

Supporting Information File 2

for

A novel family of (1-aminoalkyl)(trifluoromethyl)- and - (difluoromethyl)phosphinic acids – analogues of α -amino acids

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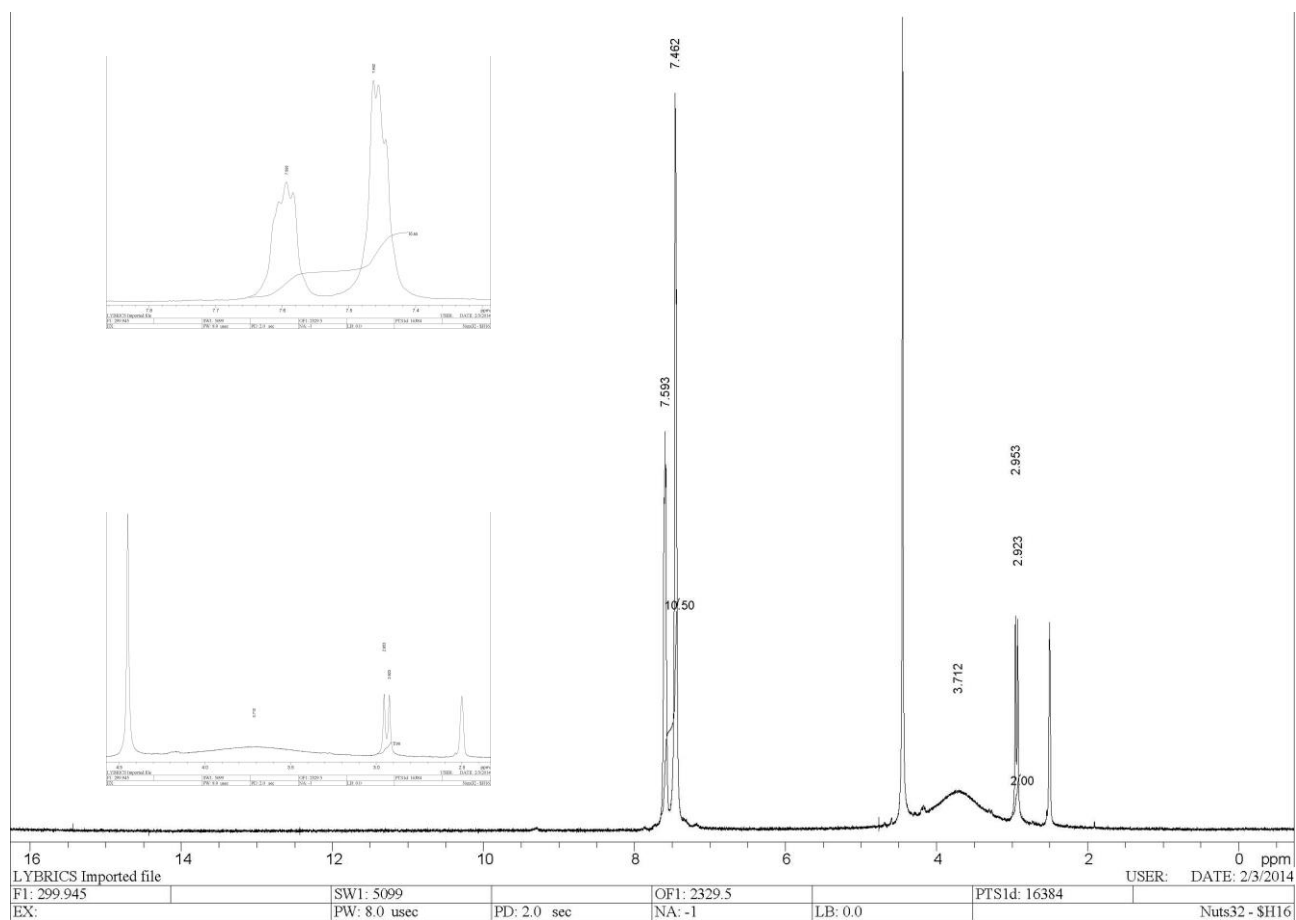
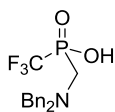
Email: Yurii L. Yagupolskii - Yagupolskii@ioch.kiev.ua

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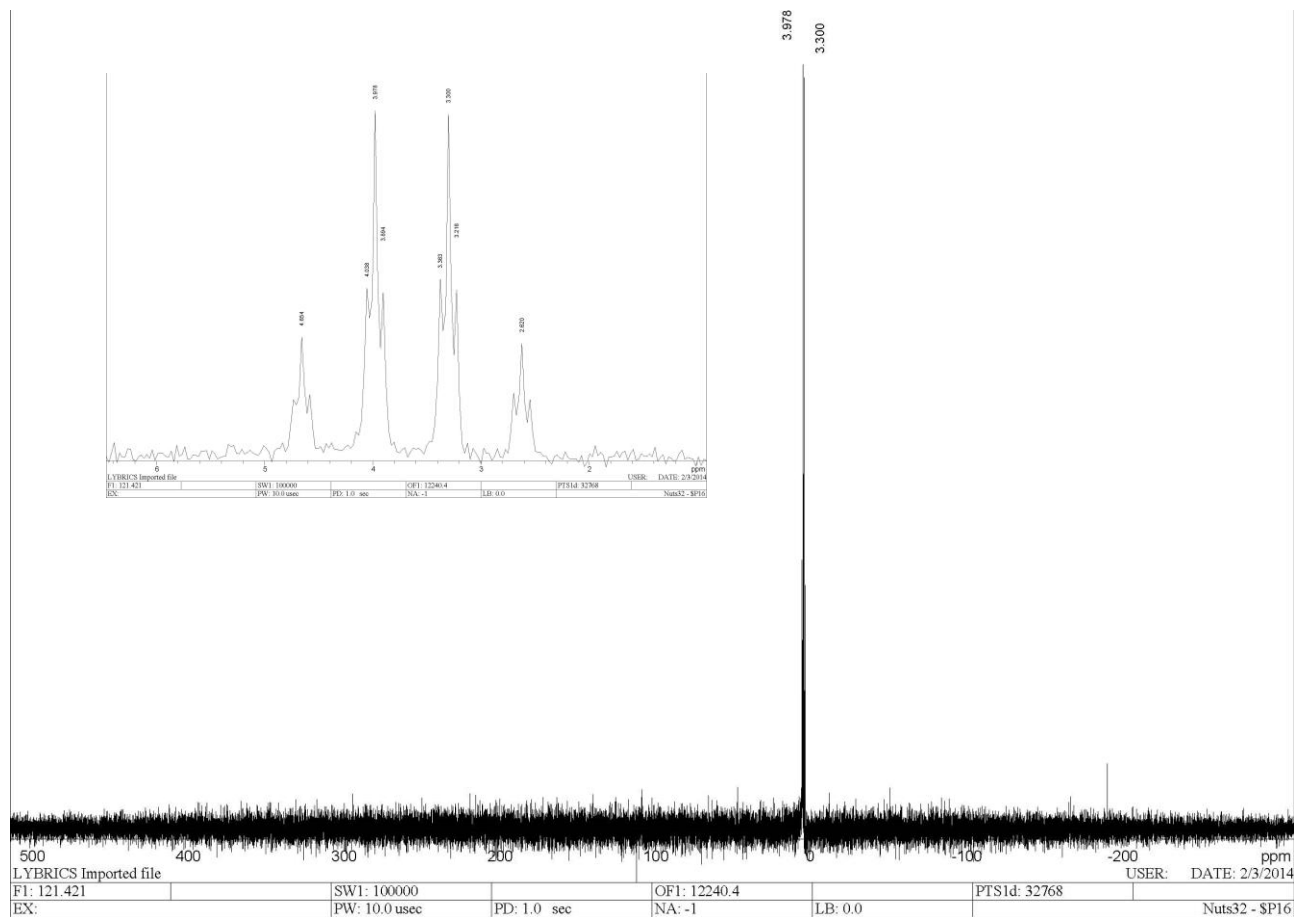
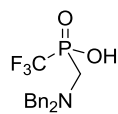
NMR spectra of the most typical compounds.

(Dibenzylamino)methyl(trifluoromethyl)phosphinic acid (**13a**).

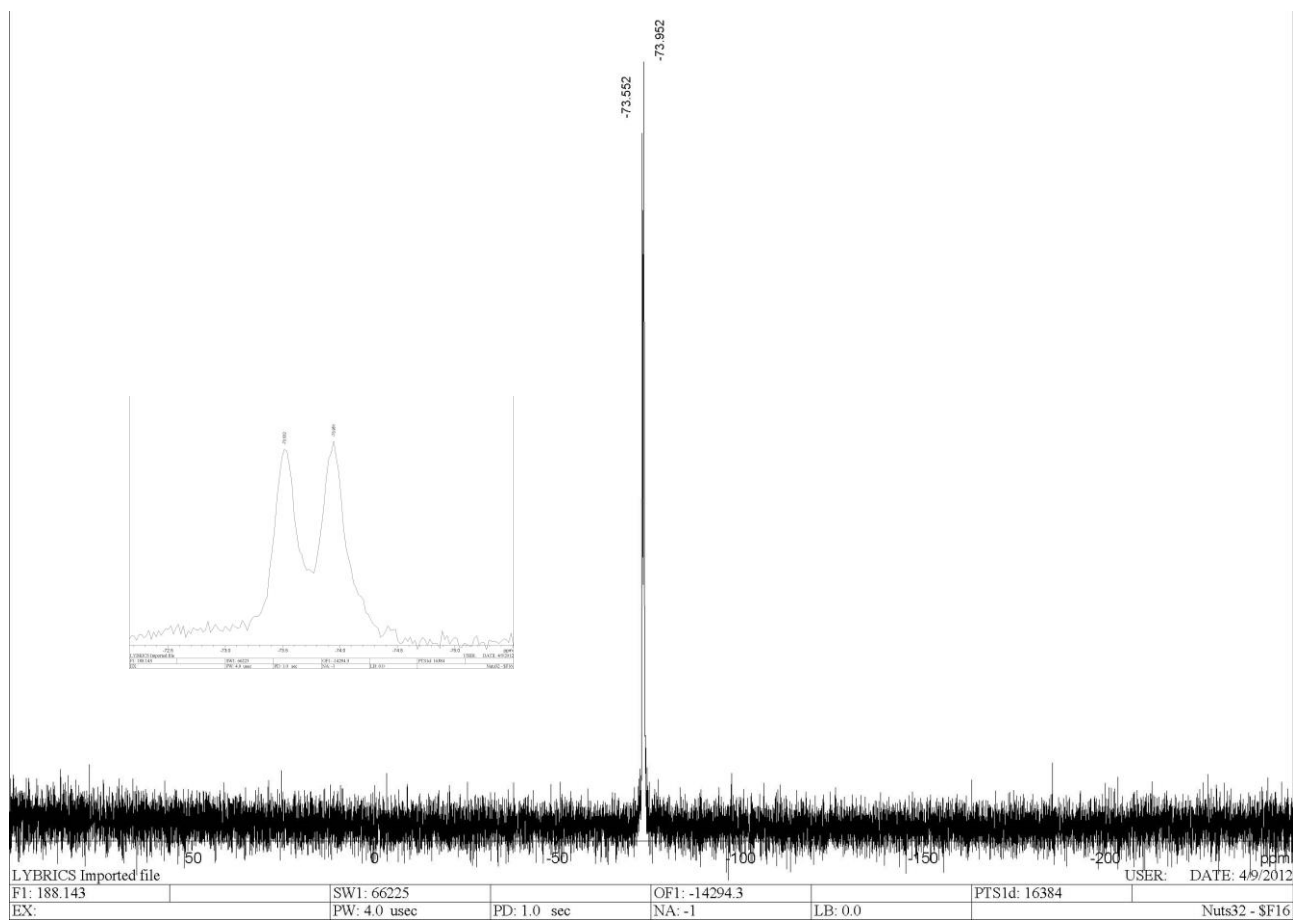
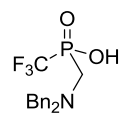
^1H (300 MHz), DMSO- d_6



^{31}P (121 MHz), DMSO- d_6

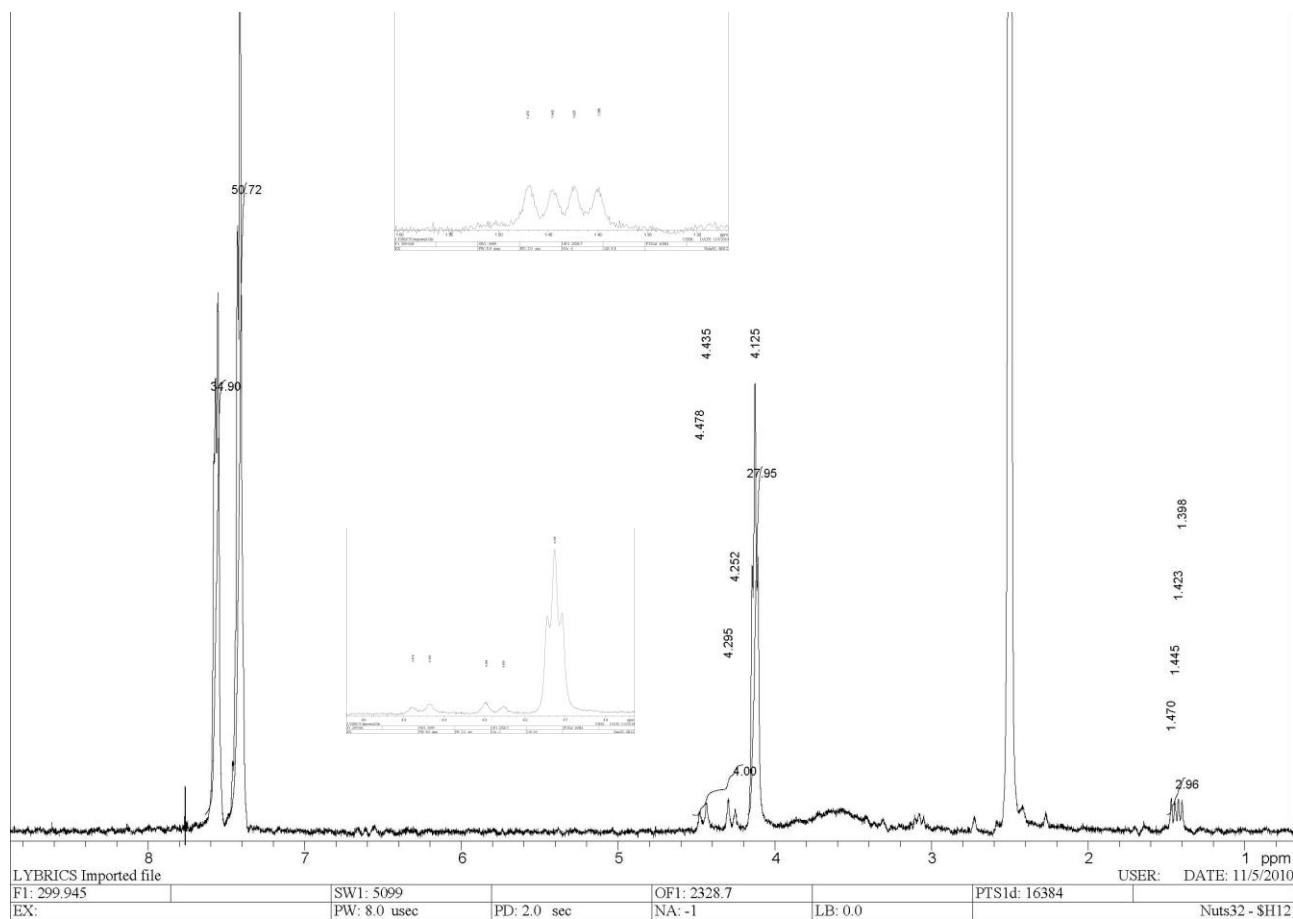
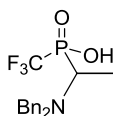


^{19}F (188 MHz), DMSO- d_6



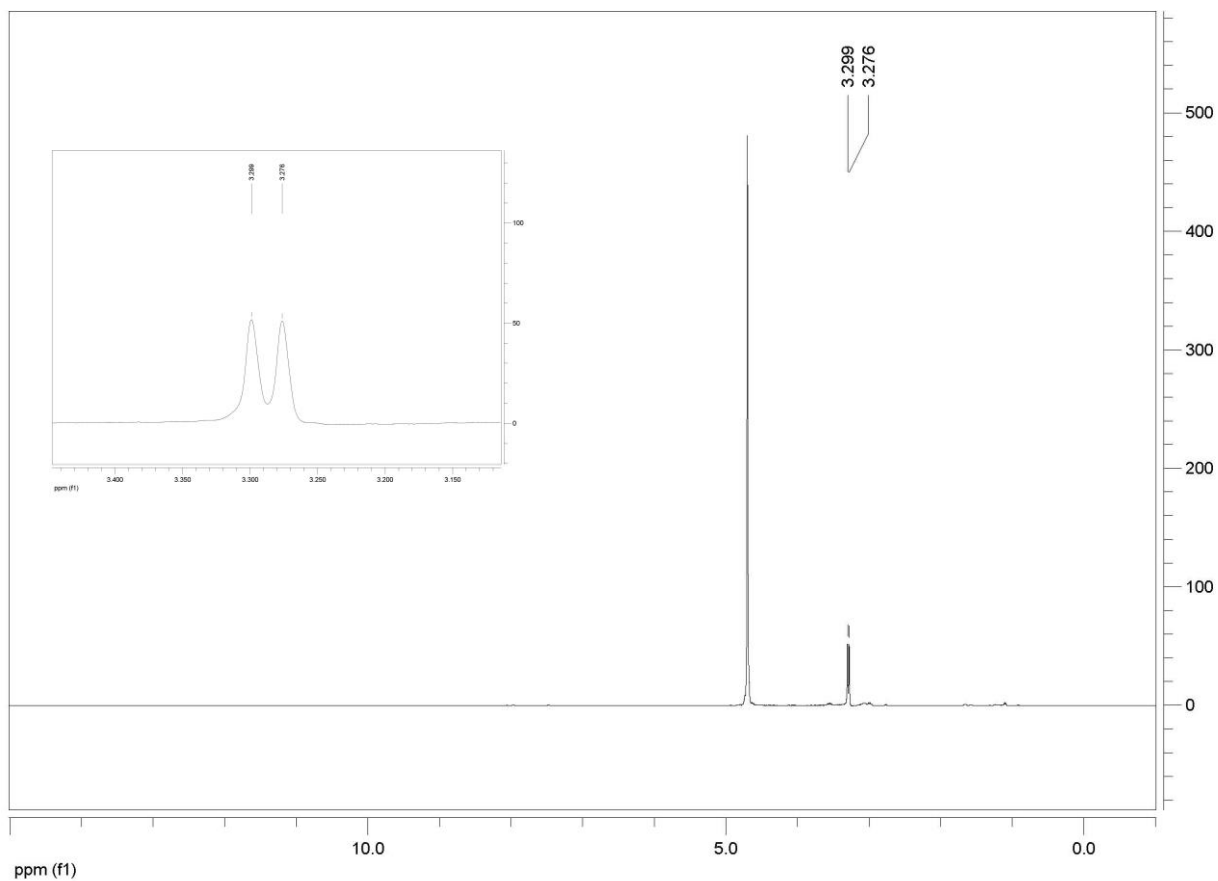
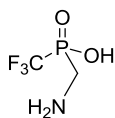
[1-(Dibenzylamino)ethyl](trifluoromethyl)phosphinic acid (**13c**) in a mixture with $\text{Bn}_2\text{NH}\cdot\text{HCl}$ (~1:7).

^1H (300 MHz), DMSO-d_6

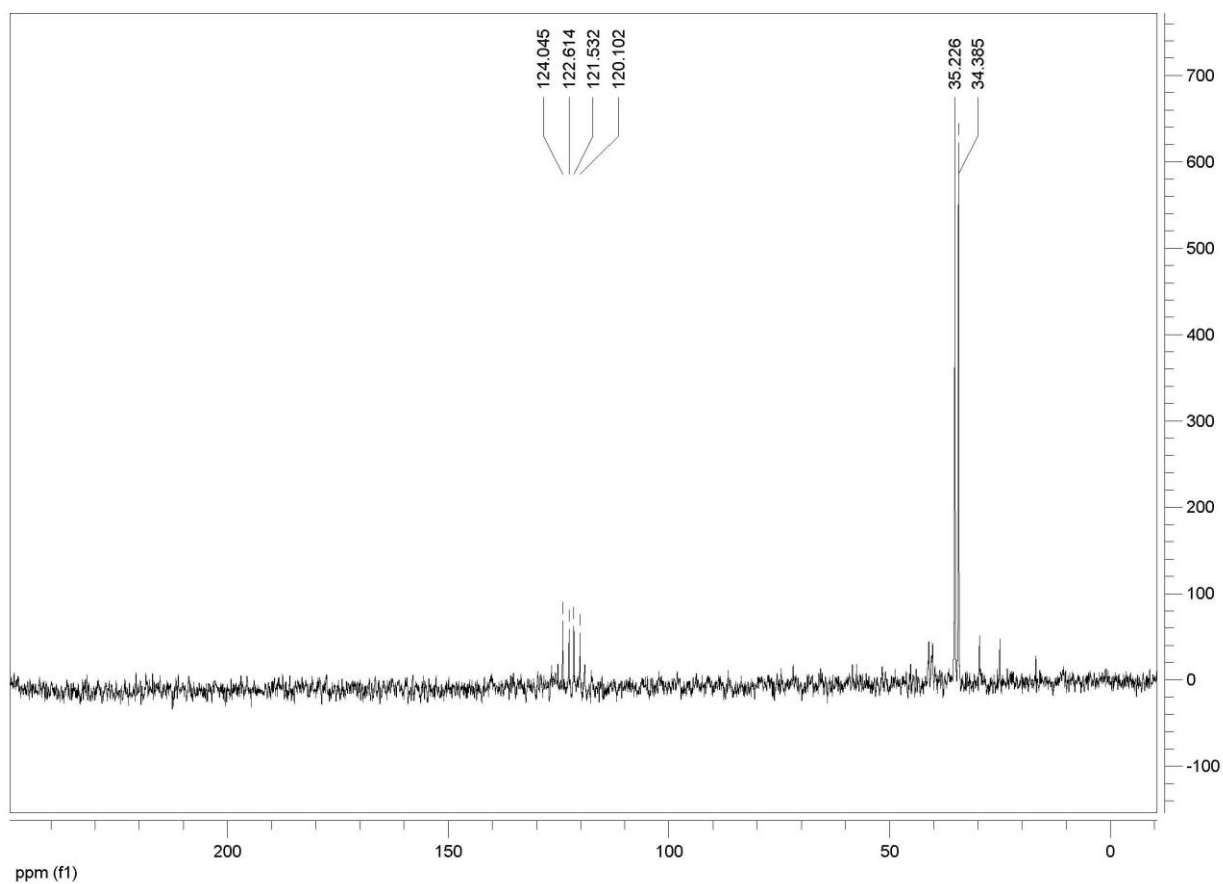
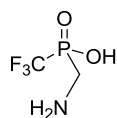


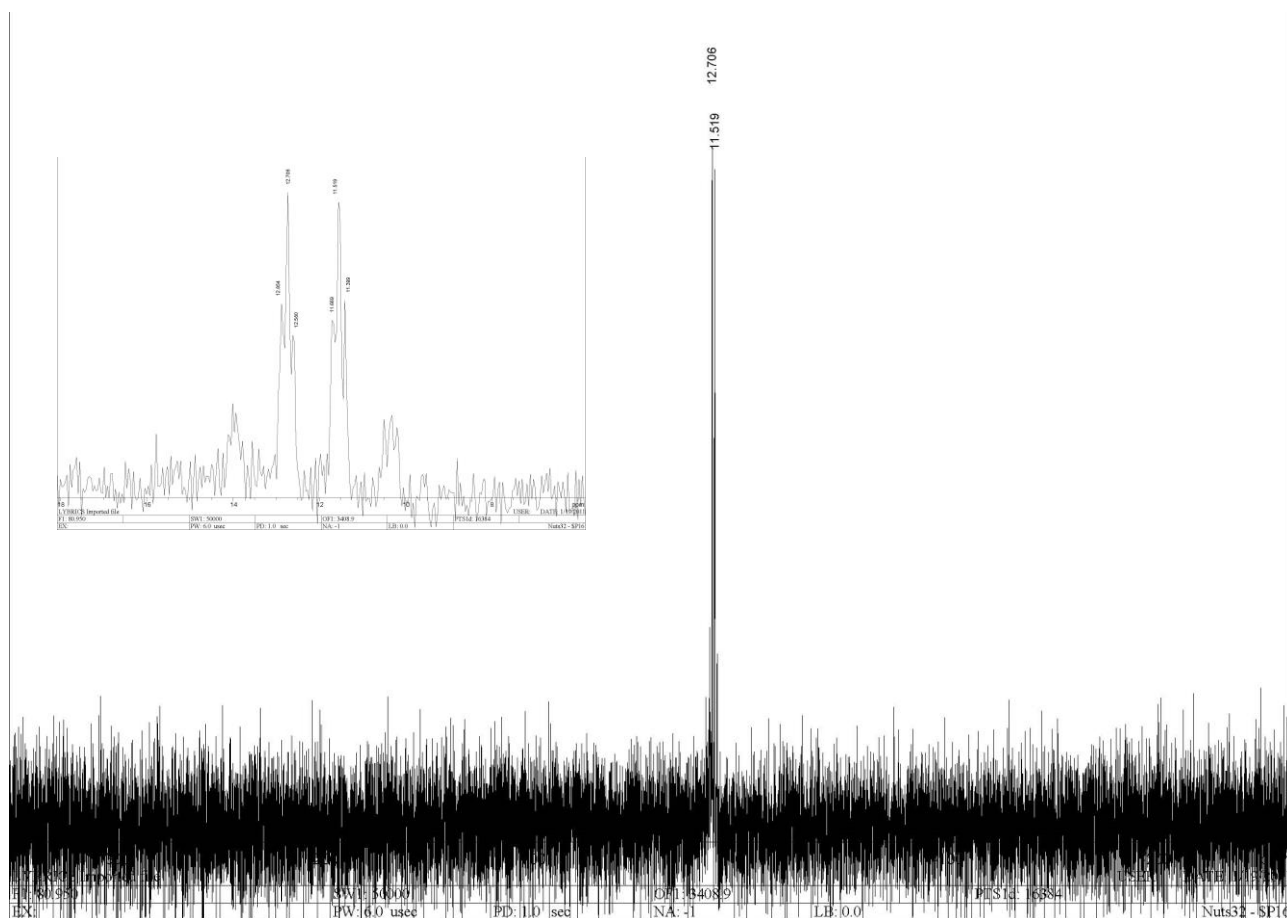
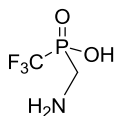
(Aminomethyl)(trifluoromethyl)phosphinic acid (**14a**) (Table 1, entry 1).

^1H (500 MHz), D_2O



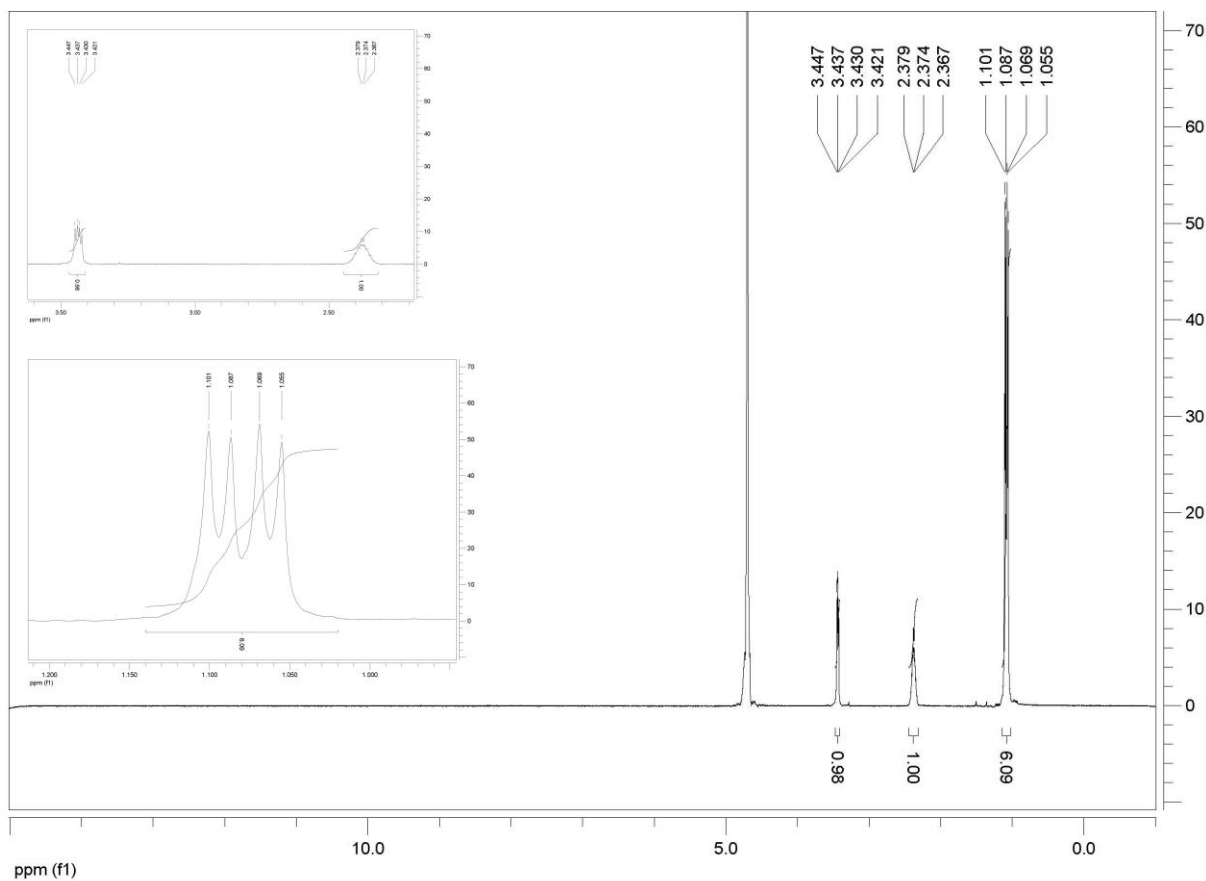
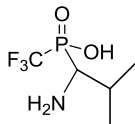
^{13}C (125 MHz), D_2O



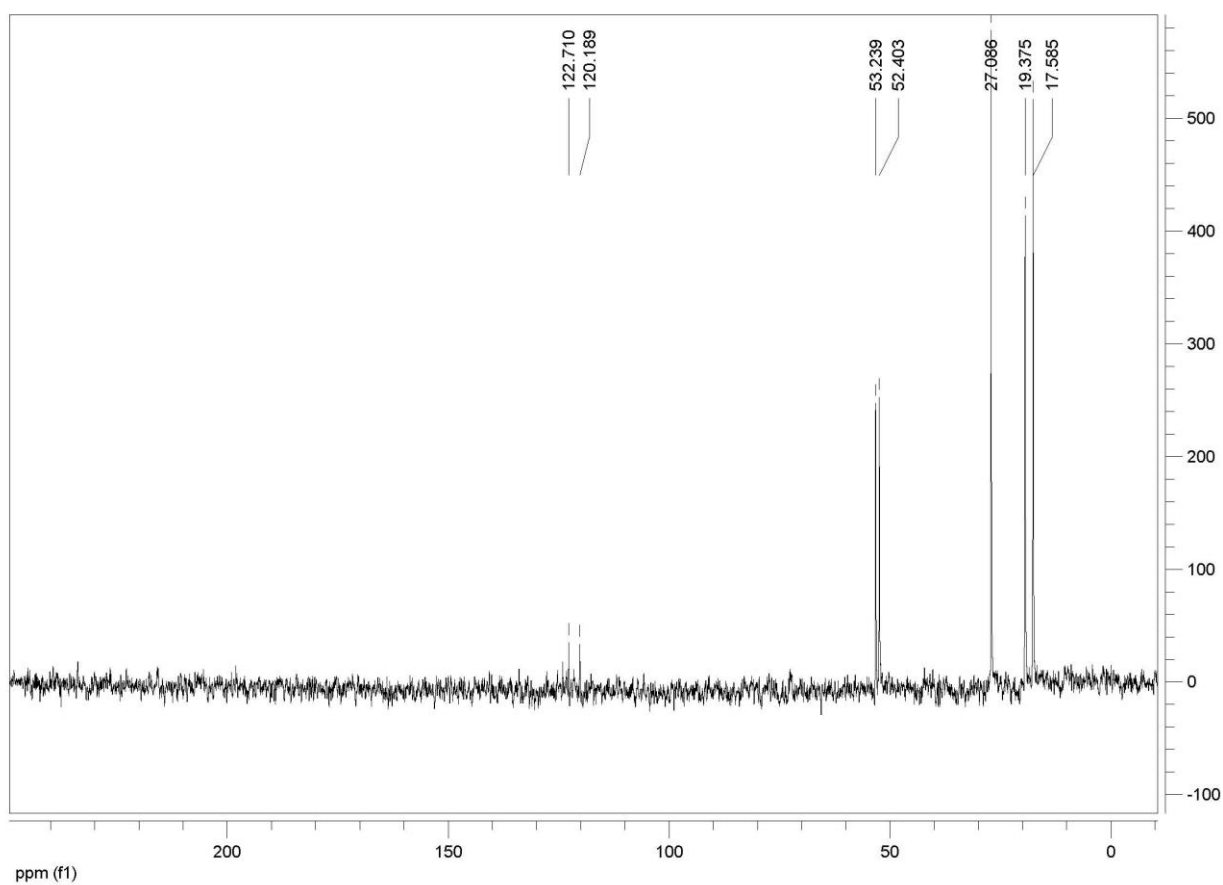
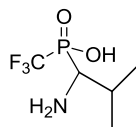
^{31}P (81 MHz), D_2O 

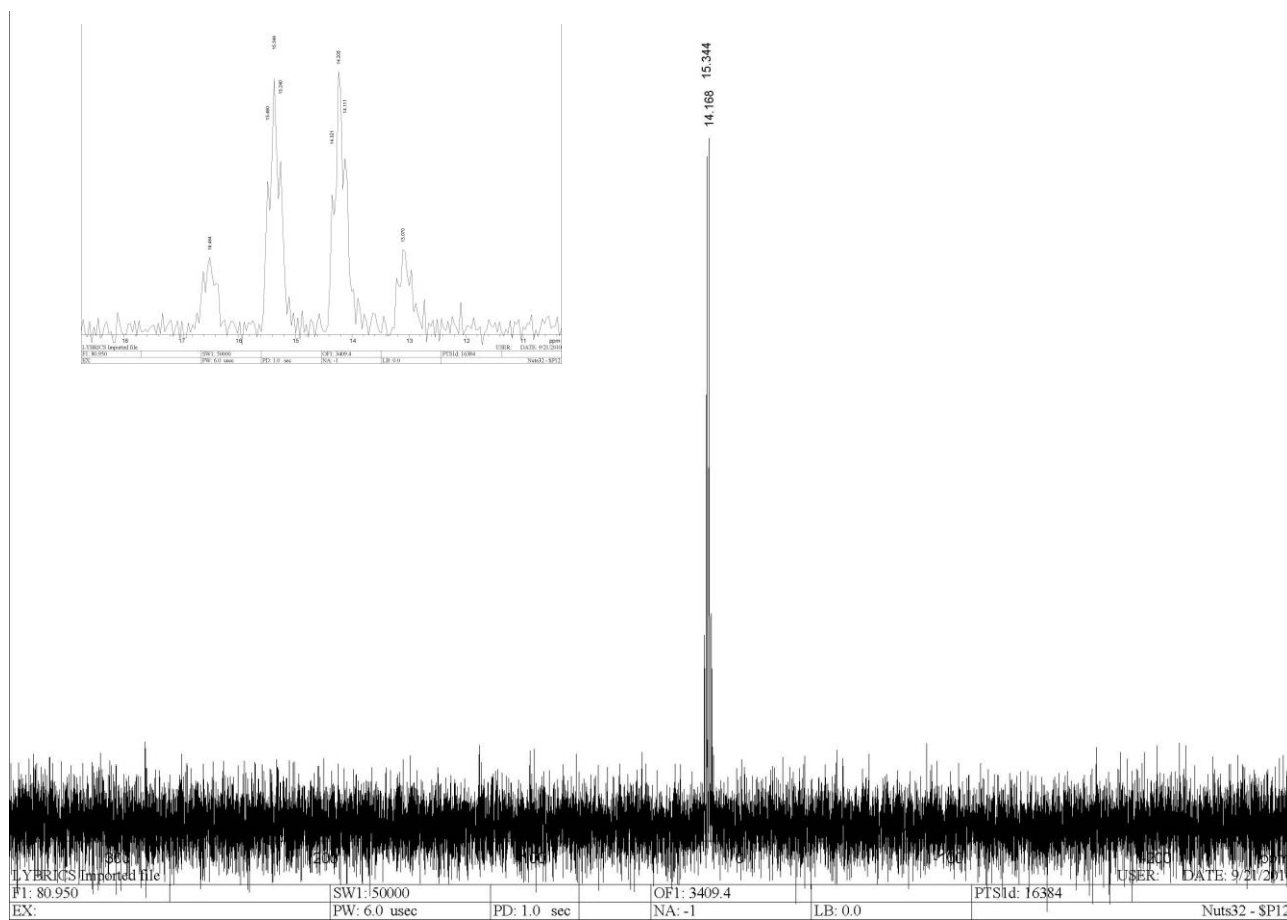
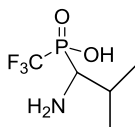
(1-Amino-2-methylpropyl)(trifluoromethyl)phosphinic acid (**14d**) (Table 1, entry 4).

^1H (500 MHz), D_2O

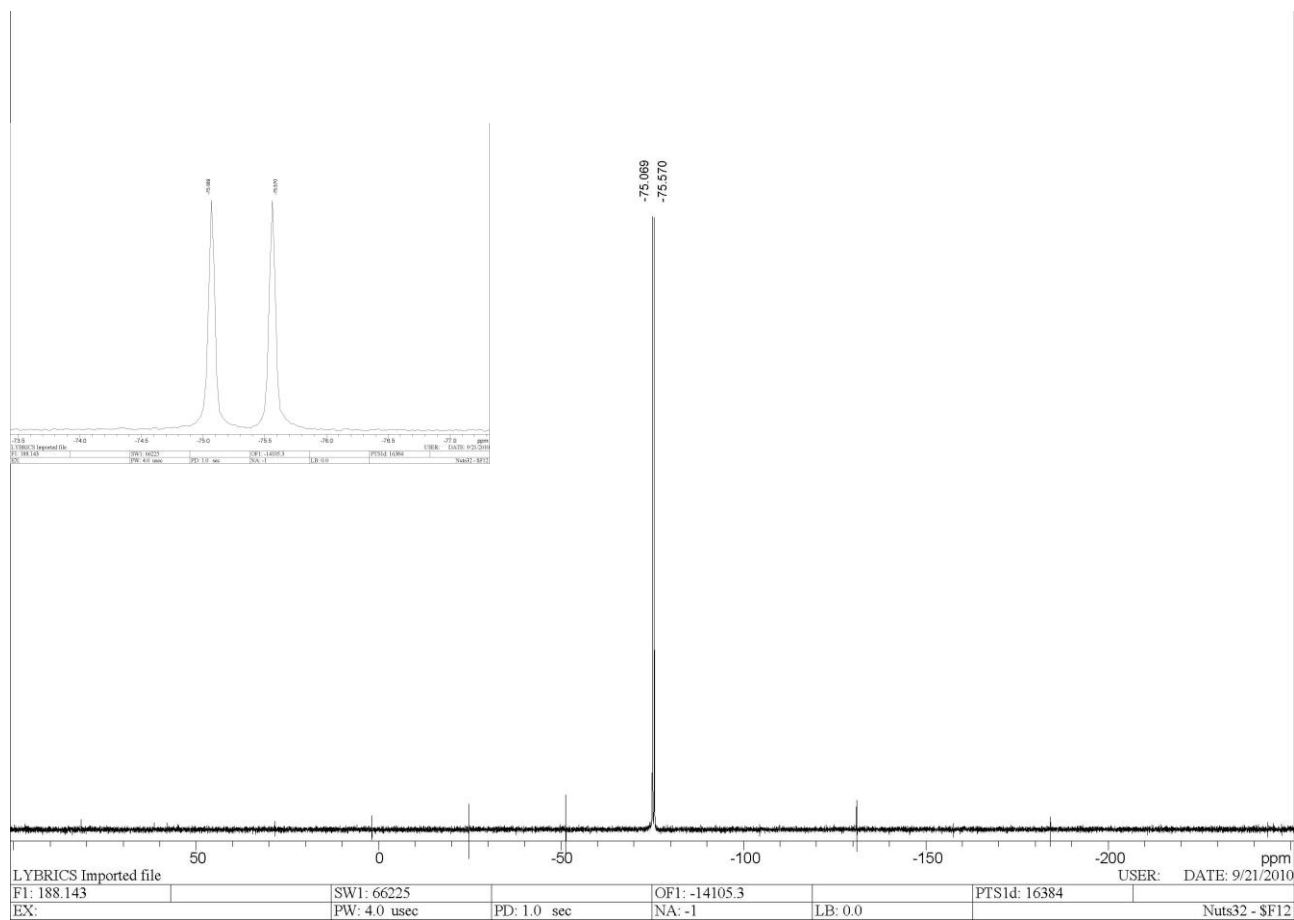
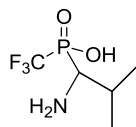


^{13}C (125 MHz), D_2O



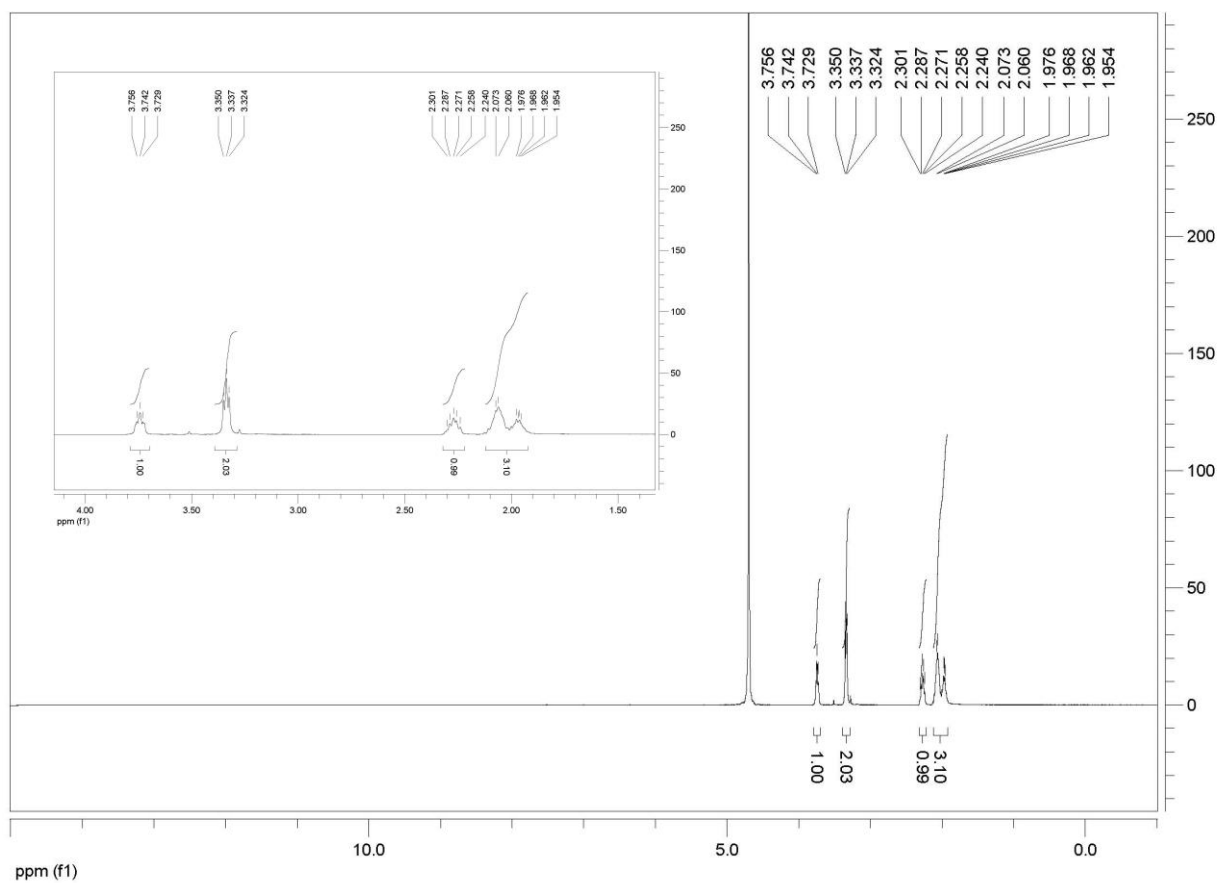
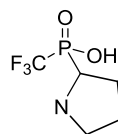
^{31}P (81 MHz), D_2O 

^{19}F (188 MHz), D_2O

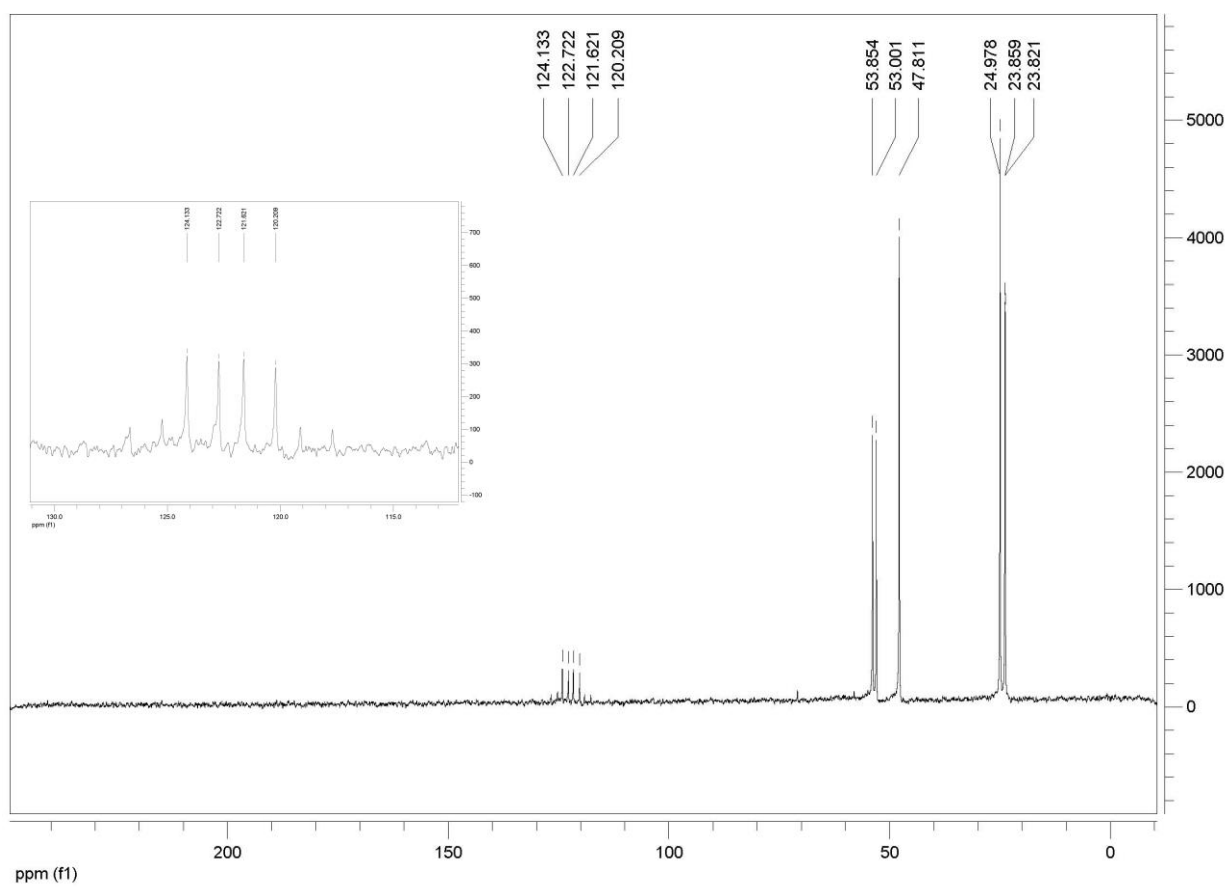
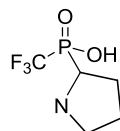


Pyrrolidin-2-yl-(trifluoromethyl)phosphinic acid (**14e**) (Table 1, entry 5).

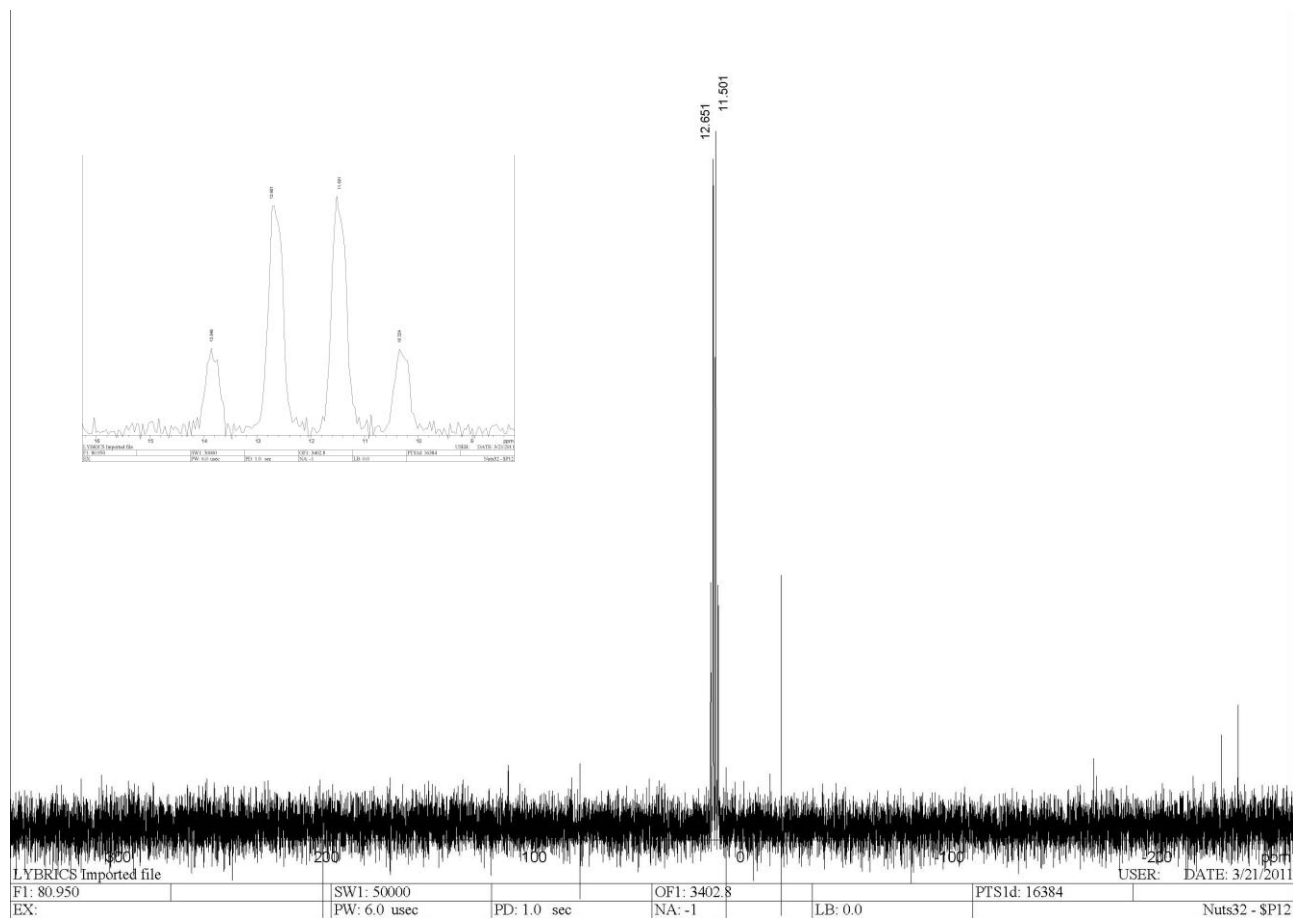
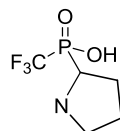
^1H (500 MHz), D_2O



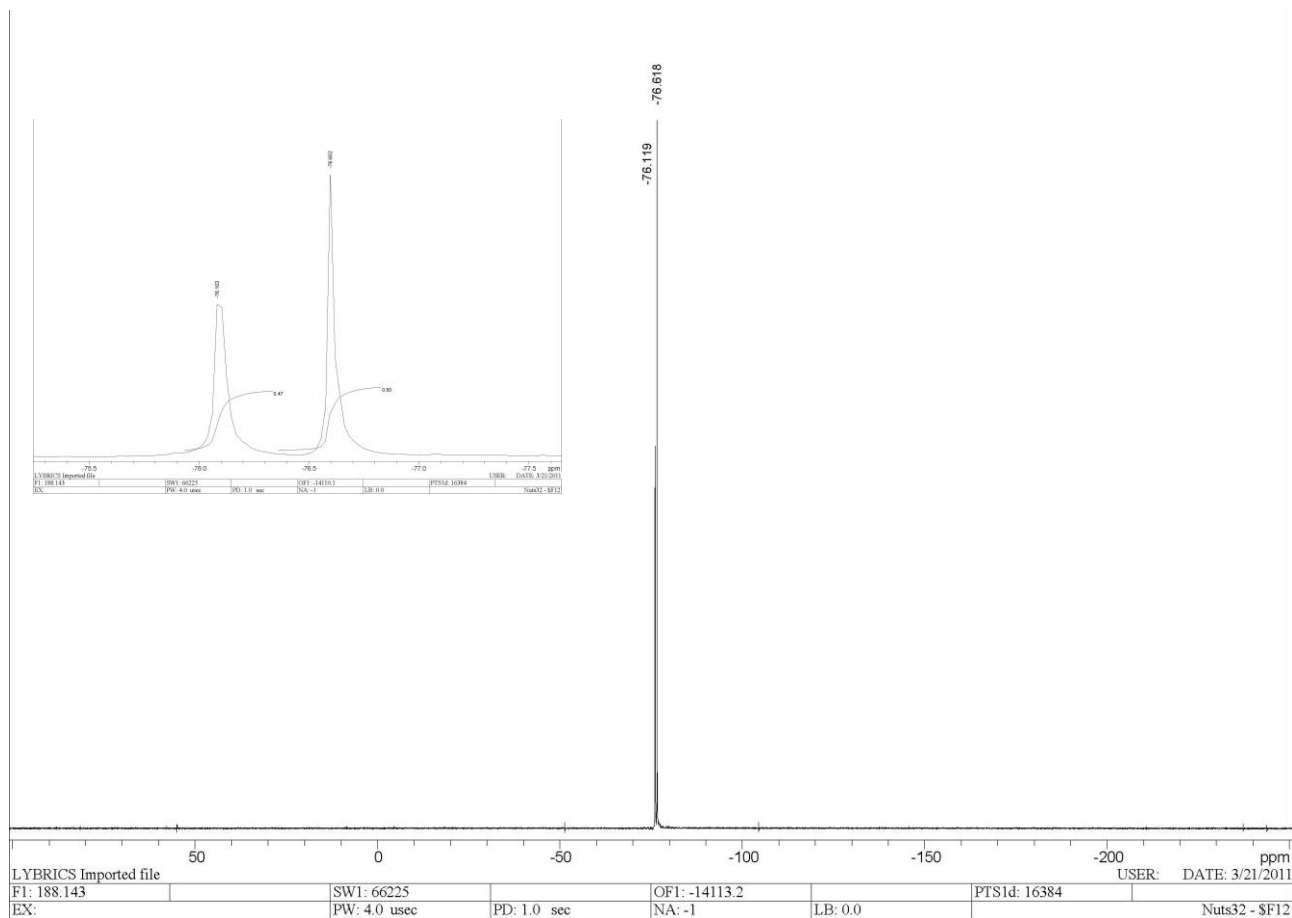
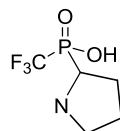
^{13}C (125 MHz), D_2O



^{31}P (81 MHz), D_2O

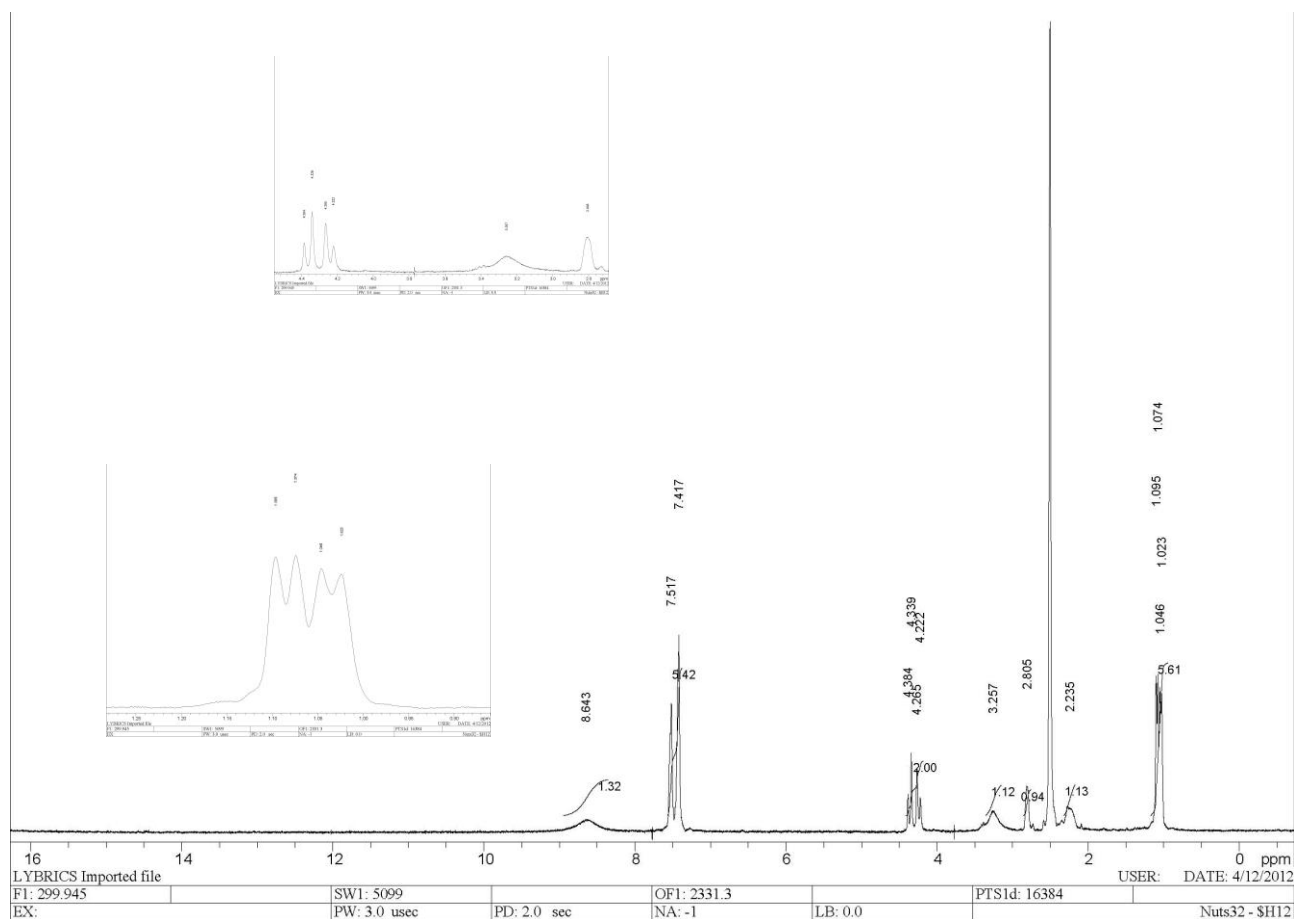
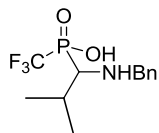


^{19}F (188 MHz), D_2O

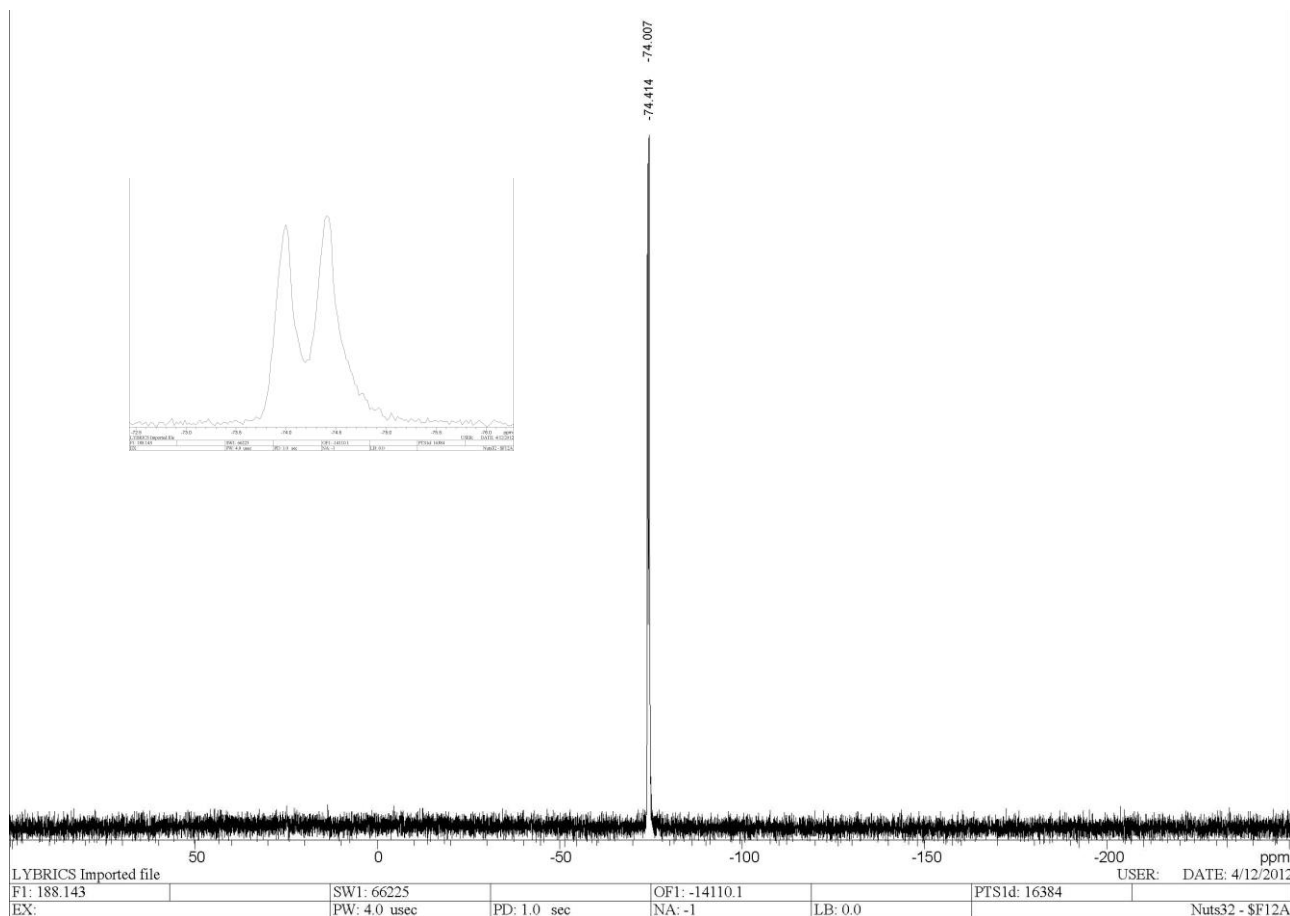
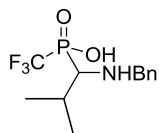


[1-(Benzylamino)-2-methylpropyl](trifluoromethyl)phosphinic acid (**17d**) (Table 1, entry 4).

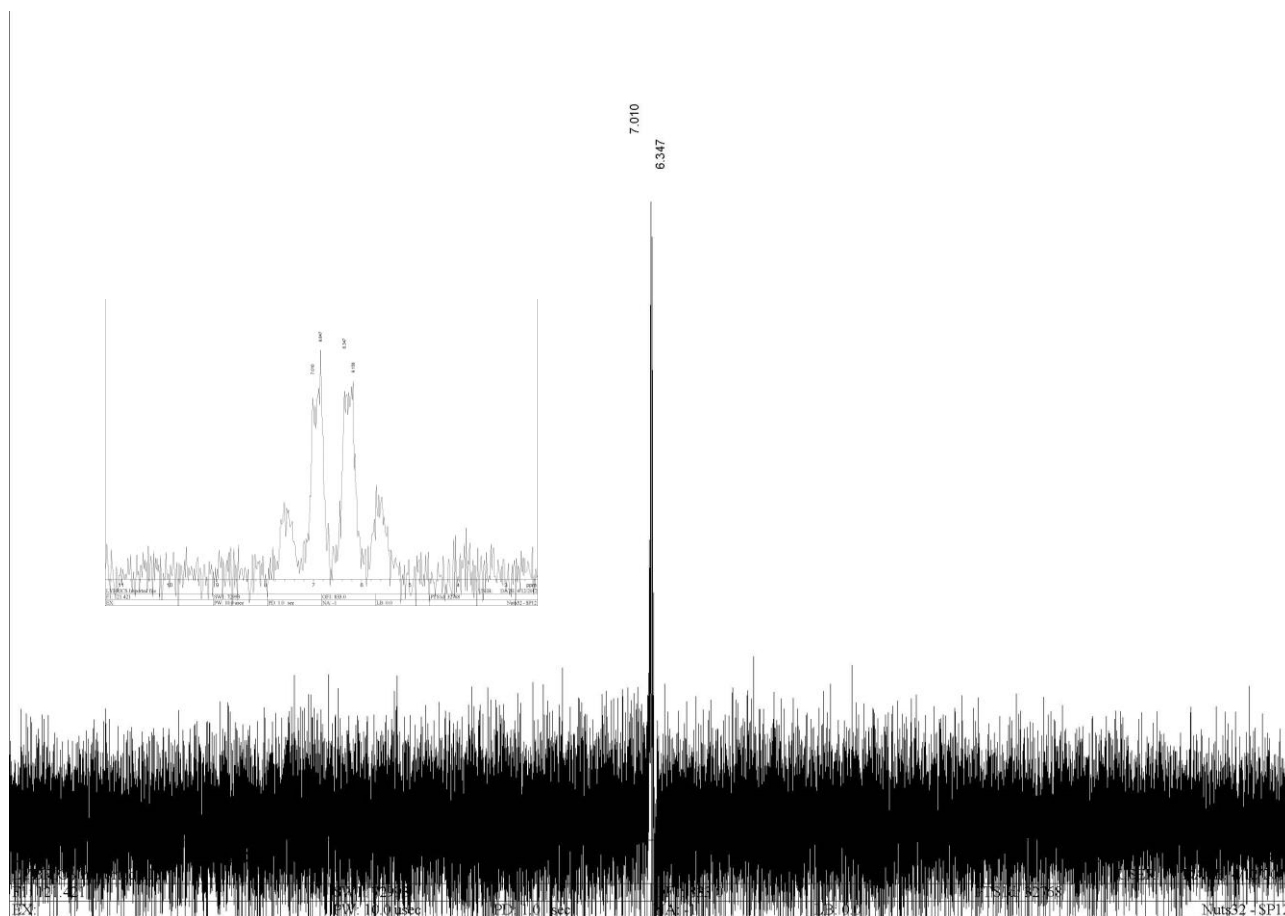
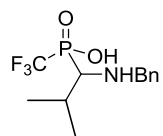
^1H (300 MHz), DMSO- d_6



^{19}F (188 MHz), DMSO- d_6

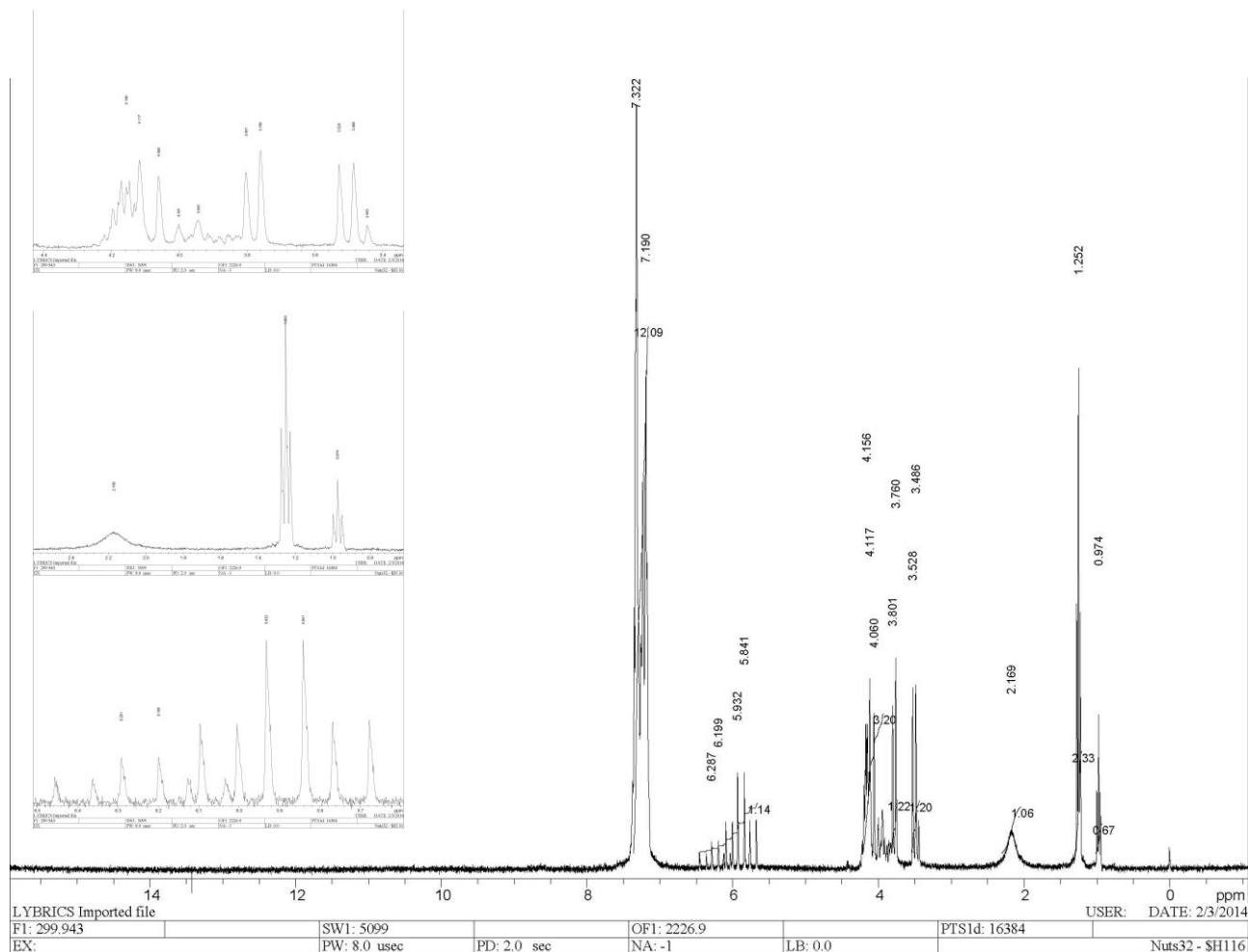
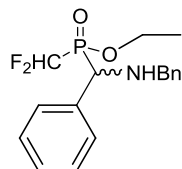


^{31}P (121 MHz), DMSO- d_6



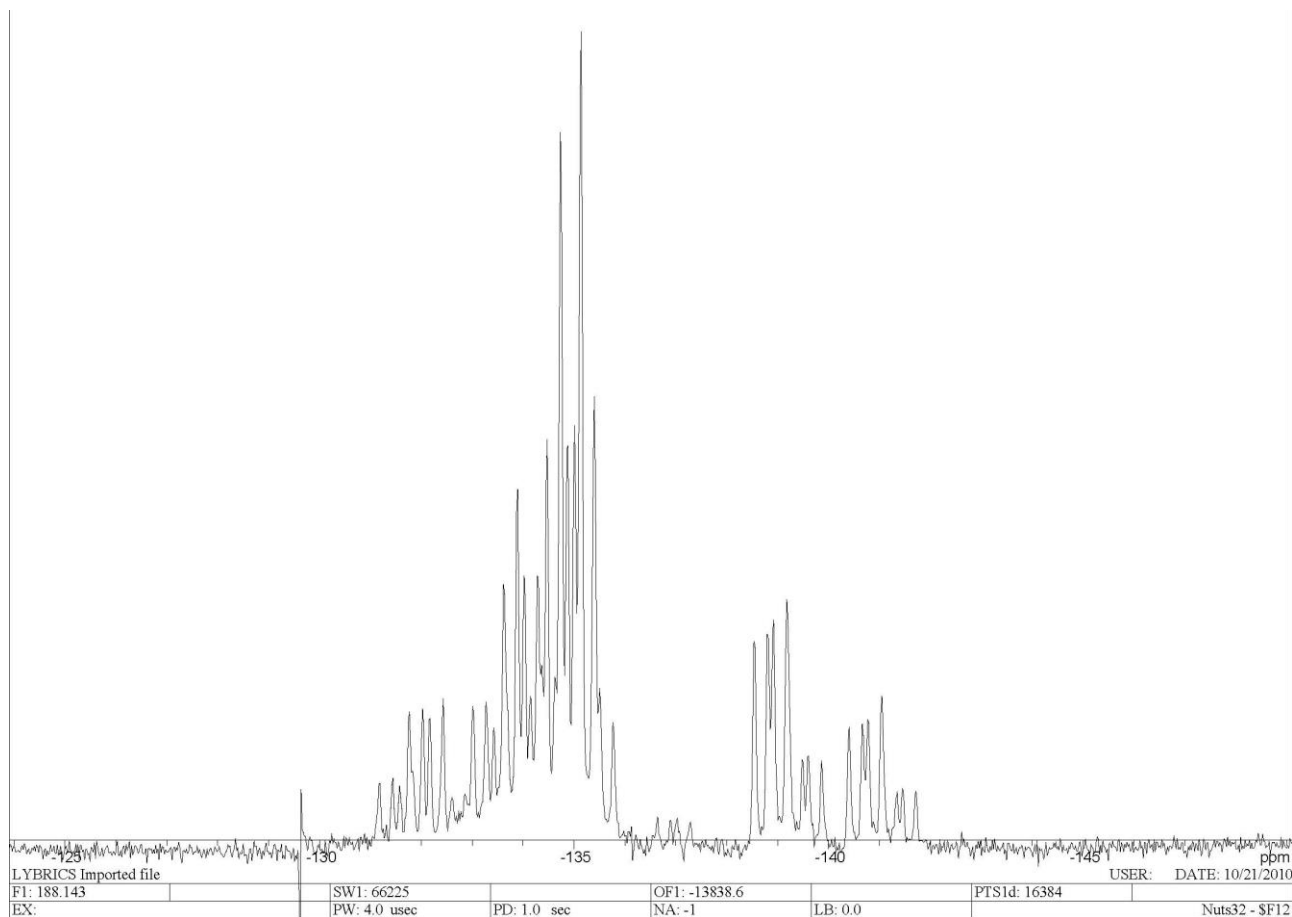
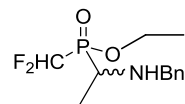
Ethyl [(benzylamino)(phenyl)methyl](difluoromethyl)phosphinate (**18b**) (Table 2, entry 2).

^1H (300 MHz), CDCl_3



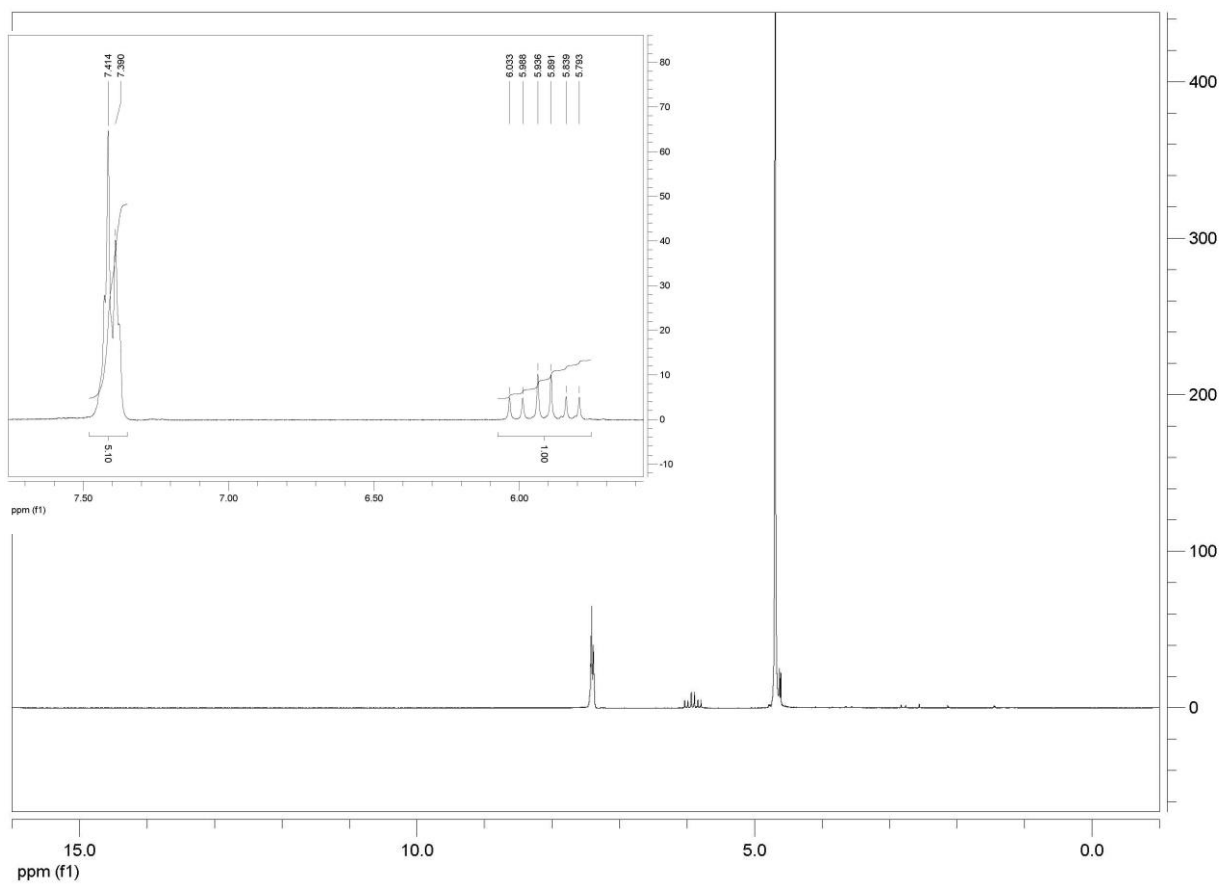
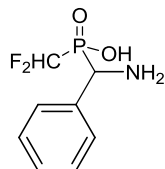
Ethyl [1-(benzylamino)ethyl](difluoromethyl)phosphinate (**18c**) (Table 2, entry 3).

^{19}F (188 MHz), D_2O

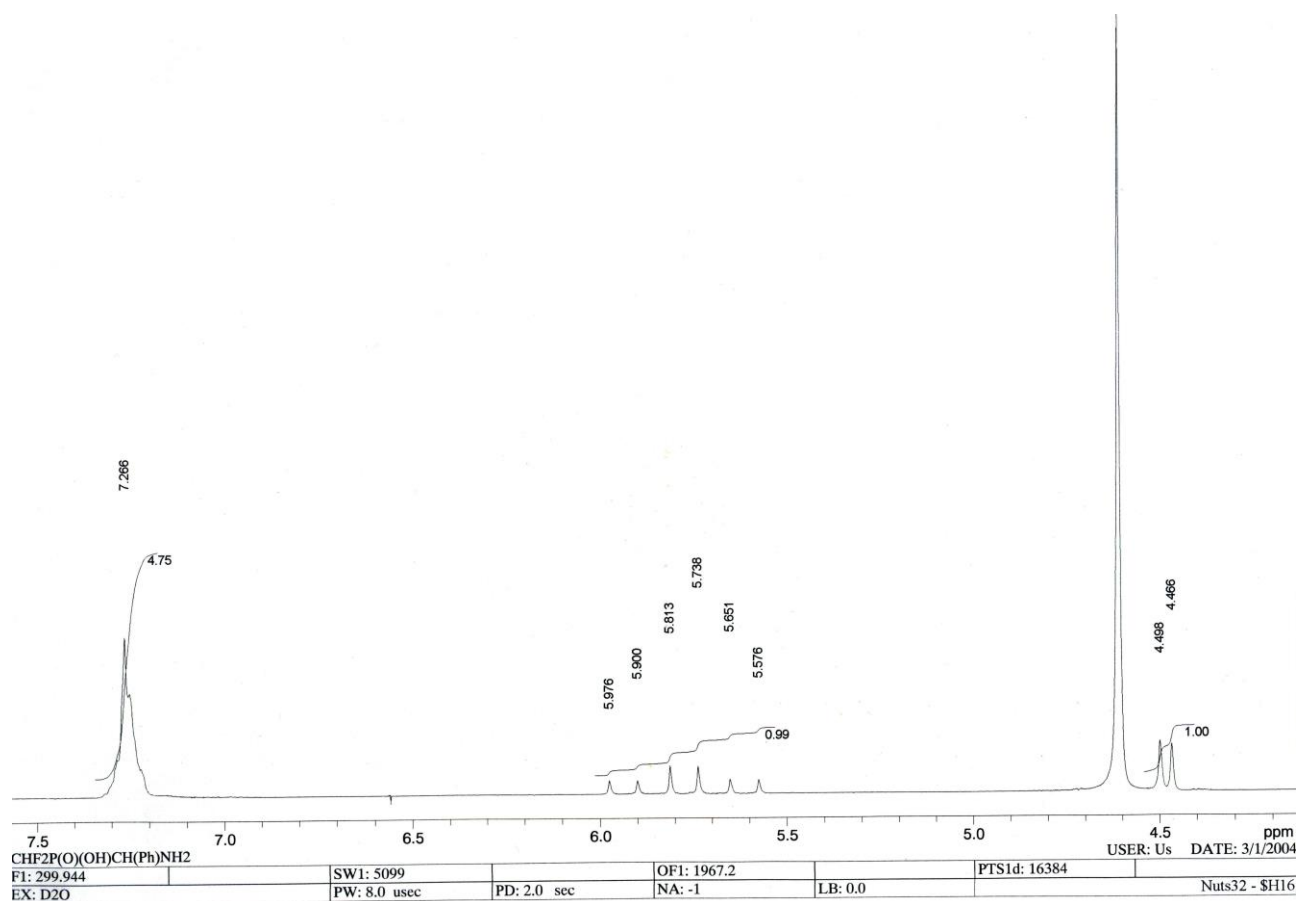
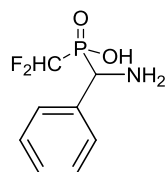


[Amino(phenyl)methyl](difluoromethyl)phosphinic acid (**20b**) (Table 2, entry 2).

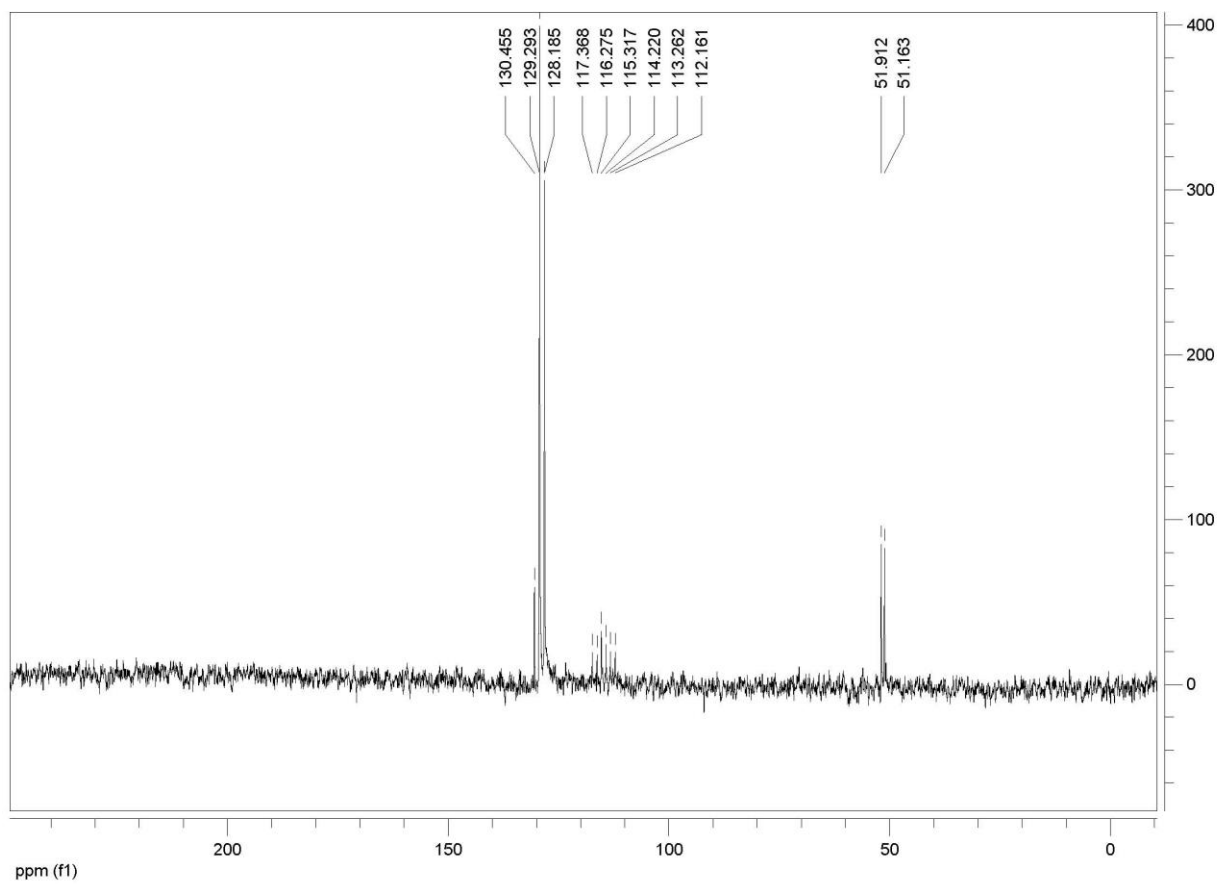
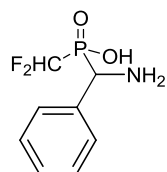
^1H (500 MHz), D_2O



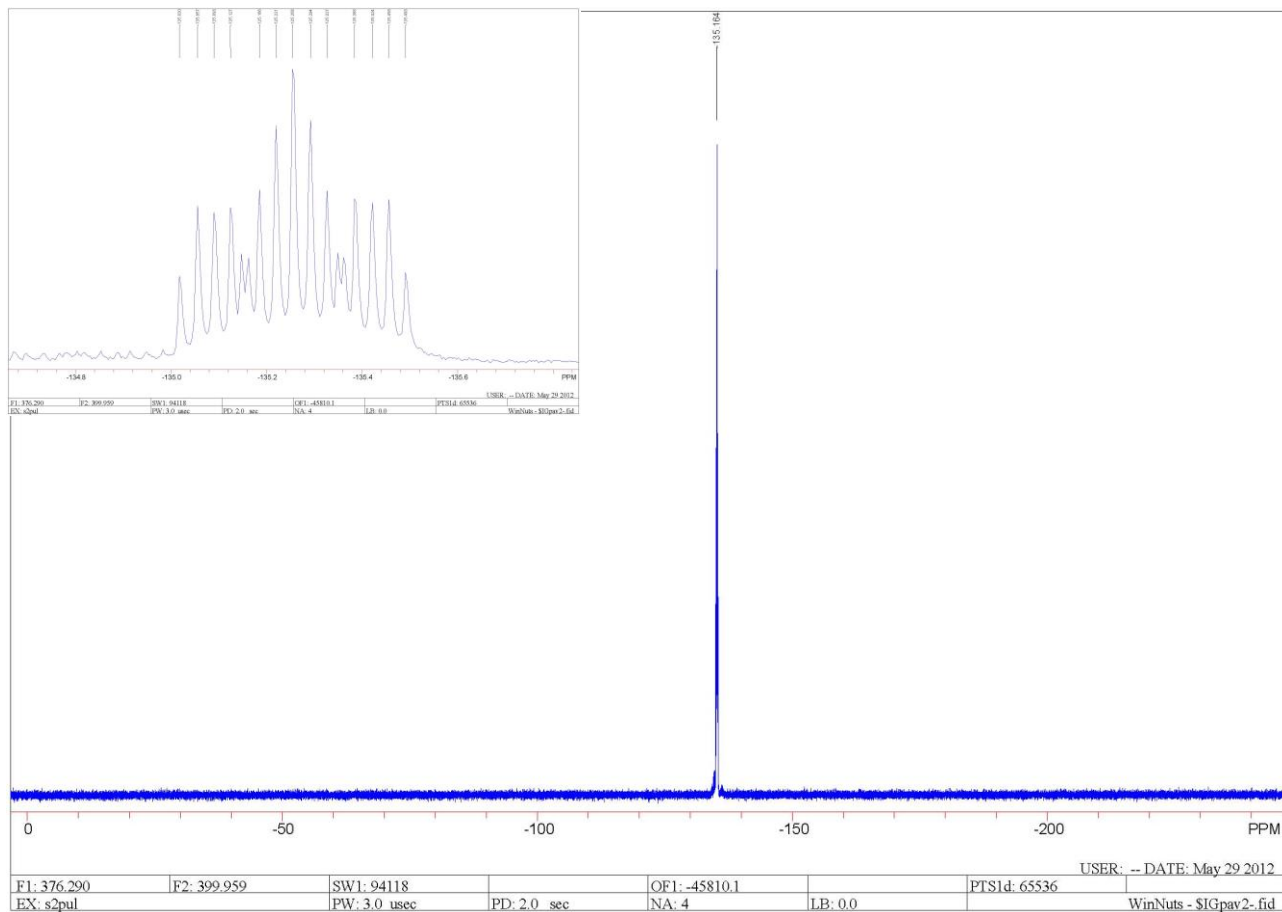
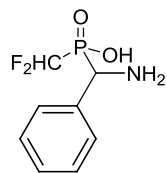
^1H (300 MHz), D_2O



^{13}C (125 MHz), D_2O

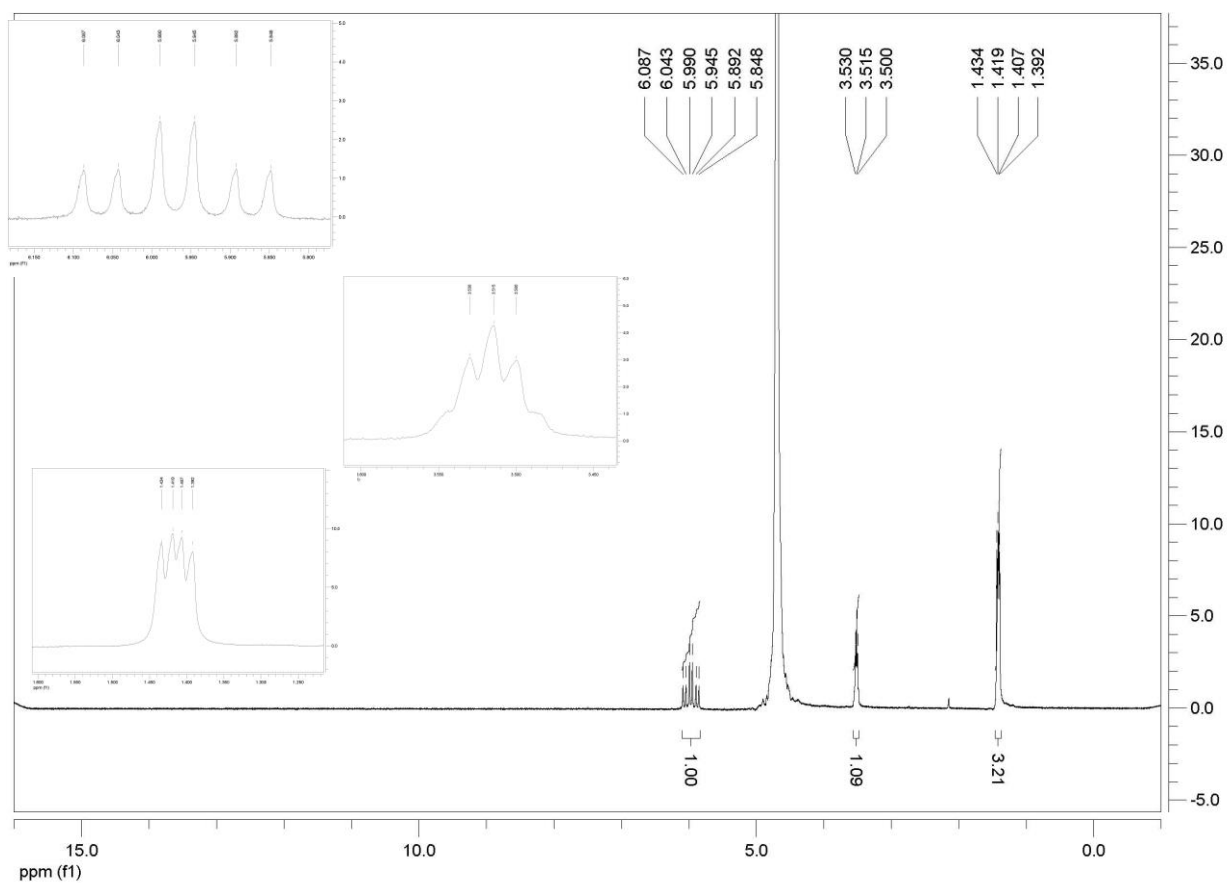
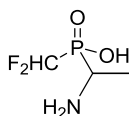


^{19}F (376 MHz), D_2O

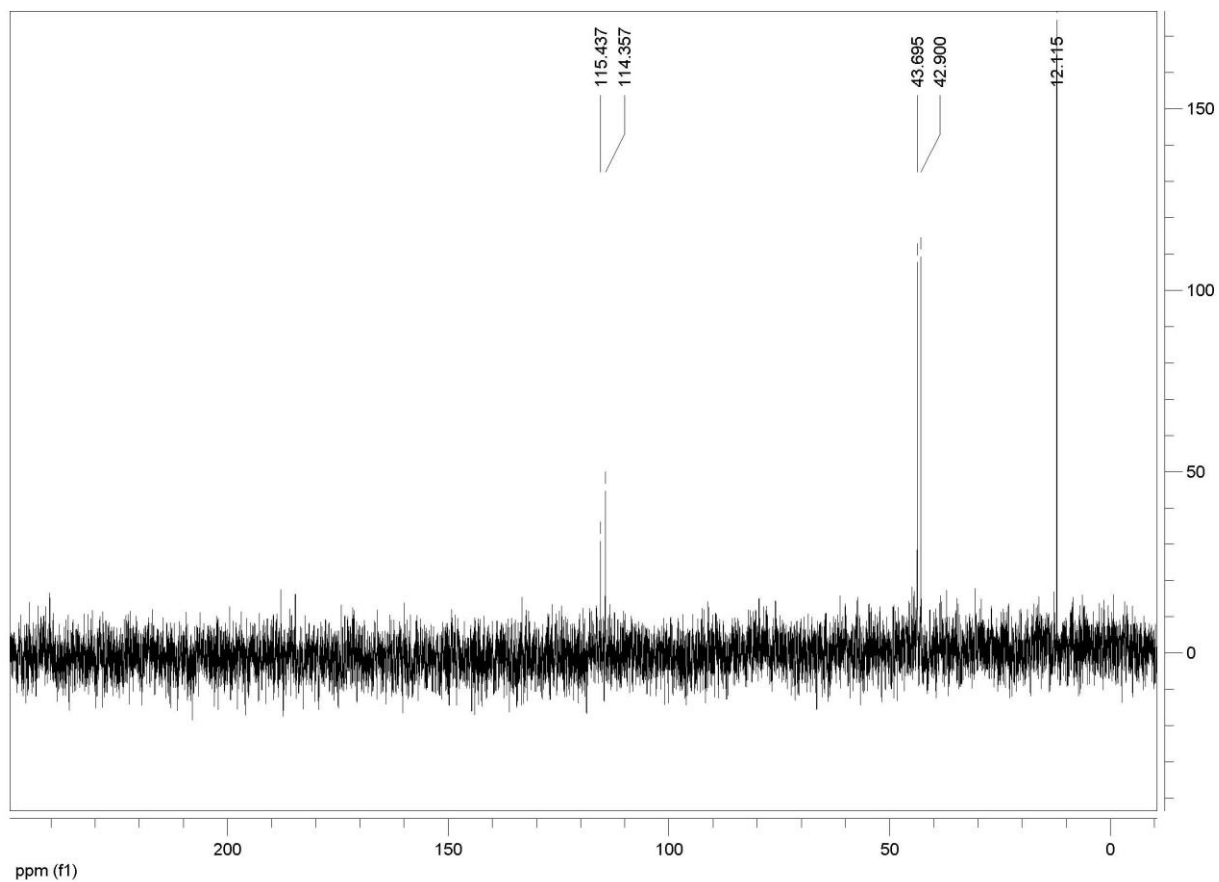
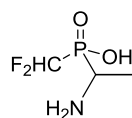


(1-Aminoethyl)(difluoromethyl)phosphinic acid (**20c**) (Table 2, entry 3).

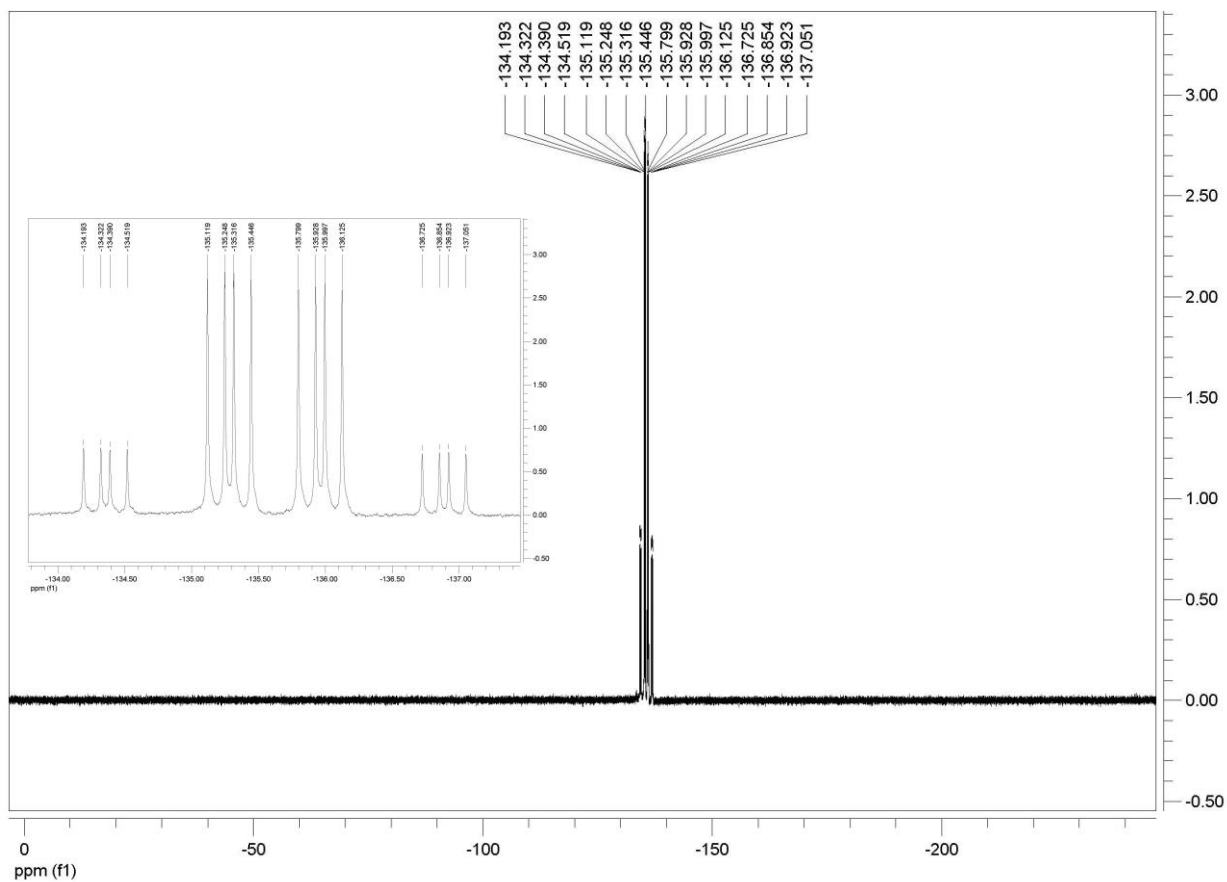
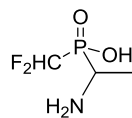
^1H (500 MHz), D_2O



^{13}C (125 MHz), D_2O



^{19}F (376 MHz), D_2O



^{31}P (121 MHz), D_2O 