

# **A straightforward approach towards glycoamino acids and glycopeptides via Pd-catalysed allylic alkylation**

**Katja Krämer, Jan Deska, Christina Hebach and Uli Kazmaier\***

*Institut für Organische Chemie, Universität des Saarlandes,*

*D-66123 Saarbrücken, Germany.*

*Fax: +49 681 302 2409; Tel: +49 681 302 3409;*

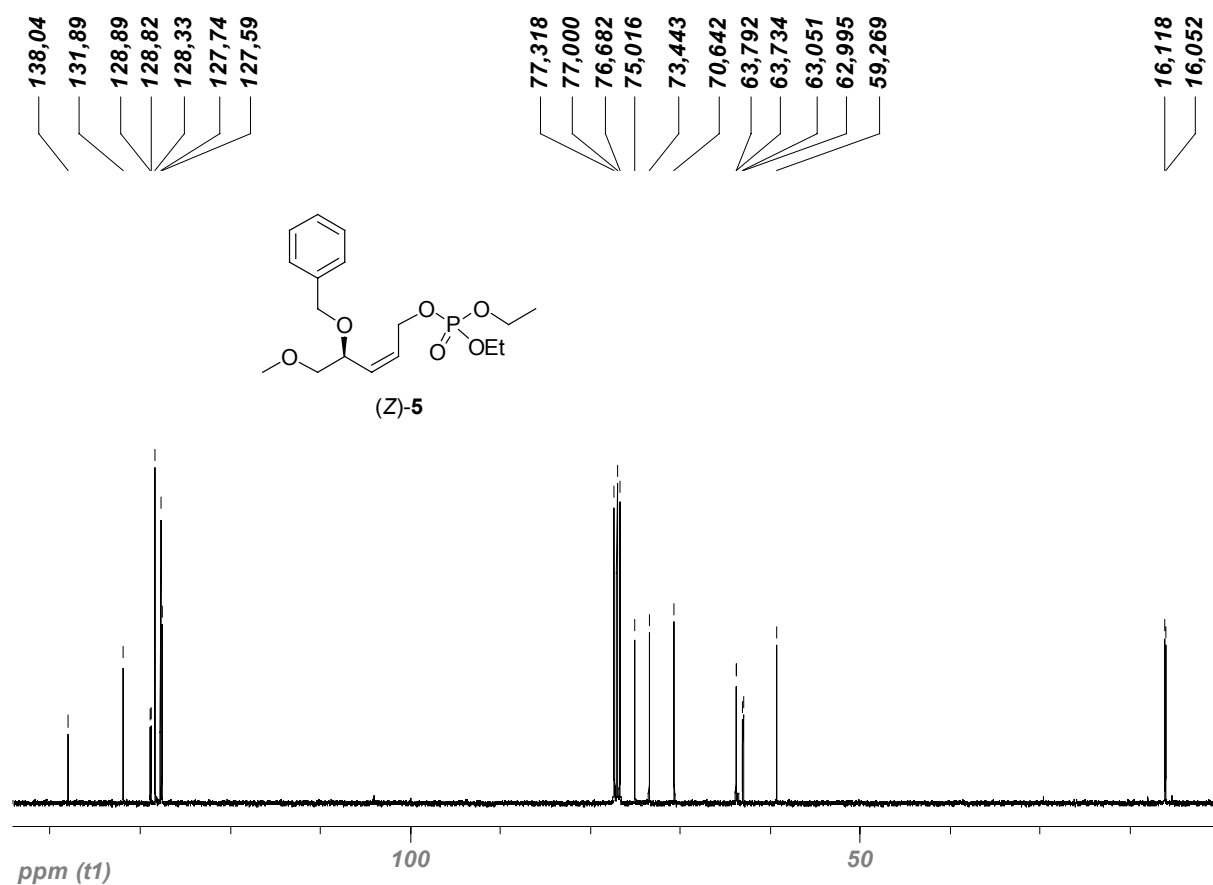
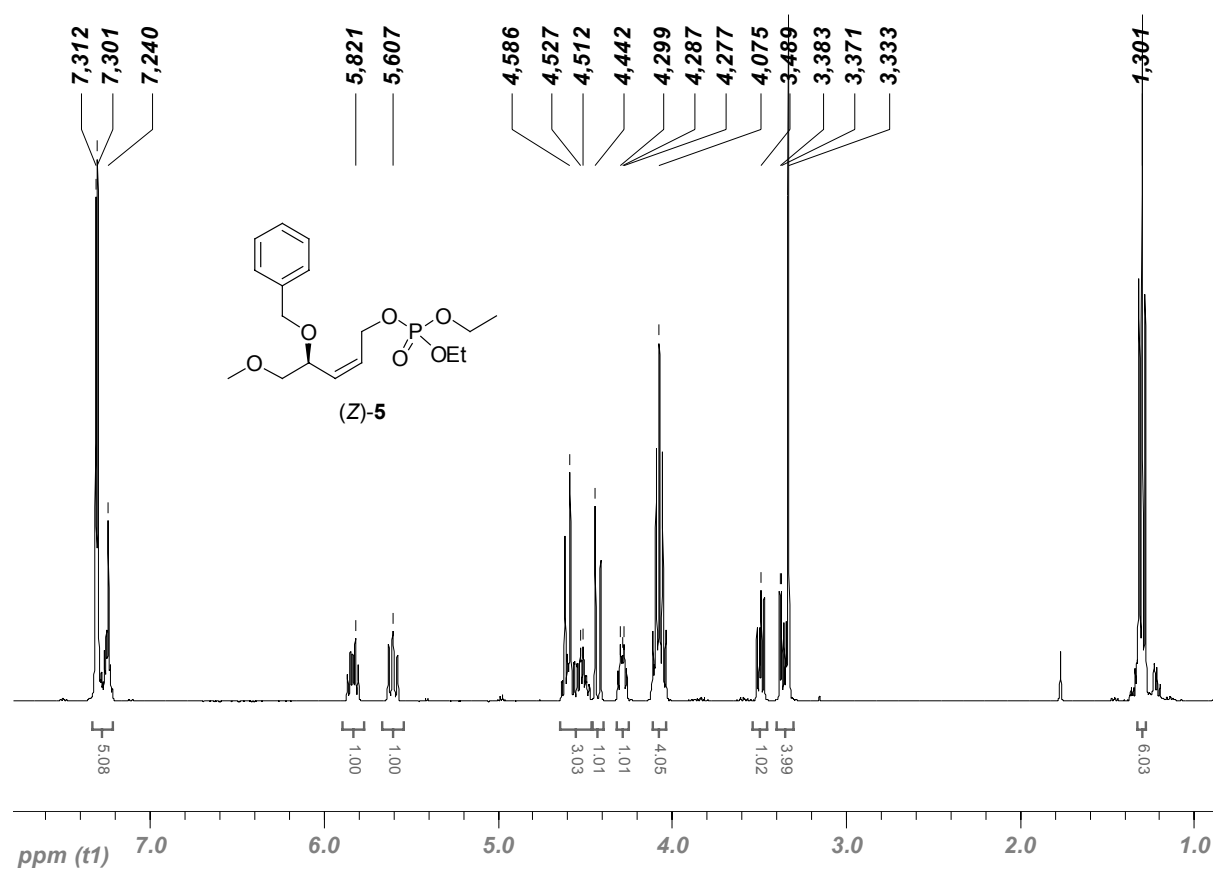
*E-mail: u.kazmaier@mx.uni-saarland.de*

## **Supplementary Information**

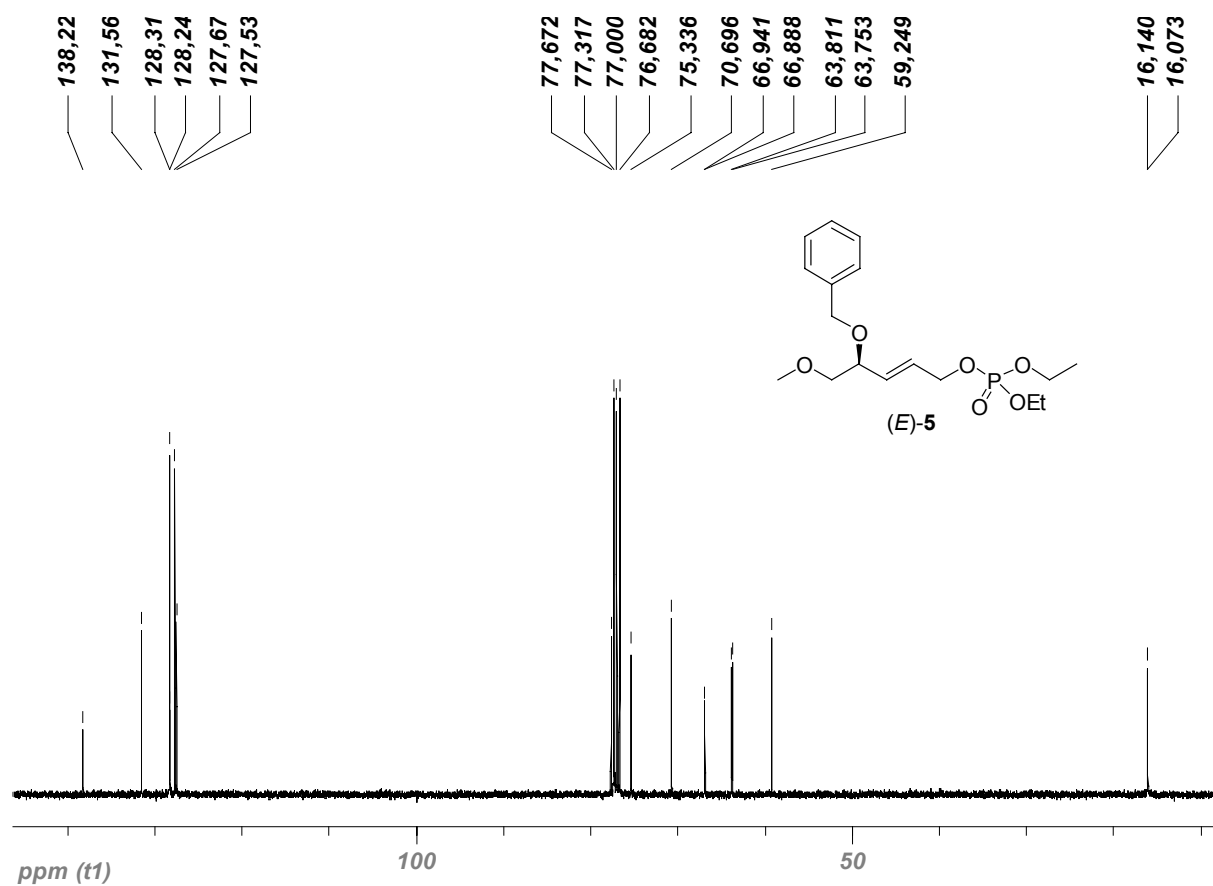
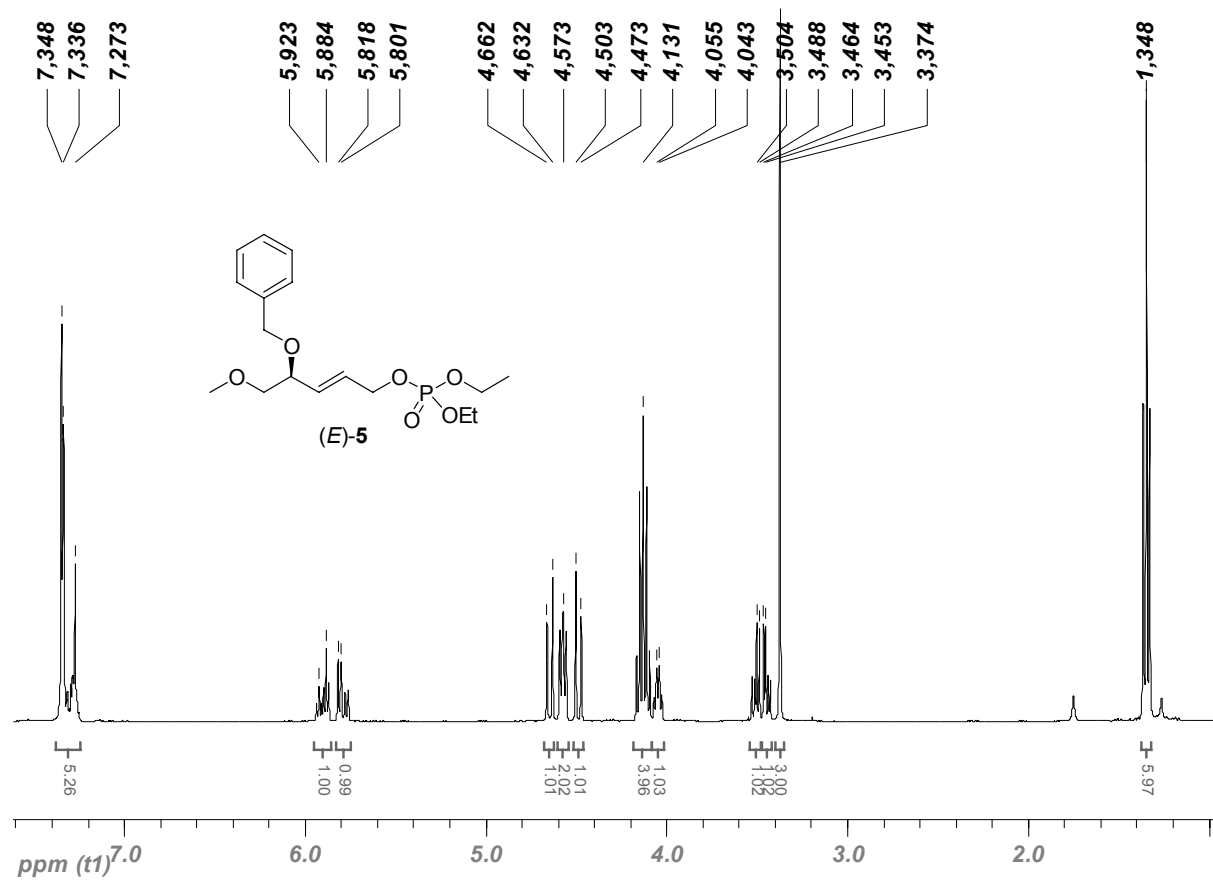
### **Content**

<sup>1</sup>H-NMR and <sup>13</sup>C-NMR spectra of compounds **5–12**

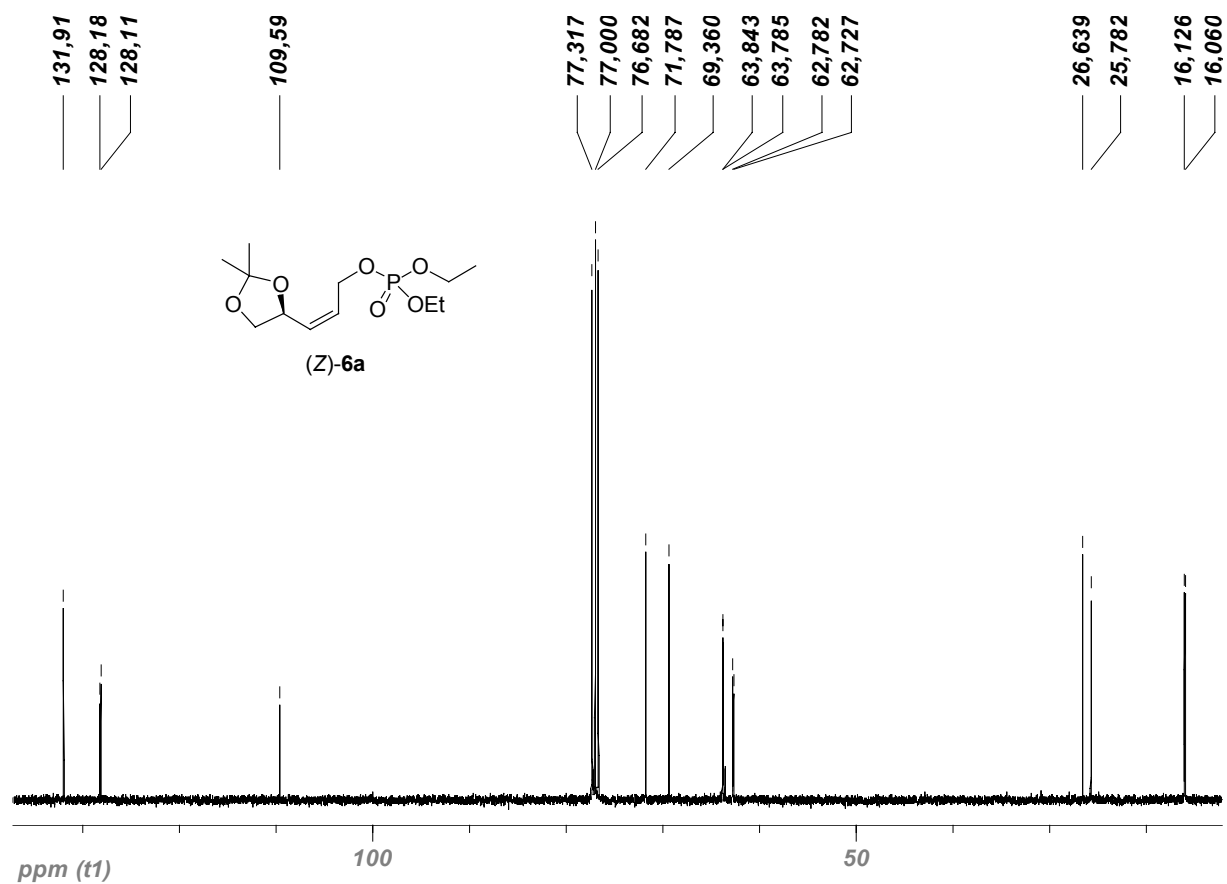
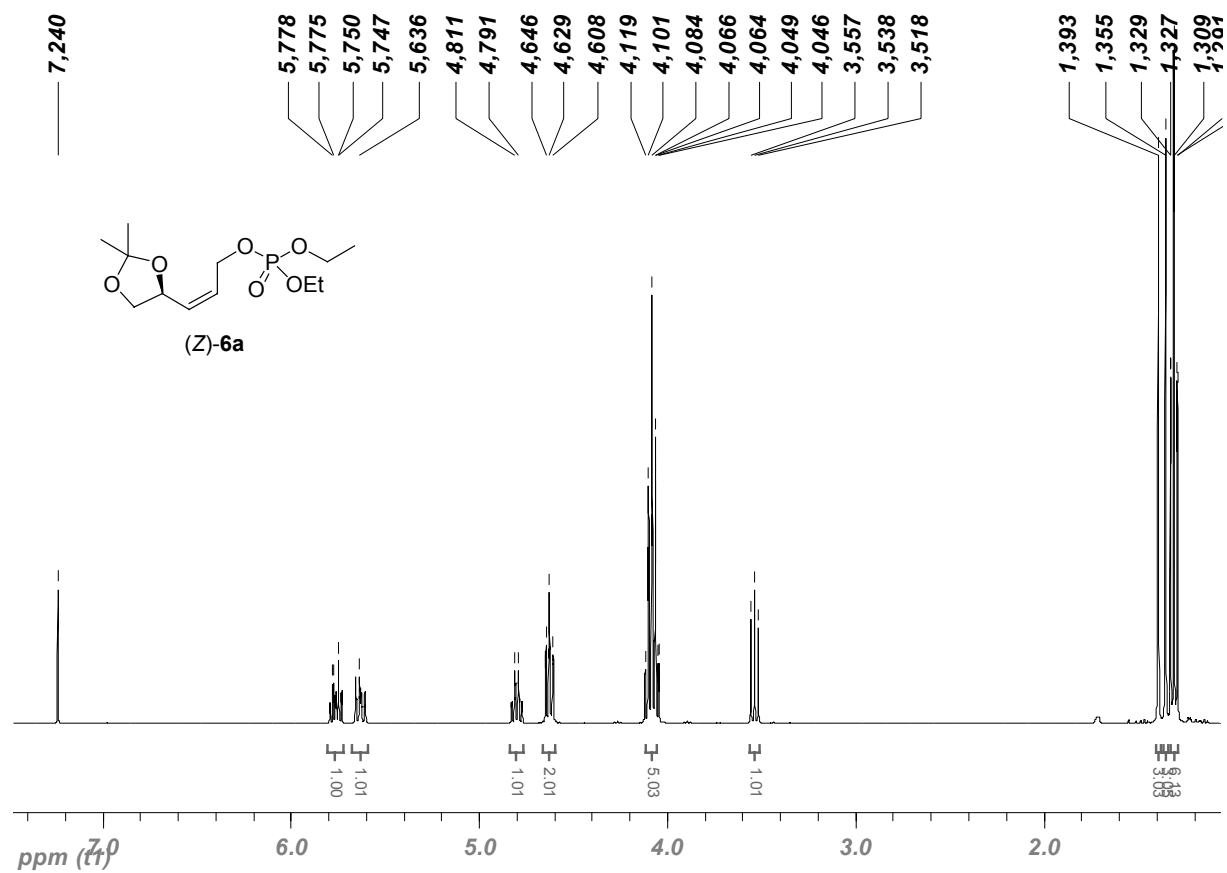
**(4S)-Benzyloxy-5-methoxy-2-(Z)-pentenyl diethyl phosphate ((Z)-5)**



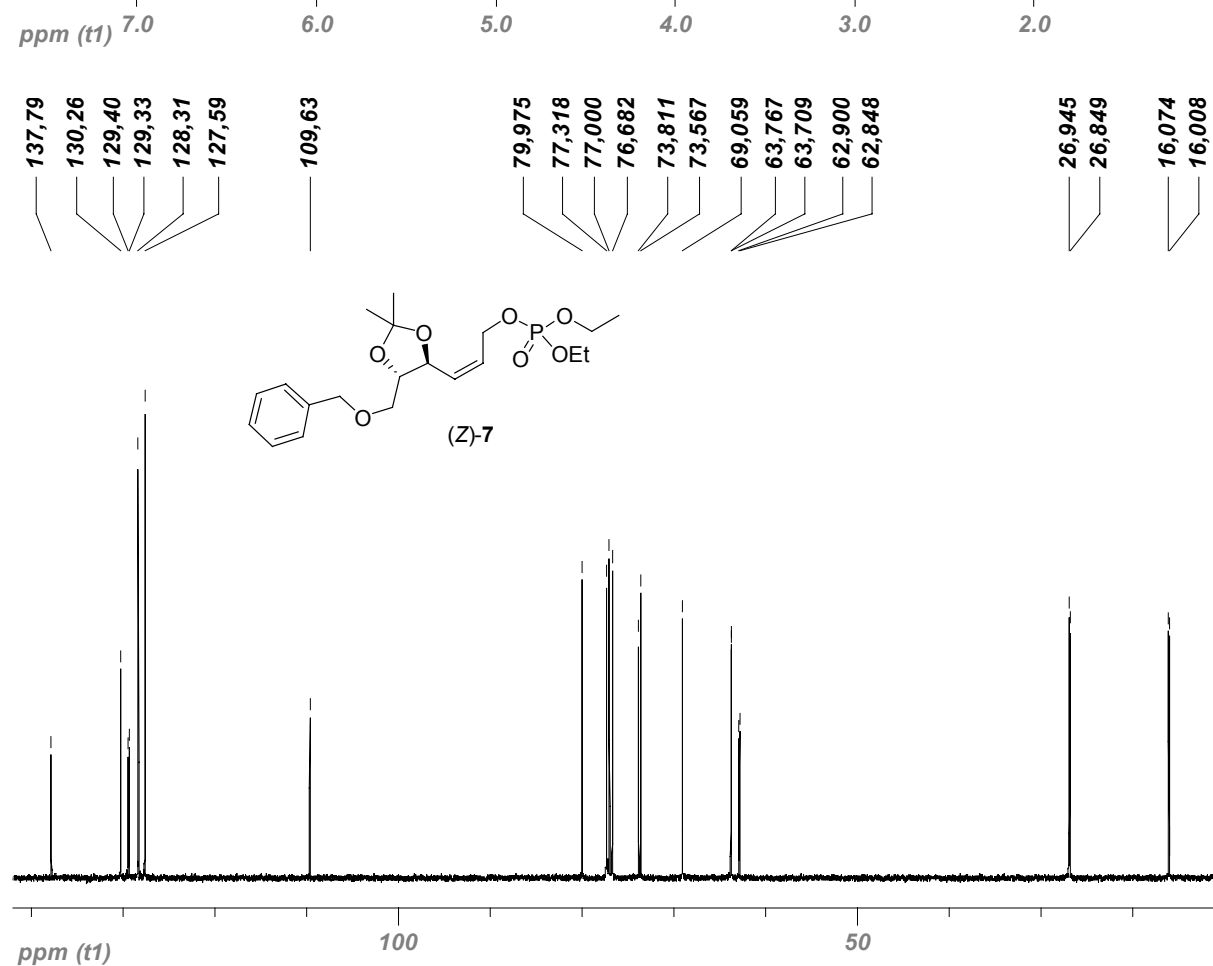
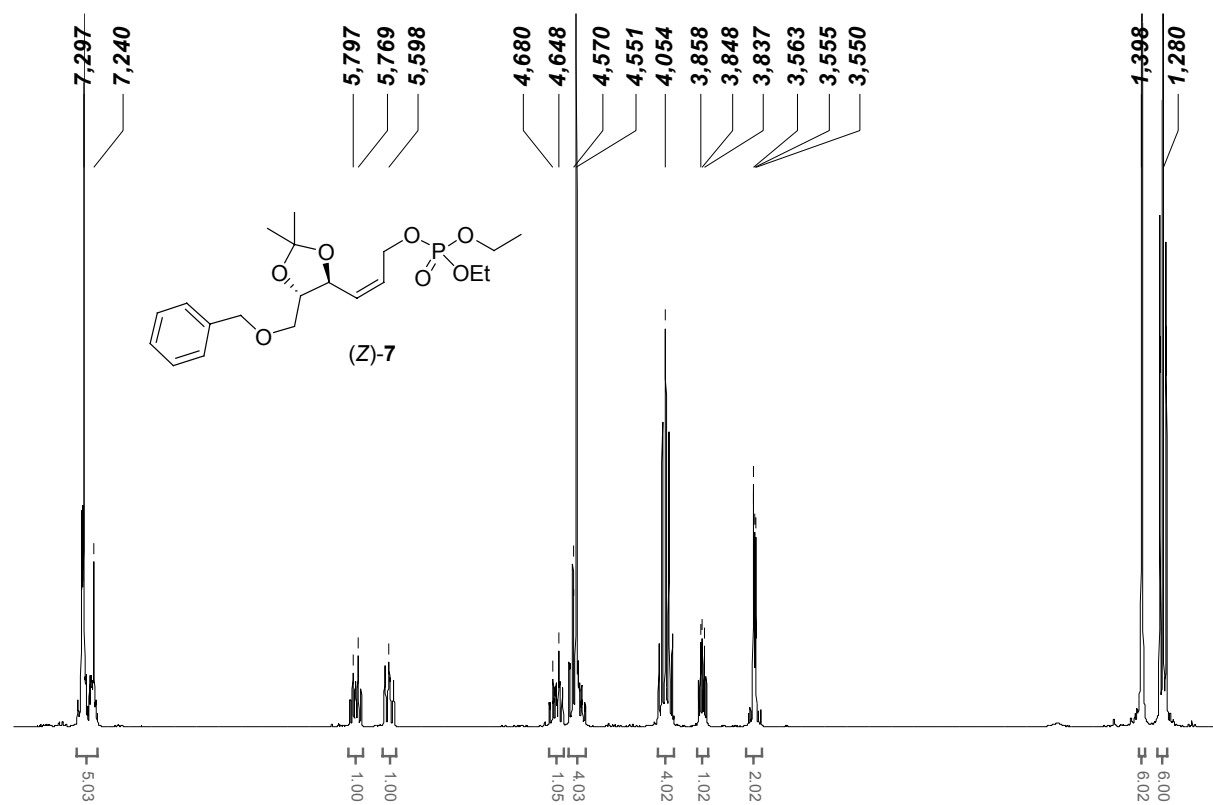
**(4S)-Benzyloxy-5-methoxy-2-(E)-pentenyl diethyl phosphate ((E)-5)**



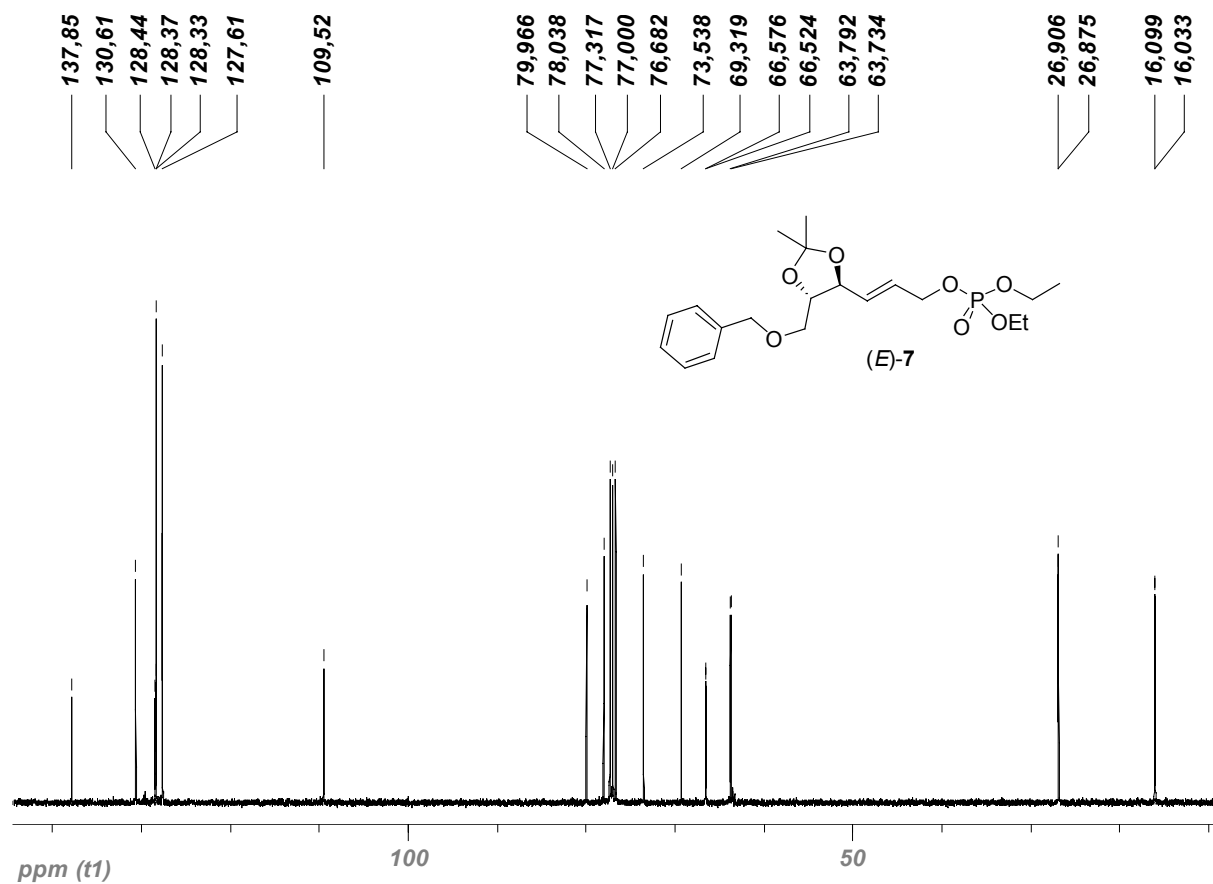
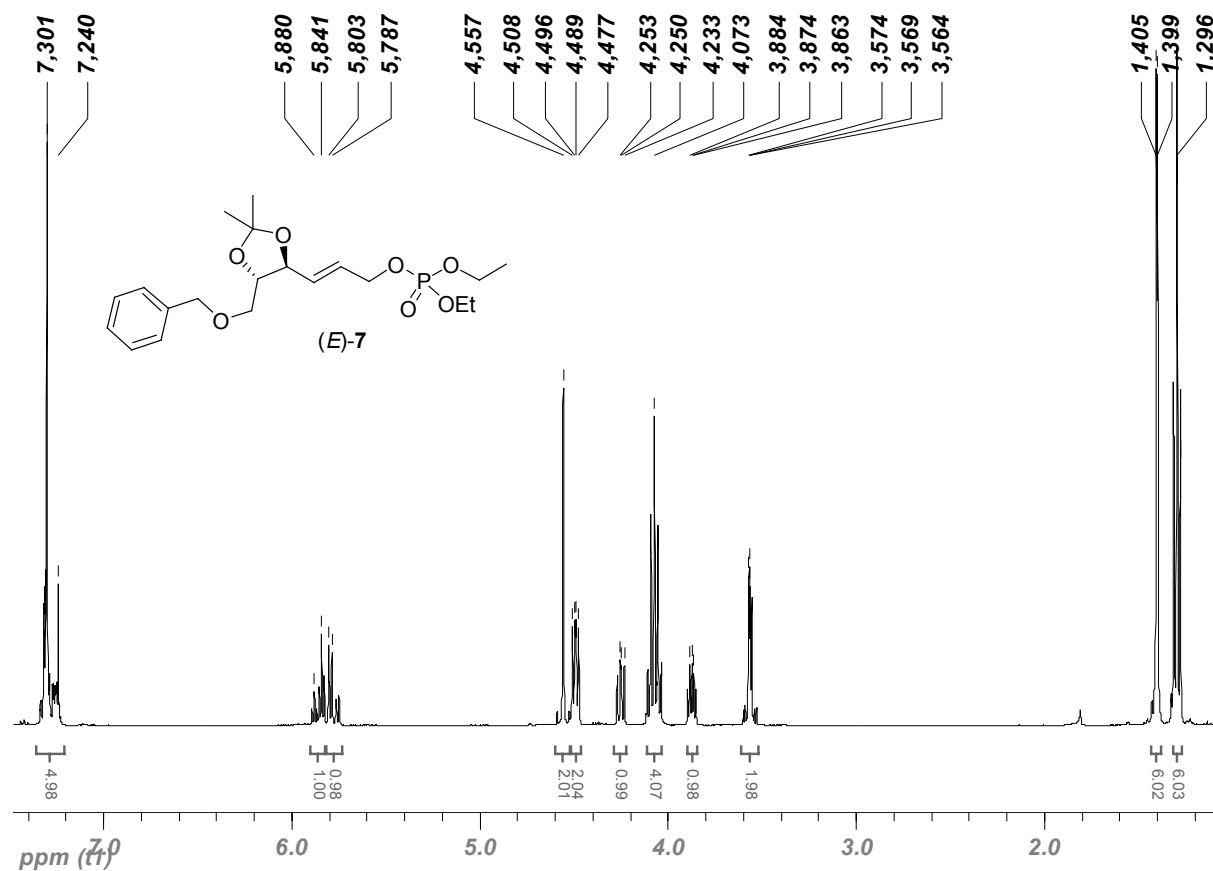
**(Z)-3-((4S)-2,2-Dimethyl-1,3-dioxolan-4-yl)-allyl diethyl phosphate ((Z)-6a)**



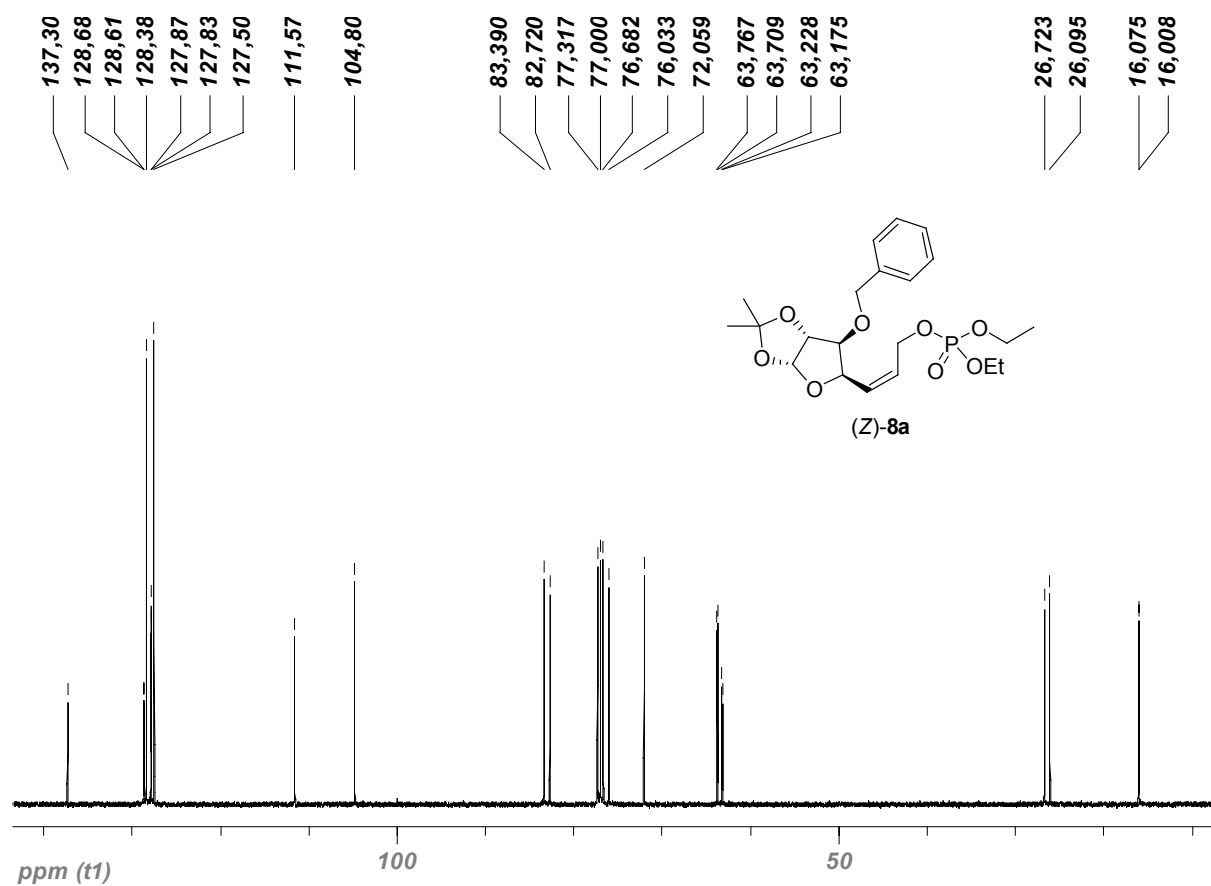
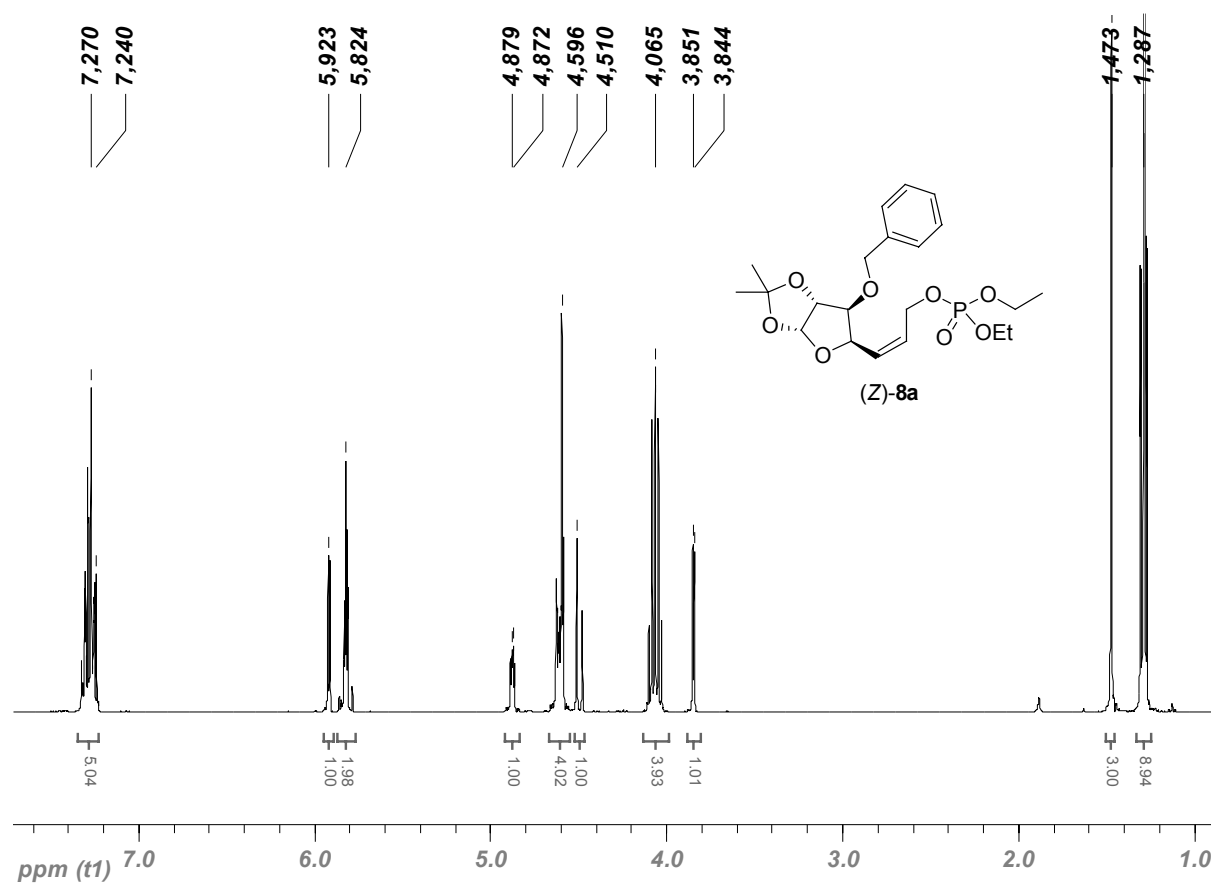
**(Z)-3-((4S,5S)-5-Benzylloxymethyl-2,2-dimethyl-[1,3]-dioxolan-4-yl)-allyl diethyl phosphate ((Z)-7)**



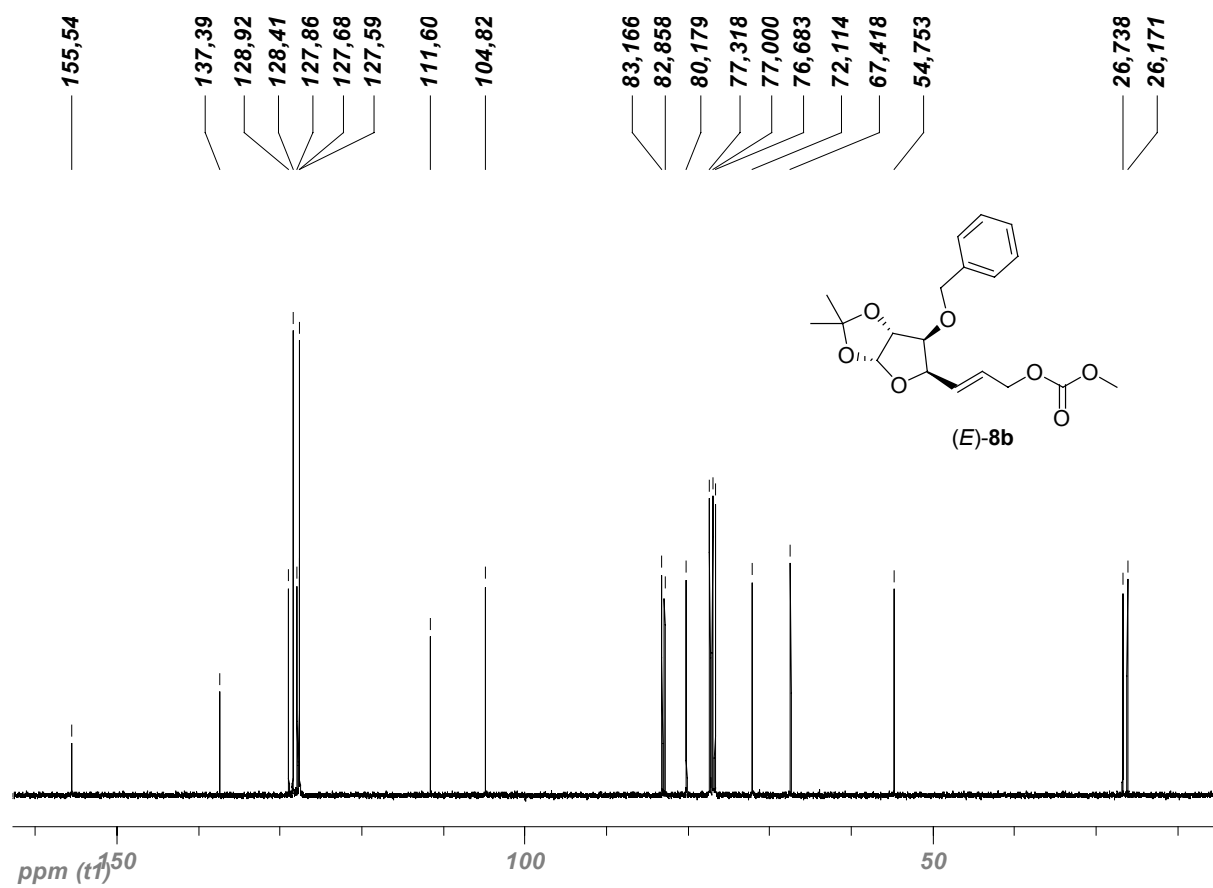
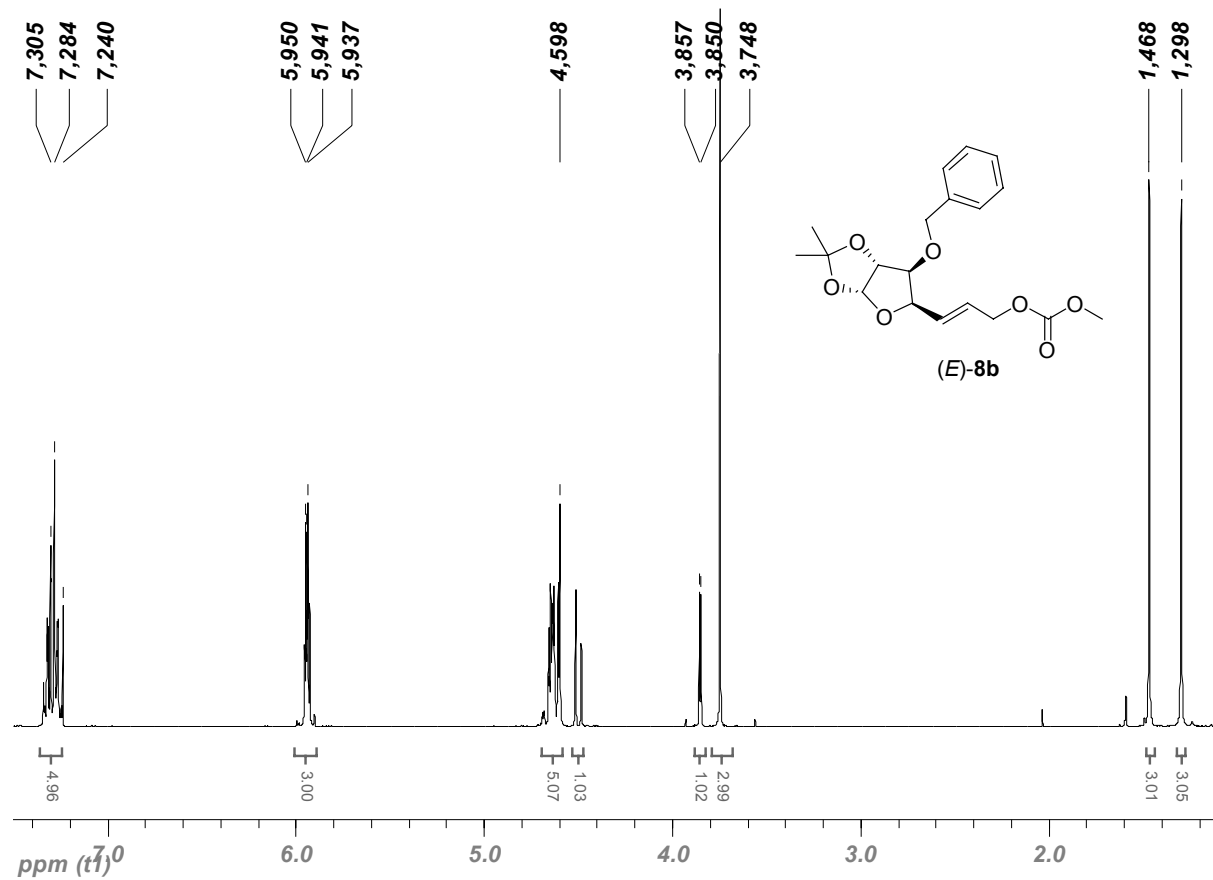
**(E)-3-((4S,5S)-5-Benzoyloxymethyl-2,2-dimethyl-[1,3]-dioxolan-4-yl)-allyl diethyl phosphate ((E)-7)**



**(Z)-3-((3aR,5R,6S,6aR)-6-Benzyloxy-2,2-dimethyl-tetrahydro-furo[2,3-d][1,3]-dioxol-5-yl)-allyl diethyl phosphate ((Z)-8a)**

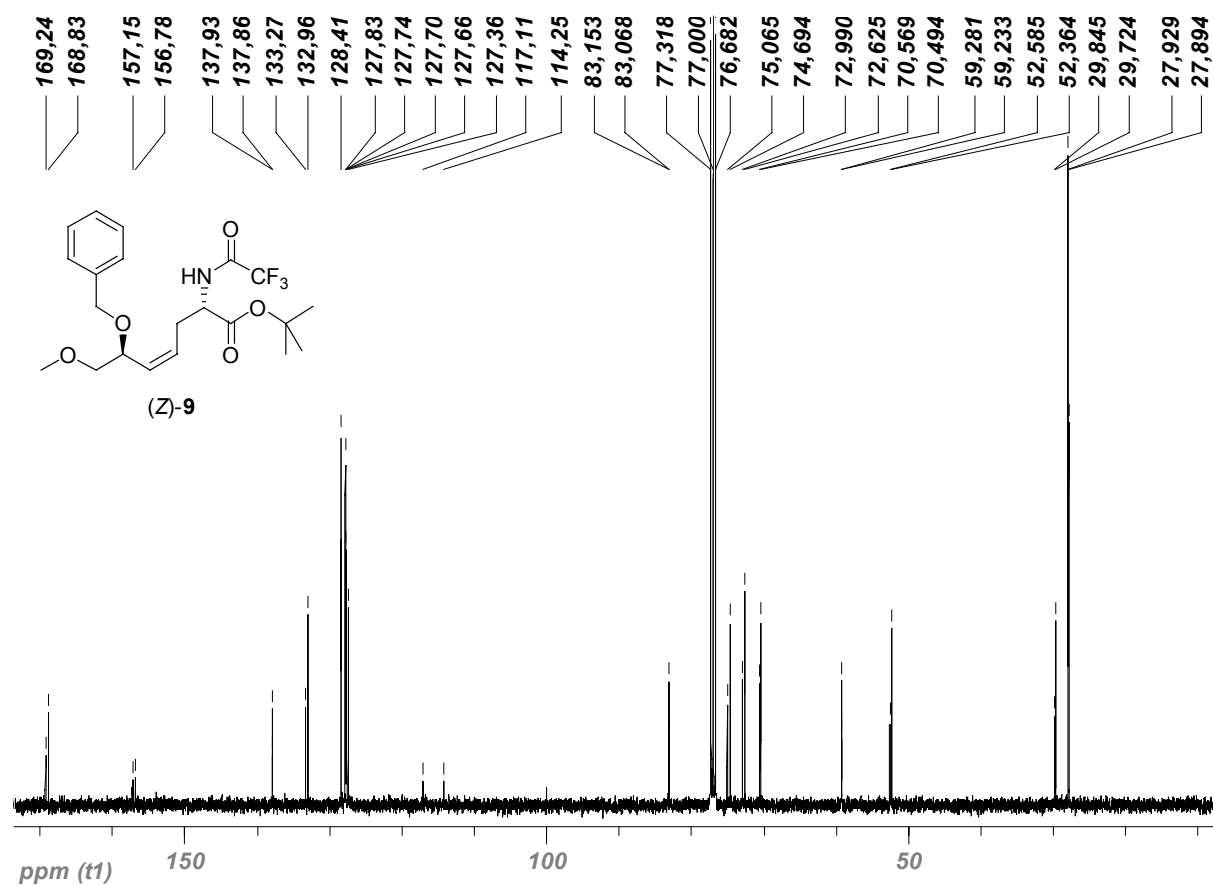
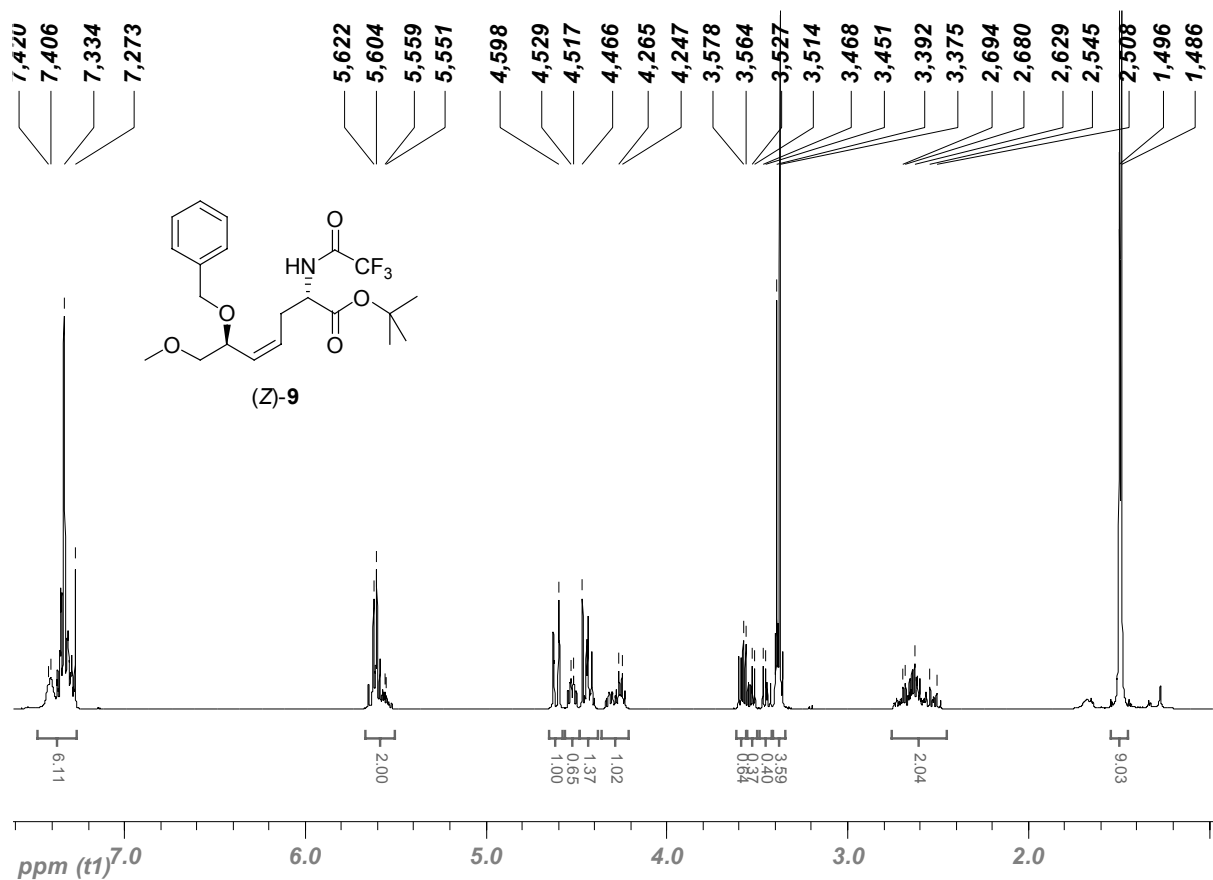


**(E)-3-((3aR,5R,6S,6aR)-6-Benzyloxy-2,2-dimethyl-tetrahydro-furo[2,3-d][1,3]-dioxol-5-yl)-allyl methyl carbonate ((E)-8b)**

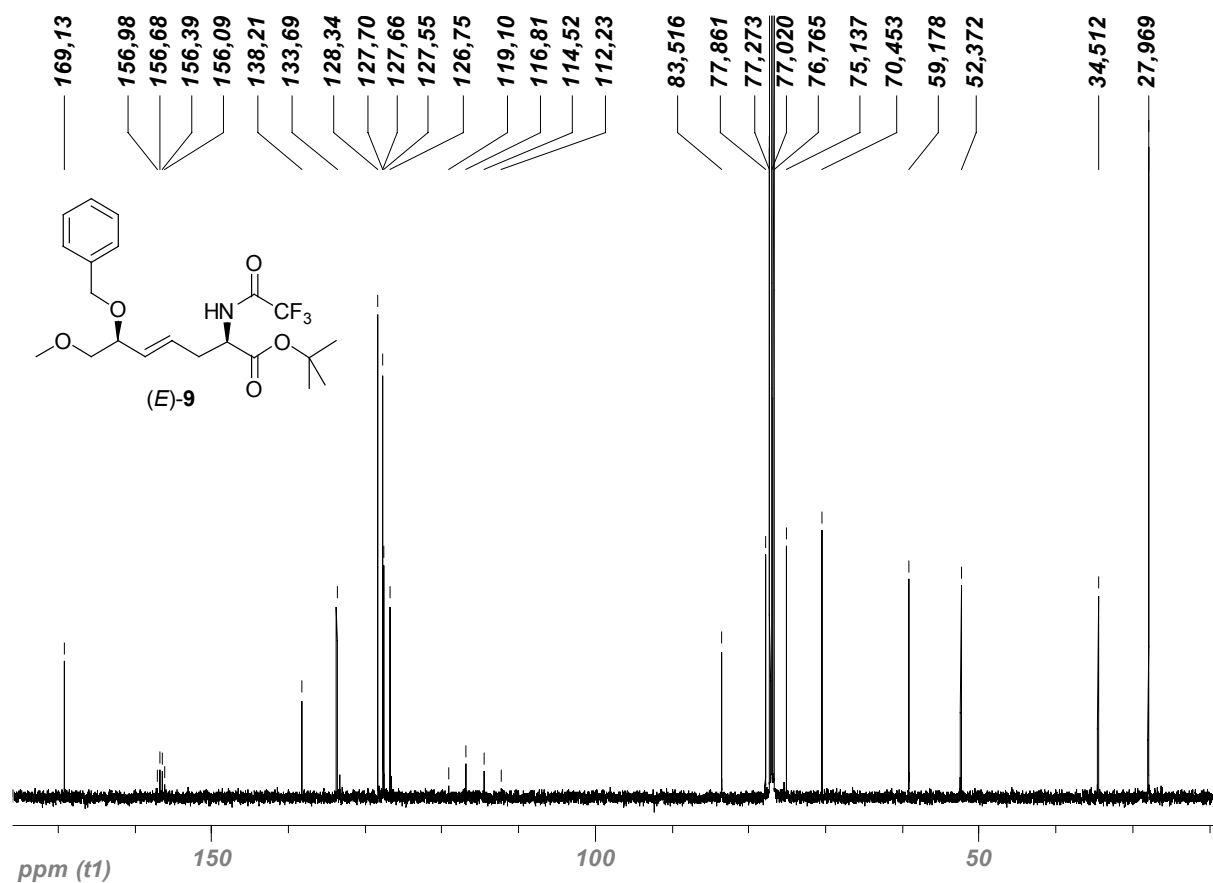
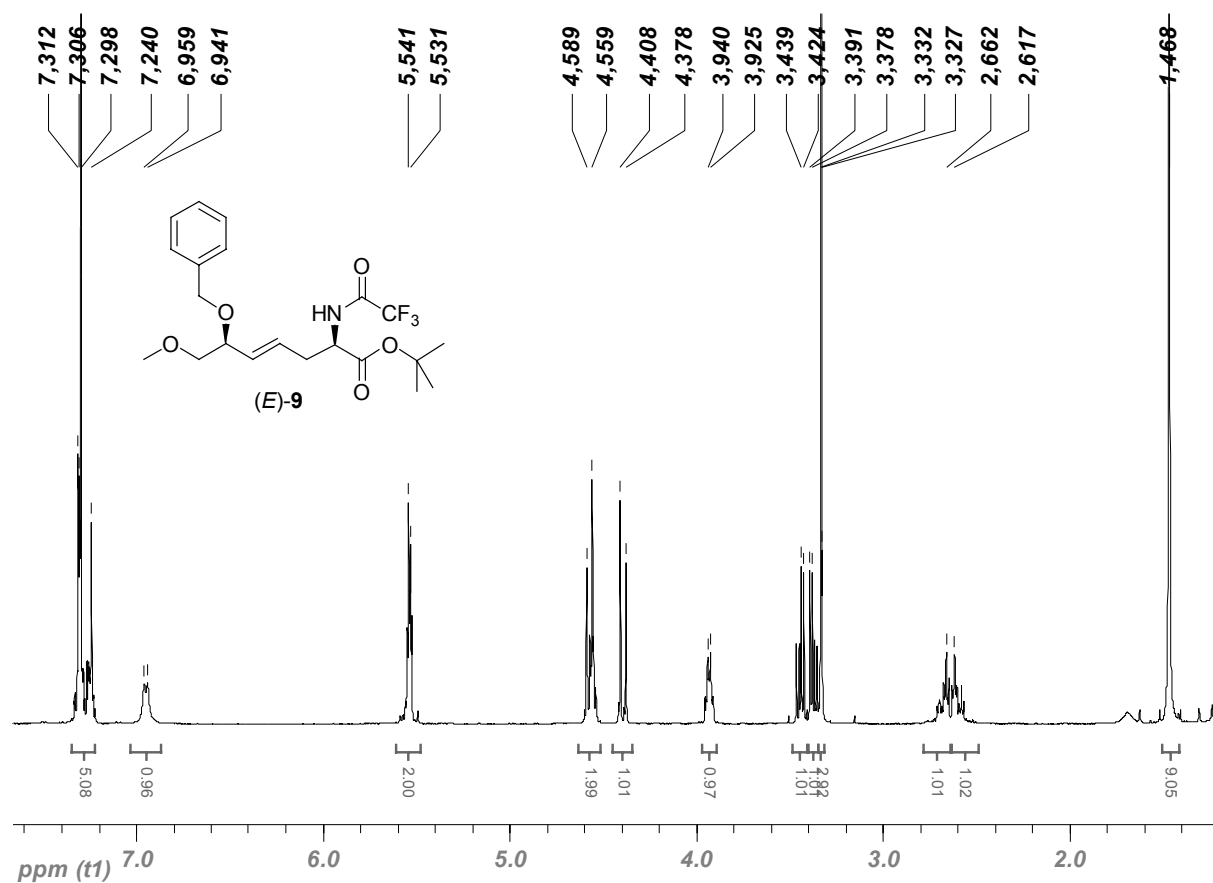




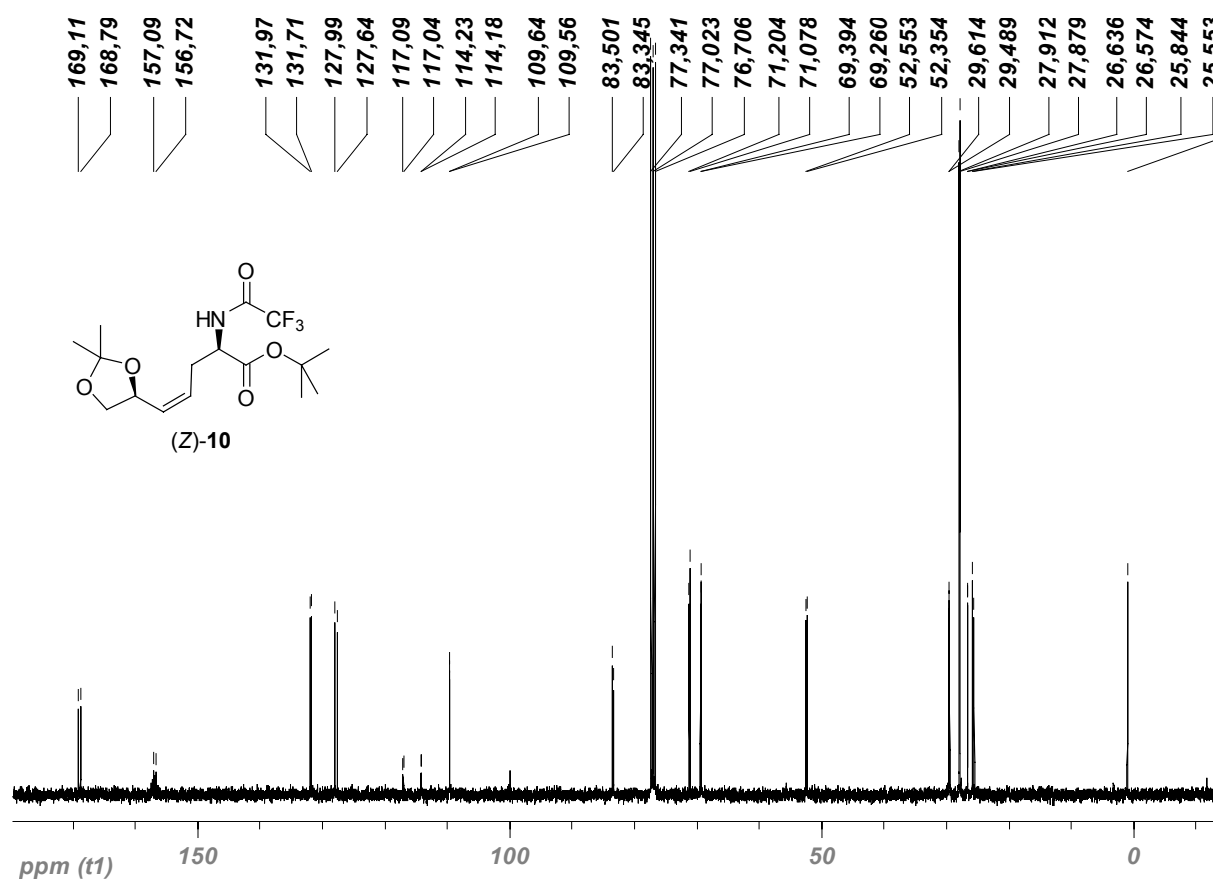
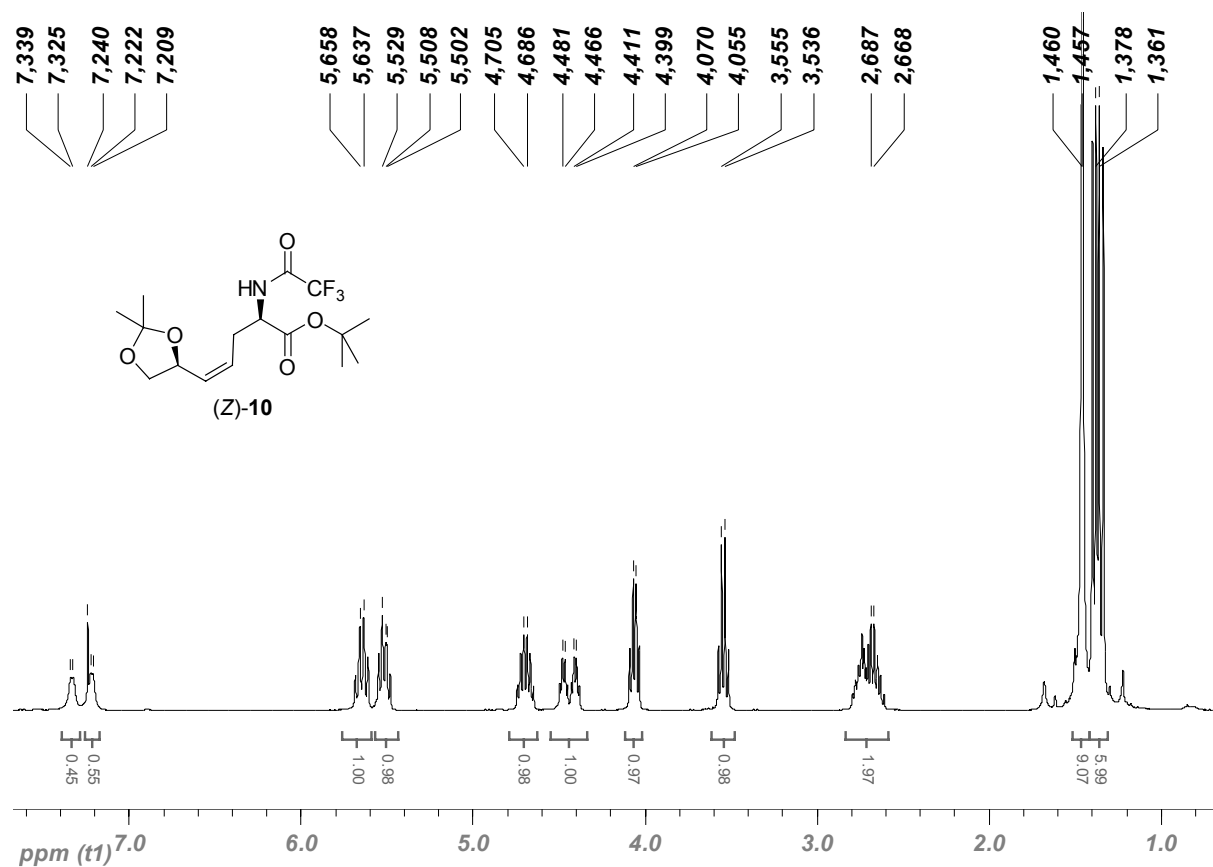
**(6*S*)-Benzyloxy-7-methoxy-(2*S*)-(trifluoroacetyl)amino-4-(*Z*)-heptenoic acid *tert*-butyl-ester ((*S,S*)-*Z*)-9**



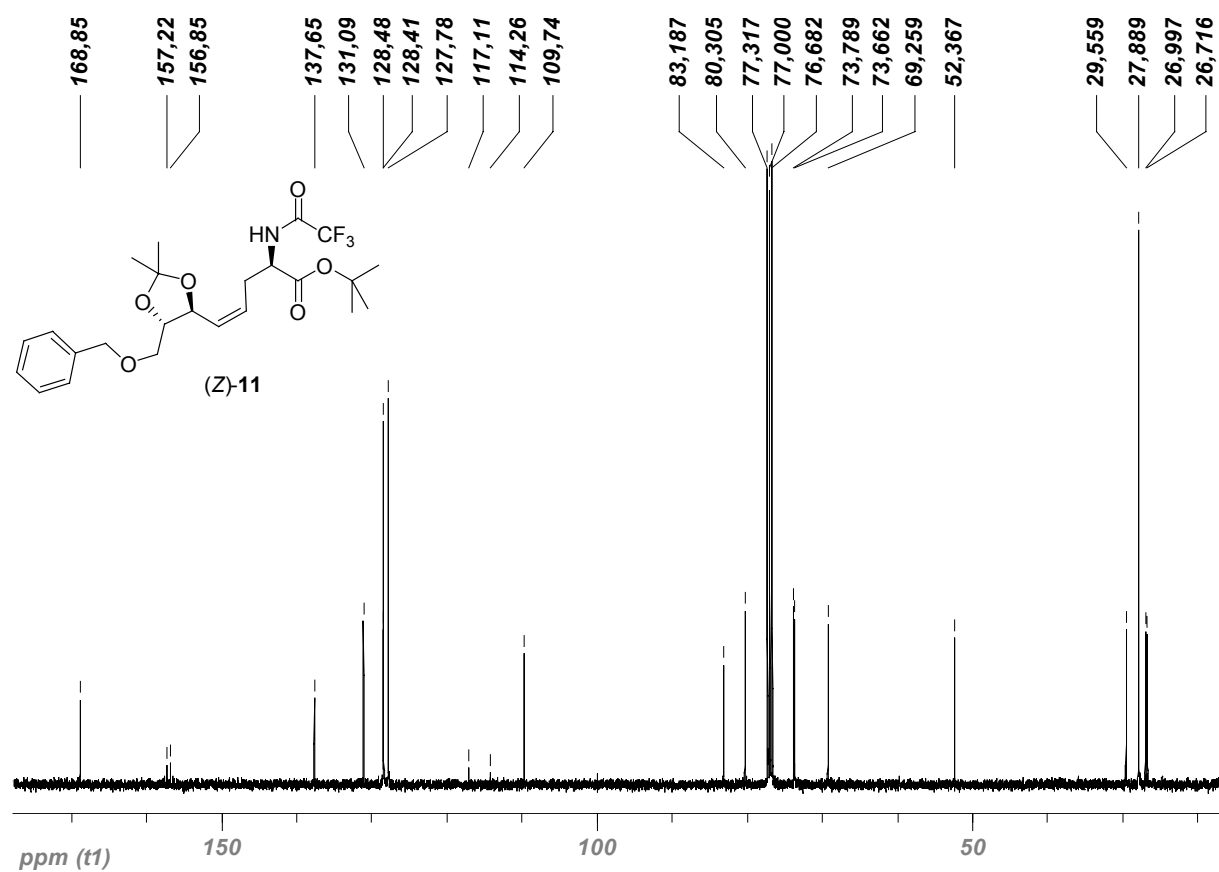
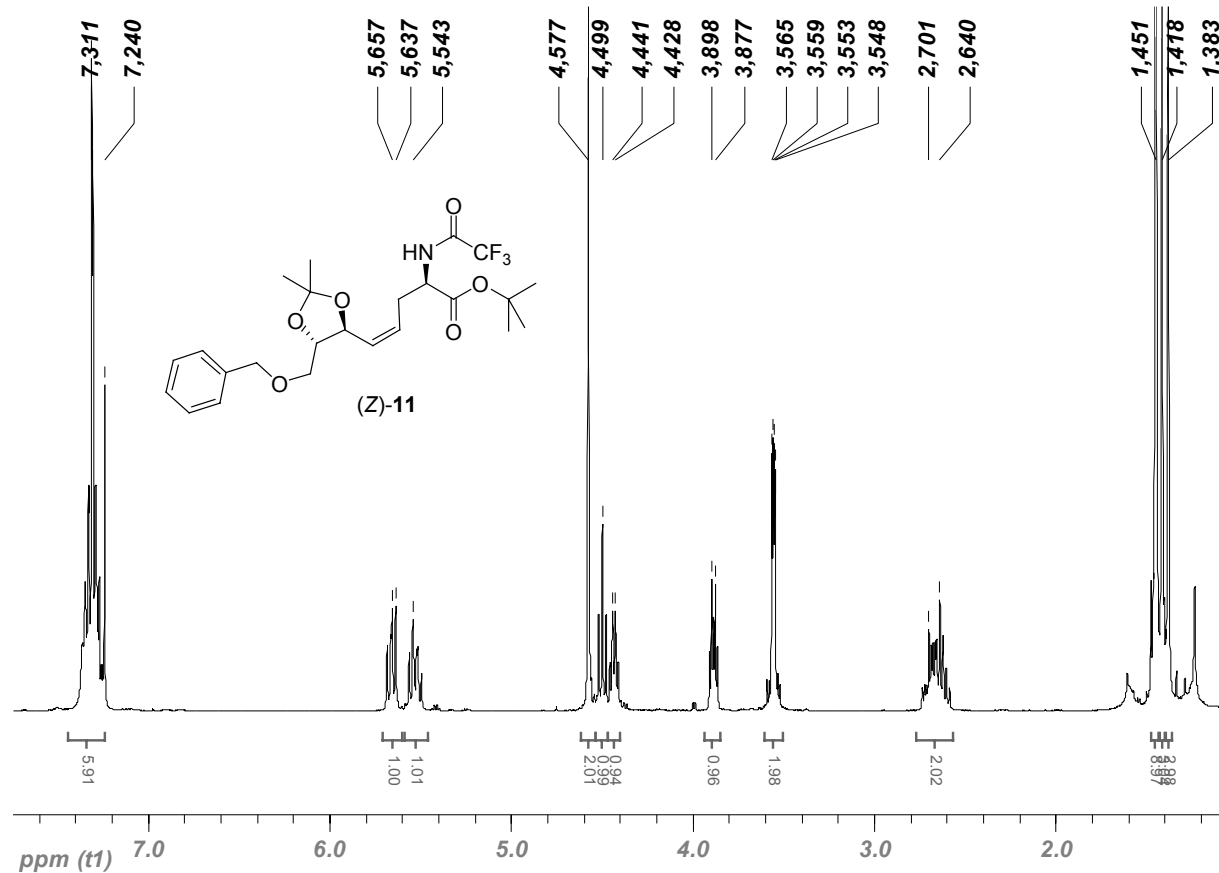
**(6*S*)-Benzyloxy-7-methoxy-(2*R*)-(trifluoroacetyl)amino-4-(*E*)-heptenoic acid *tert*-butyl-ester ((*R,S*)-(*E*)-9)**



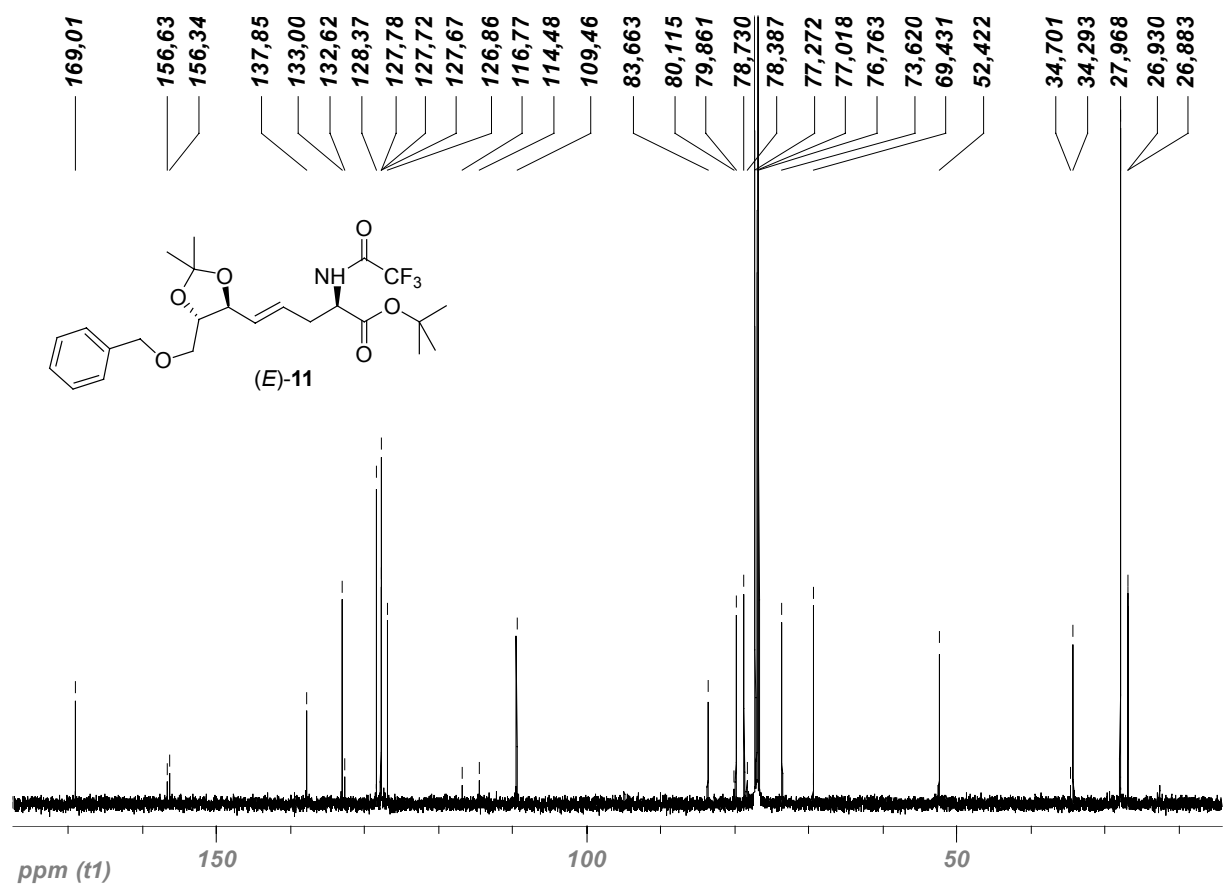
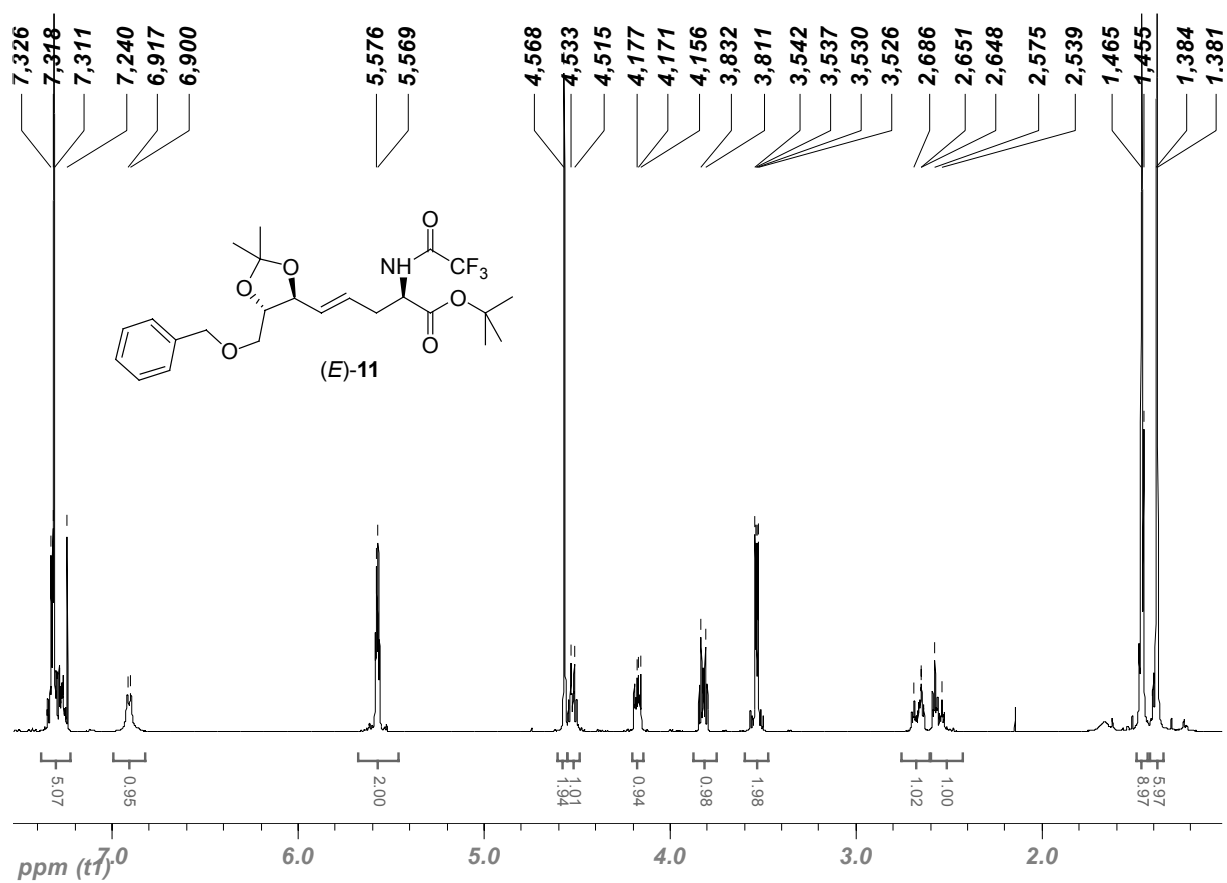
**(6*S*)-5-(2,2-Dimethyl-[1,3]-dioxolan-4-yl)-(2*R*)-(trifluoroacetyl)amino-4-(*Z*)-pentenoic acid *tert*-butylester ((*R,S*)-(*Z*)-10)**



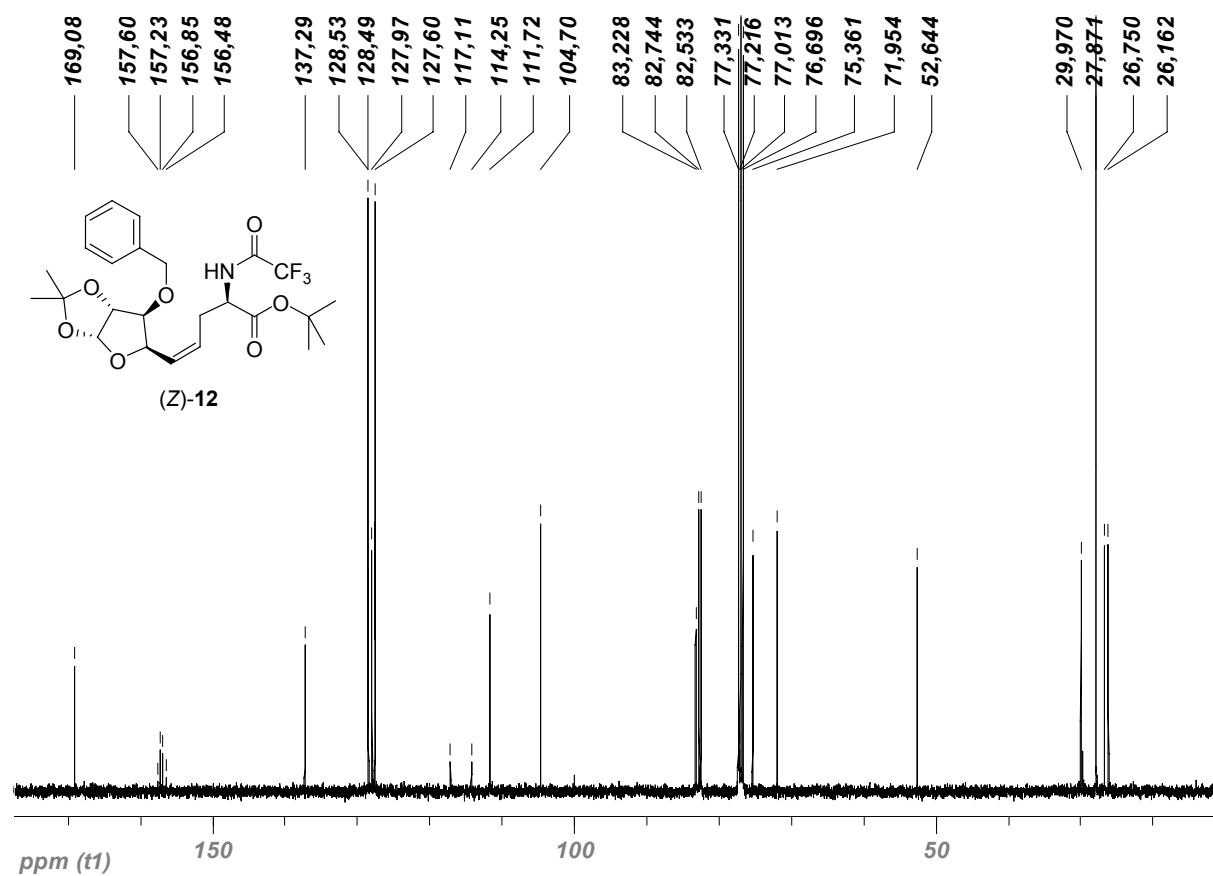
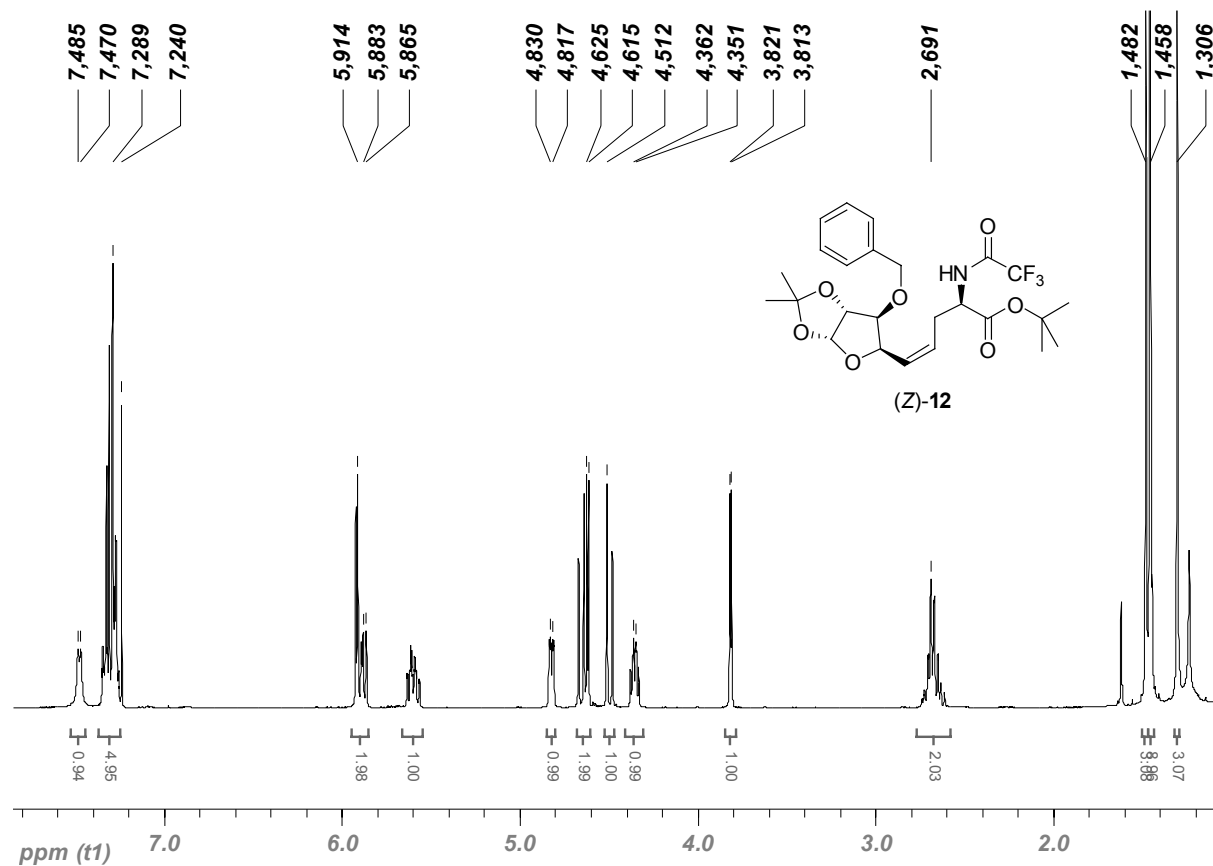
5-[(4*S*,5*S*)-5-Benzyloxymethyl-2,2-dimethyl-[1,3]dioxolan-4-yl]-(2*R*)-(trifluoroacetyl) amino-4-(*Z*)-pentenoic acid *tert*-butylester ((*R*,*S*,*S*)-(*Z*)-11)



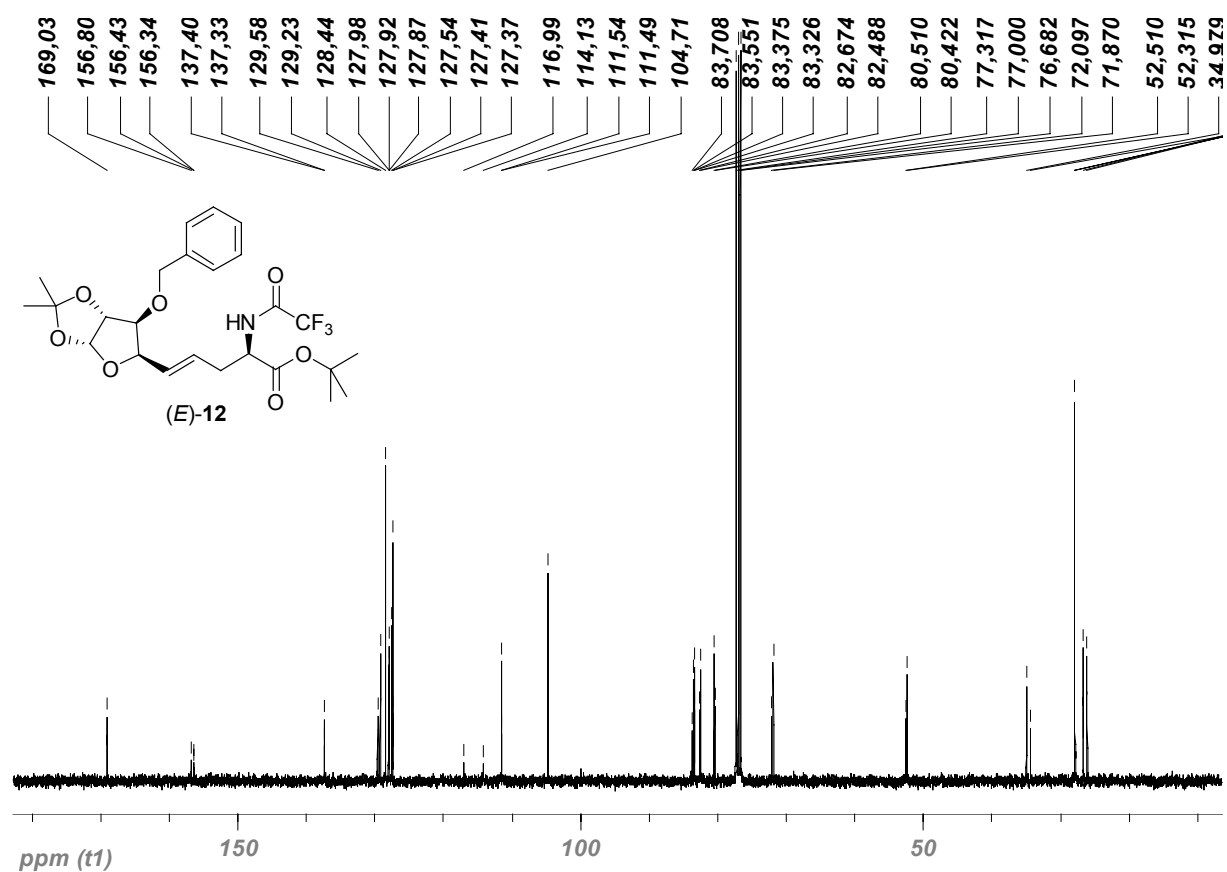
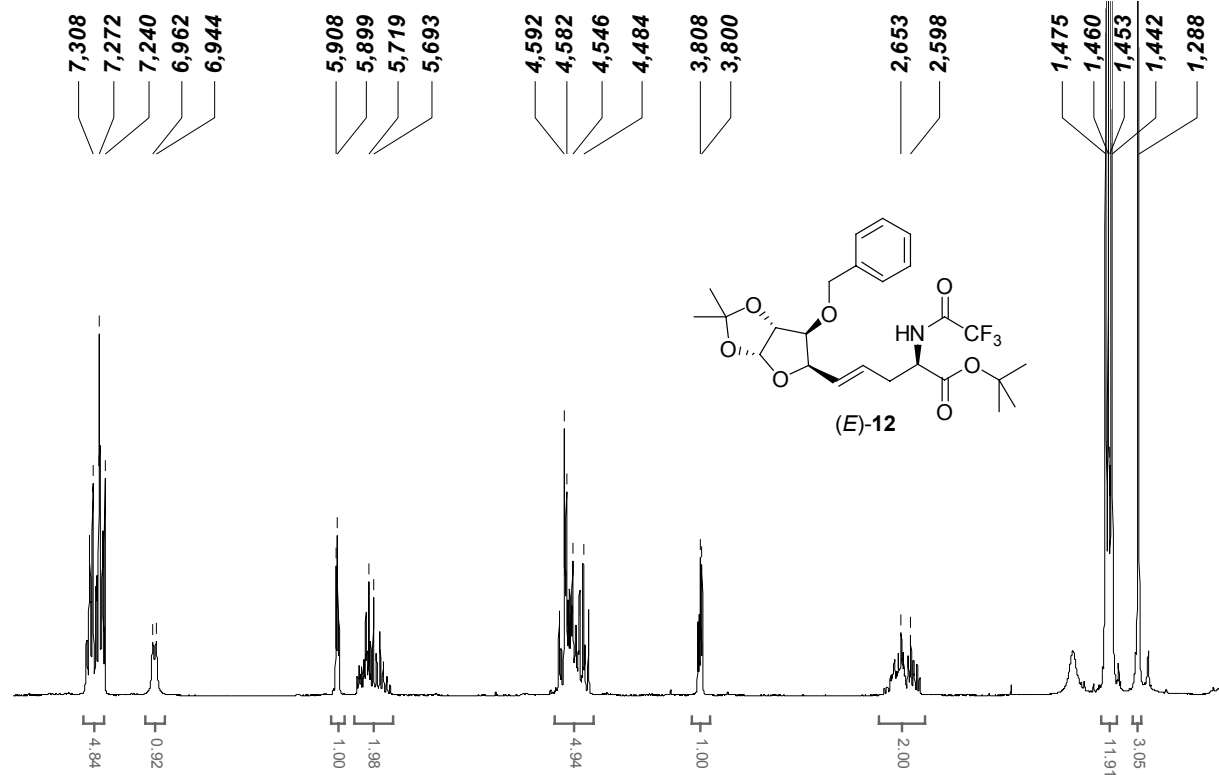
5-[(4*S*,5*S*)-5-Benzyloxymethyl-2,2-dimethyl-[1,3]dioxolan-4-yl)]-(2*R*)-(trifluoroacetyl) amino-4-(*E*)-pentenoic acid *tert*-butylester ((*R*,*S*,*S*)-(*E*)-11)



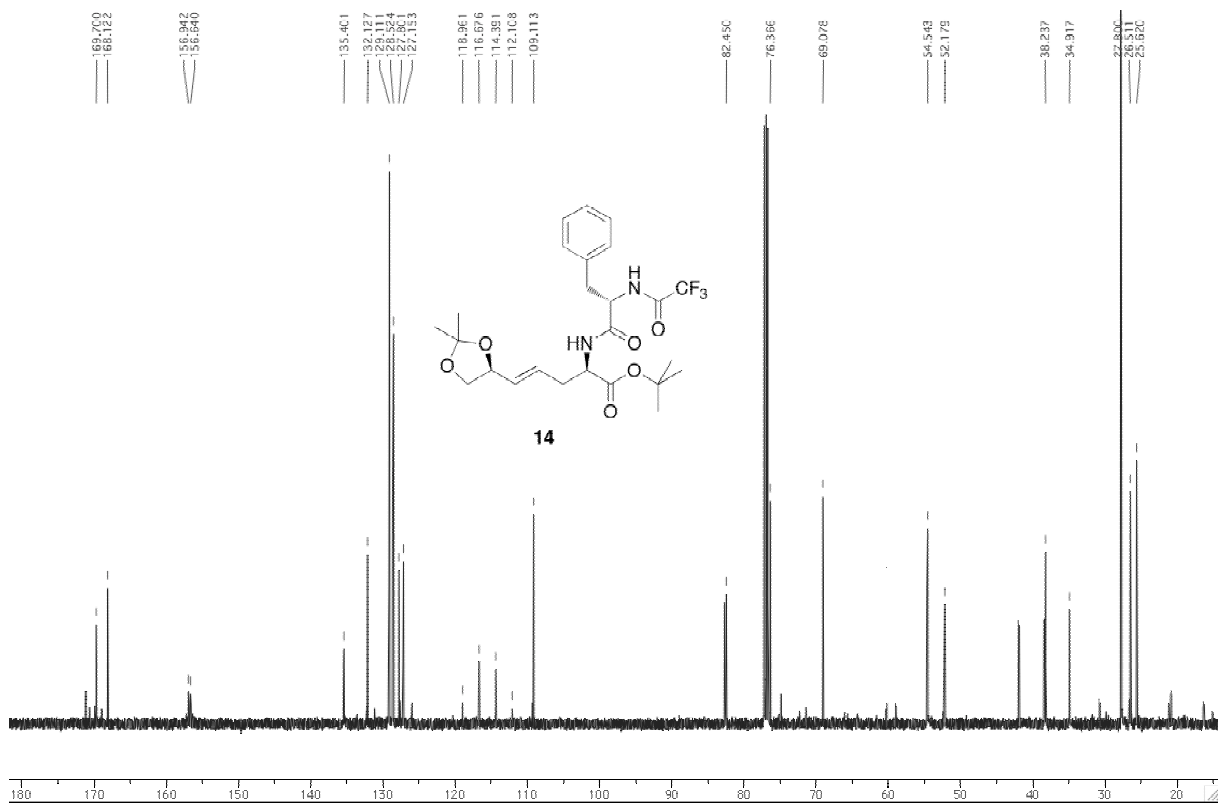
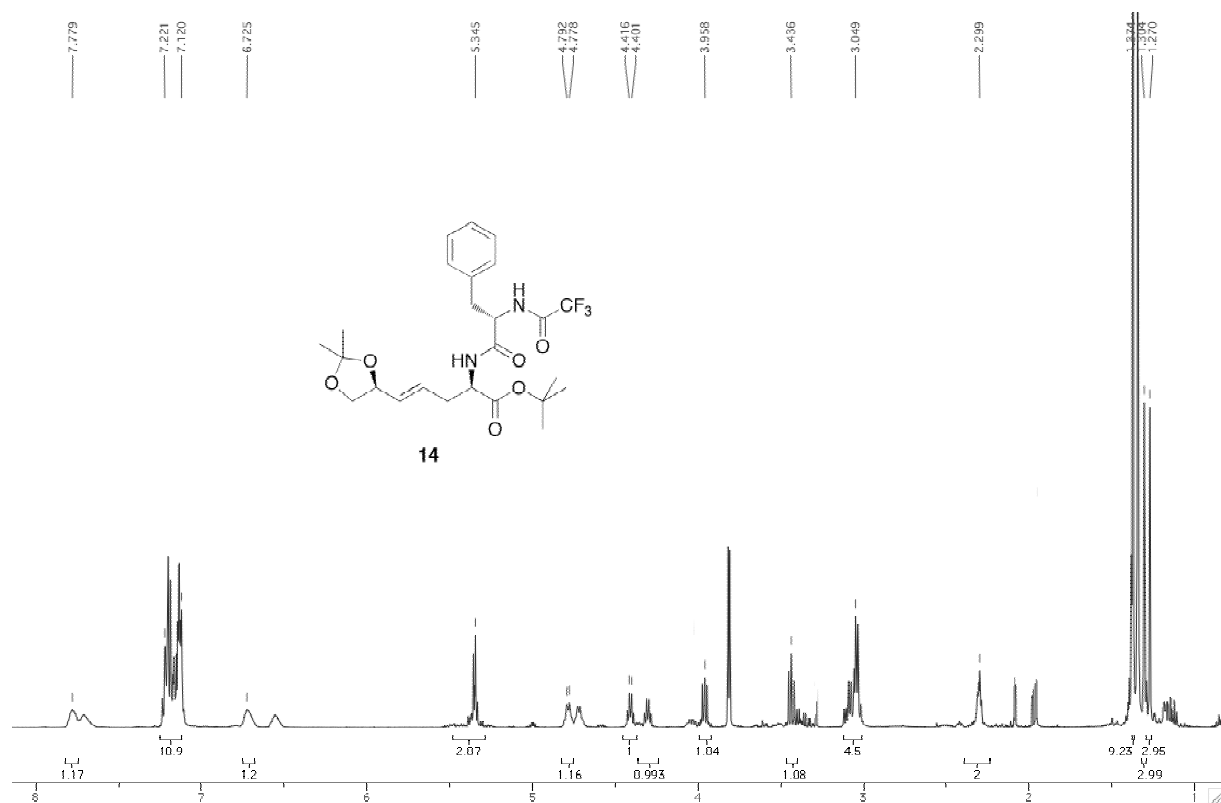
**5-((3aR,5R,6S,6aR)-6-Benzyloxy-2,2-dimethyl-tetrahydro-furo[2,3-d][1,3]-dioxol-5-yl)-(2R)-(trifluoroacetyl)amino-4-(Z)-pentenoic acid tert-butylester ((R,R,R,S,R)-(Z)-12)**



**5-((3aR,5R,6S,6aR)-6-Benzyloxy-2,2-dimethyl-tetrahydro-furo[2,3-d][1,3]-dioxol-5-yl)-(2R)-(trifluoroacetyl)amino-4-(E)-pentenoic acid tert-butylester ((R,R,R,S,R)-(E)-12)**



***N*-Trifluoroacetyl-(*S*)-phenylalanyl-(*2R,4E*)-2-amino-5-[(*4S*)-2,2-dimethyldioxolan-4-yl]-4-pentenoic acid *tert*-butylester (**14**)**





***N*-Trifluoroacetyl-(*S*)-phenylalanyl-(*2R,4E*)-2-amino-5-[(*4S,5S*)-5-benzyloxymethyl-2,2-dimethyldioxolan-4-yl]-4-pentenoic acid *tert*-butylester (15)**

