

Supplementary Material

Unusual ionization of phosphine-boranes under RP-HPLC-HRMS conditions disclose a potential system for reduction of C=O bond

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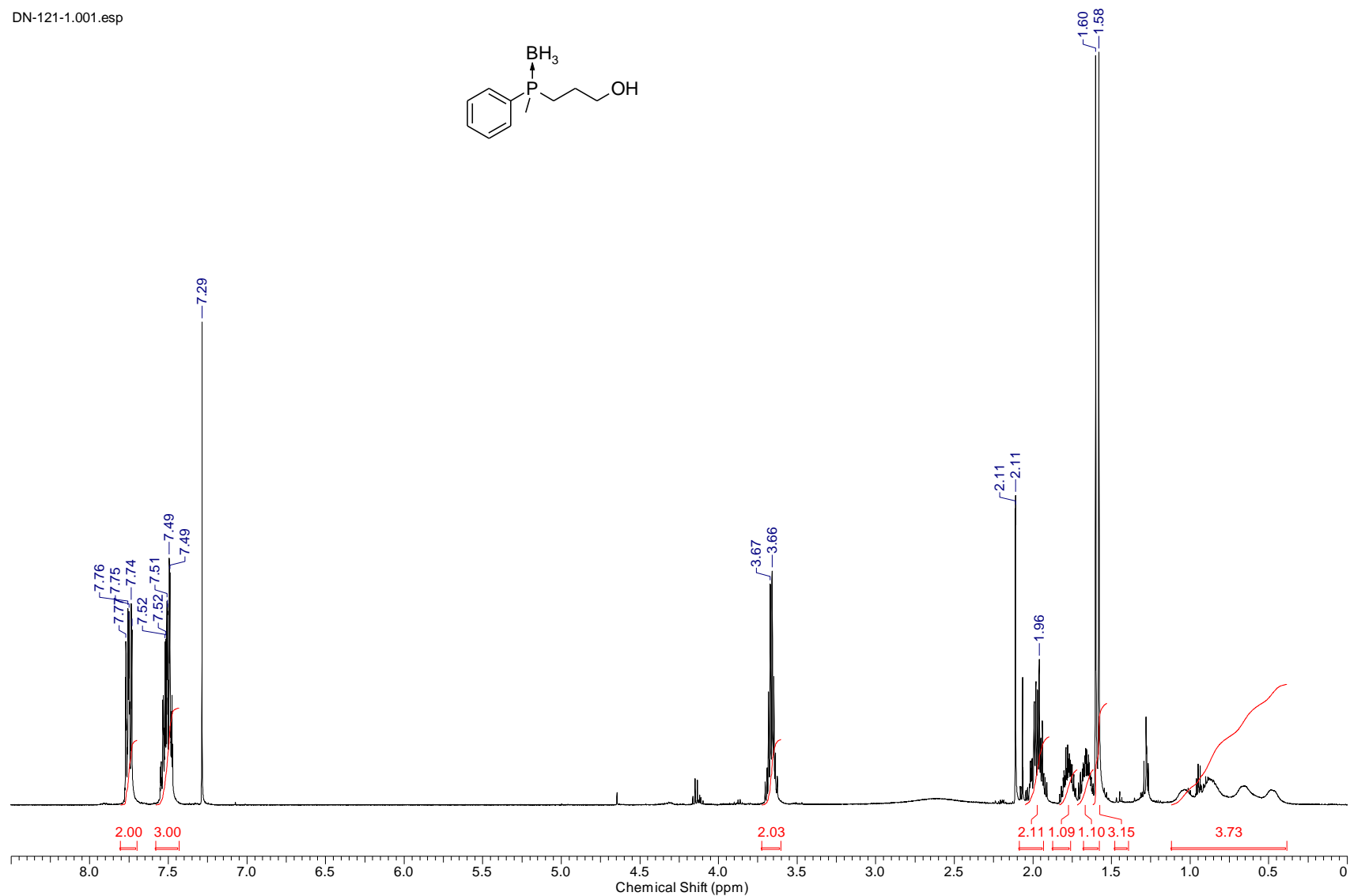
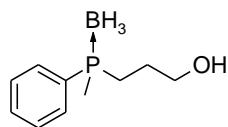
Email: marek.stankevic@mail.umcs.pl piotr.borowski@mail.umcs.pl

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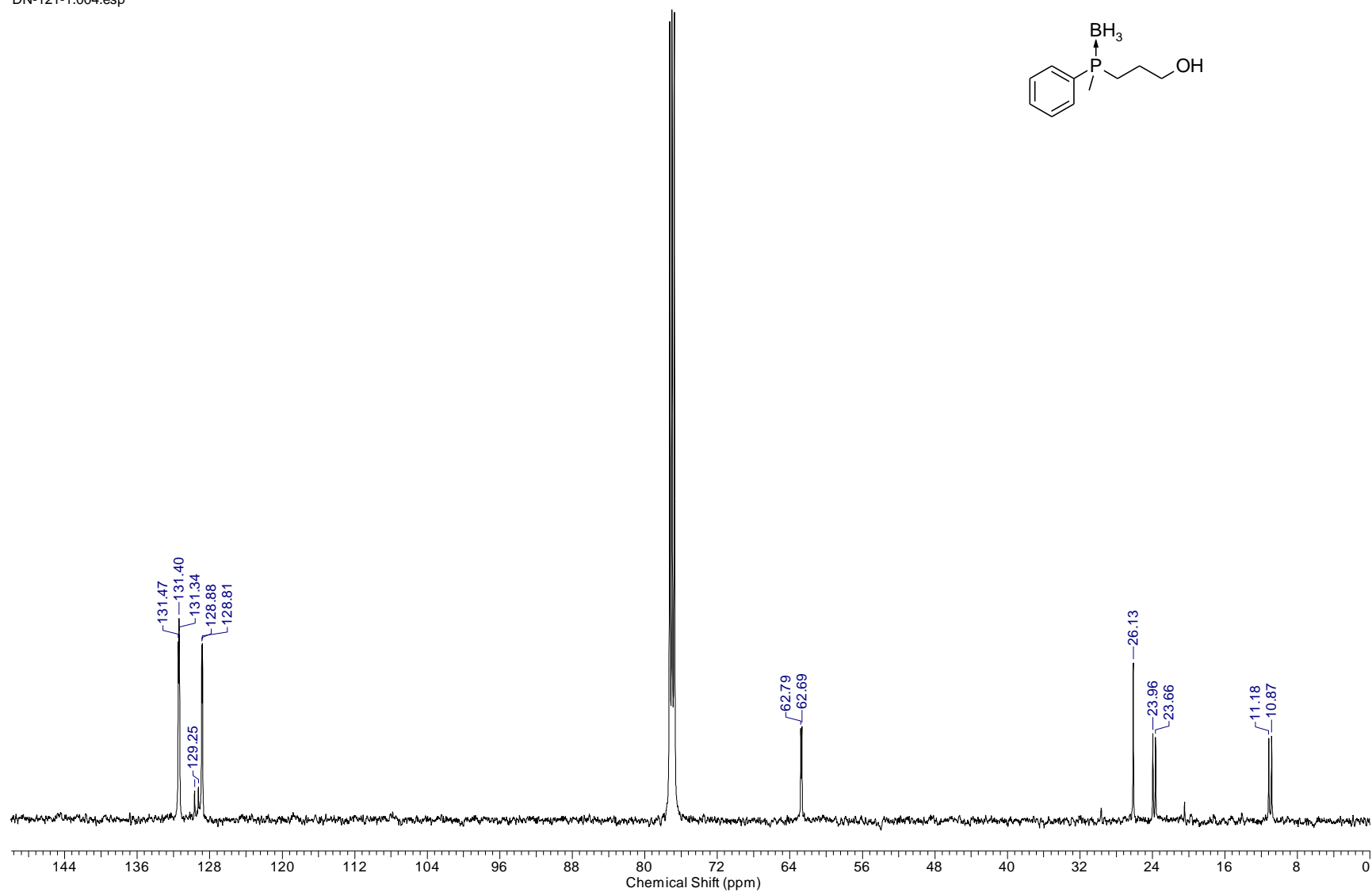
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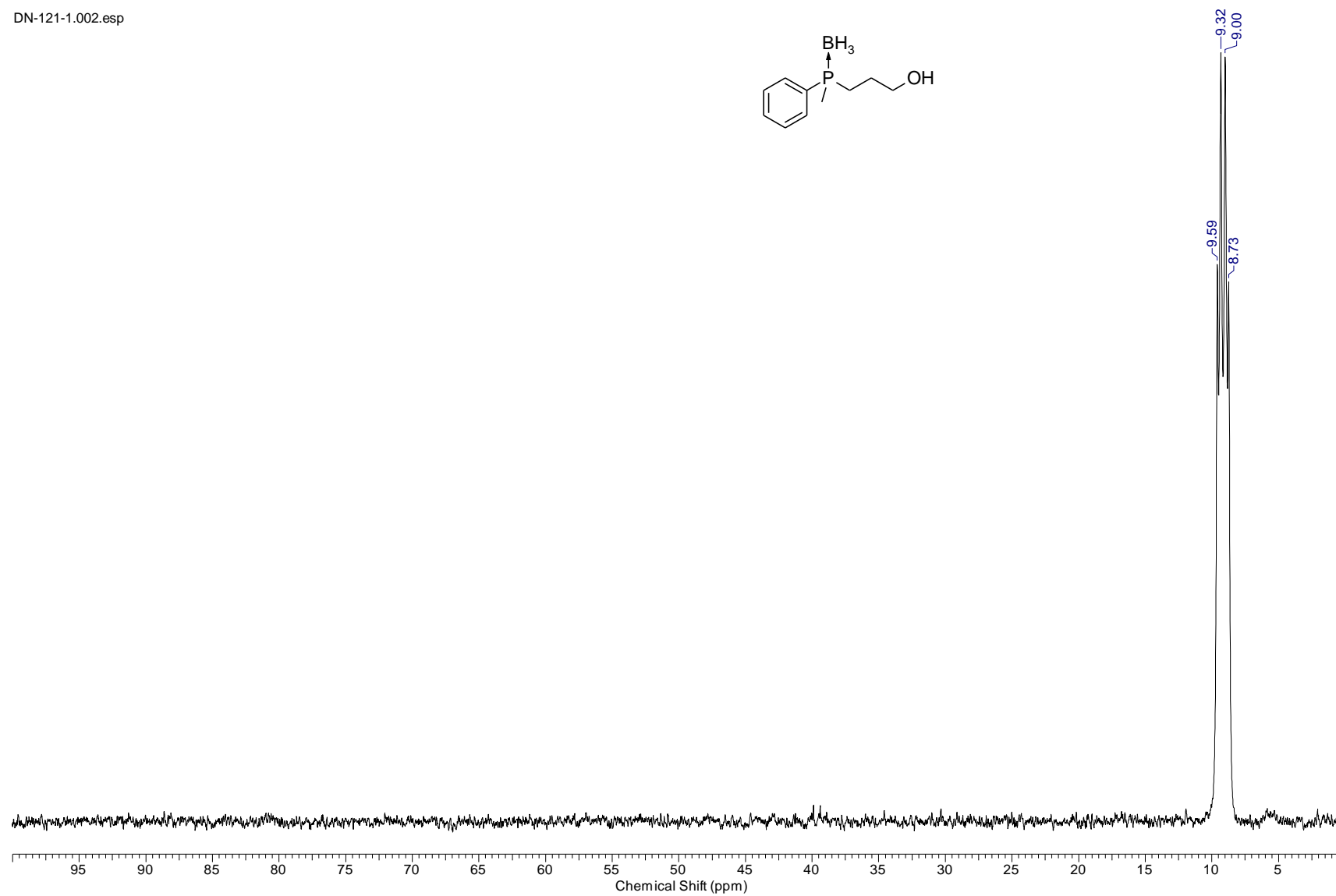
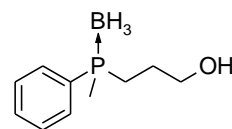


S1. ^1H NMR spectrum of (3-hydroxypropyl)methylphenylphosphine-borane **20** (500 MHz, CDCl_3)

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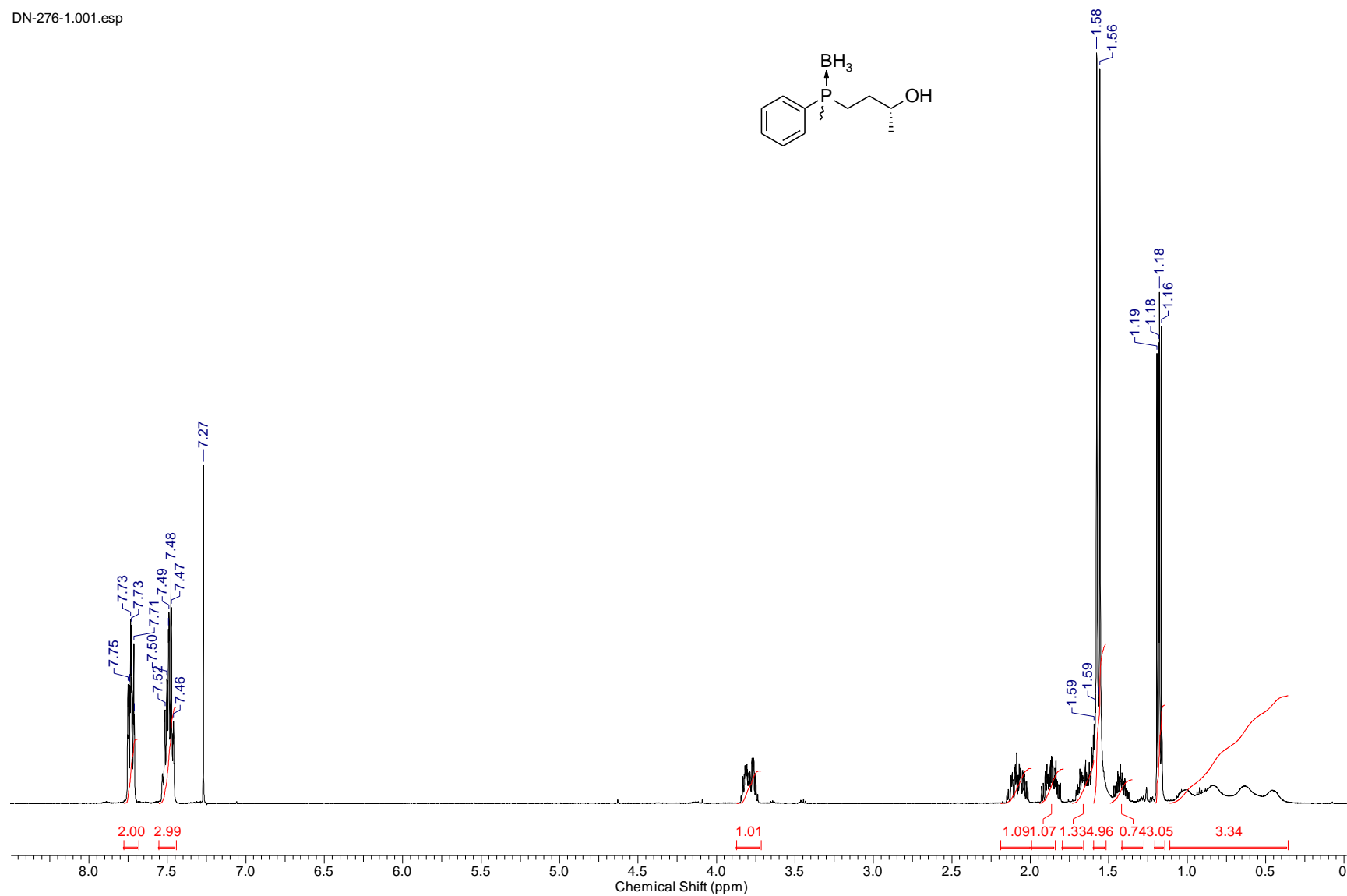
**S2.** ^{13}C NMR spectrum of (3-hydroxypropyl)methylphenylphosphine-borane **20** (126 MHz, CDCl_3)

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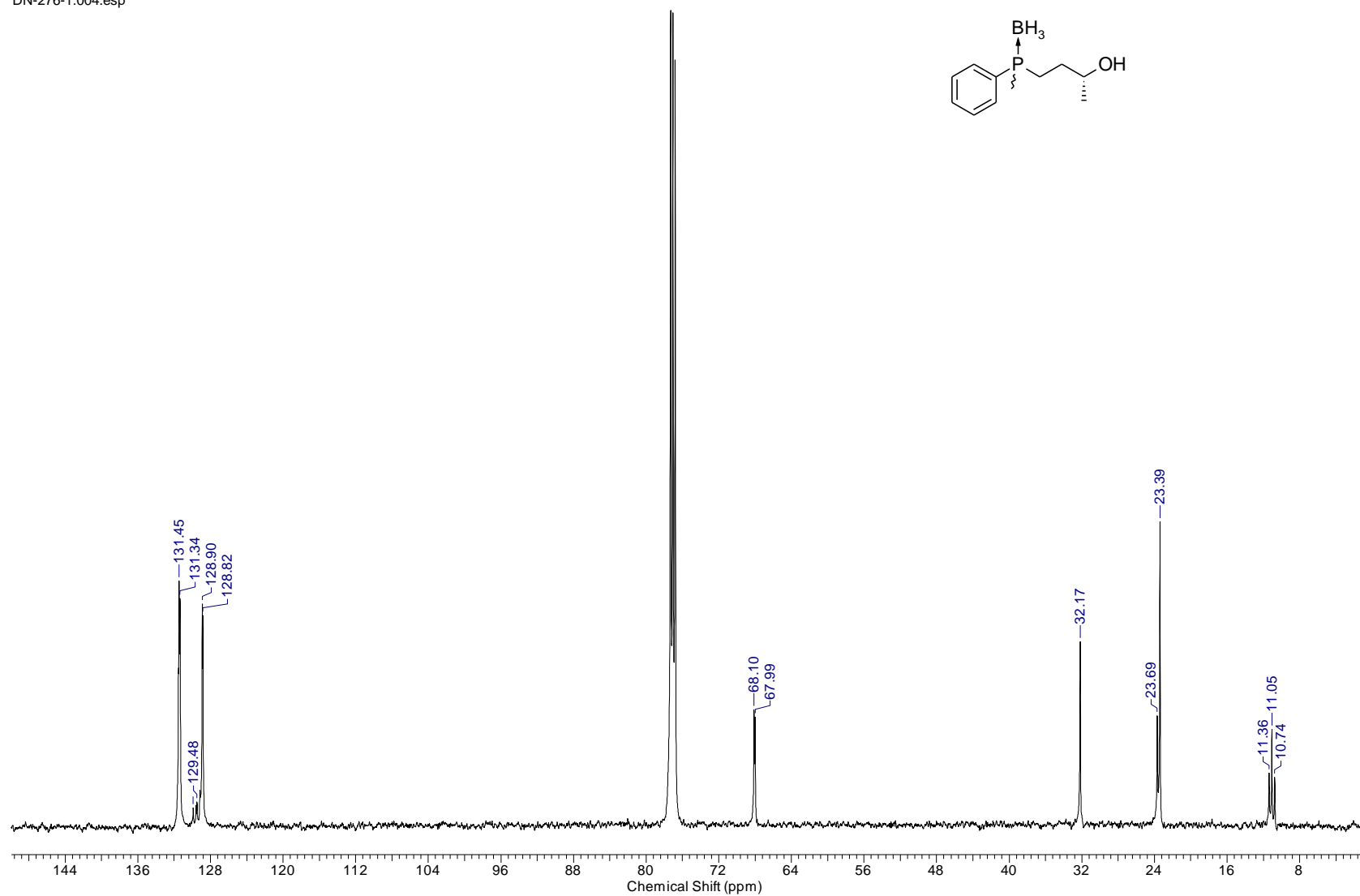
S3. ^{31}P NMR spectrum of (3-hydroxypropyl)methylphenylphosphine-borane **20** (202 MHz, CDCl_3)

DN-276-1.001.esp



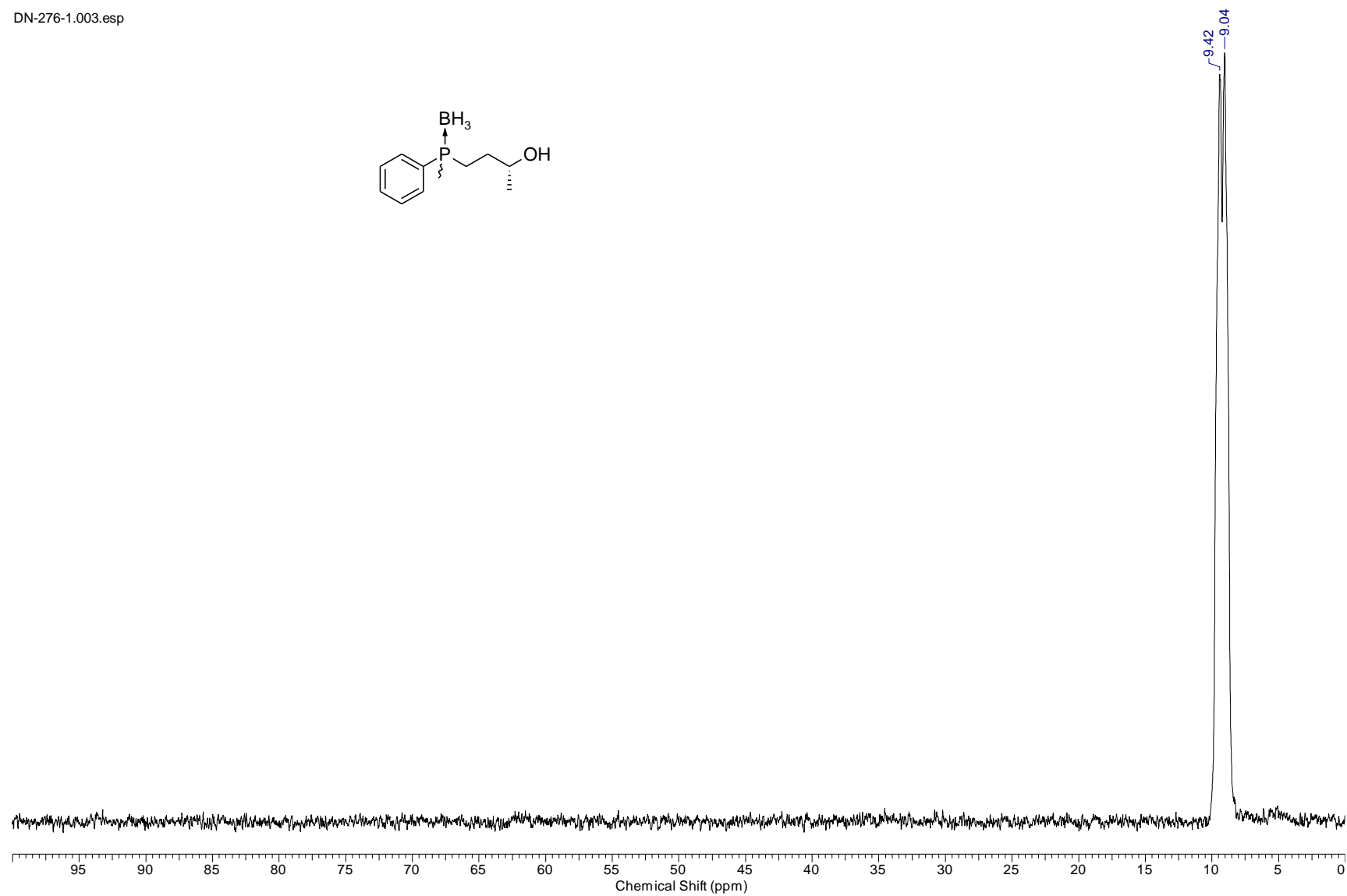
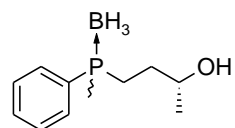
S4. ¹H NMR spectrum of ((3*R*)-3-hydroxybutyl)methylphenylphosphine-borane (mixture of diastereomers) **21** (500 MHz, CDCl₃).

DN-276-1.004.esp

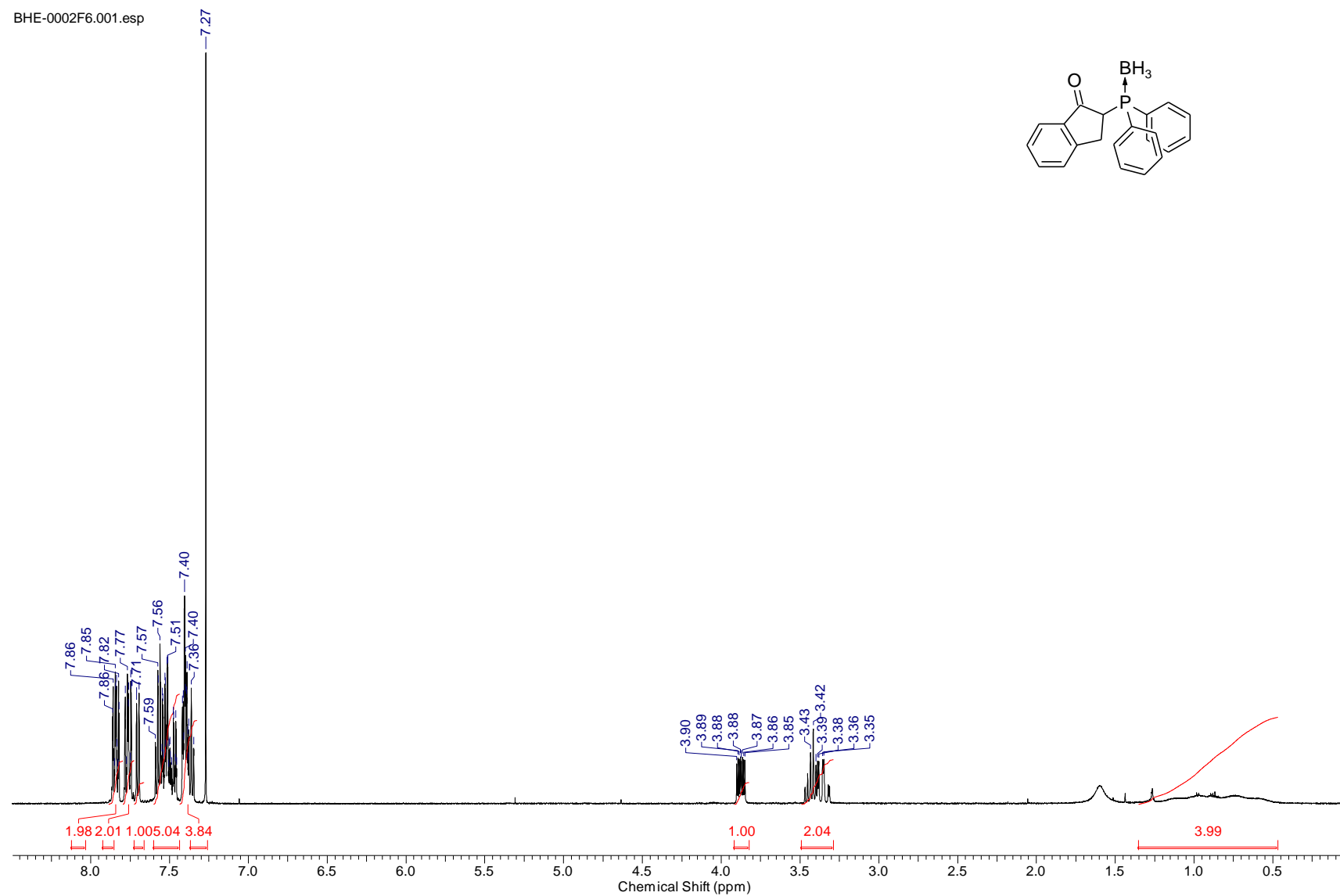


S5. ^{13}C NMR spectrum of ((3*R*)-3-hydroxybutyl)methylphenylphosphine-borane (mixture of diastereomers) **21** (126 MHz, CDCl_3)

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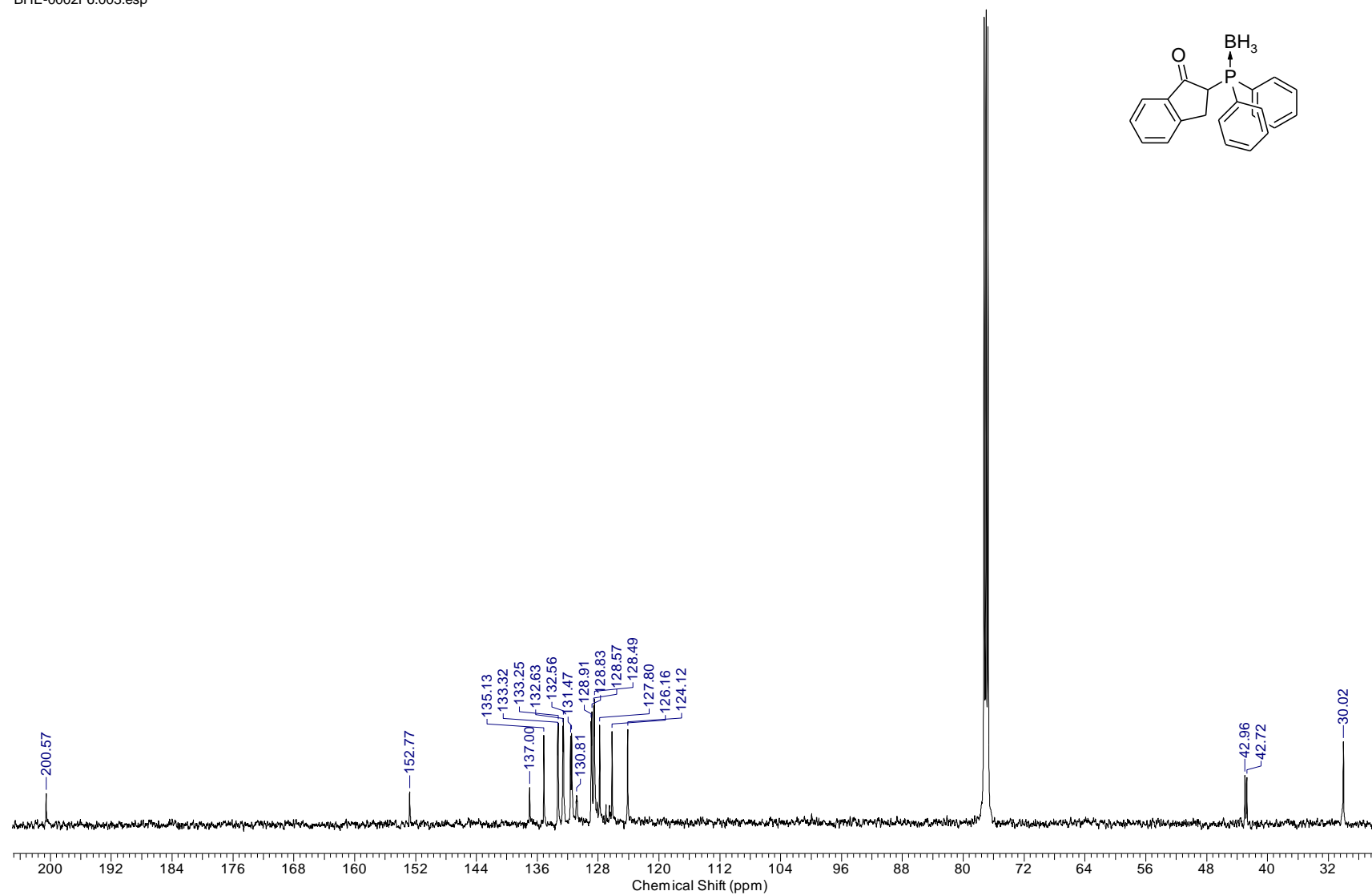


S6. ^{31}P NMR spectrum of ((3*R*)-3-hydroxybutyl)methylphenylphosphine-borane (mixture of diastereomers) **21** (202 MHz, CDCl_3)



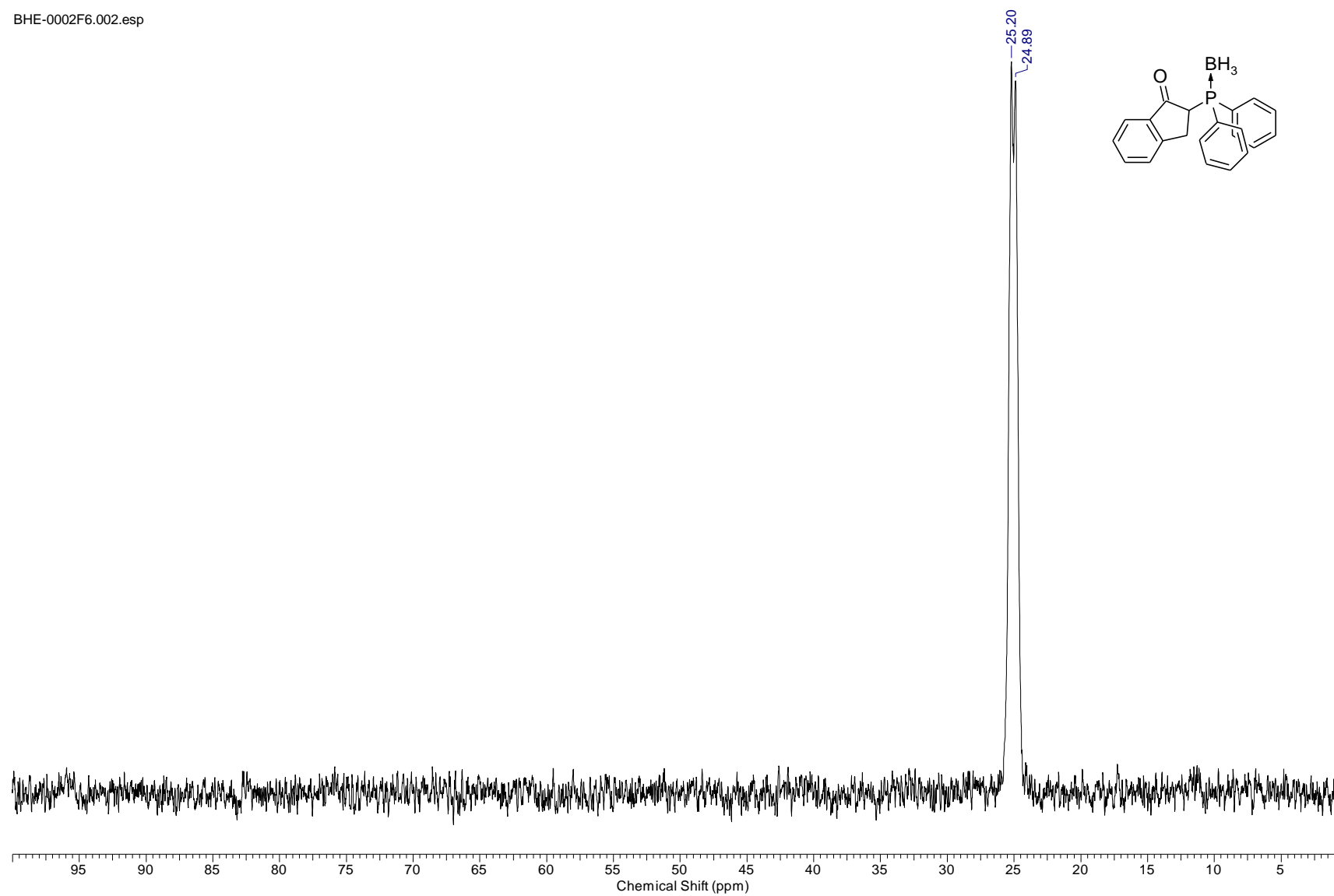
S7. ^1H NMR spectrum of 2-(diphenylboranato-phosphinyl)-1-indanone **27** (500 MHz, CDCl_3)

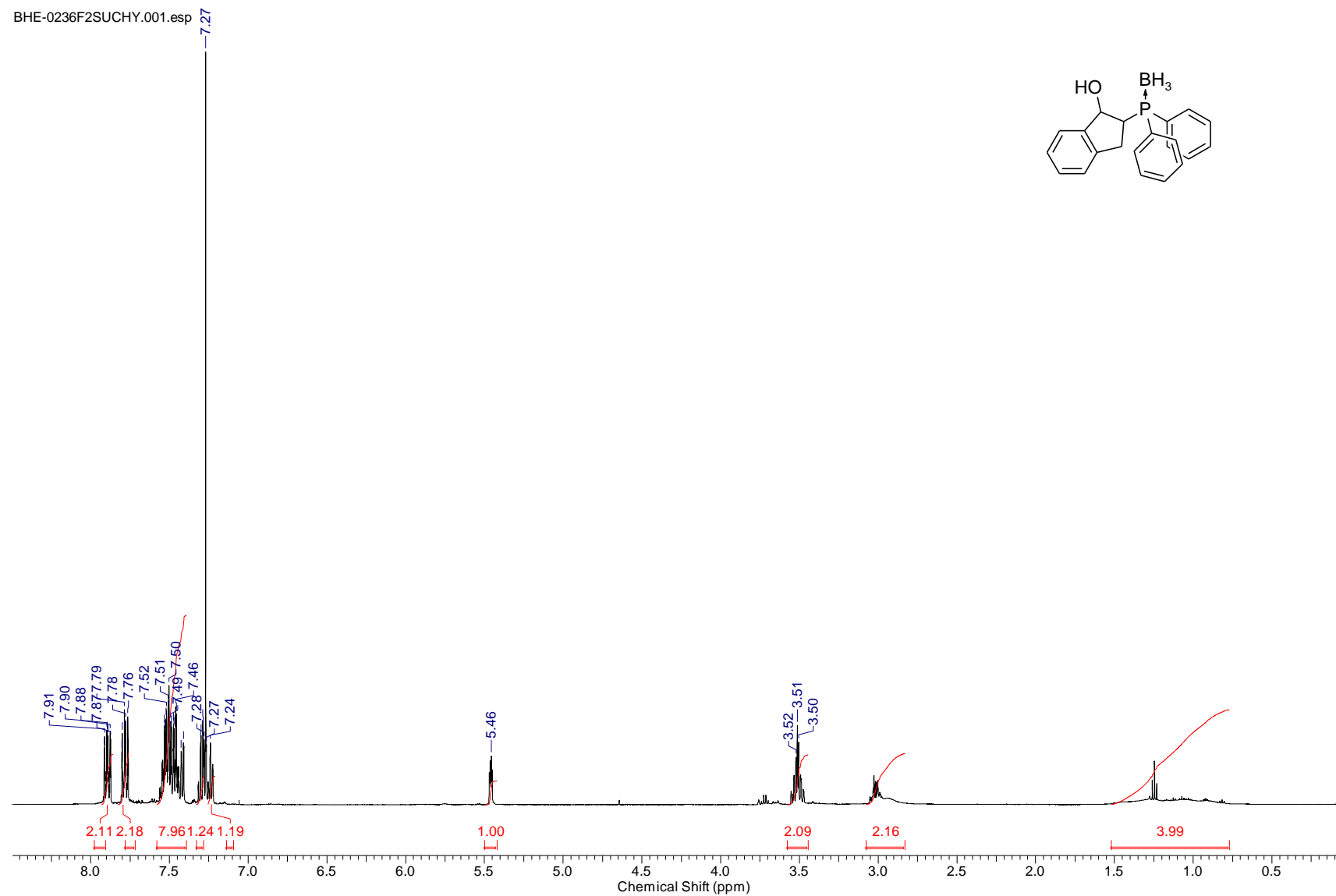
BHE-0002F6.003.esp



S8. ^{13}C NMR spectrum of 2-(diphenylboranato-phosphinyl)-1-indanone **27** (126 MHz, CDCl_3)

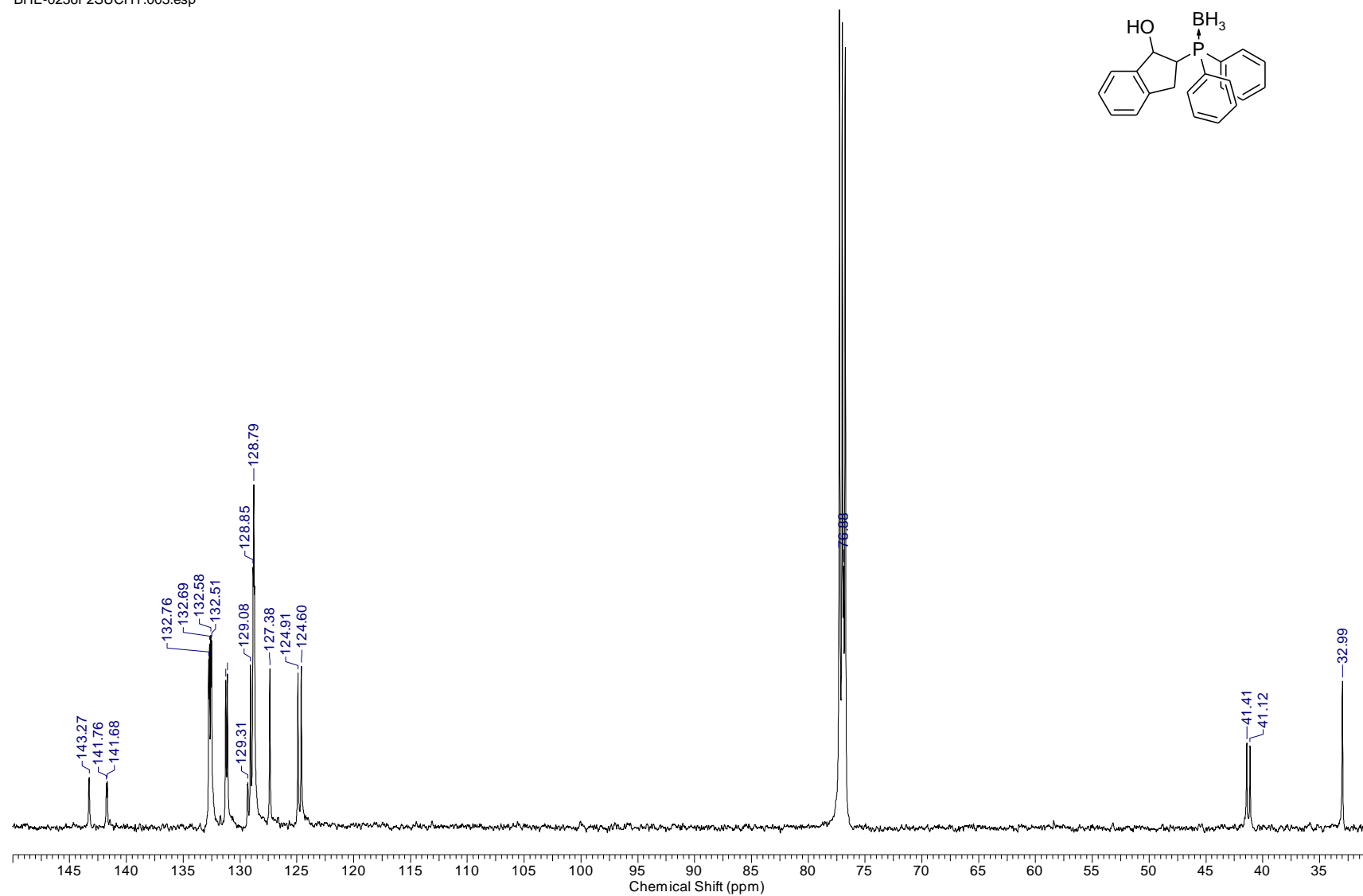
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**S9.** ^{31}P NMR spectrum of 2-(diphenylboranato-phosphinyl)-1-indanone **27** (202 MHz, CDCl_3)



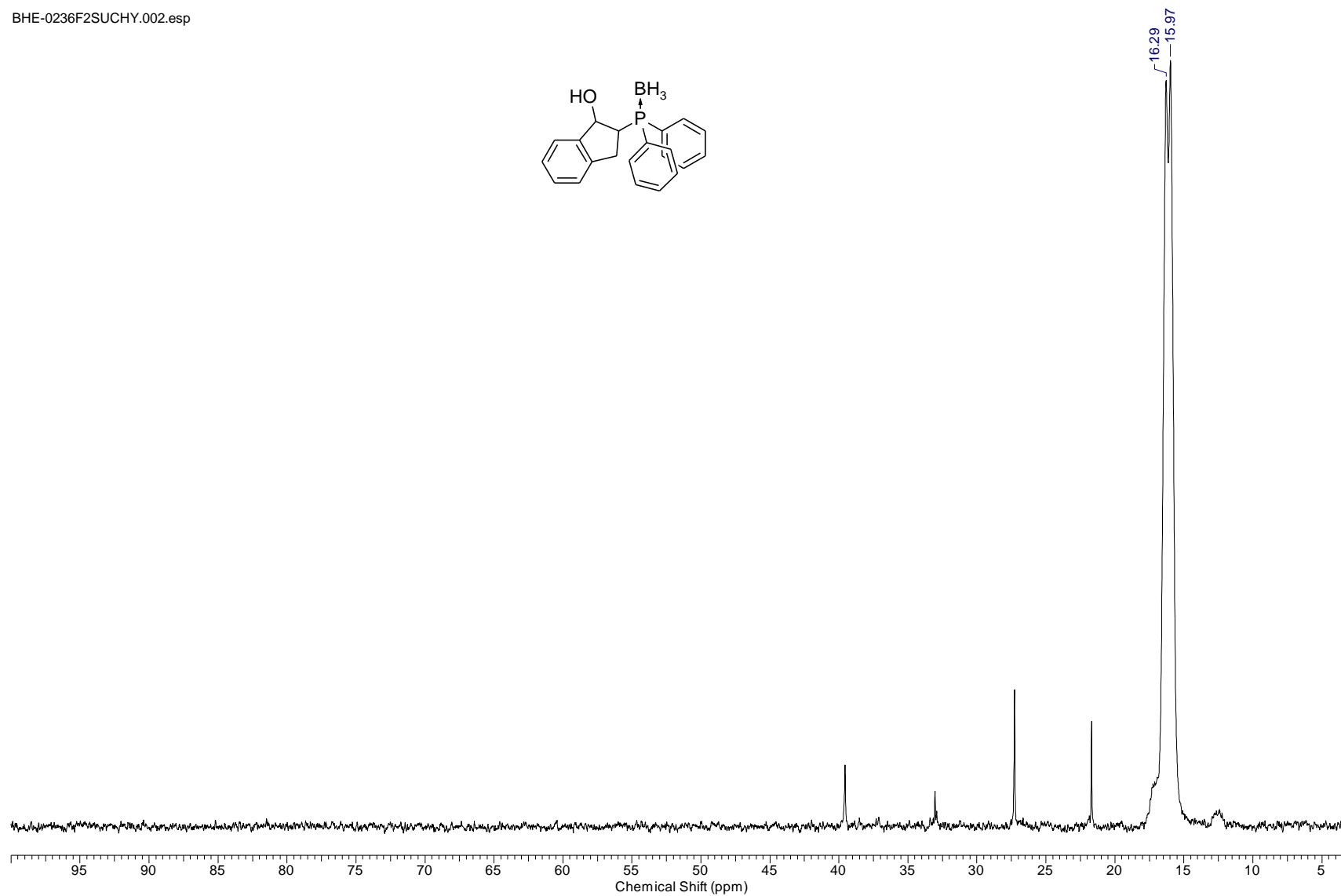
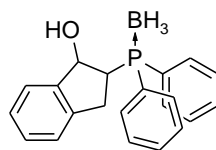
S10. ^1H NMR spectrum of 2-(diphenylboranatophosphinyl)-1-indanol **28** (500 MHz, CDCl_3)

BHE-0236F2SUCHY.003.esp



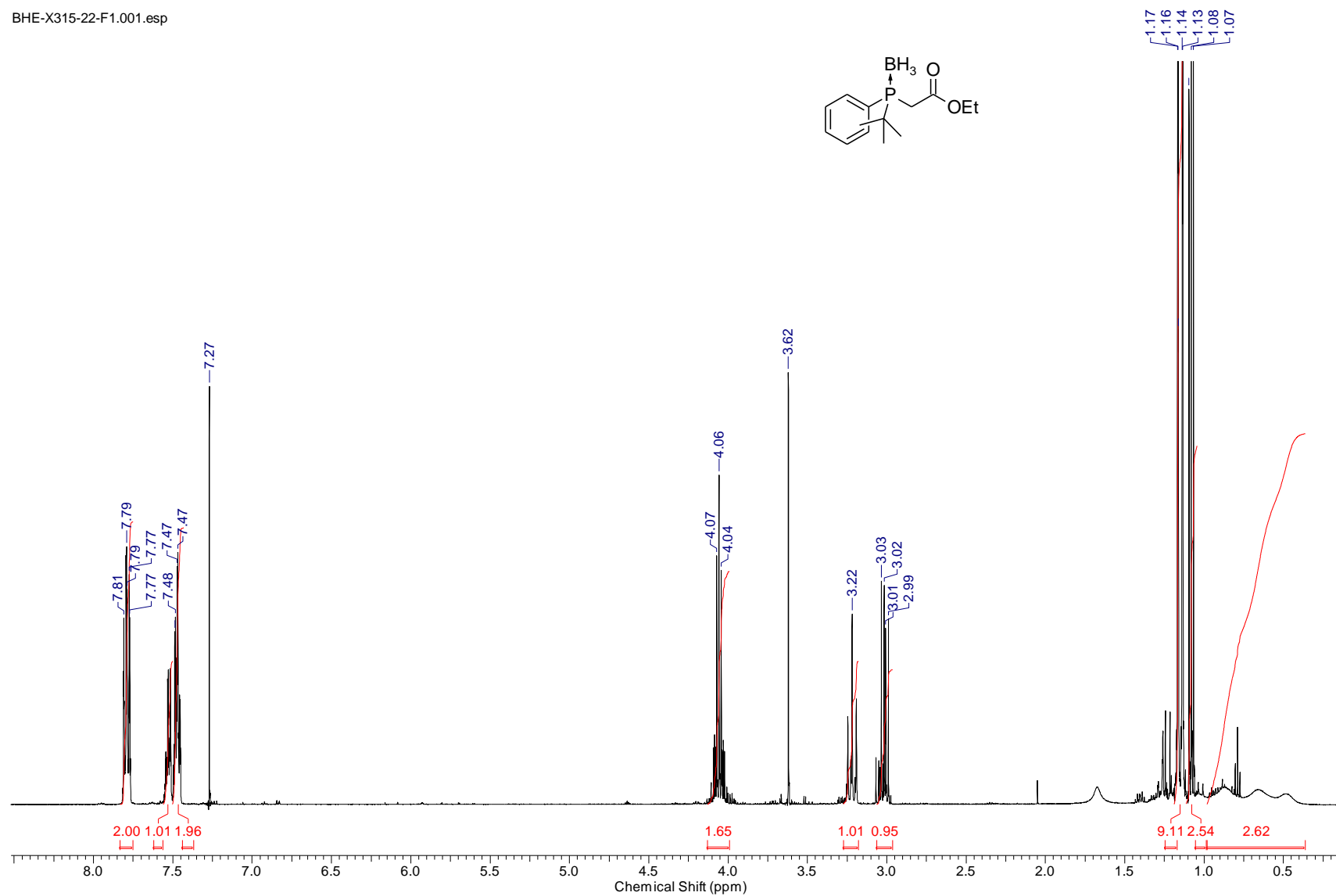
S11. ^{13}C NMR spectrum of 2-(diphenylboranato-phosphinyl)-1-indanol **28** (126 MHz, CDCl_3)

BHE-0236F2SUCHY.002.esp

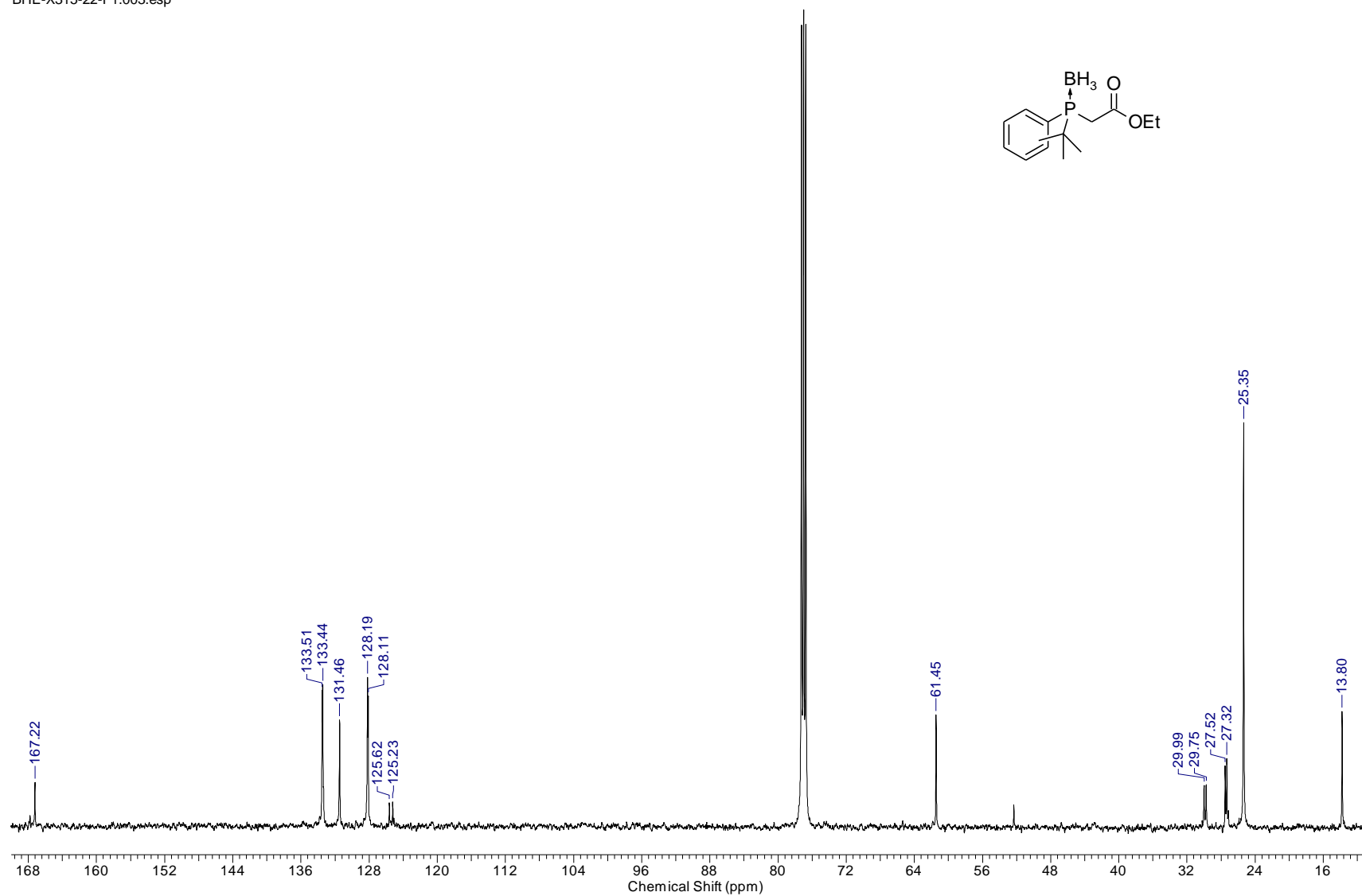


S12. ^{31}P NMR spectrum of 2-(diphenylboranato)phosphinyl-1-indanol **28** (202 MHz, CDCl_3)

BHE-X315-22-F1.001.esp

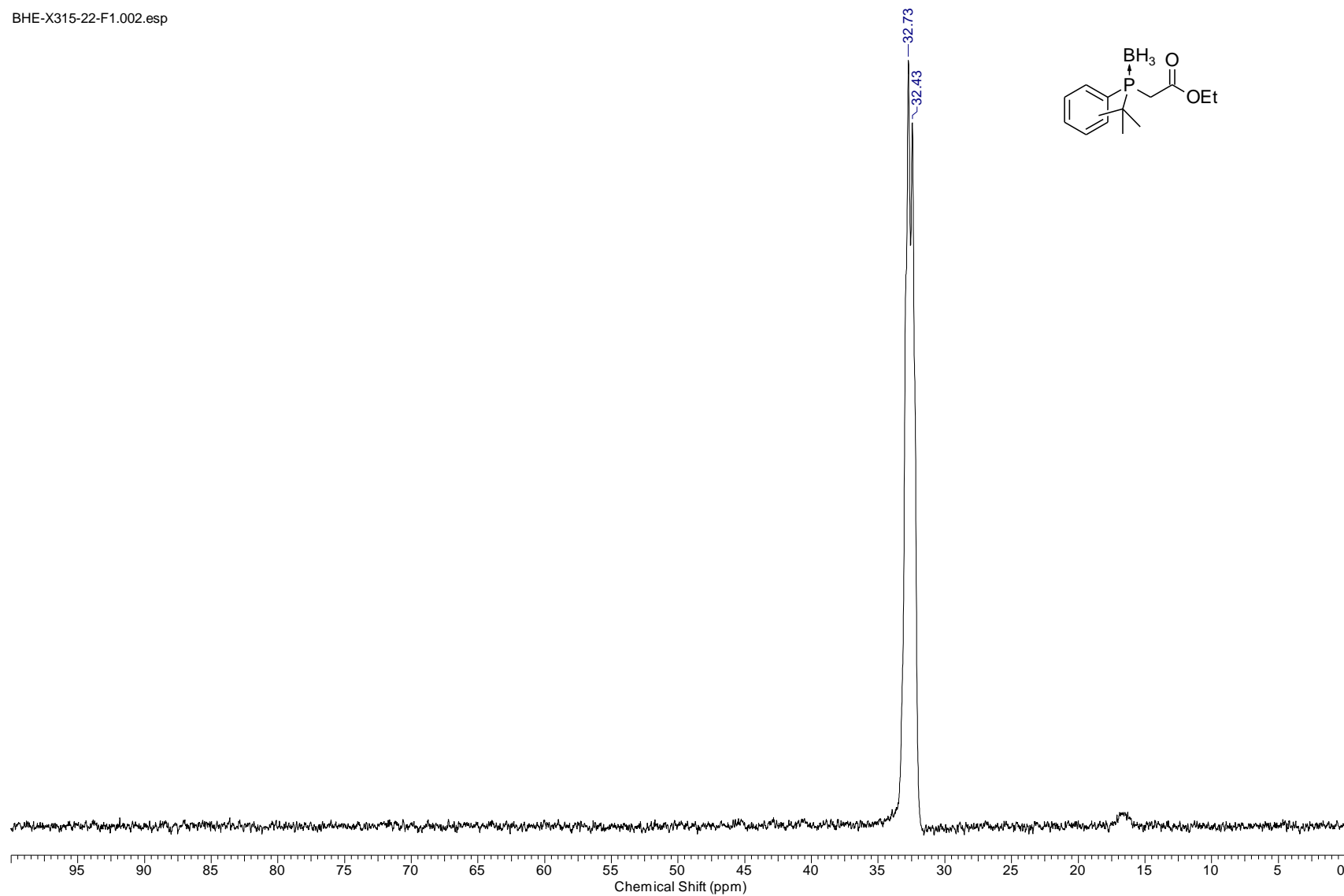
**S13.** ¹H NMR spectrum of ethyl (*t*-butylphenylboranatophosphiny)acetate **29** (500 MHz, CDCl₃)

BHE-X315-22-F1.003.esp

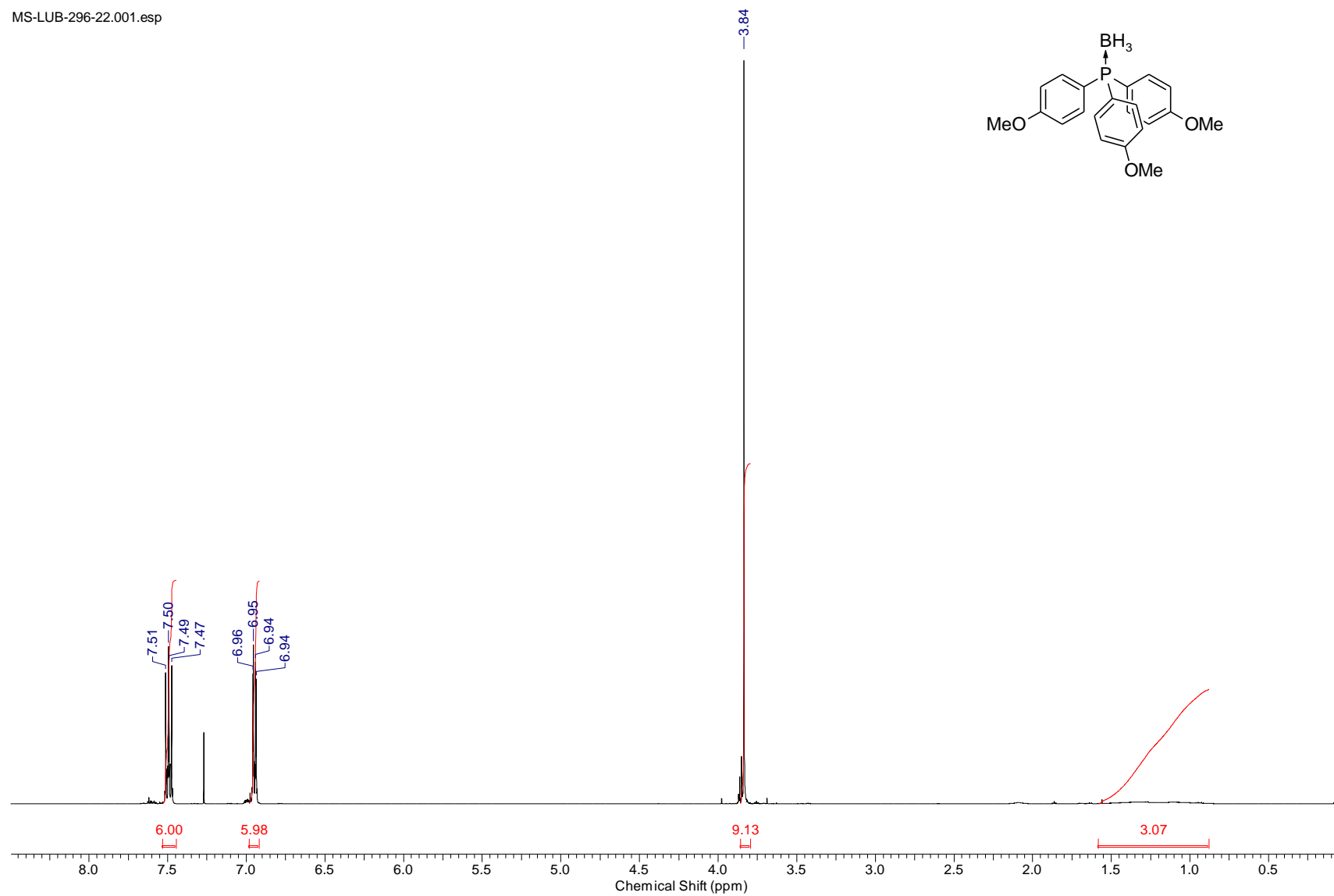


S14. ¹³C NMR spectrum of ethyl (*t*-butylphenylboranato-phosphinyloxy)acetate **29** (126 MHz, CDCl₃)

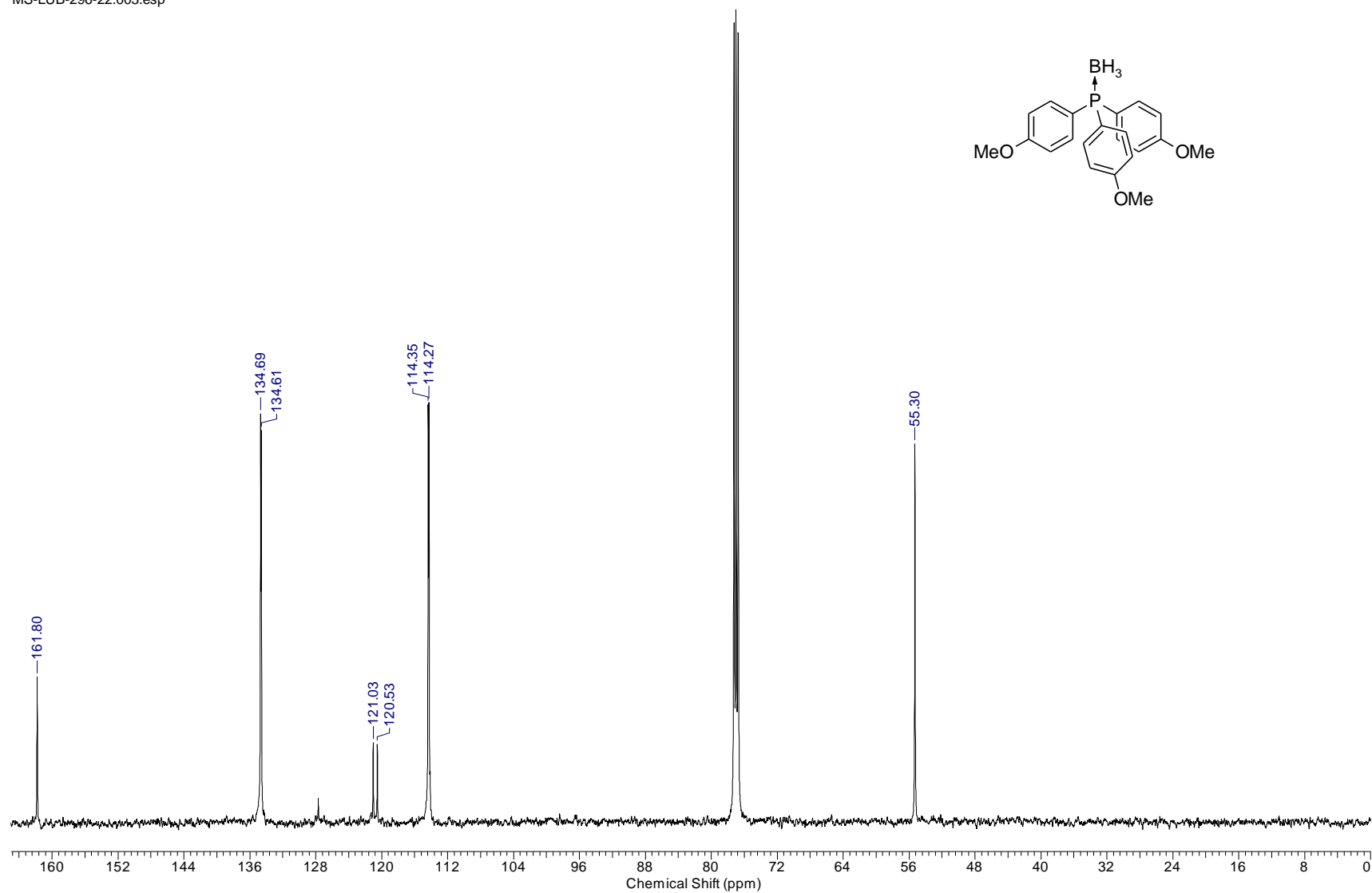
BHE-X315-22-F1.002.esp

**S15.** ^{31}P NMR spectrum of ethyl (*t*-butylphenylboranatophosphinyl)acetate **29** (202 MHz, CDCl₃)

MS-LUB-296-22.001.esp

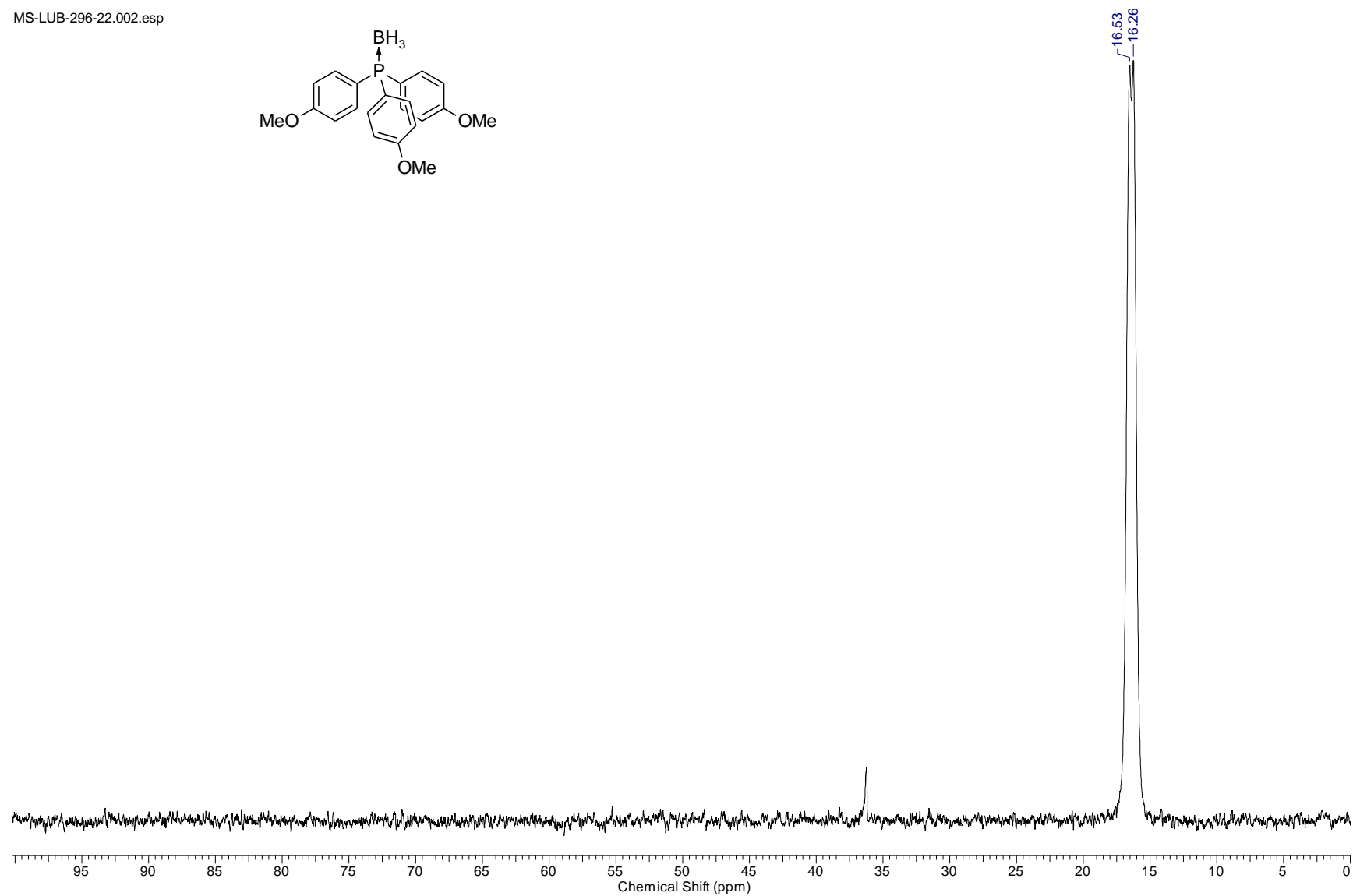
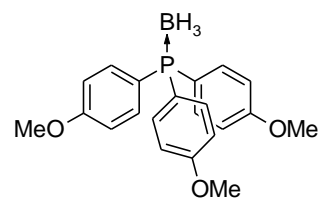
**S16.** ^1H NMR spectrum of tri(*p*-anisyl)phosphine-borane **30** (500 MHz, CDCl_3)

MS-LUB-296-22.003.esp



S17. ^{13}C NMR spectrum of tri(*p*-anisyl)phosphine-borane **30** (126 MHz, CDCl_3)

MS-LUB-296-22.002.esp

**S18.** ³¹P NMR spectrum of tri(*p*-anisyl)phosphine-borane **30** (202 MHz, CDCl₃)