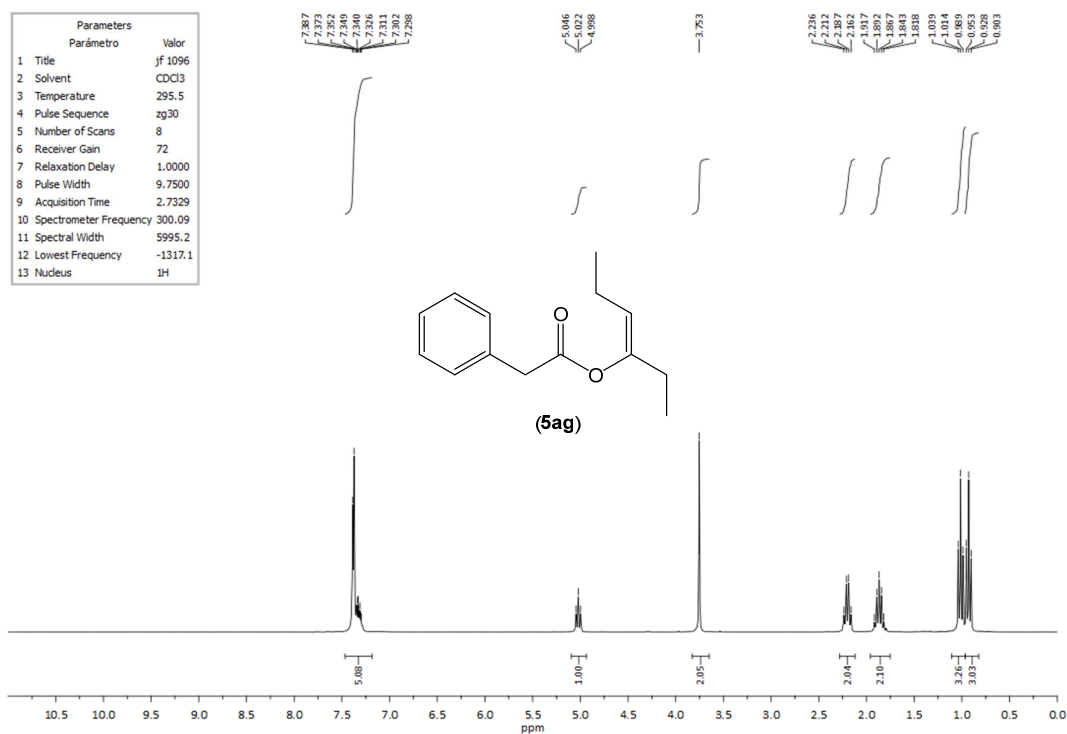


Figure S23: ¹H NMR spectrum (300 MHz, CDCl₃) of enol ester **5ag**.

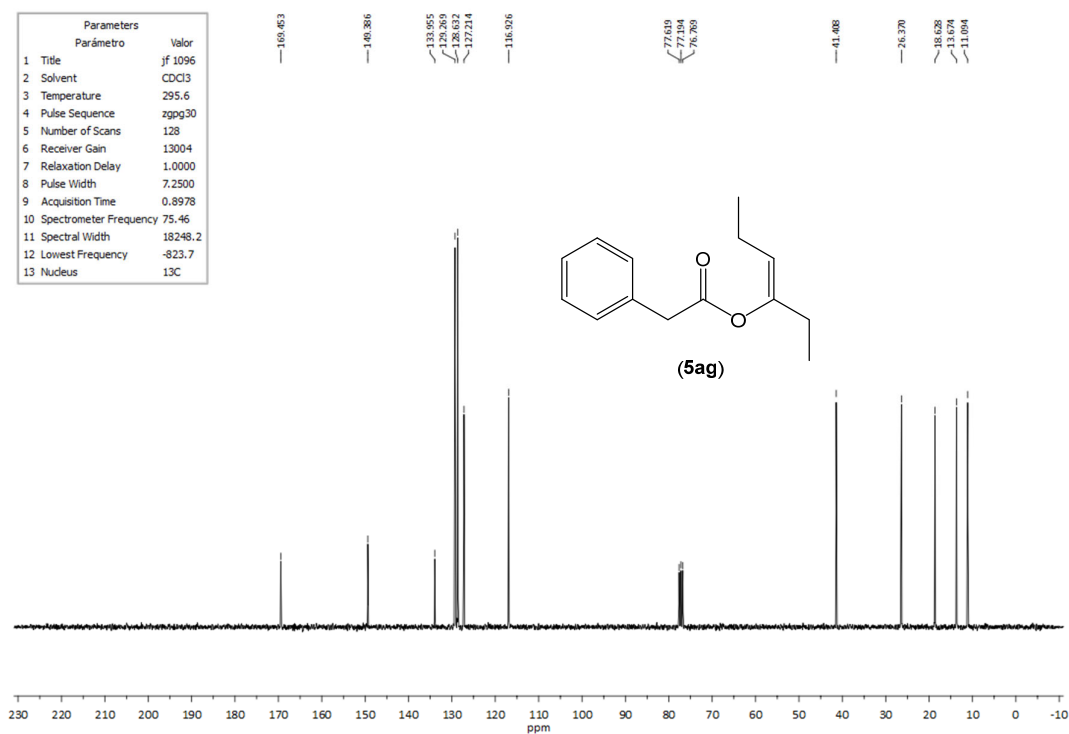


Figure S24: ¹³C{¹H} NMR spectrum (75 MHz, CDCl₃) of enol ester **5ag**.

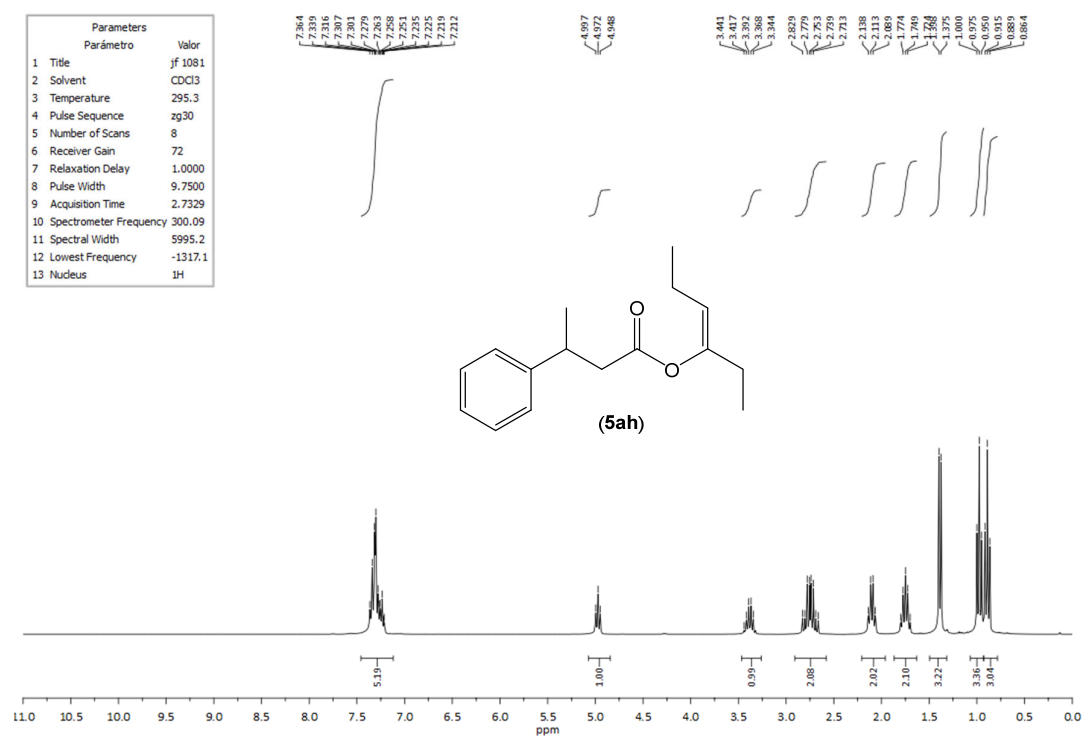


Figure S25: ¹H NMR spectrum (300 MHz, CDCl₃) of enol ester **5ah**.

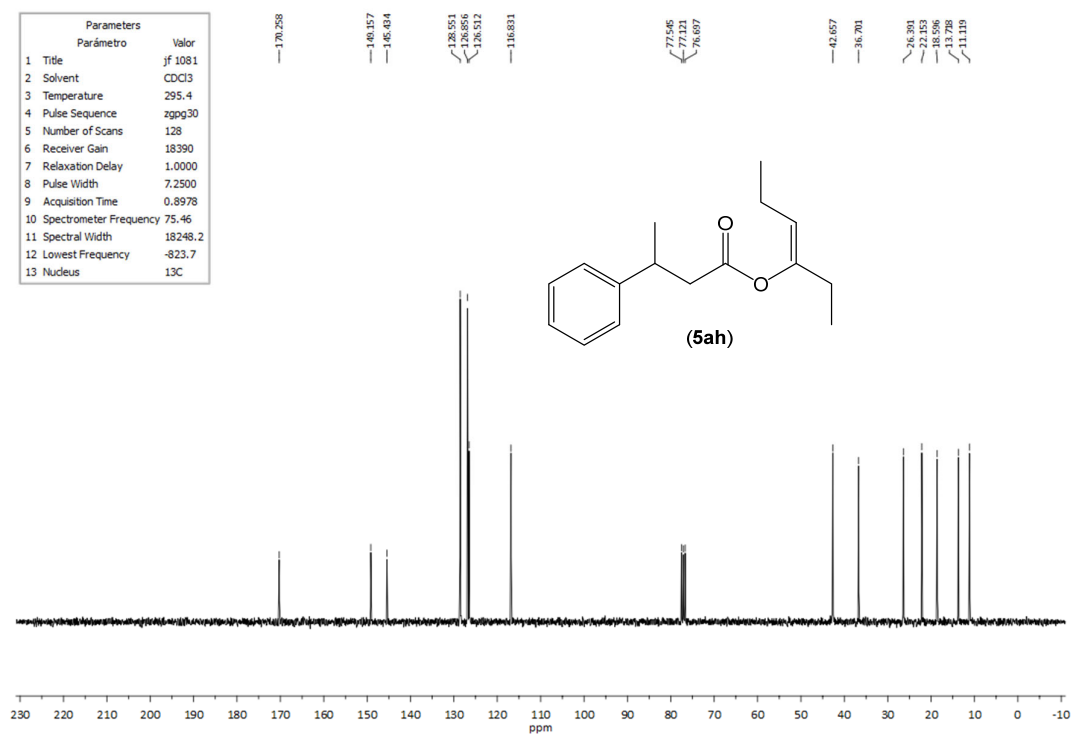


Figure S26: ¹³C{¹H} NMR spectrum (75 MHz, CDCl₃) of enol ester **5ah**.

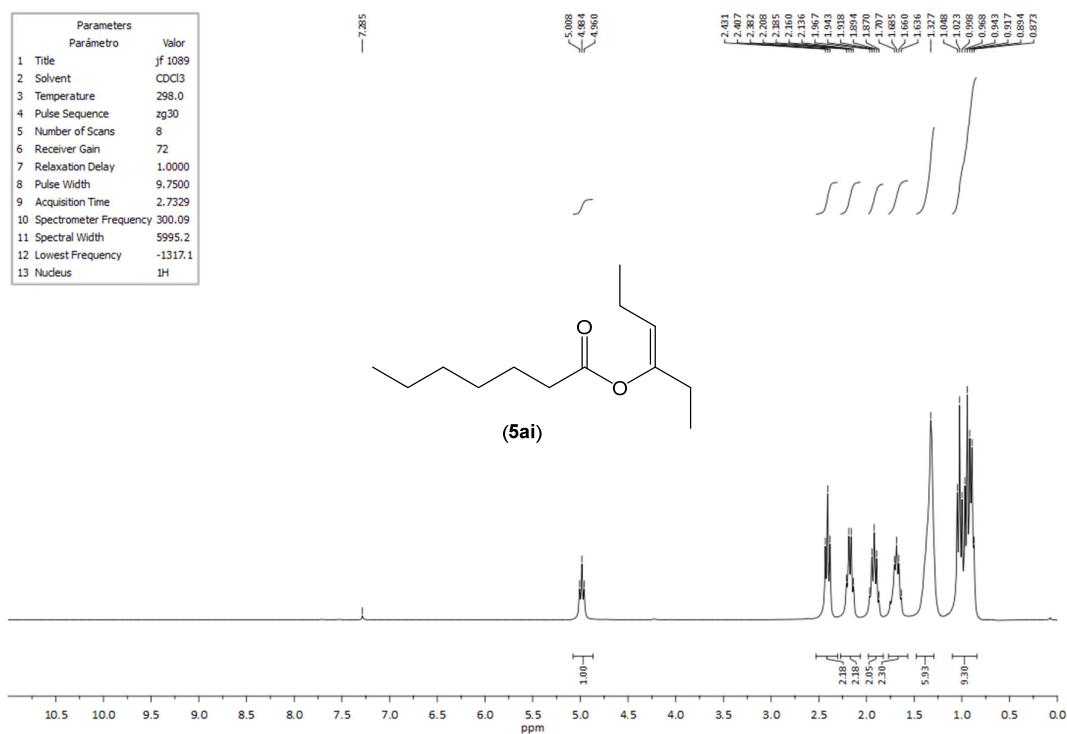


Figure S27: ¹H NMR spectrum (300 MHz, CDCl₃) of enol ester **5ai**.

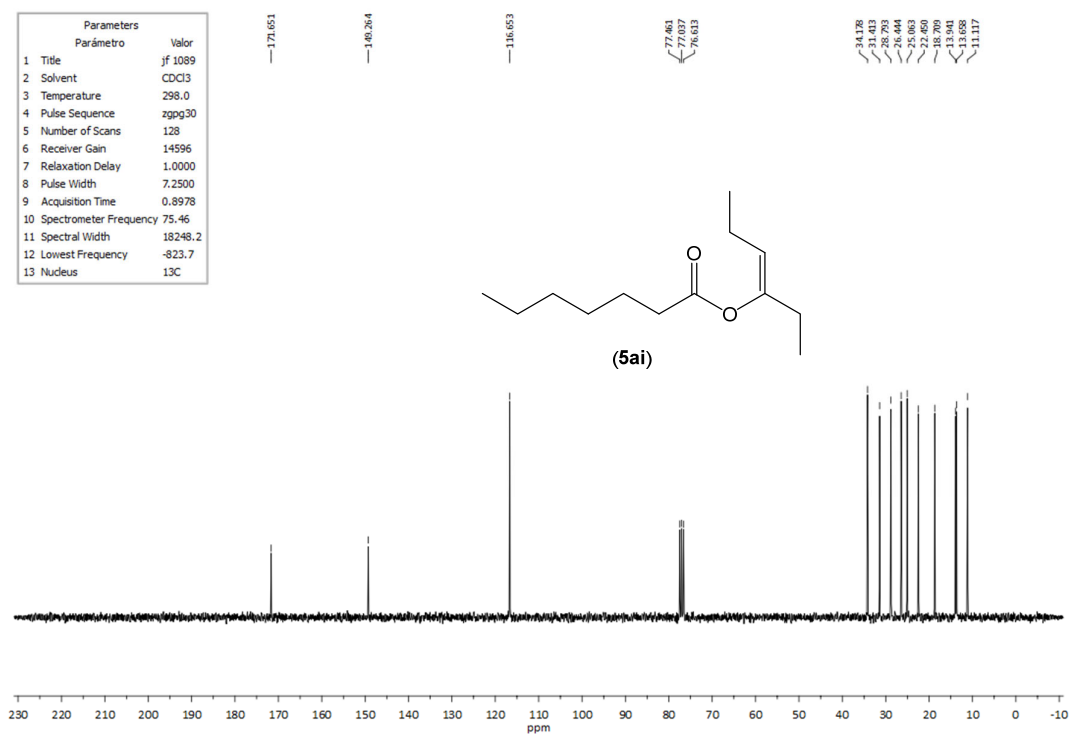


Figure S28: ¹³C{¹H} NMR spectrum (75 MHz, CDCl₃) of enol ester **5ai**.

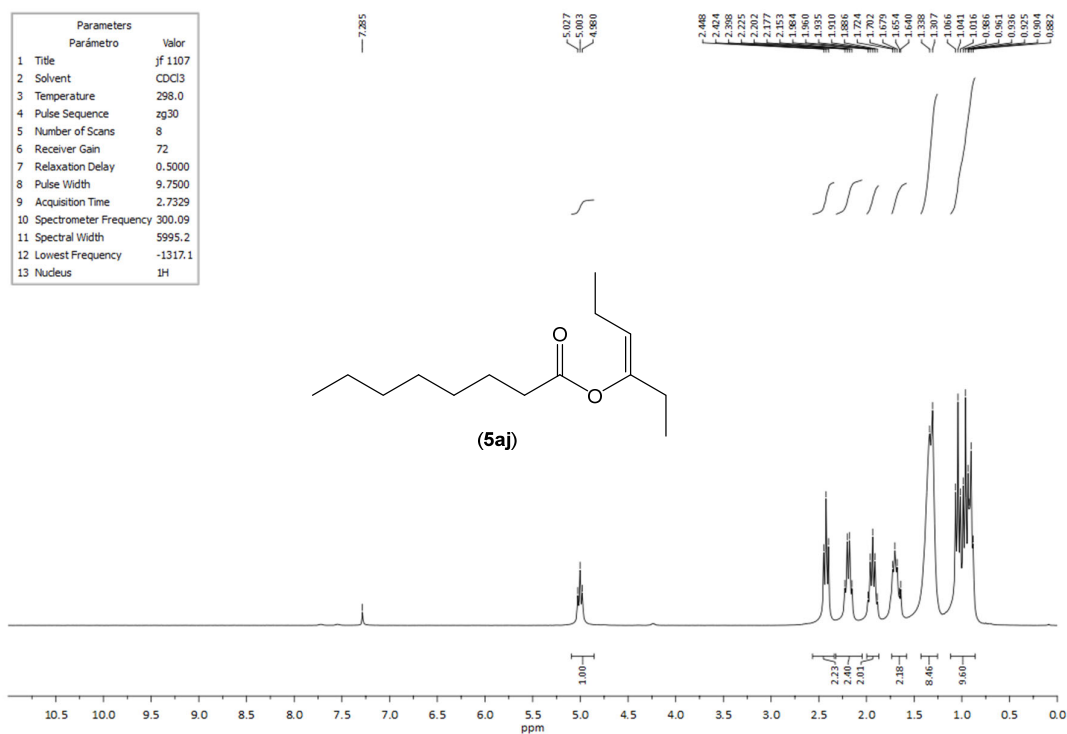


Figure S29: ¹H NMR spectrum (300 MHz, CDCl₃) of enol ester **5aj**.

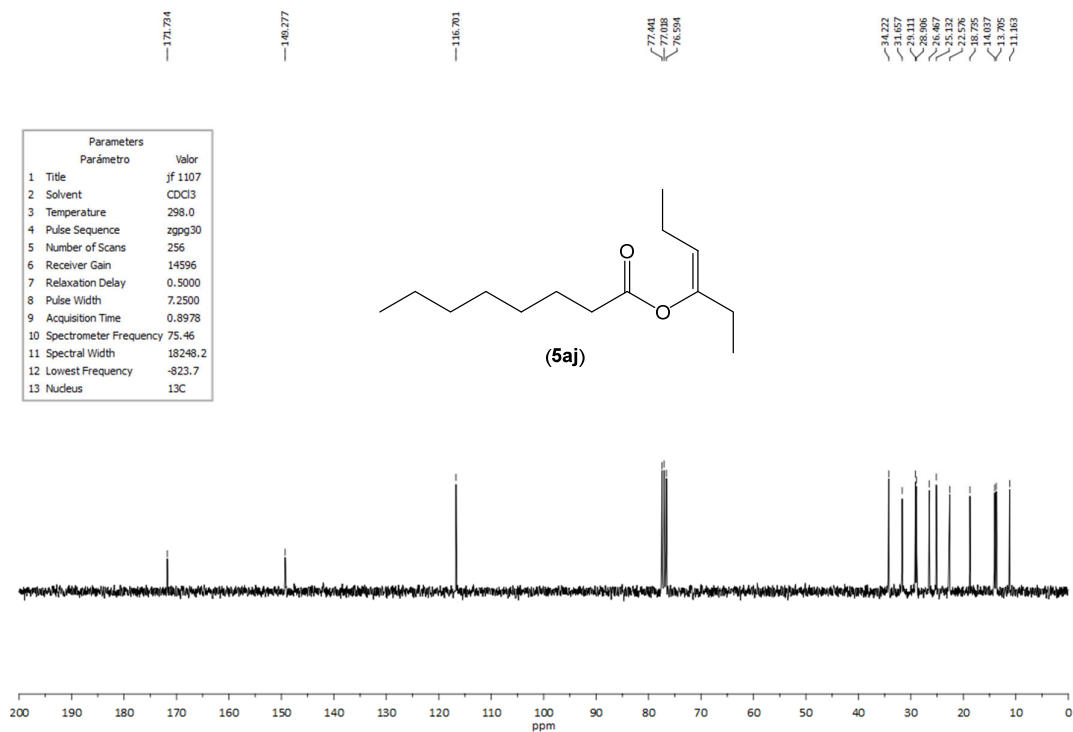


Figure S30: ¹³C{¹H} NMR spectrum (75 MHz, CDCl₃) of enol ester **5aj**.

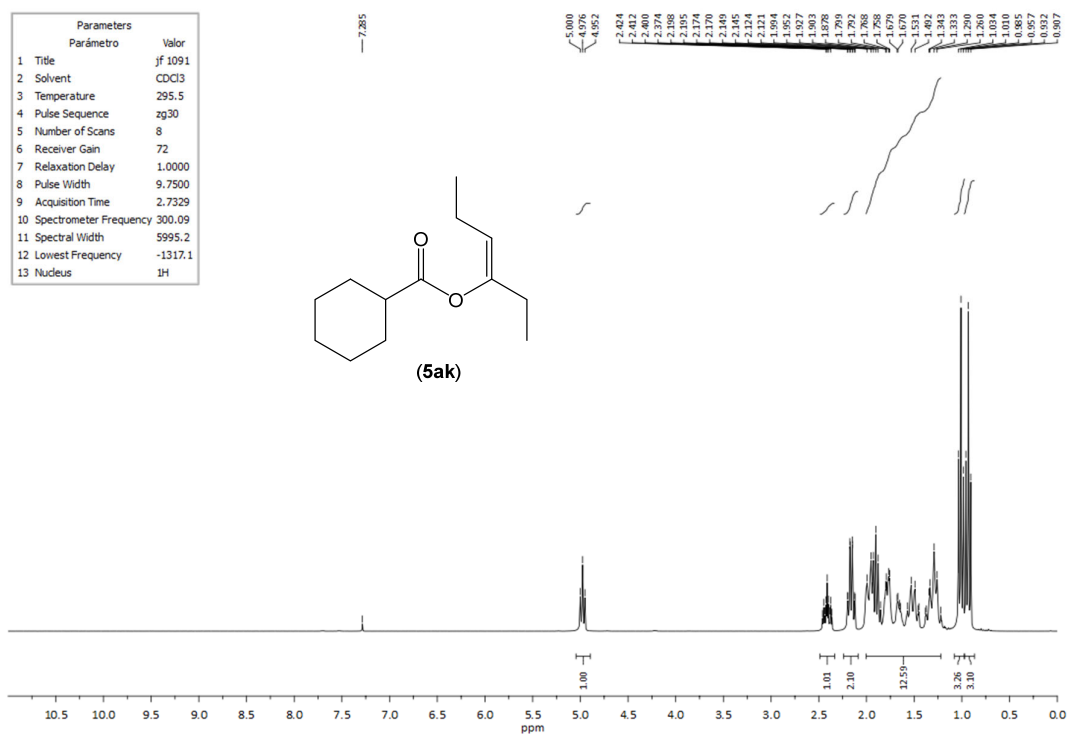


Figure S31: ¹H NMR spectrum (300 MHz, CDCl₃) of enol ester **5ak**.

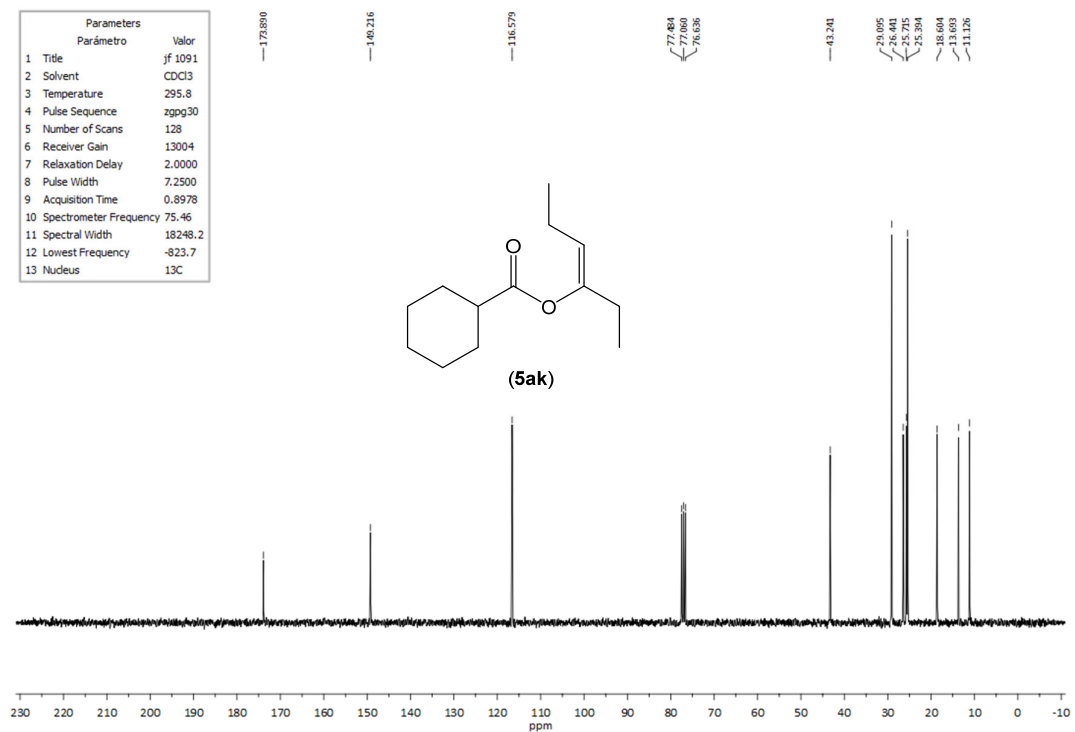


Figure S32: ¹³C{¹H} NMR spectrum (75 MHz, CDCl₃) of enol ester **5ak**.

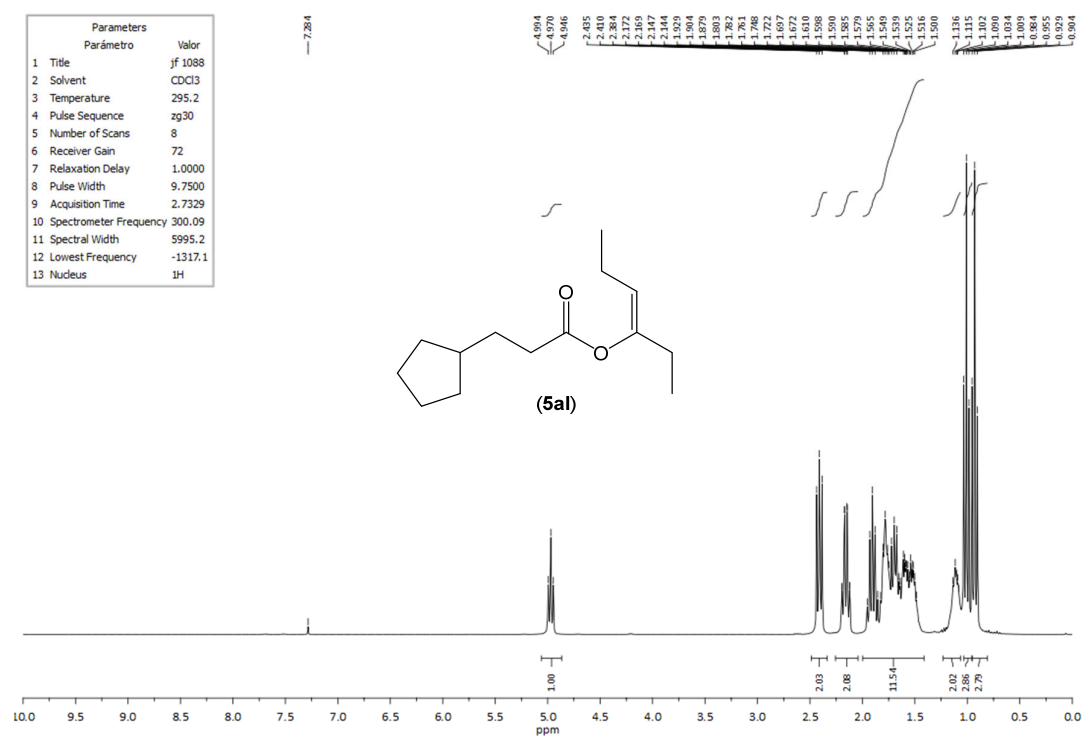


Figure S33: ¹H NMR spectrum (300 MHz, CDCl₃) of enol ester **5al**.

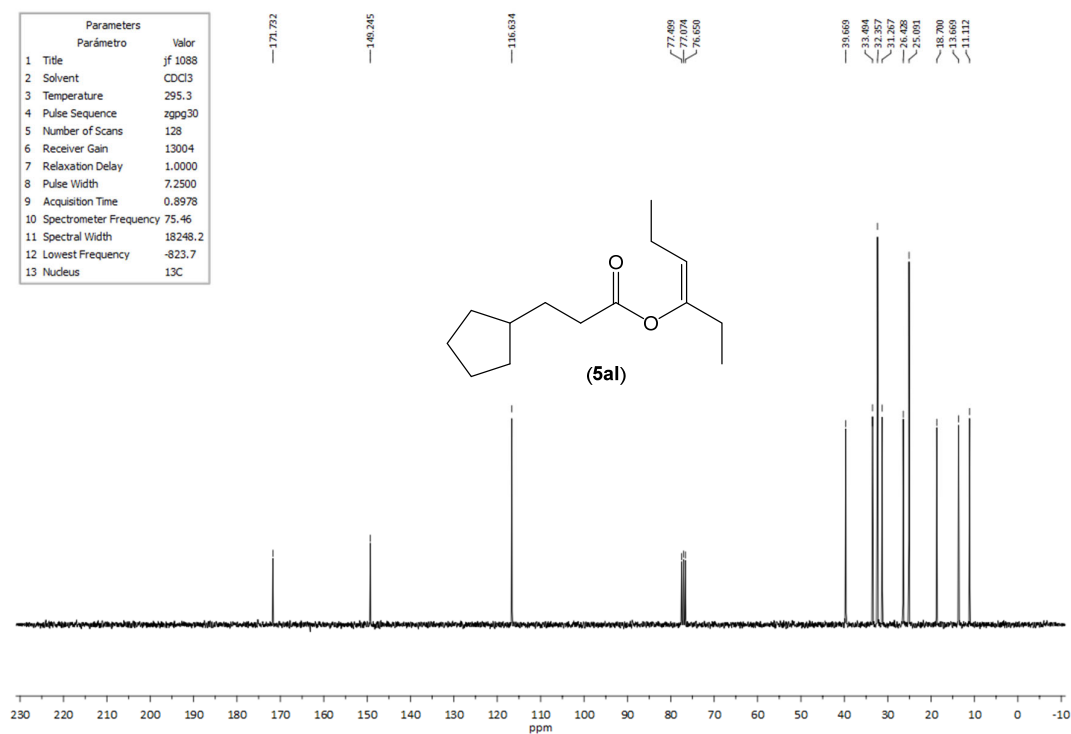


Figure S34: ¹³C{¹H} NMR spectrum (75 MHz, CDCl₃) of enol ester **5al**.

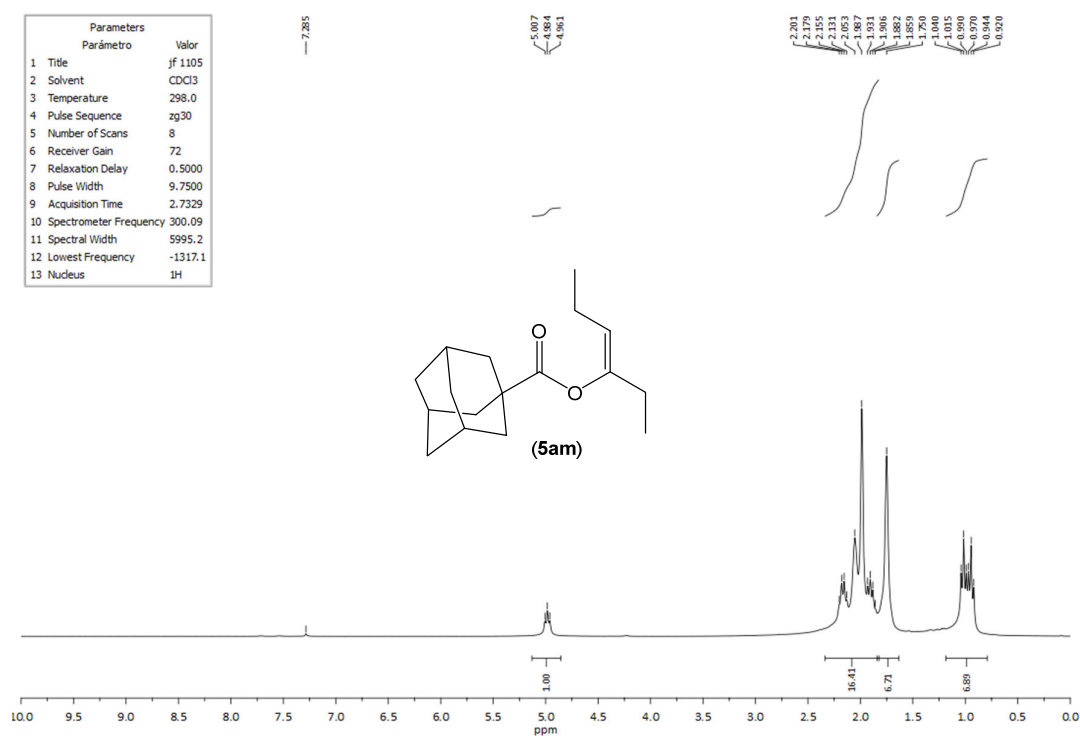


Figure S35: ¹H NMR spectrum (300 MHz, CDCl₃) of enol ester **5am**.

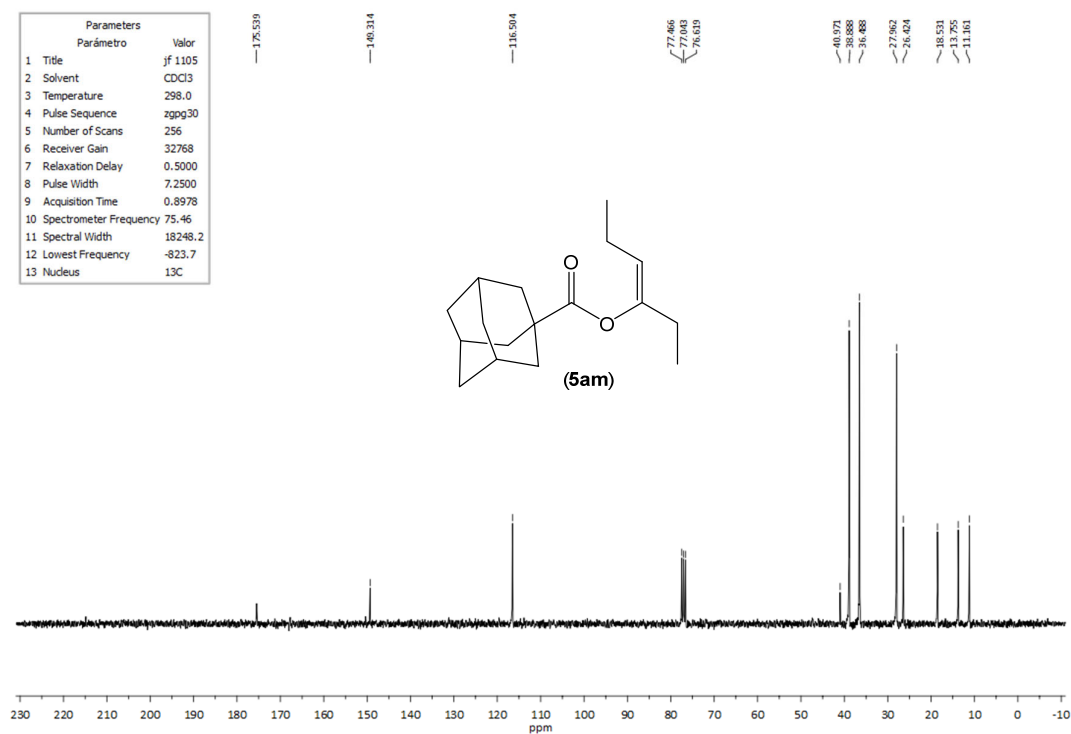


Figure S36: ¹³C{¹H} NMR spectrum (75 MHz, CDCl₃) of enol ester **5am**.

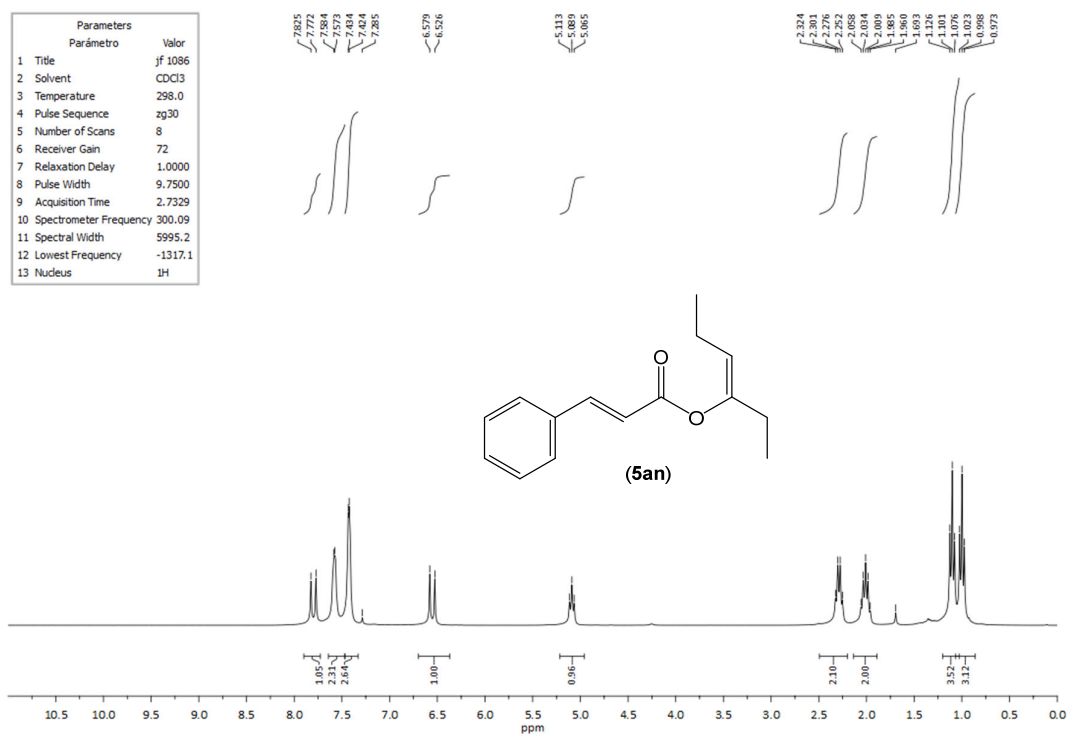


Figure S37: ¹H NMR spectrum (300 MHz, CDCl₃) of enol ester **5an**.

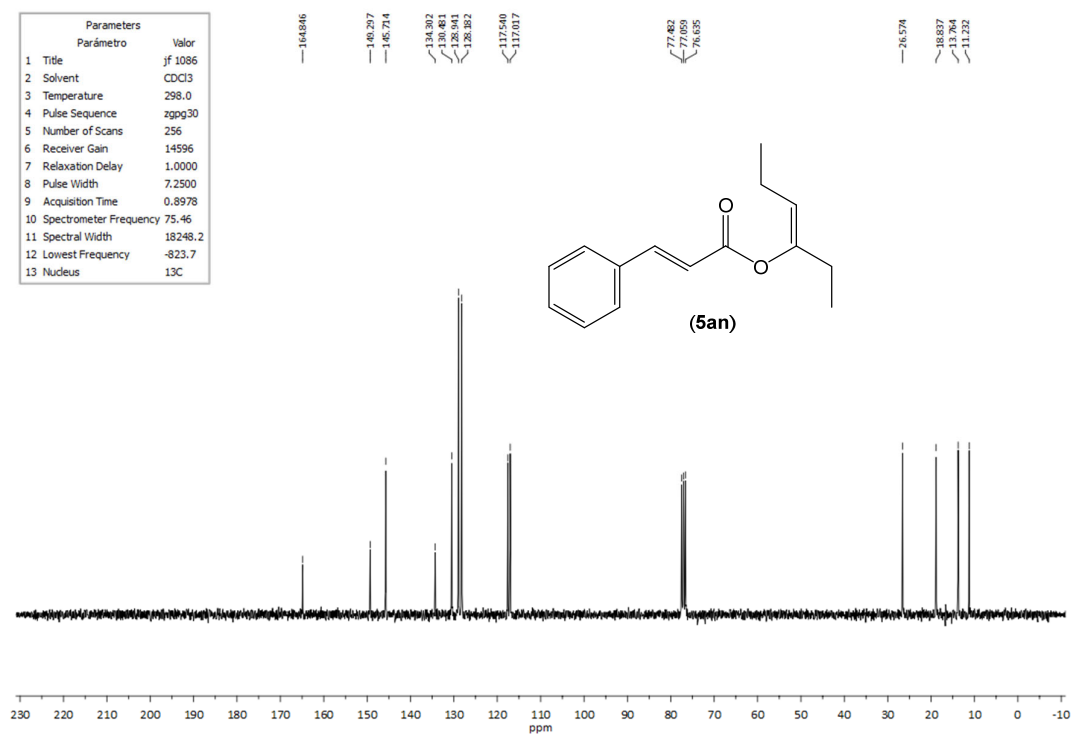


Figure S38: ¹³C{¹H} NMR spectrum (75 MHz, CDCl₃) of enol ester **5an**.

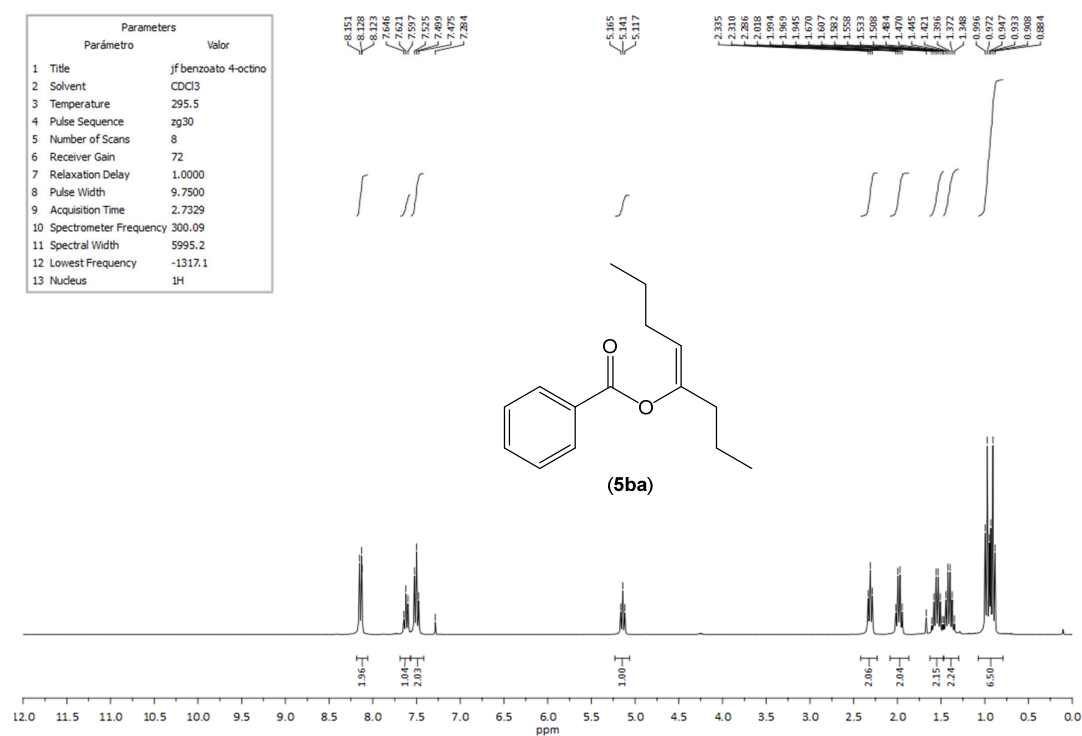


Figure S39: ¹H NMR spectrum (300 MHz, CDCl₃) of enol ester **5ba**.

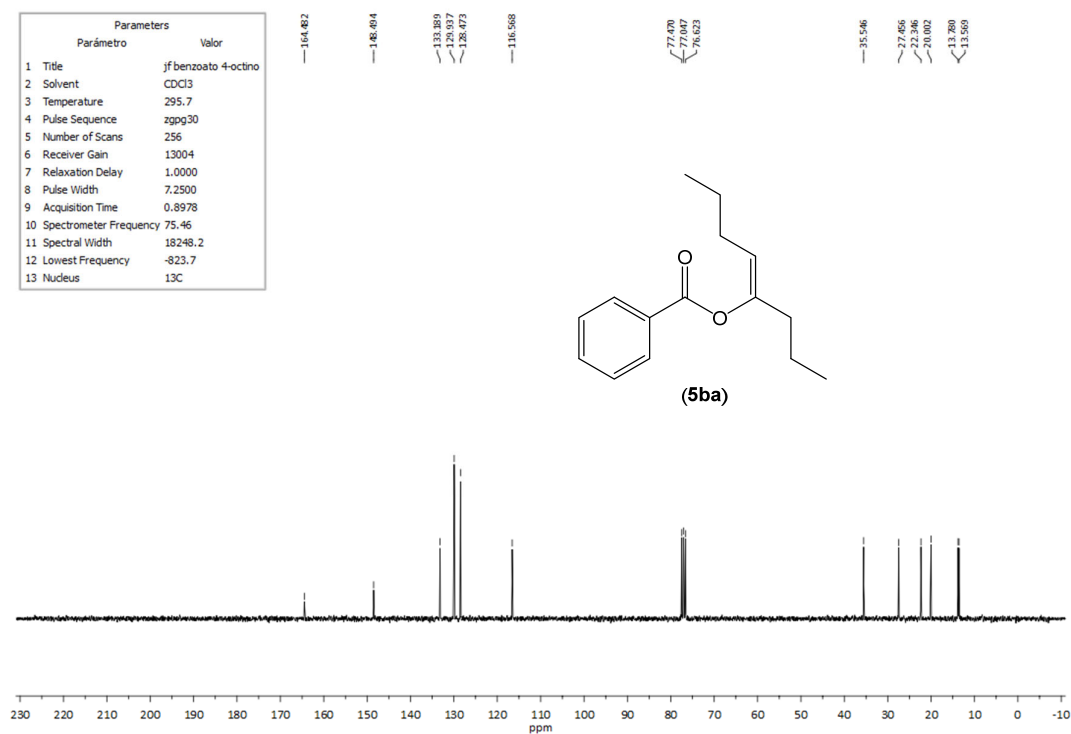


Figure S40: ¹³C{¹H} NMR spectrum (75 MHz, CDCl₃) of enol ester **5ba**.

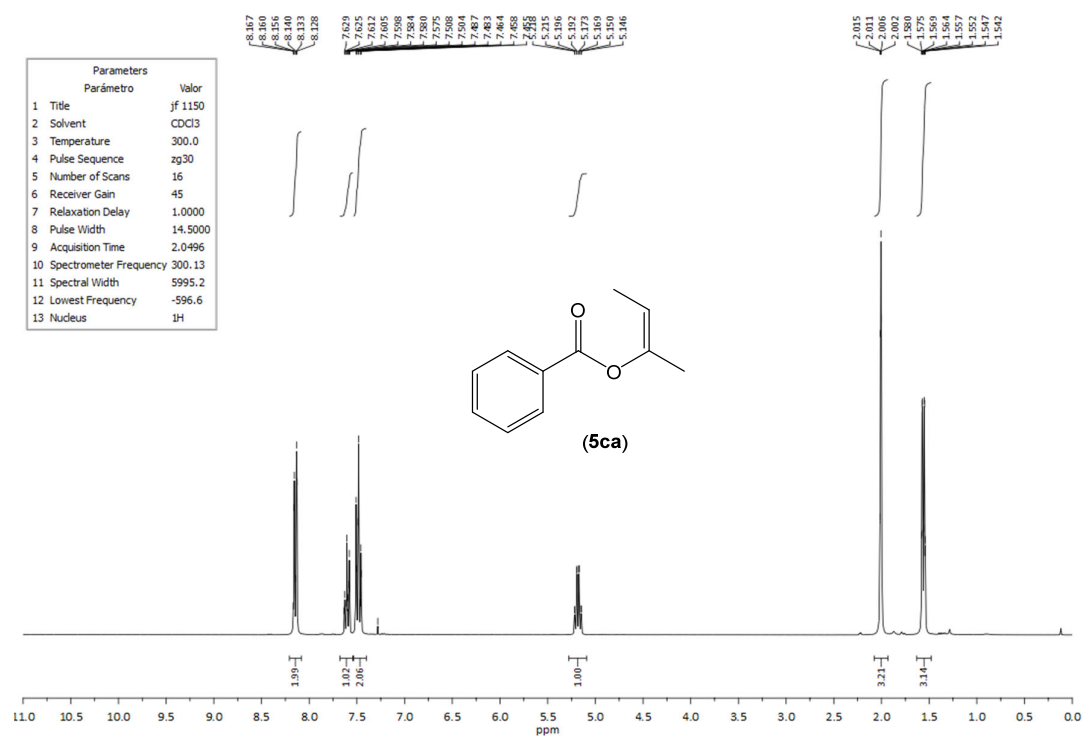


Figure S41: ¹H NMR spectrum (300 MHz, CDCl₃) of enol ester **5ca**.

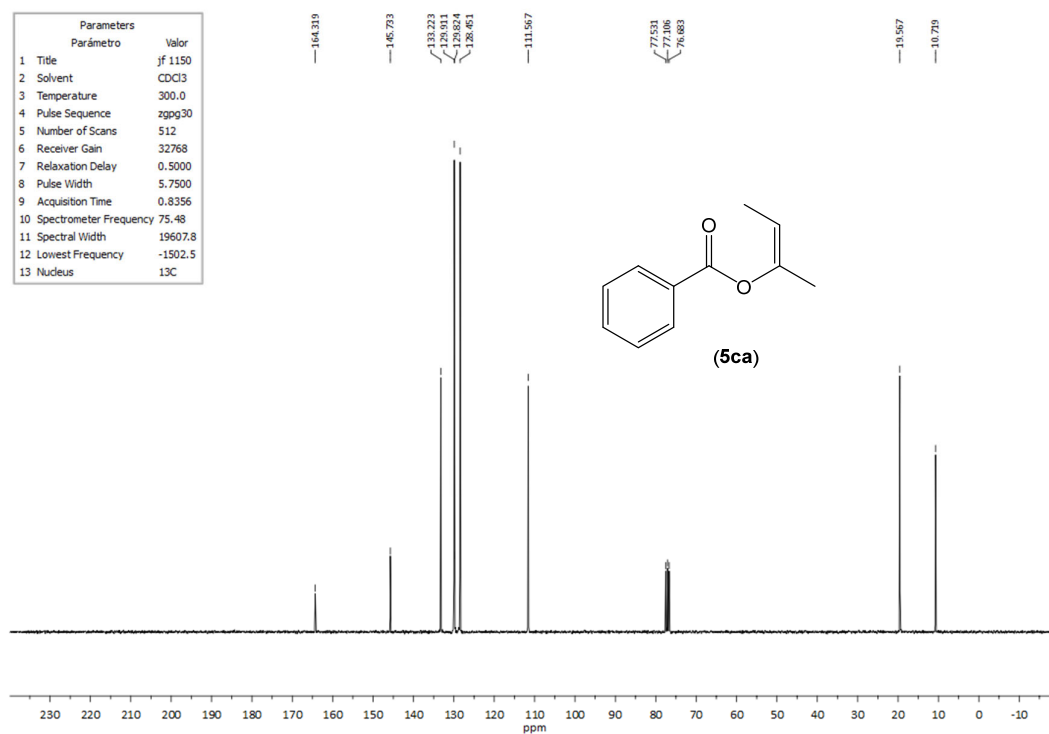


Figure S42: ¹³C{¹H} NMR spectrum (75 MHz, CDCl₃) of enol ester **5ca**.

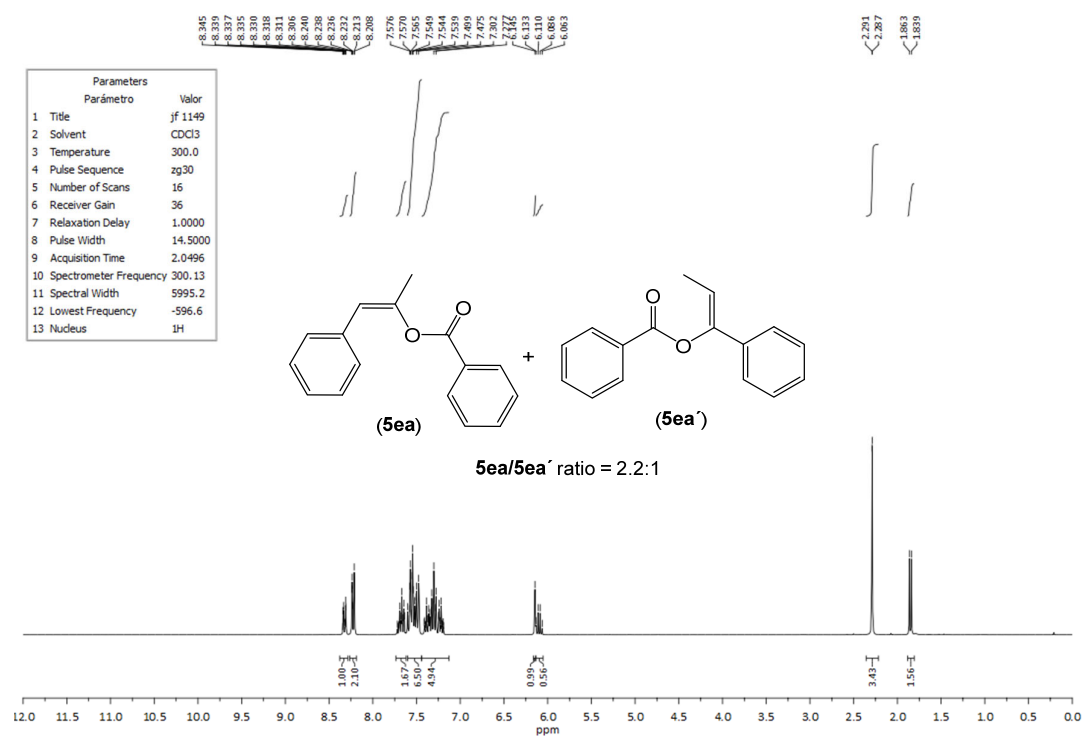


Figure S43: ¹H NMR spectrum (300 MHz, CDCl₃) of enol esters mixture **5ea/5ea'**.

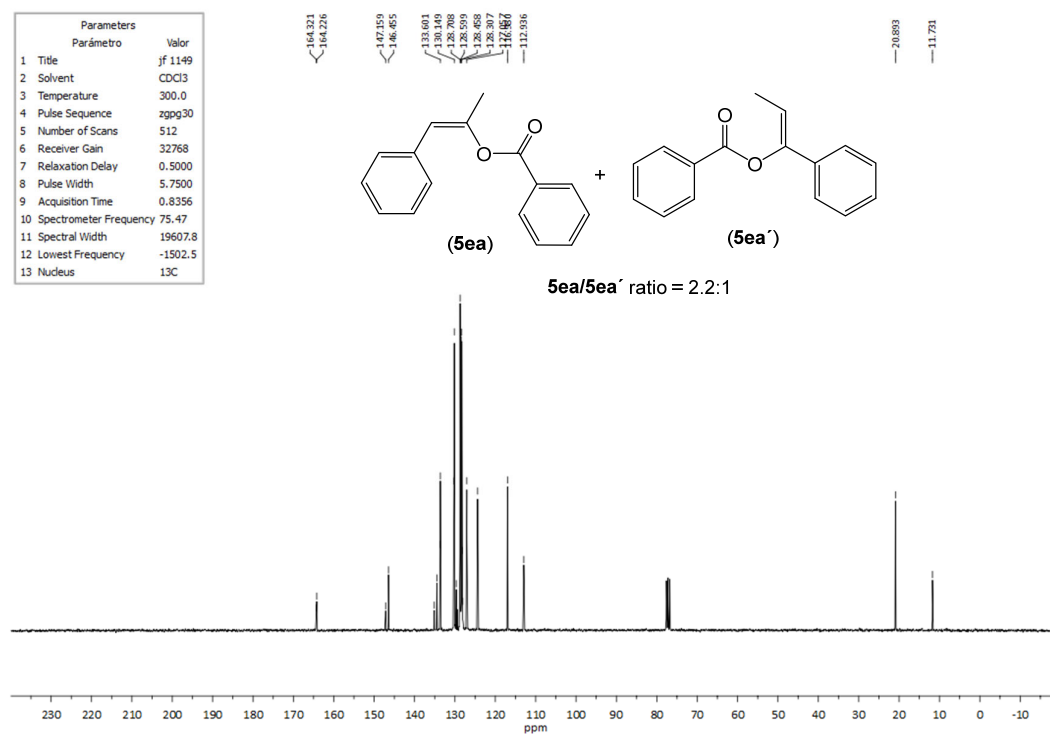


Figure S44: ¹³C{¹H} NMR spectrum (75 MHz, CDCl₃) of enol esters mixture **5ea/5ea'**.