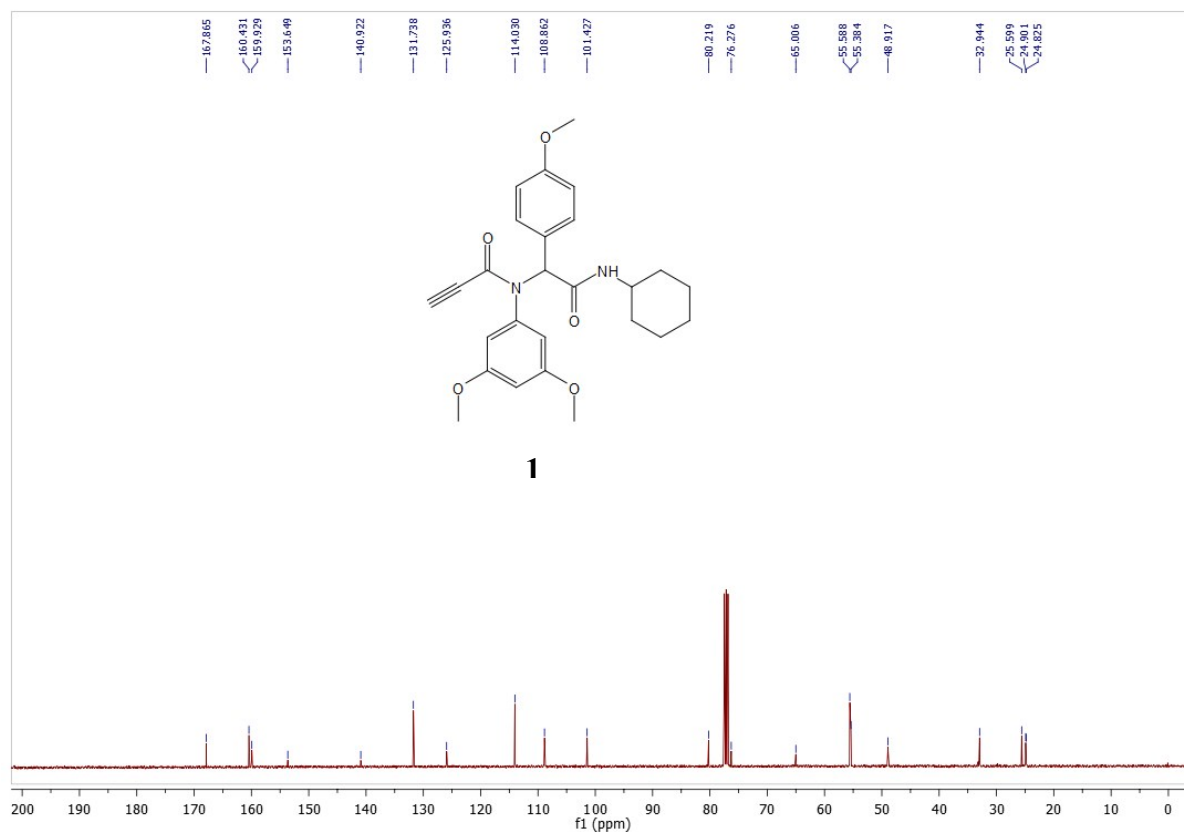
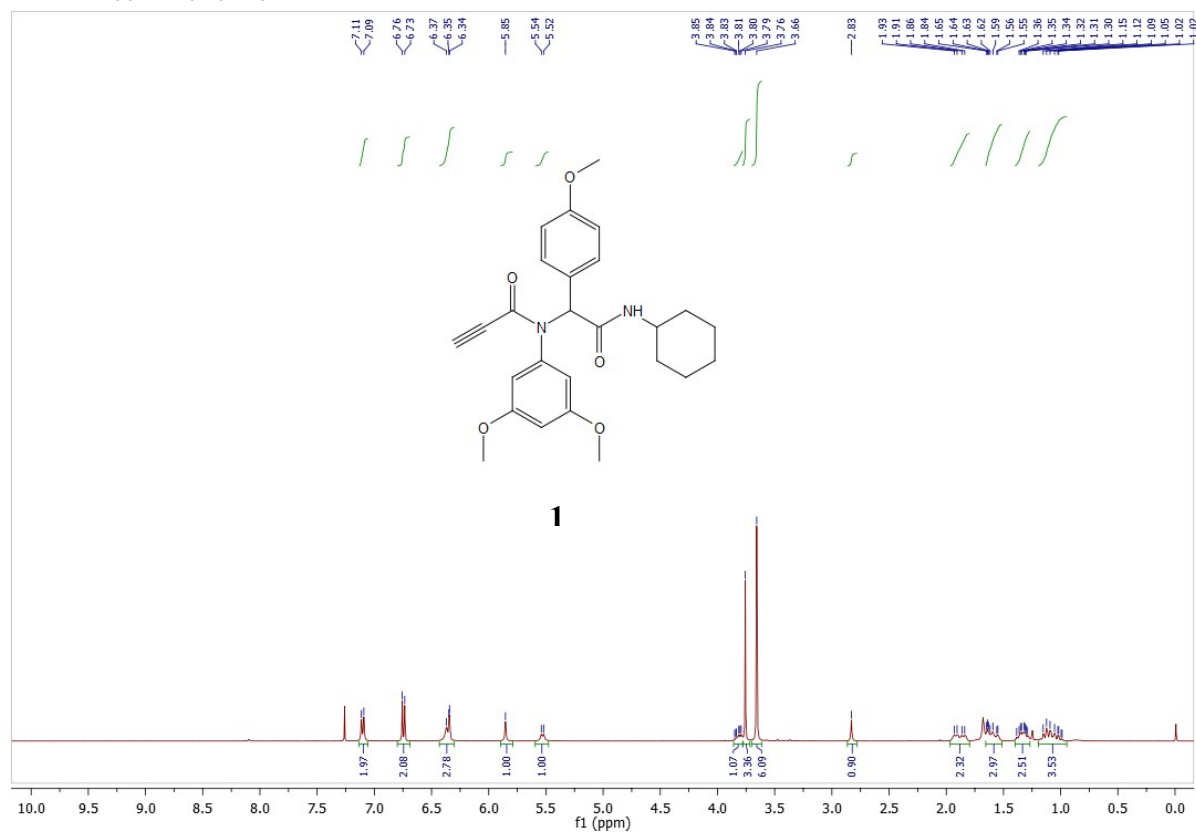


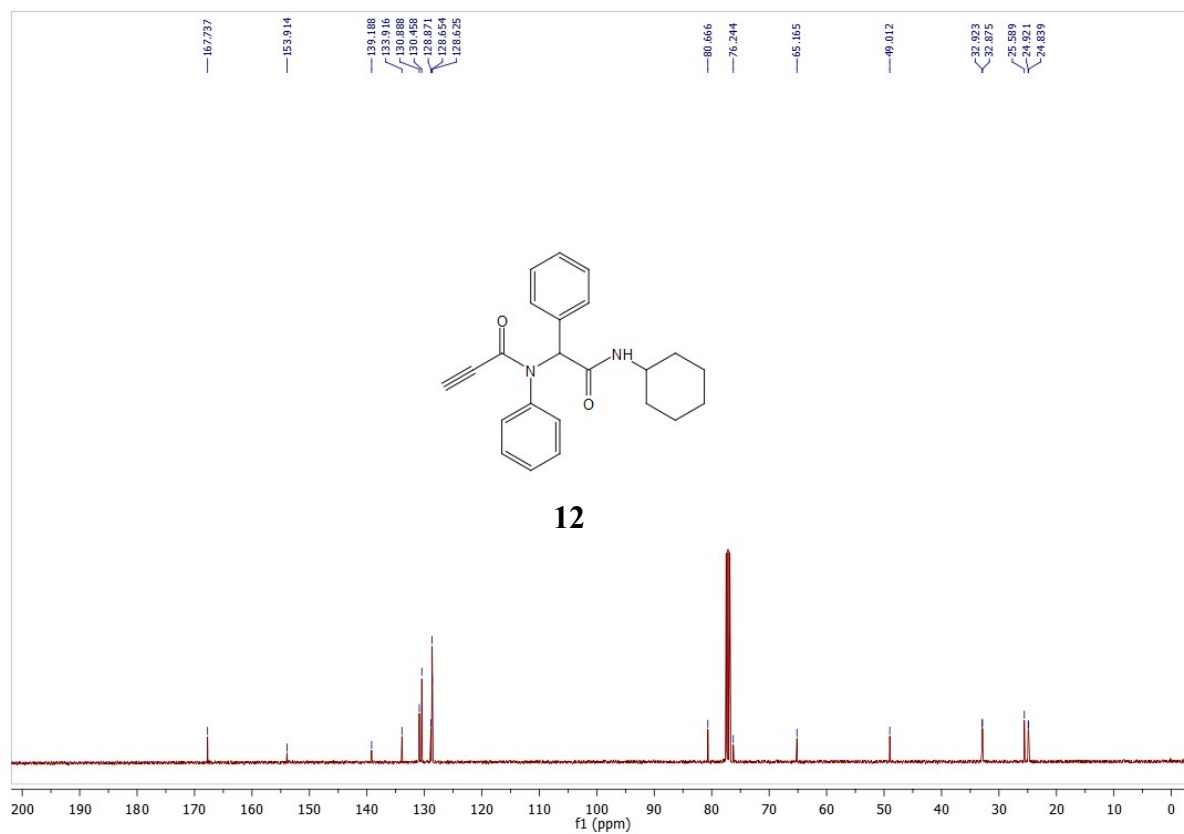
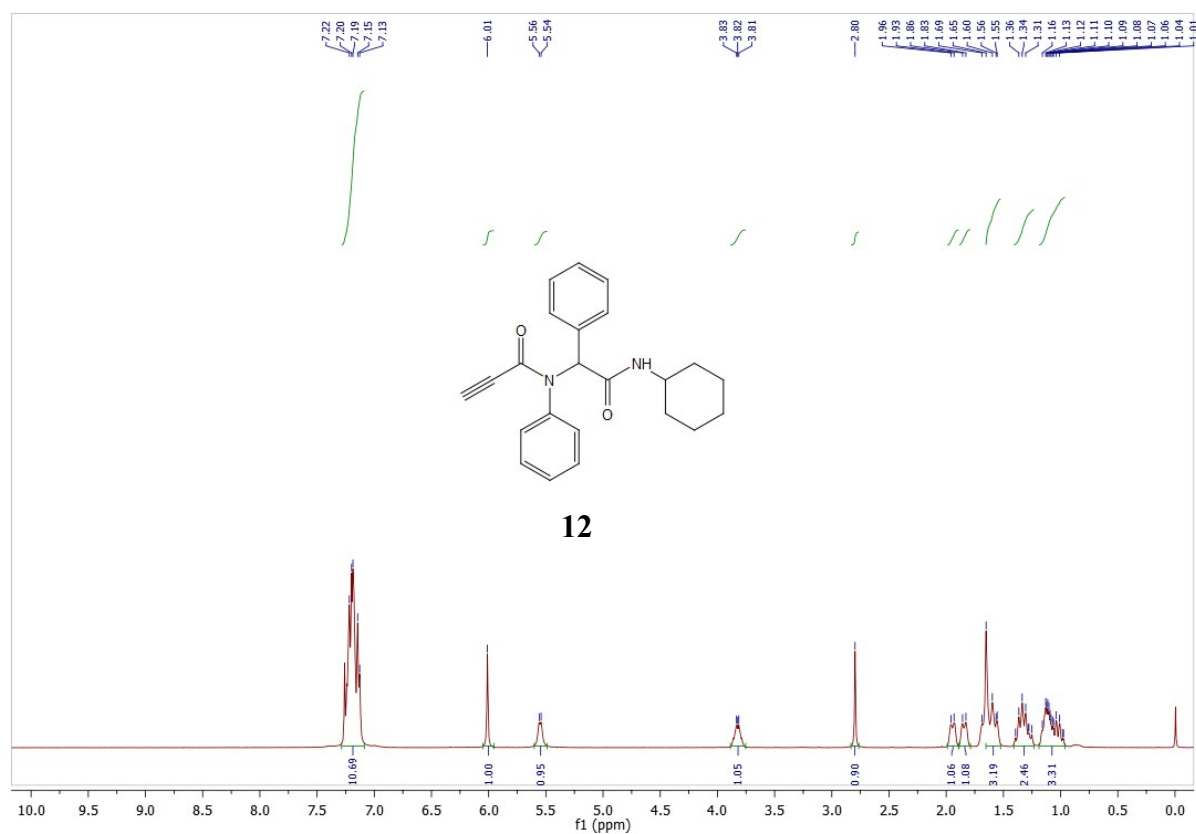
A methanol and protic ionic liquid Ugi multicomponent reaction path to cytotoxic α -phenylacetamido amides

Ahmed Al Otaibi,^{1†} Fiona M. Deane,¹ Cecilia C Russell,¹ Lacey Hizartzidis,¹ Siobhann N McCluskey,¹ Jennette A. Sakoff² and Adam McCluskey^{1*}

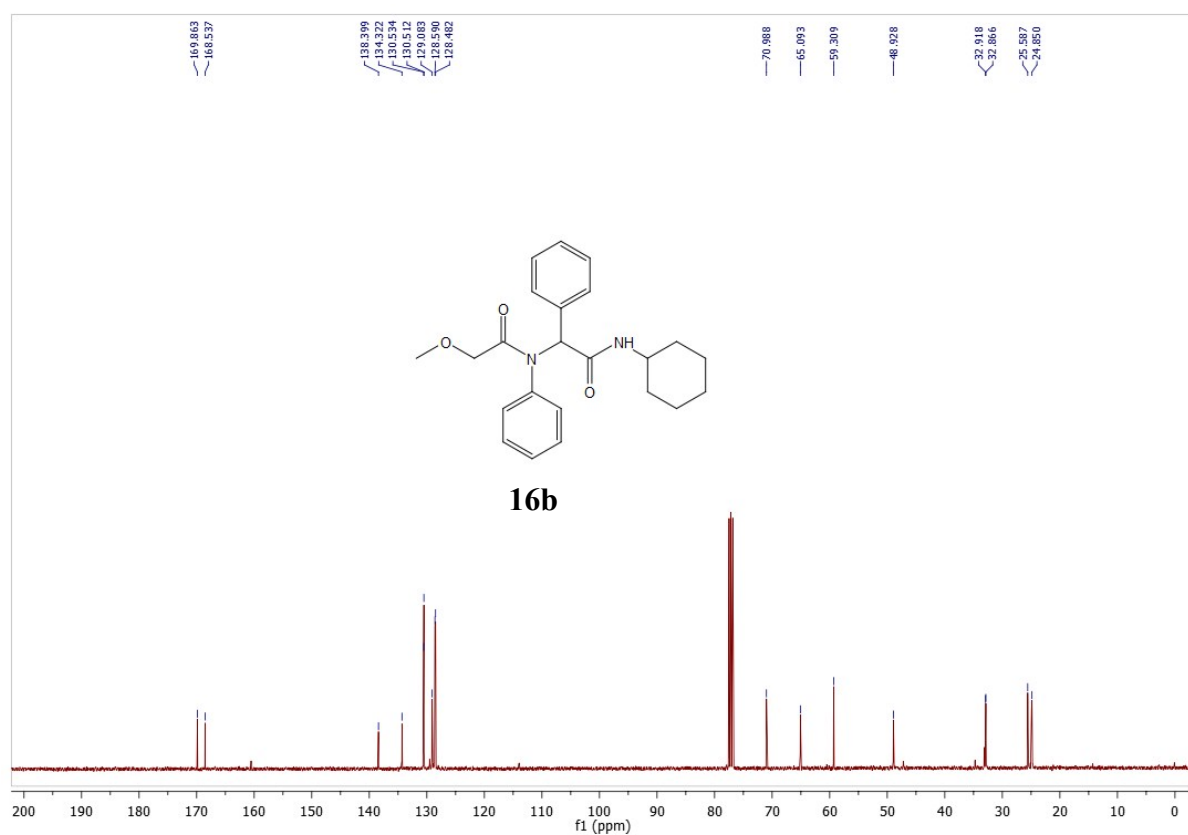
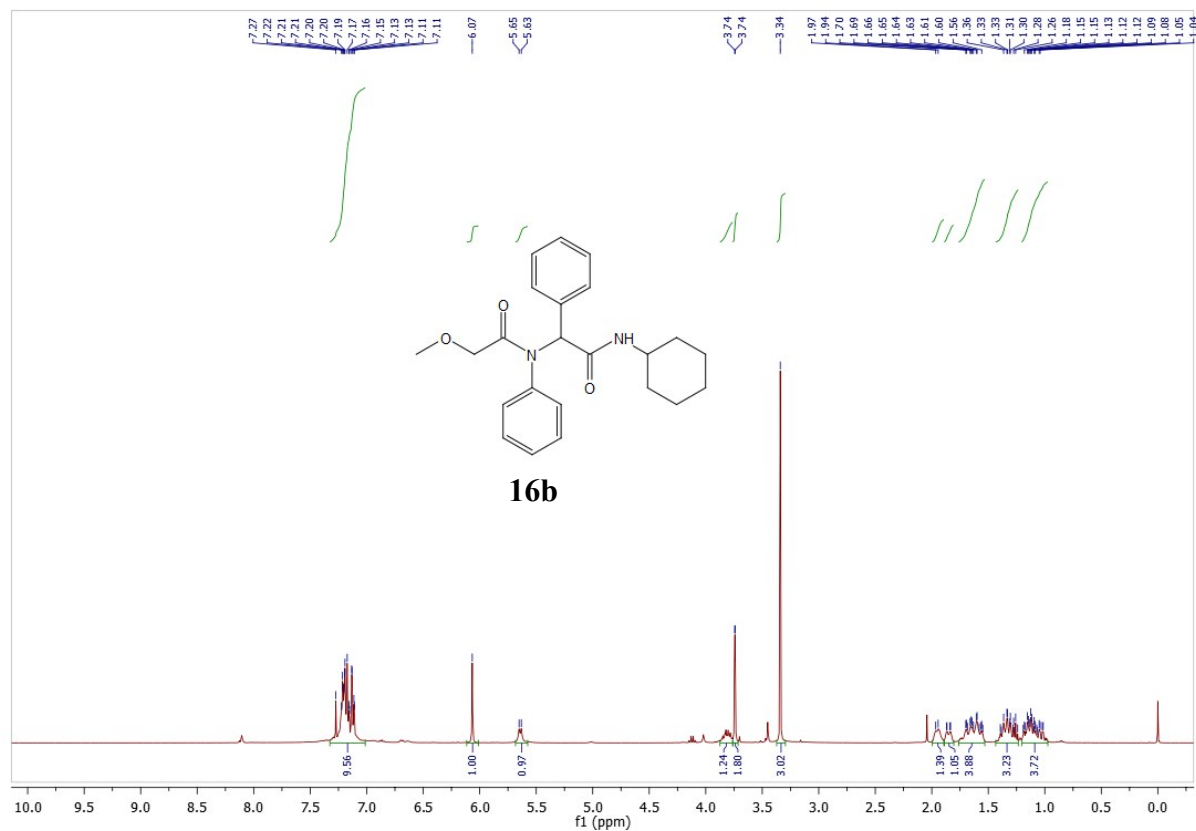
(*RS*)-*N*-(2-(cyclohexylamino)-1-(4-methoxyphenyl)-2-oxoethyl)-*N*-(3,5-dimethoxyphenyl)propiolamide (**1**)



(*RS*)-*N*-(2-(Cyclohexylamino)-2-oxo-1-phenylethyl)-*N*-phenylpropiolamide (**12**)



(*RS*)-*N*-Cyclohexyl-2-(2-methoxy-*N*-phenylacetamido)-2-phenylacetamide (**16b**)



Chemical structure of **16c** is shown above the spectrum:

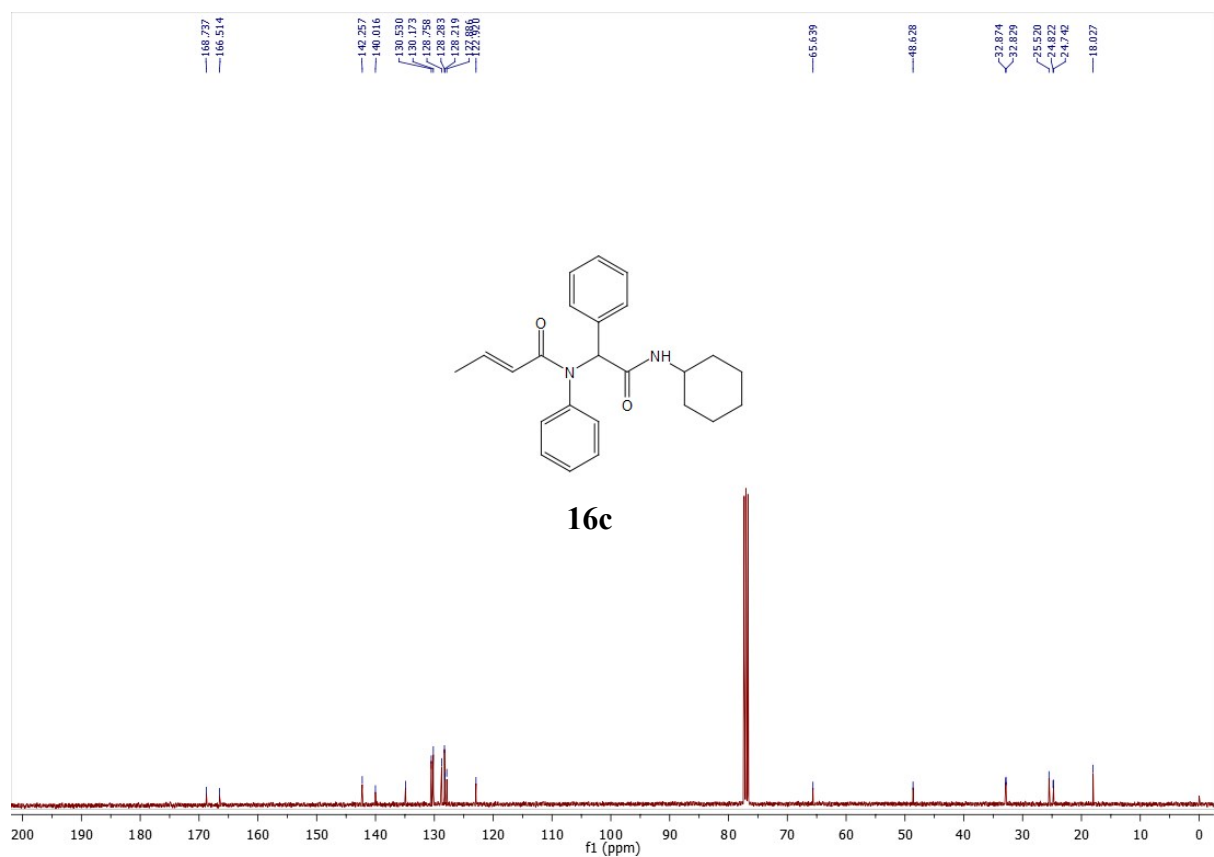
C=CC(=O)N(c1ccccc1)C(=O)Nc2ccccc2

16c

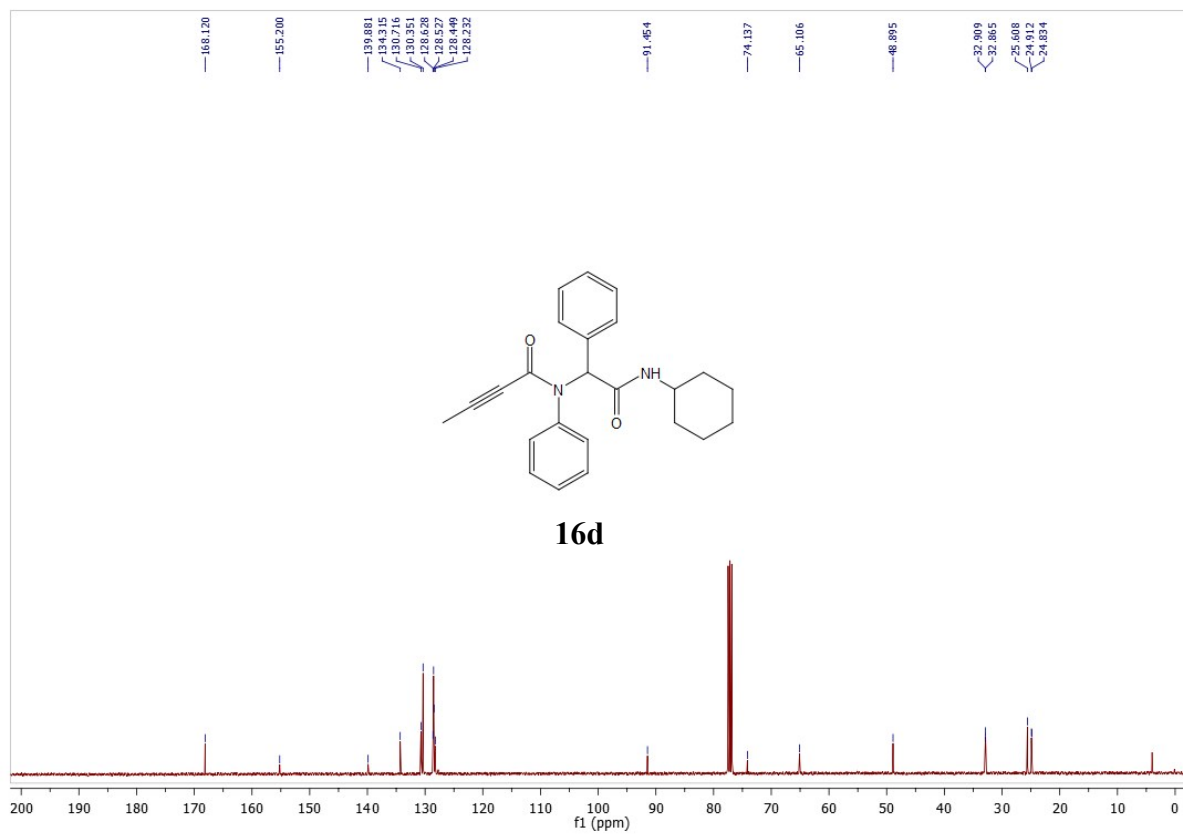
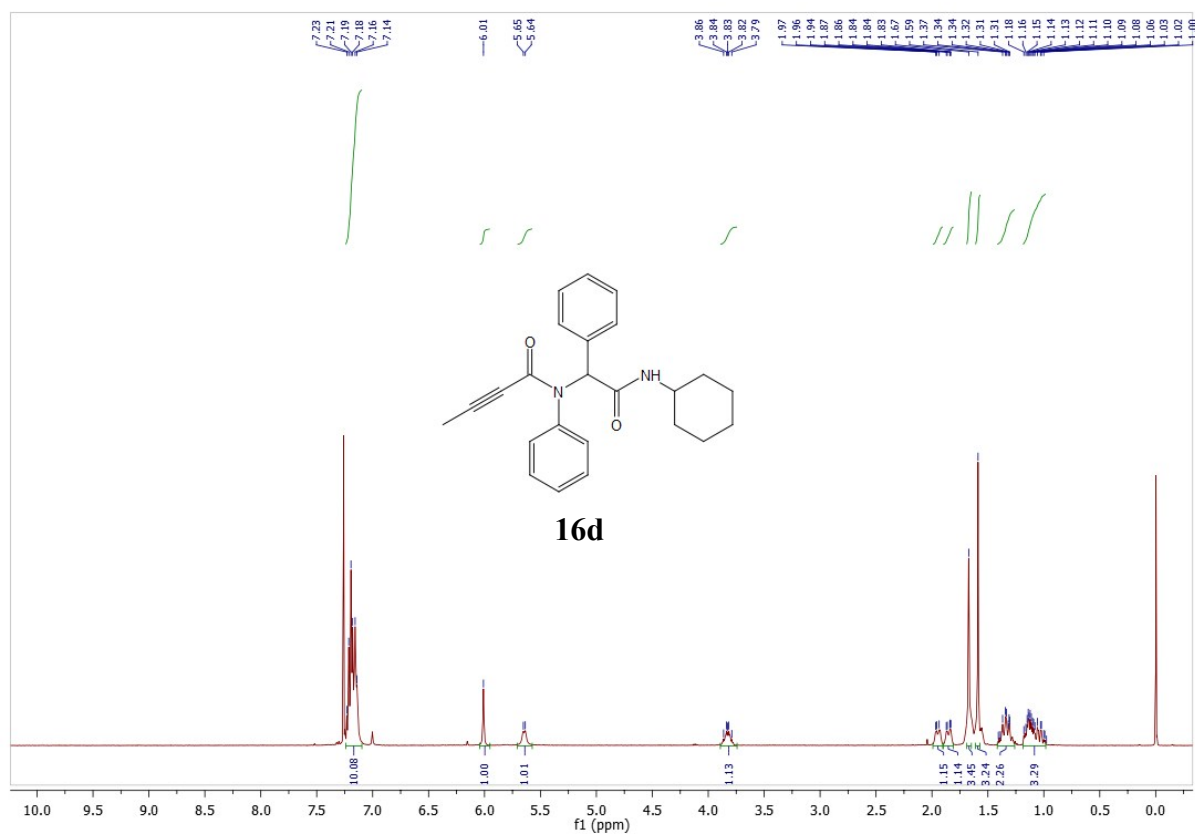
¹H NMR spectrum (CDCl₃) of compound **16c**. The x-axis represents the chemical shift in ppm (f1), ranging from 10.0 to 0.0. The spectrum shows several peaks corresponding to the structure, with integration values indicated below the baseline.

Key peaks and integration values:

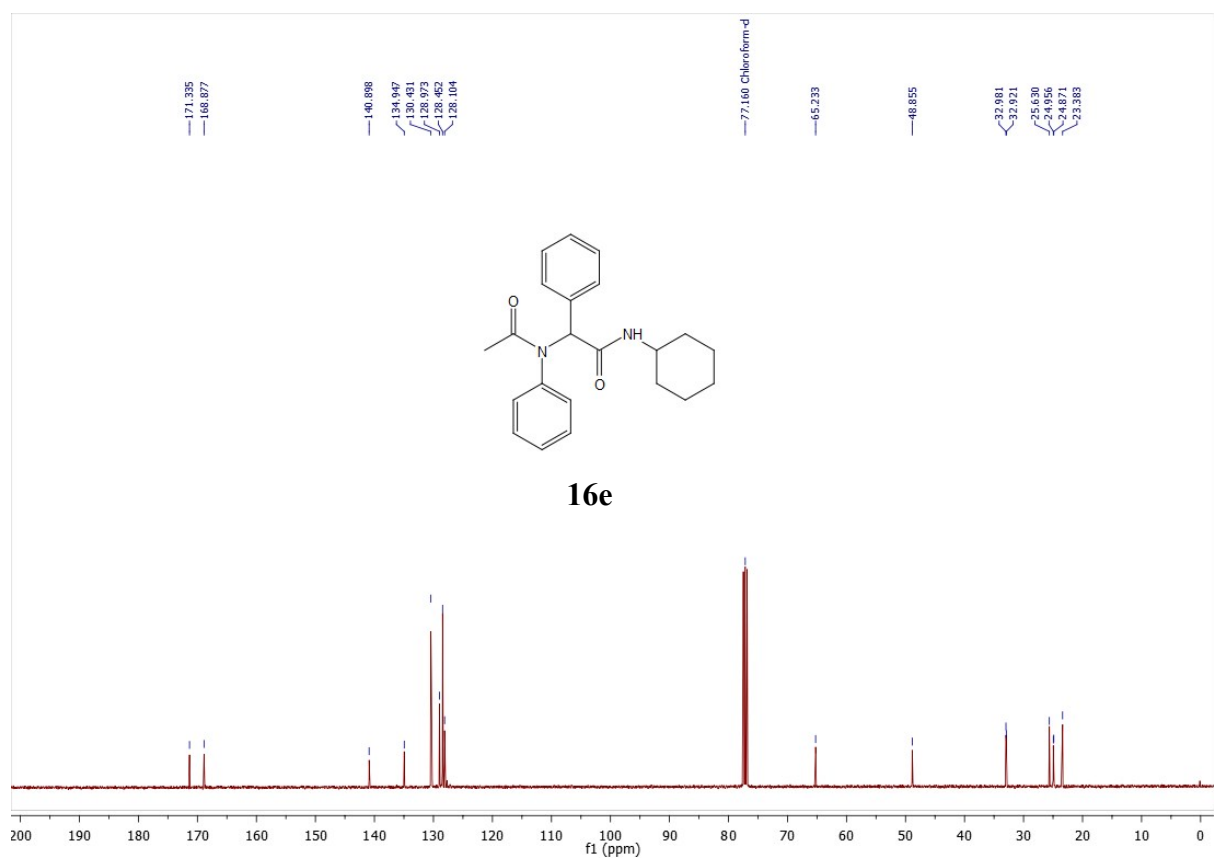
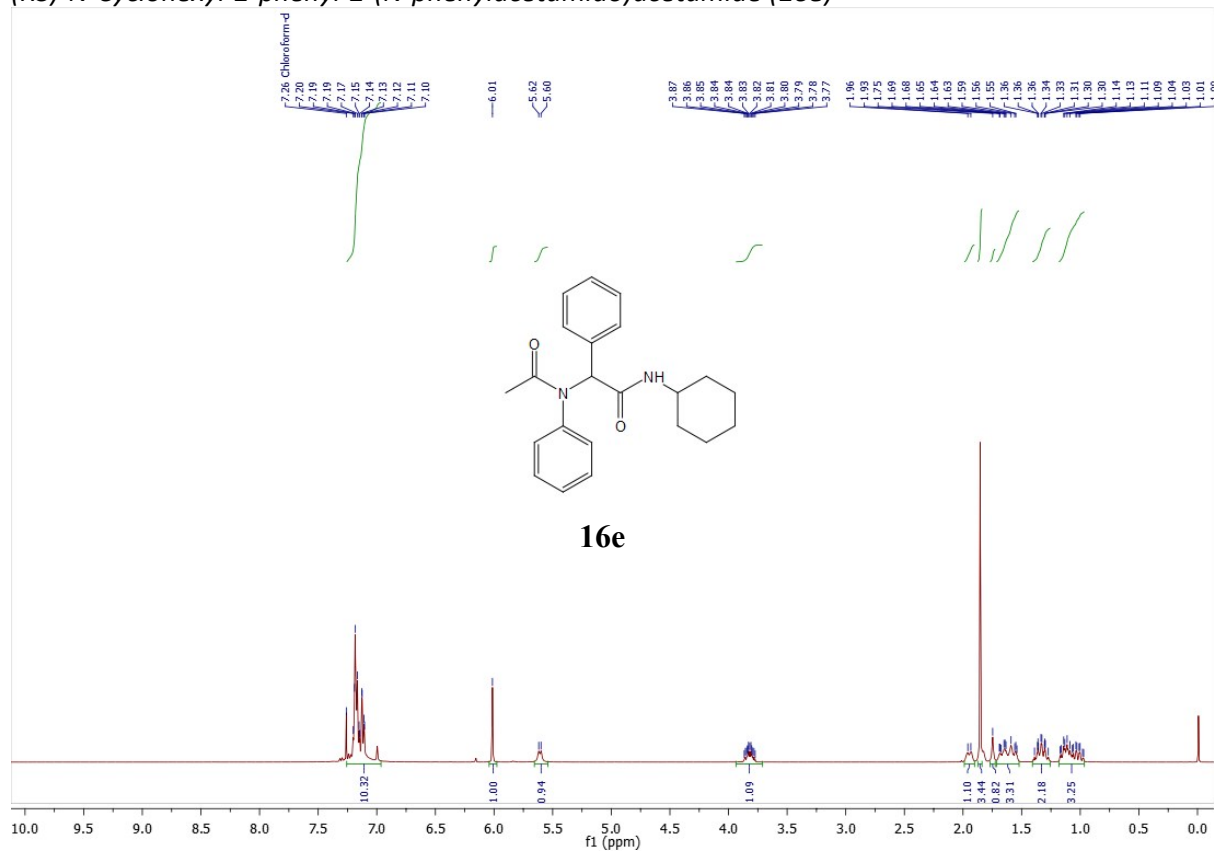
- Aromatic and vinylic protons: 6.8-7.2 ppm, integration 10.9.
- Cyclohexyl NH: 5.8 ppm, integration 1.0.
- Aromatic protons: 5.4 ppm, integration 1.0.
- Vinylic proton: 3.8 ppm, integration 1.1.
- Aliphatic protons (cyclohexyl): 1.1-2.0 ppm, integration 11.1.



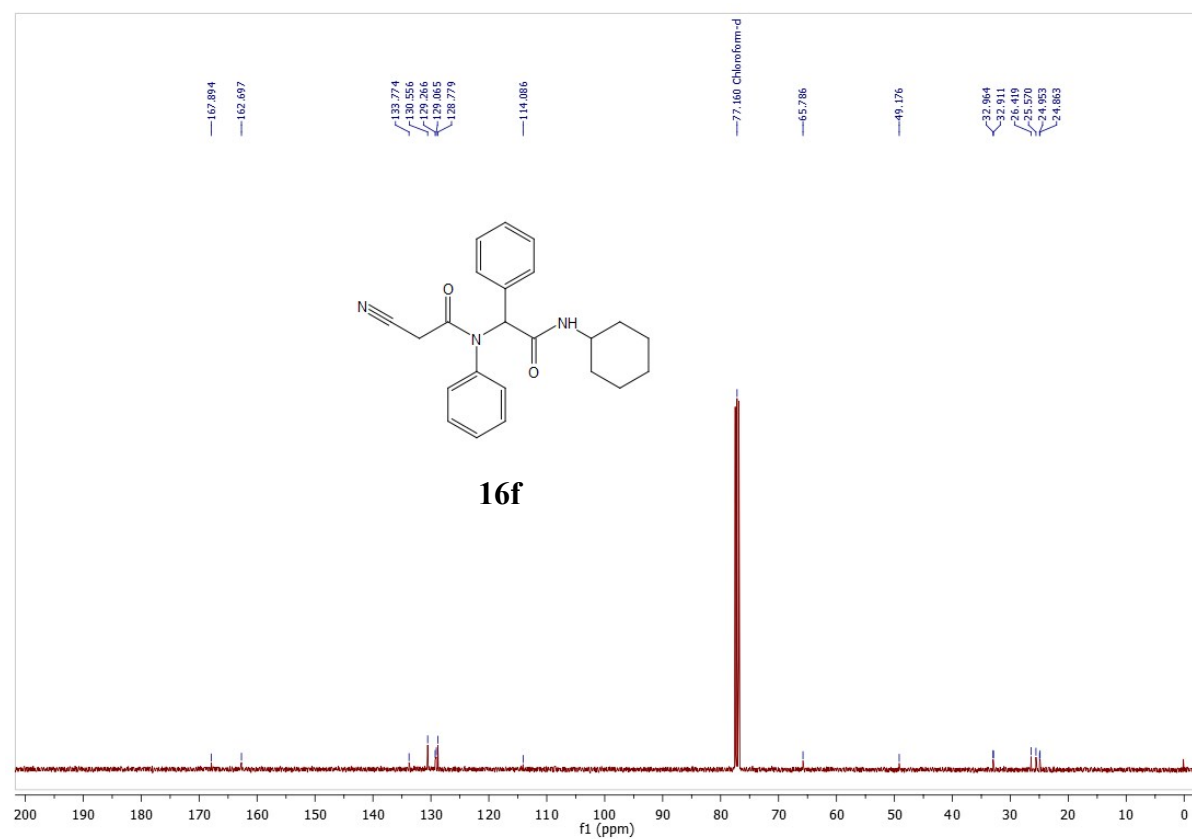
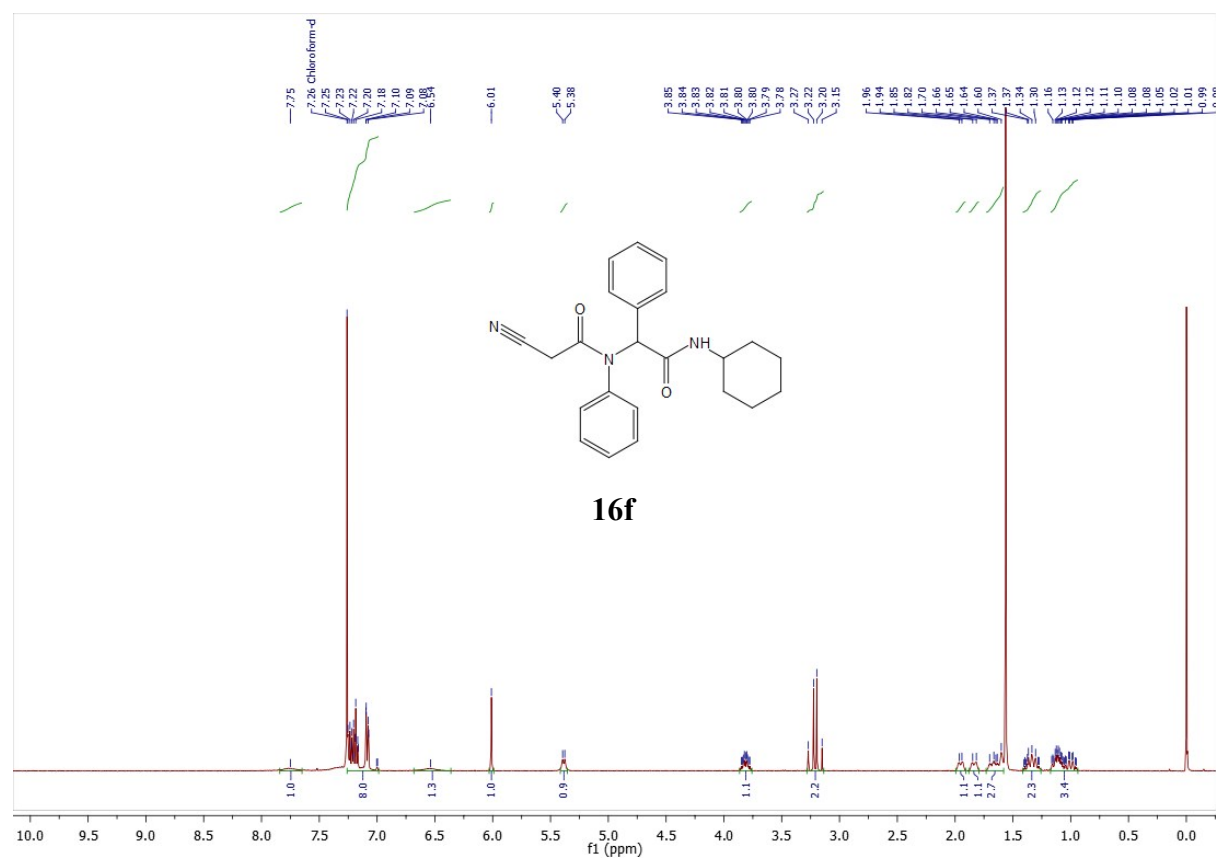
(*RS*)-*N*-(2-(Cyclohexylamino)-2-oxo-1-phenylethyl)-*N*-phenylbut-2-enamide (**16d**)



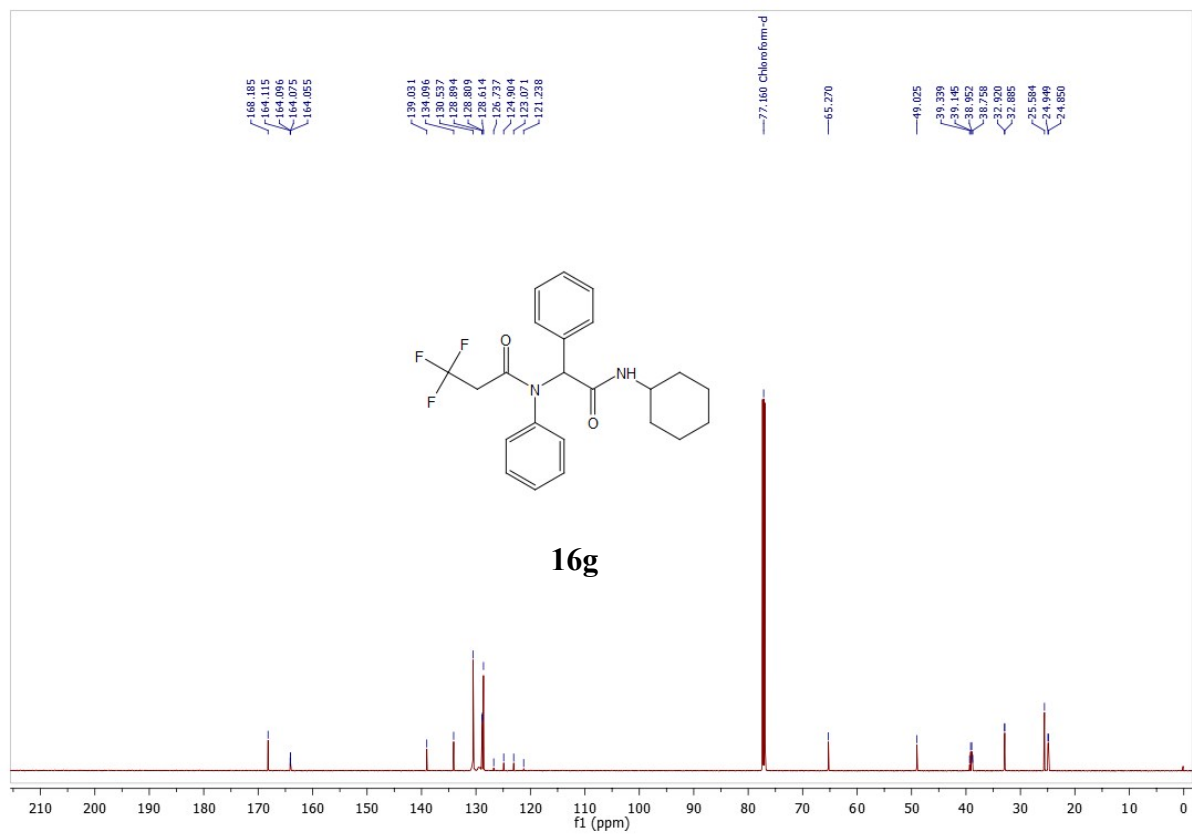
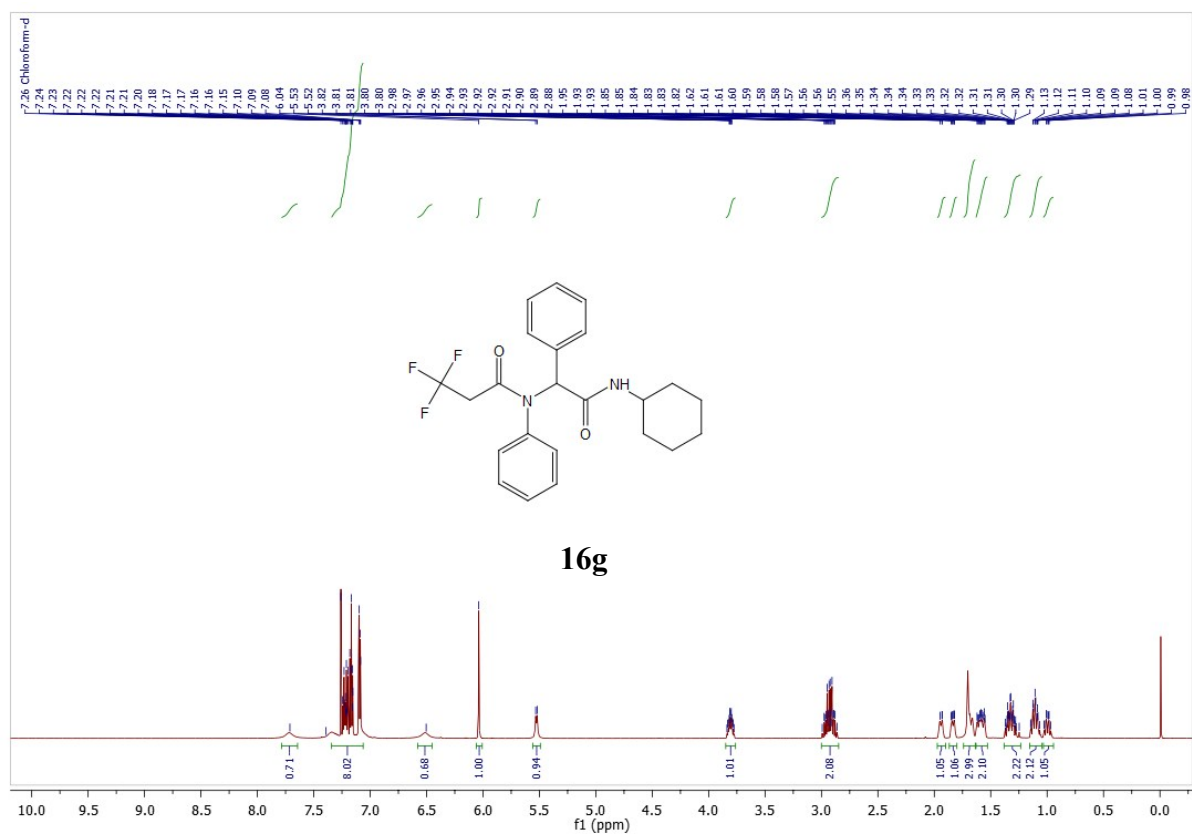
(*RS*)-*N*-Cyclohexyl-2-phenyl-2-(*N*-phenylacetamido)acetamide (**16e**)



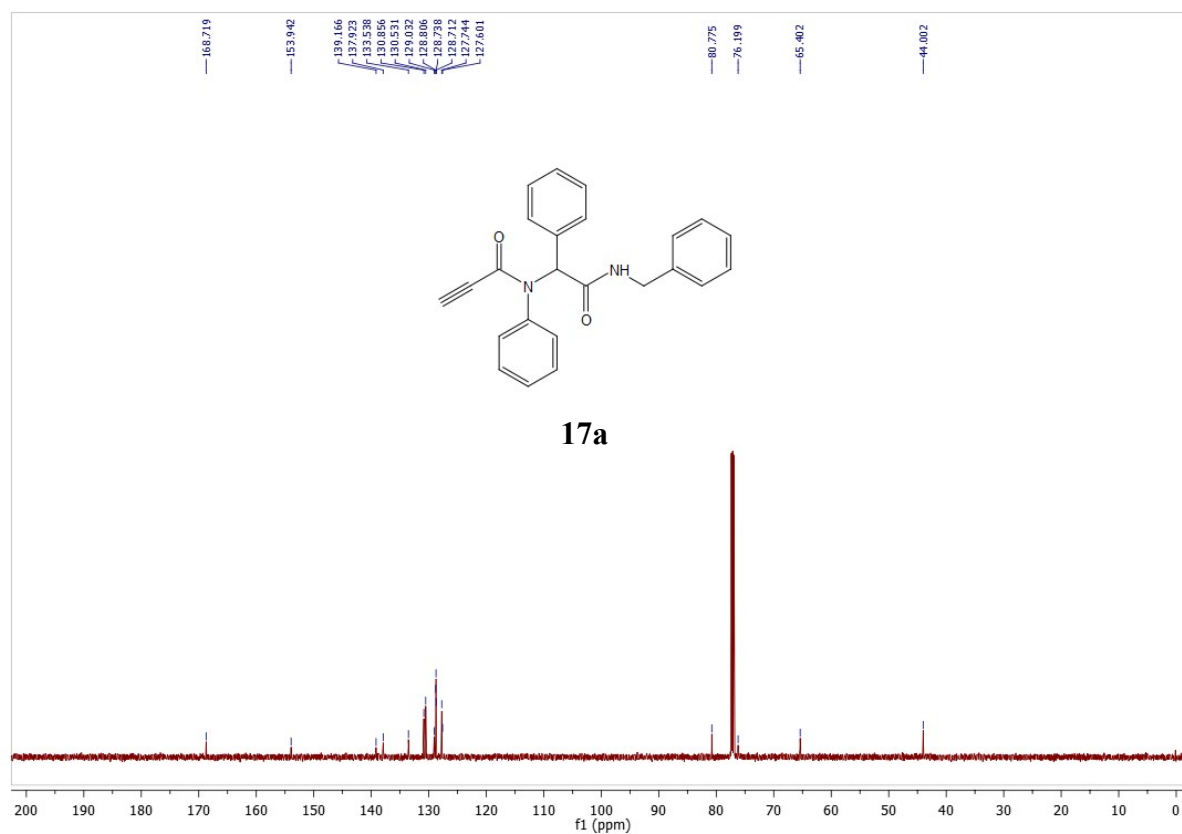
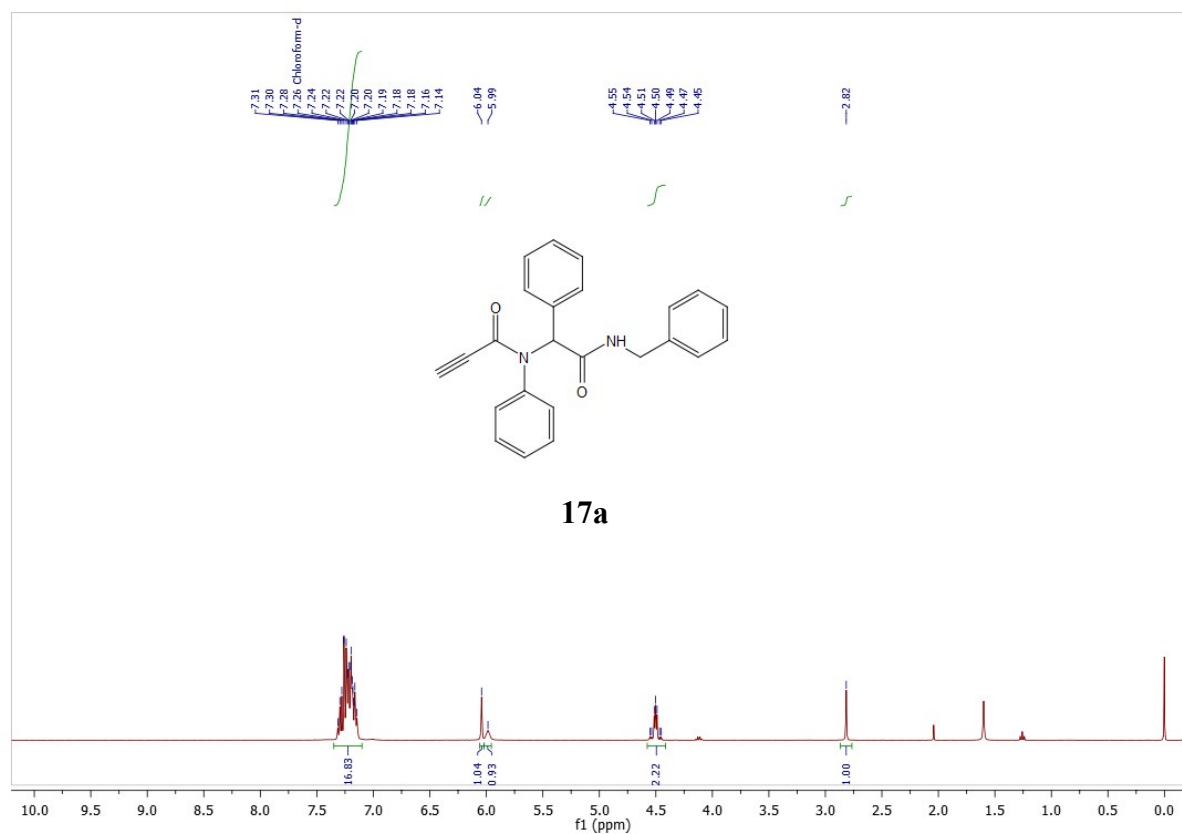
(*RS*)-2-Cyano-N-(2-(cyclohexylamino)-2-oxo-1-phenylethyl)-N-phenylacetamide (**16f**)



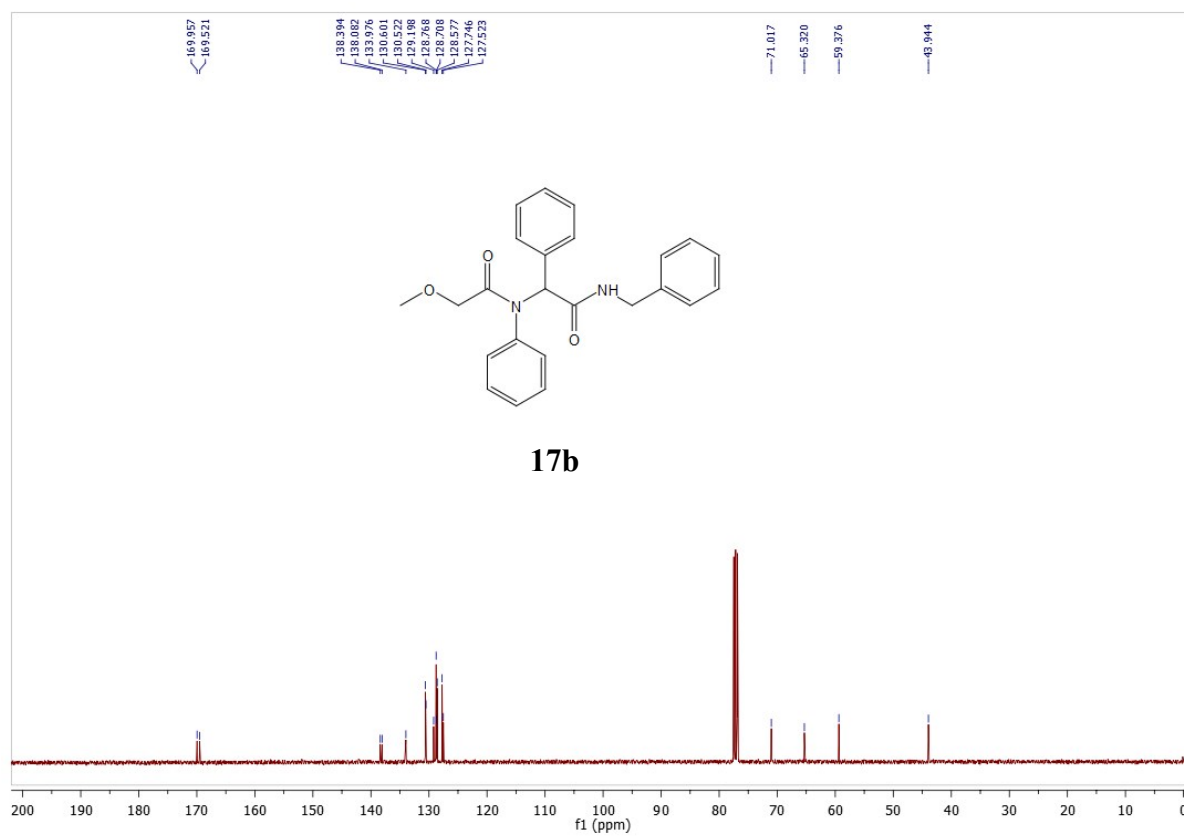
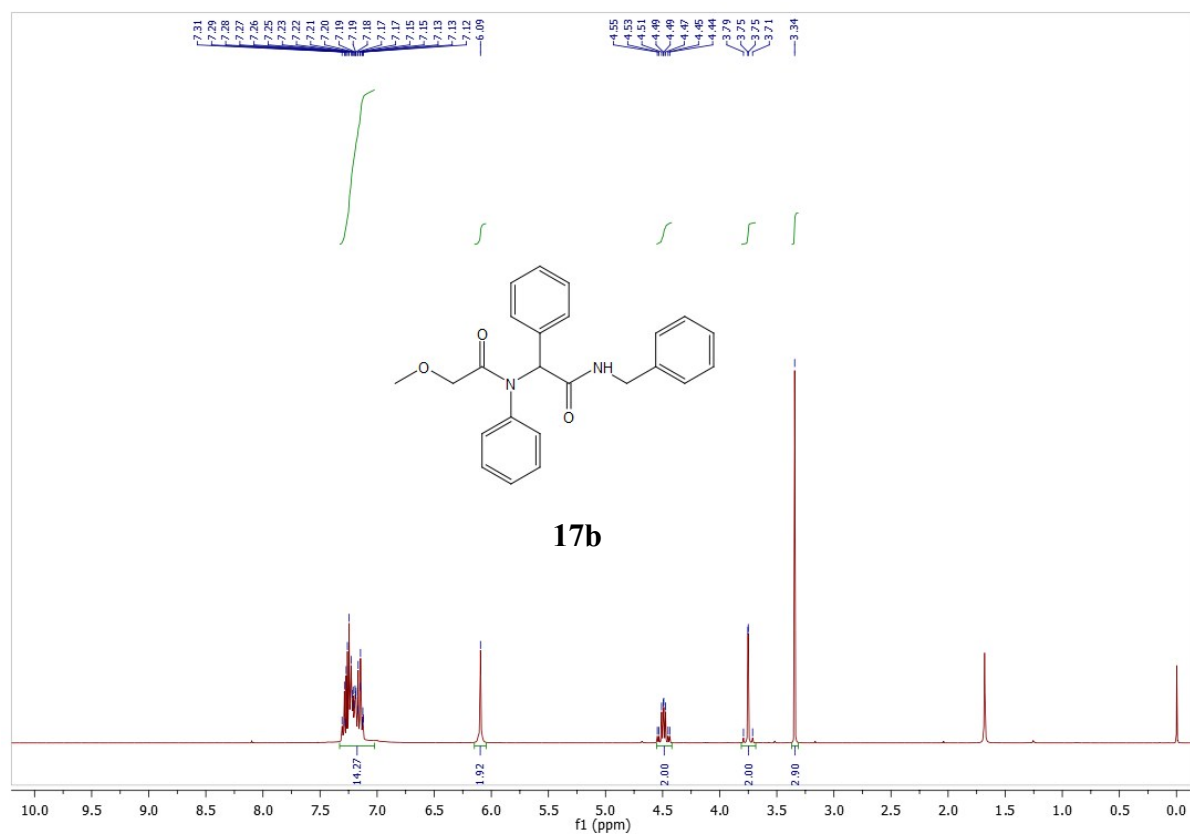
(*RS*)-*N*-(2-(cyclohexylamino)-2-oxo-1-phenylethyl)-3,3,3-trifluoro-*N*-phenylpropanamide (**16g**)



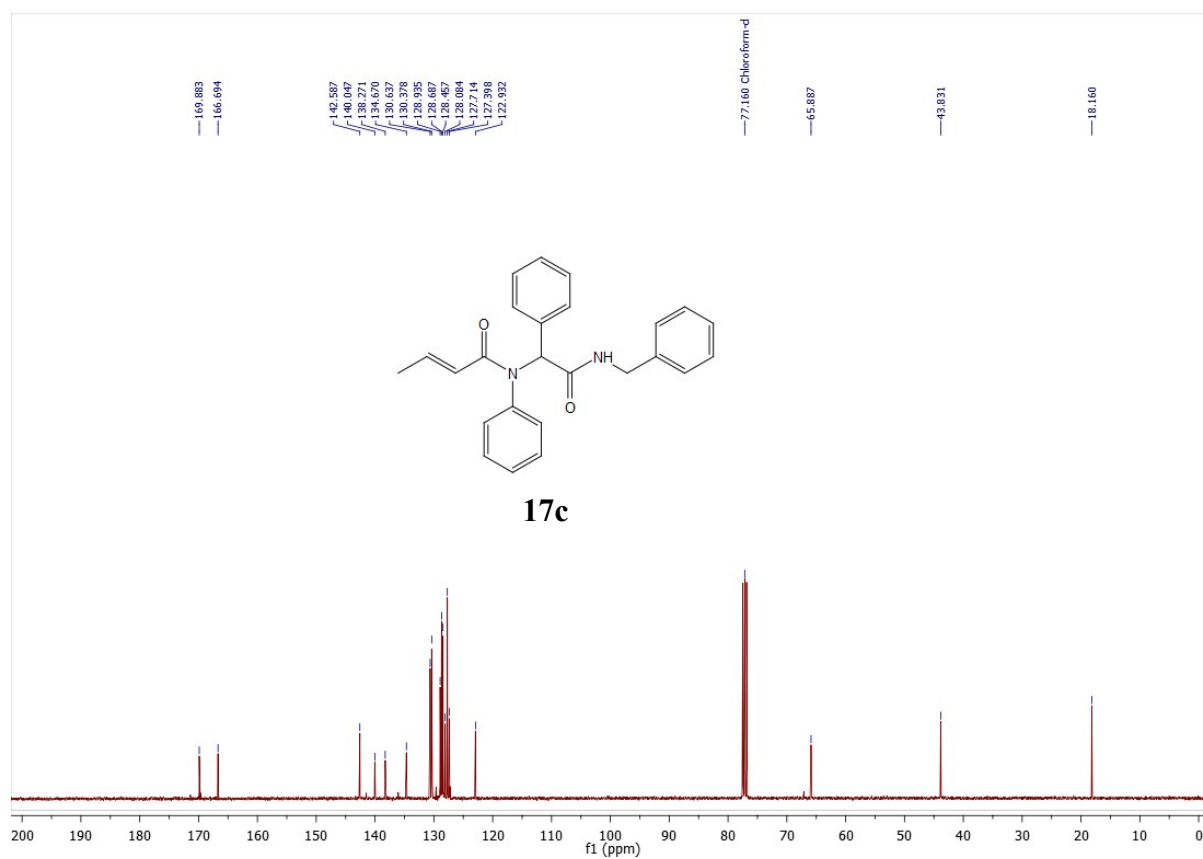
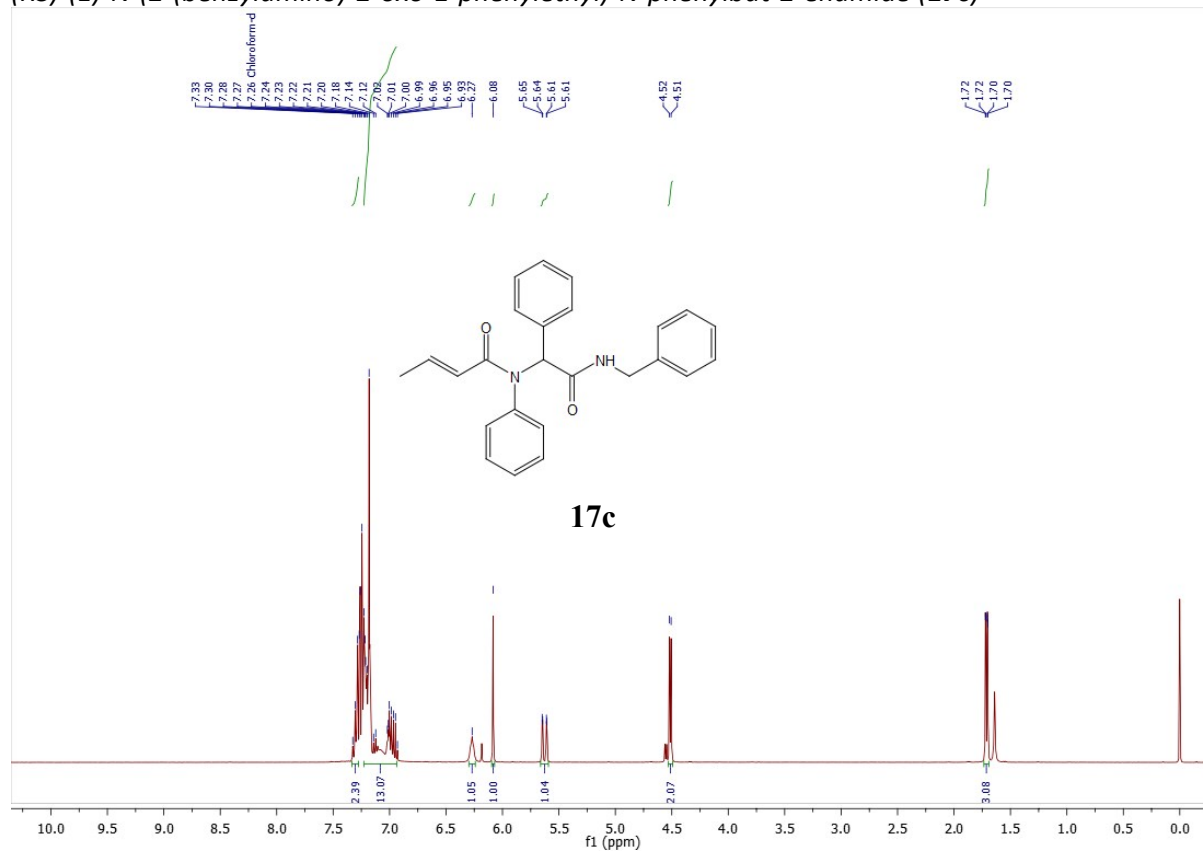
(RS)-N-(2-(Benzylamino)-2-oxo-1-phenylethyl)-N-phenylpropiolamide (**17a**)



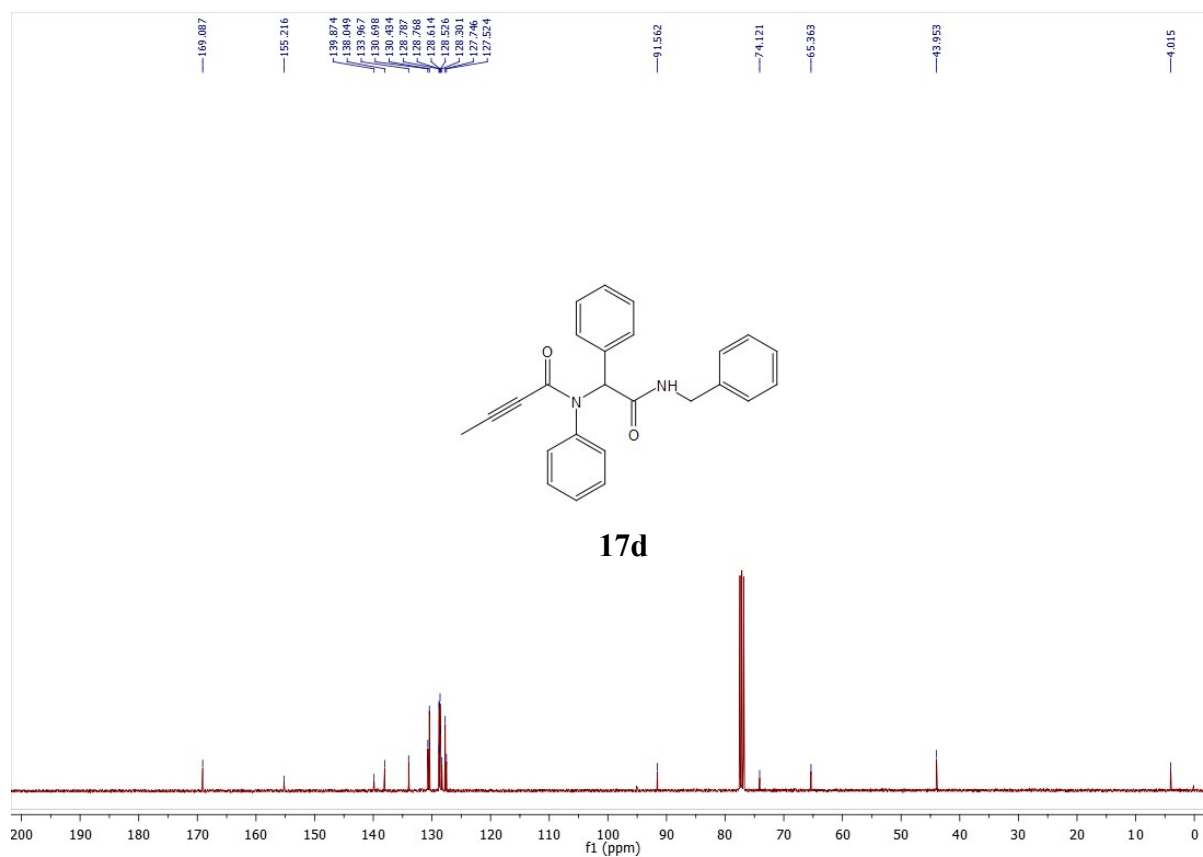
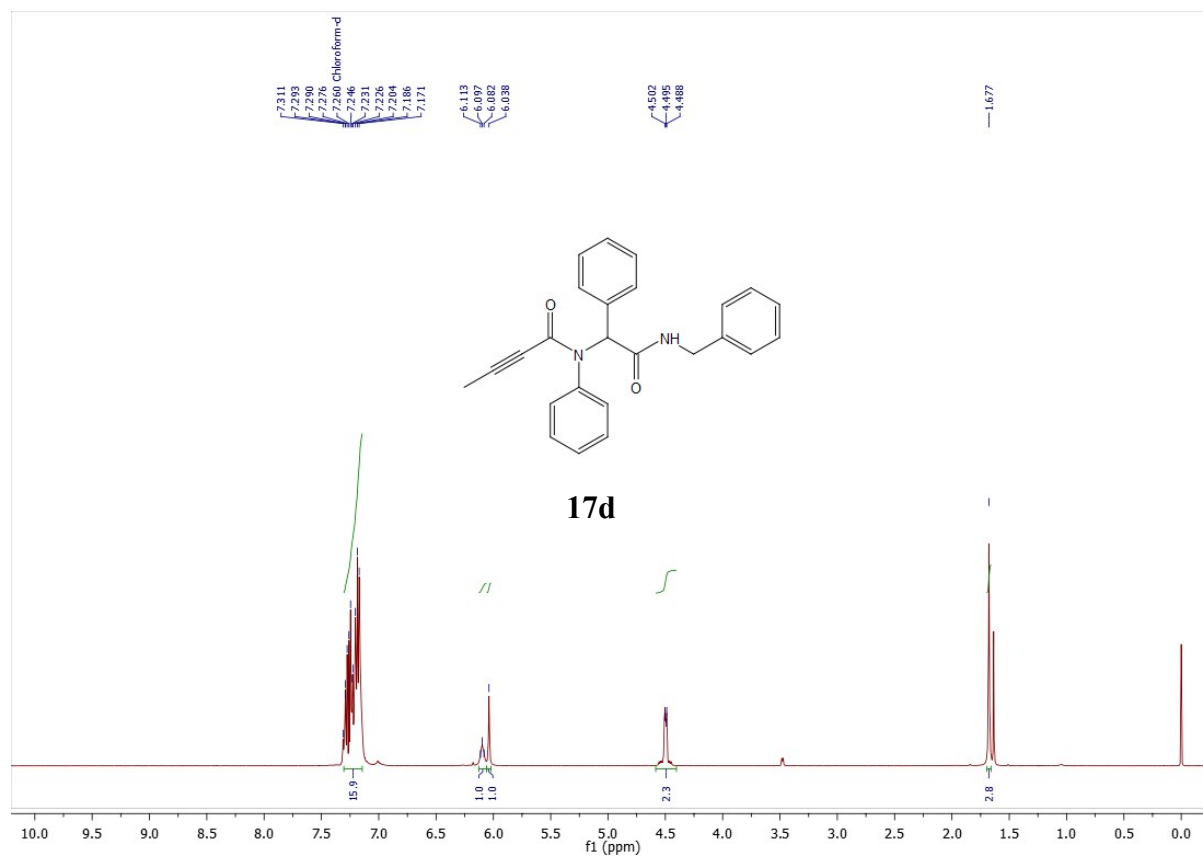
(RS)-N-Benzyl-2-(2-methoxy-N-phenylacetamido)-2-phenylacetamide (**17b**)



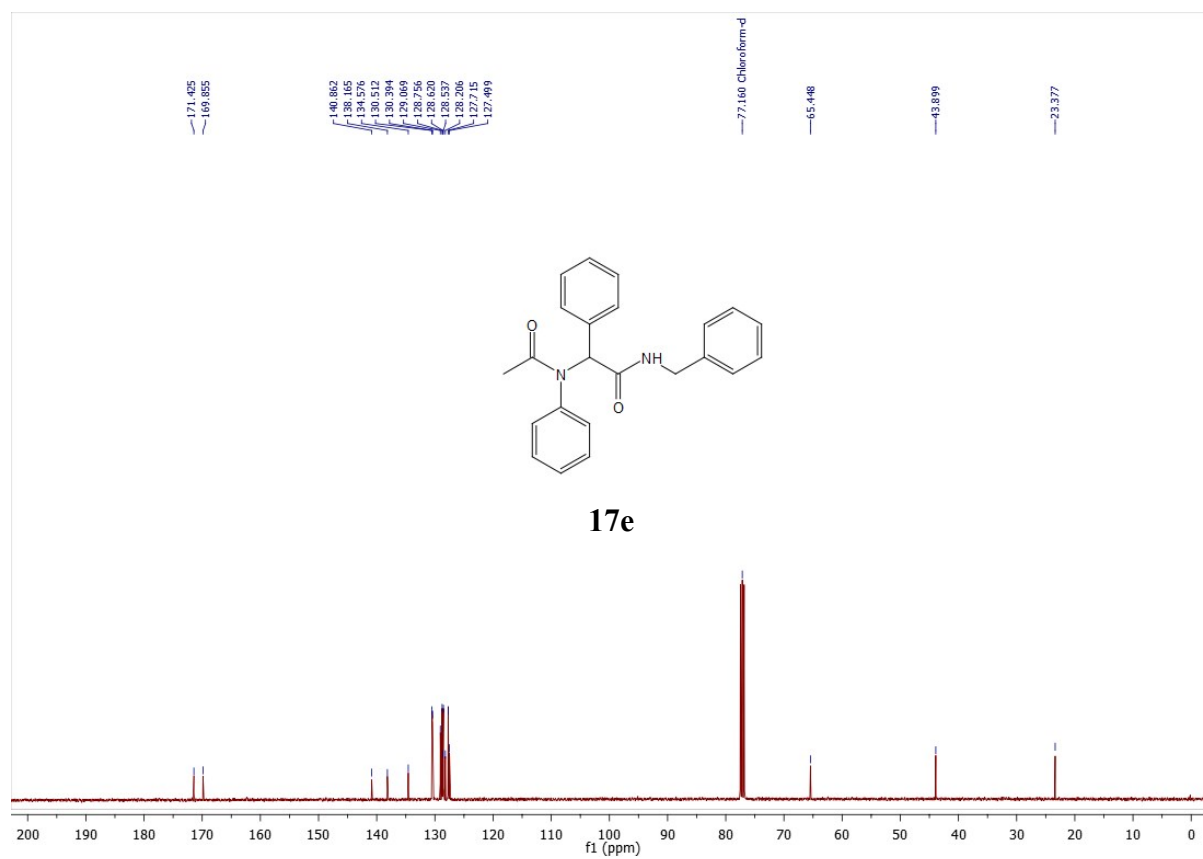
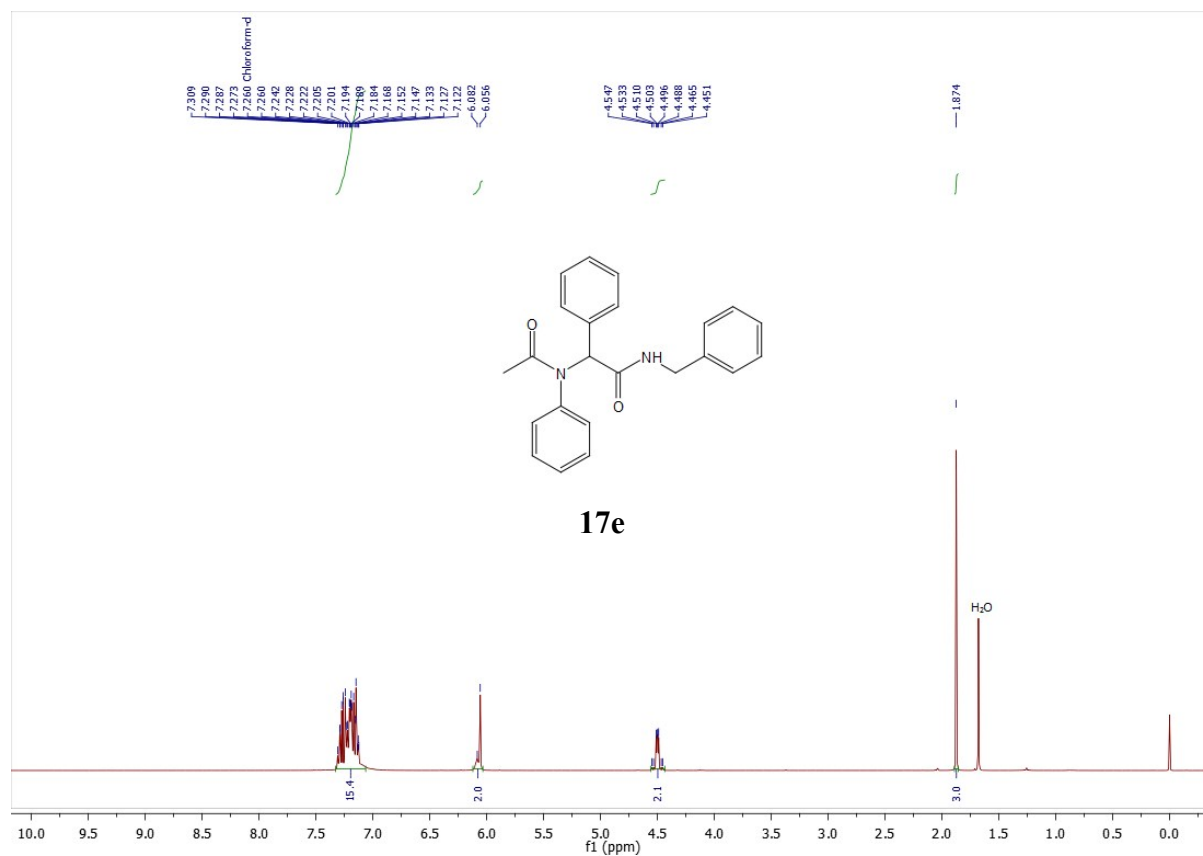
(RS)-(E)-N-(2-(benzylamino)-2-oxo-1-phenylethyl)-N-phenylbut-2-enamide (17c)



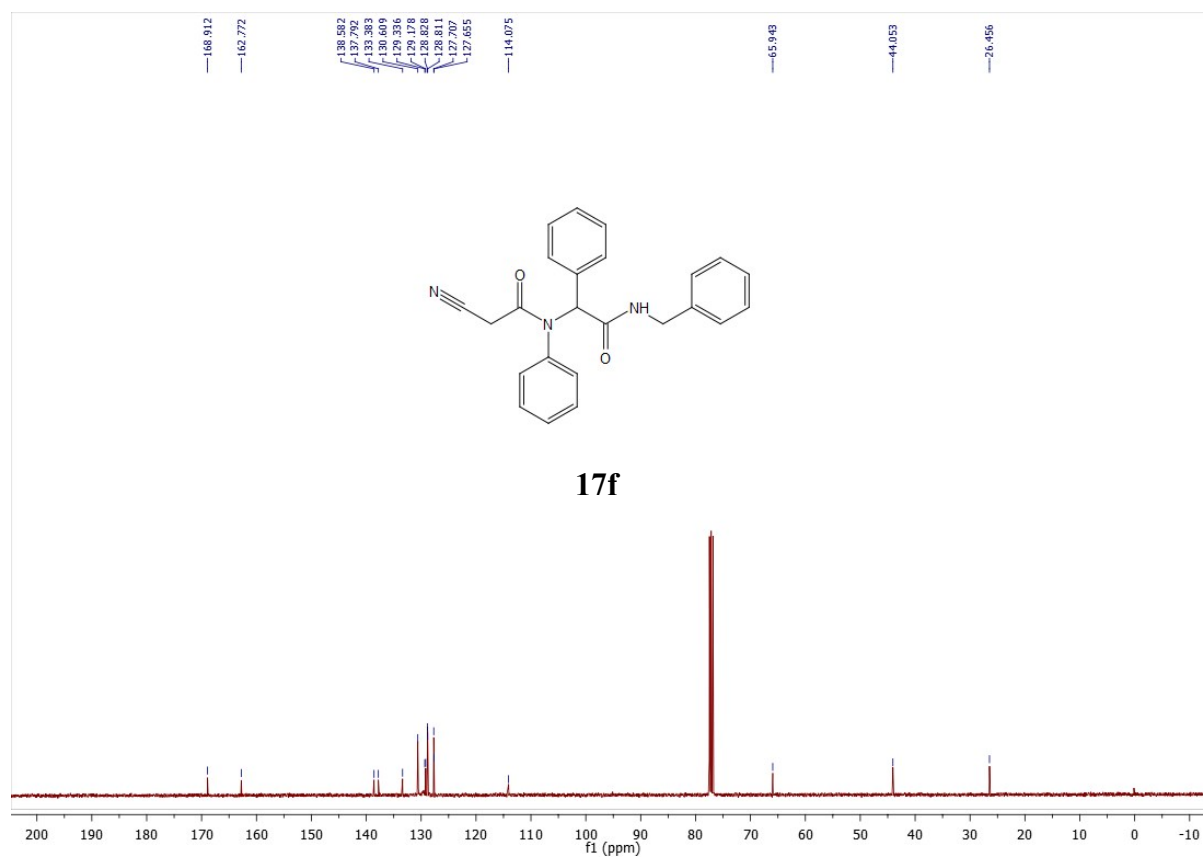
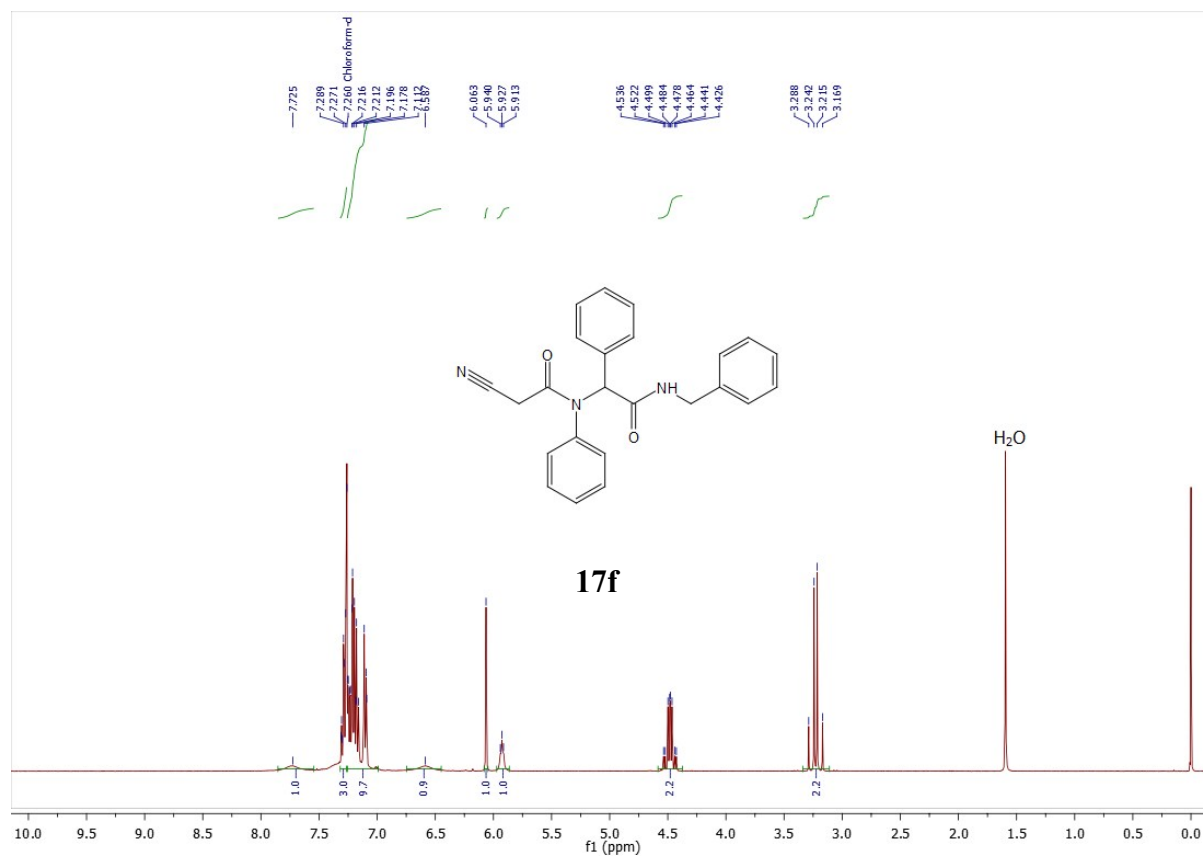
(*RS*)-*N*-(2-(Benzylamino)-2-oxo-1-phenylethyl)-*N*-phenylbut-2-ynamide (**17d**)



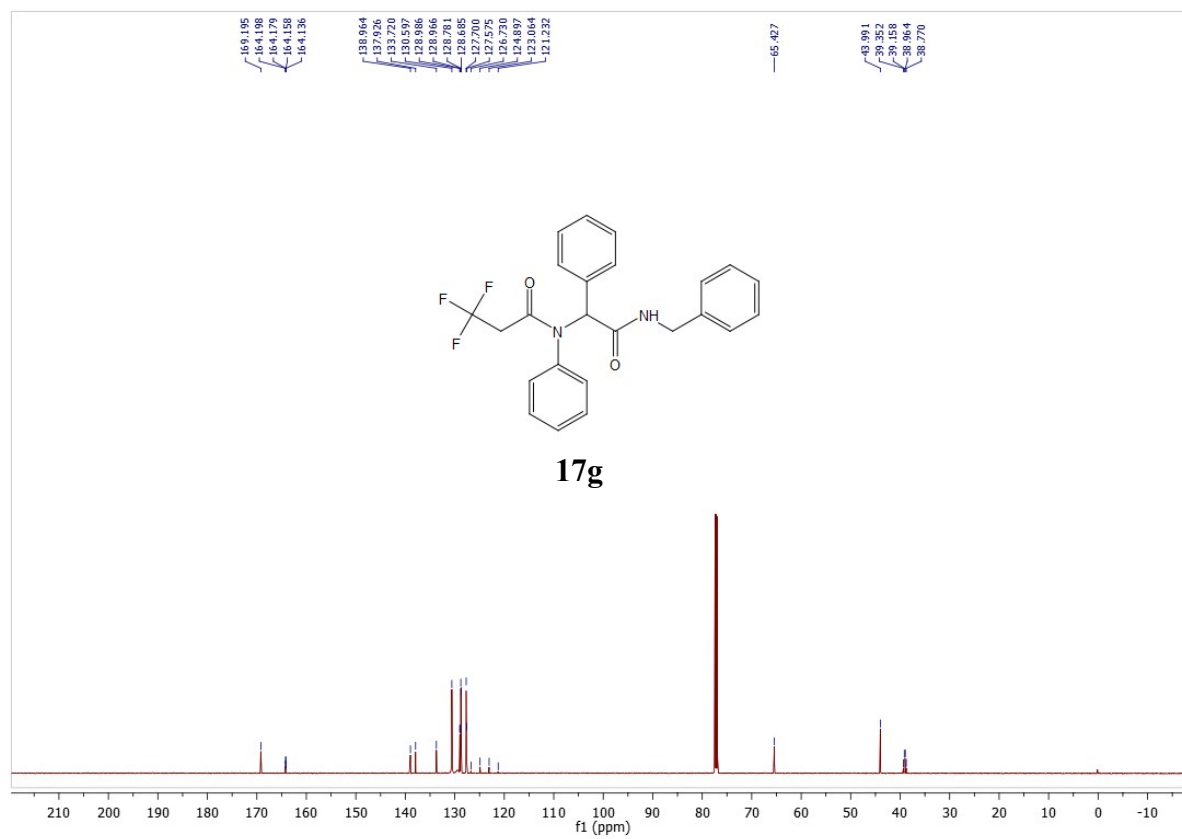
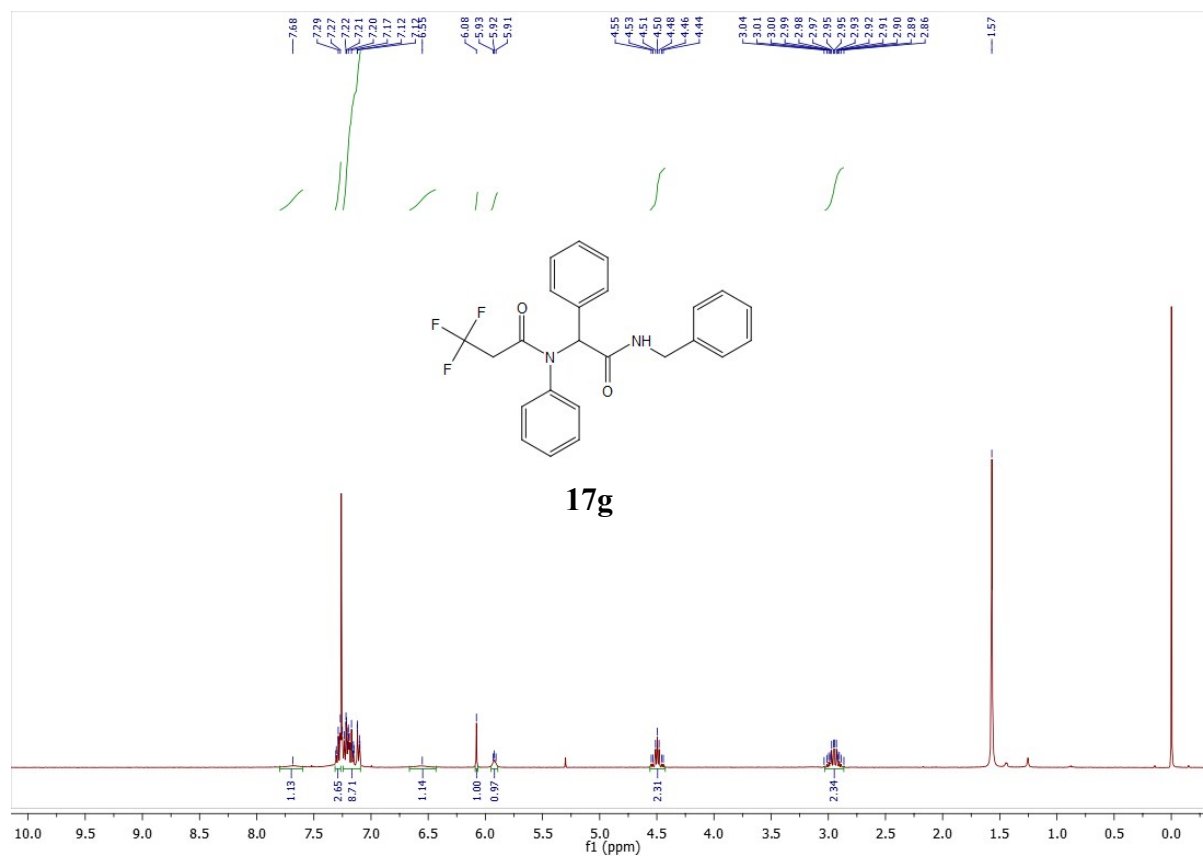
(RS)-N-Benzyl-2-phenyl-2-(N-phenylacetamido)acetamide (**17e**)



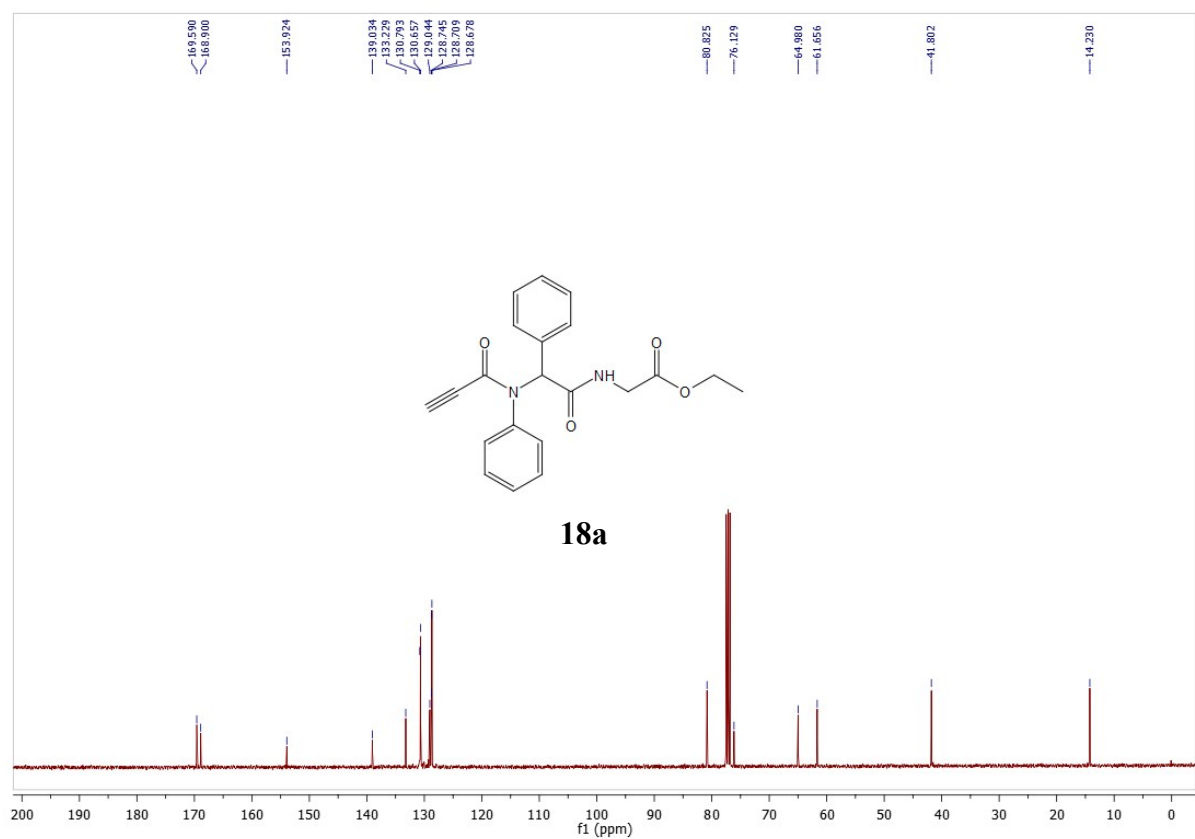
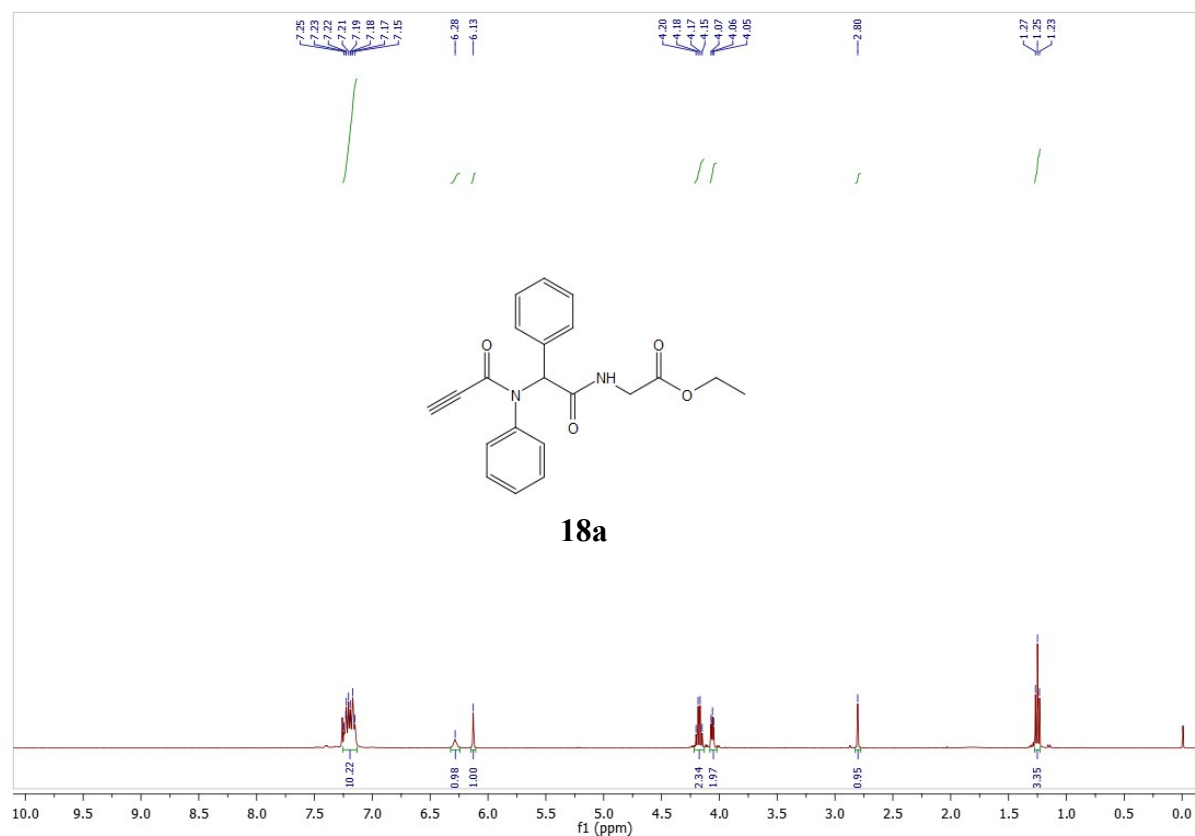
(*RS*)-*N*-Benzyl-2-(2-cyano-*N*-phenylacetamido)-2-phenylacetamide (**17f**)



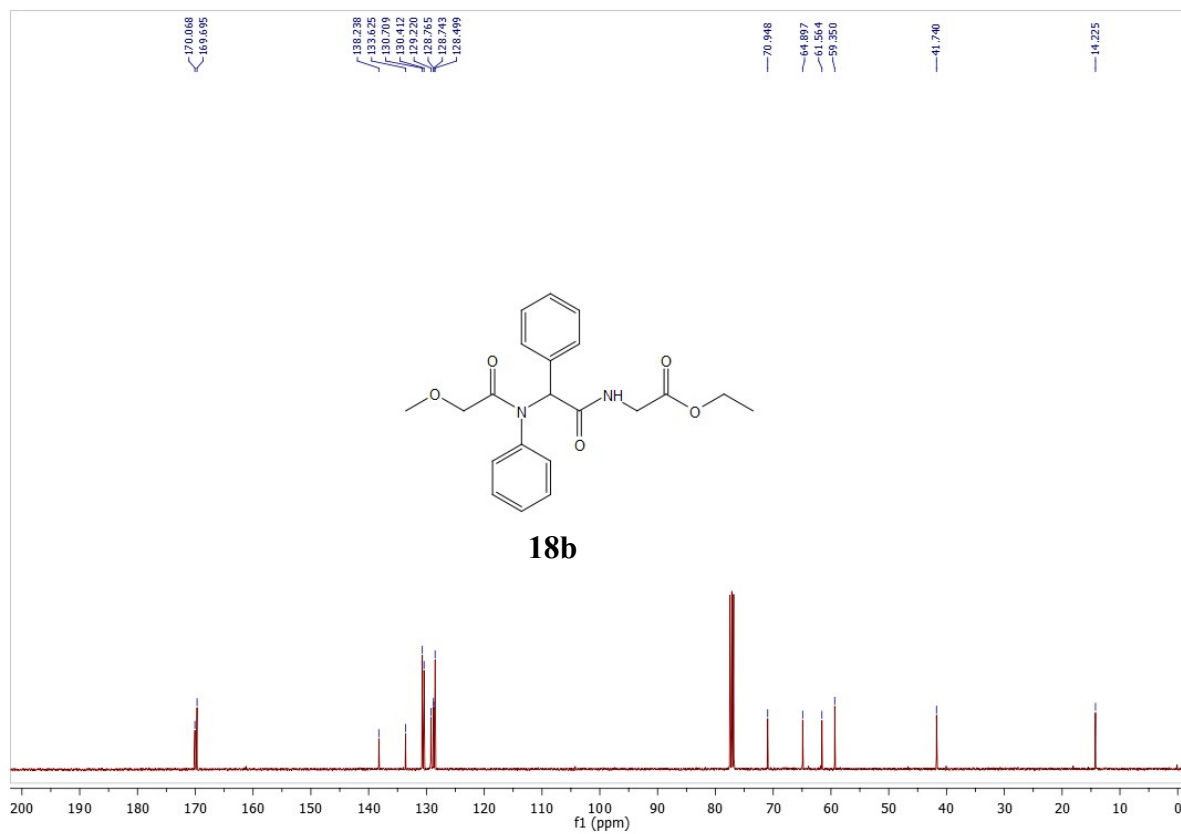
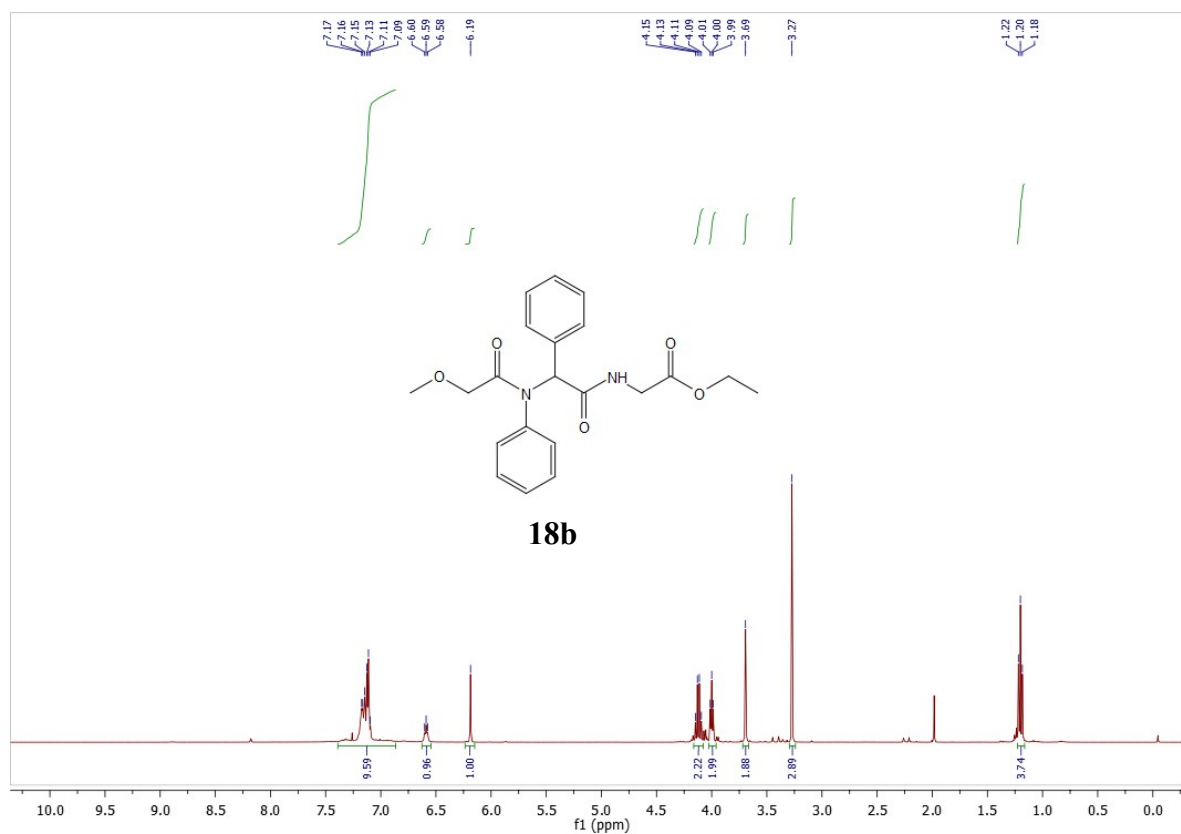
(*RS*)-*N*-(2-(Benzylamino)-2-oxo-1-phenylethyl)-3,3,3-trifluoro-*N*-phenylpropanamide (**17g**)



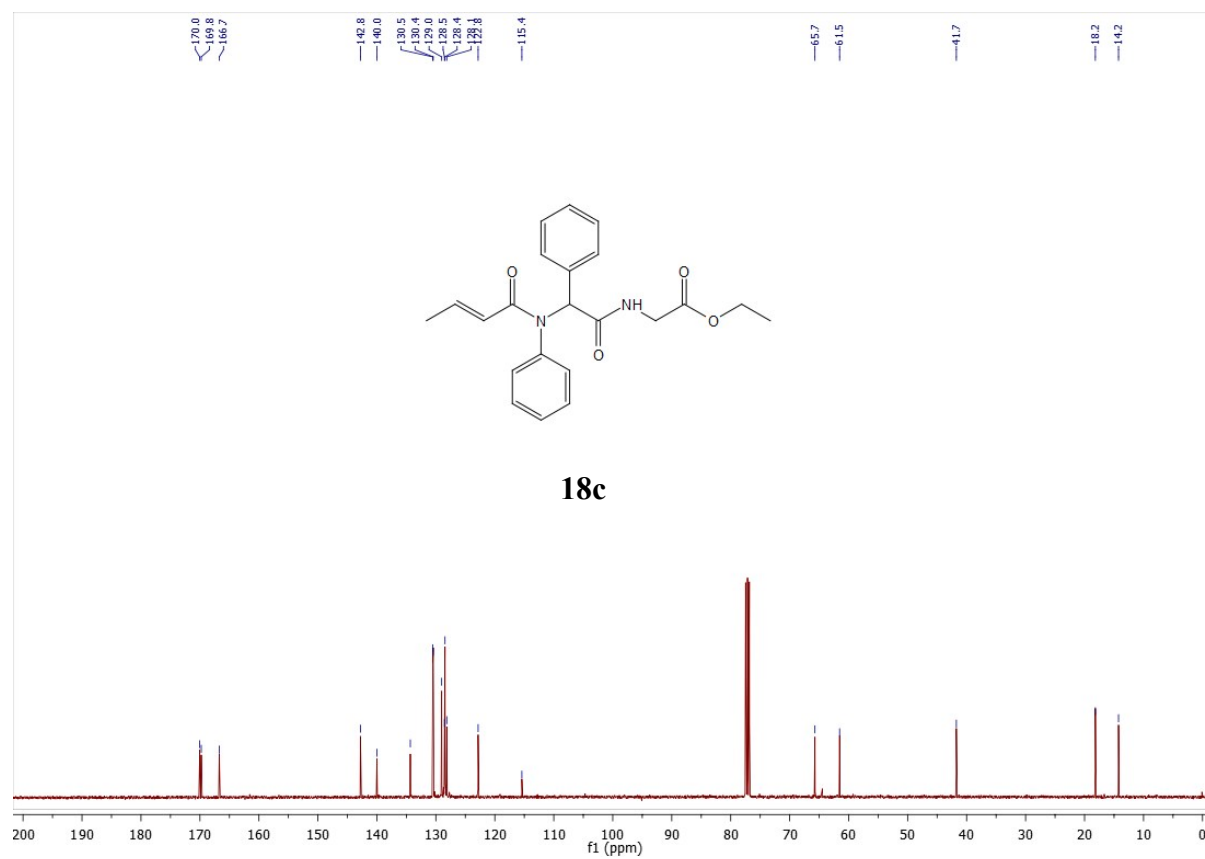
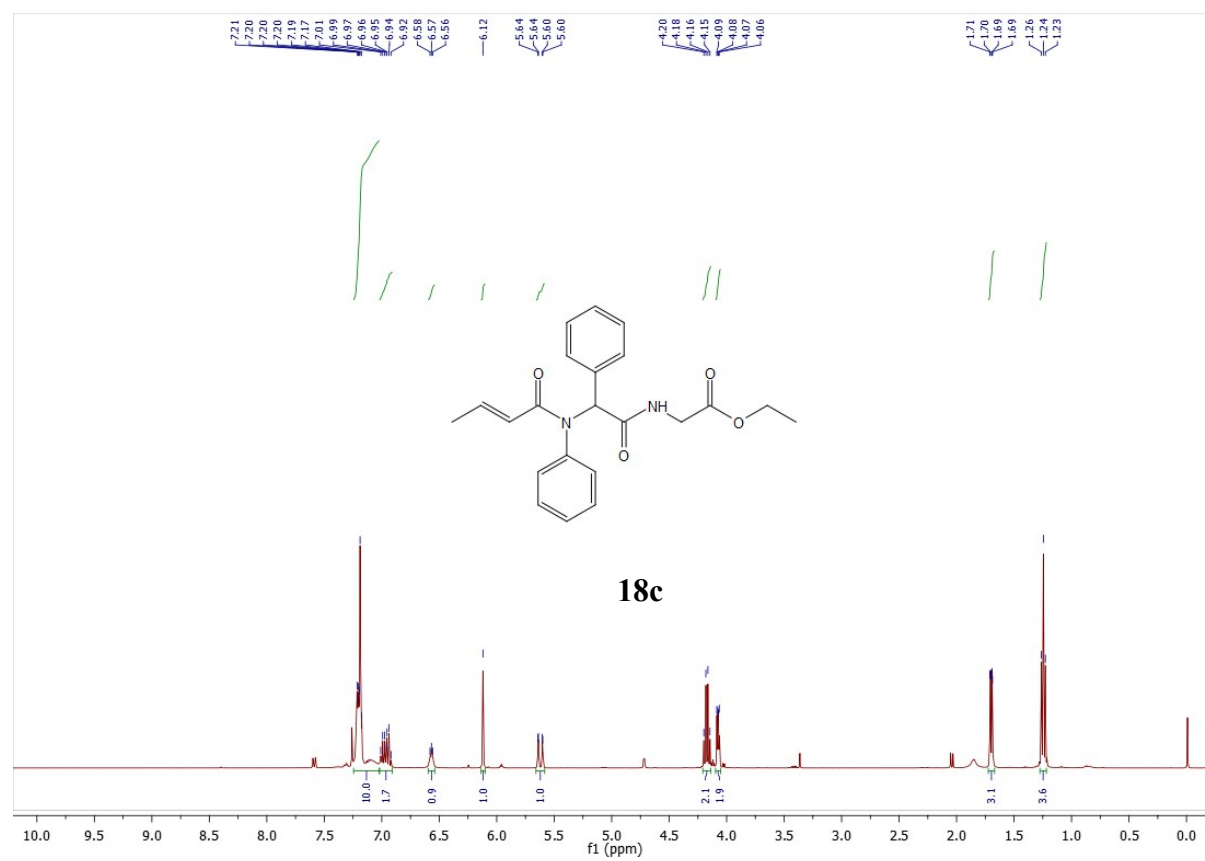
(*RS*)-Ethyl (2-phenyl-2-(*N*-phenylpropiolamido)acetyl)glycinate (**18a**)



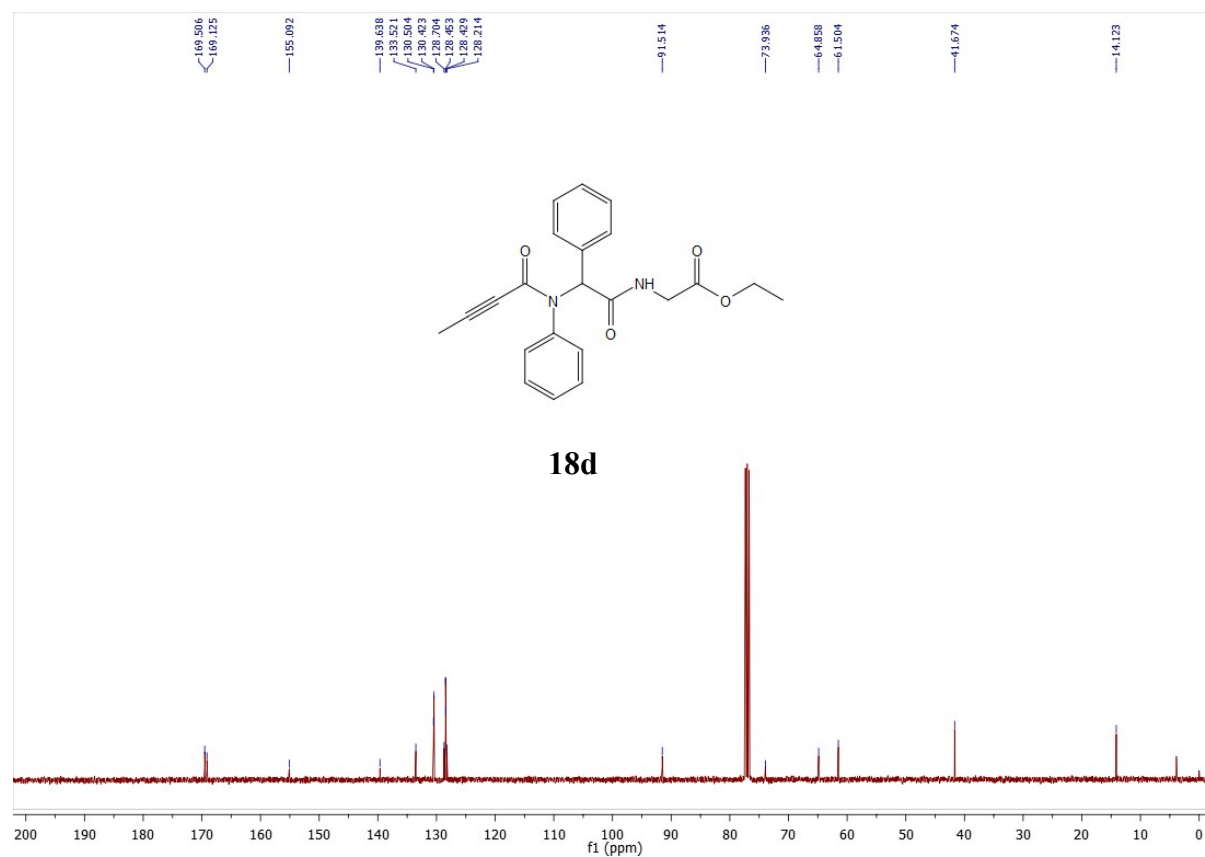
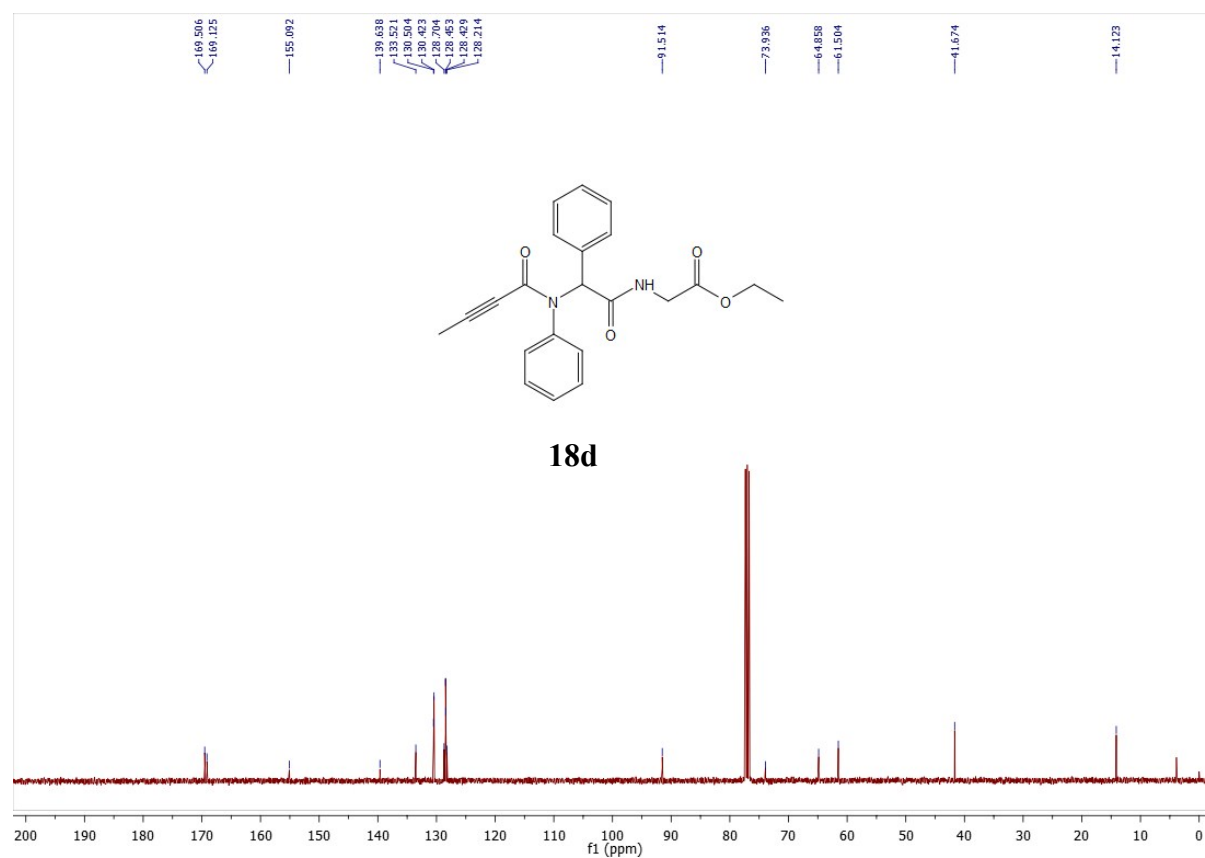
(*RS*)-Ethyl (2-(2-methoxy-*N*-phenylacetamido)-2-phenylacetyl)glycinate (**18b**)



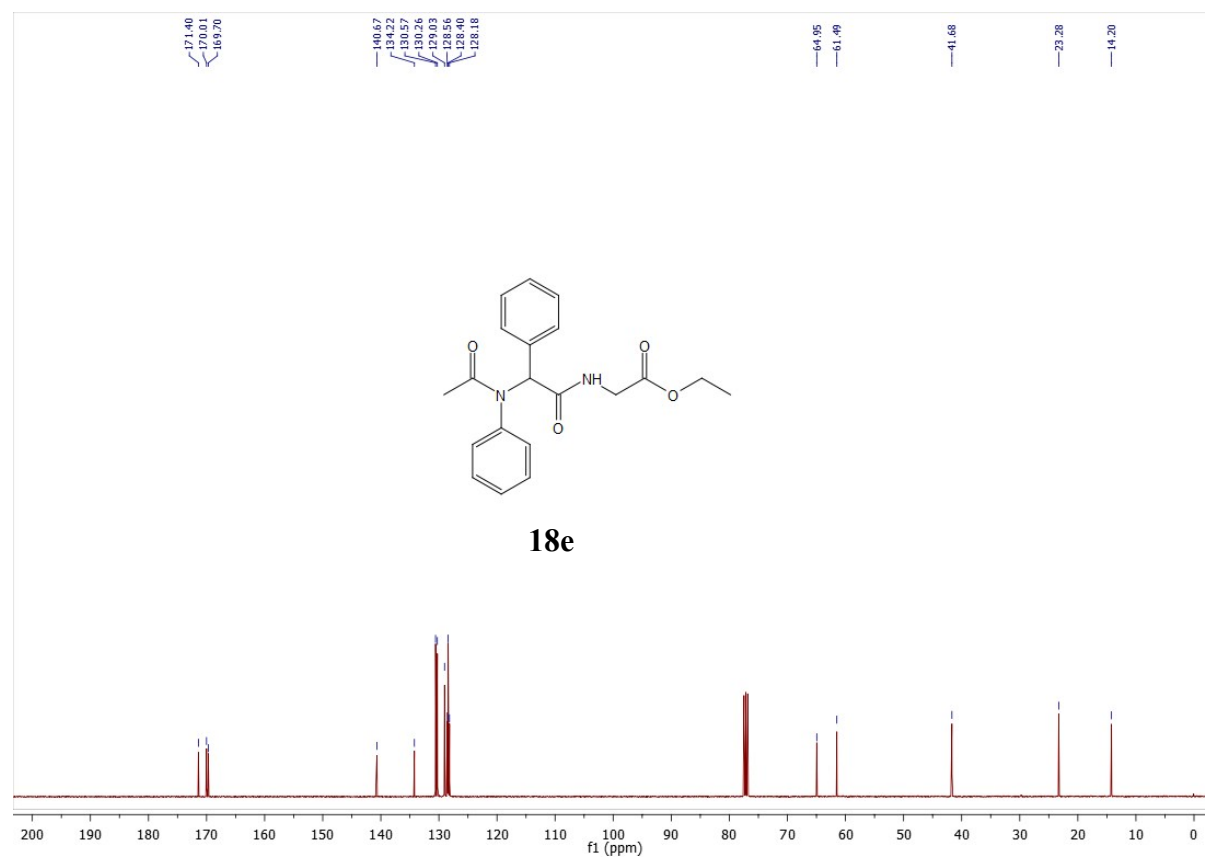
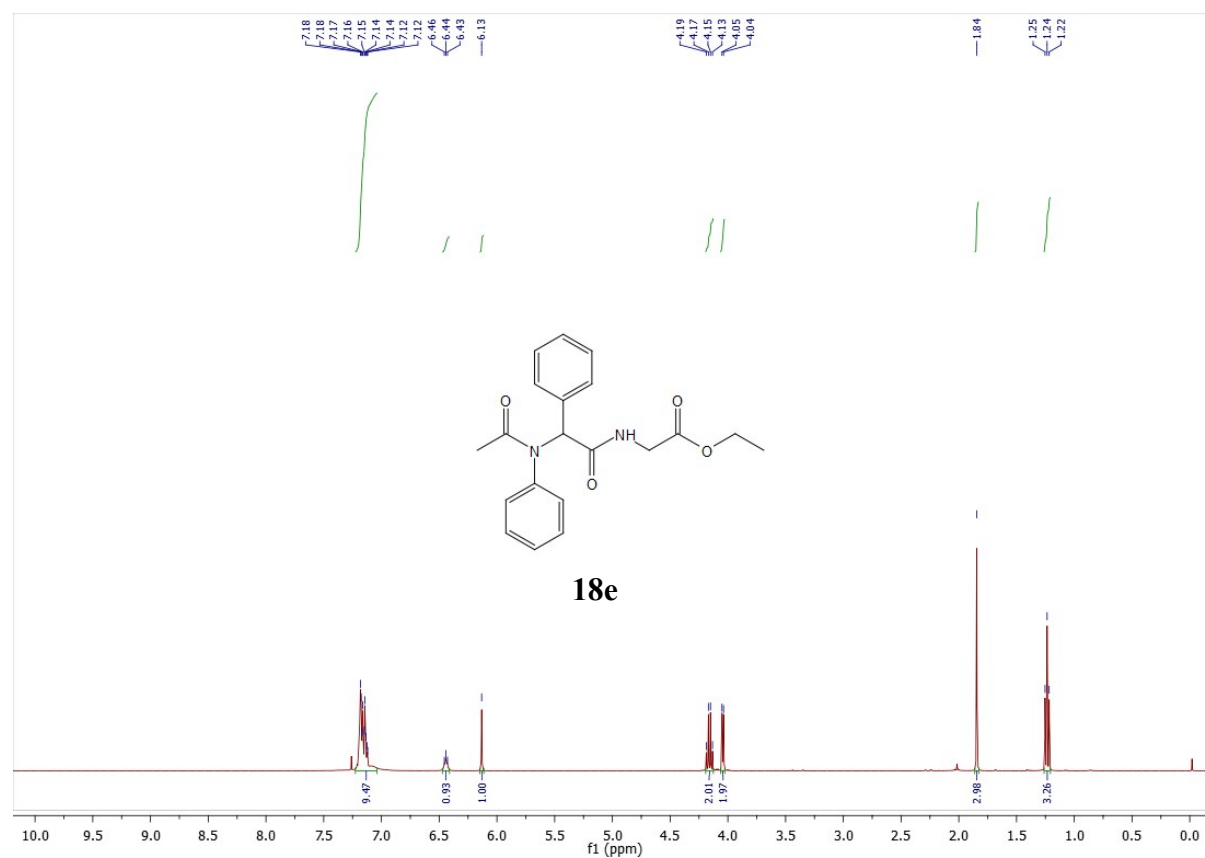
(*RS*)-(*E*)-Ethyl 2-(2-phenyl-2-(*N*-phenylbut-2-enamido)acetamido)acetate (**18c**)



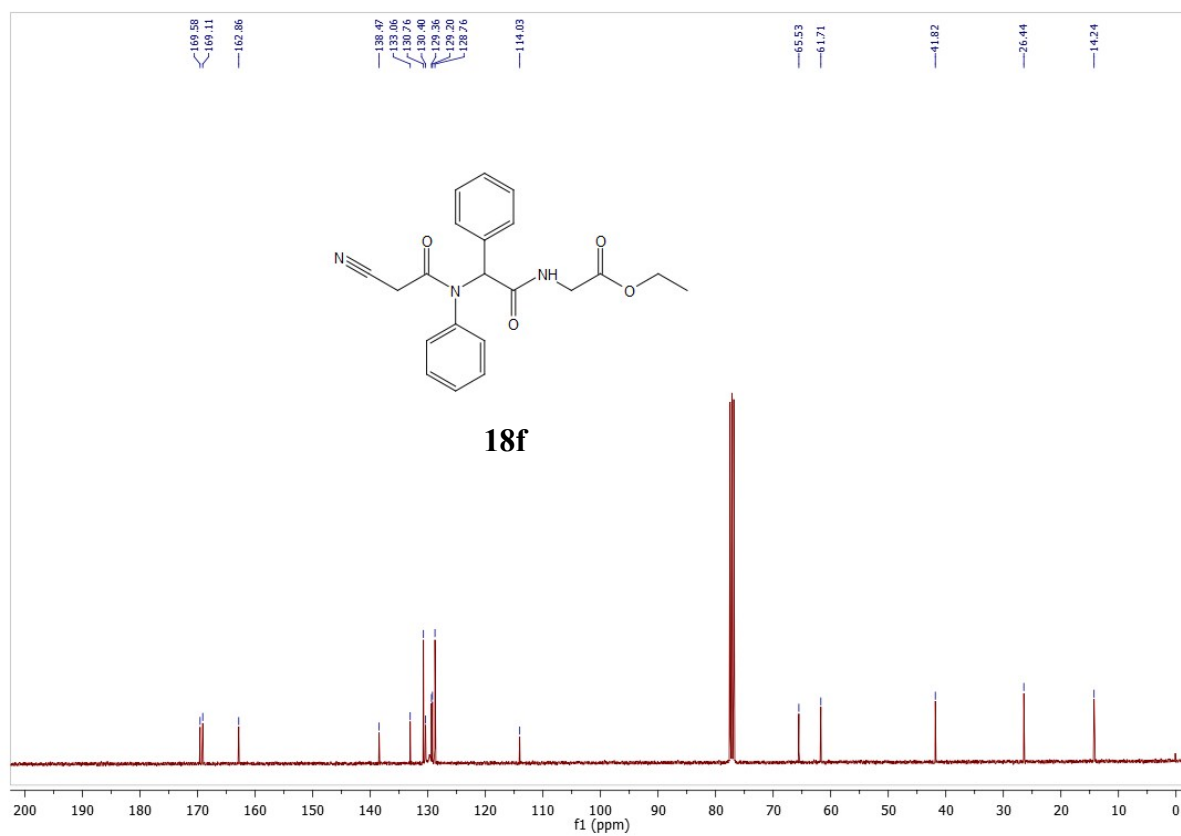
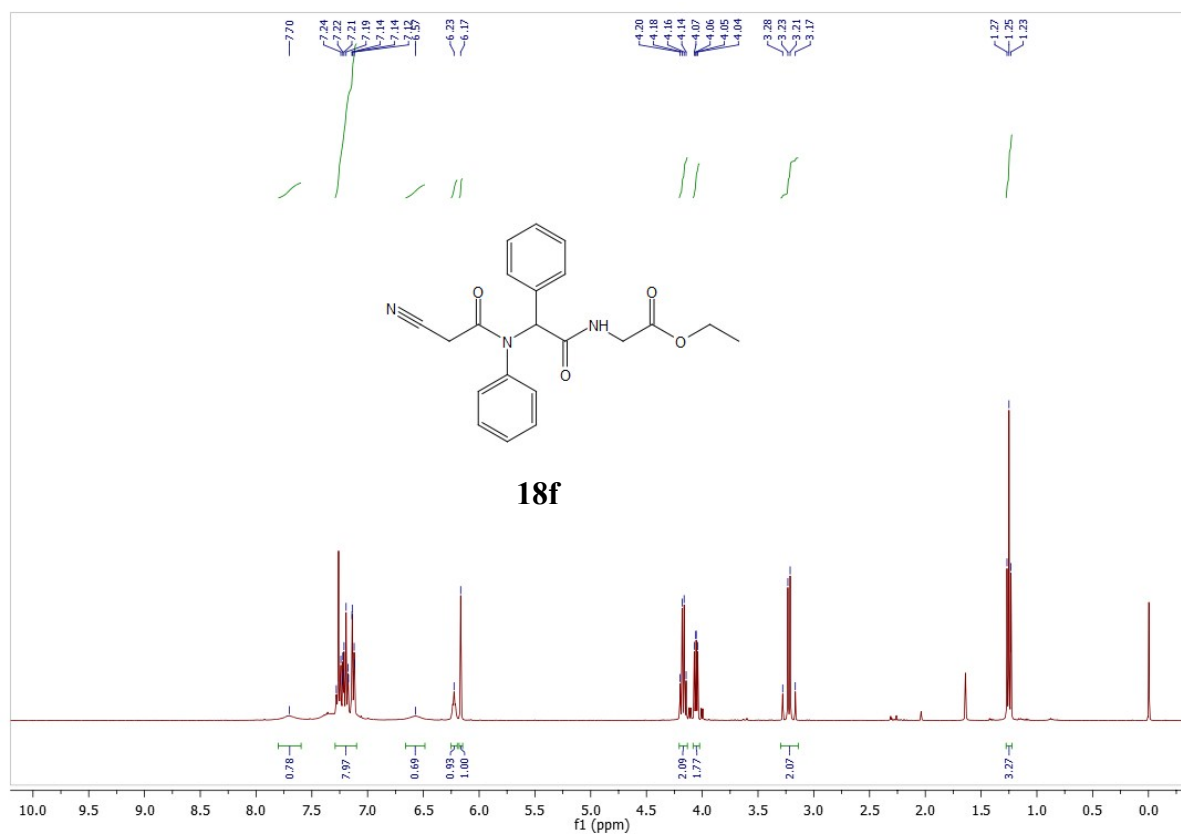
(RS)-Ethyl (2-phenyl-2-(*N*-phenylbut-2-ynamido)acetyl)glycinate (**18d**)



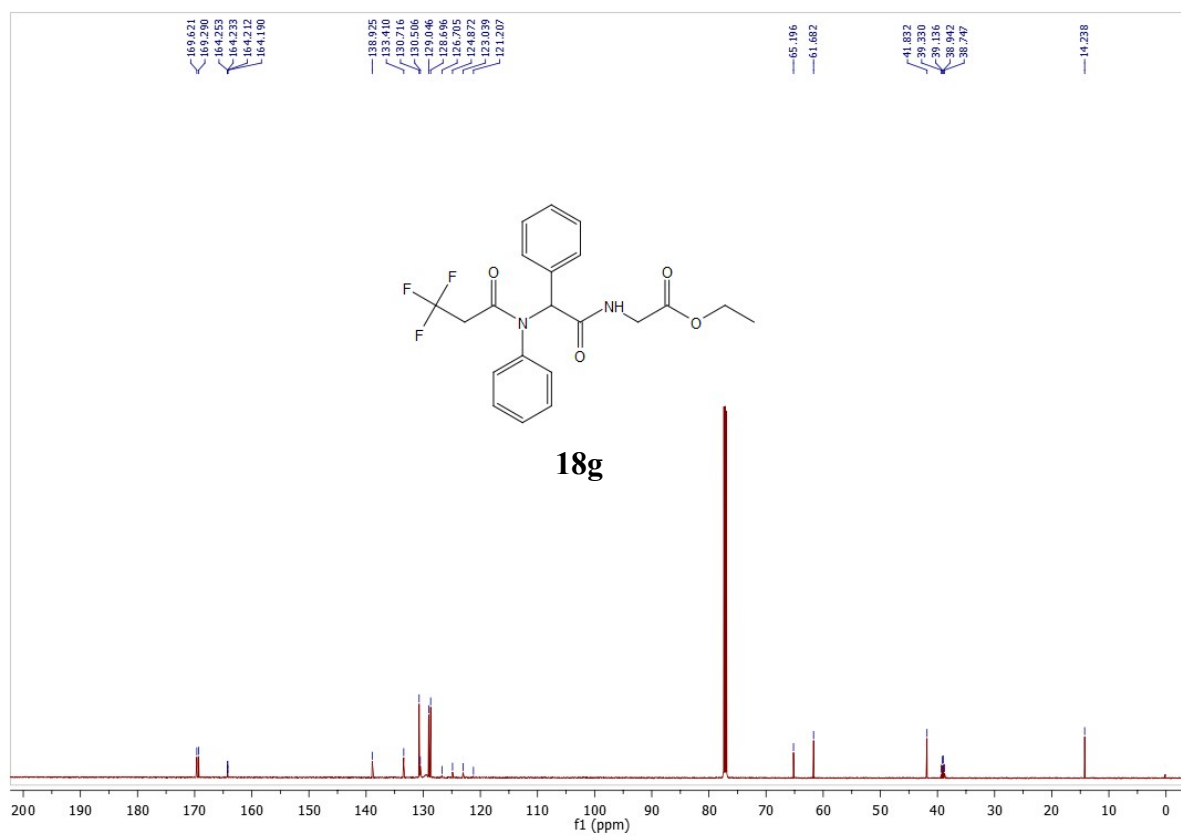
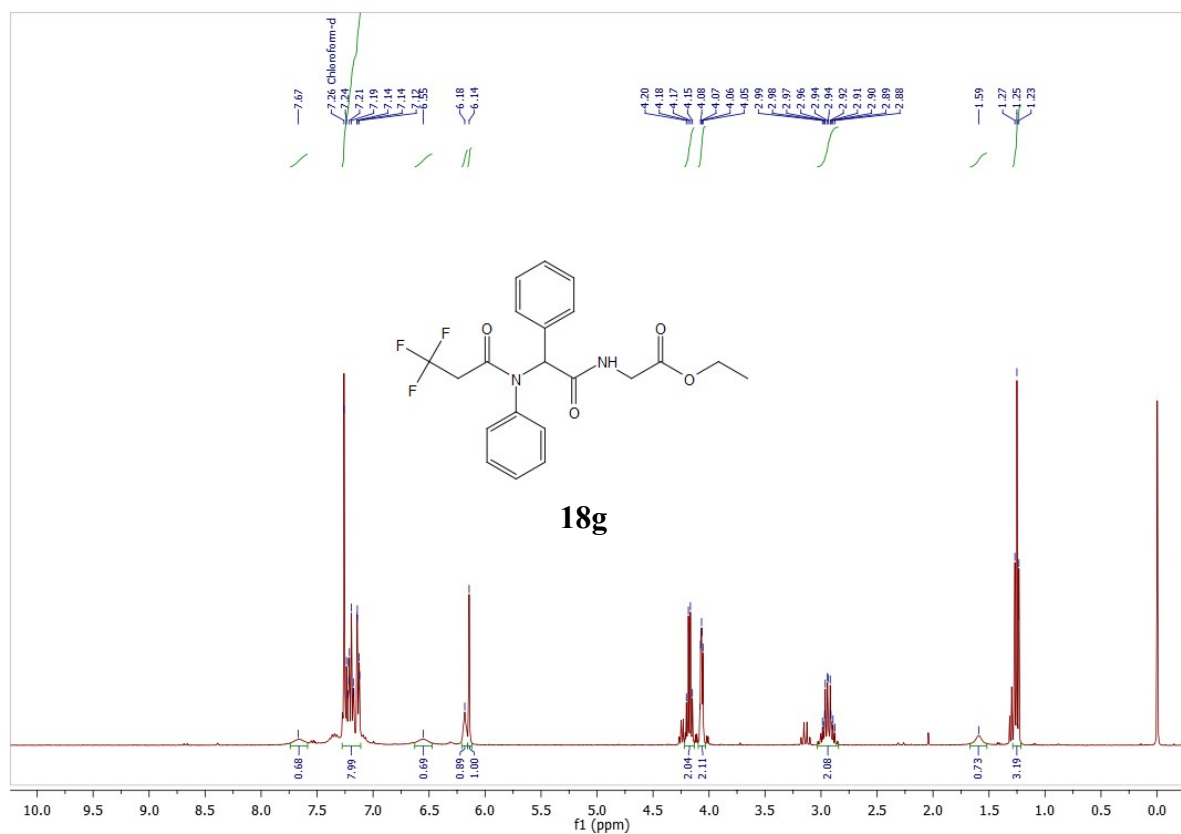
(*RS*)-Ethyl (2-(2-methoxy-*N*-phenylacetamido)-2-phenylacetyl)glycinate (**18e**)



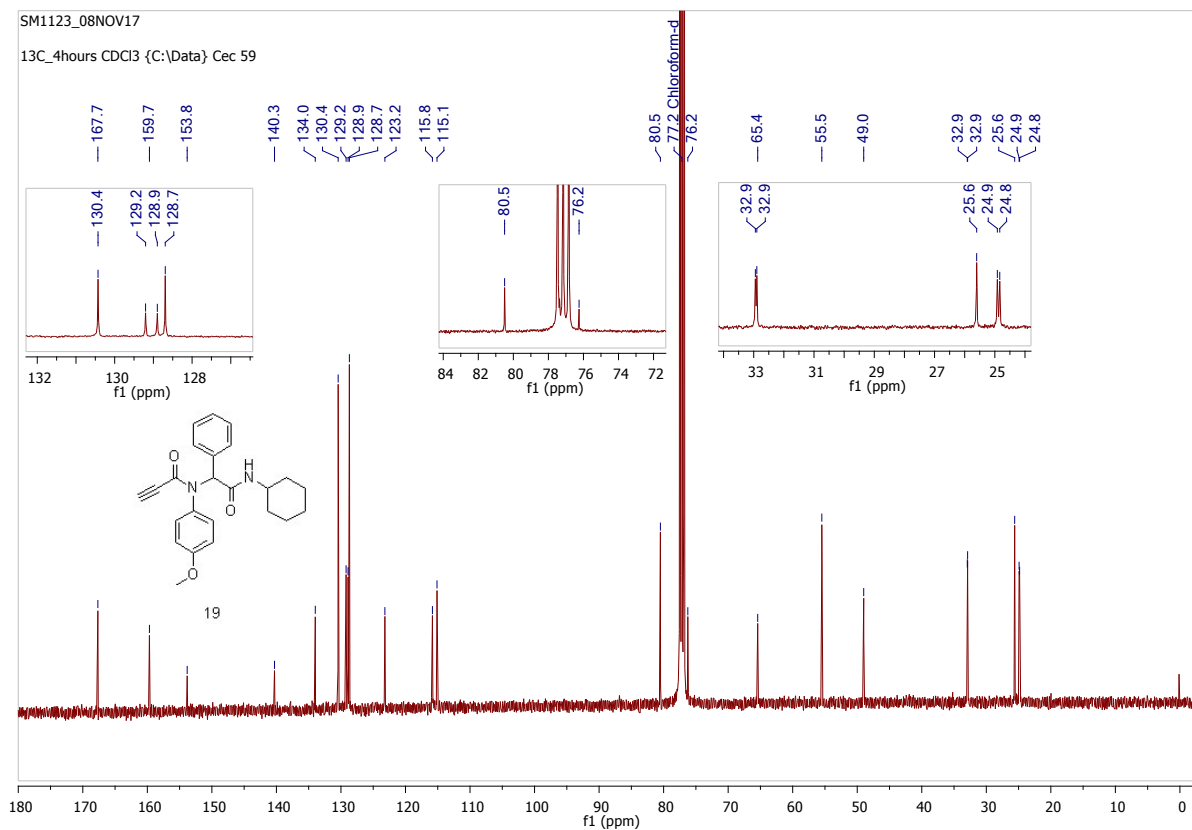
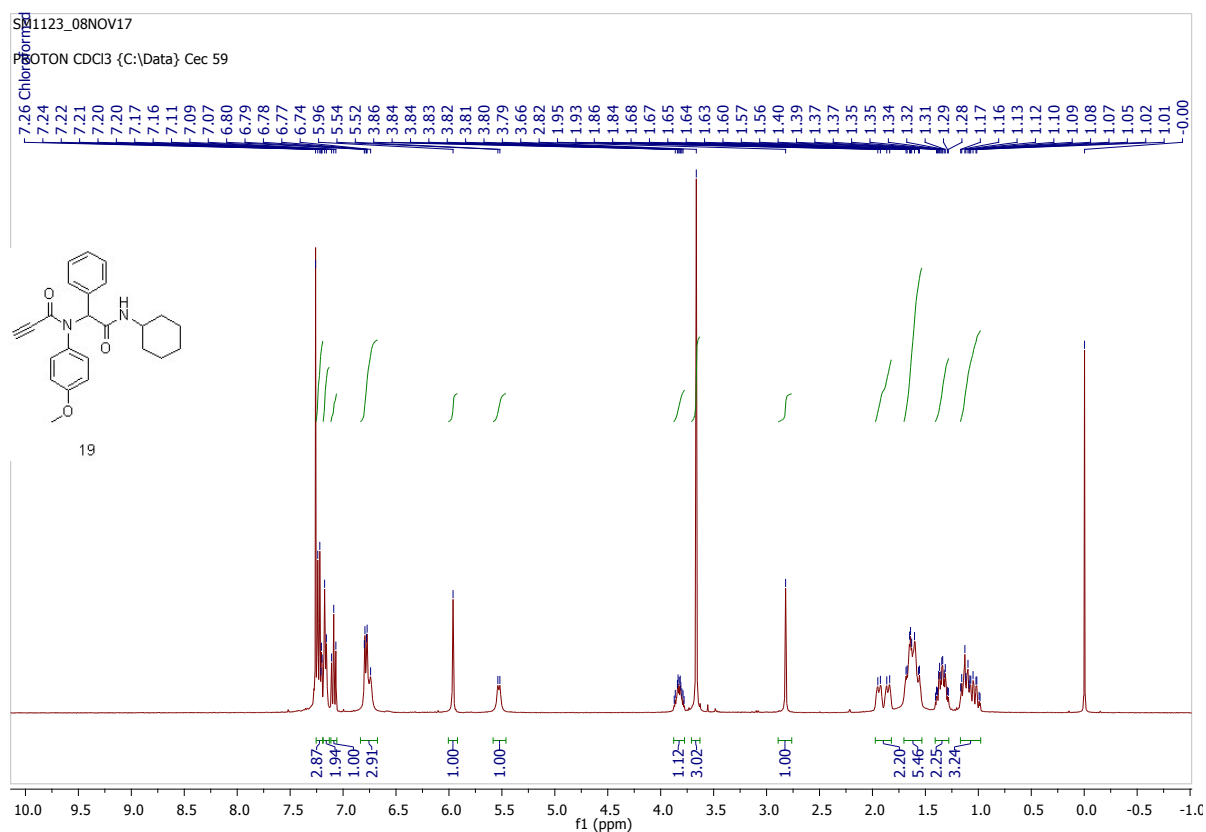
(*RS*)-Ethyl 2-(2-(2-cyano-*N*-phenylacetamido)-2-phenylacetamido)acetate (**18f**)



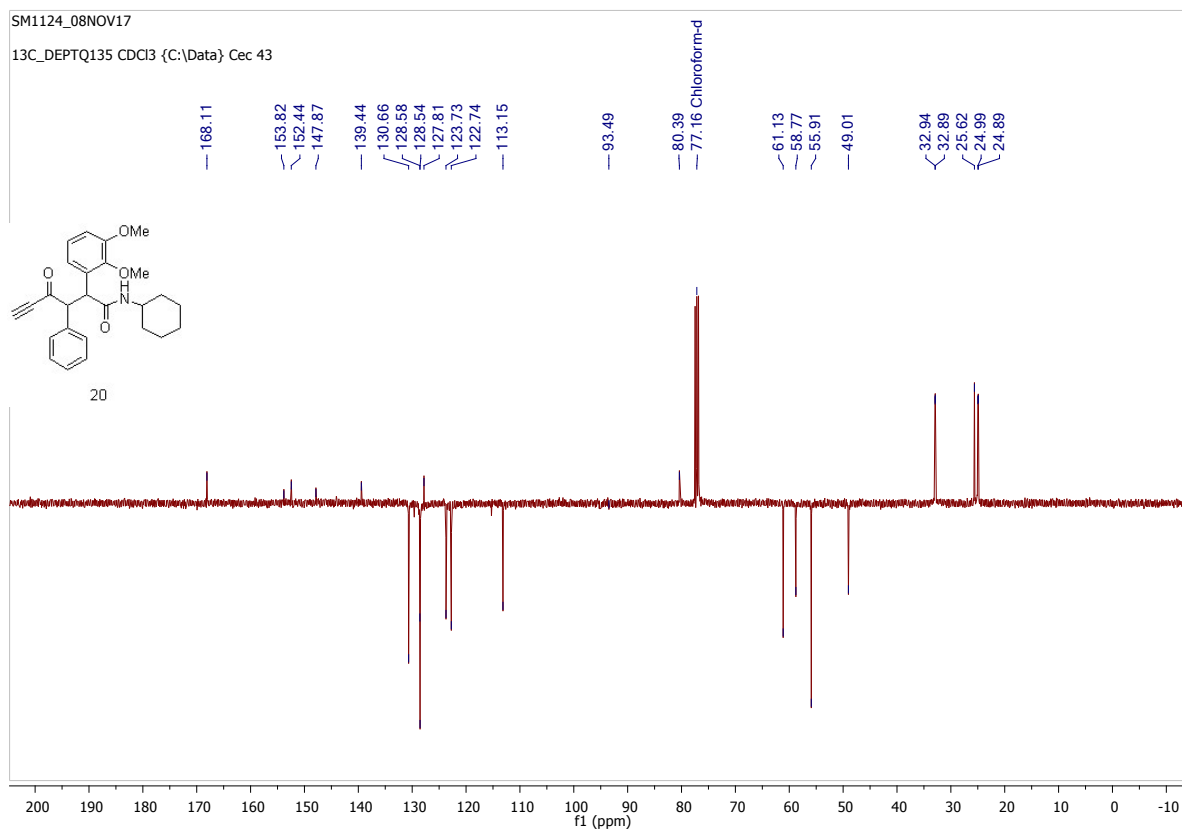
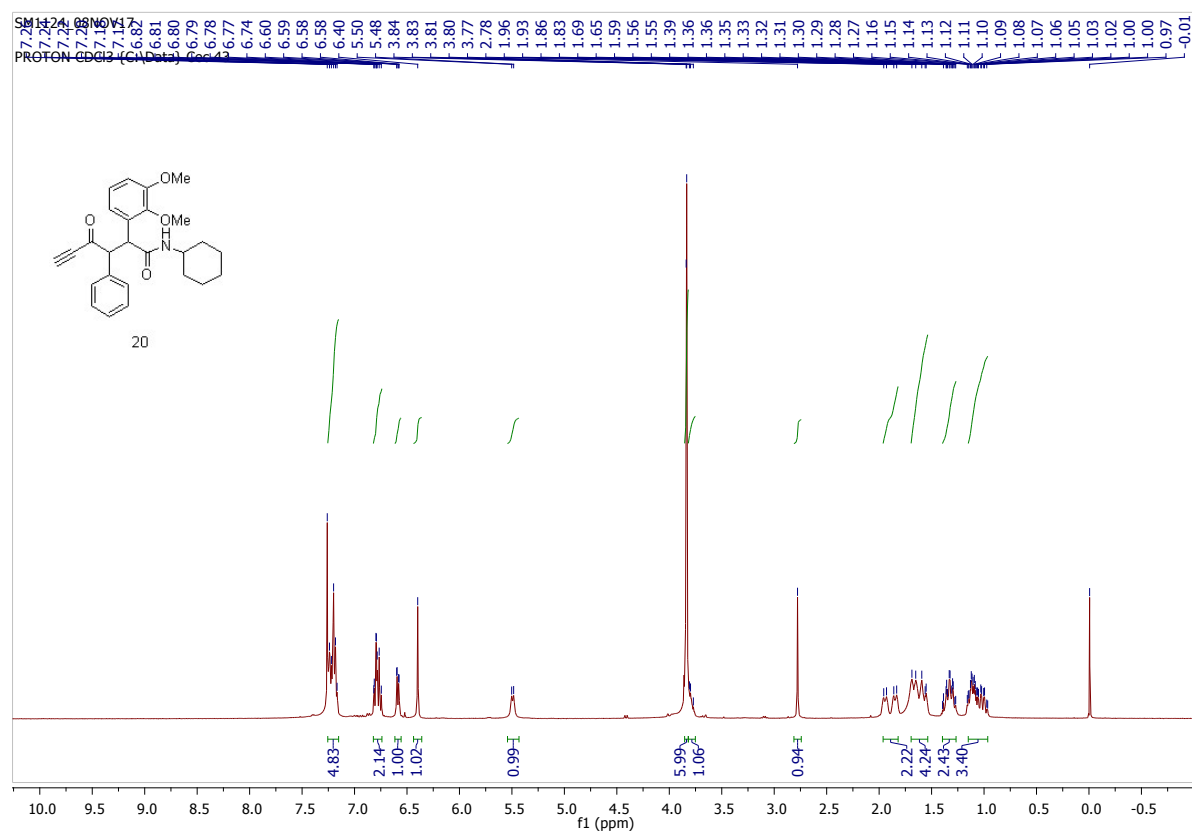
(*RS*)-Ethyl (2-phenyl-2-(3,3,3-trifluoro-*N*-phenylpropanamido)acetyl)glycinate (**18g**)



(*RS*)-*N*-(2-(cyclohexylamino)-2-oxo-1-phenylethyl)-*N*-(4-methoxyphenyl)propiolamide (19**)**



(*RS*)-*N*-(2-(cyclohexylamino)-1-(2,3-dimethoxyphenyl)-2-oxoethyl)-*N*-phenylpropiolamide (**20**)



(*RS*)-*N*-(2-(cyclohexylamino)-1-(3,4-dimethoxyphenyl)-2-oxoethyl)-*N*-phenylpropiolamide (**21**)

