Supporting Information

Preparation and anti-trypanosomal activity of a series of dipeptide-based vinyl sulfones

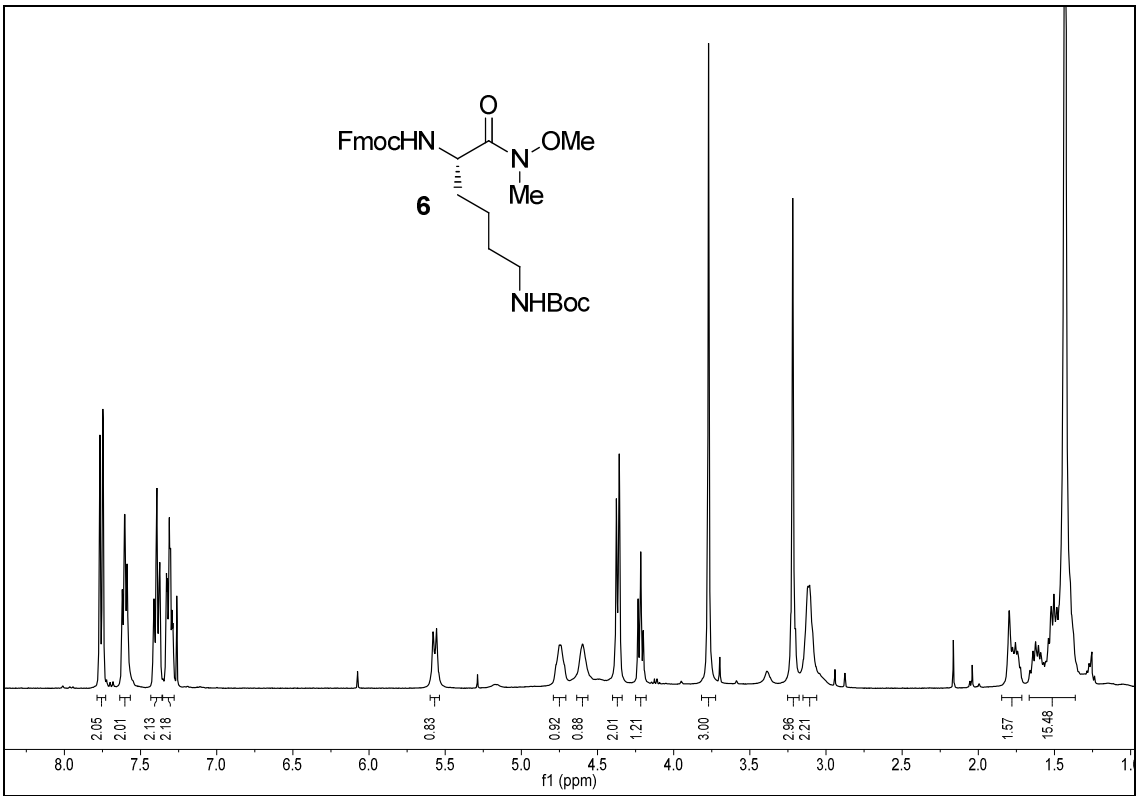
William Doherty,[a] Jinju James,[a] Paul Evans,[a*] Laura Martin,[b] Nikoletta Adler,[b]

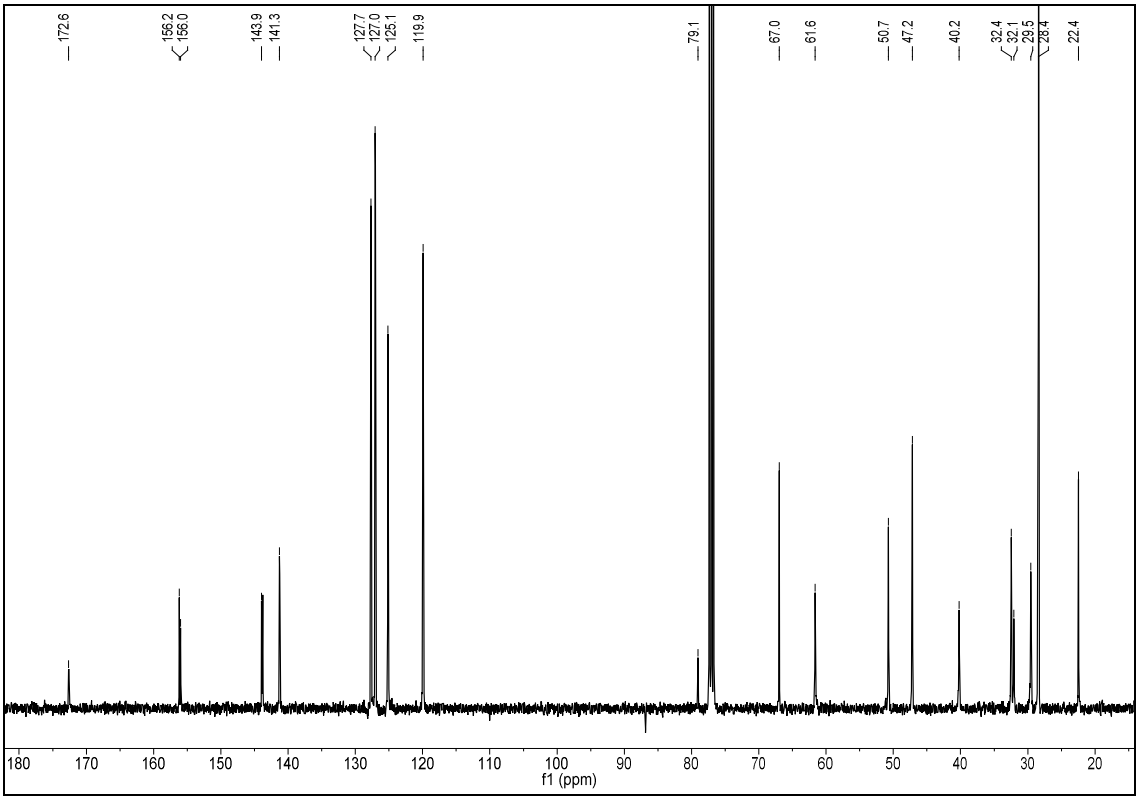
Derek Nolan[b] and Andrew Knox[b]

[a]*Centre for Synthesis and Chemical Biology, School of Chemistry and Chemical Biology, University College Dublin, Dublin 4, Ireland. Paul.evans@ucd.ie*

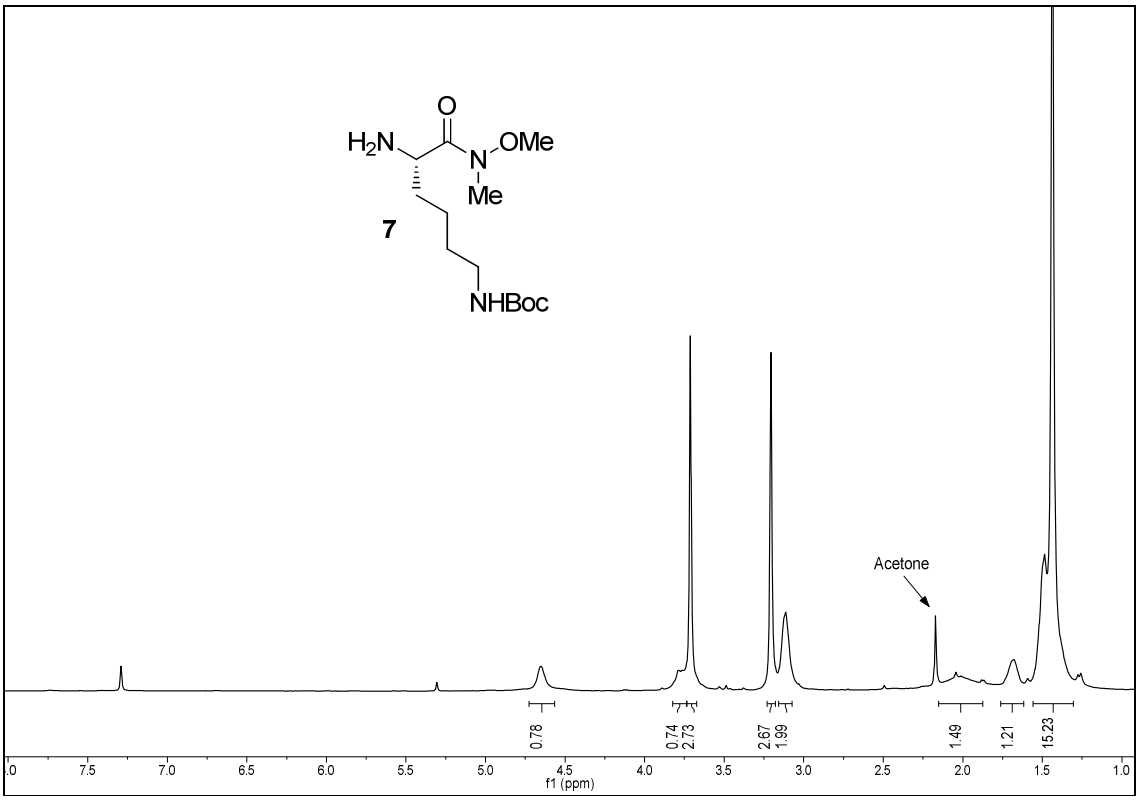
[b]*School of Biochemistry and Immunology, Trinity Biomedical Sciences Institute, Trinity College Dublin, Pearse Street, Dublin 2, Ireland. Aknox@tcd.ie*

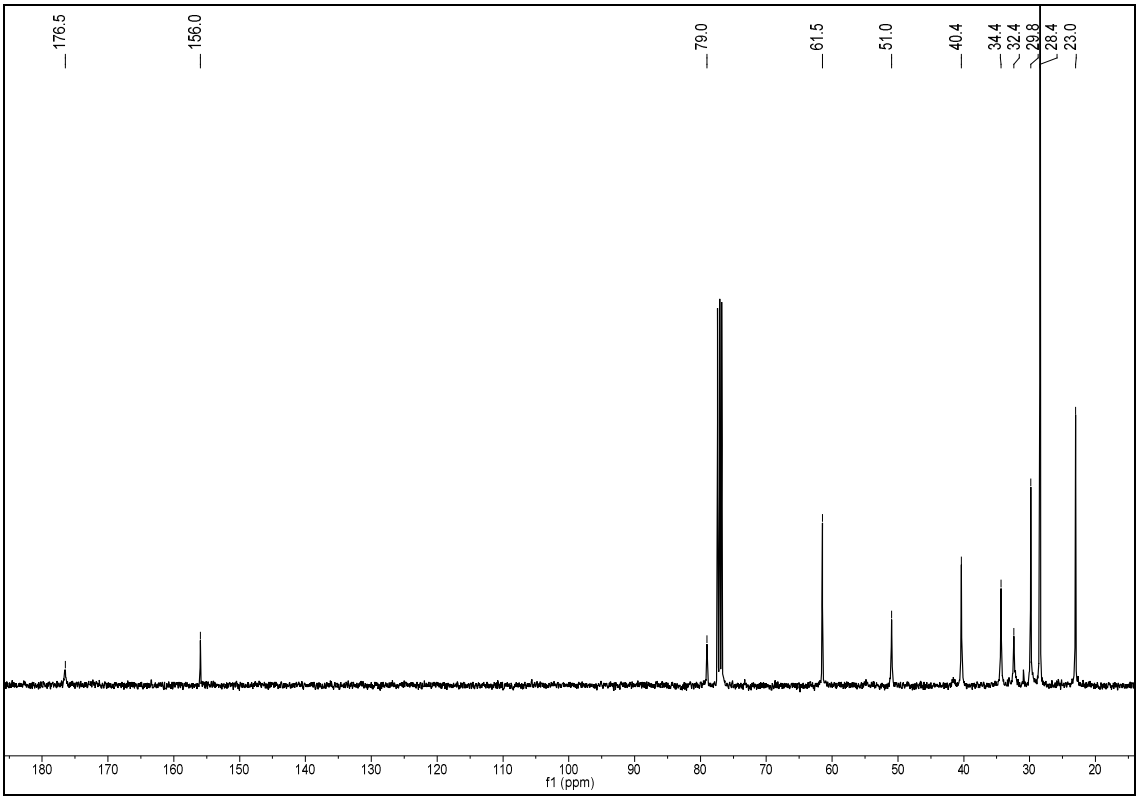
^{1}H (400 MHz, $CDCl_3$) and ^{13}C (100 MHz, $CDCl_3$) NMR spectra of **6**



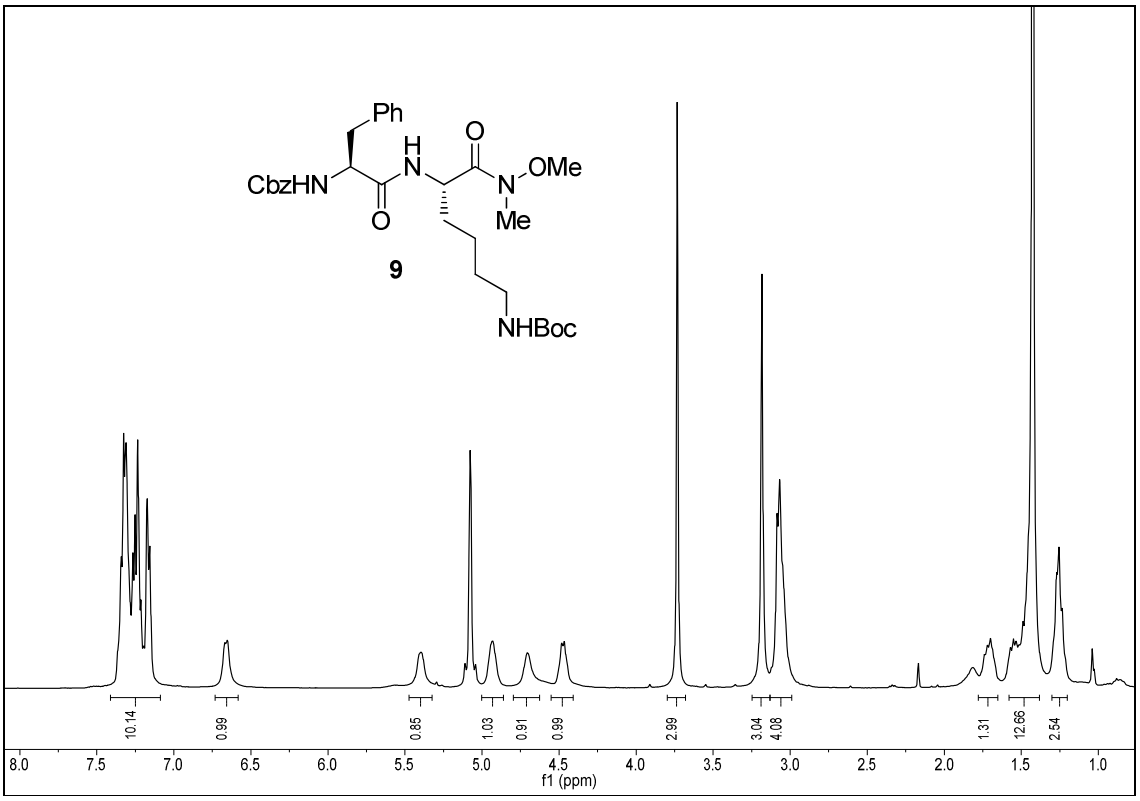


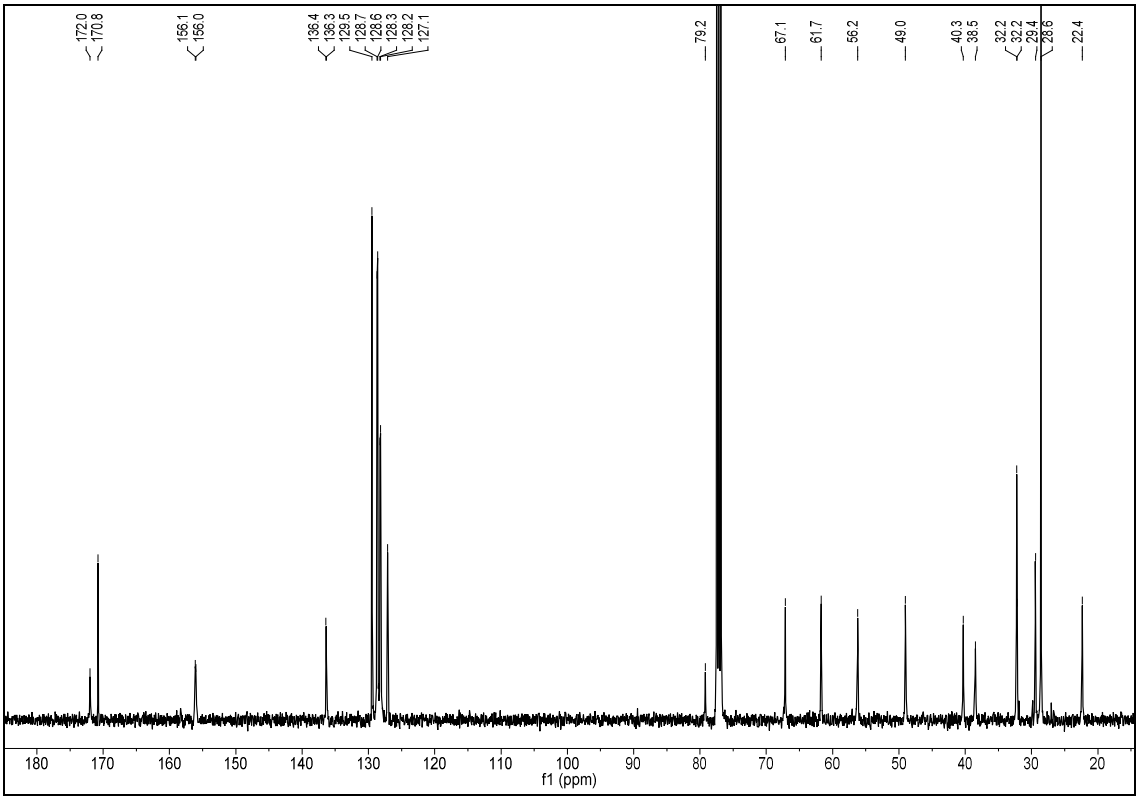
^{1}H (400 MHz, $CDCl_3$) and ^{13}C (100 MHz, $CDCl_3$) NMR spectra of **7**



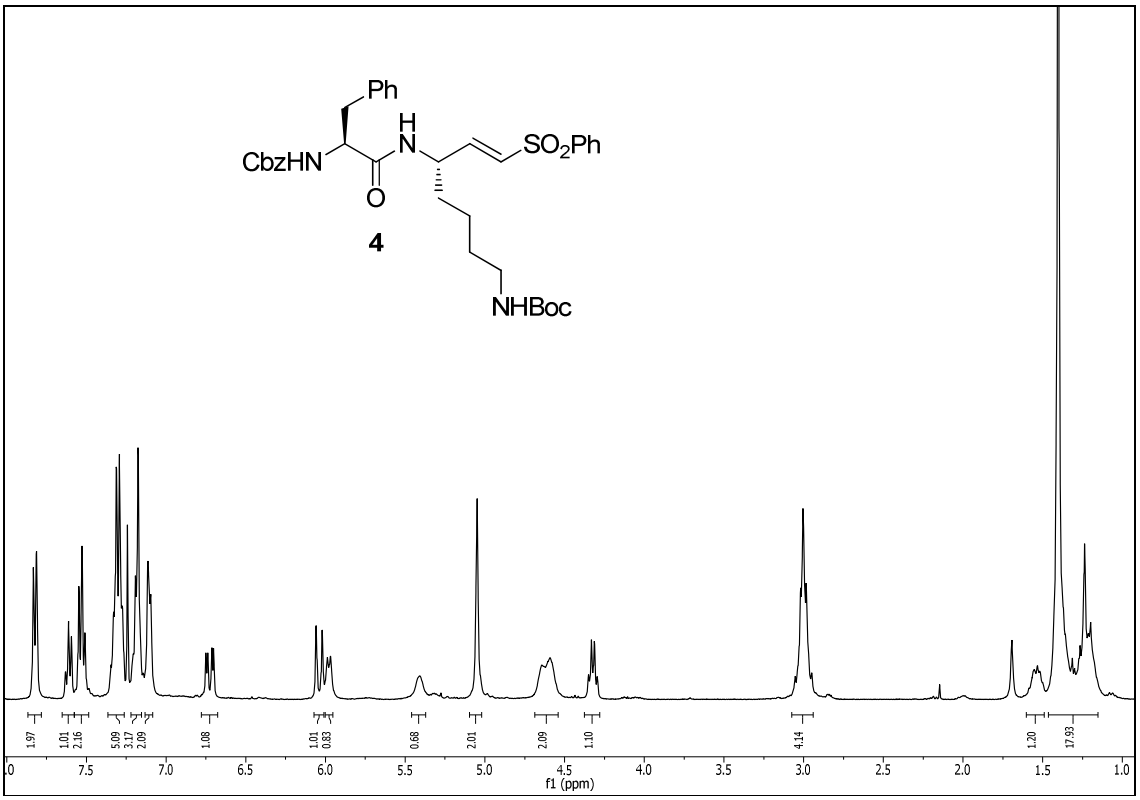


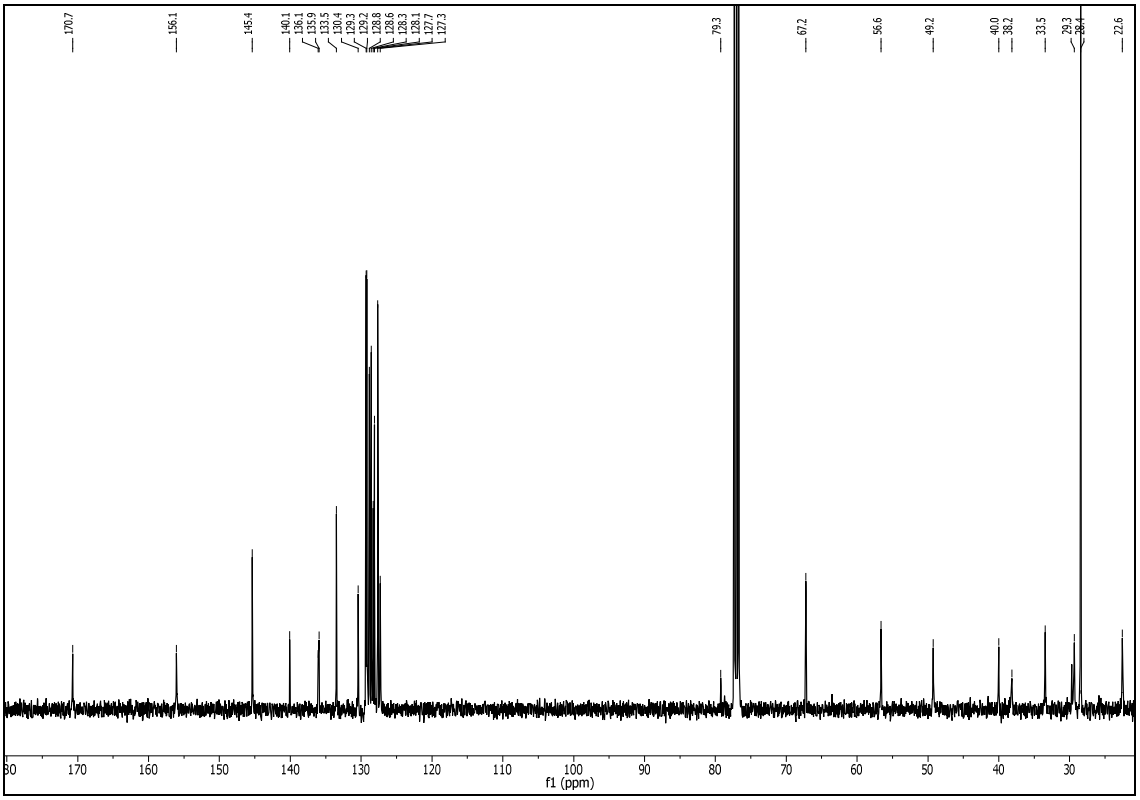
^{1}H (400 MHz, $CDCl_3$) and ^{13}C (100 MHz, $CDCl_3$) NMR spectra of **9**



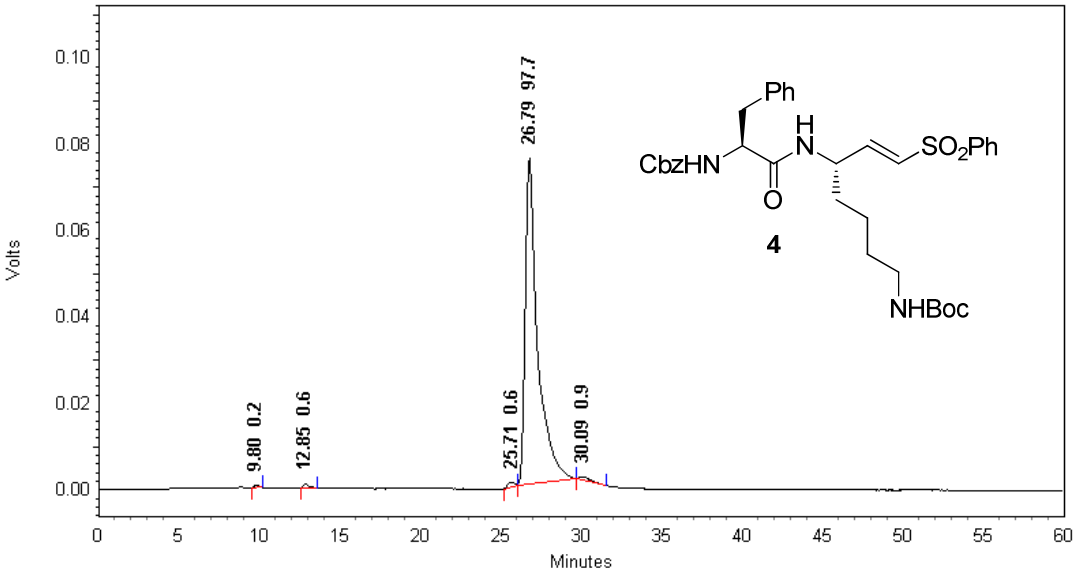


^{1}H (400 MHz, $CDCl_3$) and ^{13}C (100 MHz, $CDCl_3$) NMR spectra of **4**



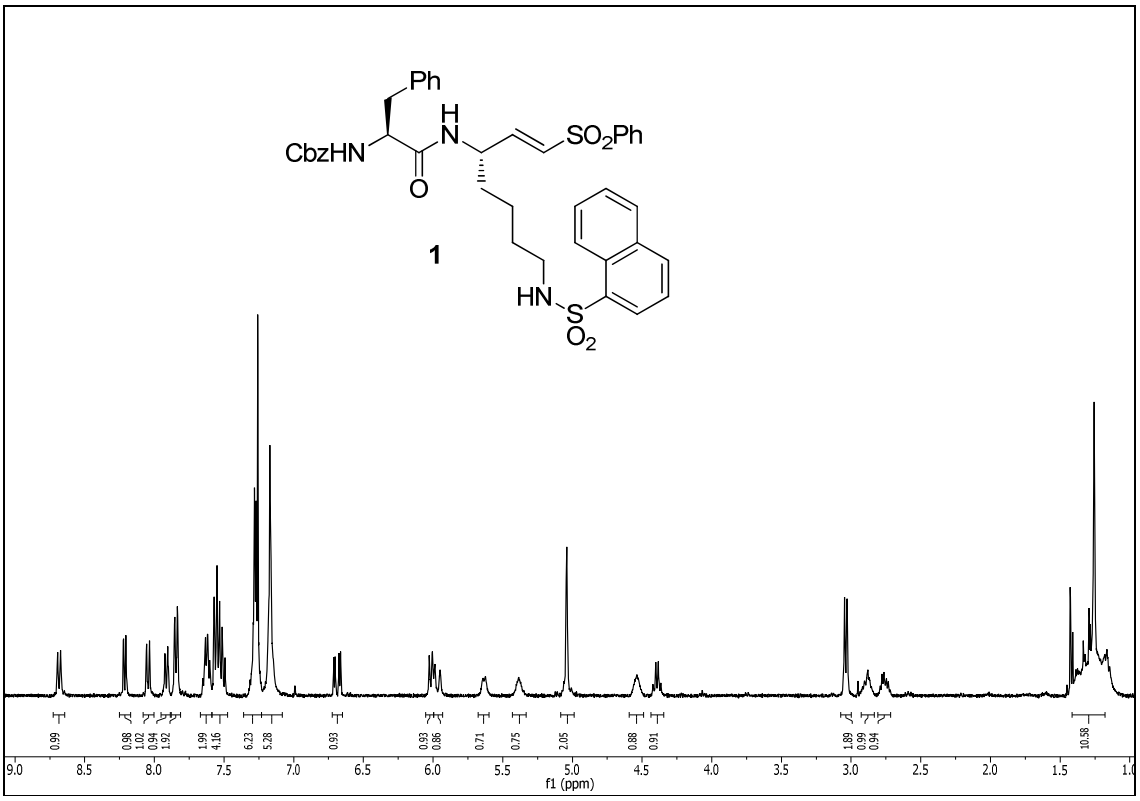


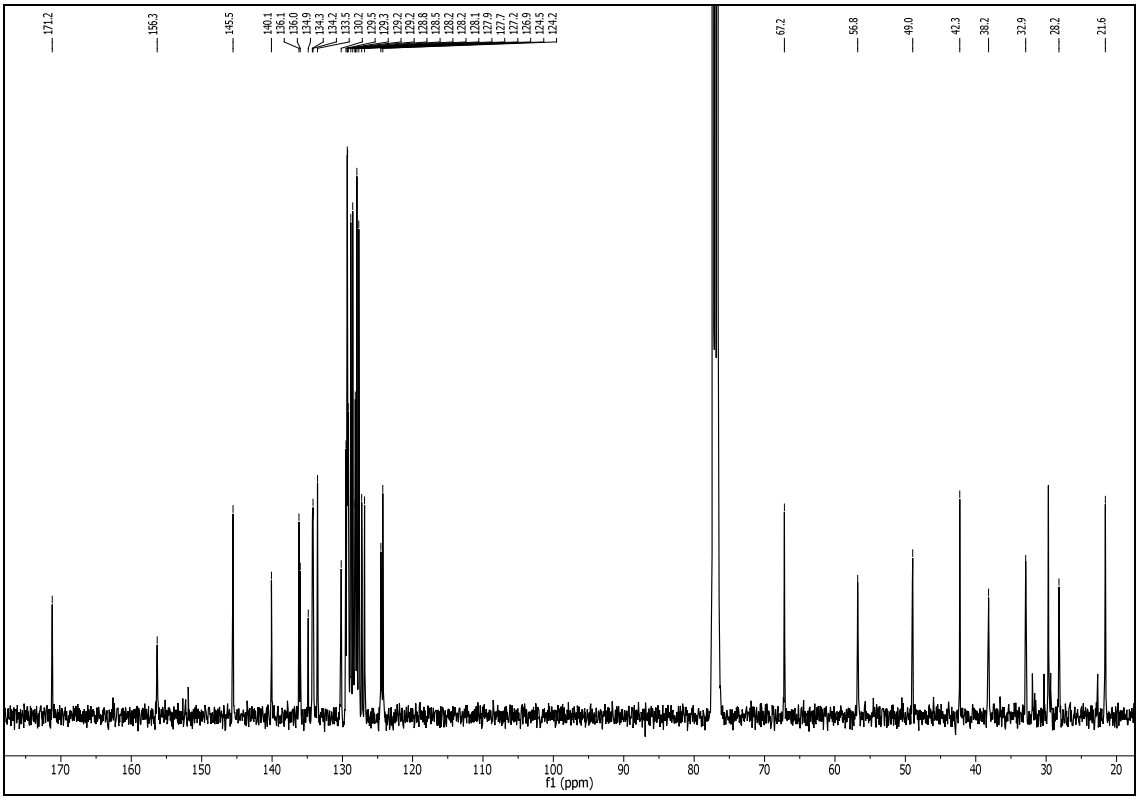
Reverse Phase HPLC trace of compound **4**



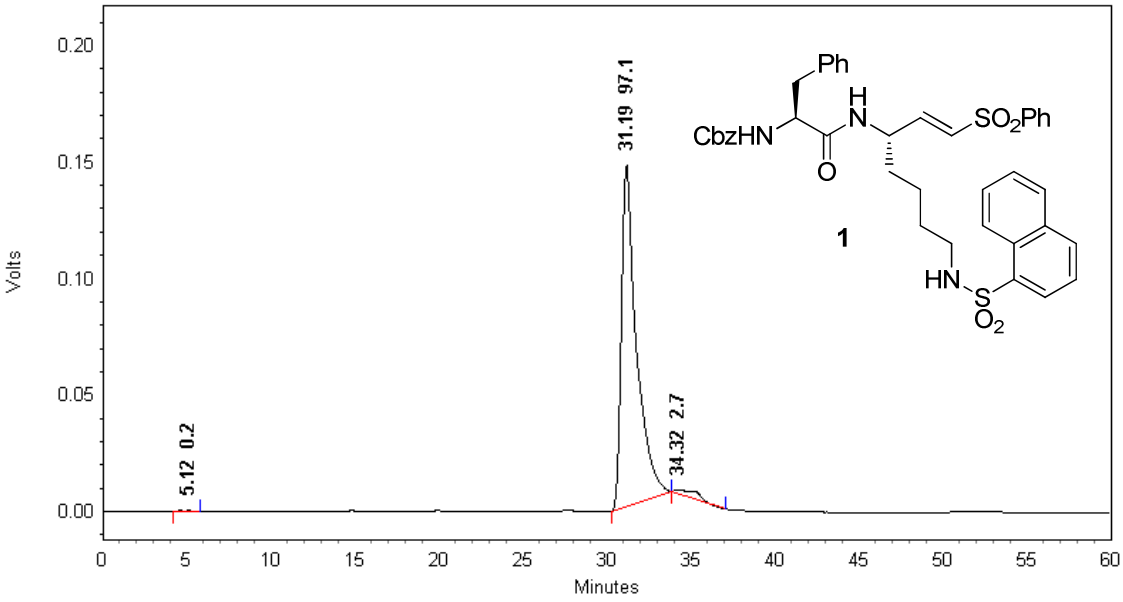
HPLC analysis at 220 nm for compound **4**: (C-18) MeCN-H_2O-0.1 M $NH_4HCO_{3(aq)}$; 60:30:10 (0.4 mL/min): t_r = 26.79 min. Purity: >95%.

^{1}H (400 MHz, $CDCl_3$) and ^{13}C (100 MHz, $CDCl_3$) NMR spectra of **1**



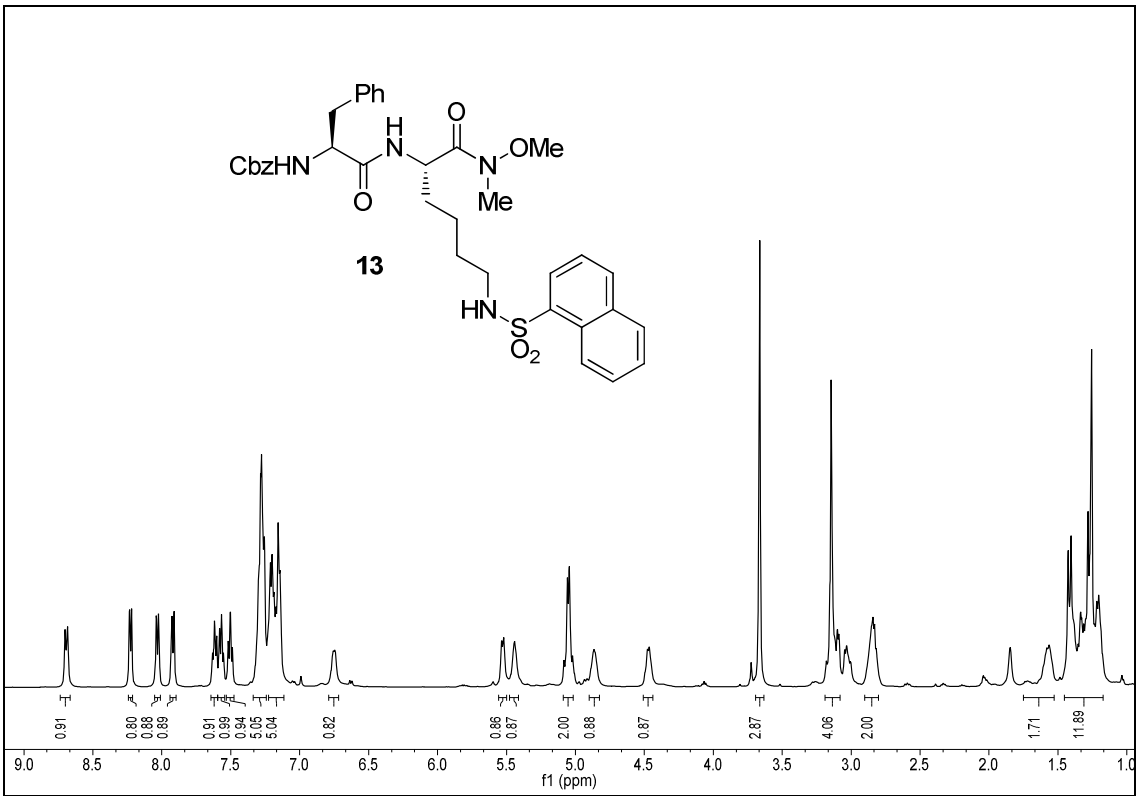


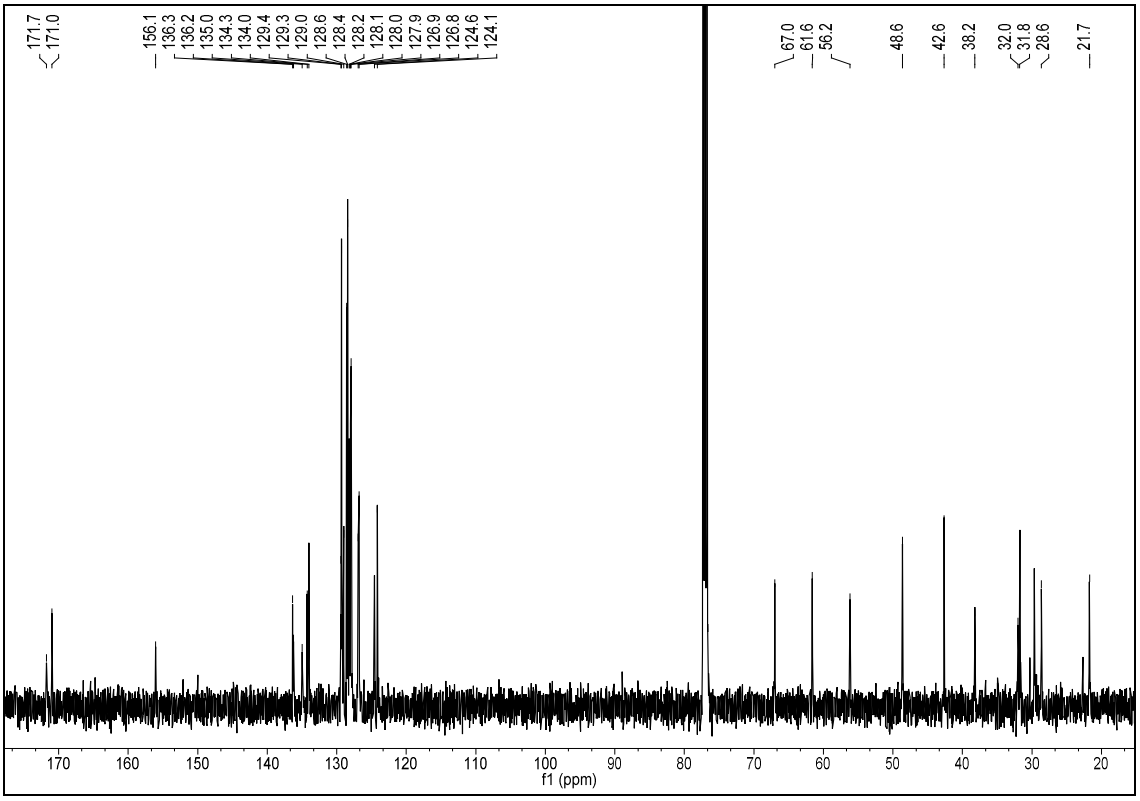
Reverse Phase HPLC trace of compound **1**



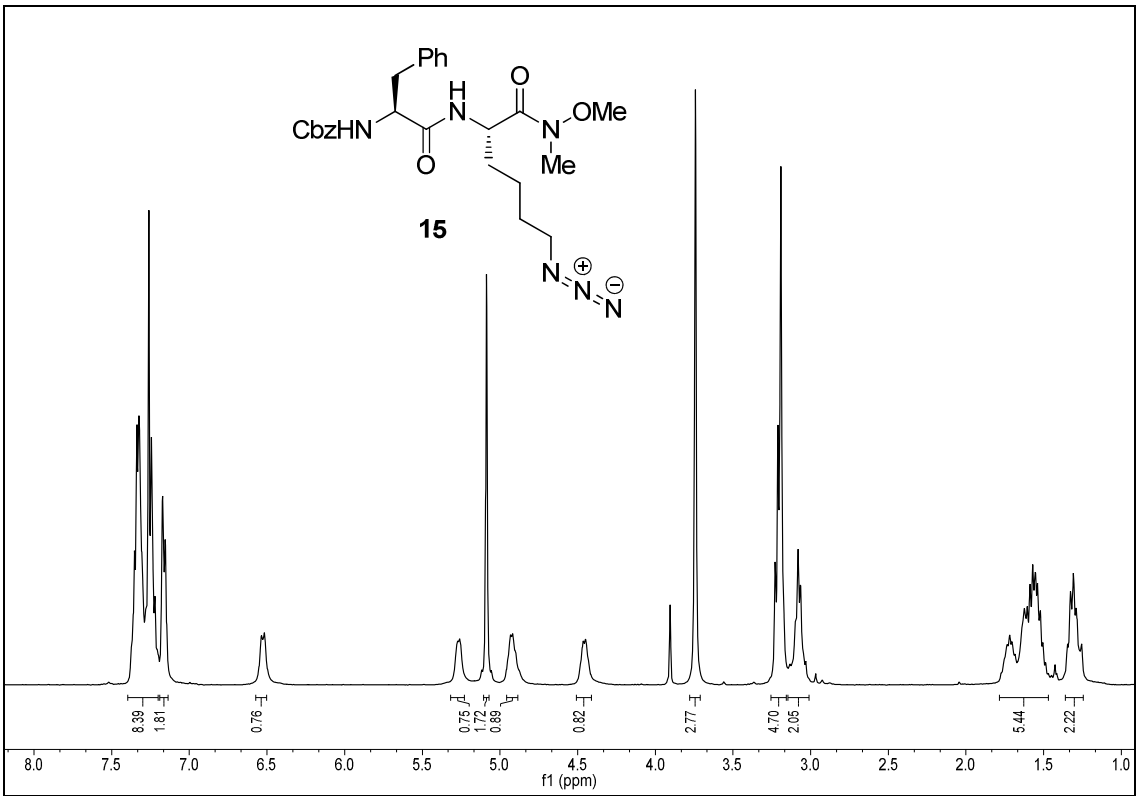
HPLC analysis at 220 nm for compound **1**: (C-18), MeCN-H_2O-0.1 M $NH_4HCO_{3(aq)}$; 60:30:10 (0.4 mL/min): t_r = 31.19 min. Purity: >95%.

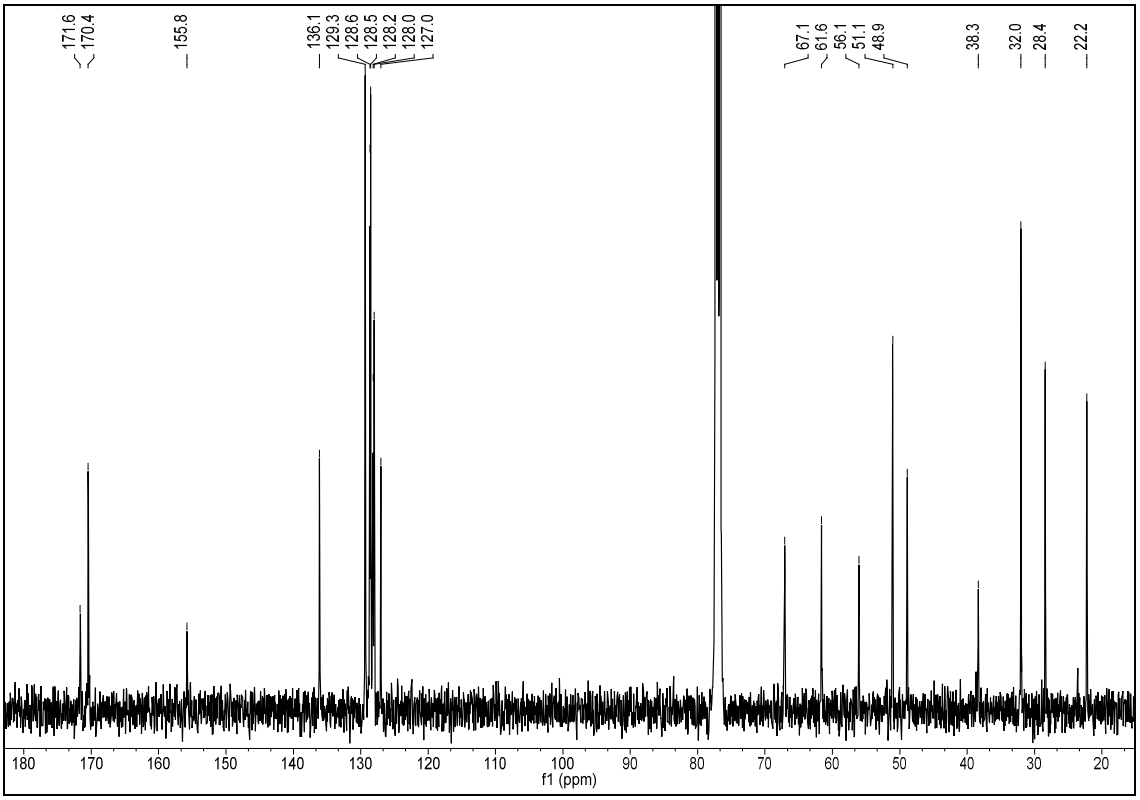
^{1}H (500 MHz, $CDCl_3$) and ^{13}C (125 MHz, $CDCl_3$) NMR spectra of **13**



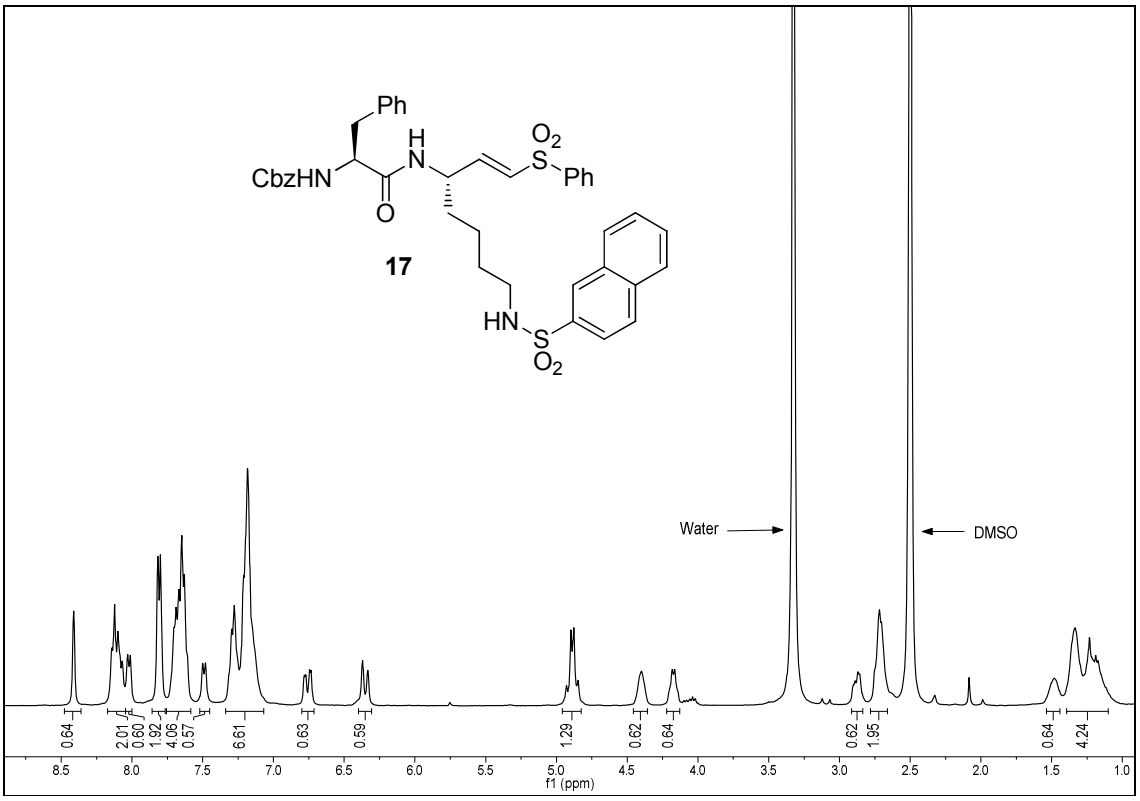


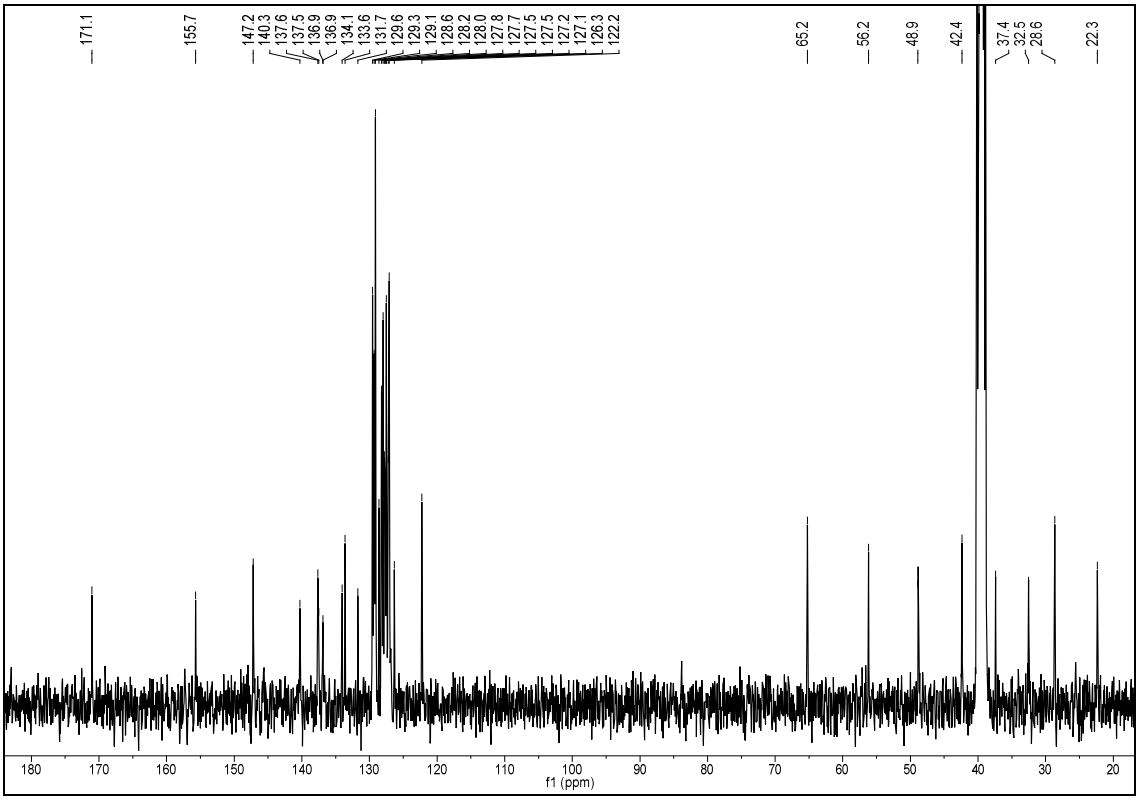
^{1}H (400 MHz, $CDCl_3$) and ^{13}C (100 MHz, $CDCl_3$) NMR spectra of **15**



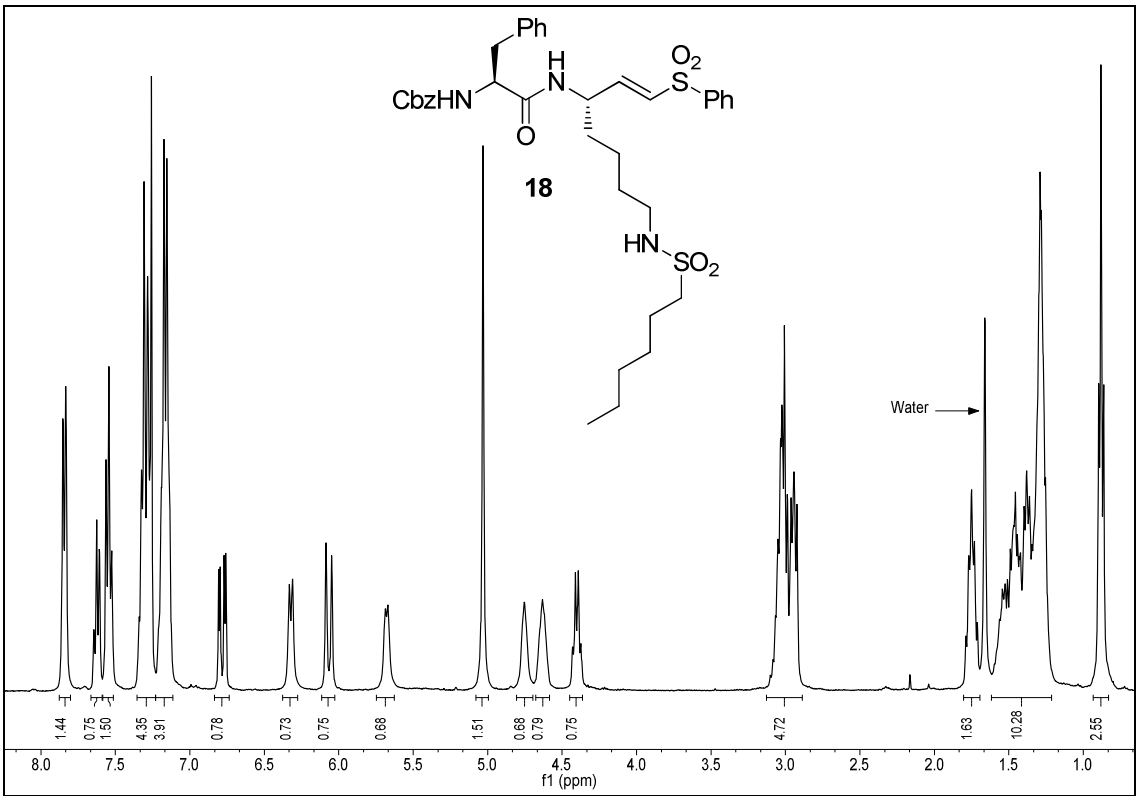


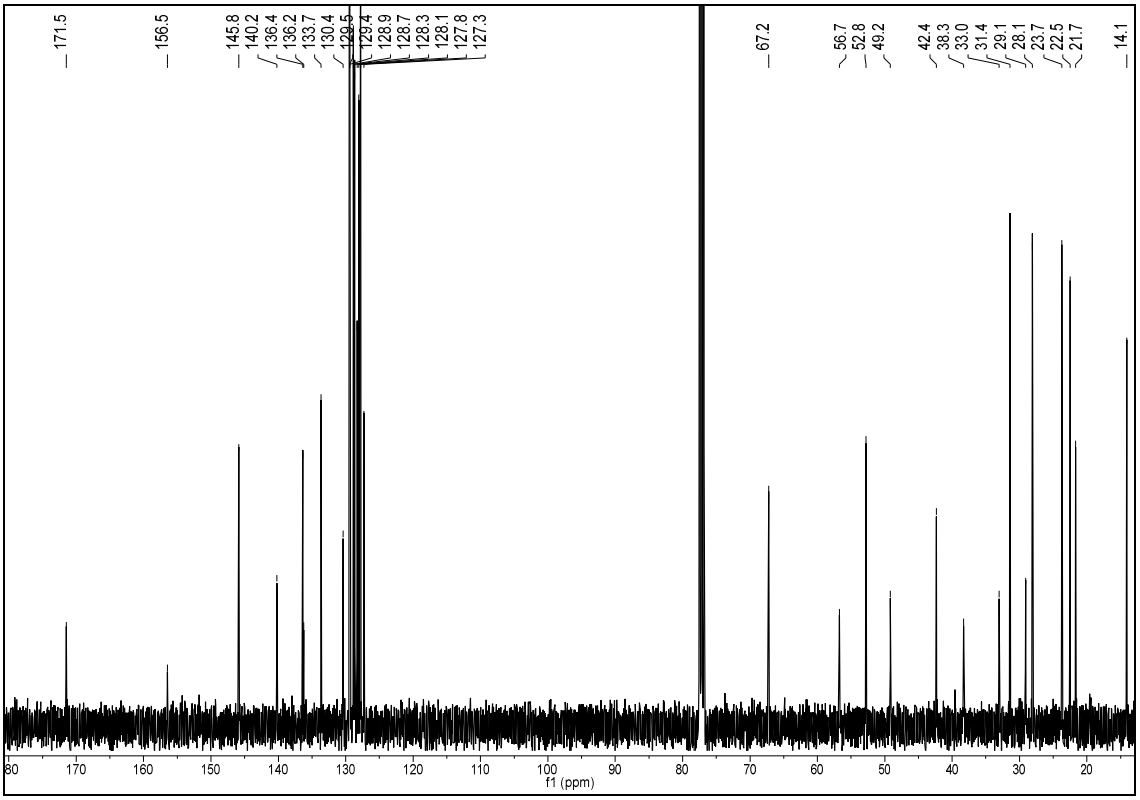
^{1}H (400 MHz, d^{6}–DMSO) and ^{13}C (100 MHz, d^{6}–DMSO) NMR spectra of **17**



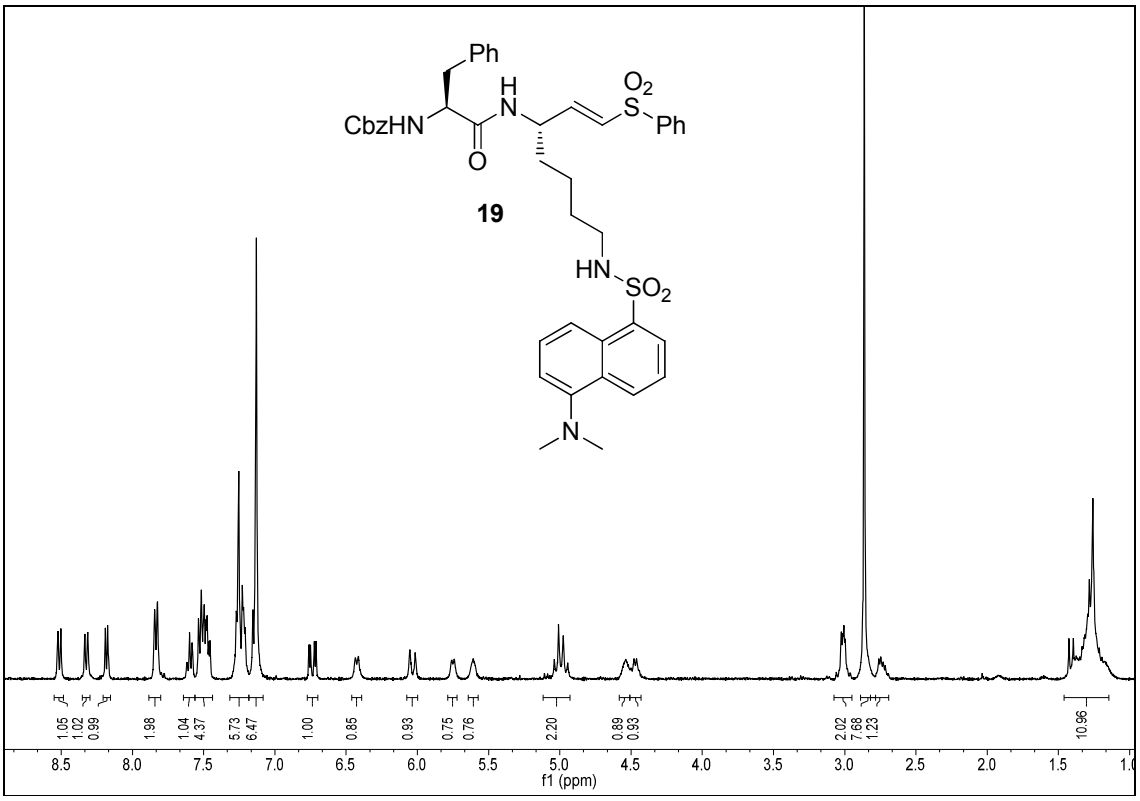


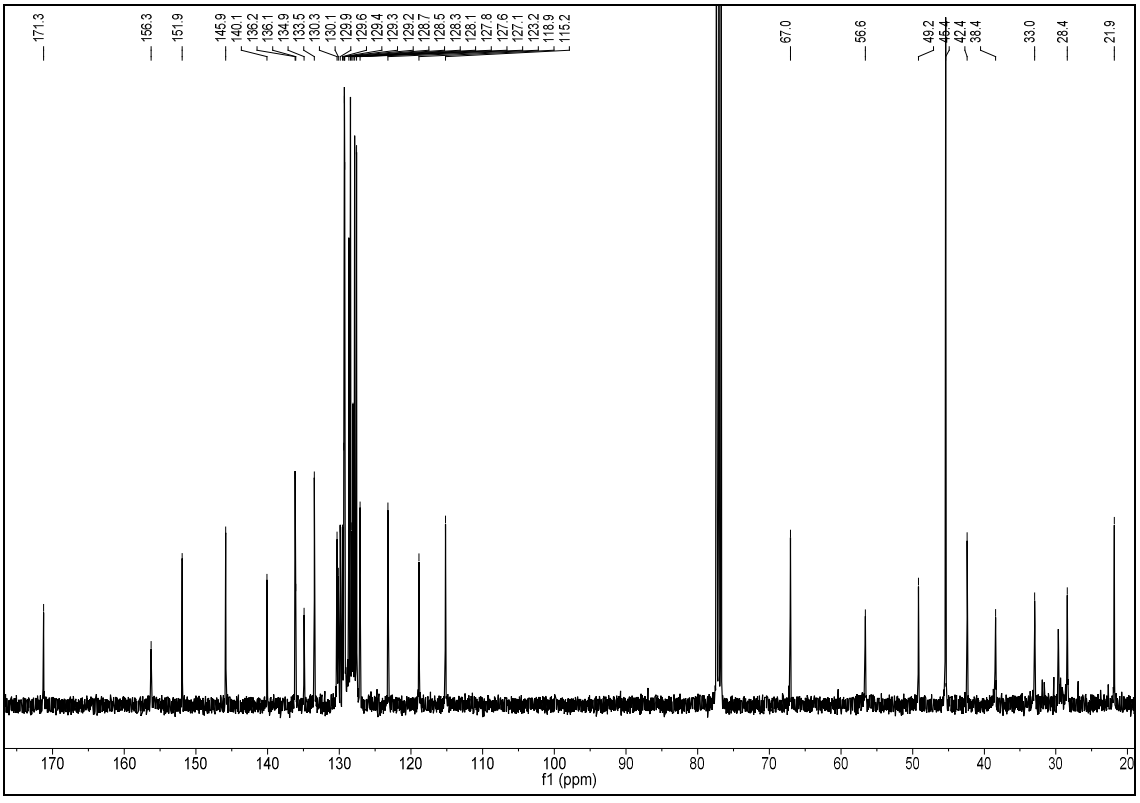
^{1}H (400 MHz, $CDCl_3$) and ^{13}C (100 MHz, $CDCl_3$) NMR spectra of **18**



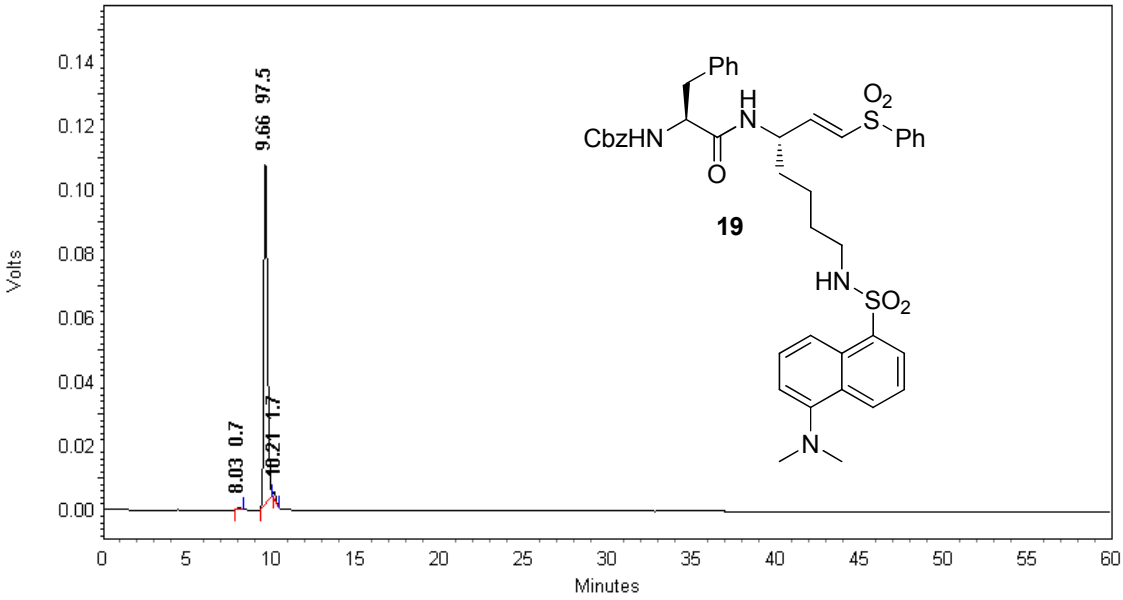


^{1}H (400 MHz, $CDCl_3$) and ^{13}C (100 MHz, $CDCl_3$) NMR spectra of **19**



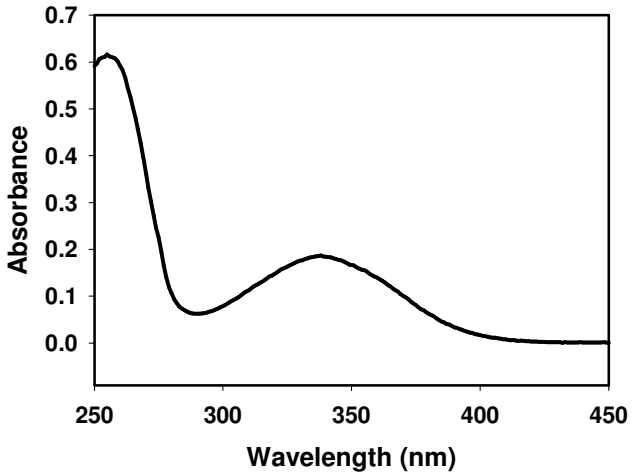


Reverse Phase HPLC trace of compound **19**

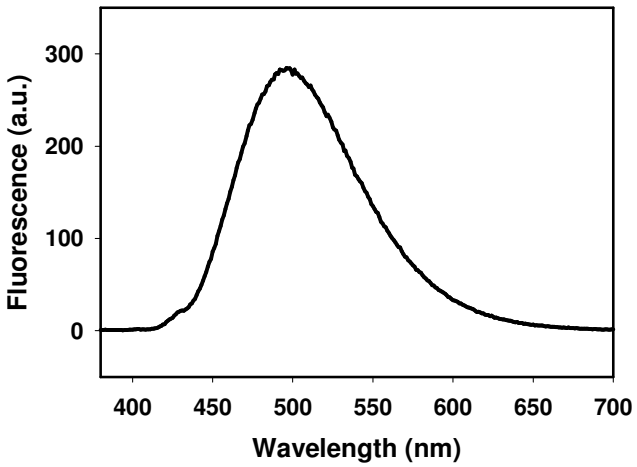


HPLC analysis at 220 nm for compound **19**: (C–18), MeCN-H_2O-0.1 M NH_4 $HCO_{3(aq)}$; 90:9:1 (0.4 mL/min): t_r = 9.66 min. Purity: >95%.

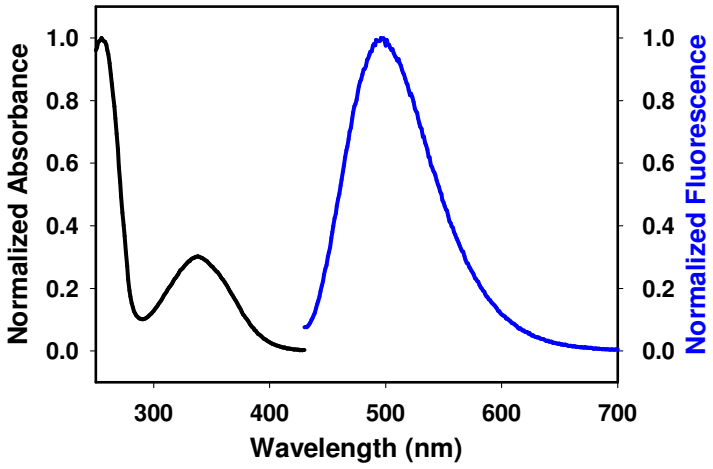
UV-Visible spectrum ($CHCl_3$) for compound **19** (conc = 1×10^{-5} M).



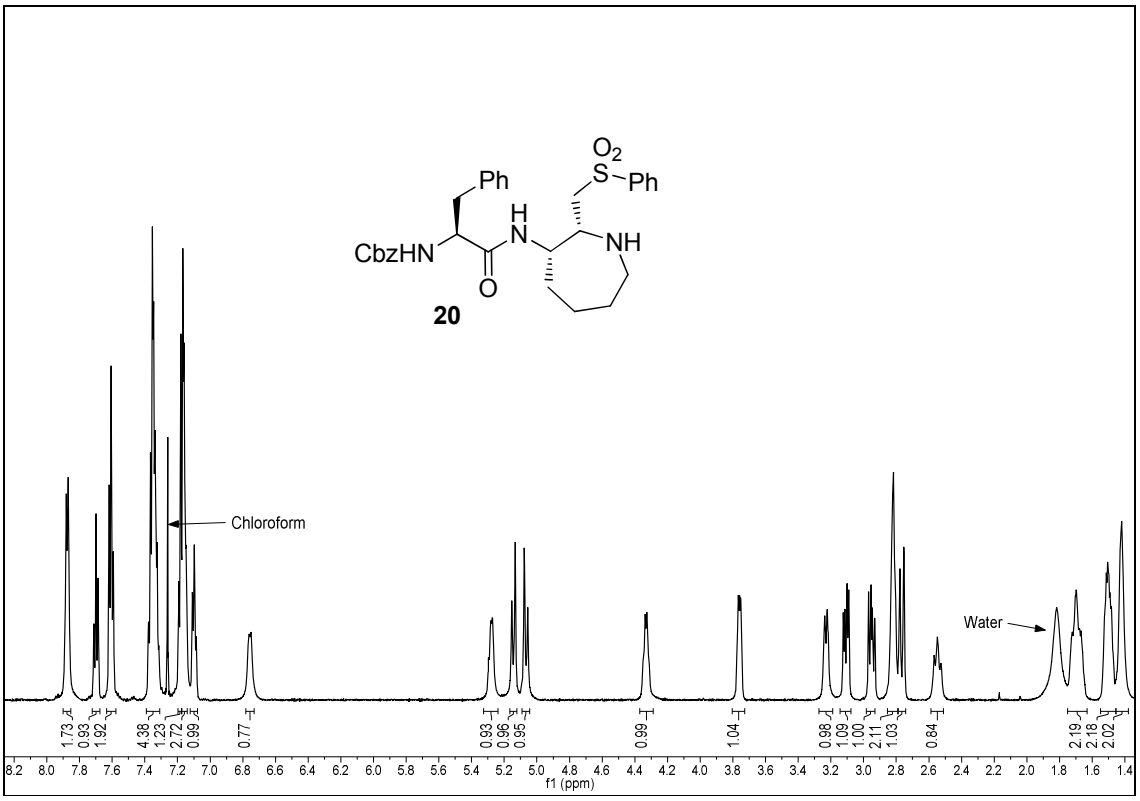
Fluorescence emission spectrum ($CHCl_3$) of **19** (conc = 1×10^{-6} M). Excitation at 340 nm.

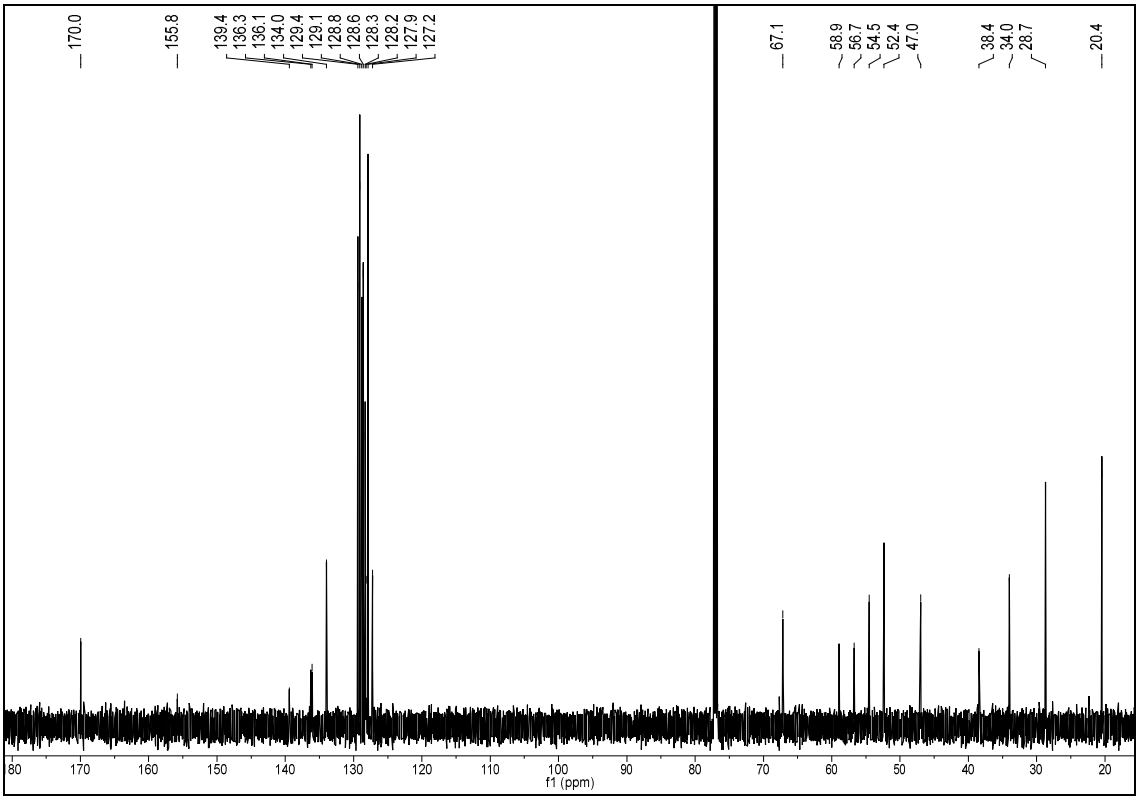


Normalised UV–Vis absorbance (**black**) and fluorescence emission (**blue**) spectra for compound **19**.

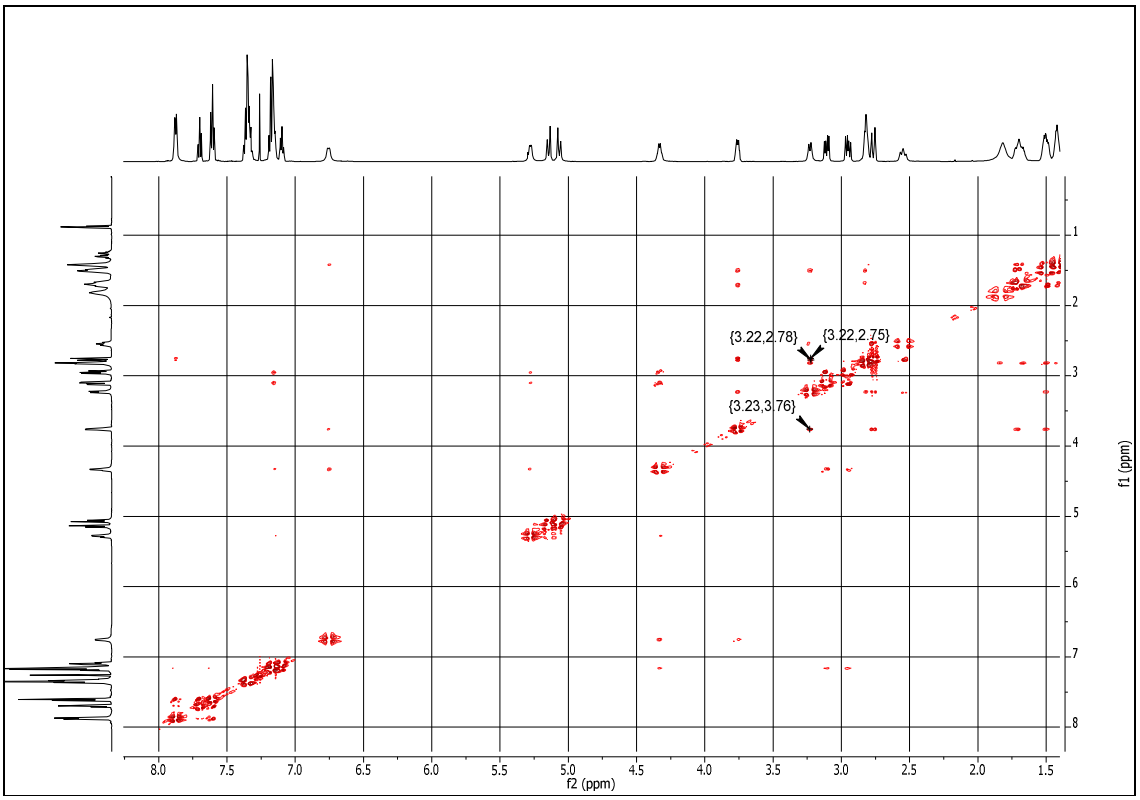


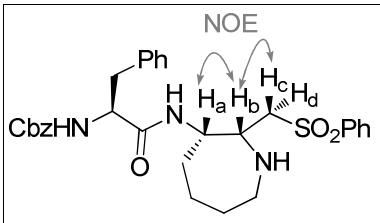
^{1}H (600 MHz, $CDCl_3$) and ^{13}C (150 MHz, $CDCl_3$) NMR spectra of **20**





600 MHz 2D NOE Spectrum of **20**



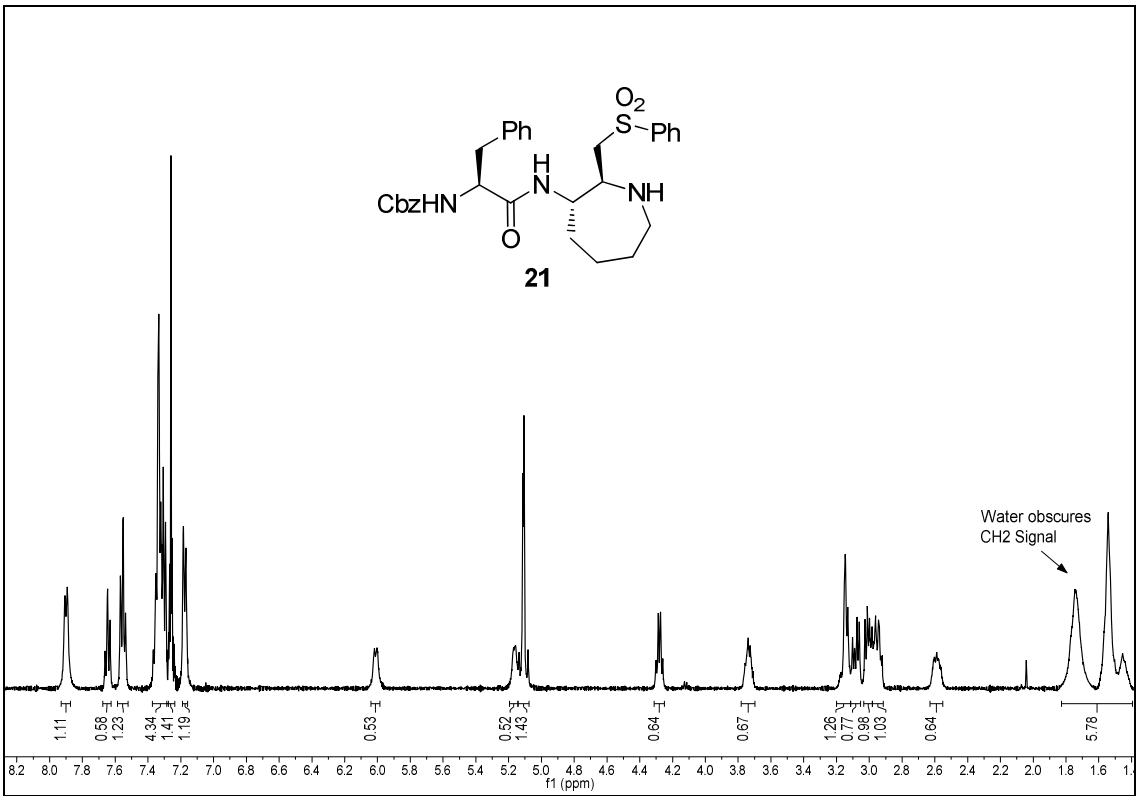


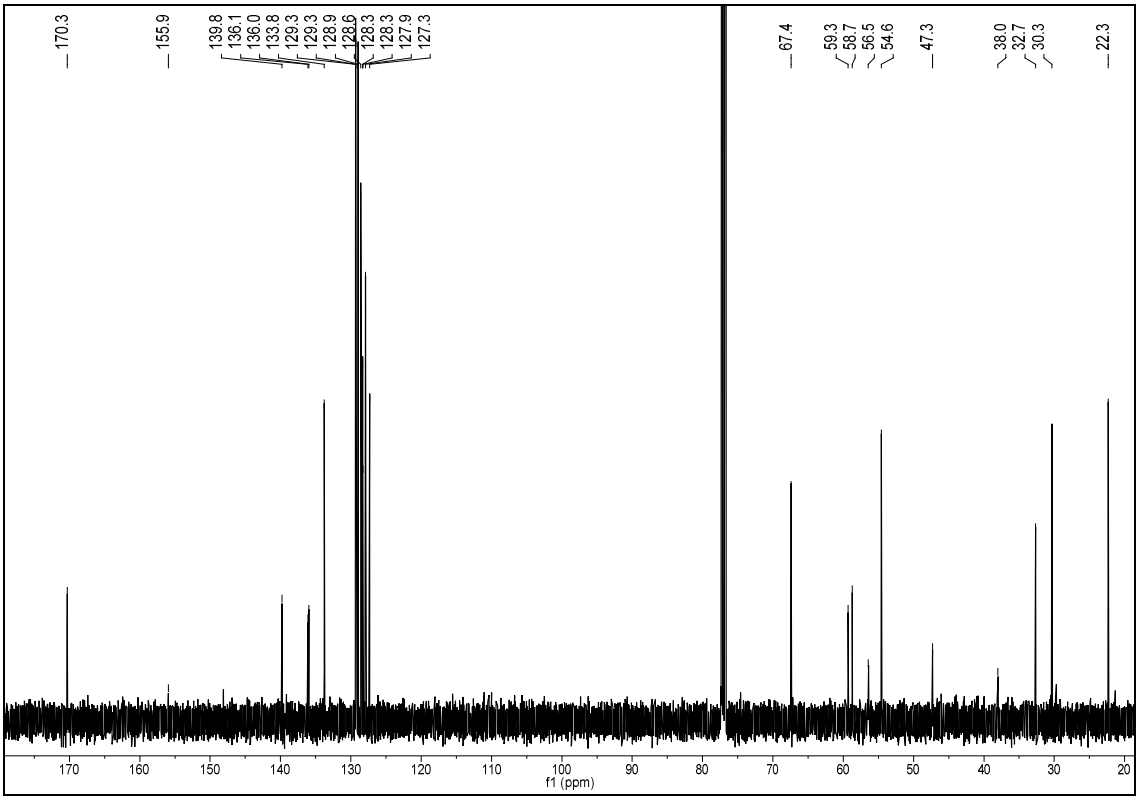
20

Key Chemical Shifts

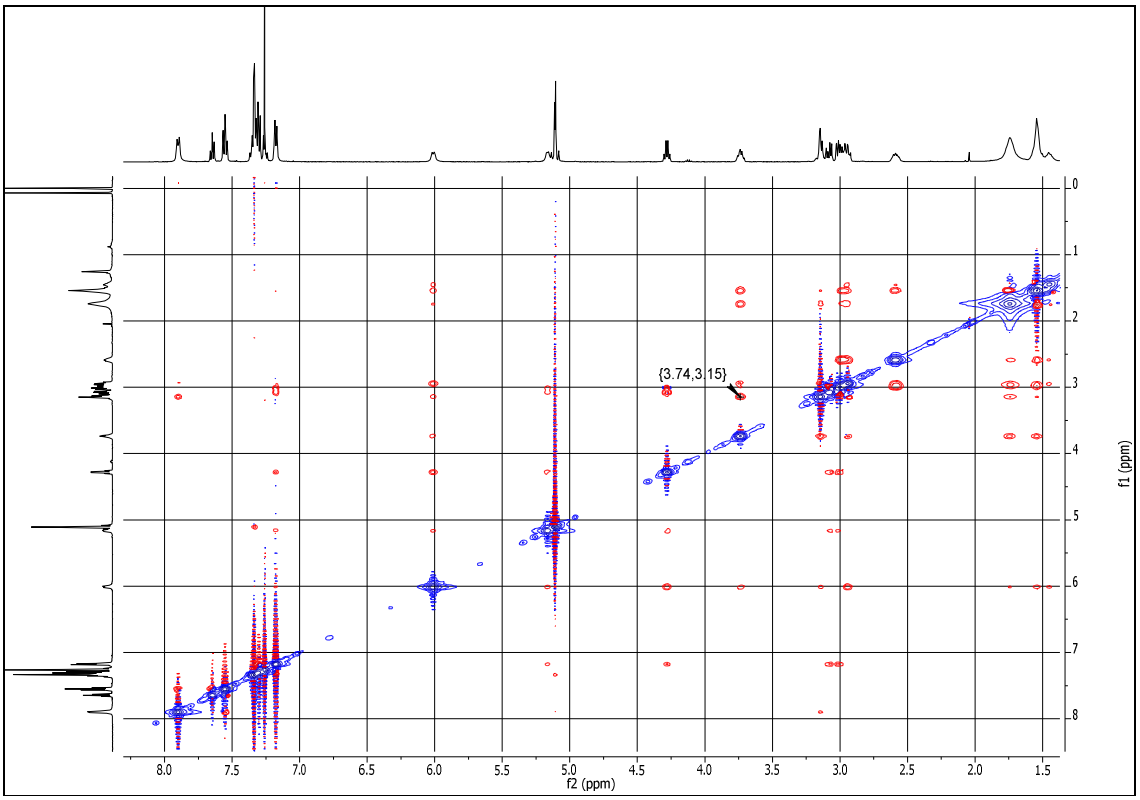
δ H_a = 3.74–3.78 ppm
δ H_b = 3.23 ppm
δ H_c = 2.77 ppm
δ H_d = 2.51–2.59 ppm

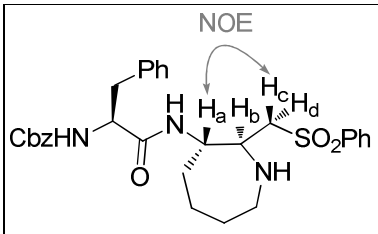
^{1}H (500 MHz, $CDCl_3$) and ^{13}C (125 MHz, $CDCl_3$) NMR spectra of **21**





500 MHz 2D NOE Spectrum of **21**



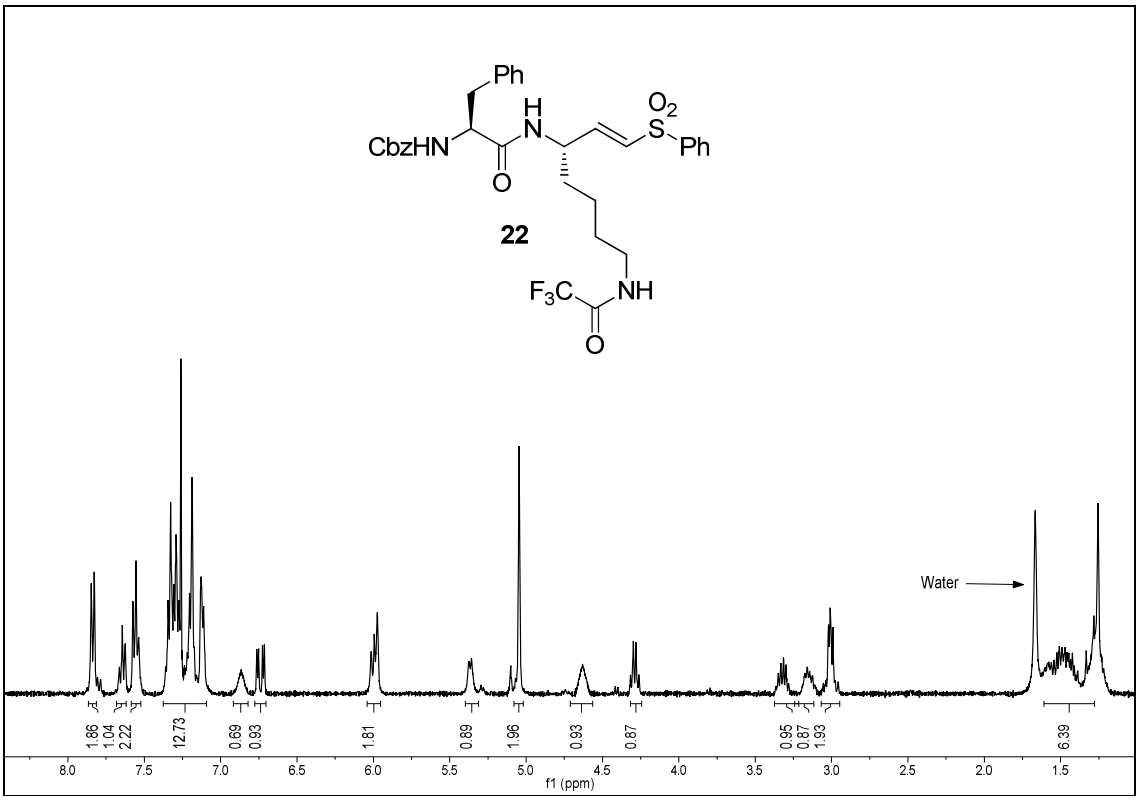


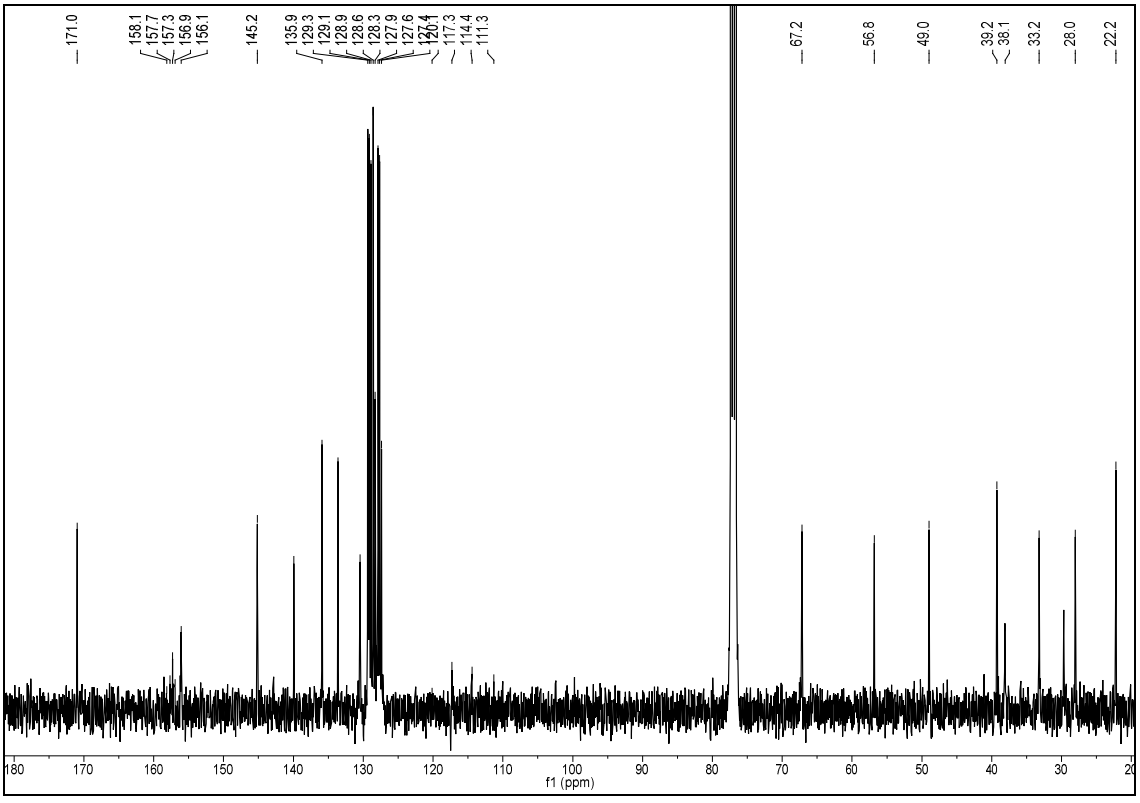
21

Key Chemical Shifts

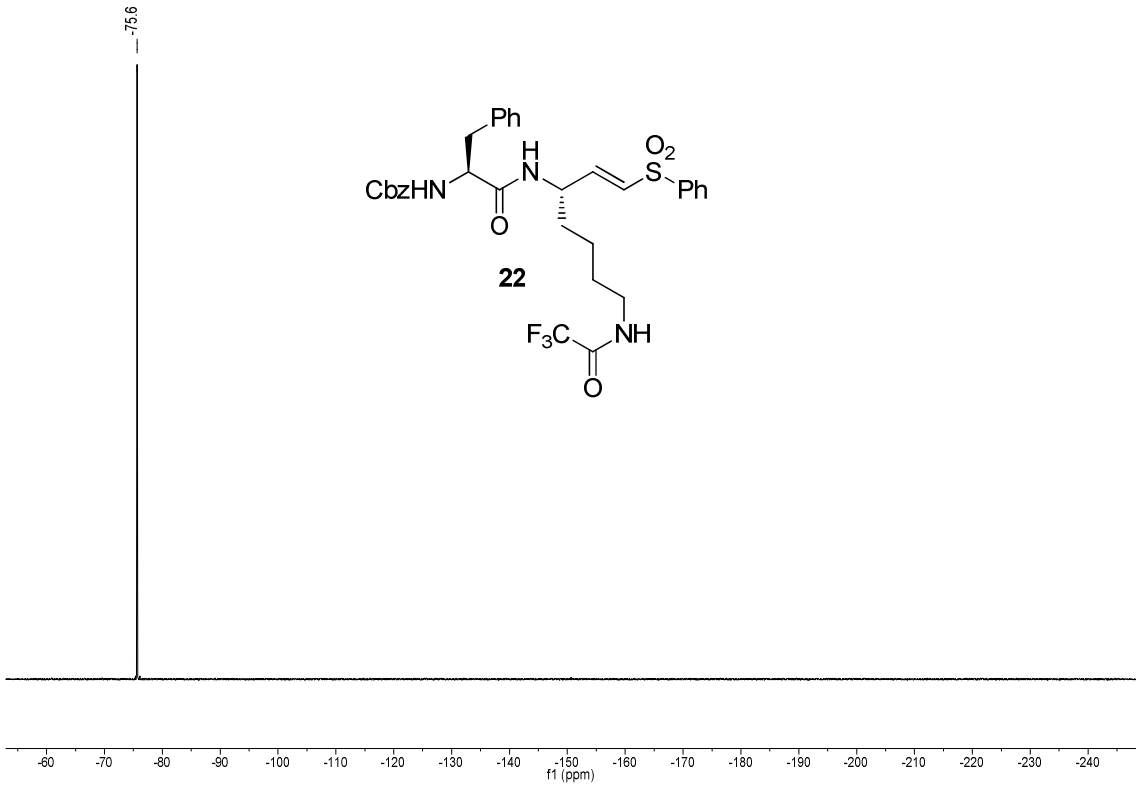
δ H_a = 3.70–3.78 ppm
δ H_b = 2.91–2.98 ppm
δ H_c + δ H_d = 3.11–3.20 ppm

^{1}H (400 MHz, $CDCl_3$) and ^{13}C (100 MHz, $CDCl_3$) spectra of **22**

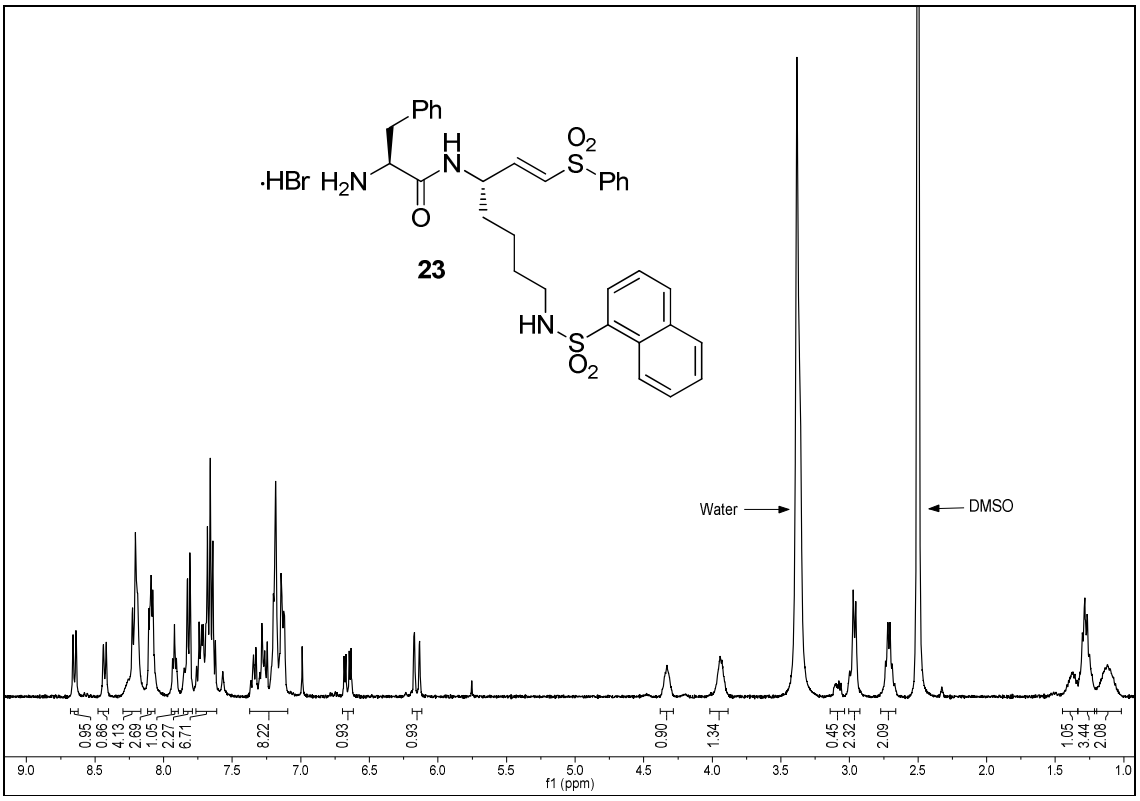


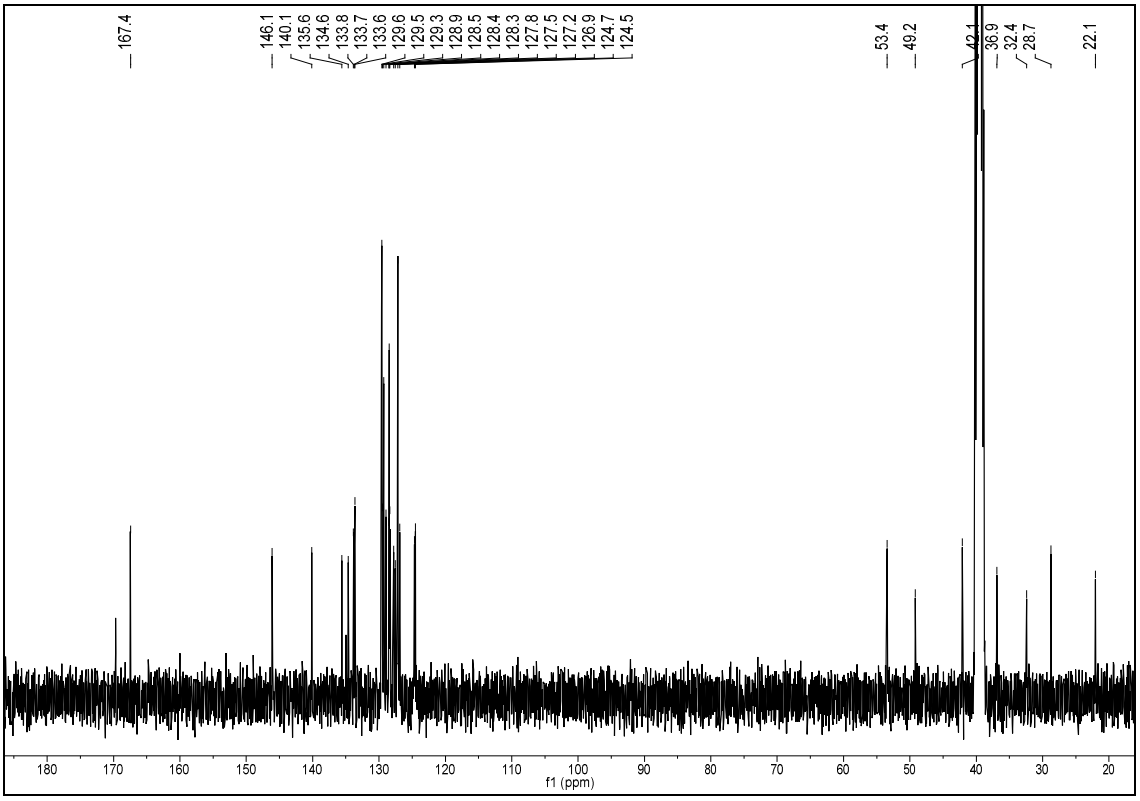


^{19}F NMR (376 MHz, $CDCl_3$) spectrum of **22**

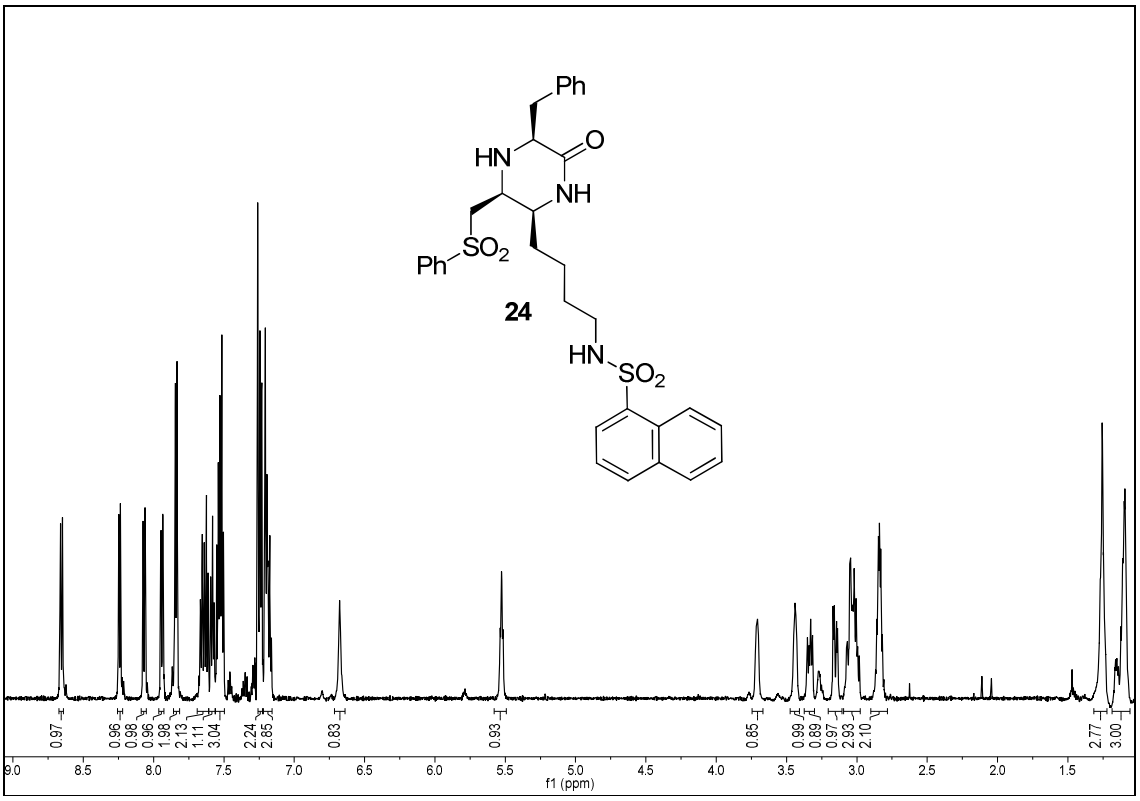


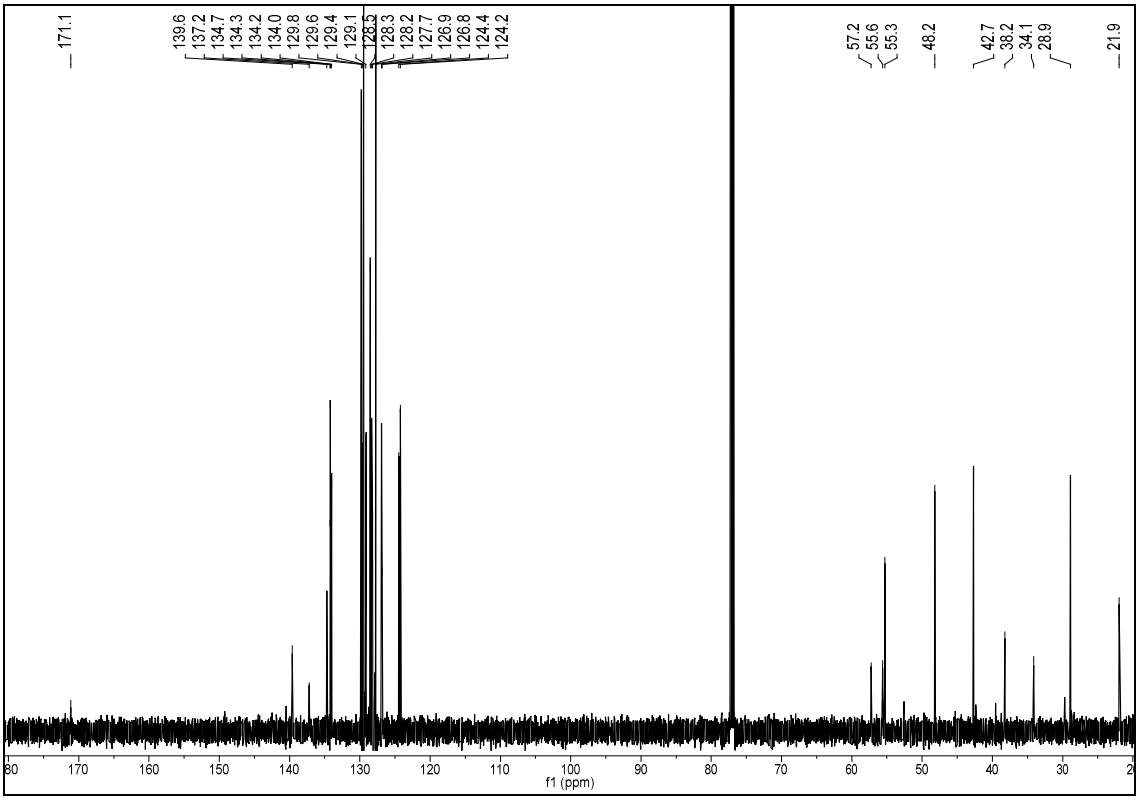
^{1}H (400 MHz, d^{6}–DMSO) and ^{13}C (100 MHz, d^{6}–DMSO) NMR spectra of **23**



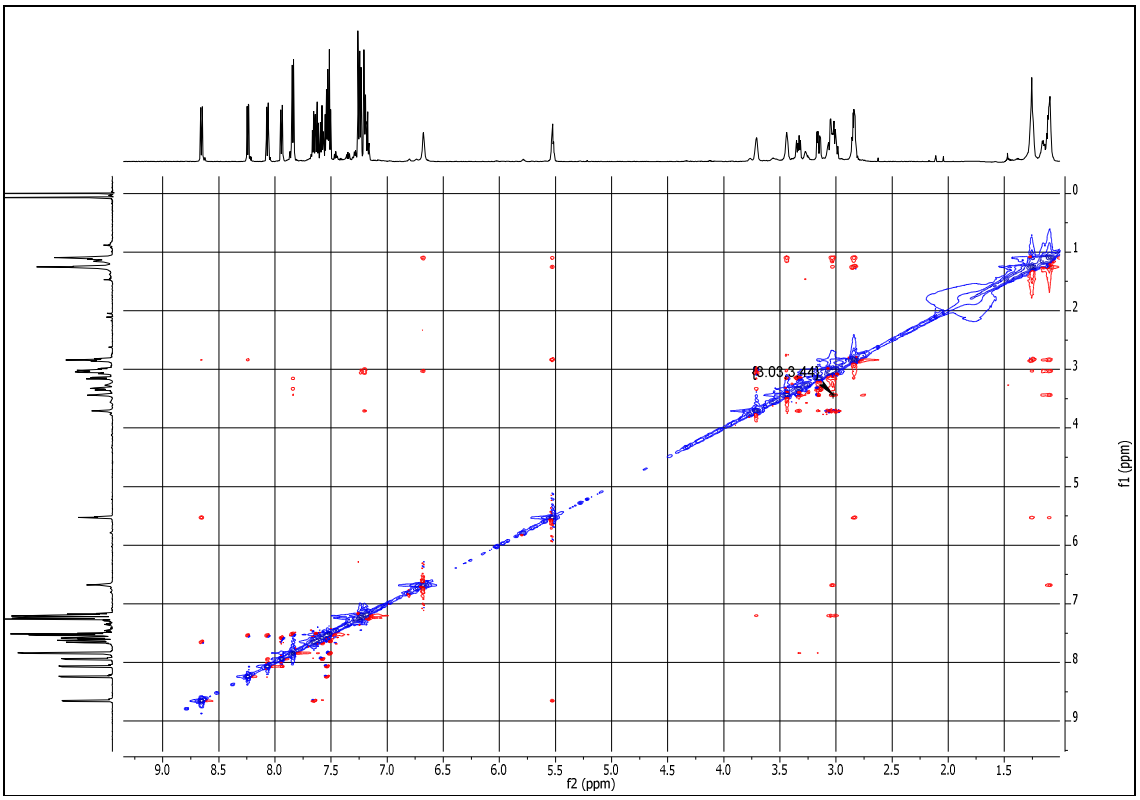


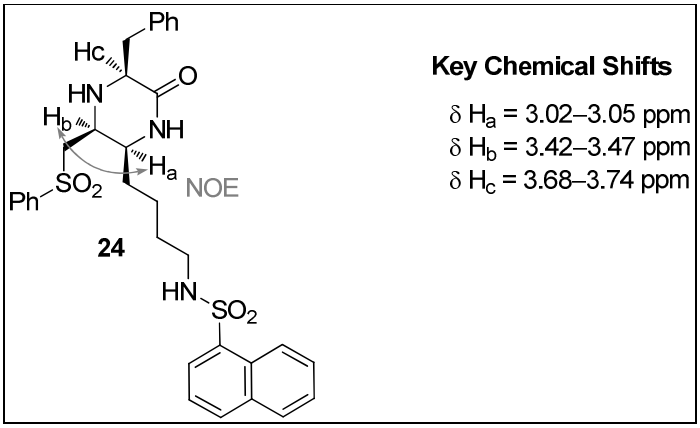
^{1}H (600 MHz, $CDCl_3$) and ^{13}C (150 MHz, $CDCl_3$) NMR spectra of **24**



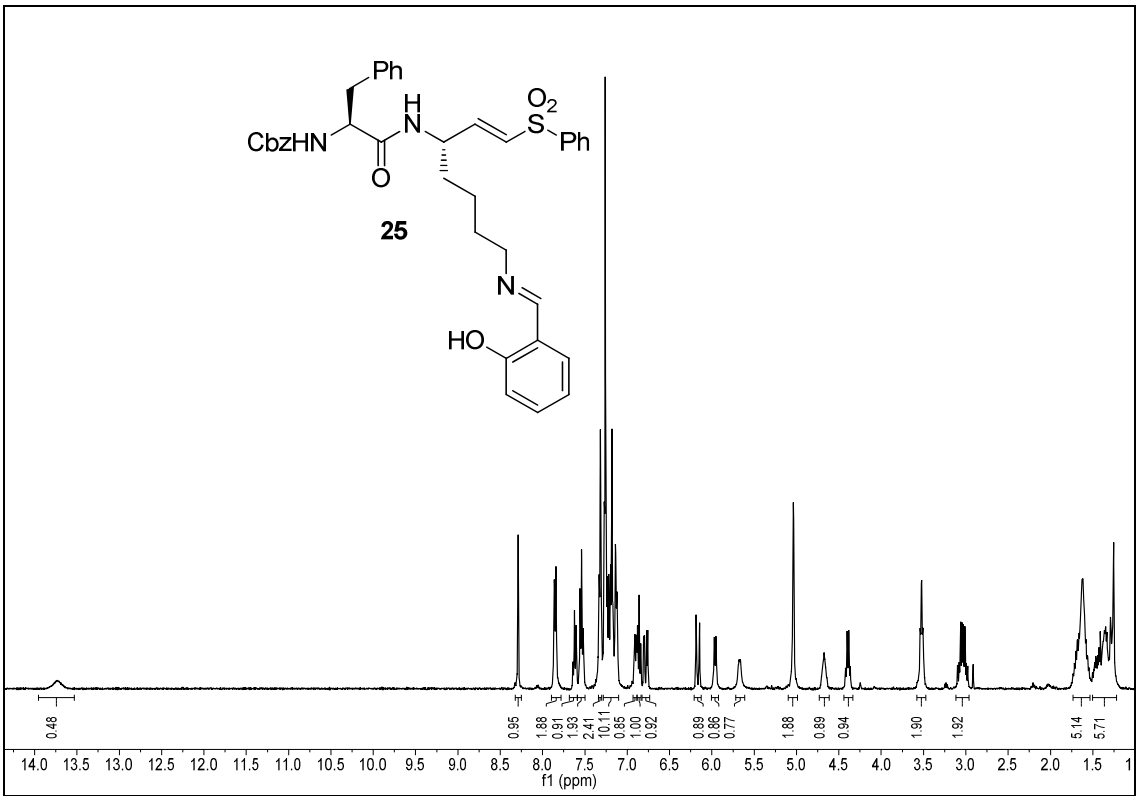


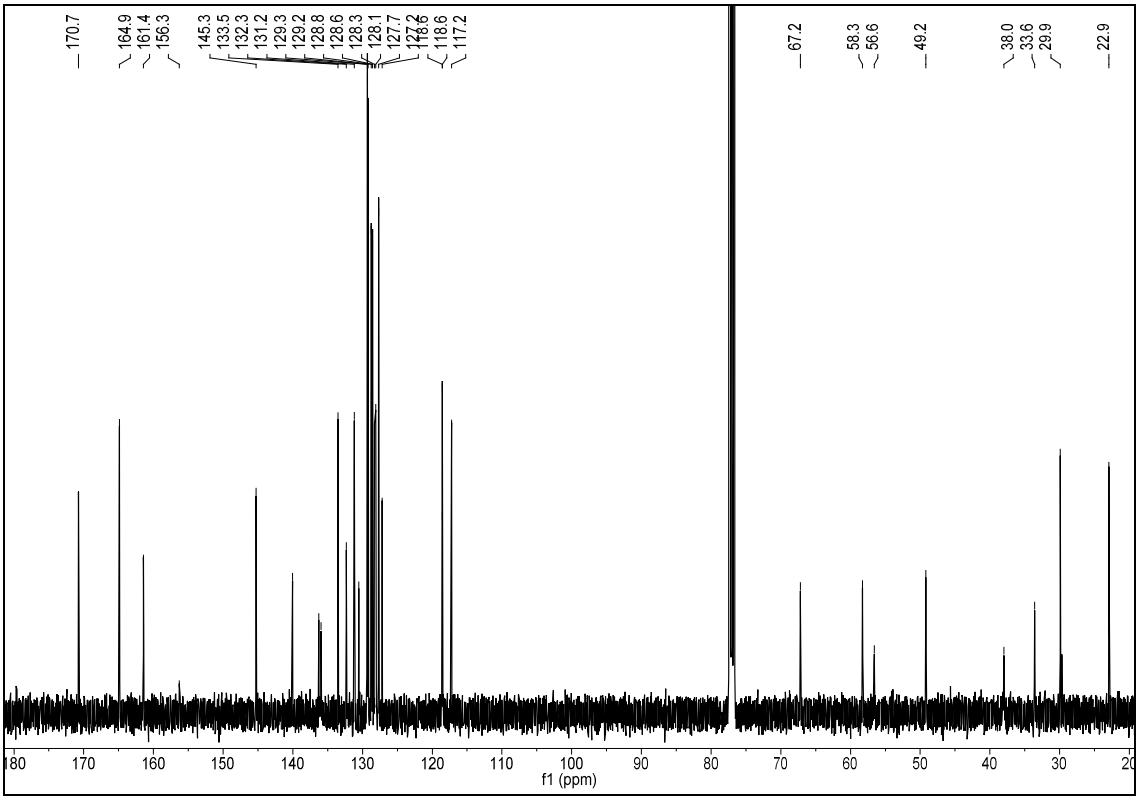
600 MHz 2D NOE Spectrum of **24**



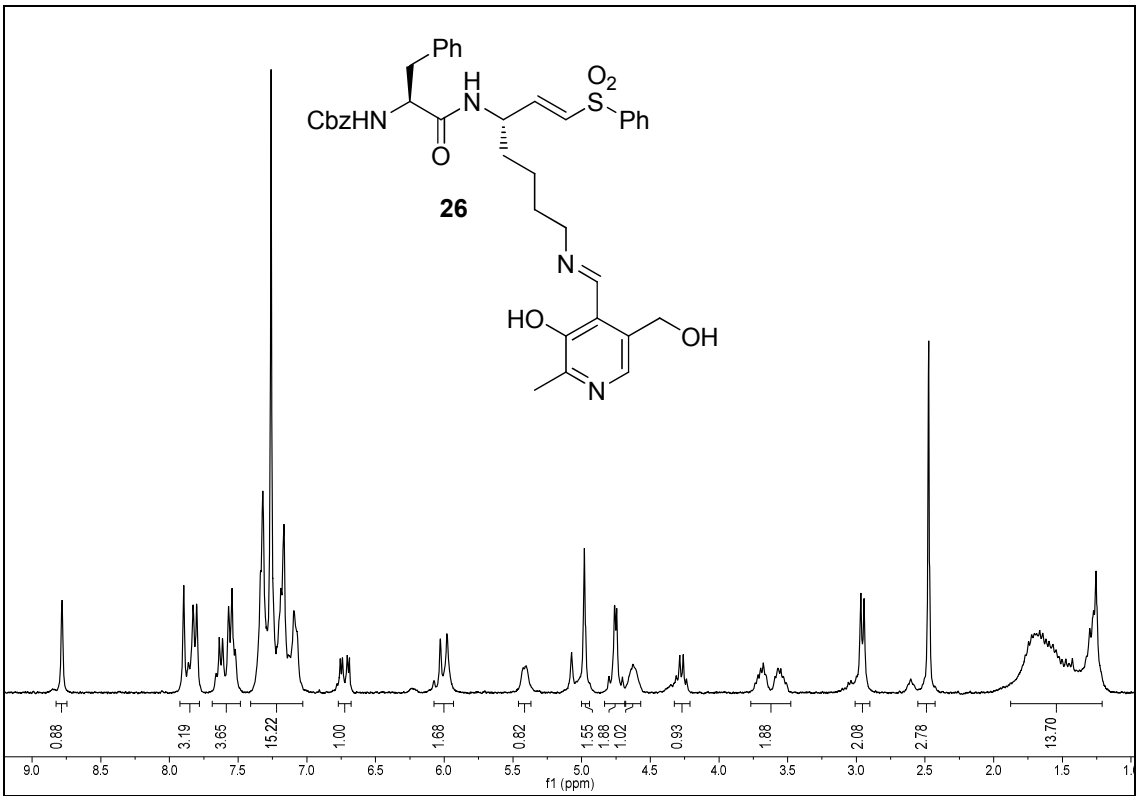


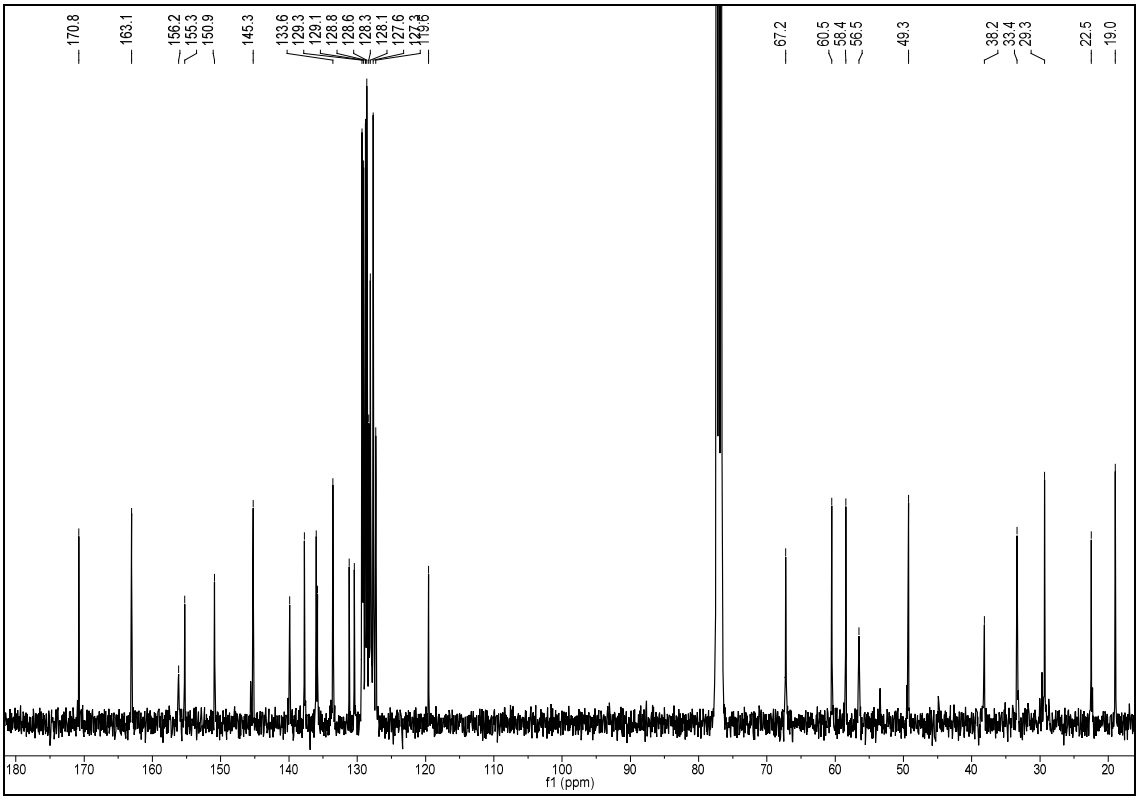
^{1}H (400 MHz, $CDCl_3$) and ^{13}C (100 MHz, $CDCl_3$) NMR spectra of **25**



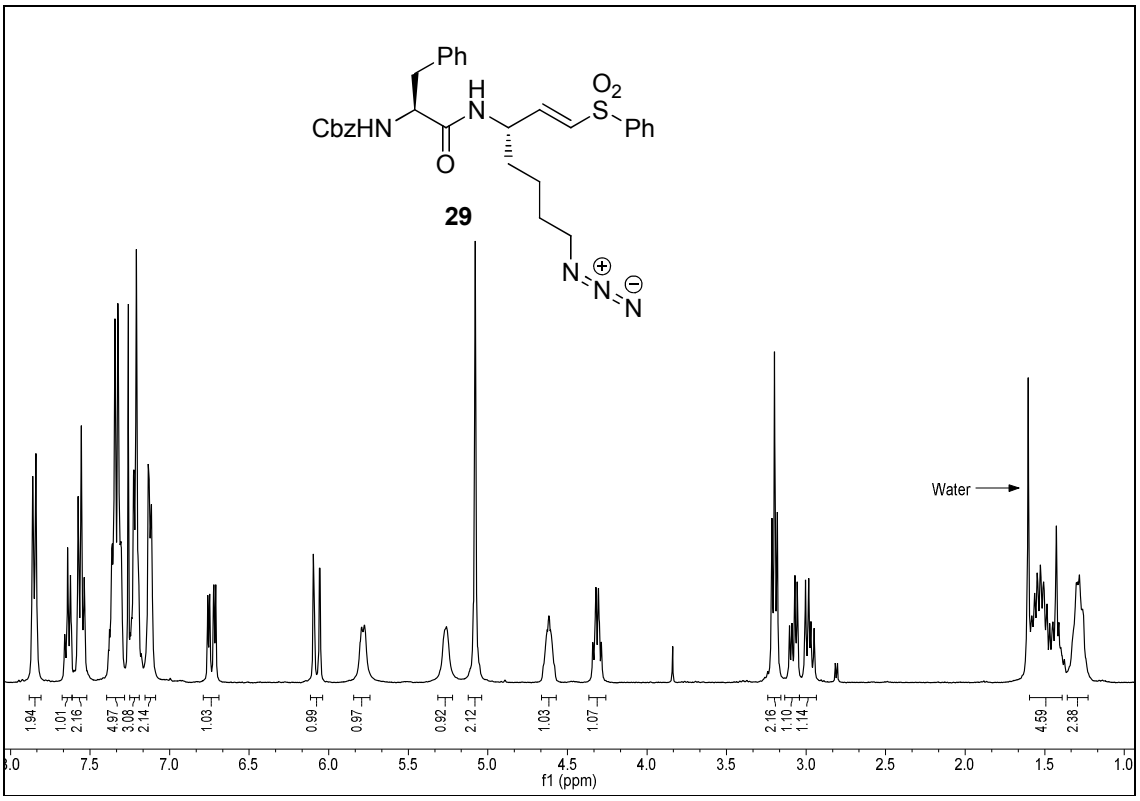


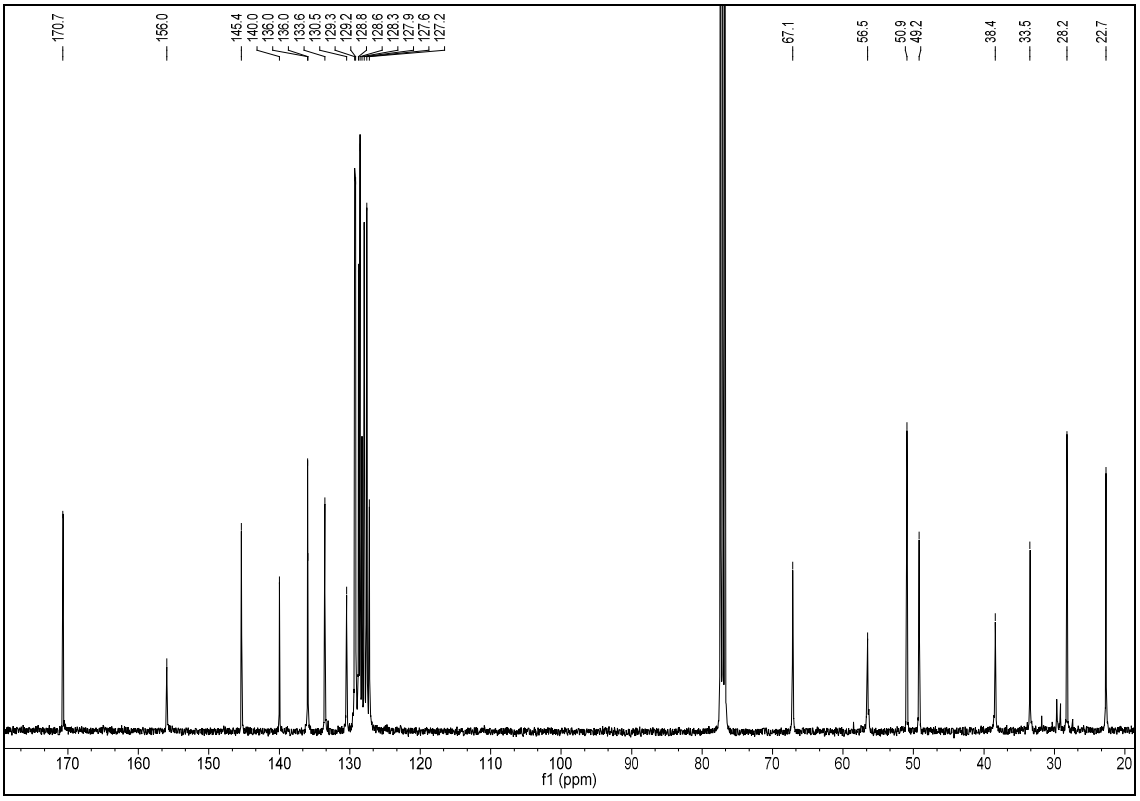
^{1}H (400 MHz, $CDCl_3$) and ^{13}C (100 MHz, $CDCl_3$) NMR spectra of **26**





^{1}H (400 MHz, $CDCl_3$) and ^{13}C (100 MHz, $CDCl_3$) NMR spectra of **29**





^{1}H (400 MHz, $CDCl_3$) and ^{13}C (100 MHz, $CDCl_3$) NMR spectra of **31**