

Novel, N-arylamino phosphonates Bearing a Pyrrole Moiety and Their Ecotoxicological Properties

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Contents

Figure S1. ¹H NMR (a), COSY (b), ¹³C NMR (c), HMQC (d) and ³¹P NMR (e) spectra of diphenyl *N*-phenylamino(pyrrol-2-yl)-methylphosphonate (2a).

Figure S2. ¹H NMR (a), ¹³C NMR (b) and ³¹P NMR (c) spectra of diphenyl *N*-(4-nitrophenyl)-amino(pyrrol-2-yl)methylphosphonate (2b).

Figure S3. ¹H NMR (a), ¹³C NMR (b) and ³¹P NMR (c) spectra of diphenyl *N*-(4-chloro-2-methylphenyl)amino-(pyrrol-2-yl)methylphosphonate (2c).

Figure S4. ¹H NMR (a), ¹³C NMR (b) and ³¹P NMR (c) spectra of diphenyl *N*-(3-bromophenyl)-amino(pyrrol-2-yl)methylphosphonate (2d).

Figure S5. ¹H NMR (a), ¹³C NMR (b) and ³¹P NMR (c) spectra of diphenyl *N*-(1-naphthyl)amino-(pyrrol-2-yl)methylphosphonate (2e).

Figure S6 a–e. FT-IR spectra of aminophosphonates 2a–e

Figure S7 a–e. ESI-MS spectra of aminophosphonates 2a–e.

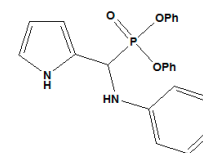
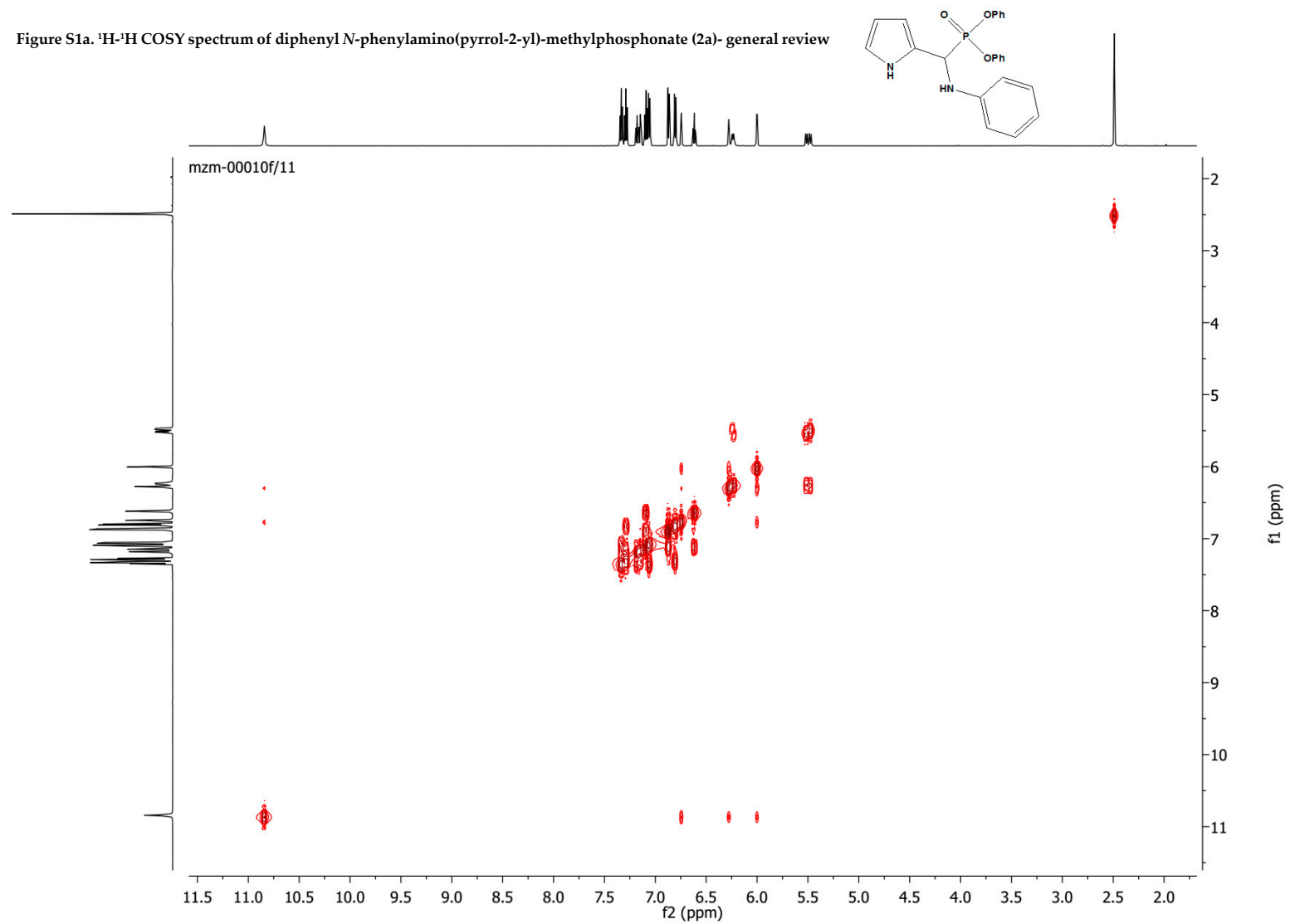


Figure S1. ^1H NMR spectrum of diphenyl N-phenylamino(pyrrol-2-yl)-methylphosphonates (**2a**)

Figure S1a. ^1H - ^1H COSY spectrum of diphenyl *N*-phenylamino(pyrrol-2-yl)-methylphosphonate (2a)- general review

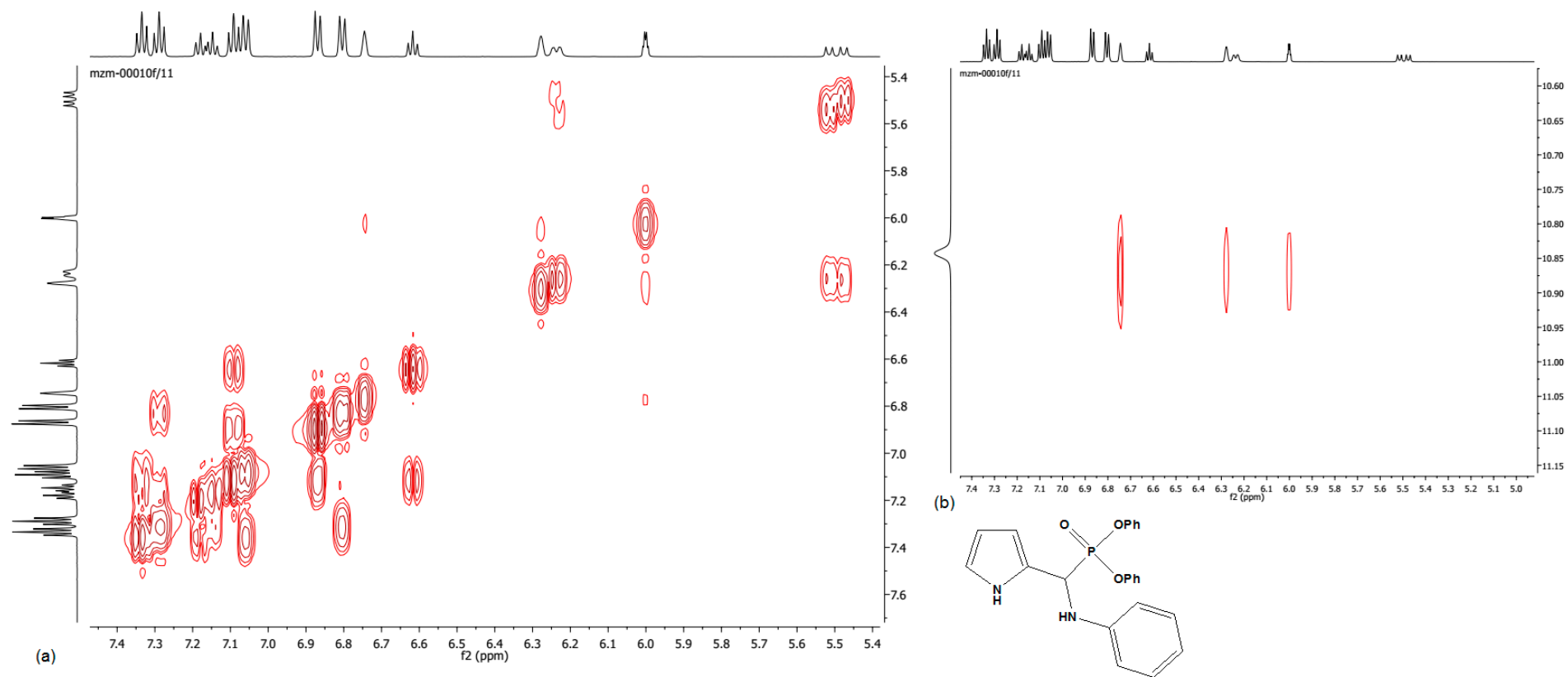


Figure S1b (bis). ^1H - ^1H COSY spectrum of diphenyl *N*-phenylamino(pyrrol-2-yl)-methylphosphonate (**2a**): (a) 7.5 – 5.4 ppm region and (b) correlations in pyrrole ring

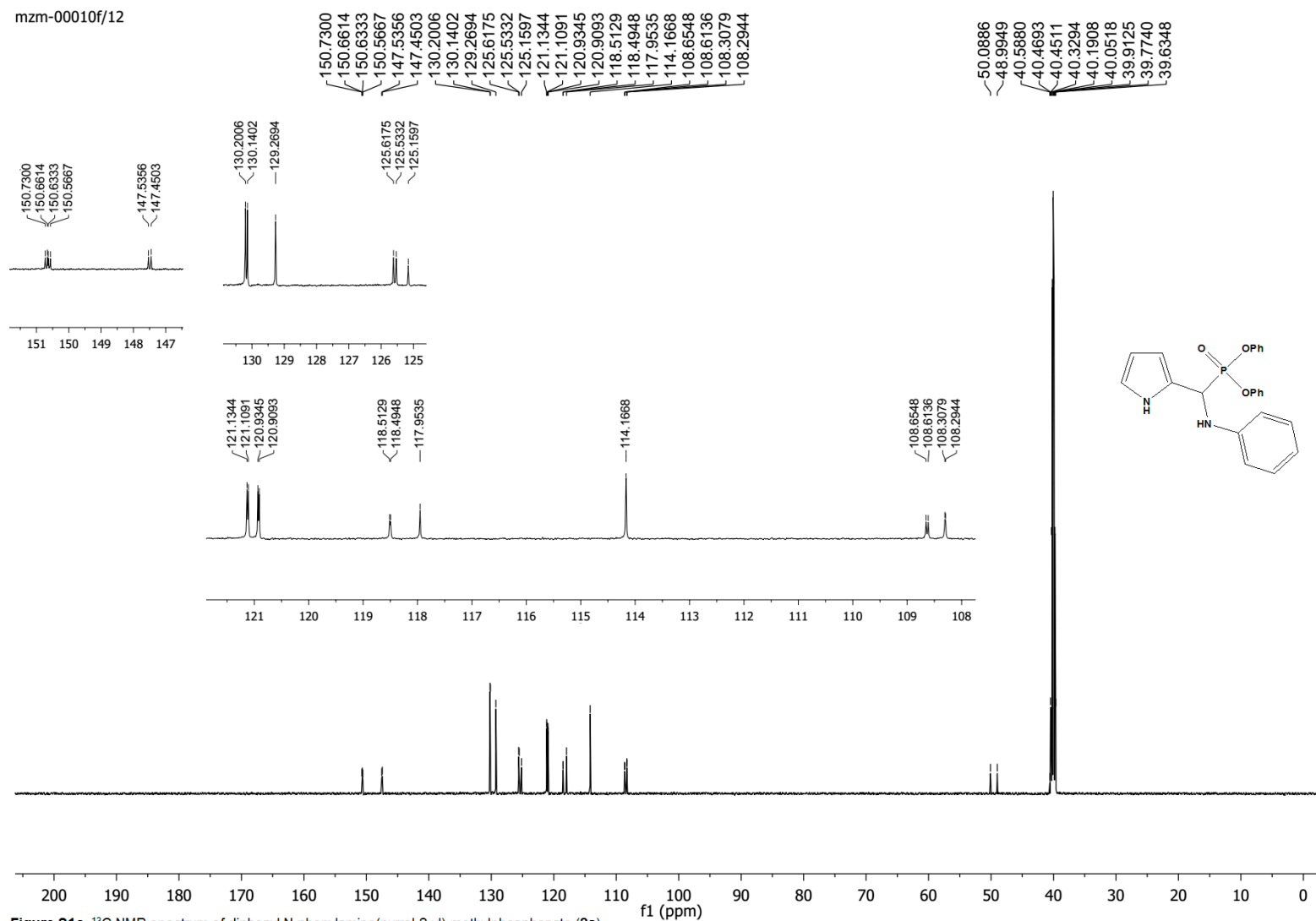
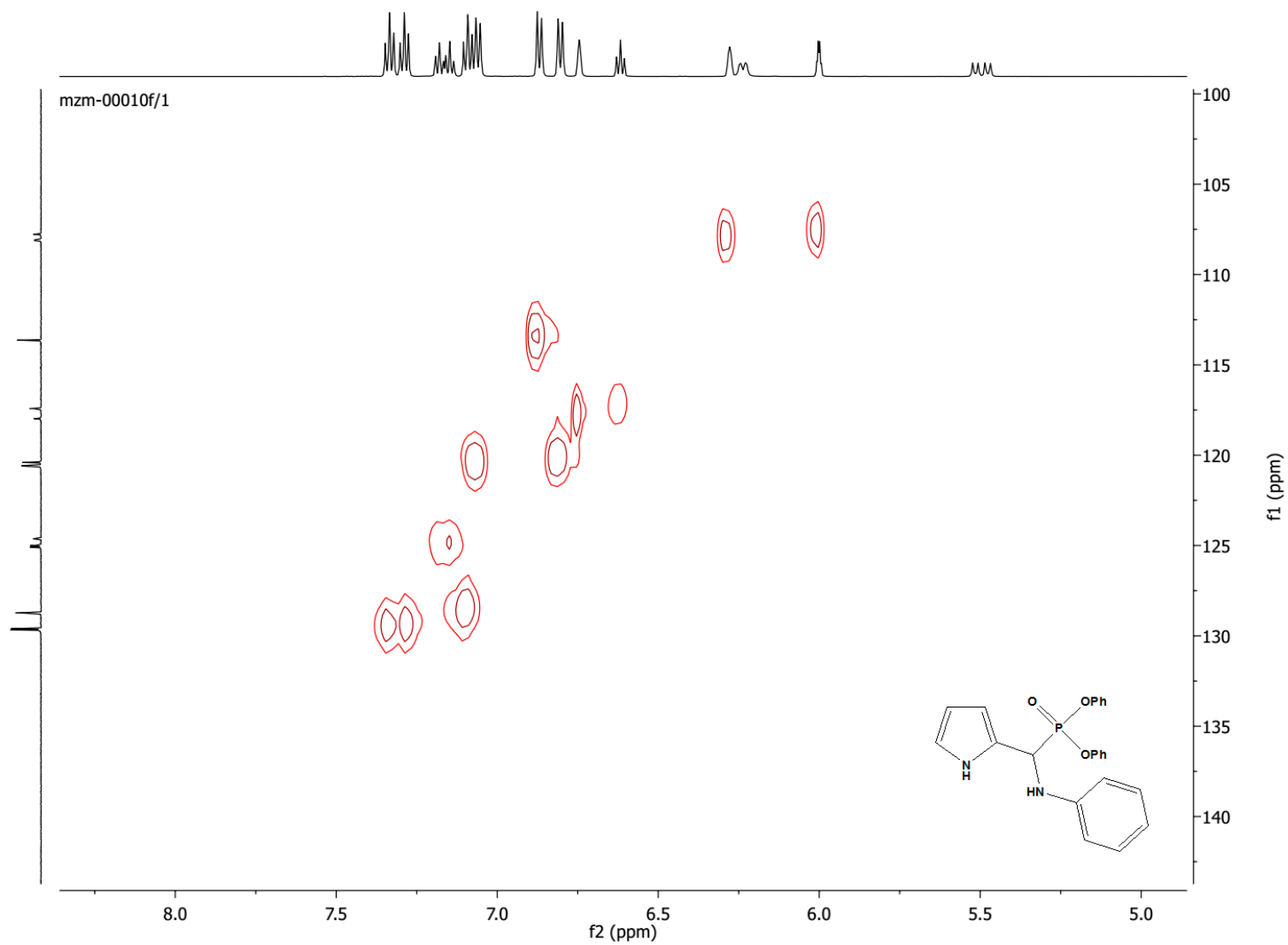
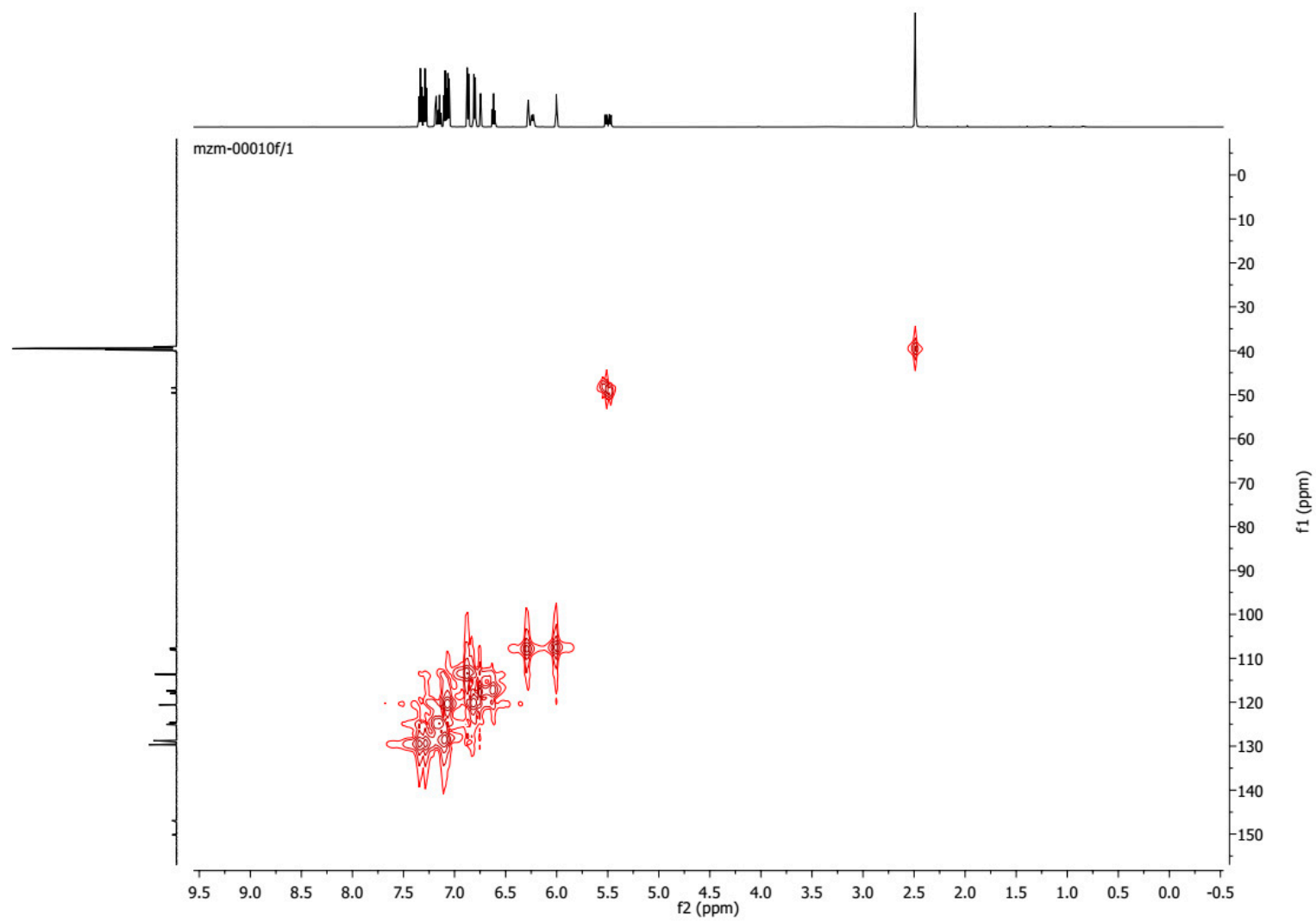
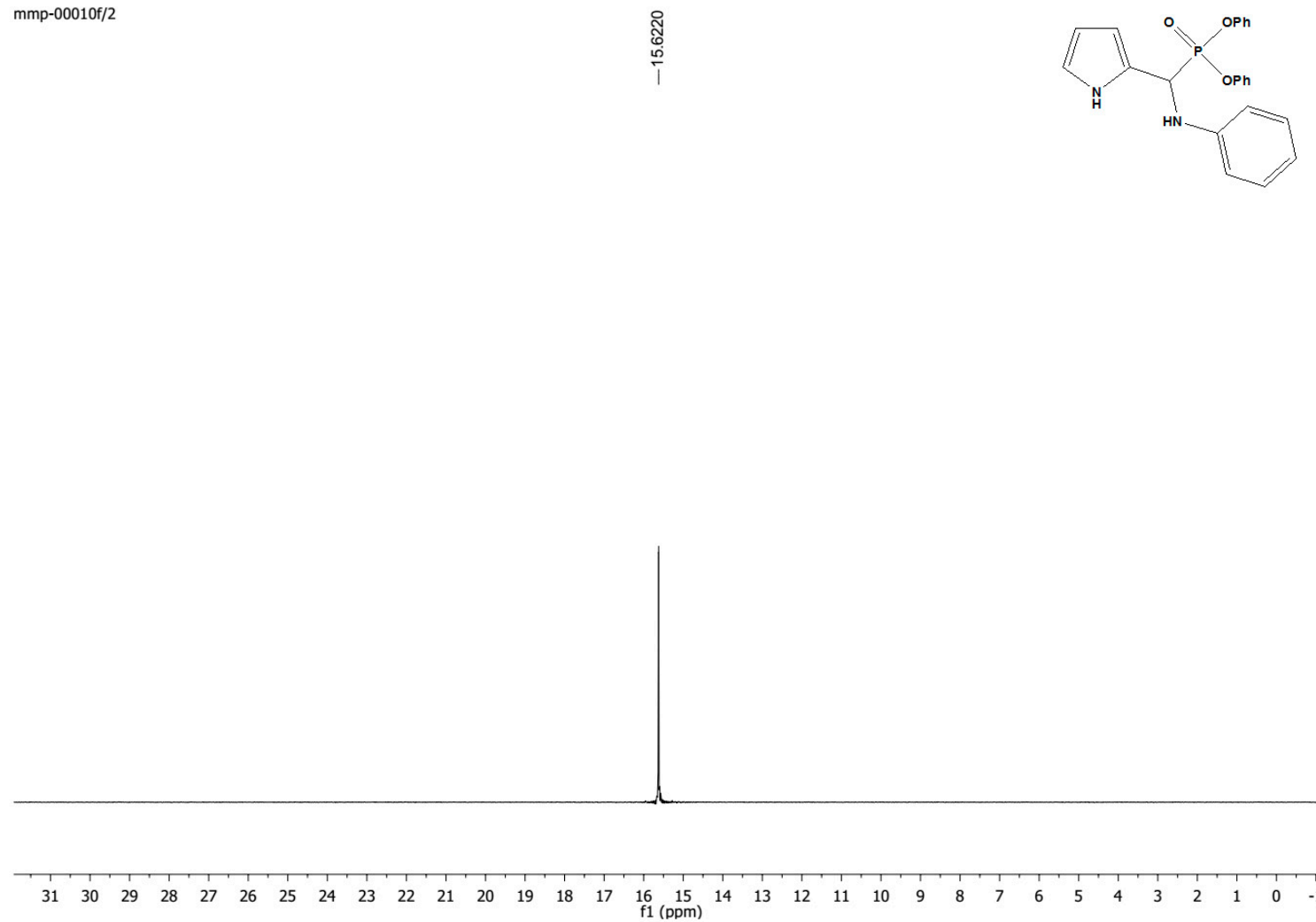


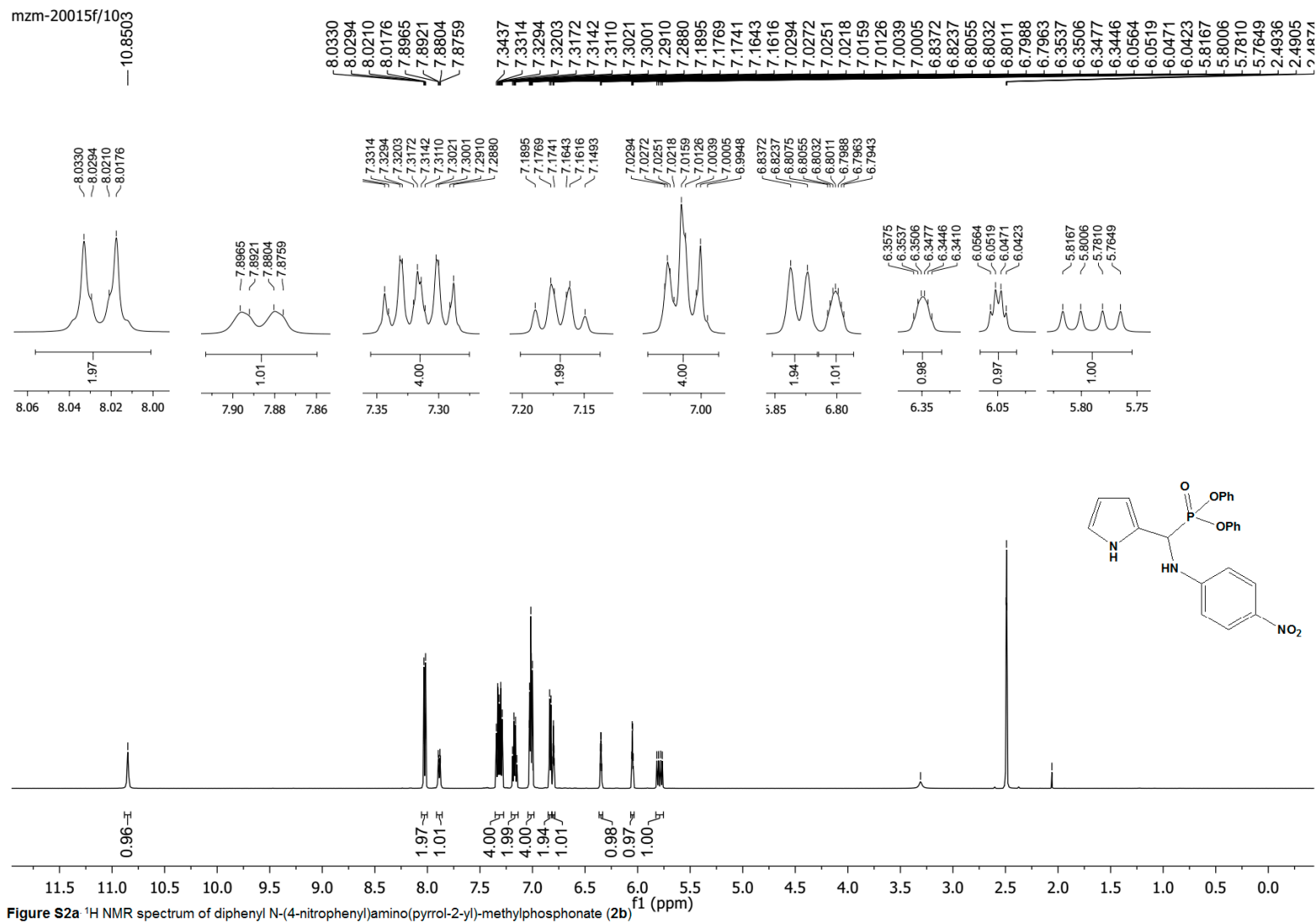
Figure S1c. ¹³C NMR spectrum of diphenyl N-phenylamino(pyrrol-2-yl)-methylphosphonate (2a)

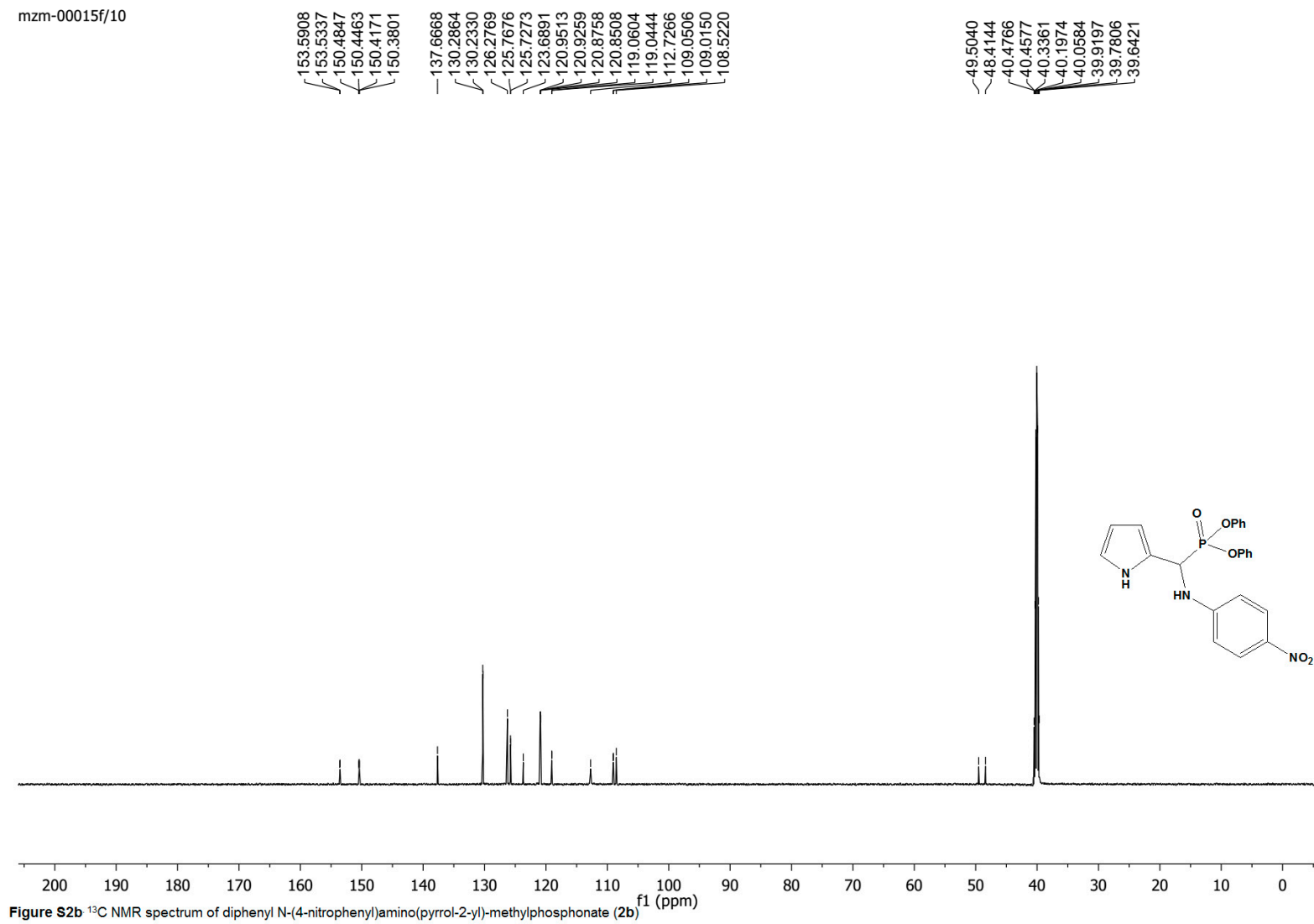


Figure S1d *cont.*

mmp-00010f/2

**Figure S1e.** ^{31}P NMR spectrum of diphenyl N-phenylamino(pyrrol-2-yl)-methylphosphonate (2a)

Figure S2a ¹H NMR spectrum of diphenyl N-(4-nitrophenyl)amino(pyrrol-2-yl)-methylphosphonate (2b)



mmp-160115f-P
kag-0001

—13.99

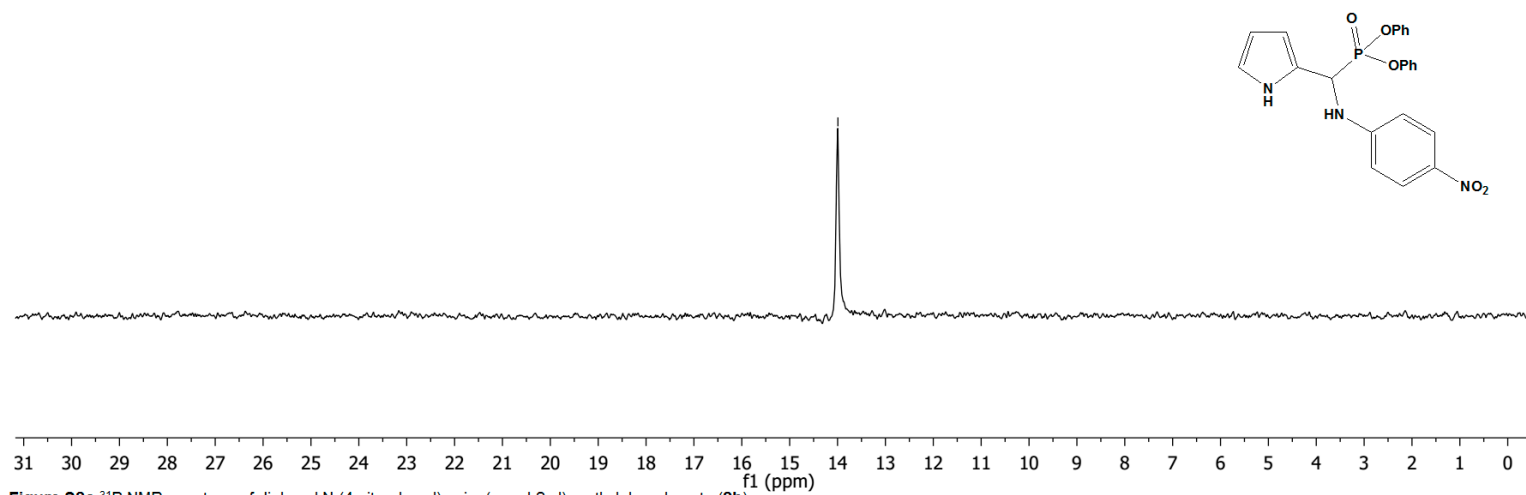


Figure S2c: ^{31}P NMR spectrum of diphenyl N-(4-nitrophenyl)amino(pyrrol-2-yl)-methylphosphonate (2b)

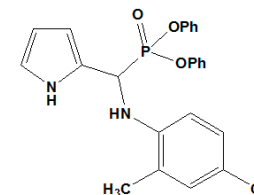


Figure S3a: ^1H NMR spectrum of diphenyl N-(4-chloro-2-methylphenyl)amino(pyrrol-2-yl)-methylphosphonate (**2c**)

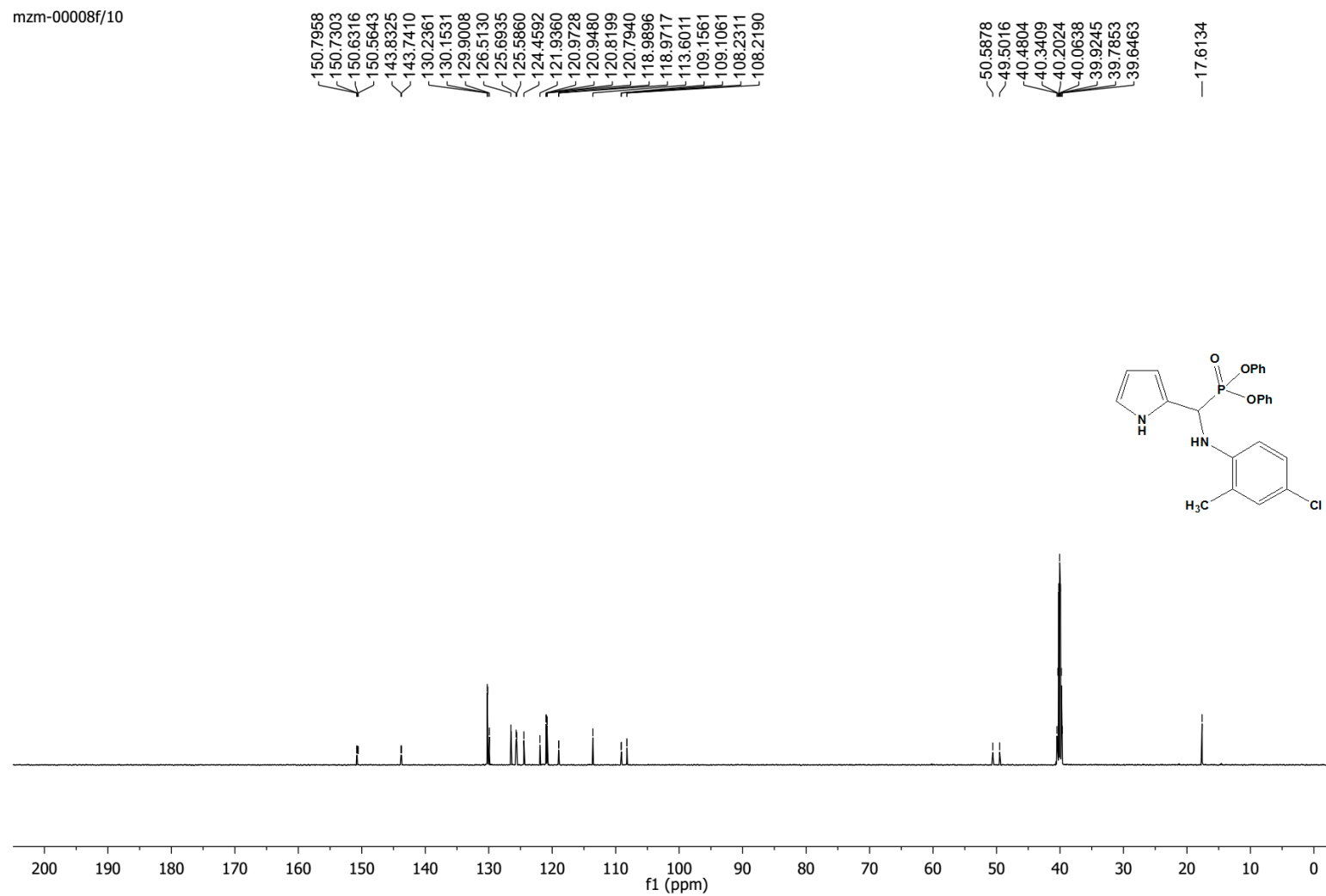


Figure S3b ^{13}C NMR spectrum of diphenyl N-(4-chloro-2-methylphenyl)amino(pyrrol-2-yl)-methylphosphonate (2c)

mmp-16018F-P
kag-0001

14.99
14.95

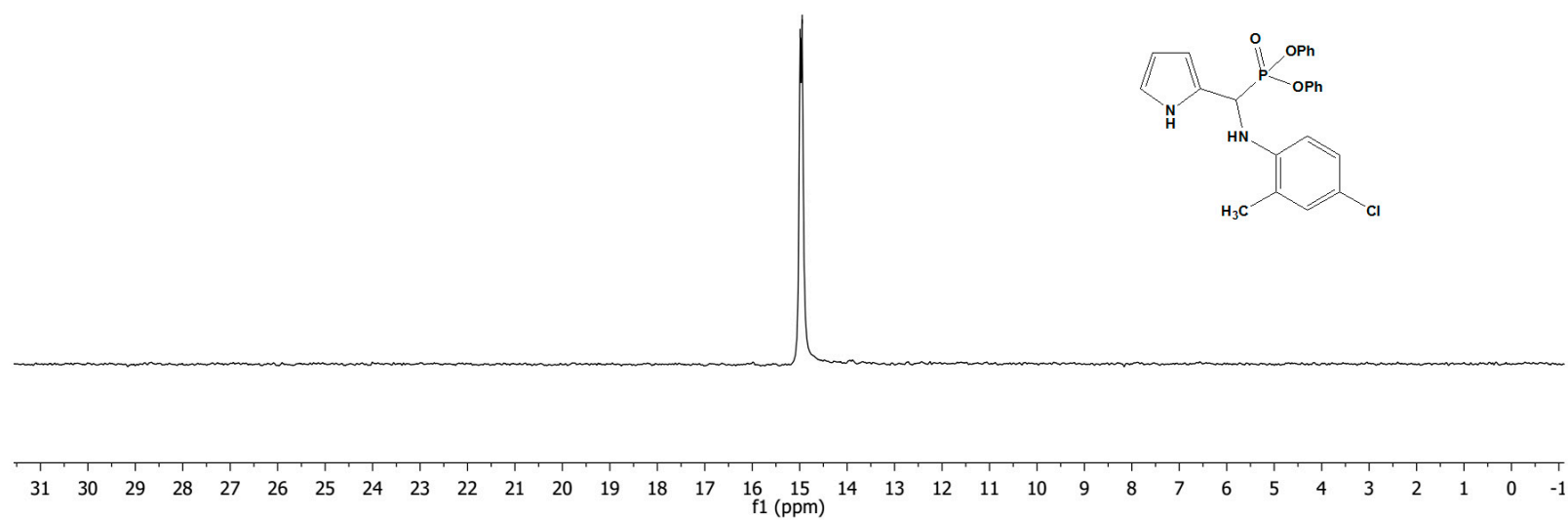
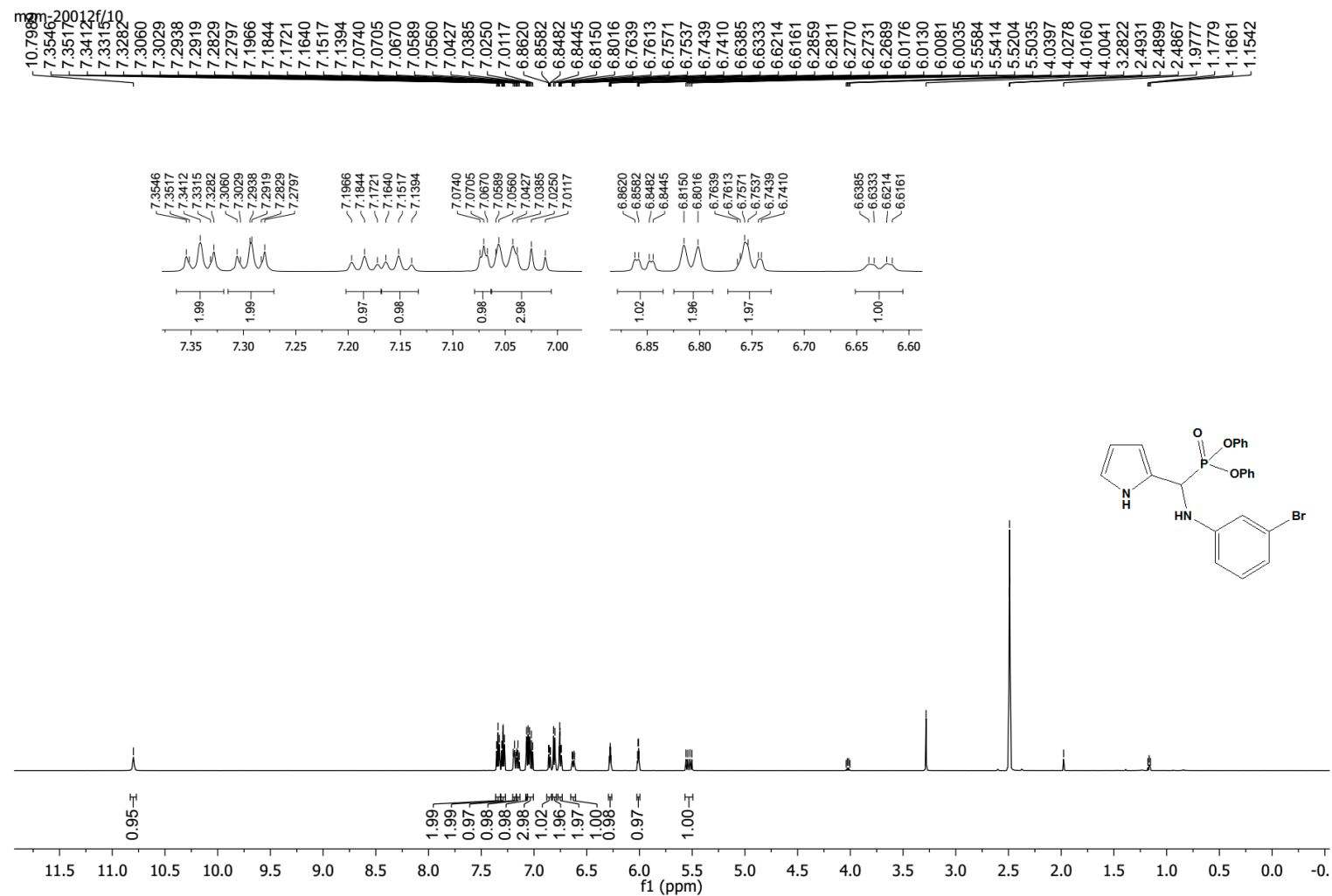
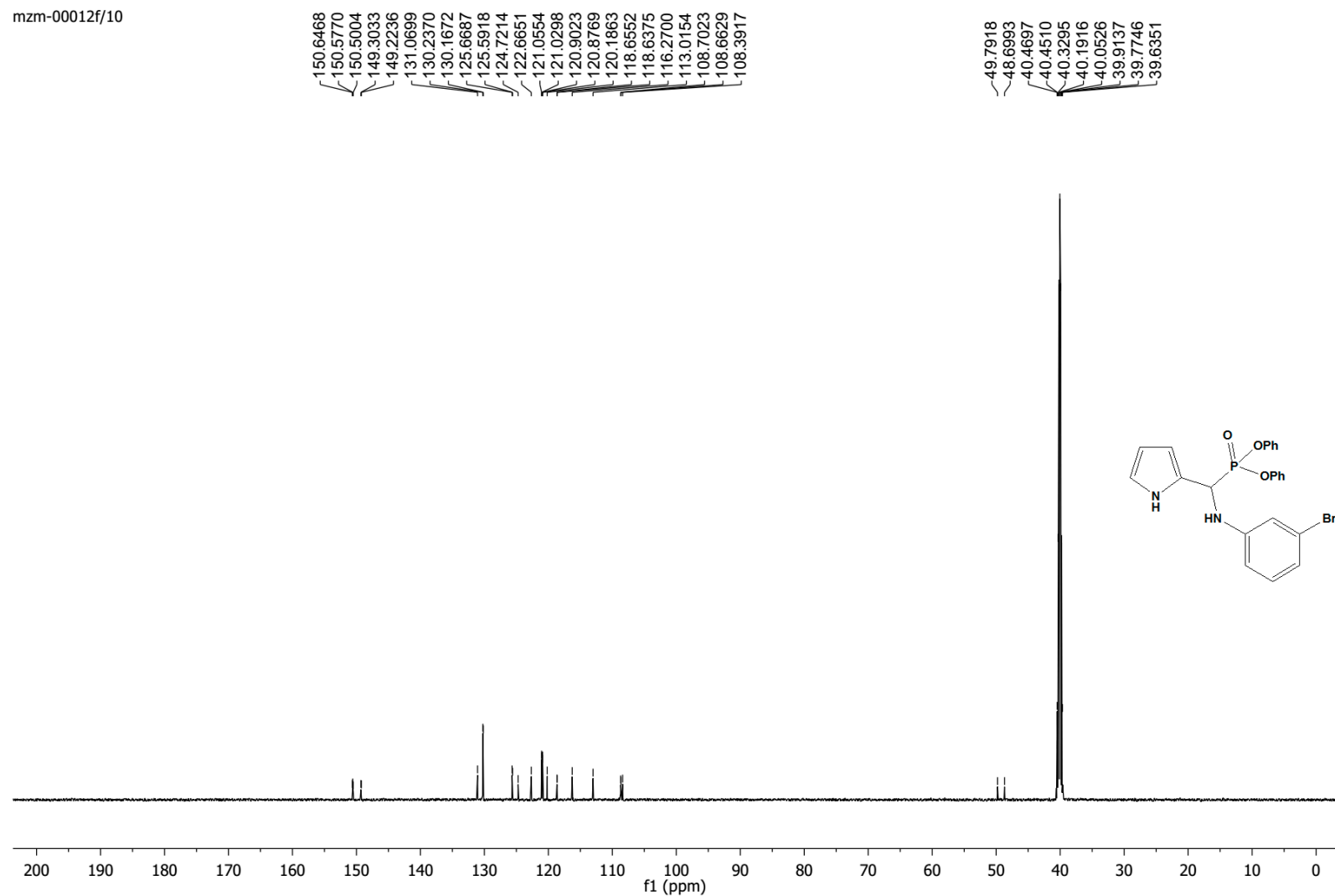
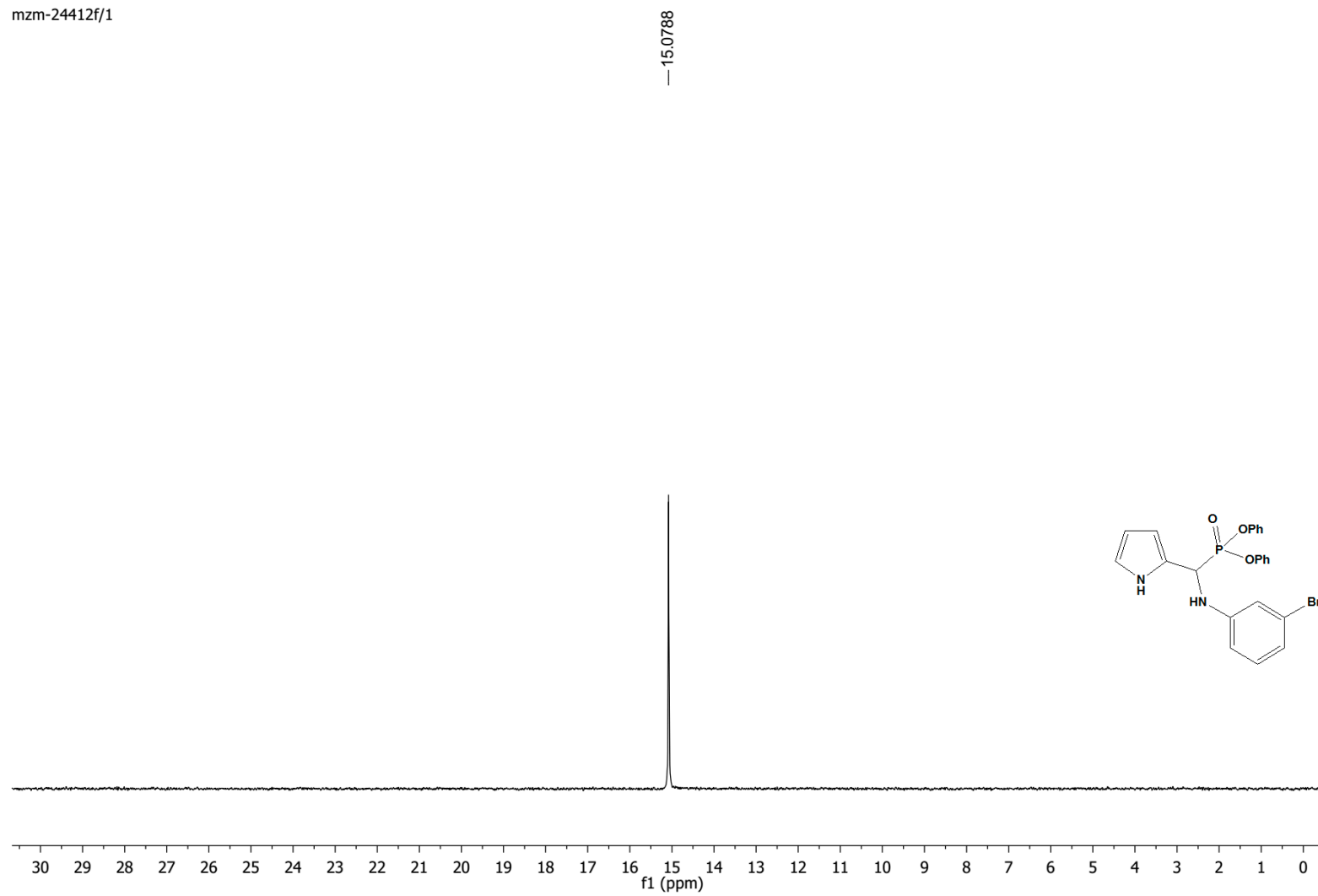


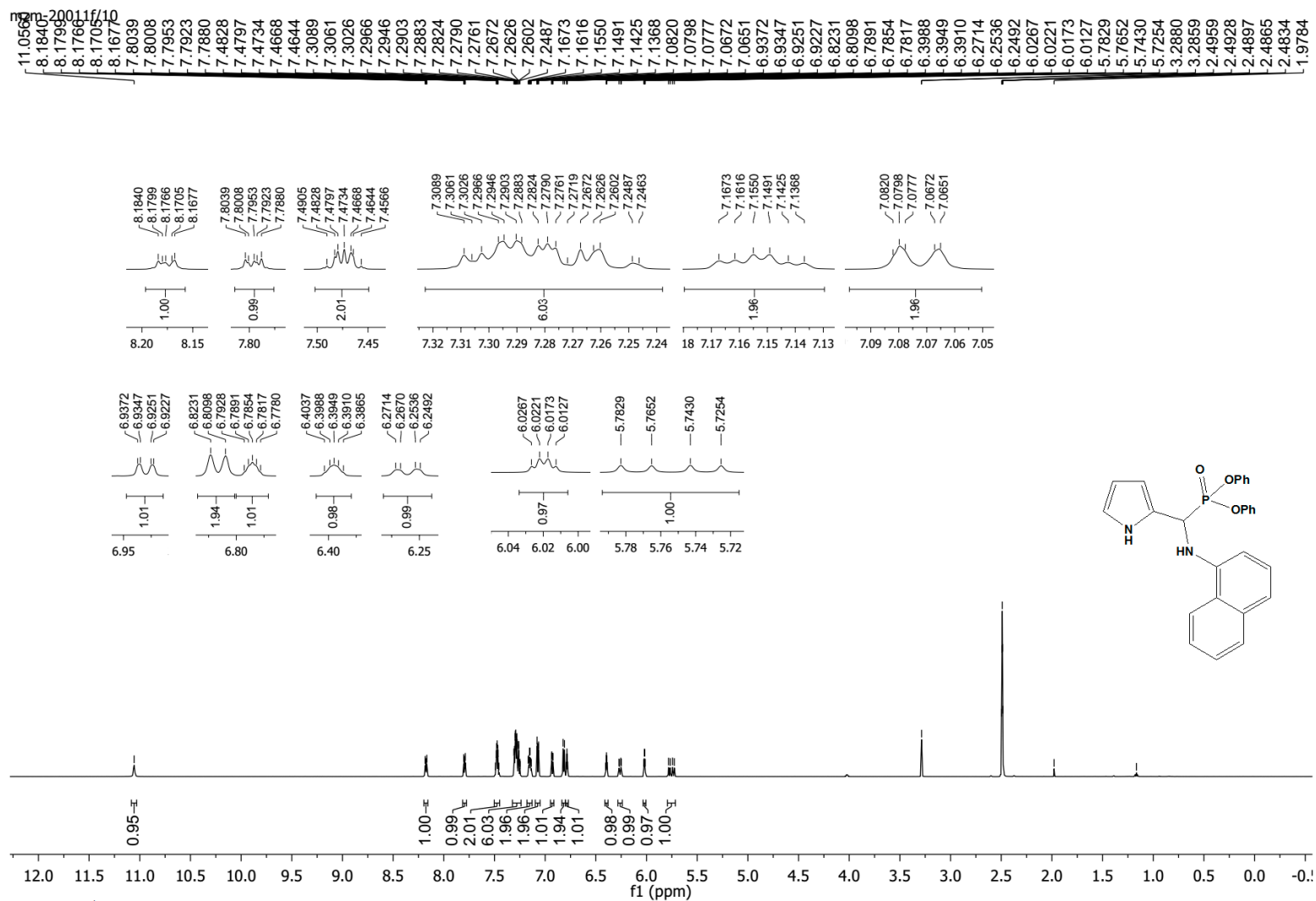
Figure S3c ^{31}P NMR spectrum of diphenyl N-(4-chloro-2-methylphenyl)amino(pyrrol-2-yl)-methylphosphonate (2c)

Figure S4a ¹H NMR spectrum of diphenyl N-(3-bromophenyl)amino(pyrrol-2-yl)-methylphosphonate (2d)

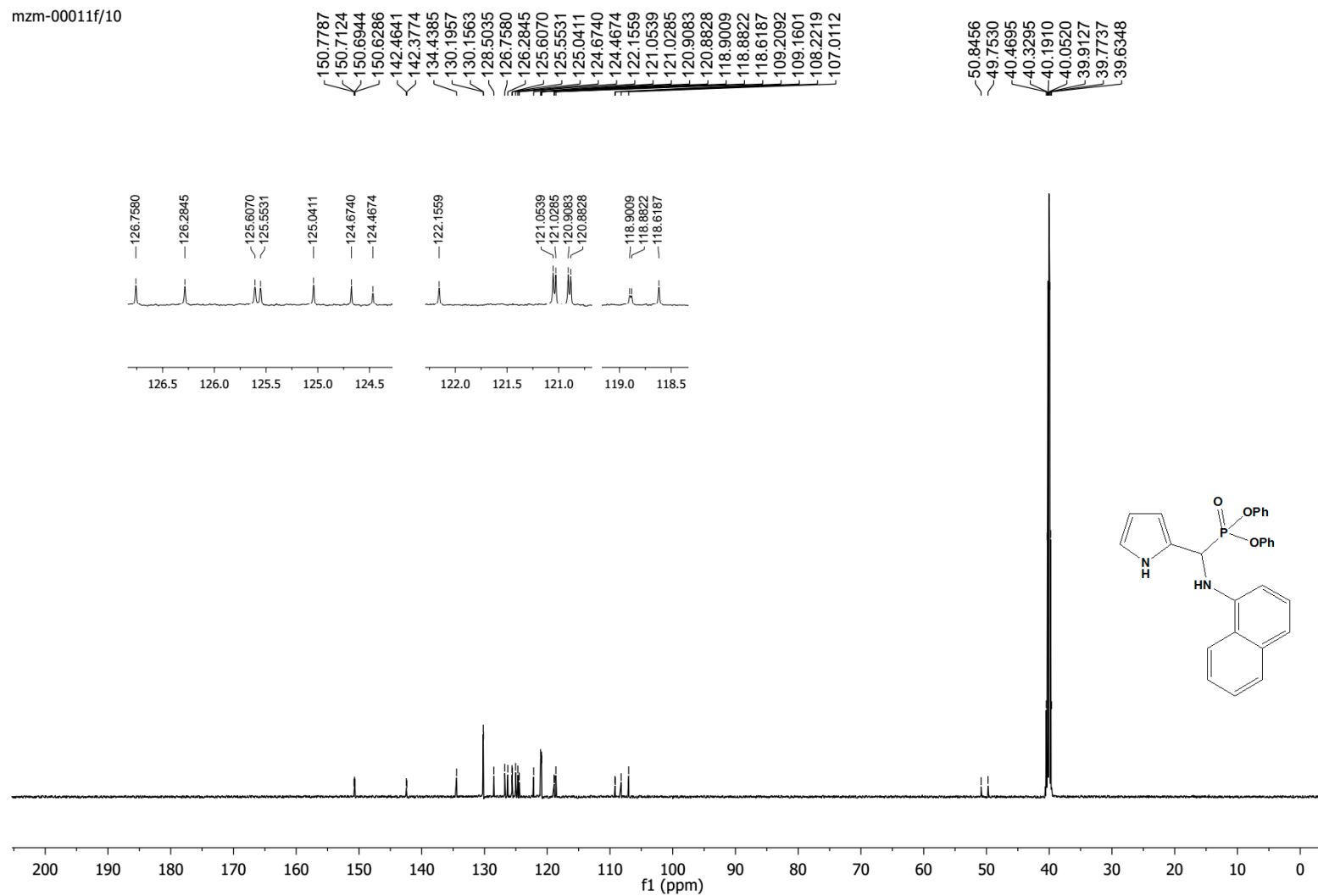


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**Figure S4c** ^{31}P NMR spectrum of diphenyl N-(3-bromophenyl)amino(pyrrol-2-yl)-methylphosphonate (2d)

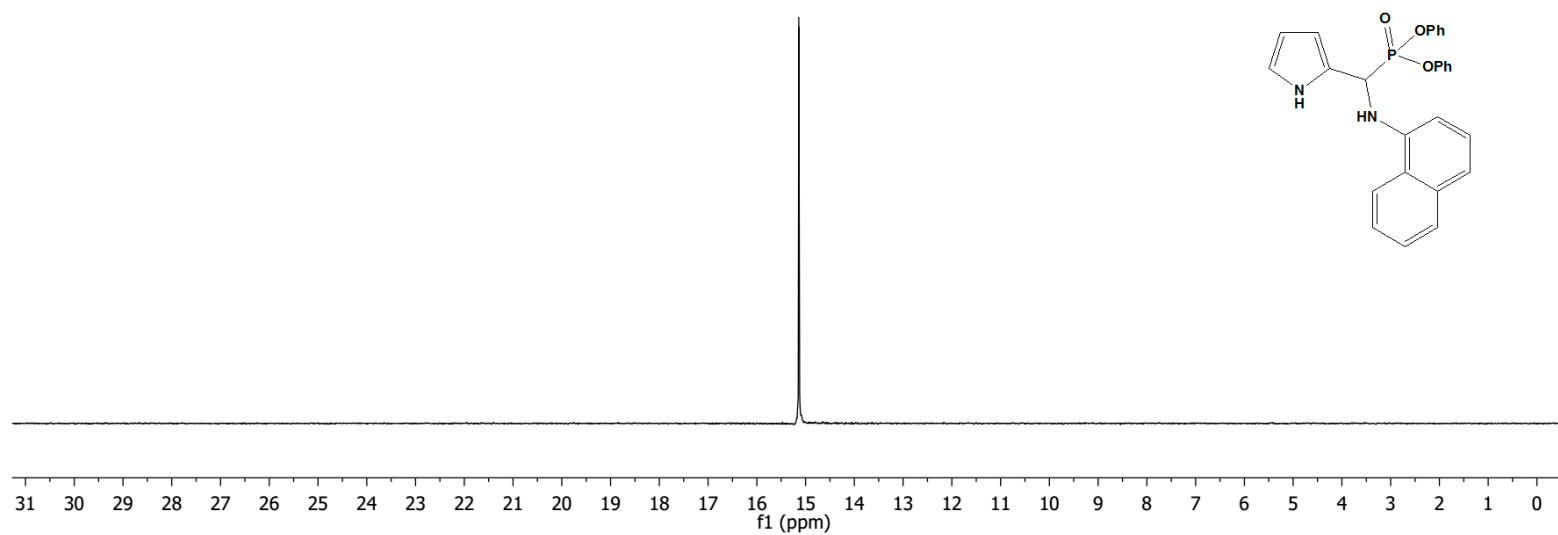
Figure S5a ¹H NMR spectrum of diphenyl N-(1-naphthyl)amino(pyrrol-2-yl)-methylphosphonate (2e)

mzm-00011f/10

Figure S5b ¹³C NMR spectrum of diphenyl N-(1-naphthyl)amino(pyrrol-2-yl)-methylphosphonate (2e)

mmp-00011f/2

— 15.1392

**Figure S5c** ^{31}P NMR spectrum of diphenyl N-(1-naphthyl)amino(pyrrol-2-yl)-methylphosphonate (2e)

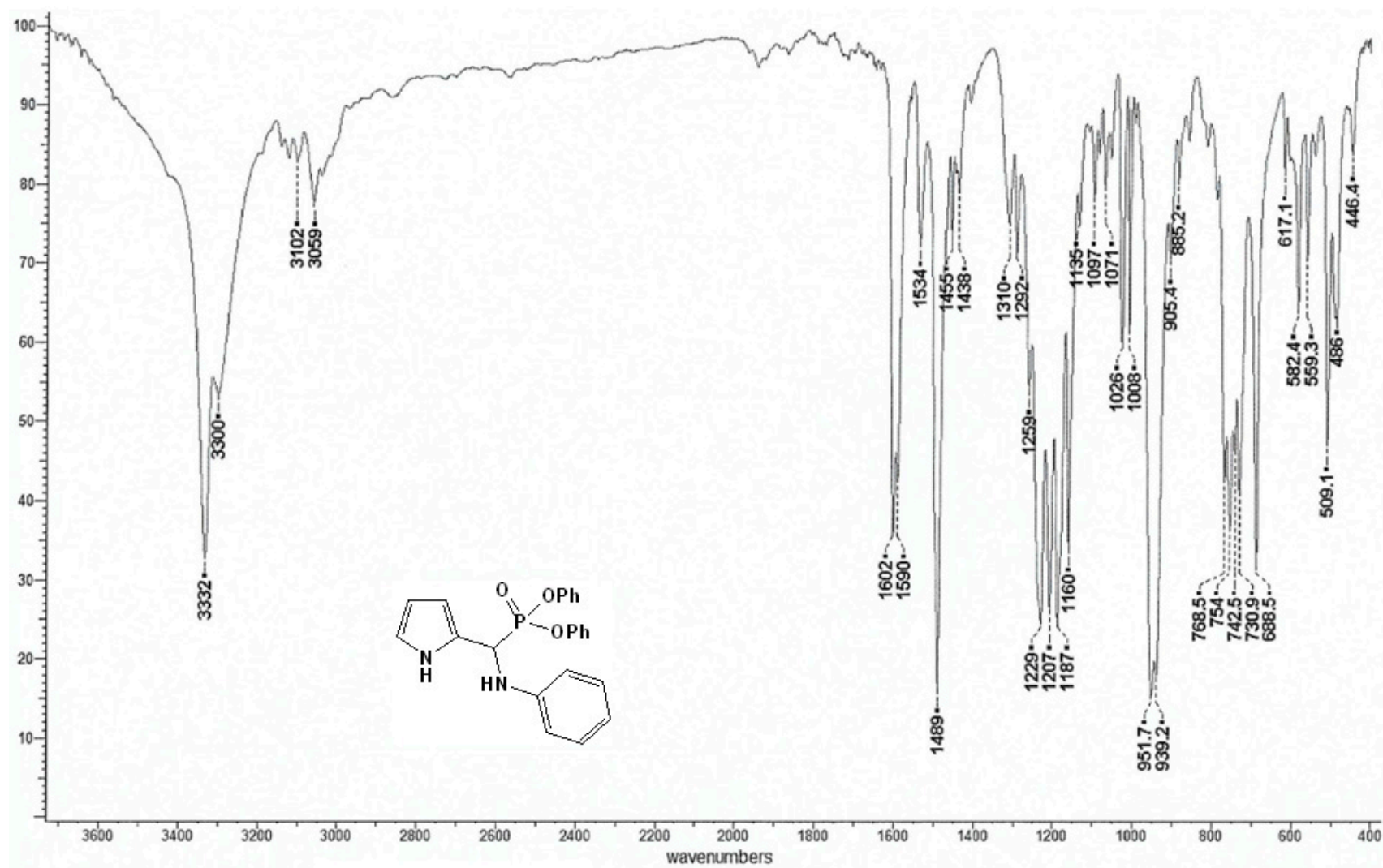


Figure S6a. FT-IR spectra of diphenyl N-phenylamino(pyrrol-2-yl)-methylphosphonate 2a

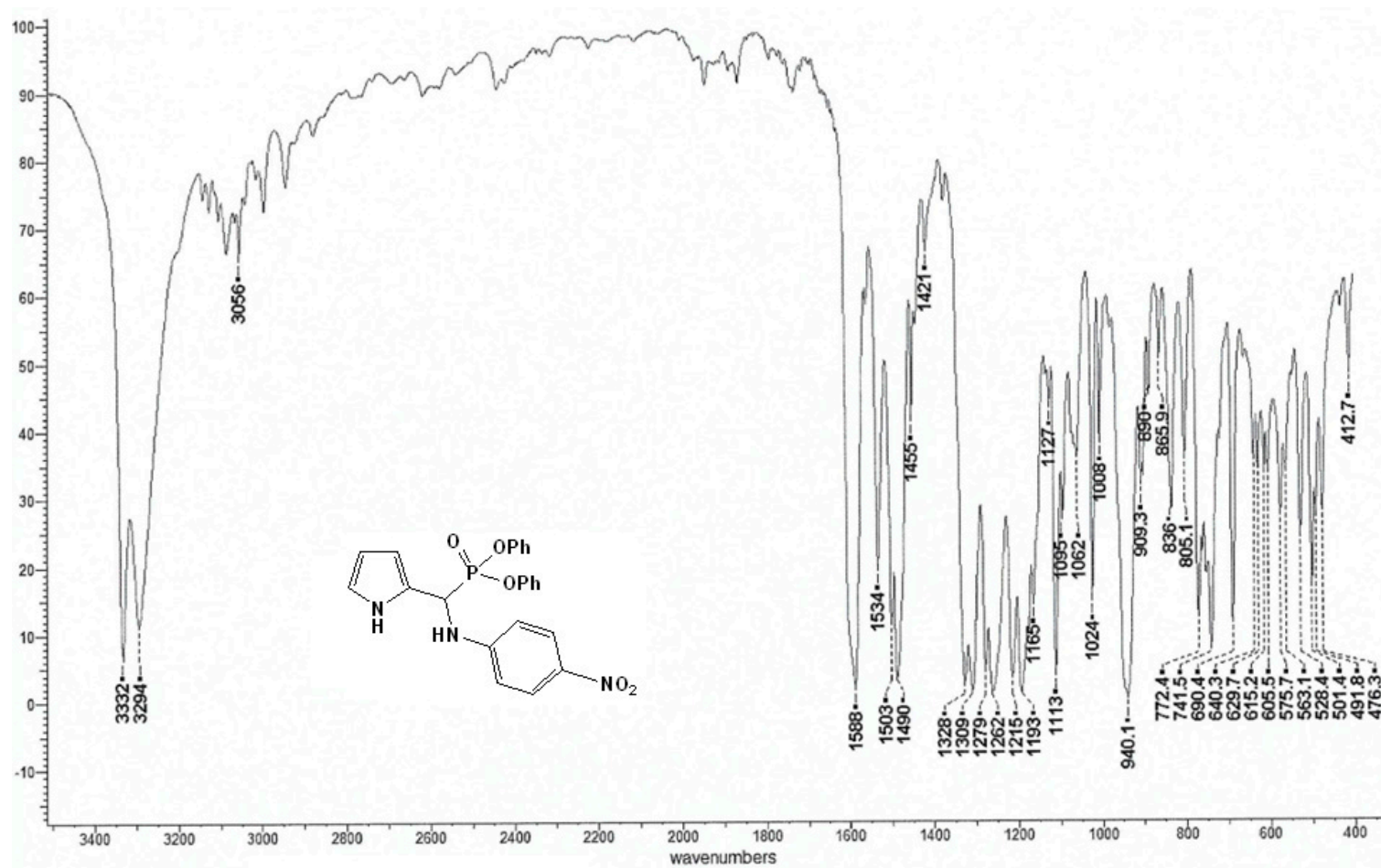


Figure S6b. FT-IR spectra of diphenyl N-(4-nitrophenyl)-amino(pyrrol-2-yl)methylphosphonate **2b**

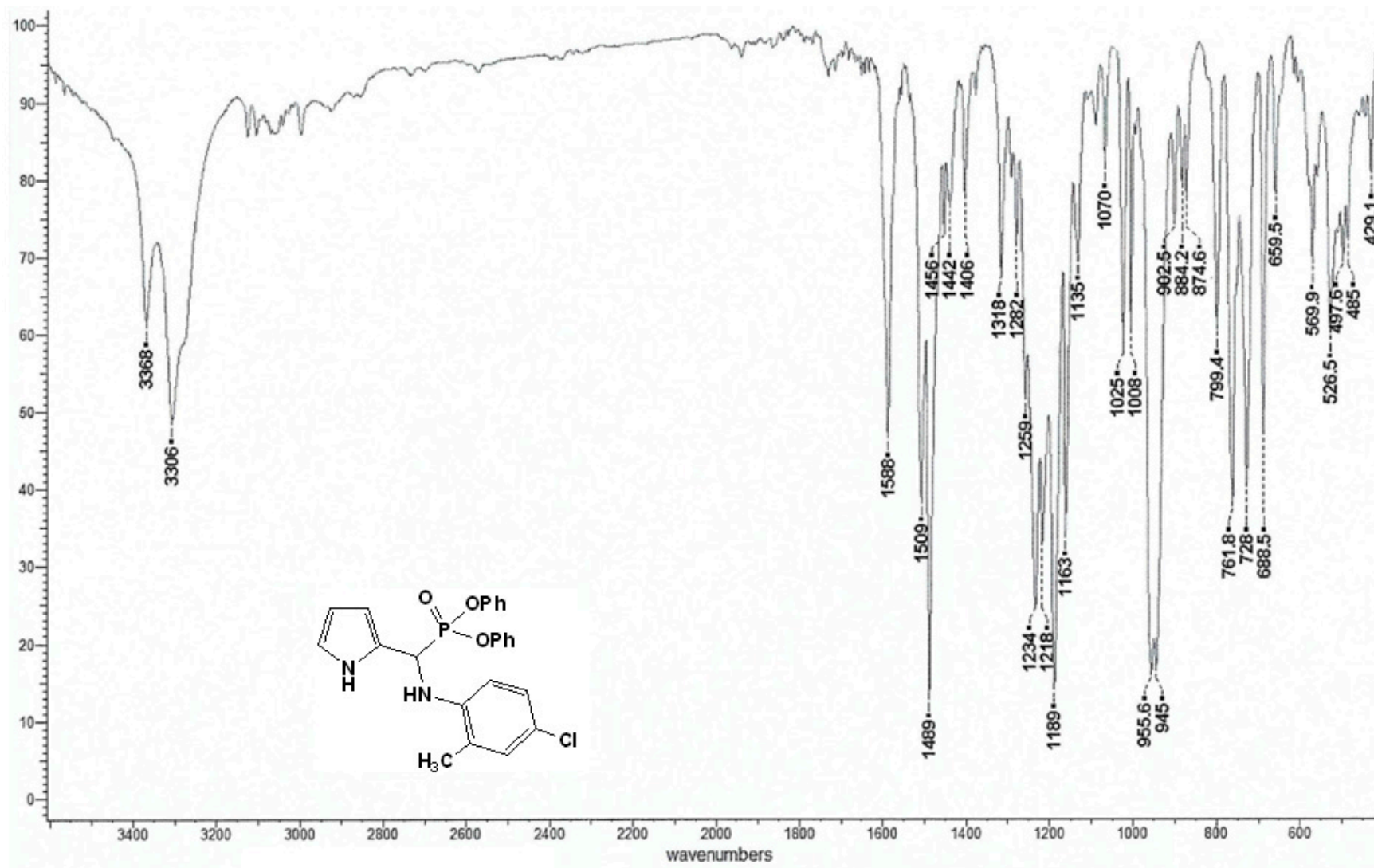


Figure S6c. FT-IR spectra of diphenyl N-(4-chloro-2-methylphenyl)amino-(pyrrol-2-yl)methylphosphonate 2c

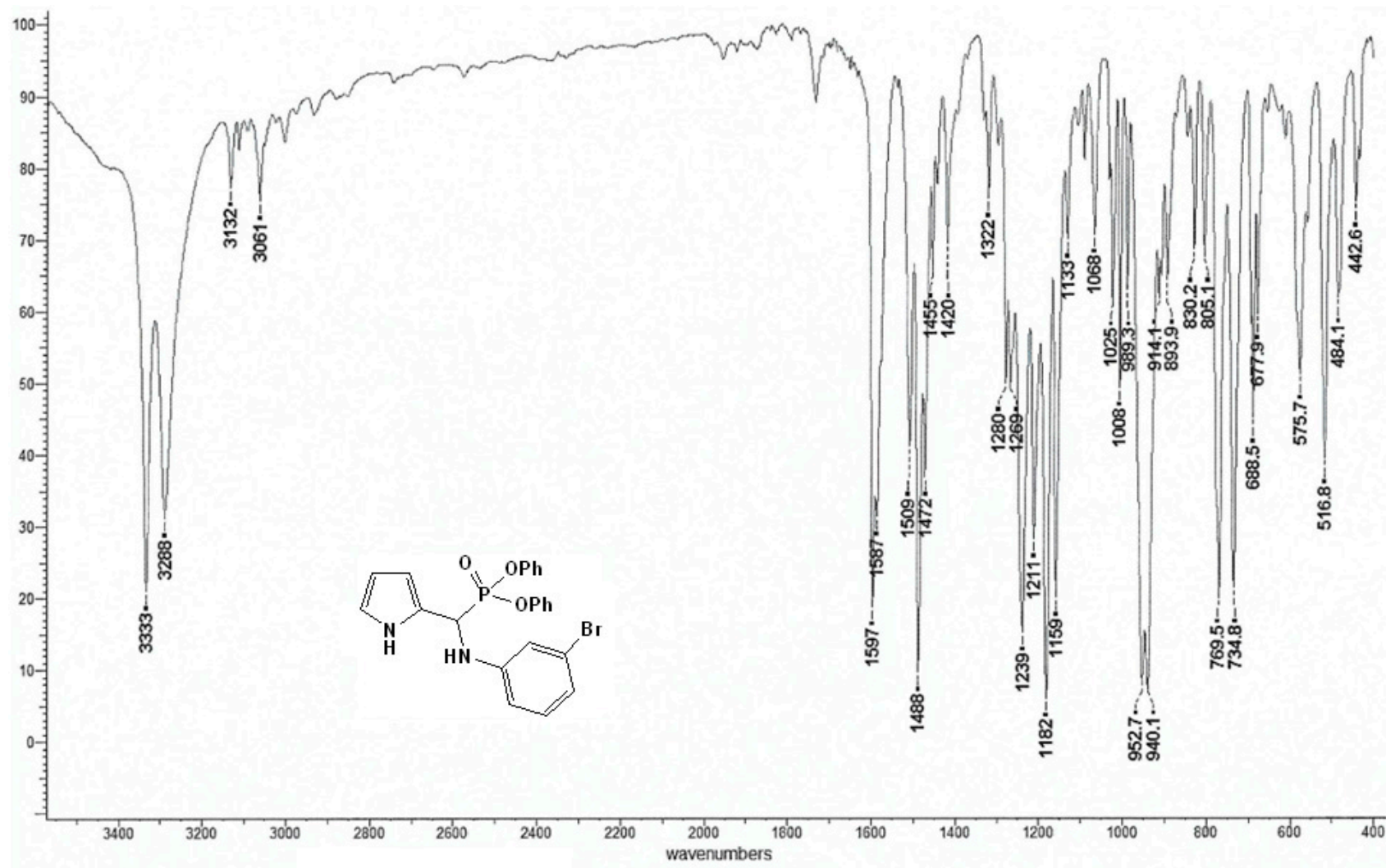


Figure S6d. FT-IR spectra of diphenyl N-(3-bromophenyl)-amino(pyrrol-2-yl)methylphosphonate 2d

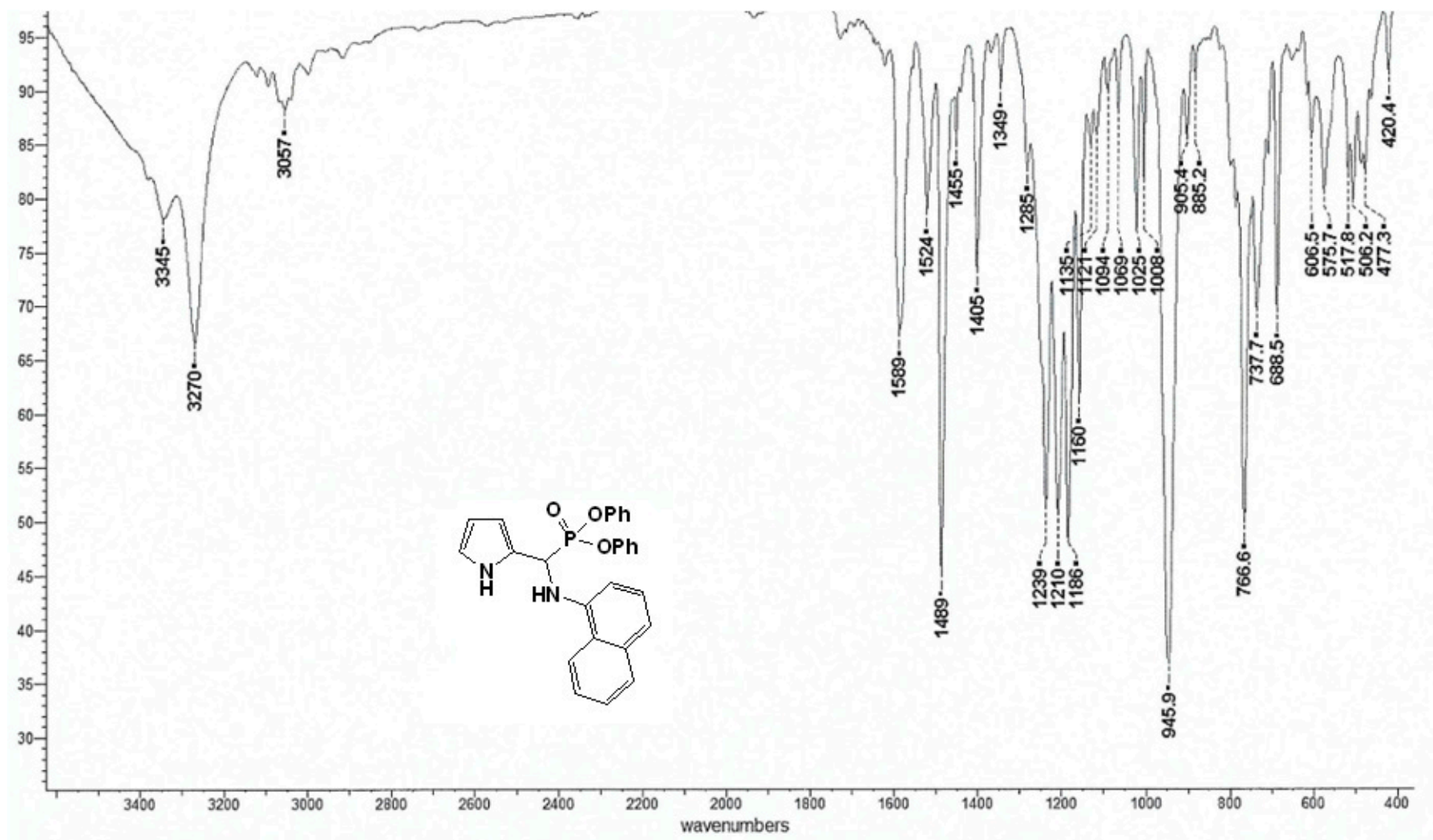


Figure S6e. FT-IR spectra of diphenyl N-(1-naphthyl)amino-(pyrrol-2-yl)methylphosphonate 2e

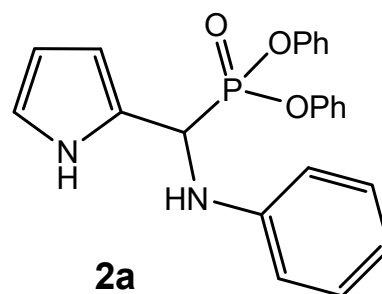
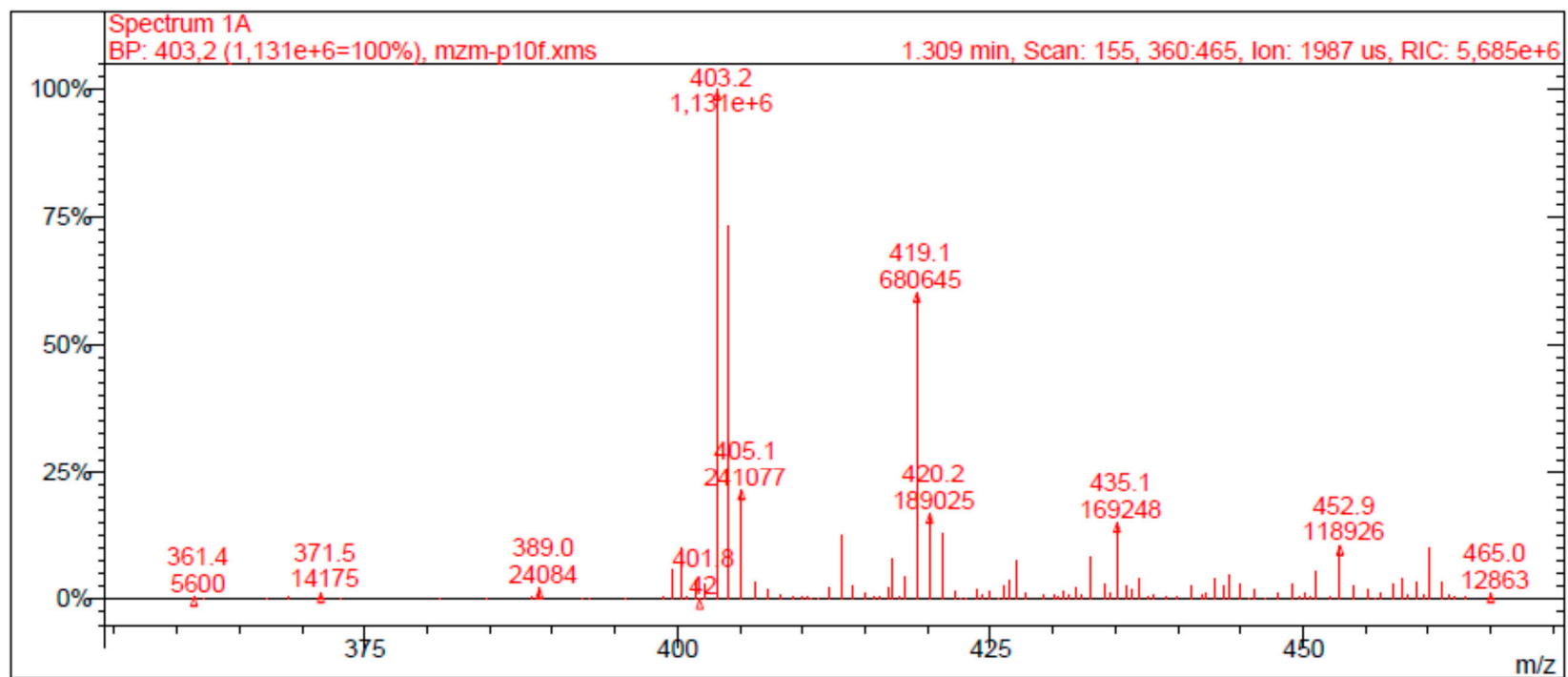


Figure S7a. ESI-MS spectra of diphenyl N-phenylamino(pyrrol-2-yl)-methylphosphonate (**2a**).

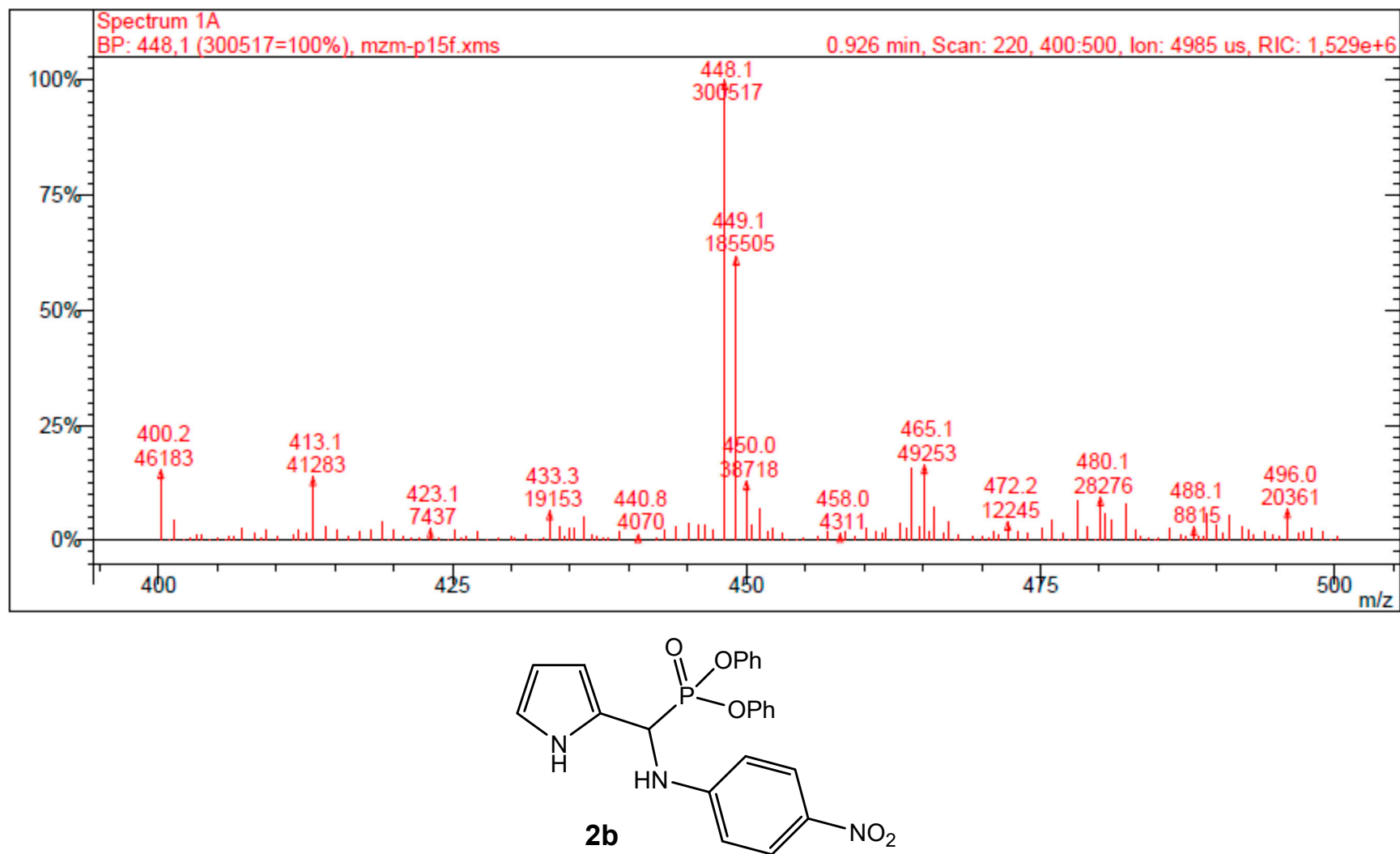


Figure S7b. ESI-MS spectra of diphenyl *N*-(4-nitrophenyl)-amino(pyrrol-2-yl)methylphosphonate (**2b**).

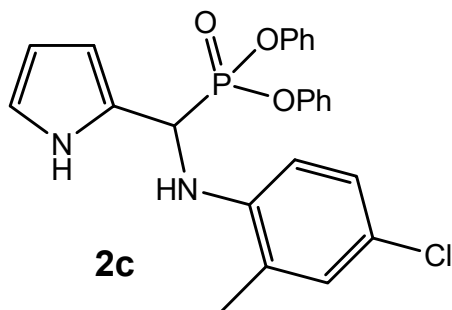
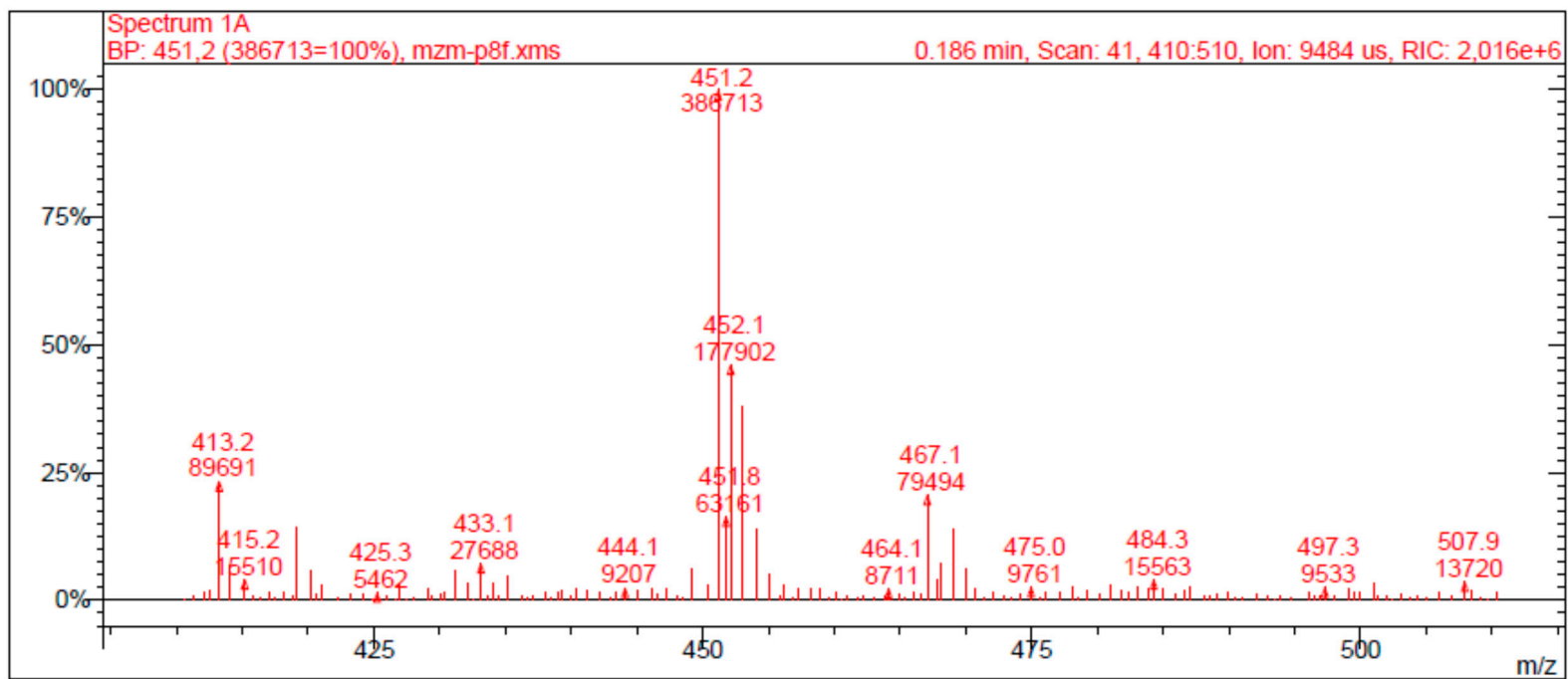


Figure S7c. ESI-MS spectra of diphenyl N-(4-chloro-2-methylphenyl)amino-(pyrrol-2-yl)methylphosphonate (**2c**).

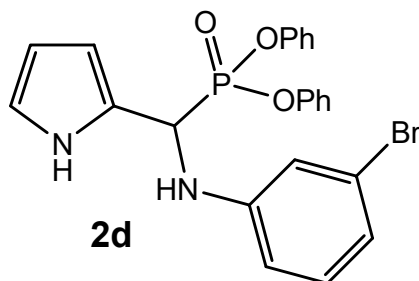
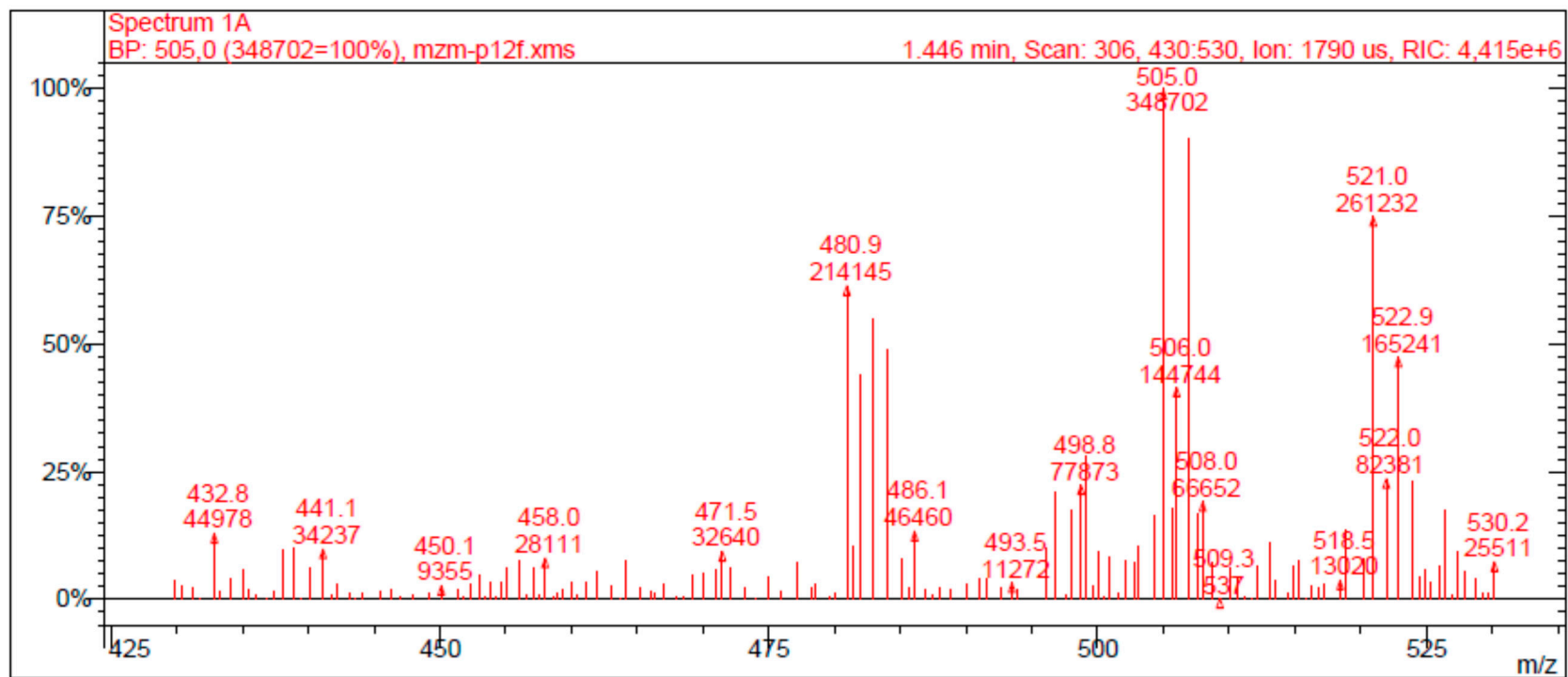


Figure S7d. ESI-MS spectra of diphenyl *N*-(3-bromophenyl)-amino(pyrrol-2-yl)methylphosphonate (**2d**).

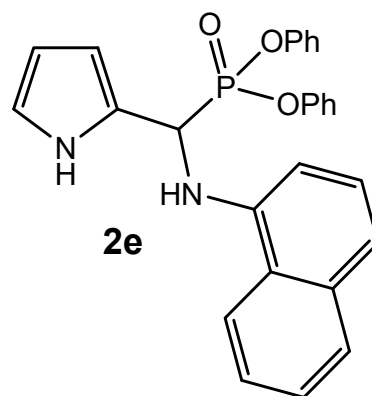
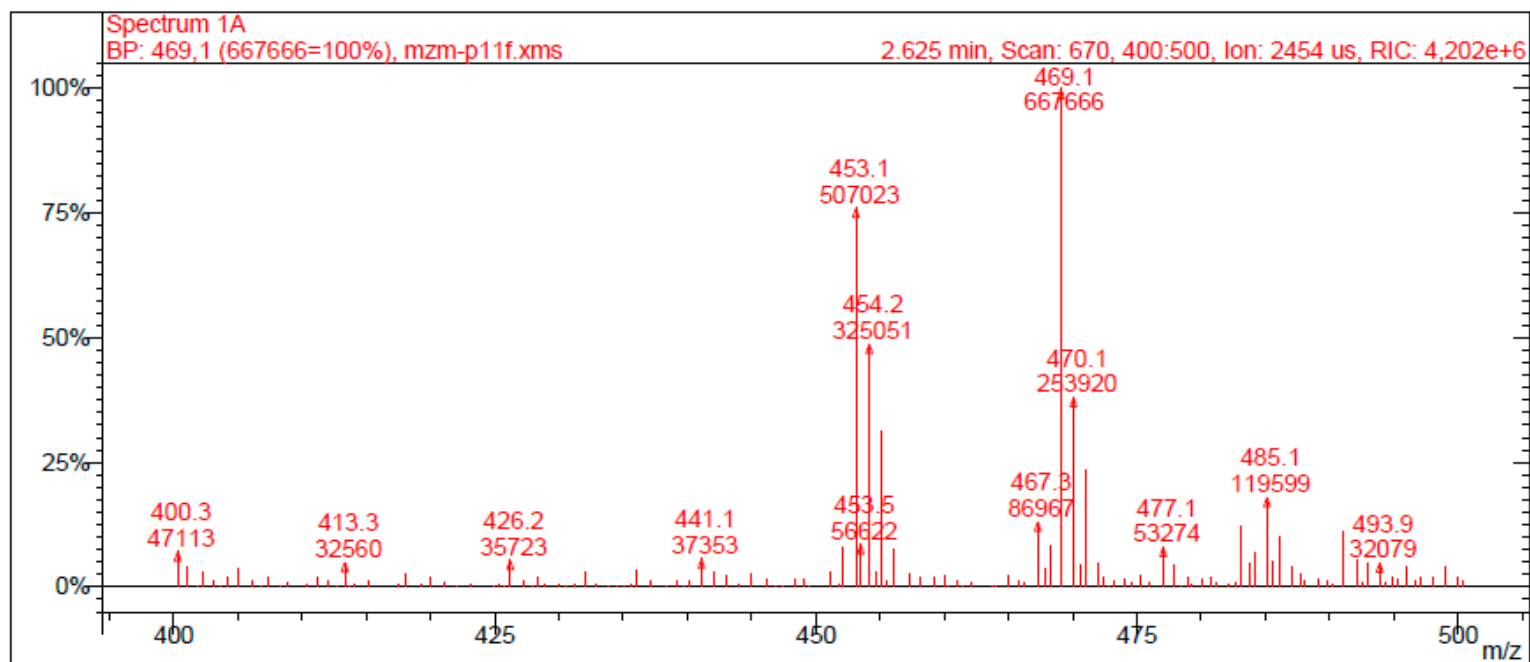


Figure S7e. ESI-MS spectra of diphenyl *N*-(1-naphthyl)amino-(pyrrol-2-yl)methylphosphonate (**2e**).