Supporting Information File 2

for

Synthesis and in vitro cytotoxicity of acetylated 3-fluoro, 4-fluoro and 3,4-difluoro analogs of D-glucosamine and D-galactosamine

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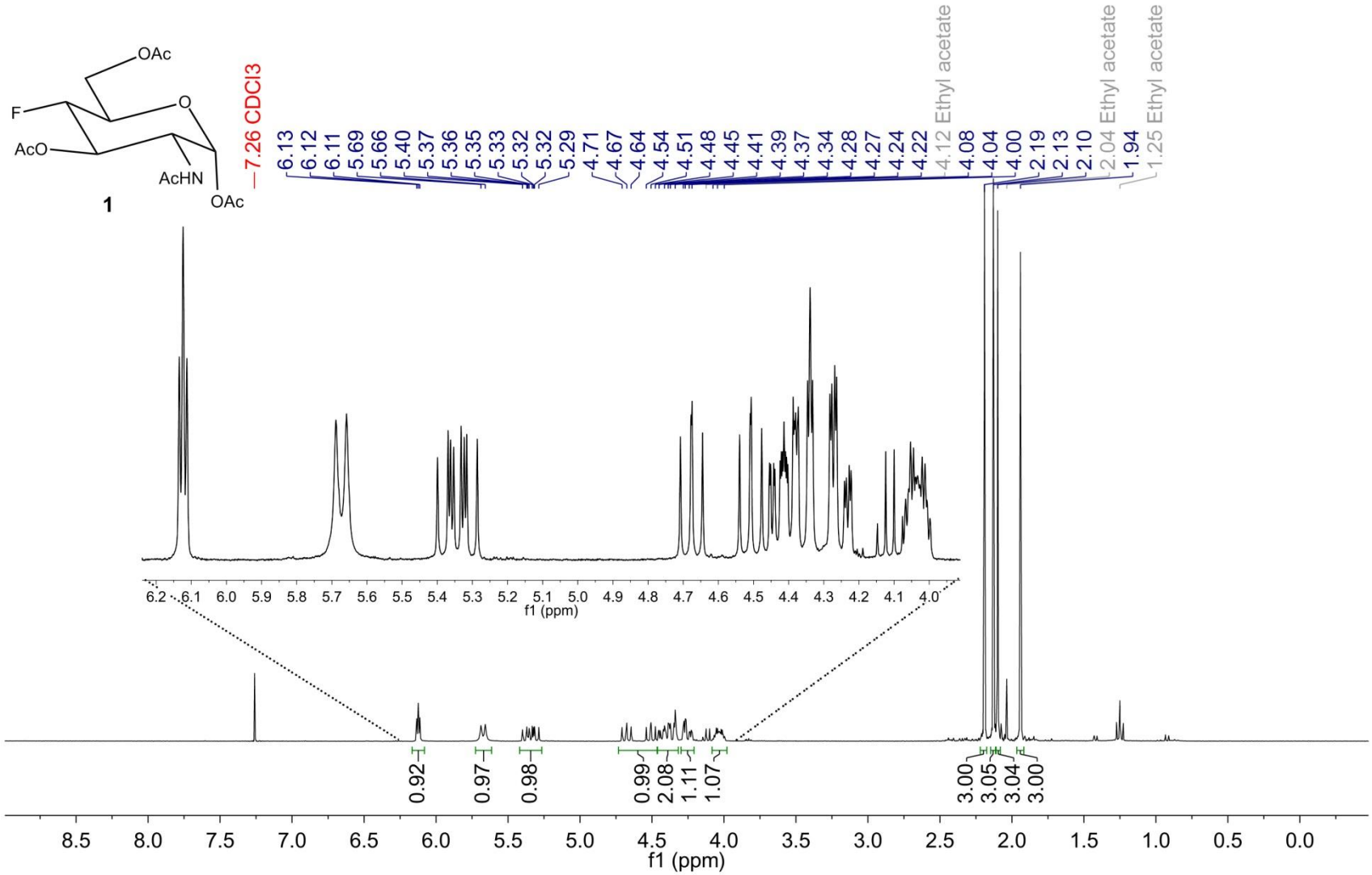
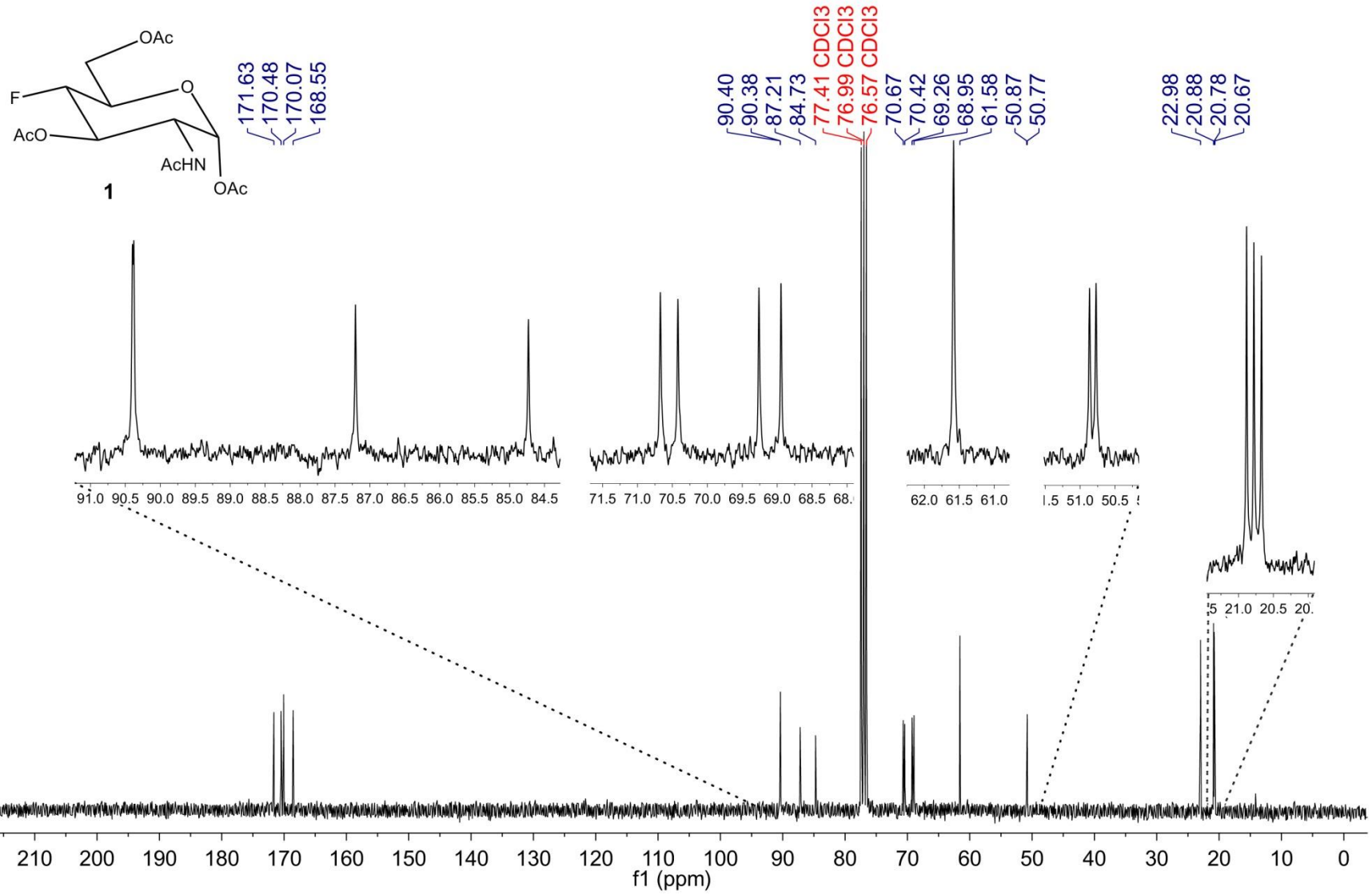
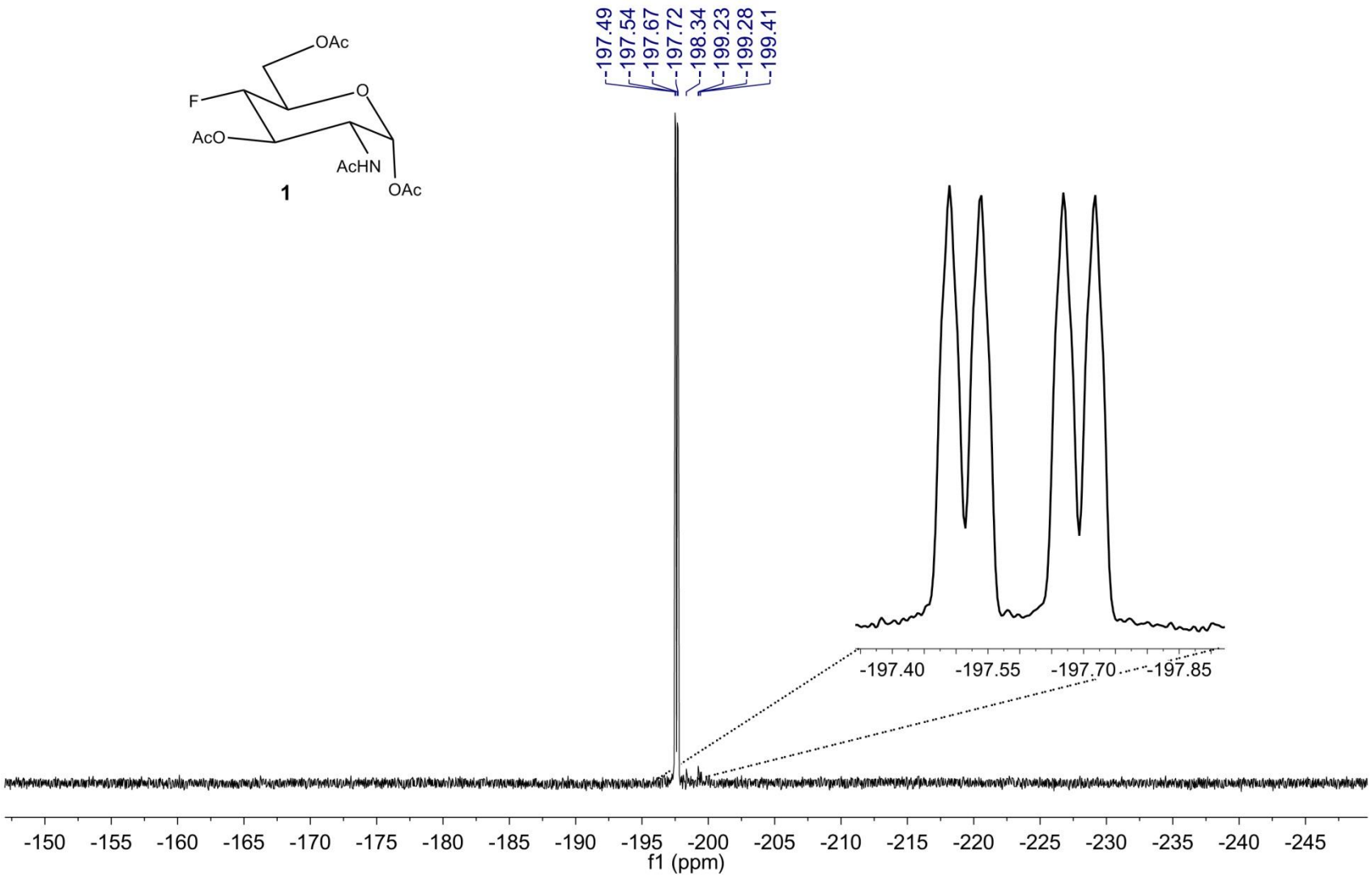
NMR spectra for compounds 1, 2, 4–8, 12, 18–22, 25, 26, 28, 29, 31, 40–46, and 48–51



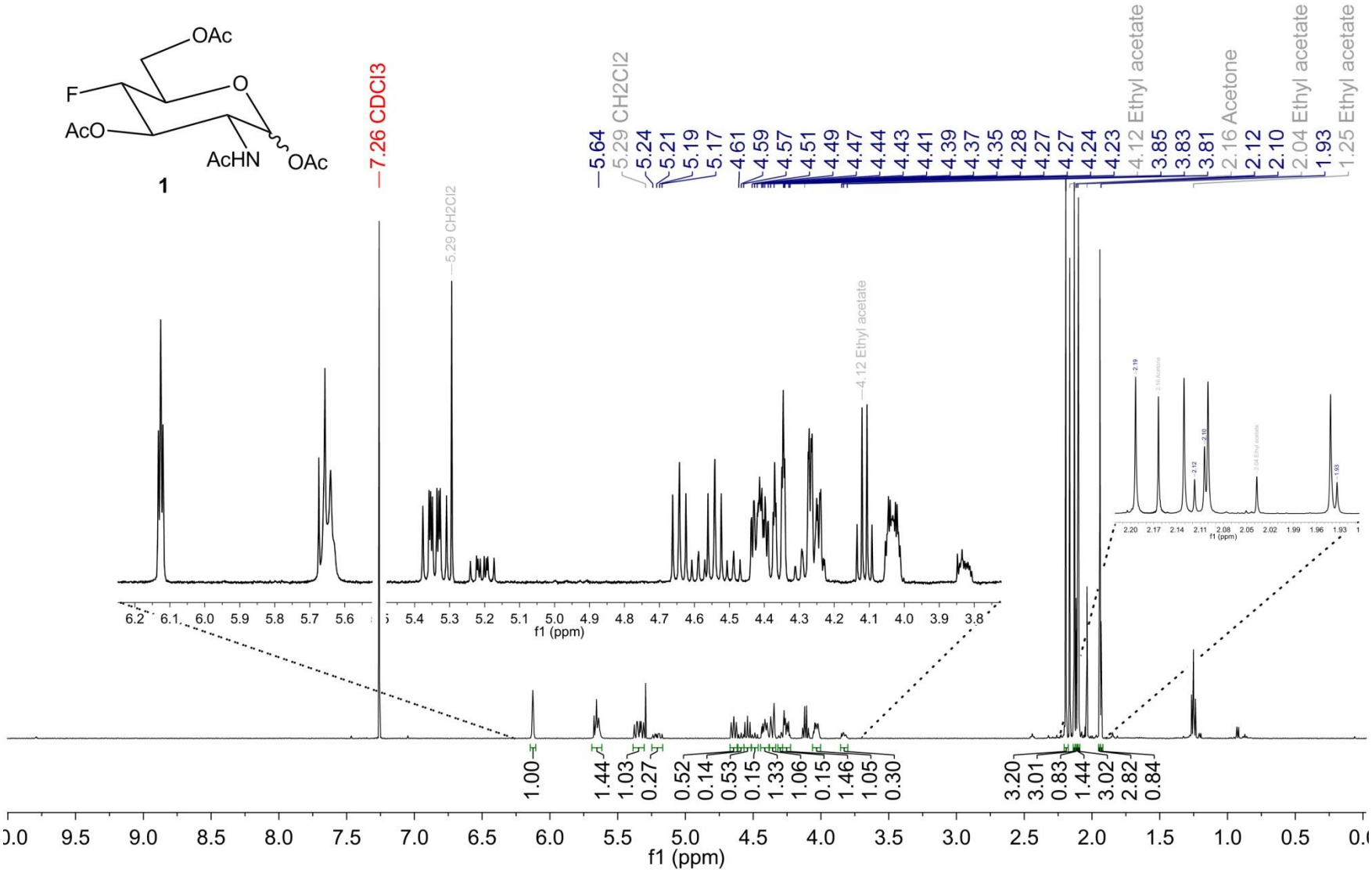
^{1}H NMR (300 MHz, $CDCl_3$) of **1α** (α-anomer).



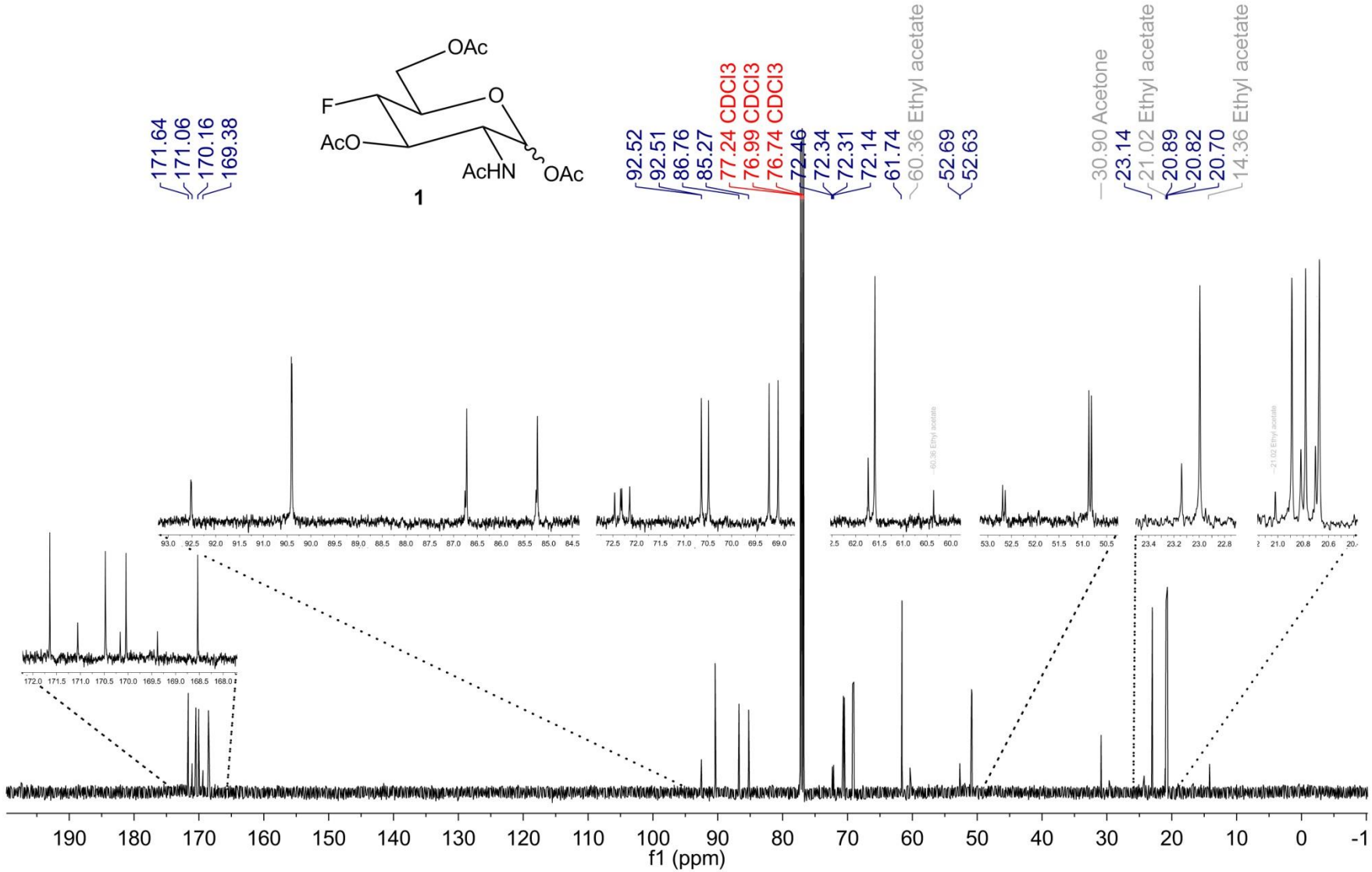
^{13}C {^{1}H} NMR (75 MHz, $CDCl_3$) of **1α** (α-anomer).



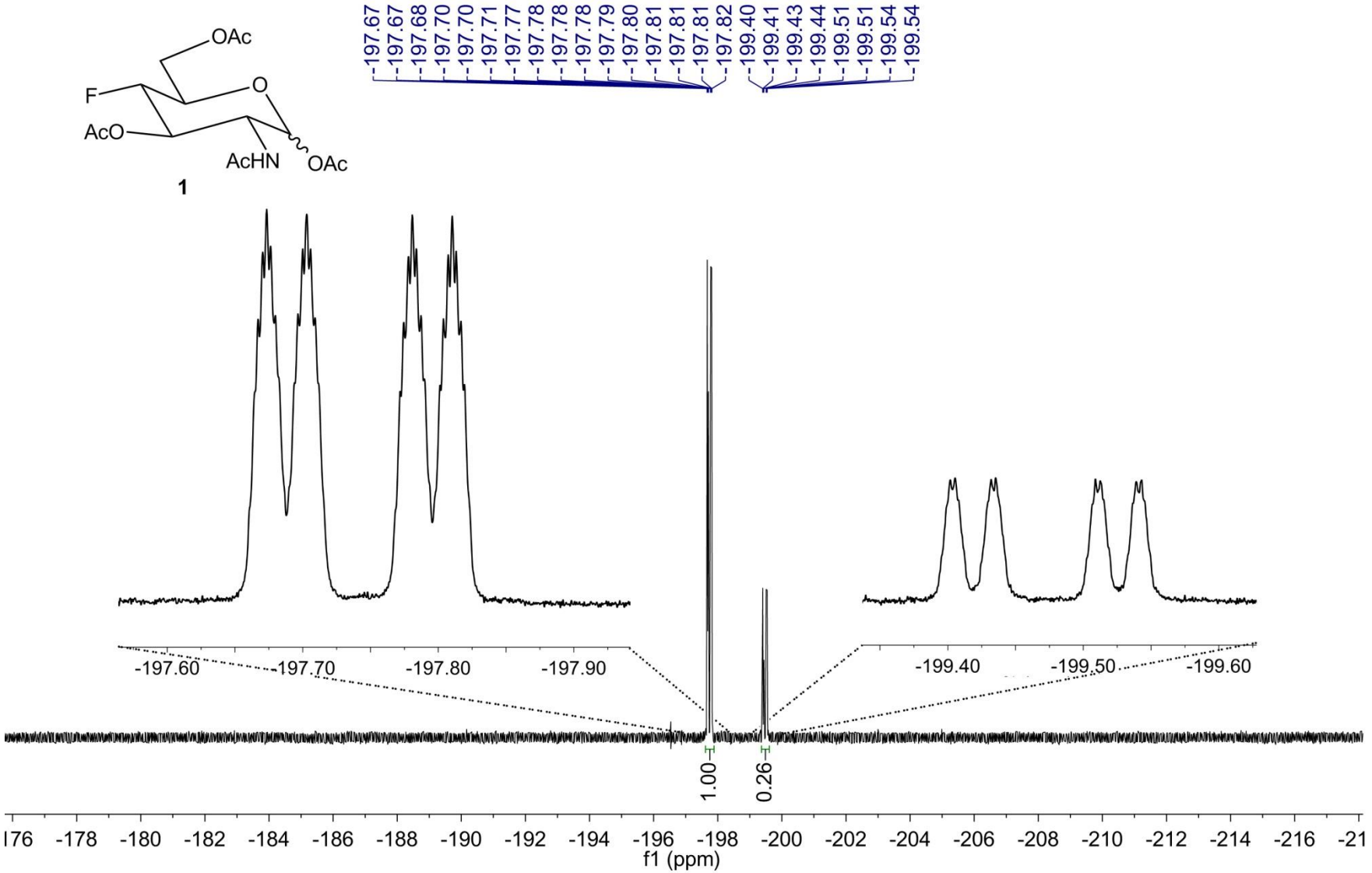
^{19}F NMR (282 MHz, $CDCl_3$) of **1α** (α-anomer).



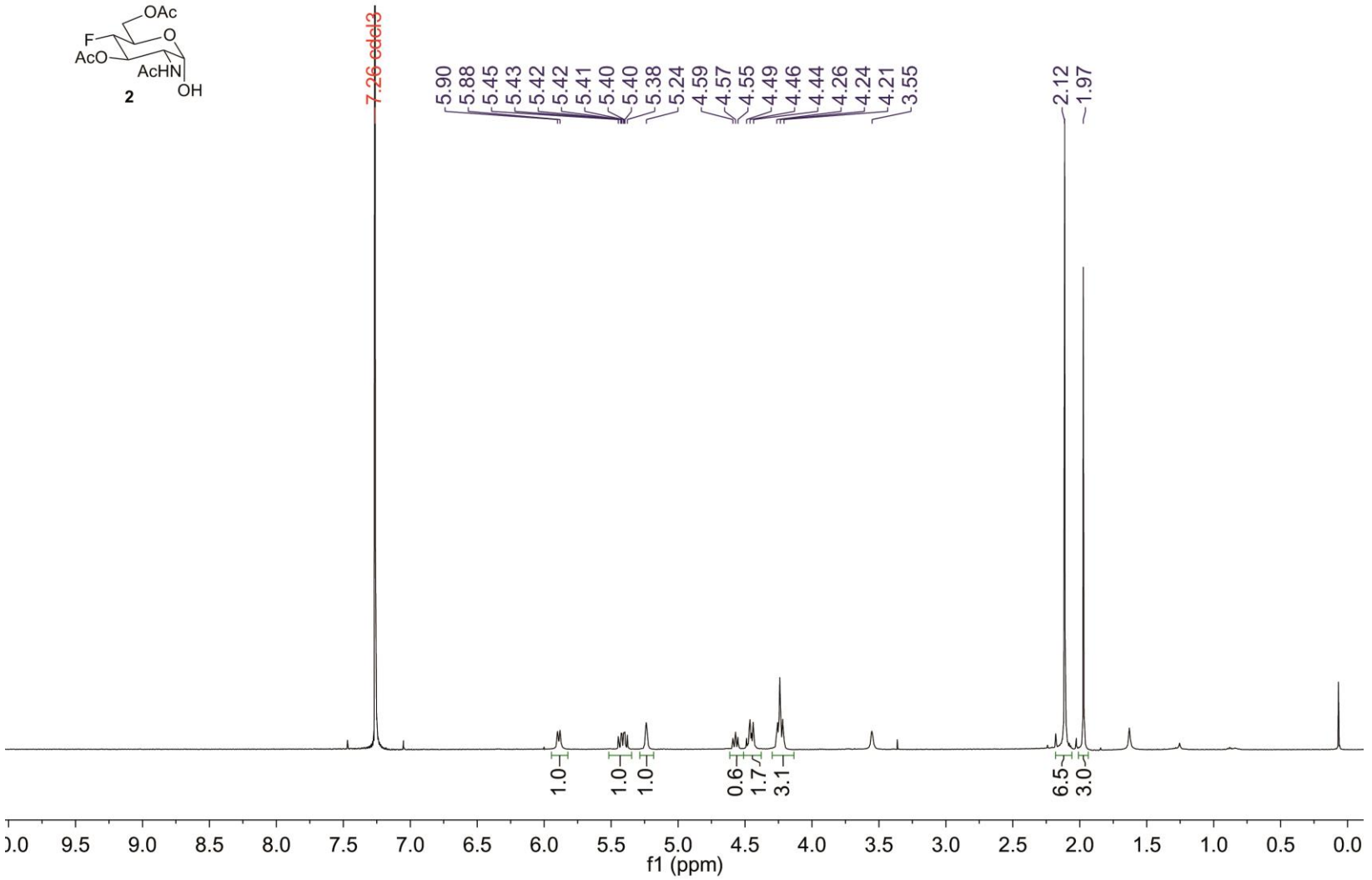
^{1}H NMR (500 MHz, $CDCl_3$) of **1** (α-anomer/β-anomer ca 1:0.3).



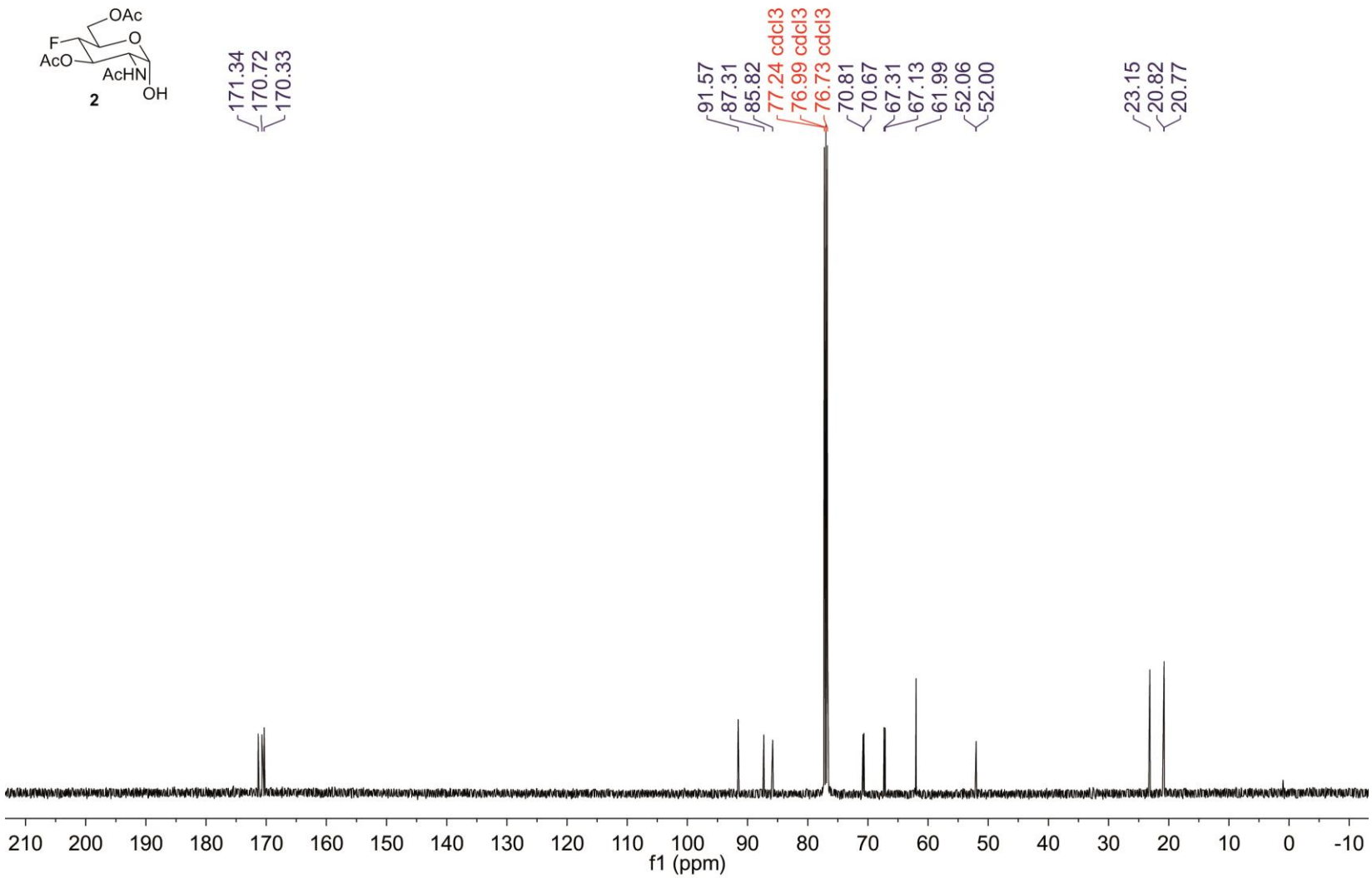
^{13}C {^{1}H} NMR (125 MHz, $CDCl_3$) of **1** (α-anomer/β-anomer ca 1:0.3).



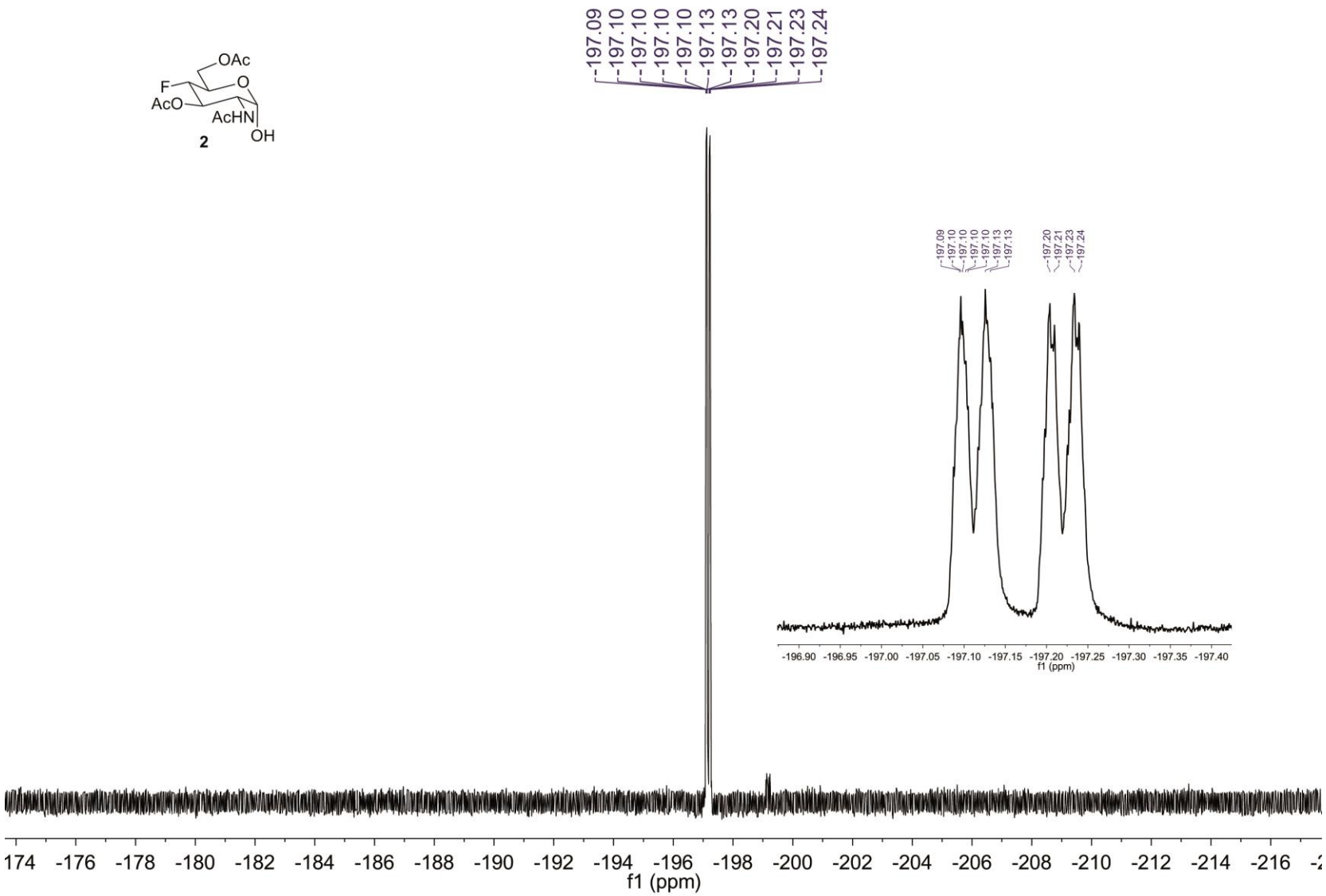
^{19}F NMR (470 MHz, $CDCl_3$) of **1** (α-anomer/β-anomer ca 1:0.3)



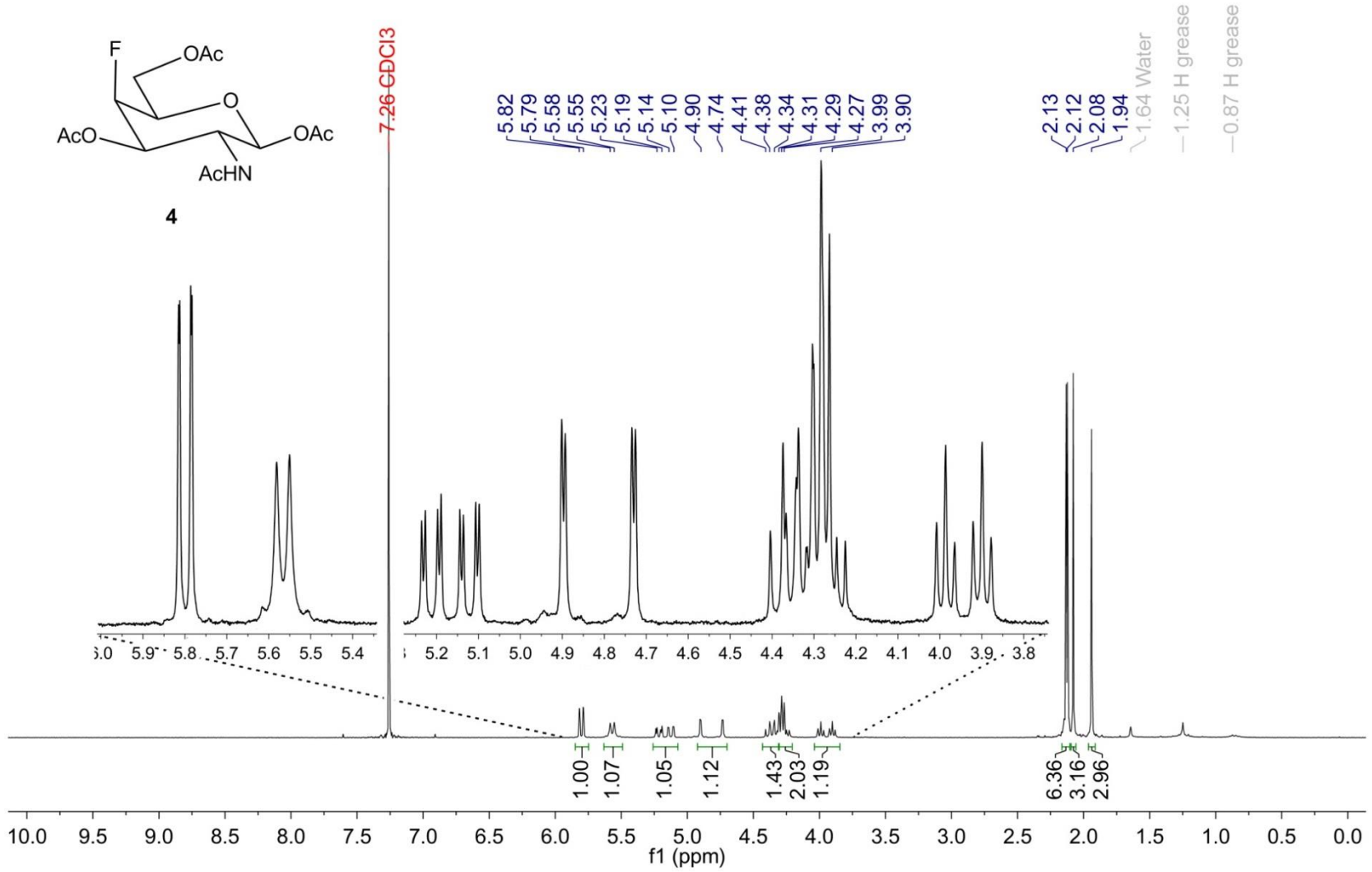
^{1}H NMR (500 MHz, $CDCl_3$) of **2** (α-anomer)



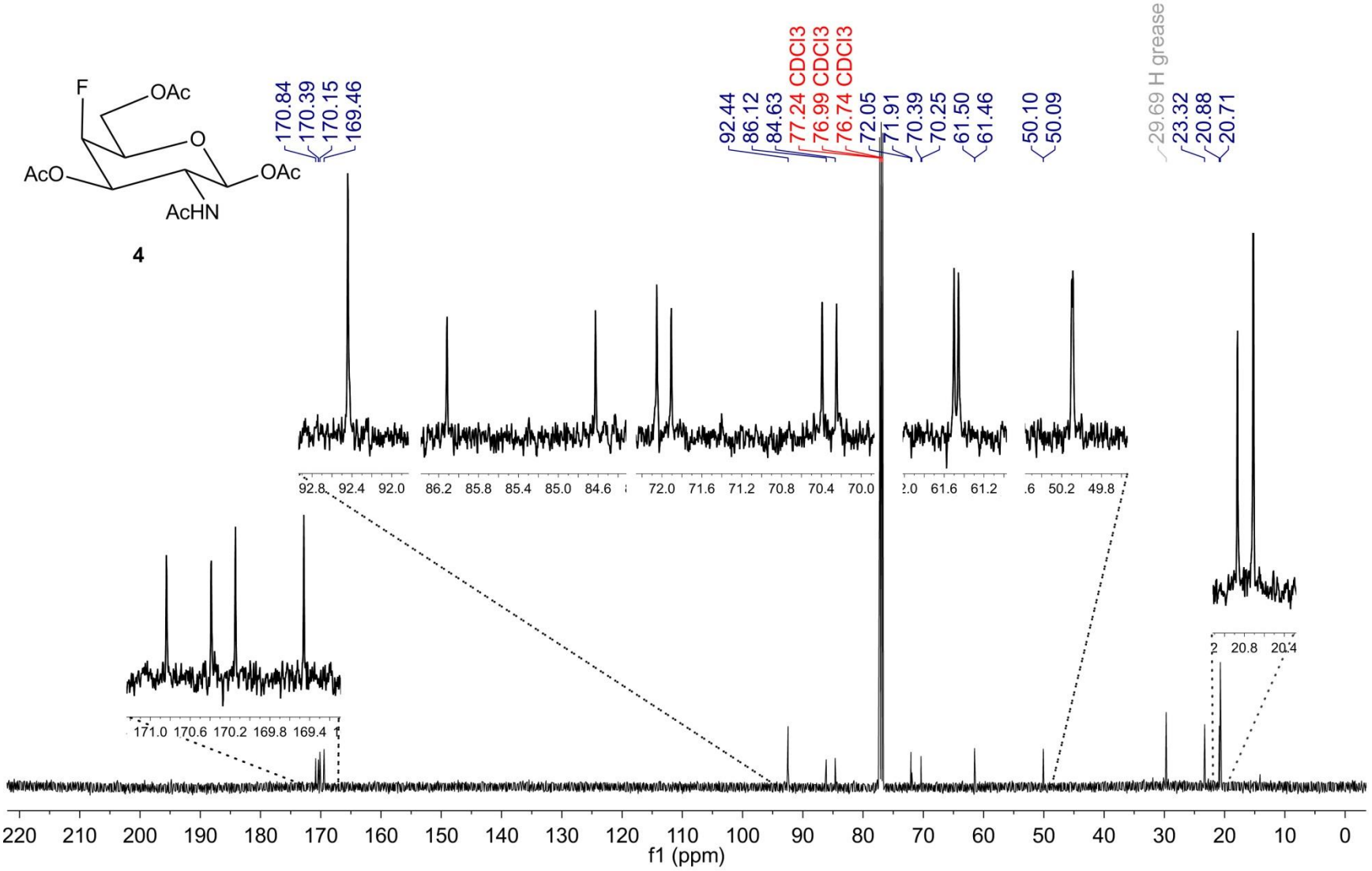
^{13}C {^{1}H} NMR (125 MHz, $CDCl_3$) of **2** (α-anomer)



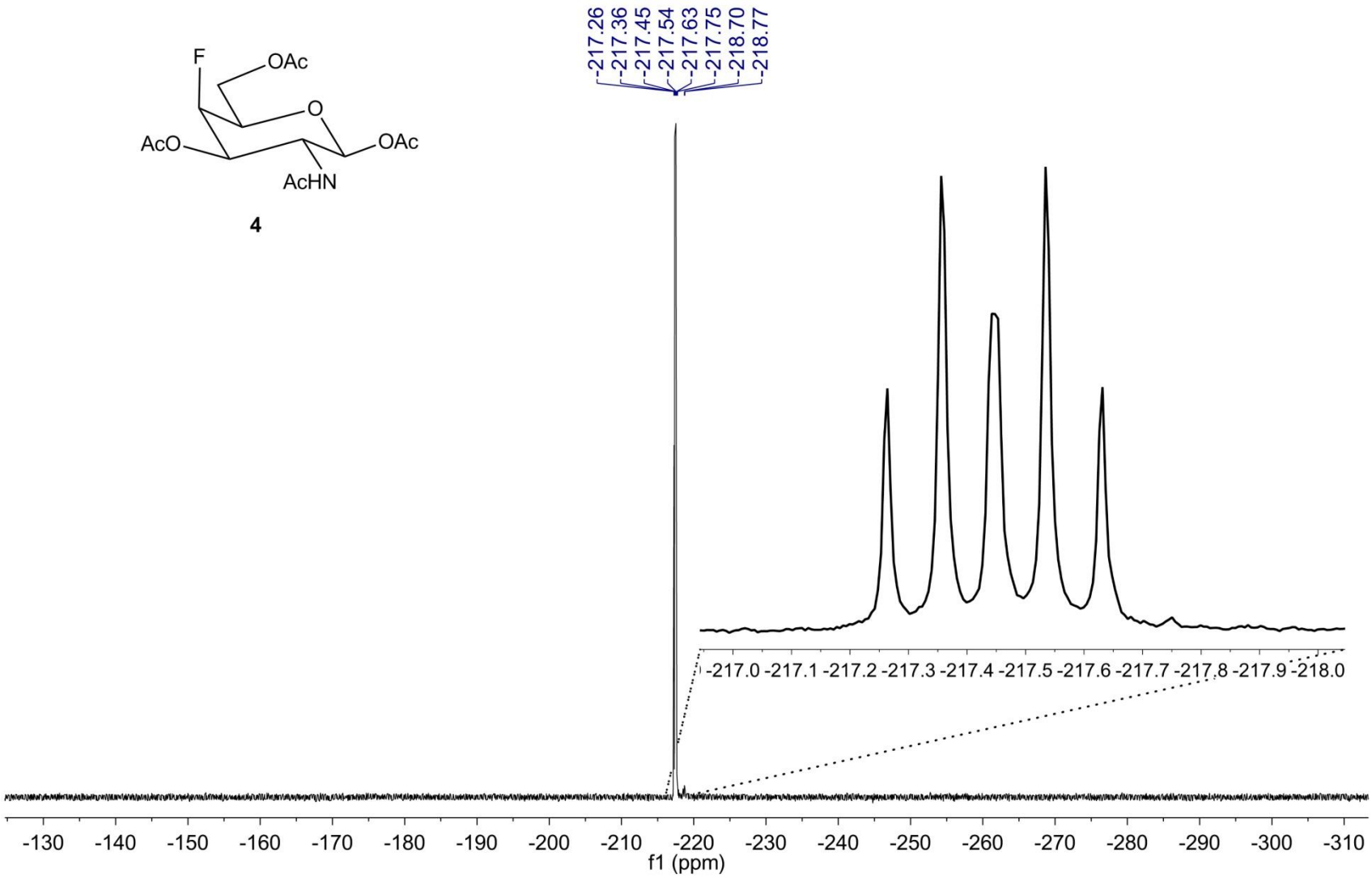
^{19}F NMR (470 MHz, $CDCl_3$) of **2** (α-anomer)



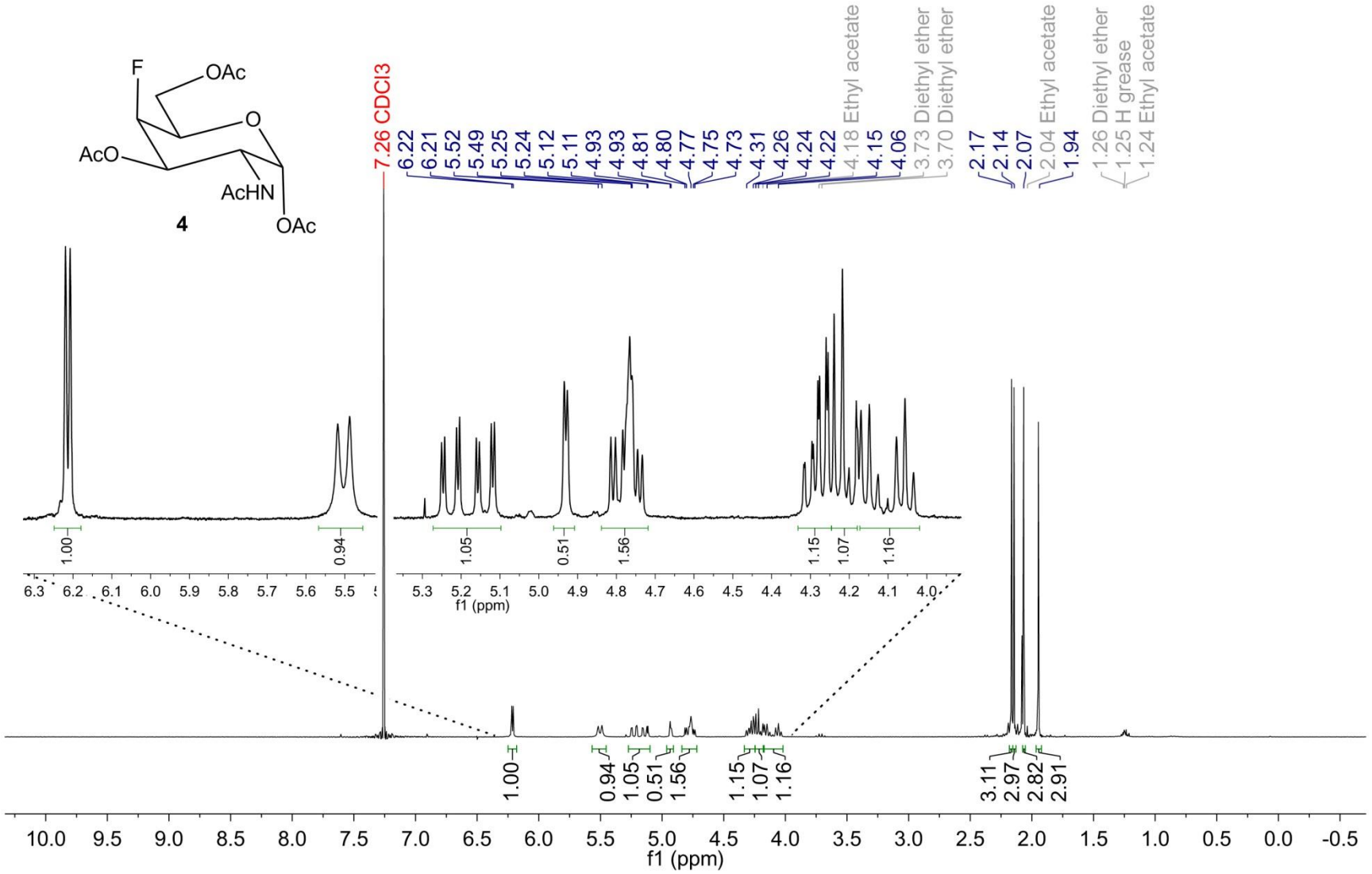
^{1}H NMR (300 MHz, $CDCl_3$) of **4β** (β-anomer).



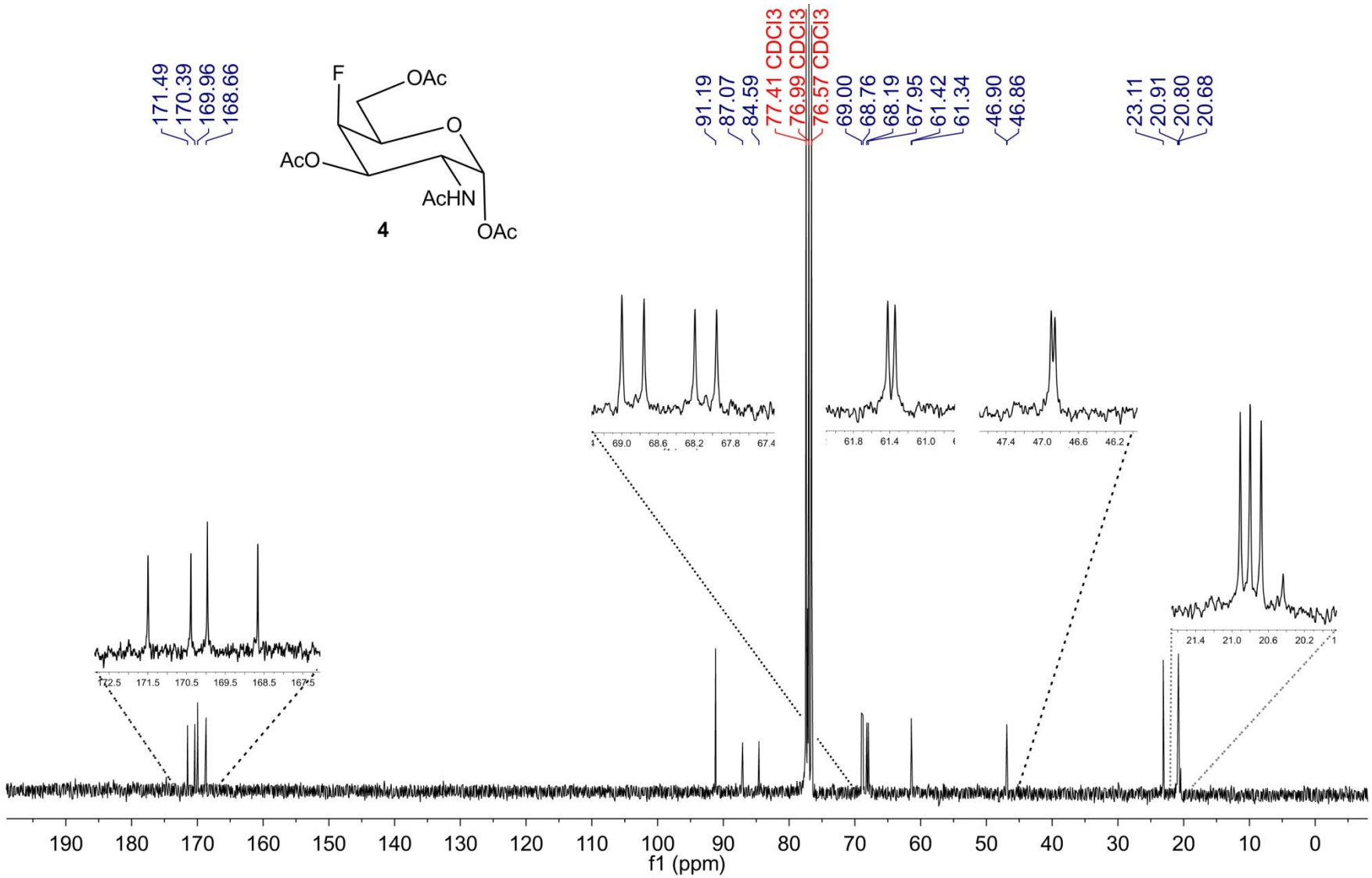
^{13}C {^{1}H} NMR (75 MHz, $CDCl_3$) of **4β** (β-anomer).



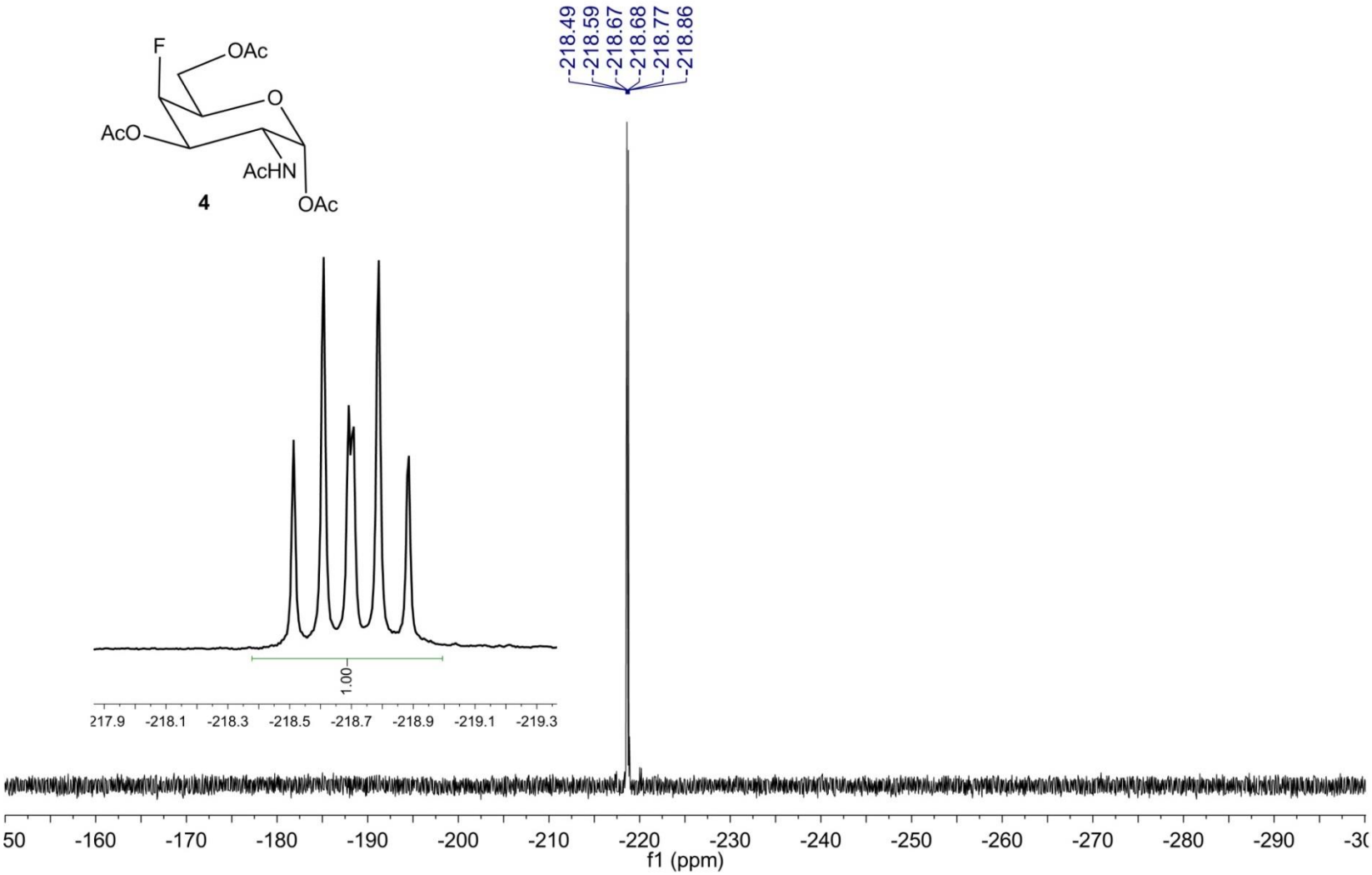
^{19}F NMR (282 MHz, $CDCl_3$) of **4β** (β-anomer).



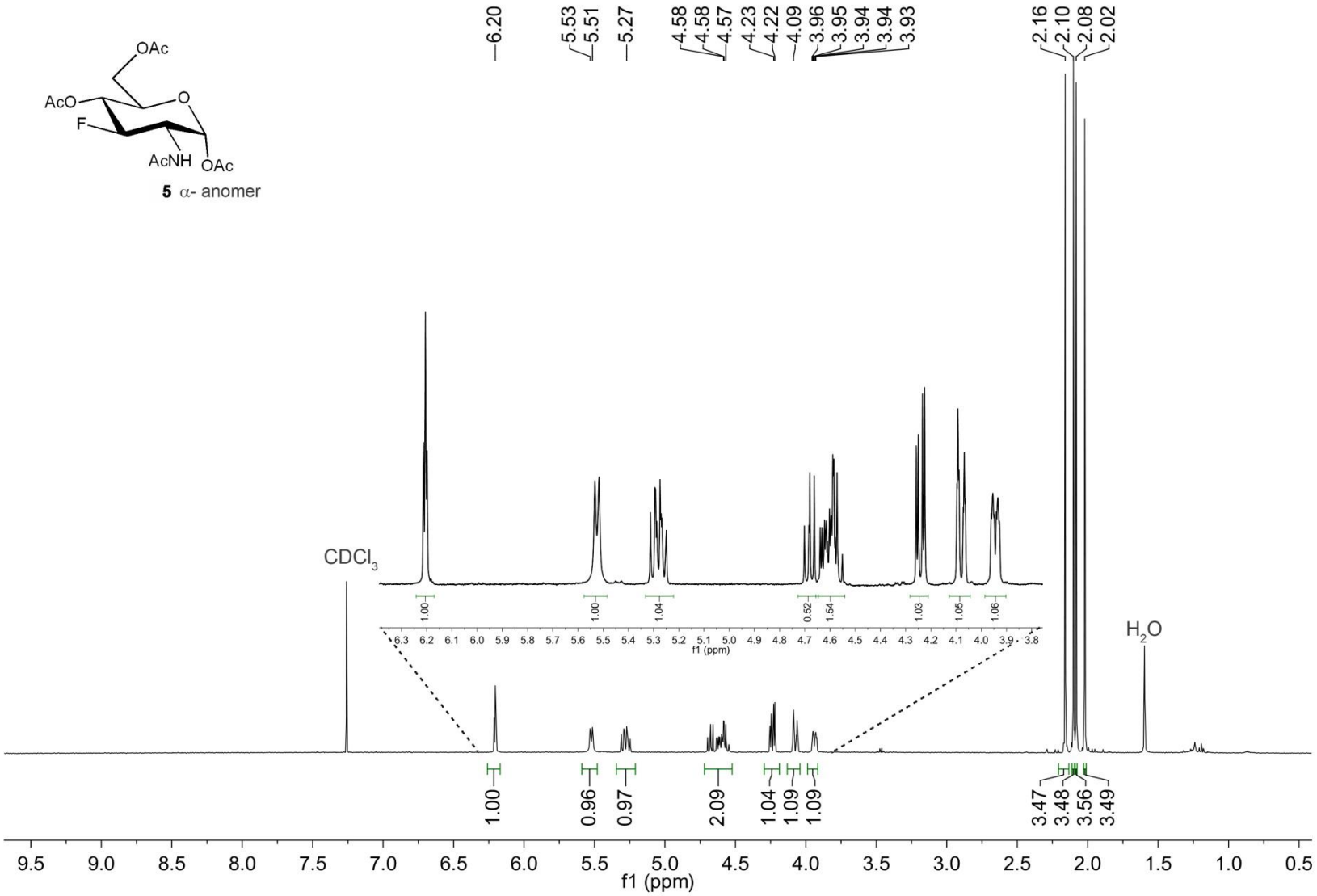
^{1}H NMR (300 MHz, $CDCl_3$) of **4α** (α-anomer).



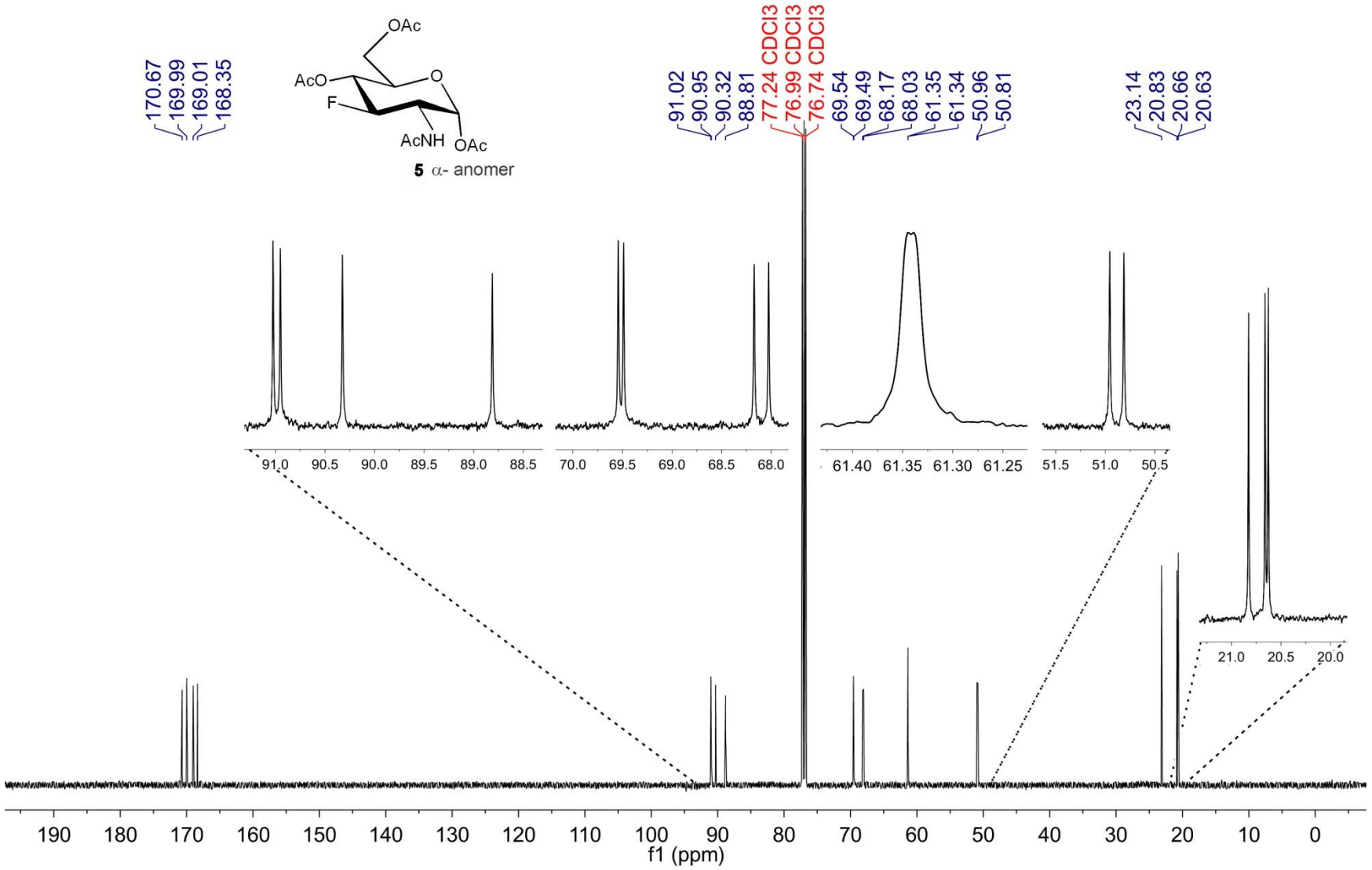
^{13}C {^{1}H} NMR (75 MHz, $CDCl_3$) of **4α** (α-anomer).



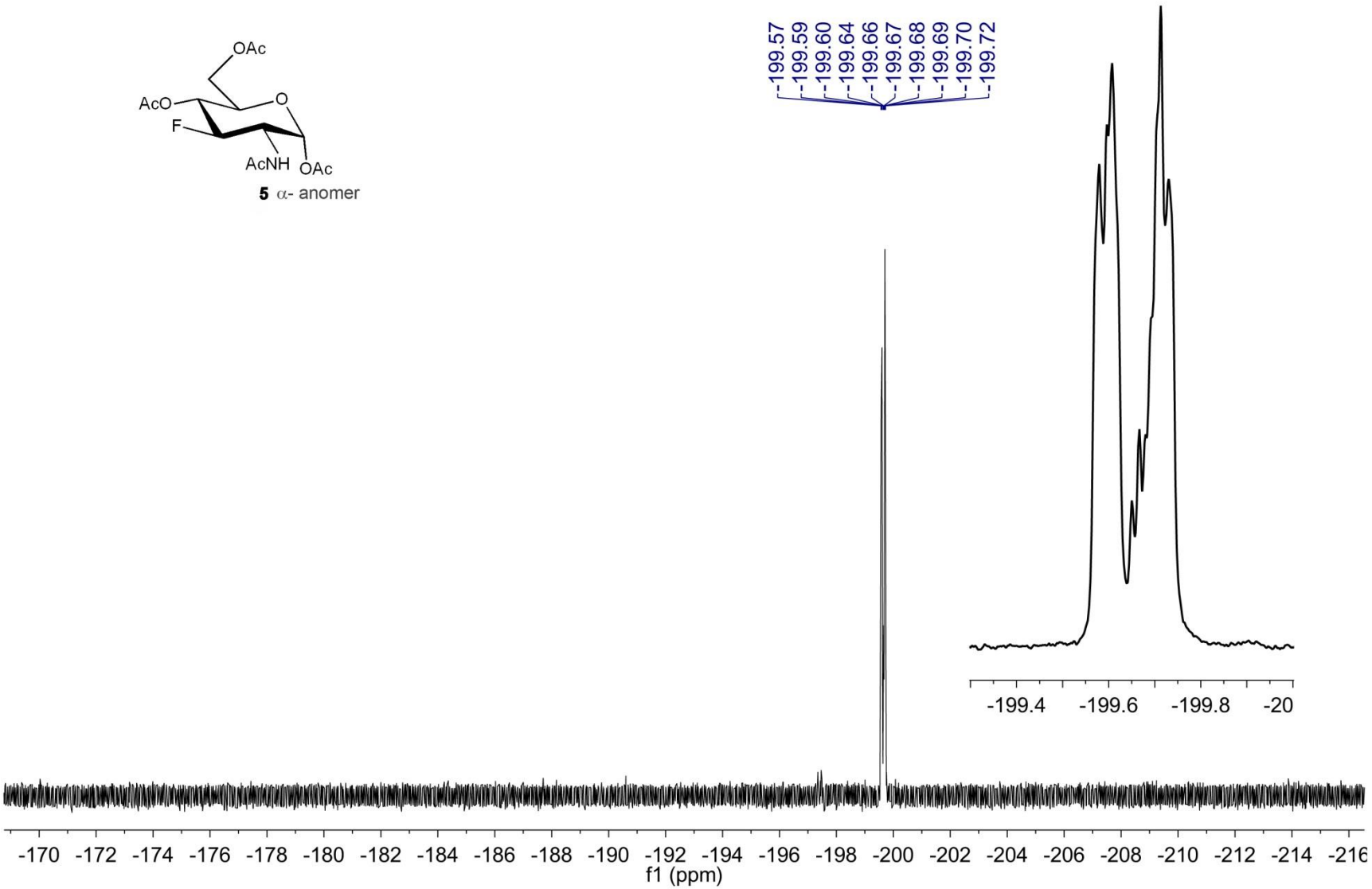
^{19}F NMR (282 MHz, $CDCl_3$) of **4α** (α-anomer).



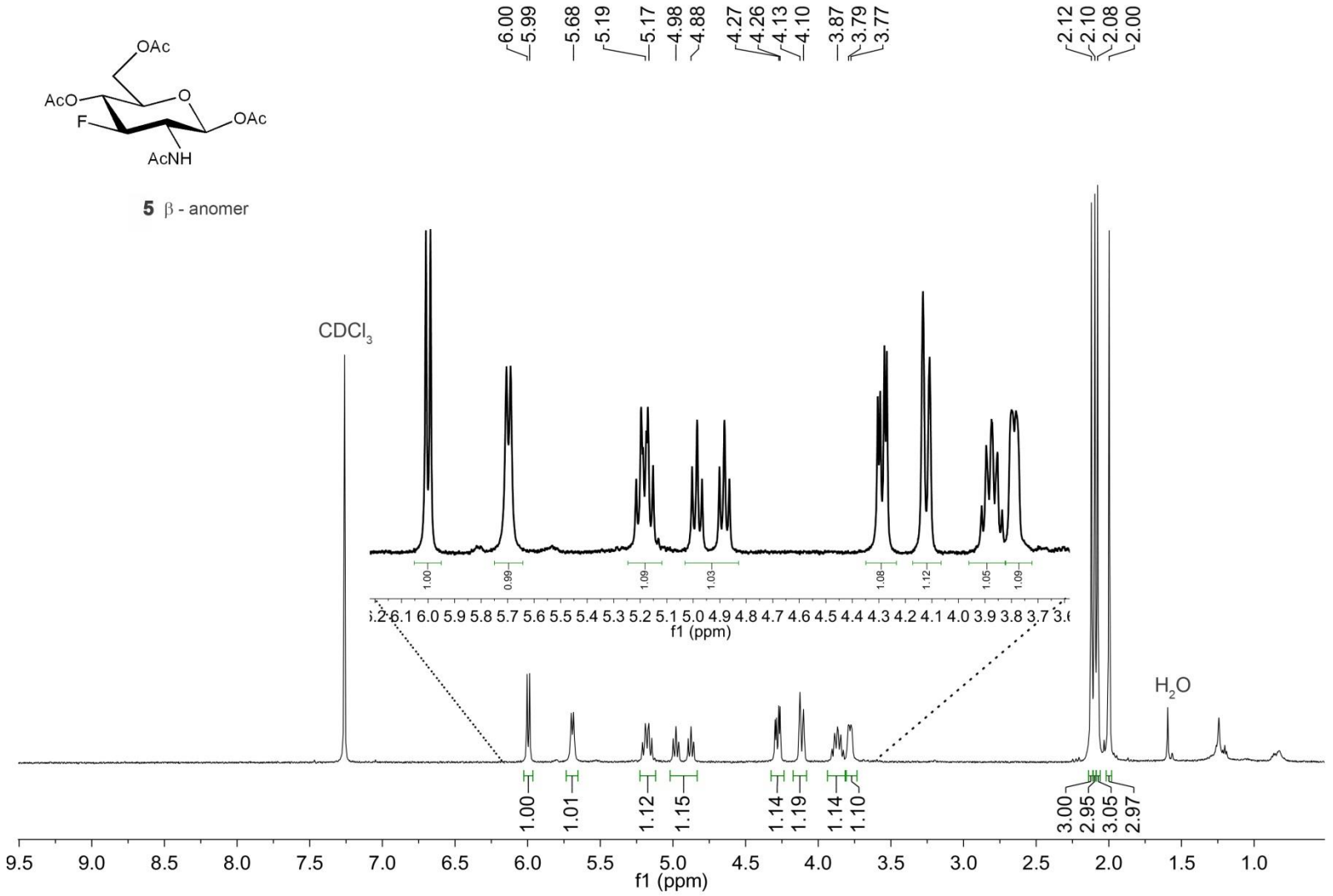
^{1}H NMR (500 MHz, $CDCl_3$) of **5α** (α-anomer).



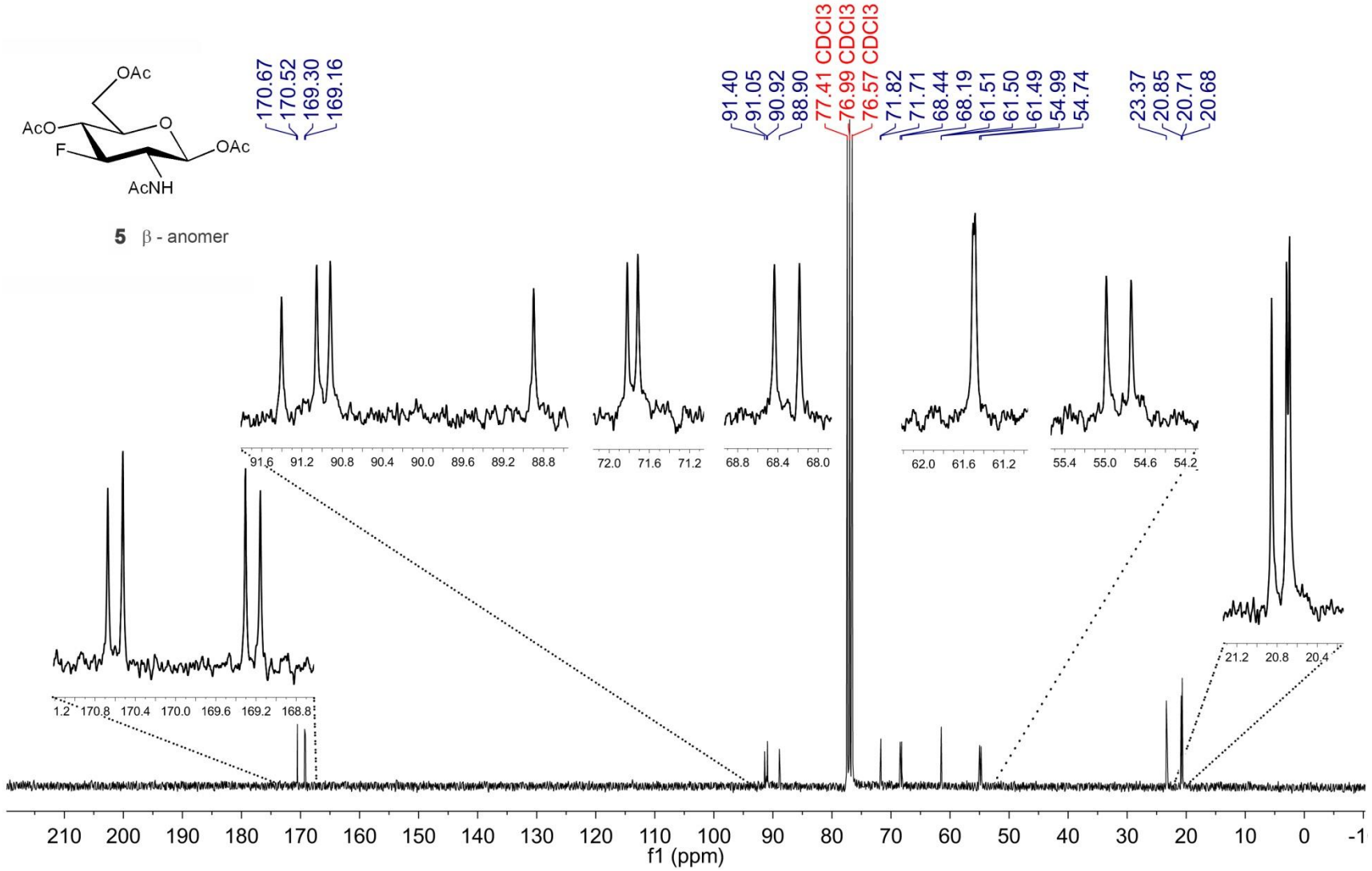
^{13}C {^{1}H} NMR (125 MHz, $CDCl_3$) of **5*α*** (α-anomer).



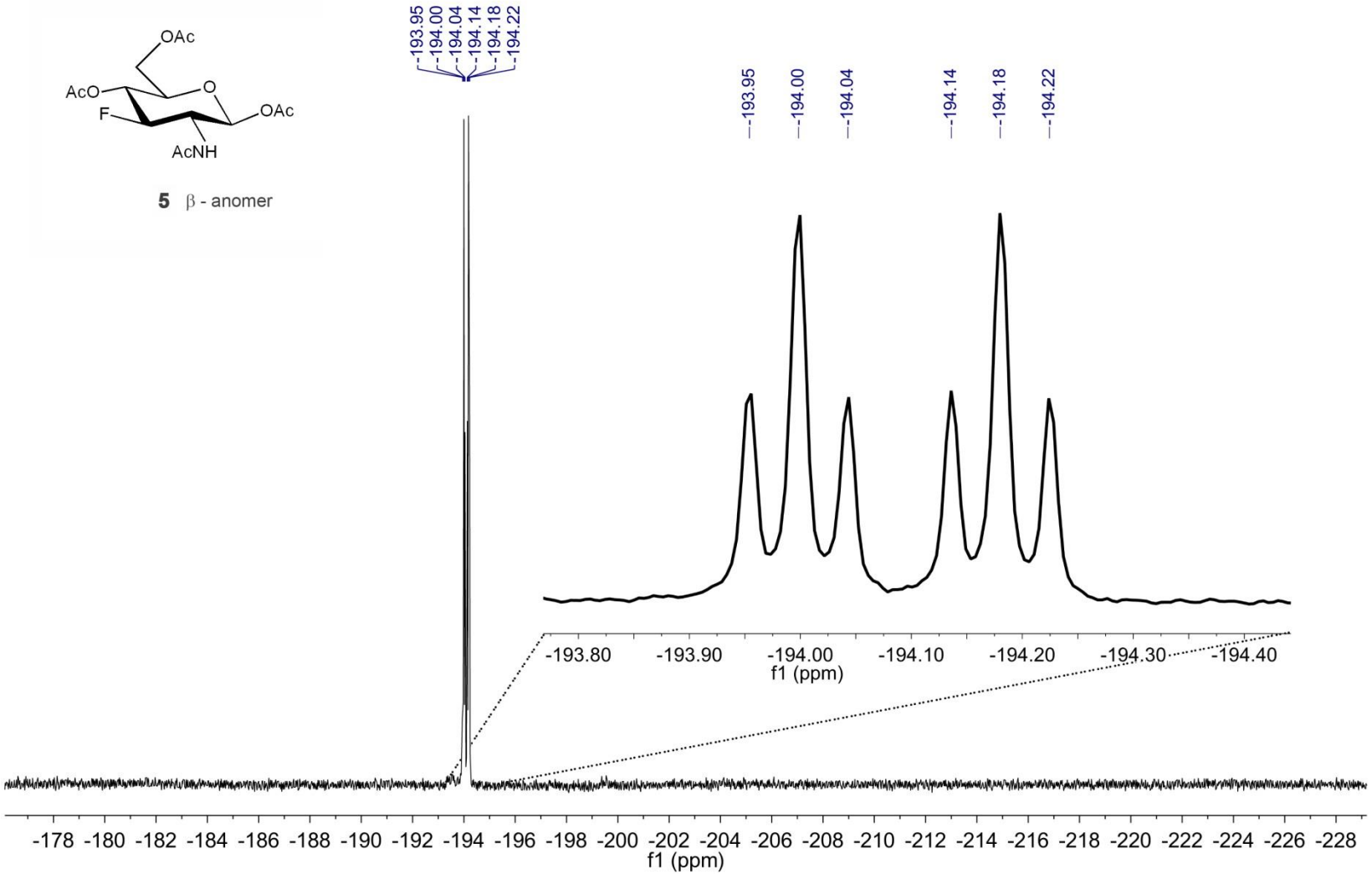
^{19}F NMR (470 MHz, $CDCl_3$) of **5α** (α-anomer).



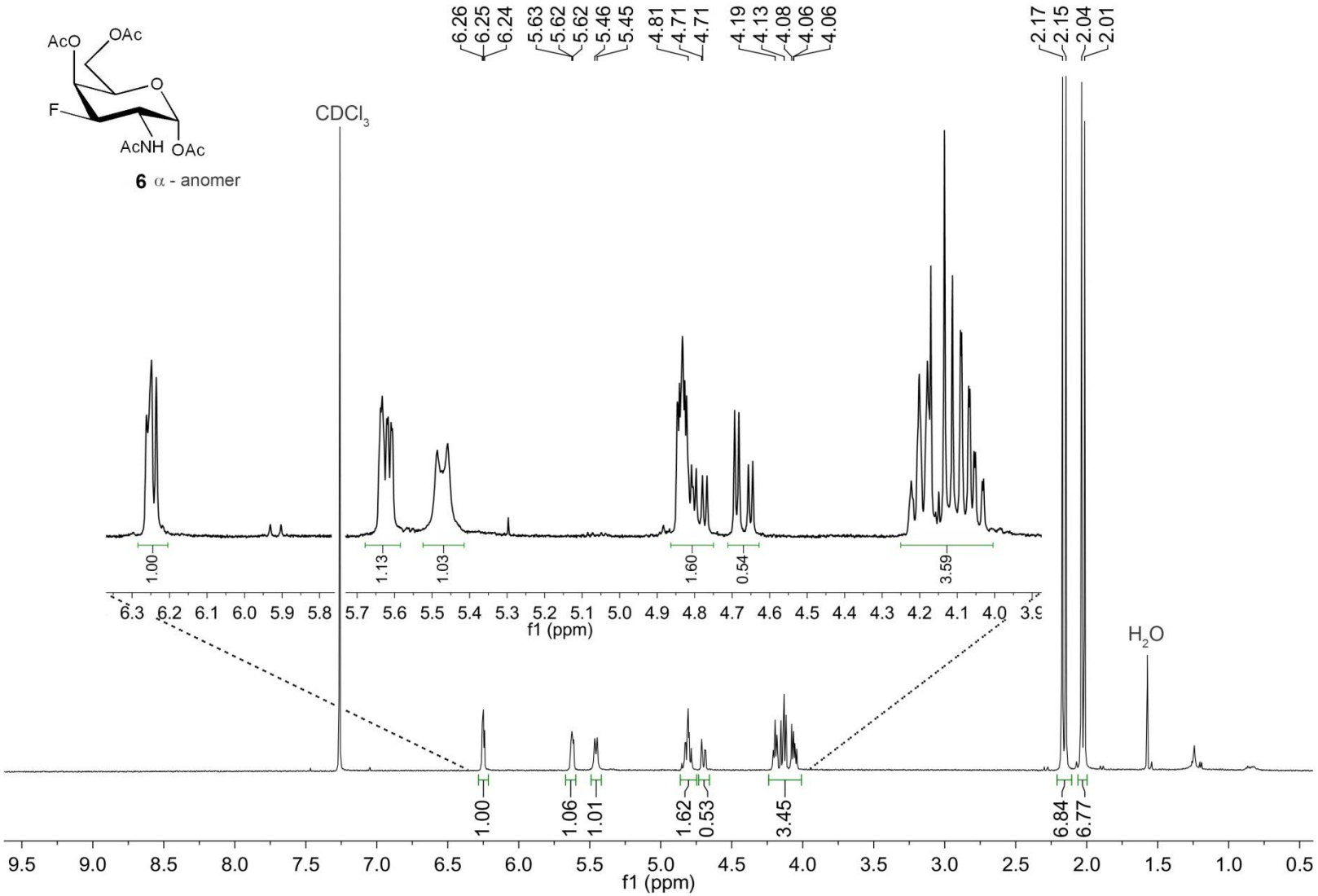
^{1}H NMR (300 MHz, $CDCl_3$) of **5β** (β-anomer).



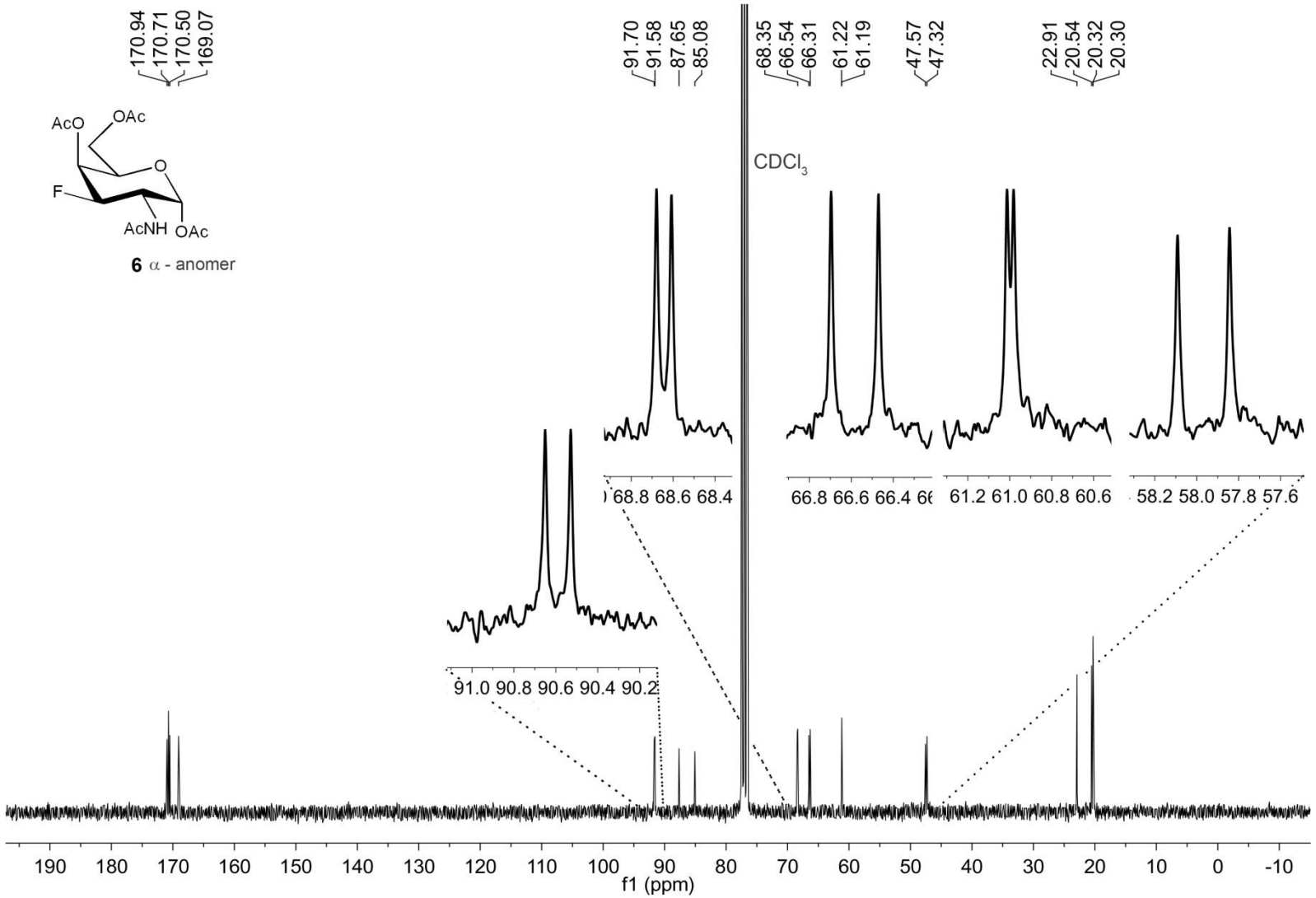
^{13}C {^{1}H} NMR (75 MHz, $CDCl_3$) of **5β** (β-anomer).



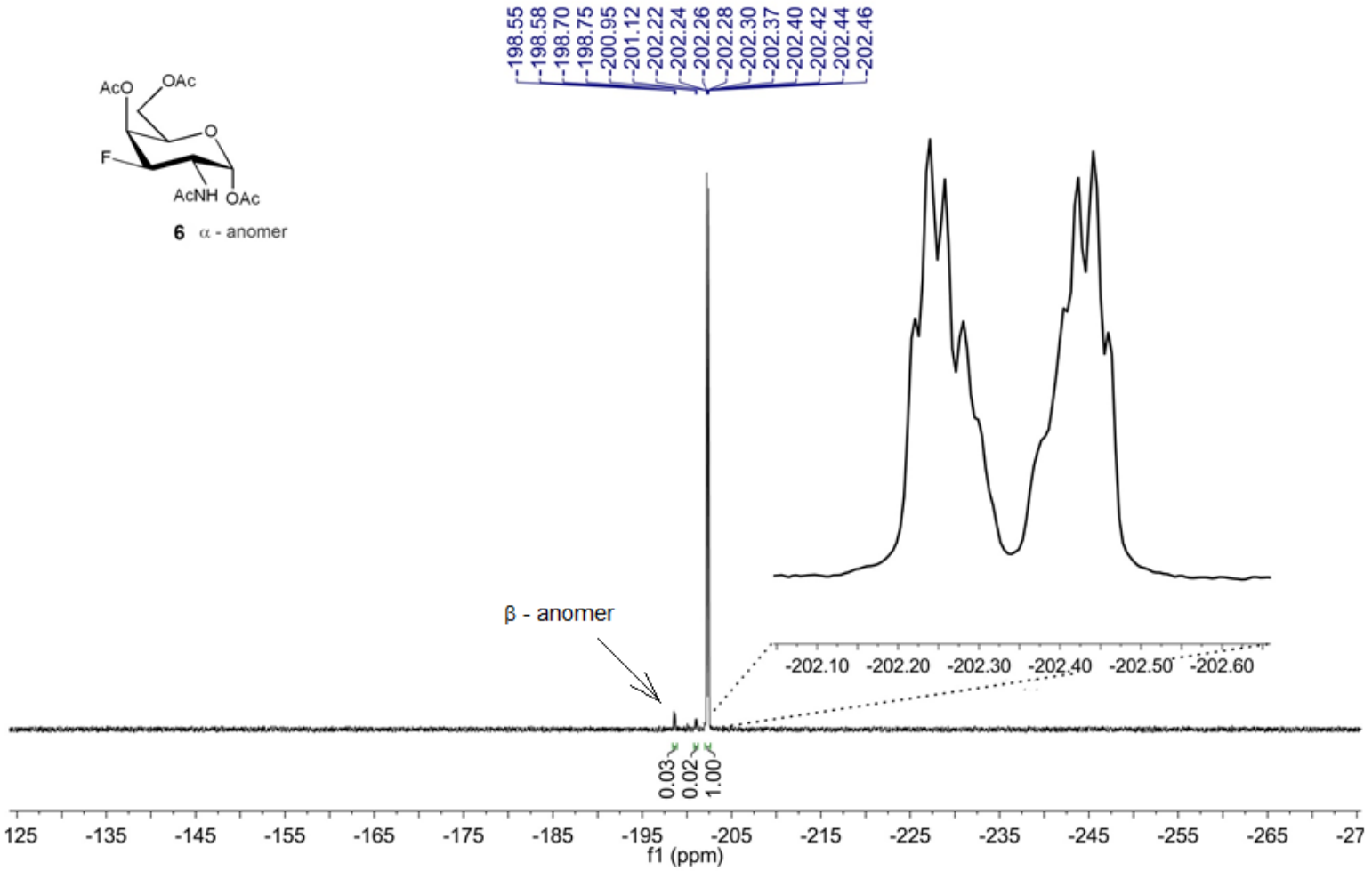
^{19}F NMR (282 MHz, $CDCl_3$) of **5β** (β-anomer).



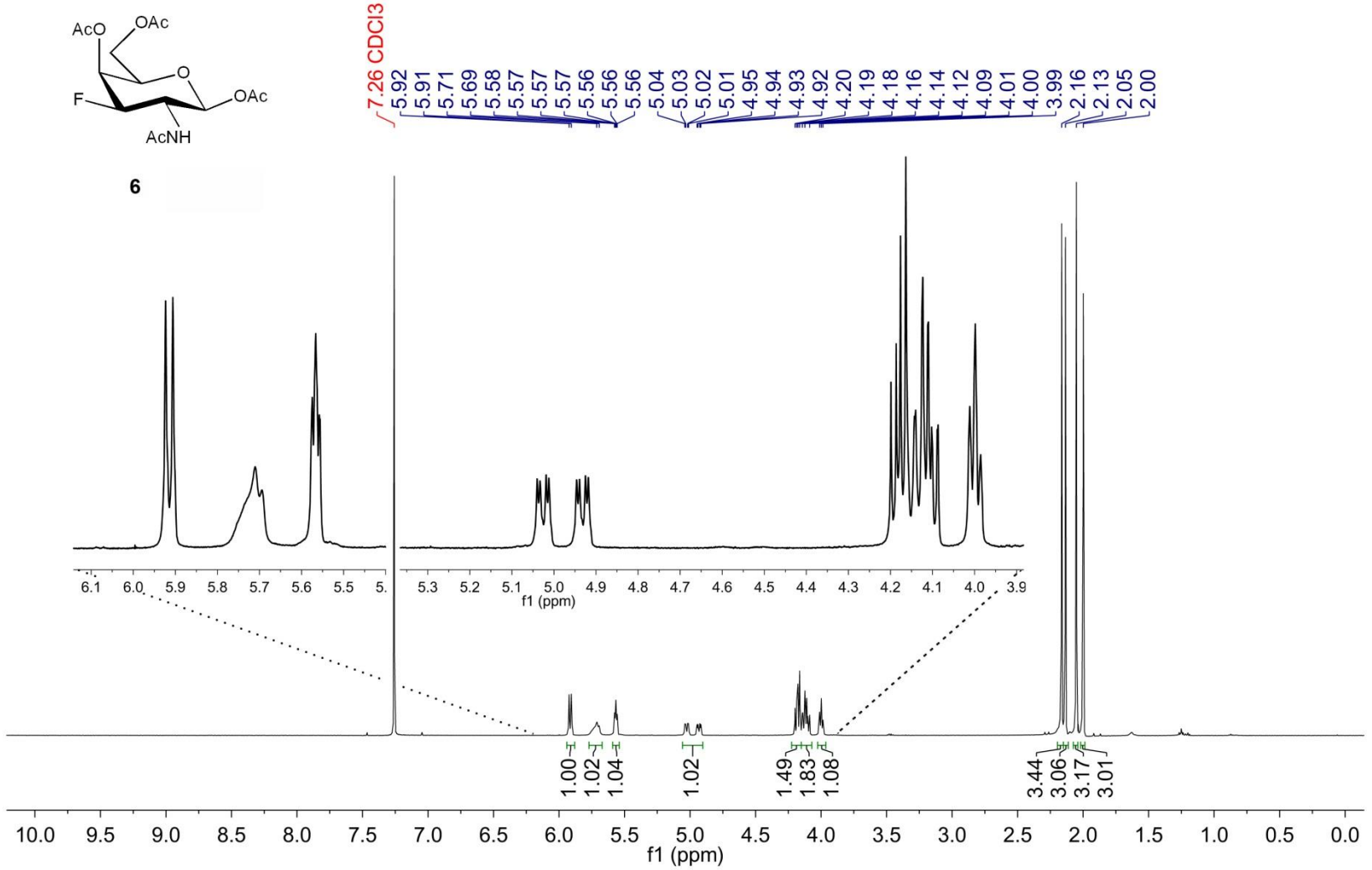
^{1}H NMR (300 MHz, $CDCl_3$) of **6** (α-anomer).



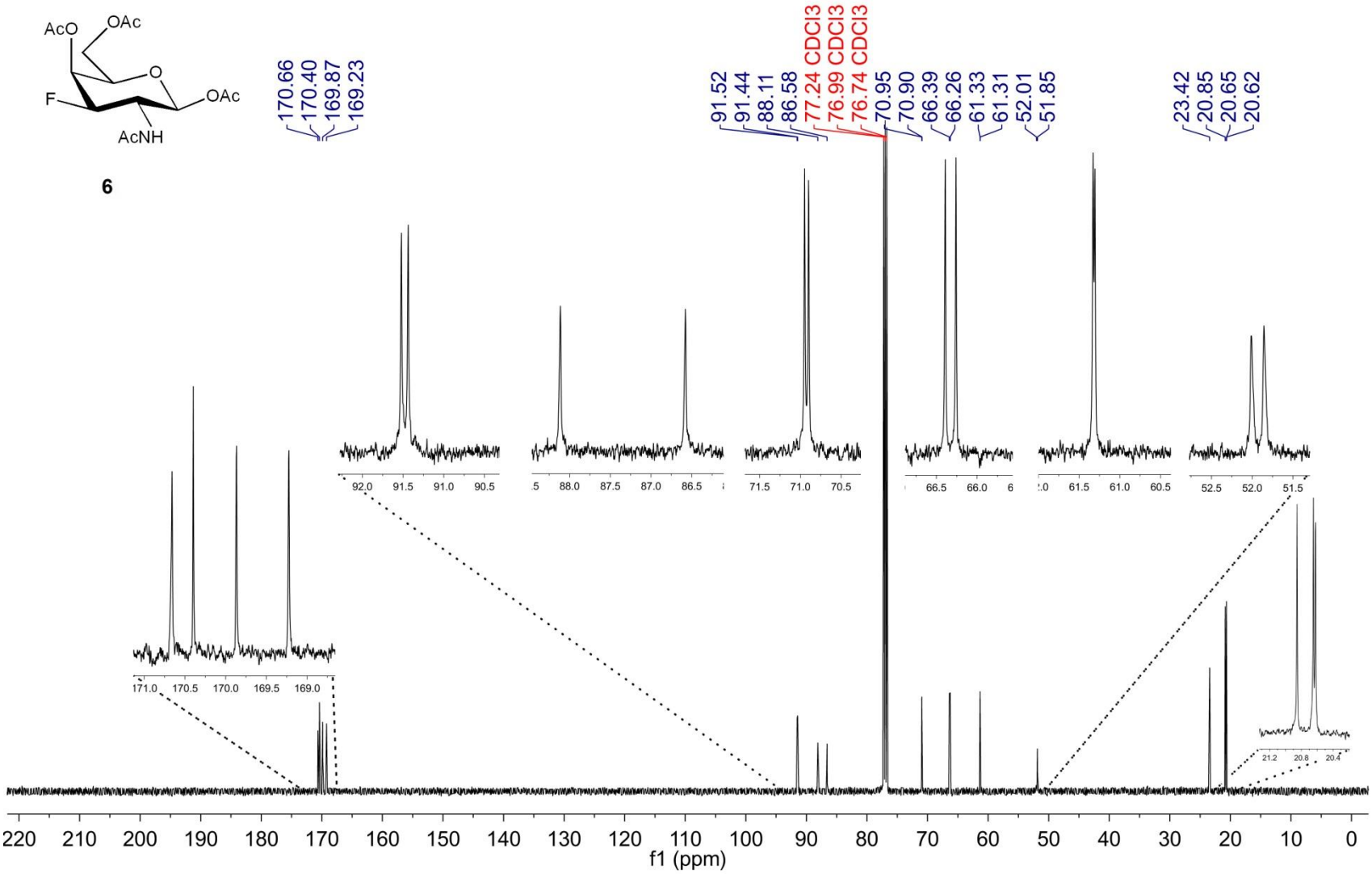
^{13}C {^{1}H} NMR (75 MHz, $CDCl_3$) of **6** (α-anomer).



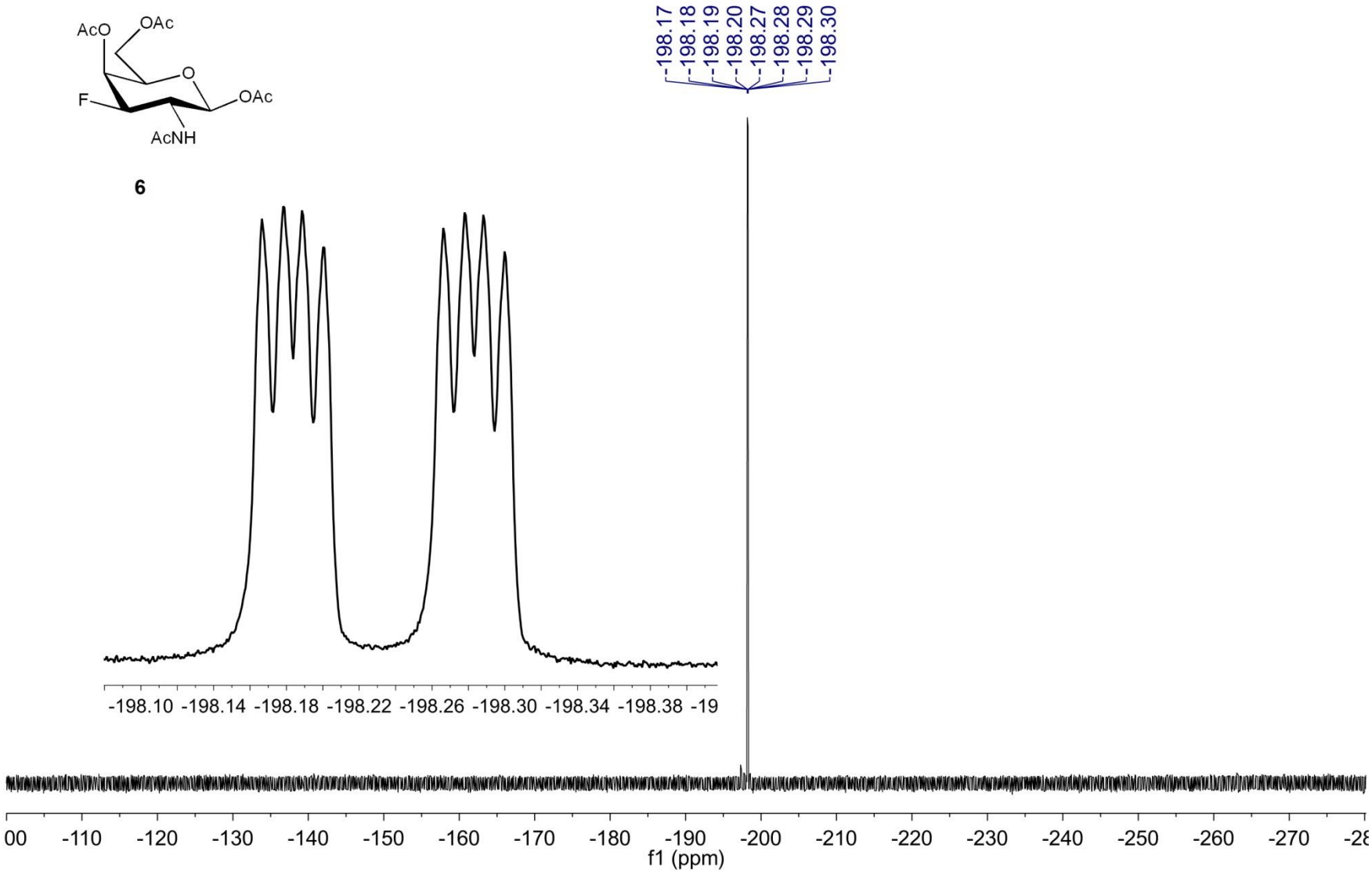
^{19}F NMR (282 MHz, $CDCl_3$) of **6** (α-anomer + cca 3 % β-anomer).



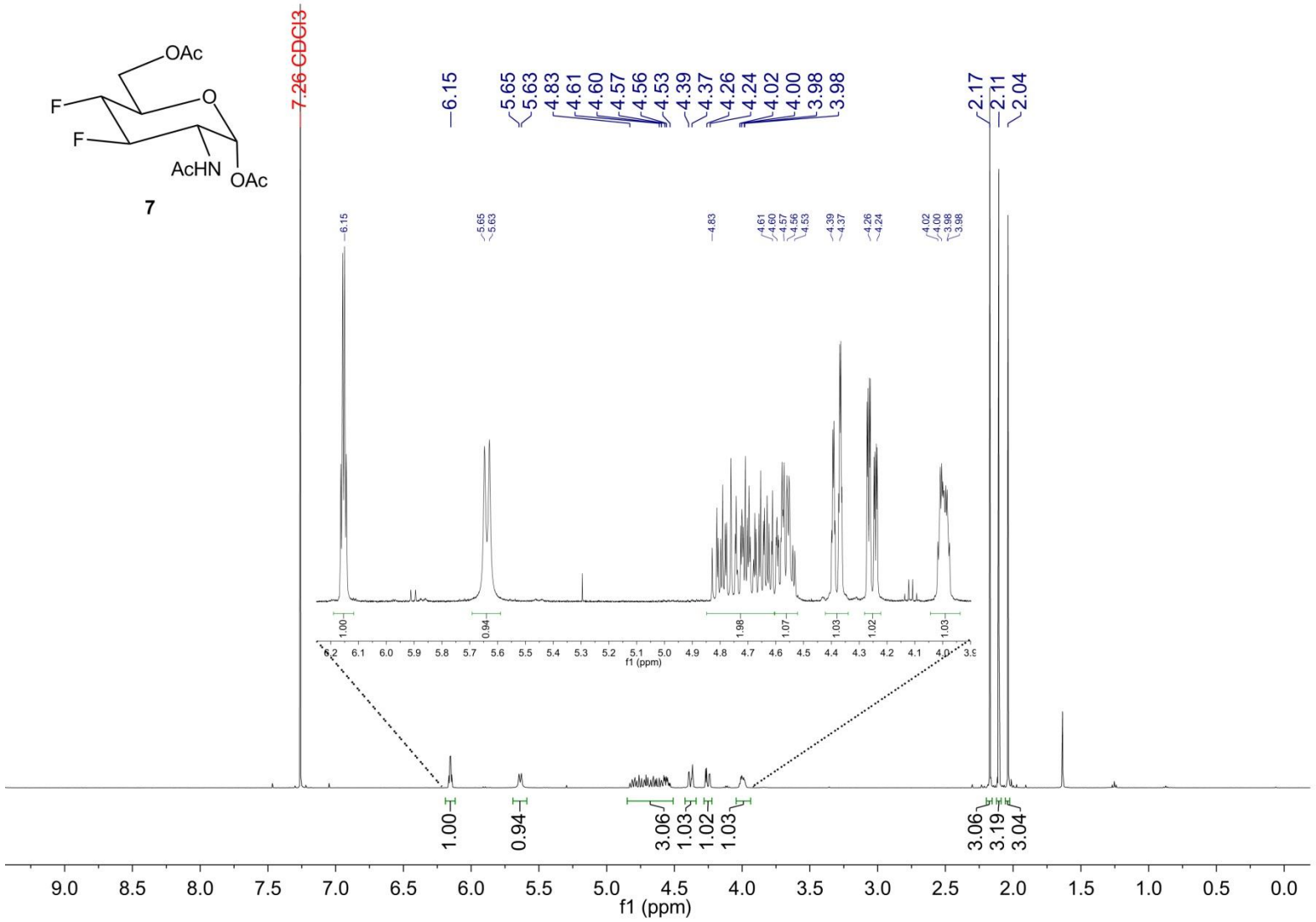
^{1}H NMR (500 MHz, $CDCl_3$) of **6** (β-anomer).



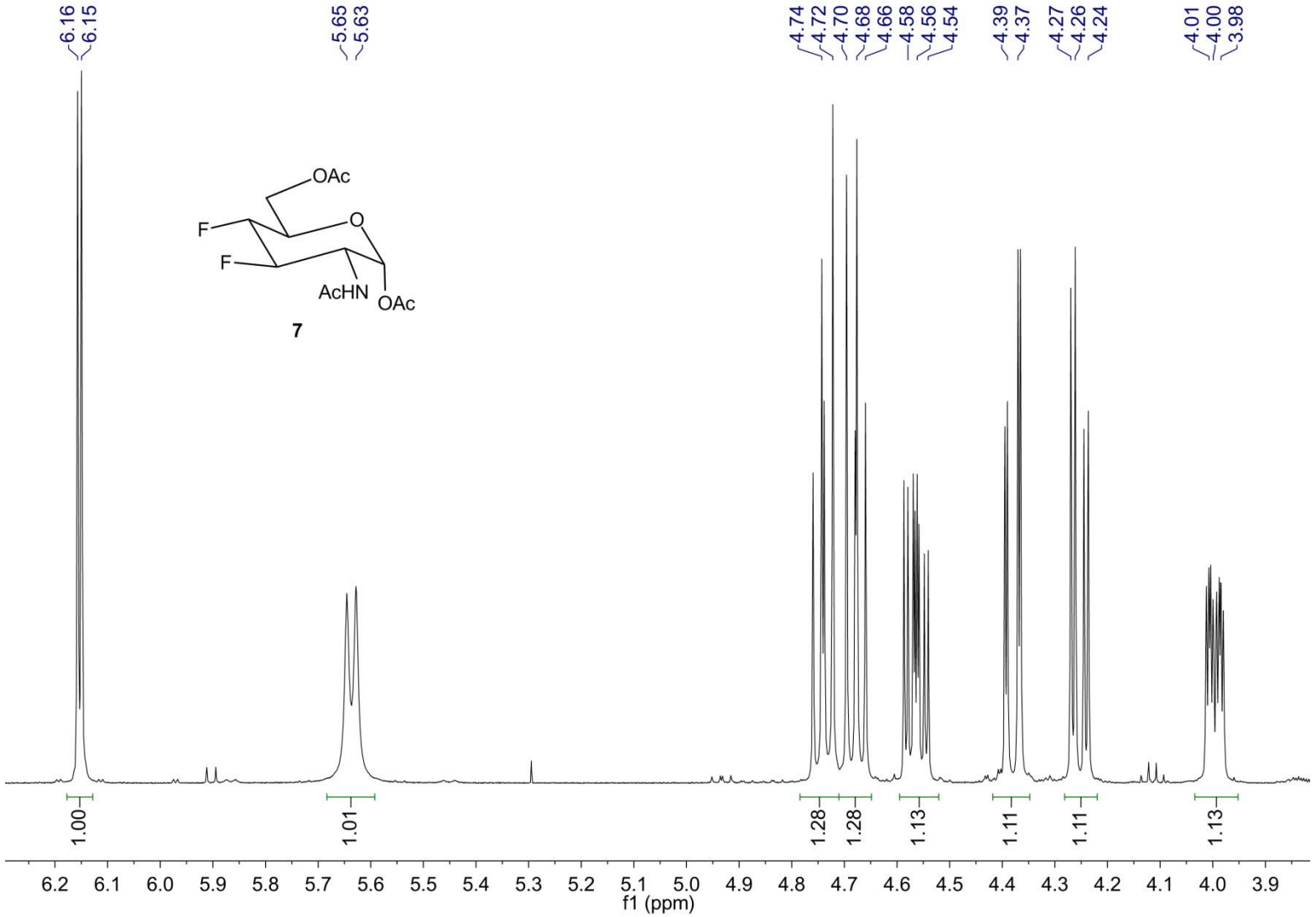
^{13}C {^{1}H} NMR (125 MHz, $CDCl_3$) of **6** (β-anomer).



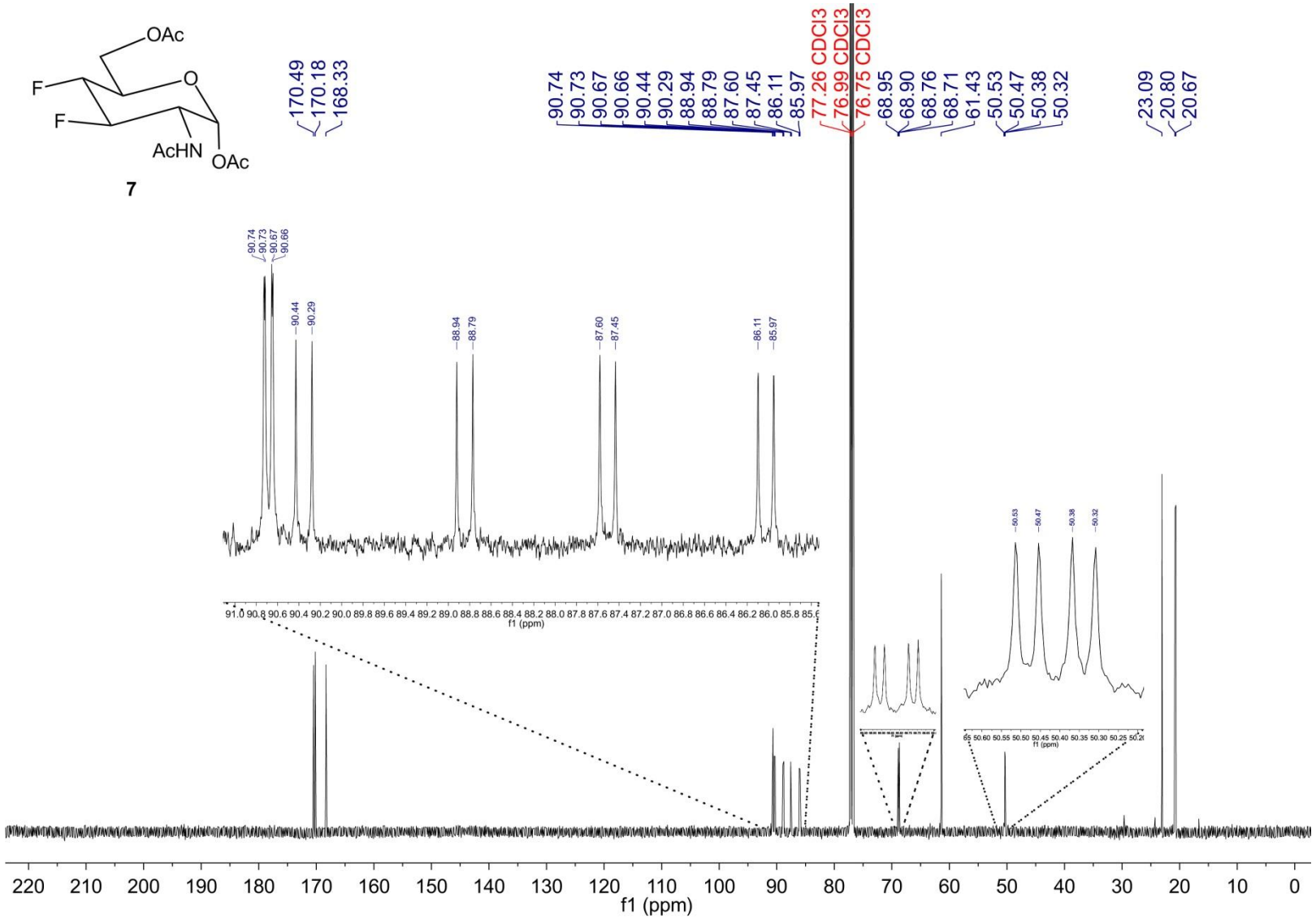
^{19}F NMR (470 MHz, $CDCl_3$) of **6** (β-anomer).



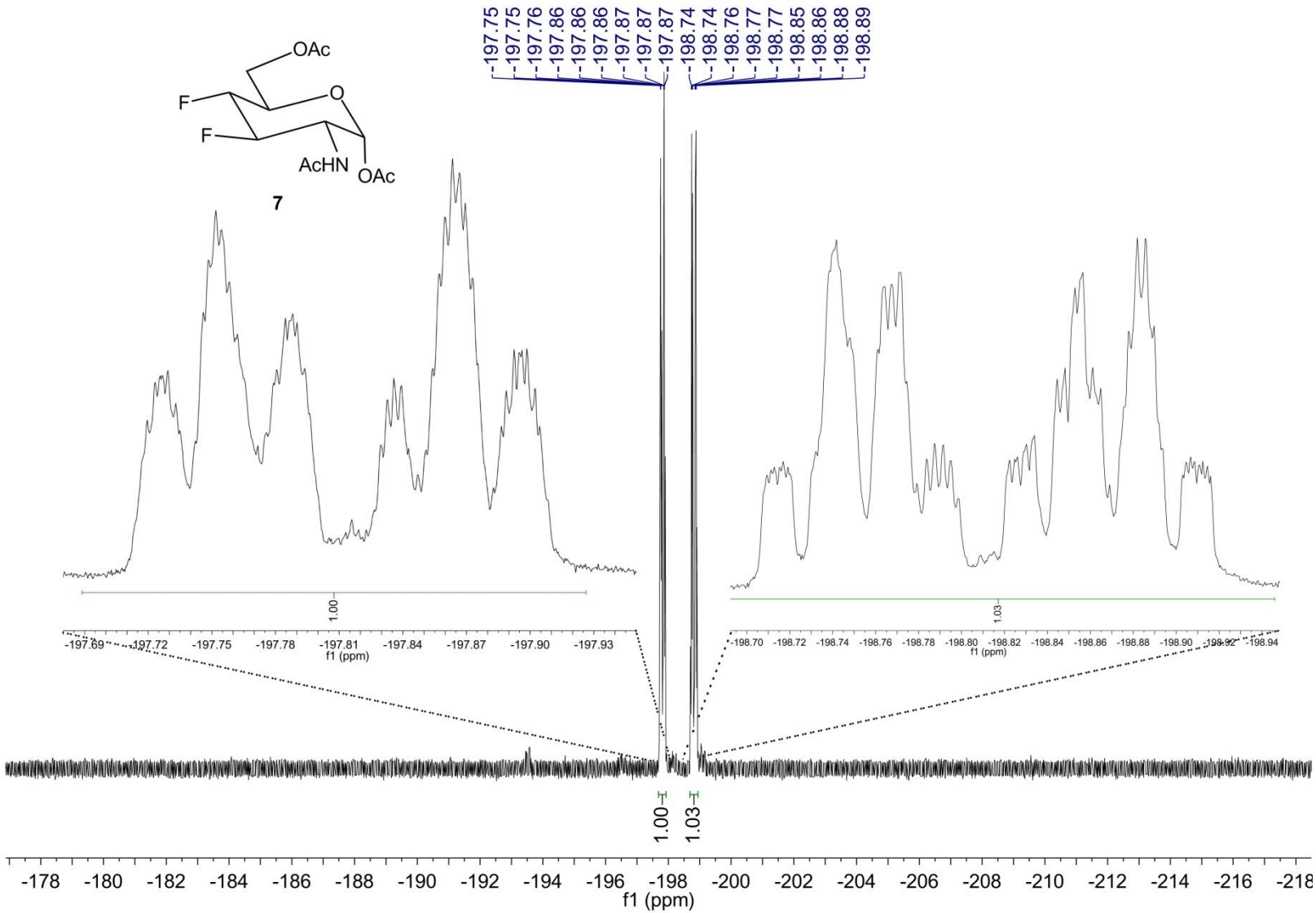
^{1}H NMR (500 MHz, $CDCl_3$) of **7** (α-anomer).



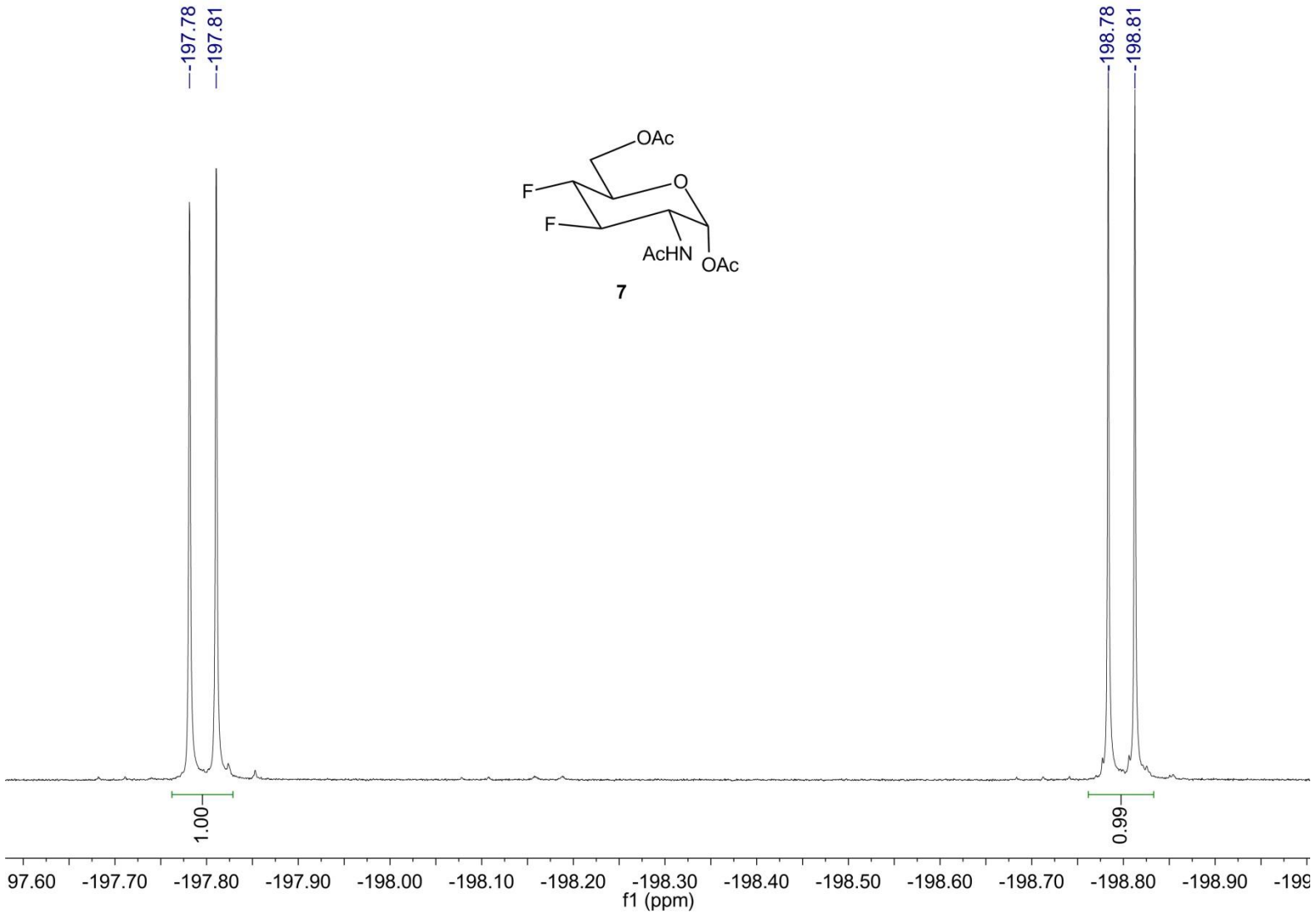
Detail of ^{1}H {^{19}F} NMR (500 MHz, $CDCl_3$) of **7** (α-anomer).



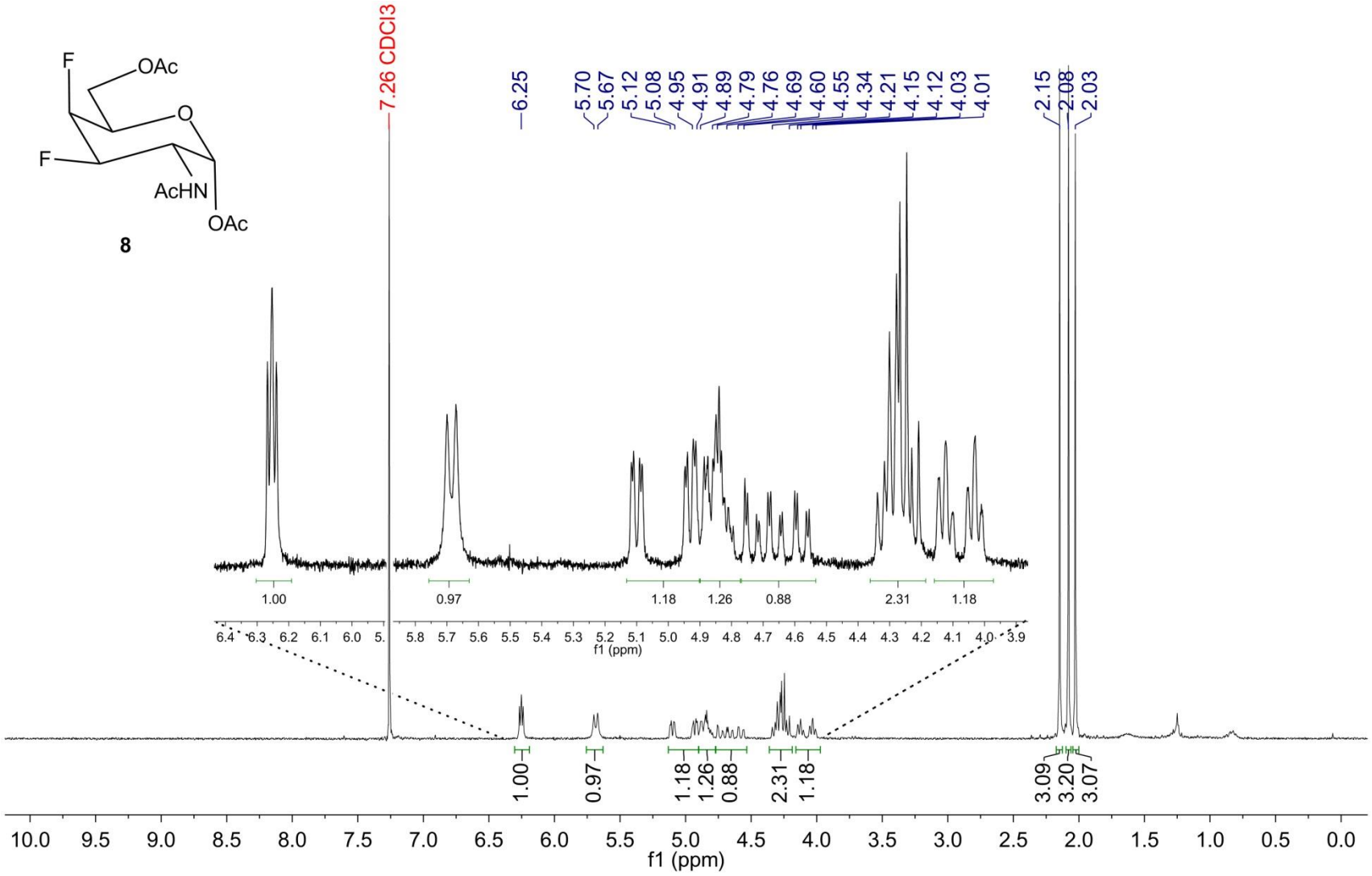
^{13}C {^{1}H} NMR (125 MHz, $CDCl_3$) of **7** (α-anomer).



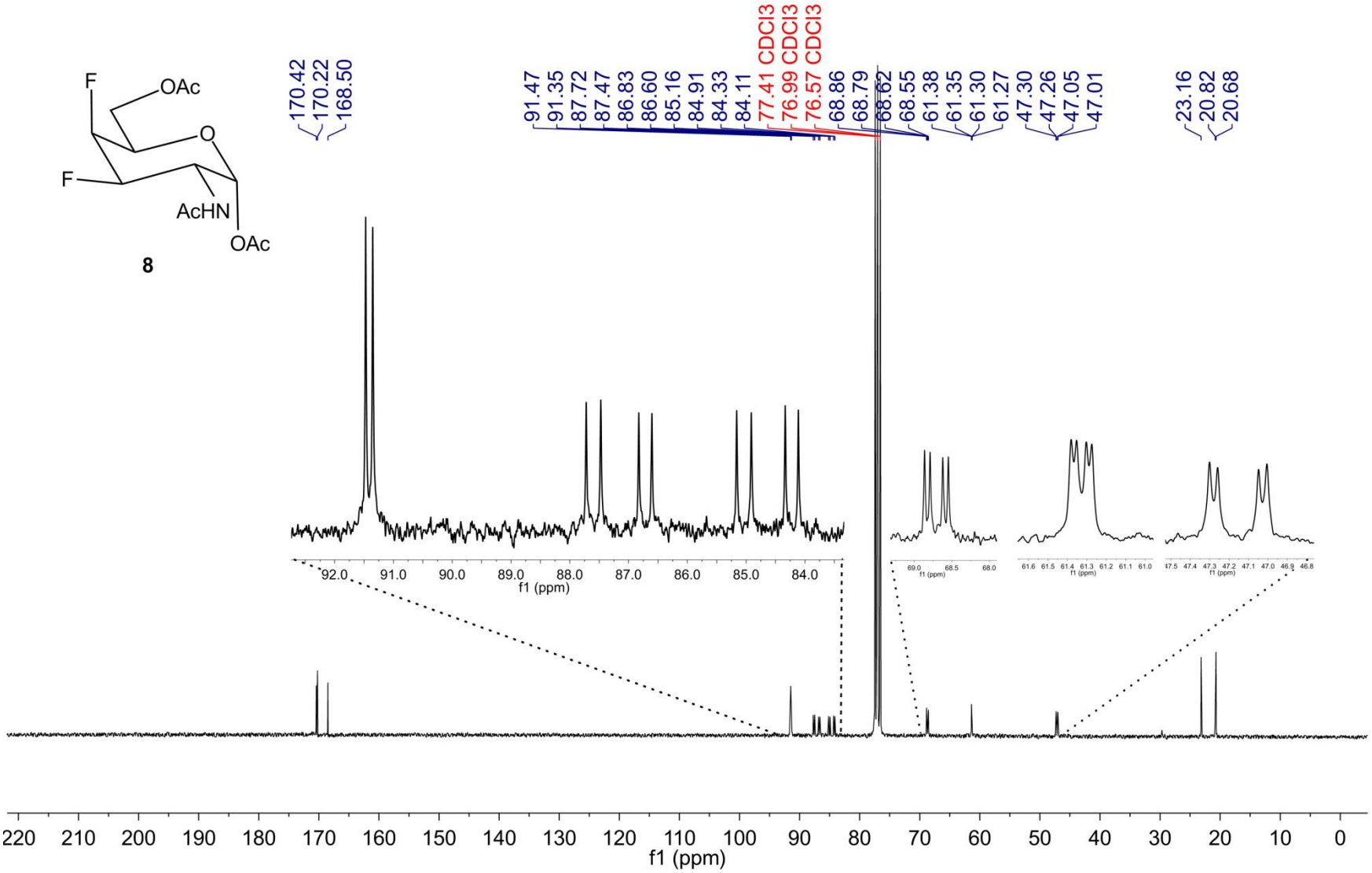
^{19}F NMR (470 MHz, $CDCl_3$) of **7** (α-anomer).



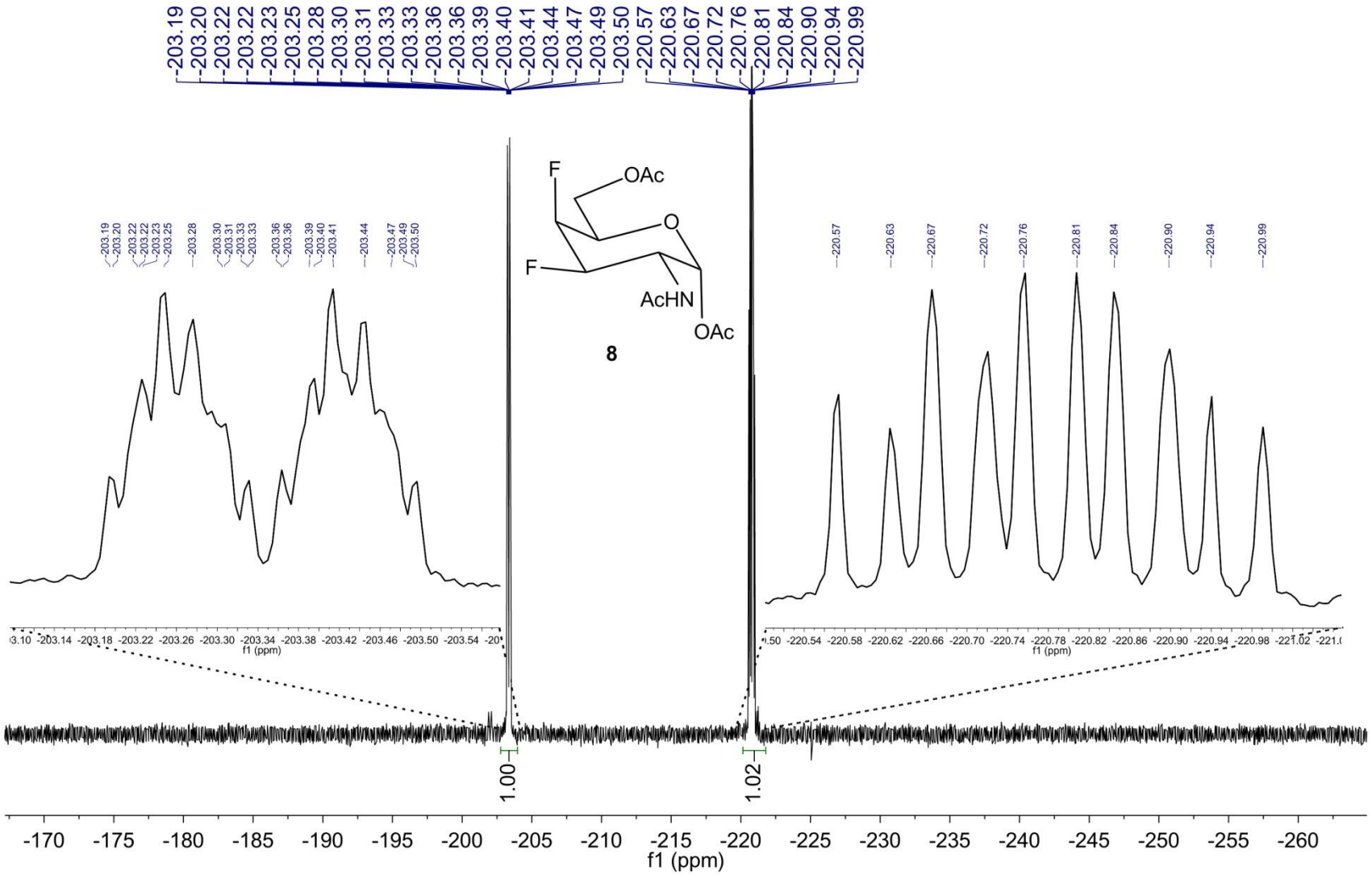
^{19}F {^{1}H} NMR (470 MHz, $CDCl_3$) of **7** (α-anomer).



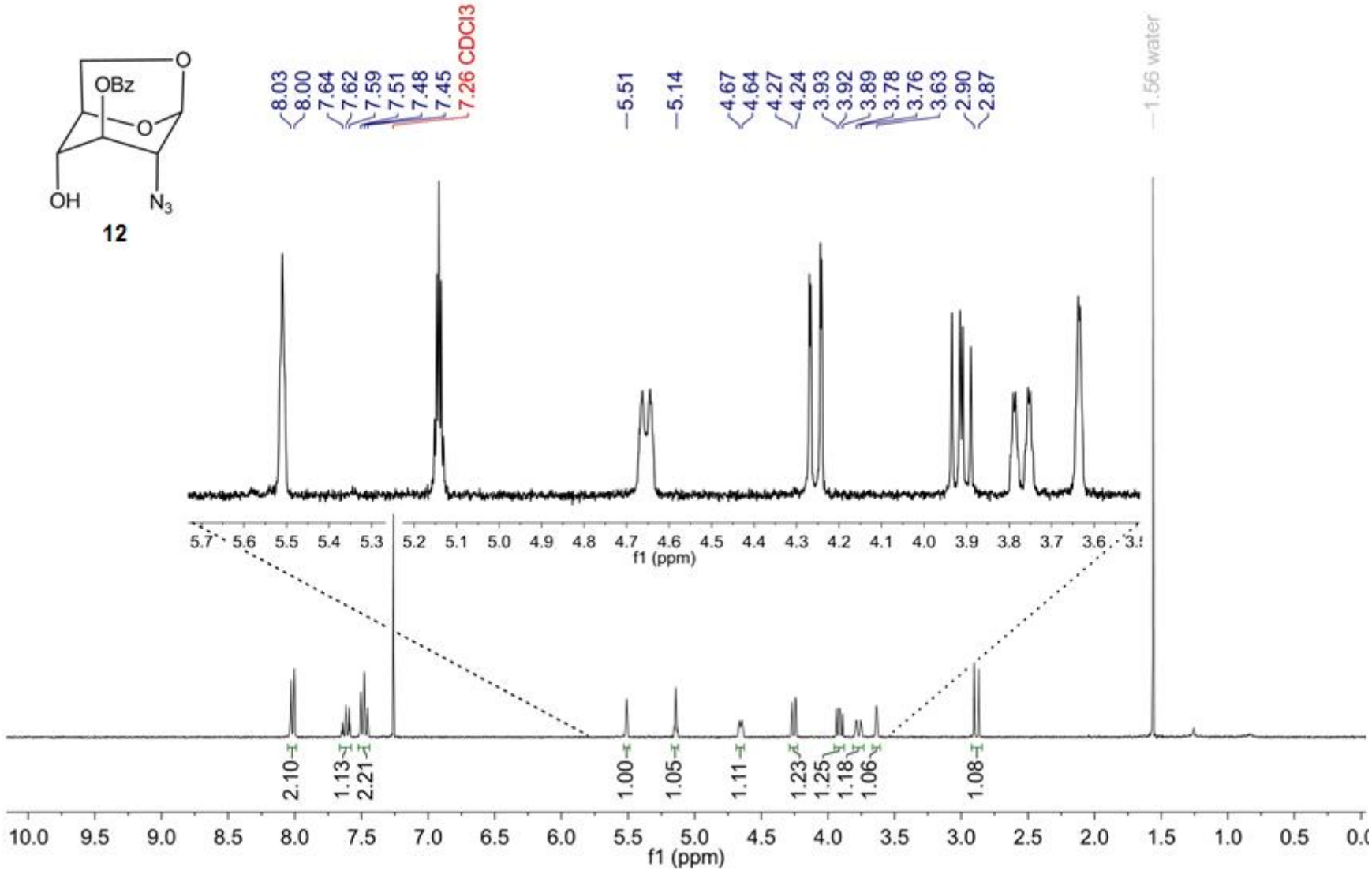
^{1}H NMR (300 MHz, $CDCl_3$) of **8** (α-anomer).



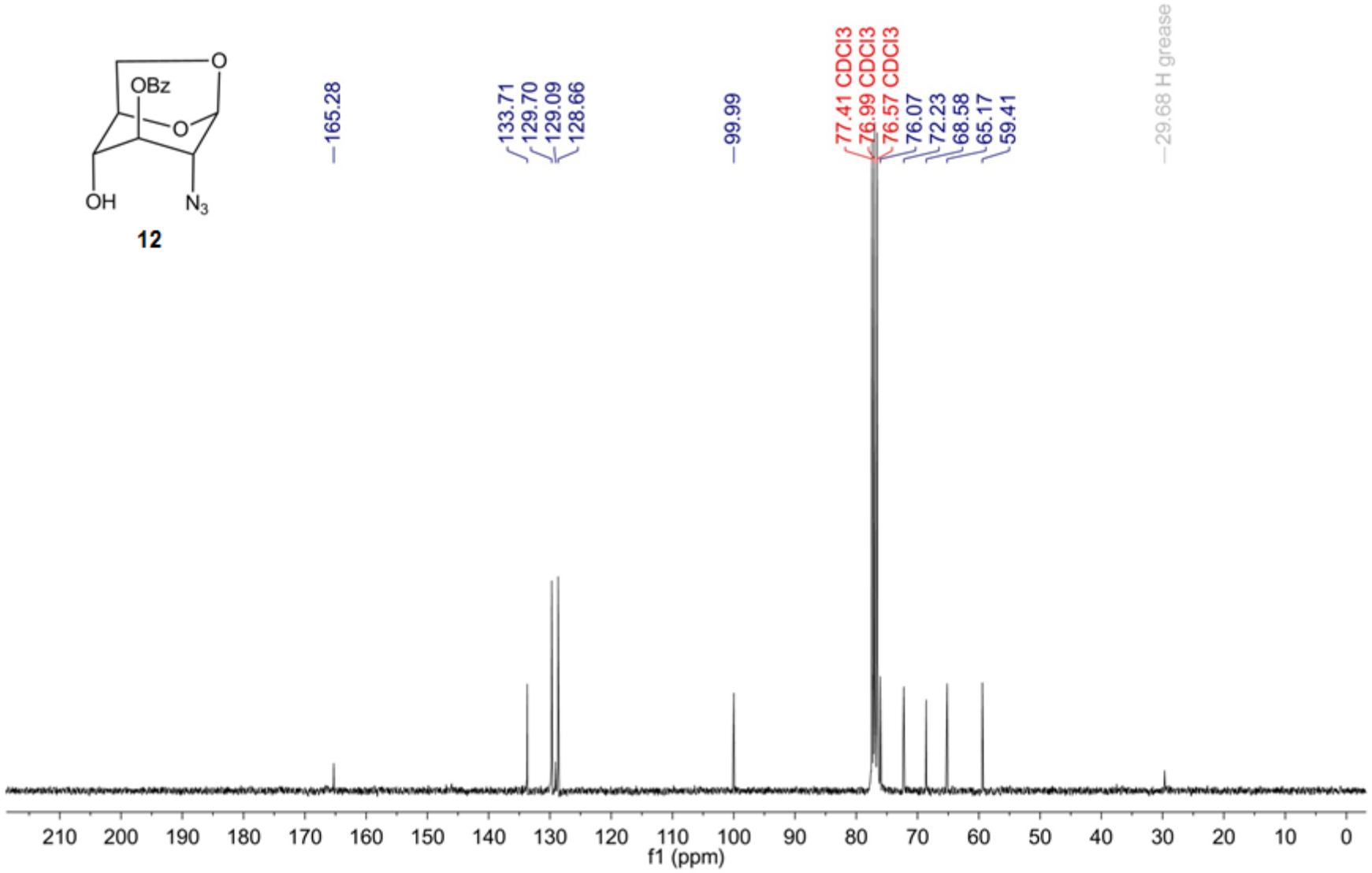
^{13}C {^{1}H} NMR (75 MHz, $CDCl_3$) of **8** (α-anomer).



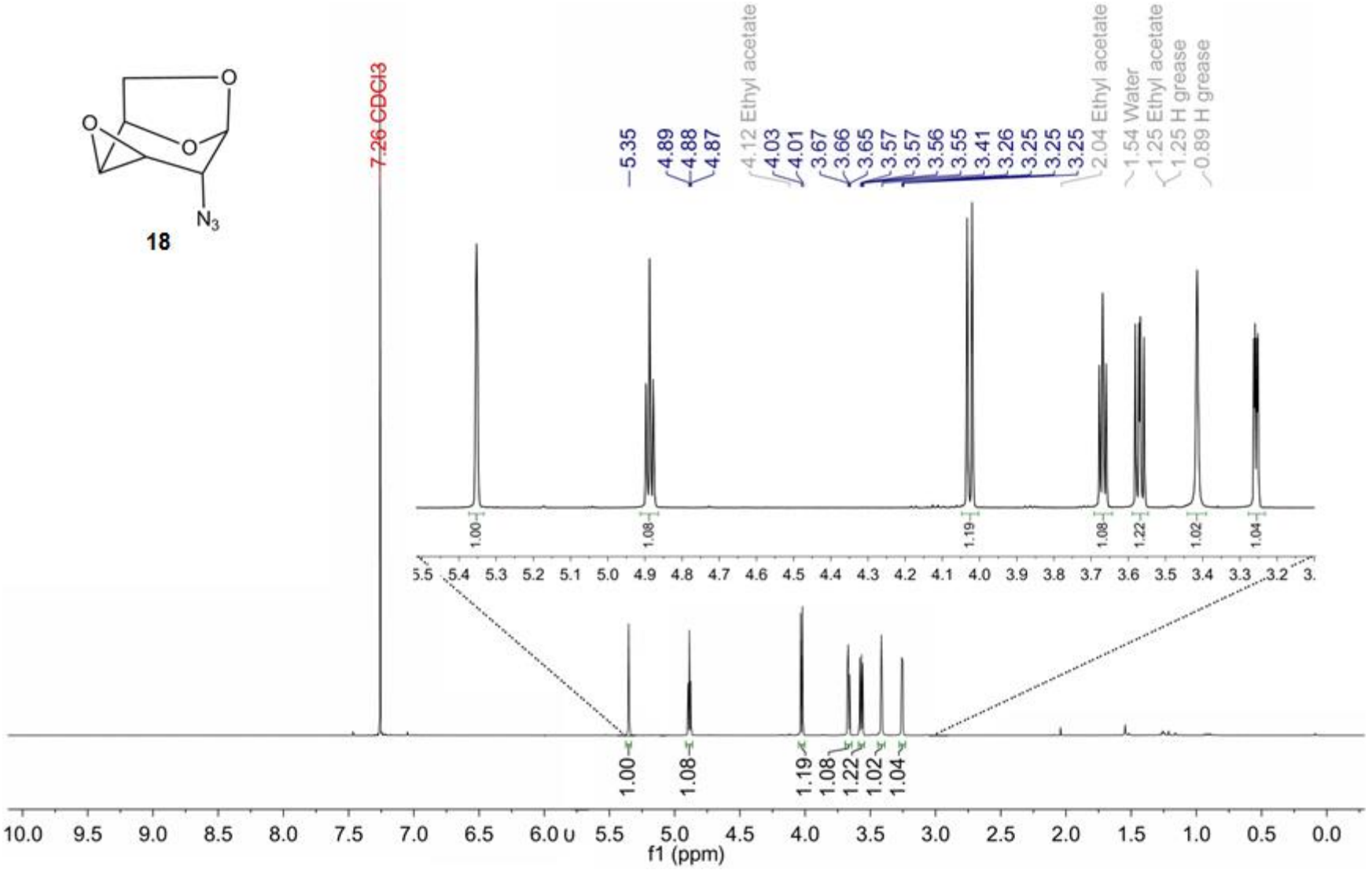
^{19}F NMR (282 MHz, $CDCl_3$) of **8** (α-anomer)



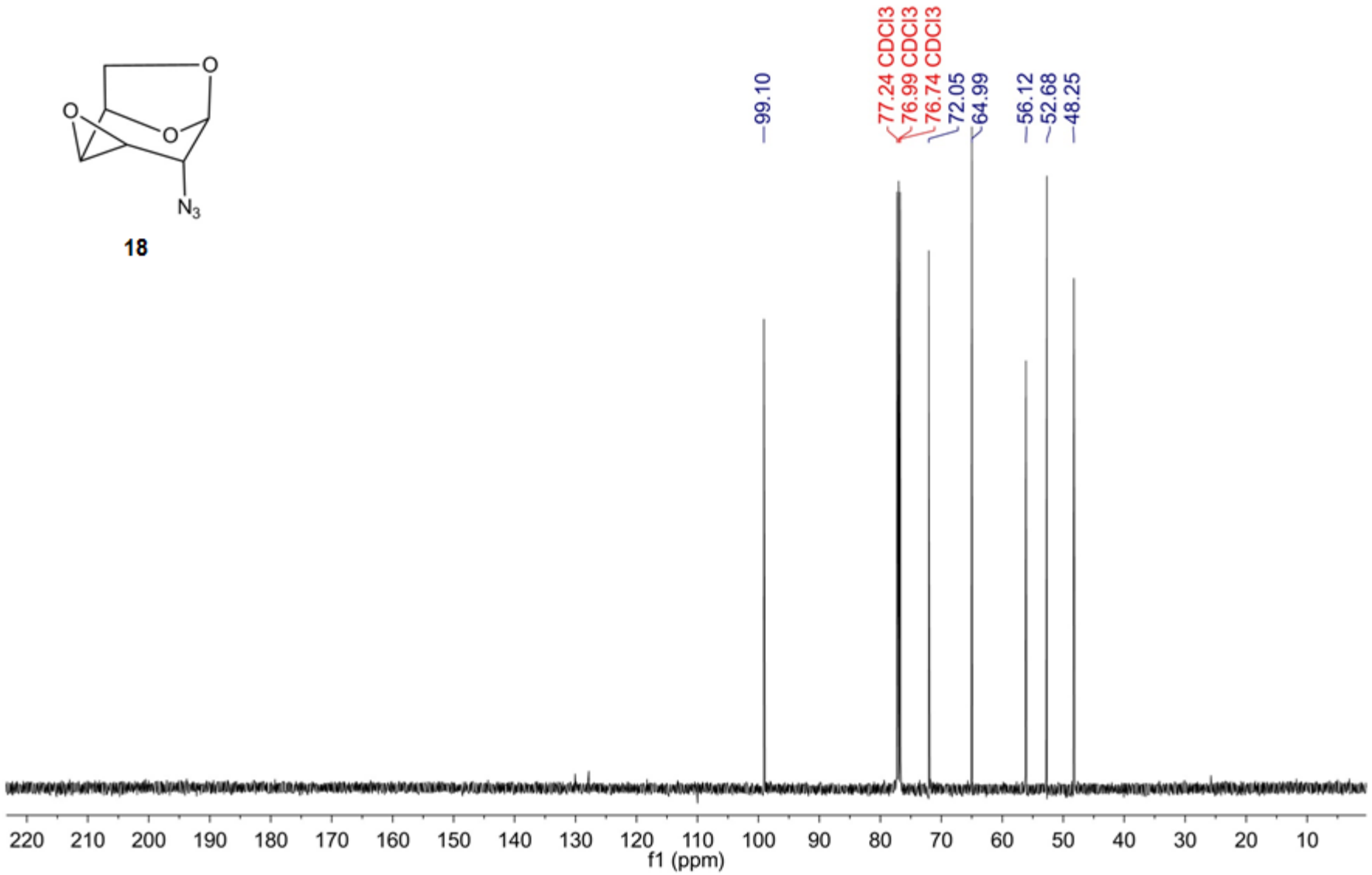
^{1}H NMR (500 MHz, $CDCl_3$) of **12**.



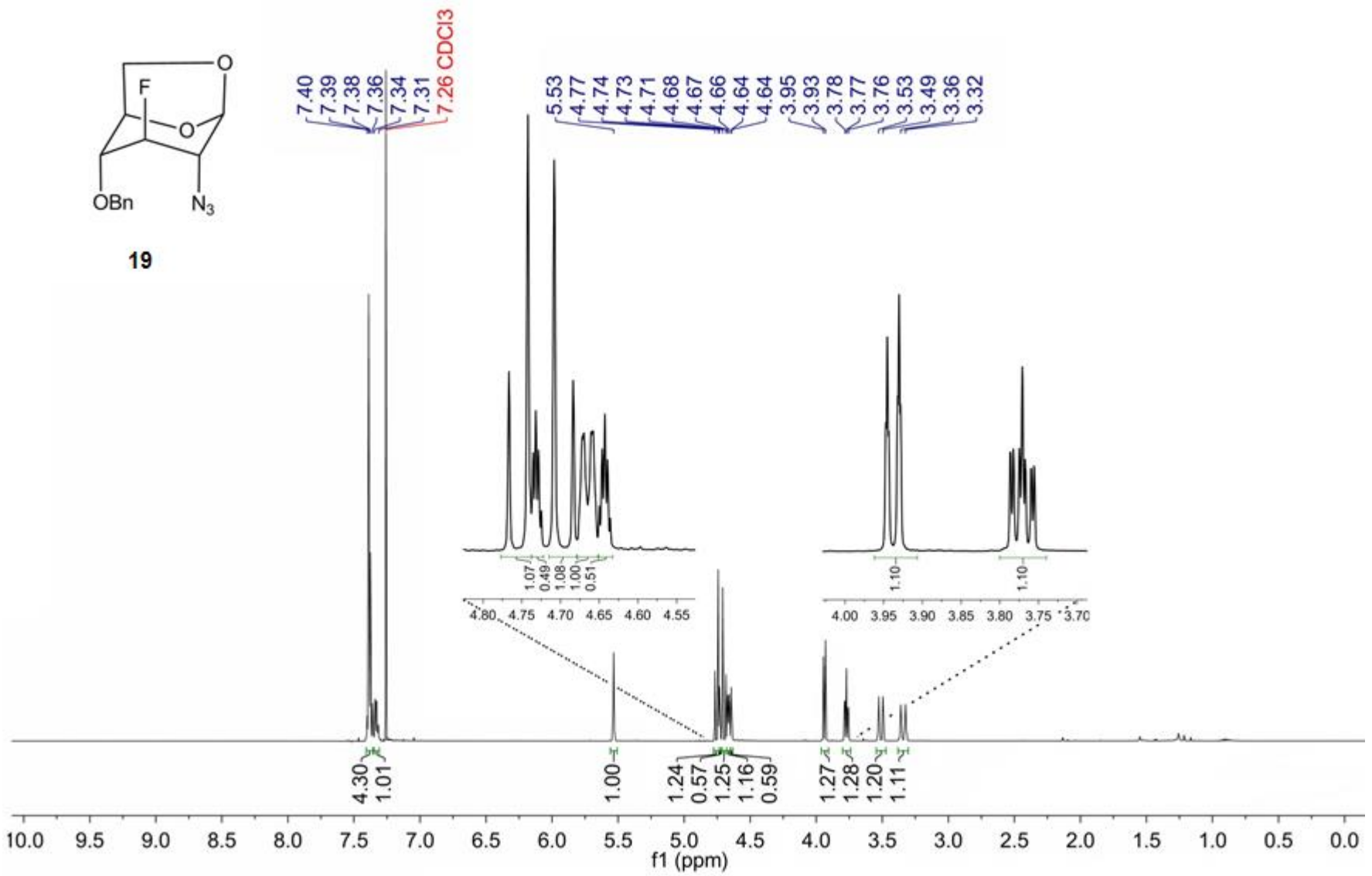
^{13}C {^{1}H} NMR (125 MHz, $CDCl_3$) of **12**.



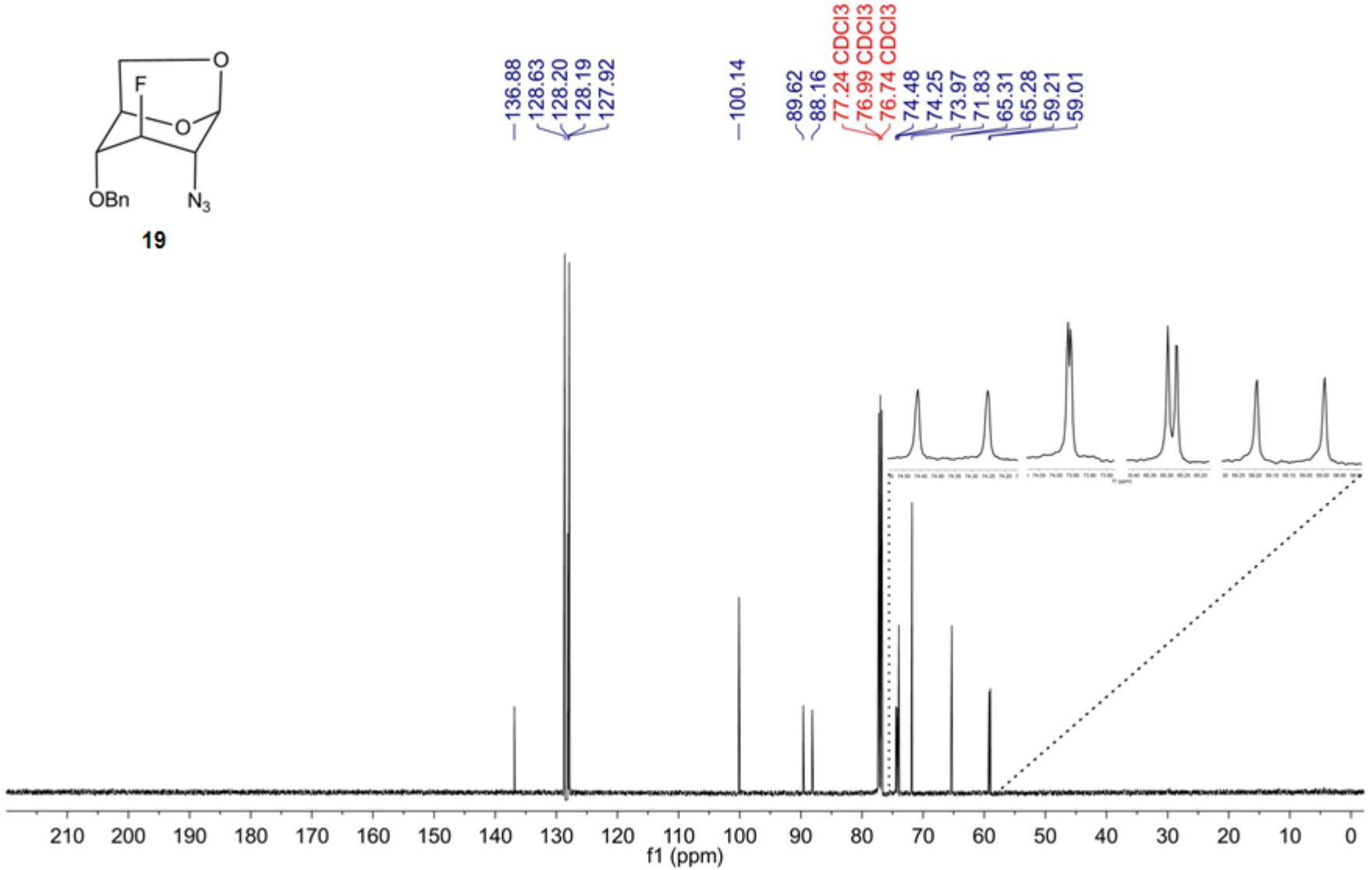
^{1}H NMR (500 MHz, $CDCl_3$) of **18**.



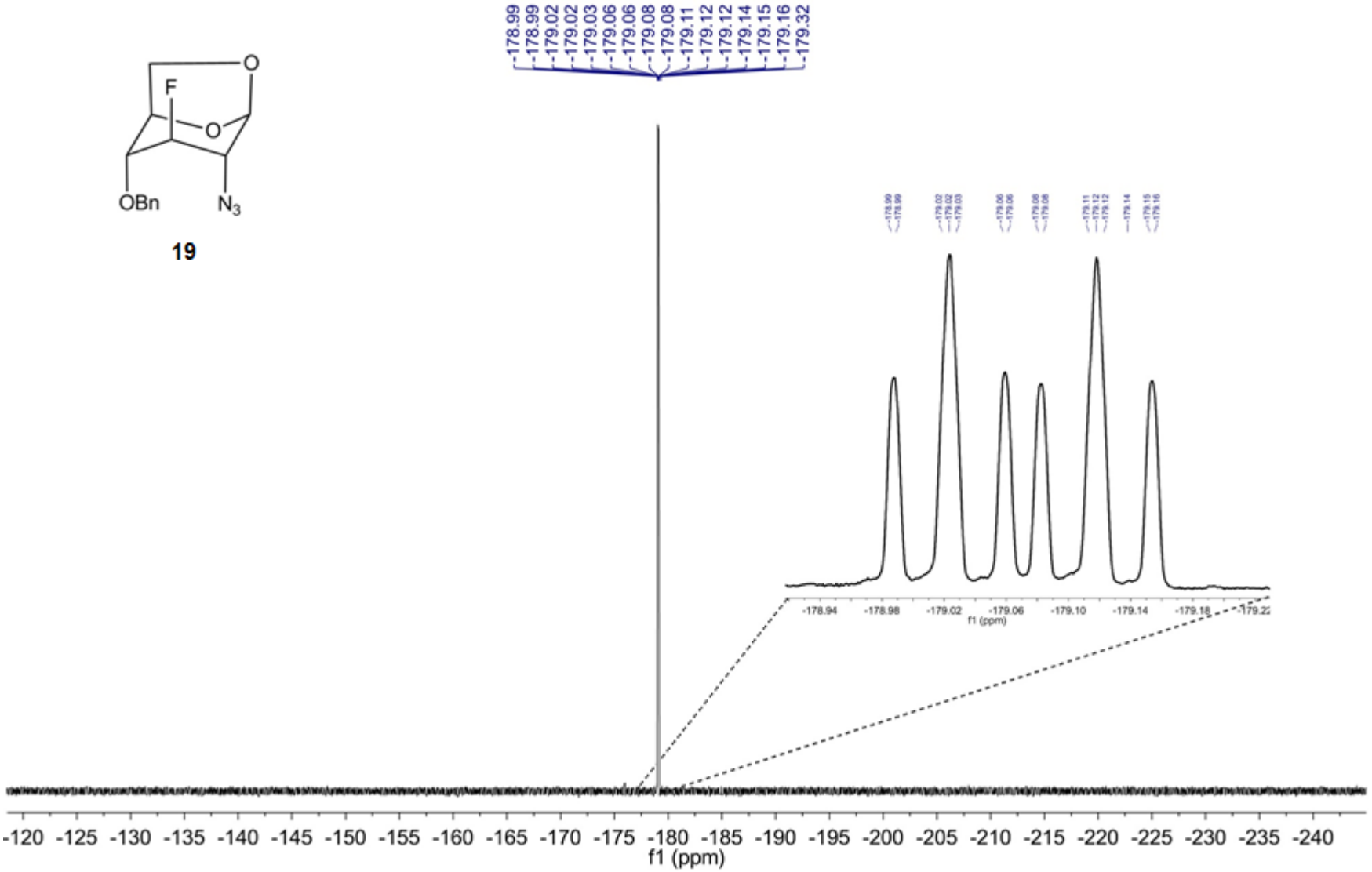
^{13}C NMR (125 MHz, $CDCl_3$) of **18**.



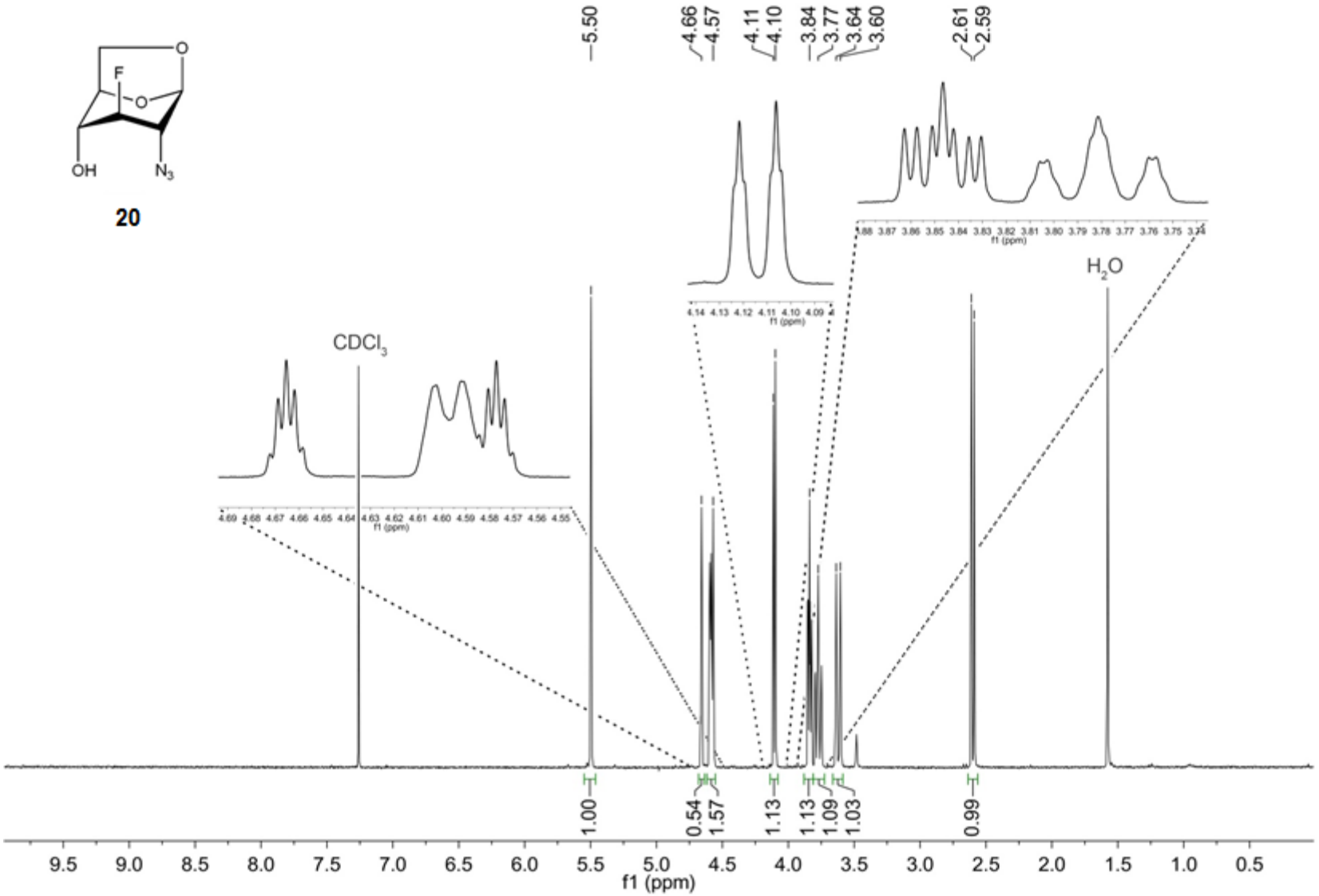
^{1}H NMR (500 MHz, $CDCl_3$) of **19**.



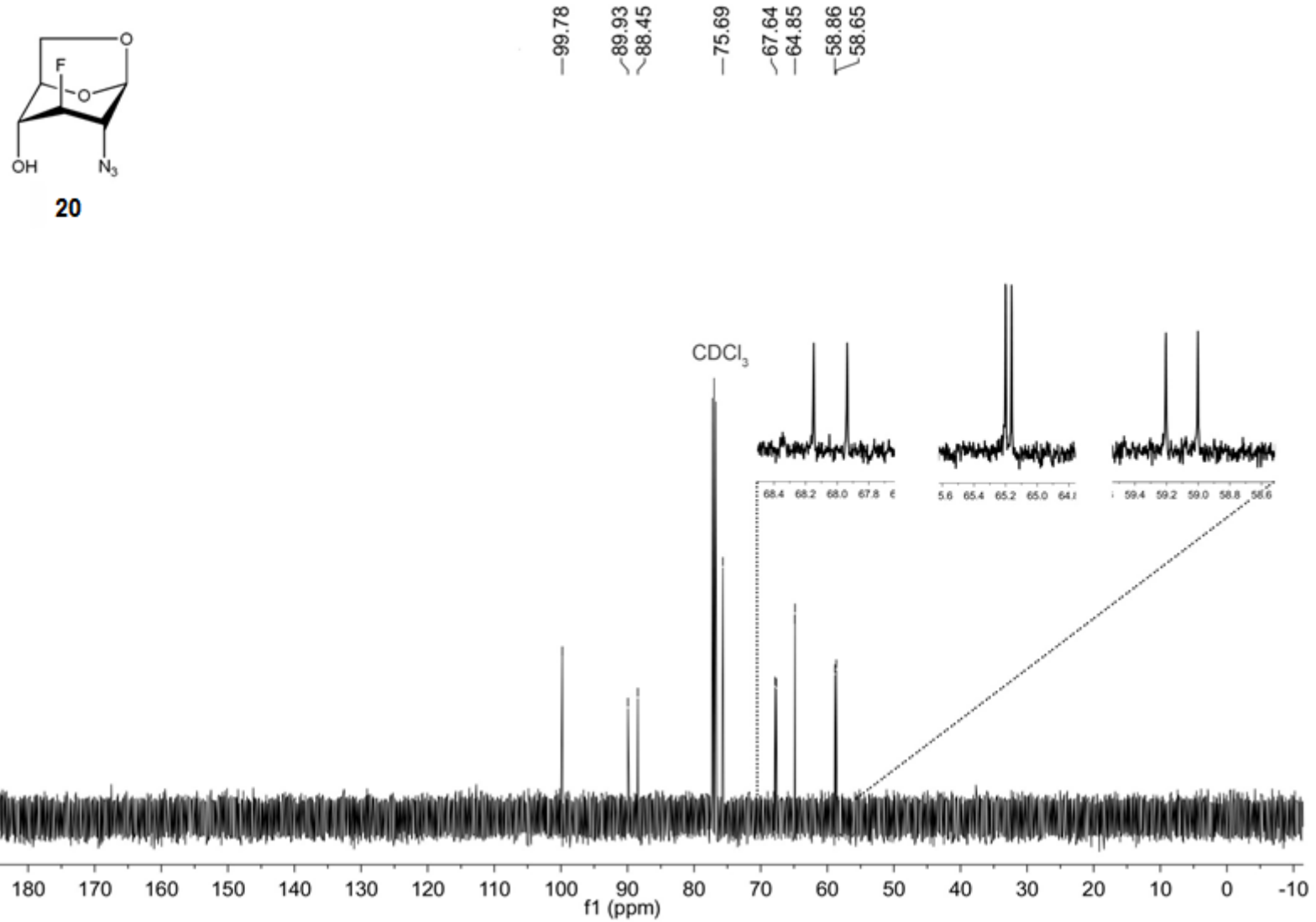
^{13}C {^{1}H} NMR (125 MHz, $CDCl_3$) of **19**



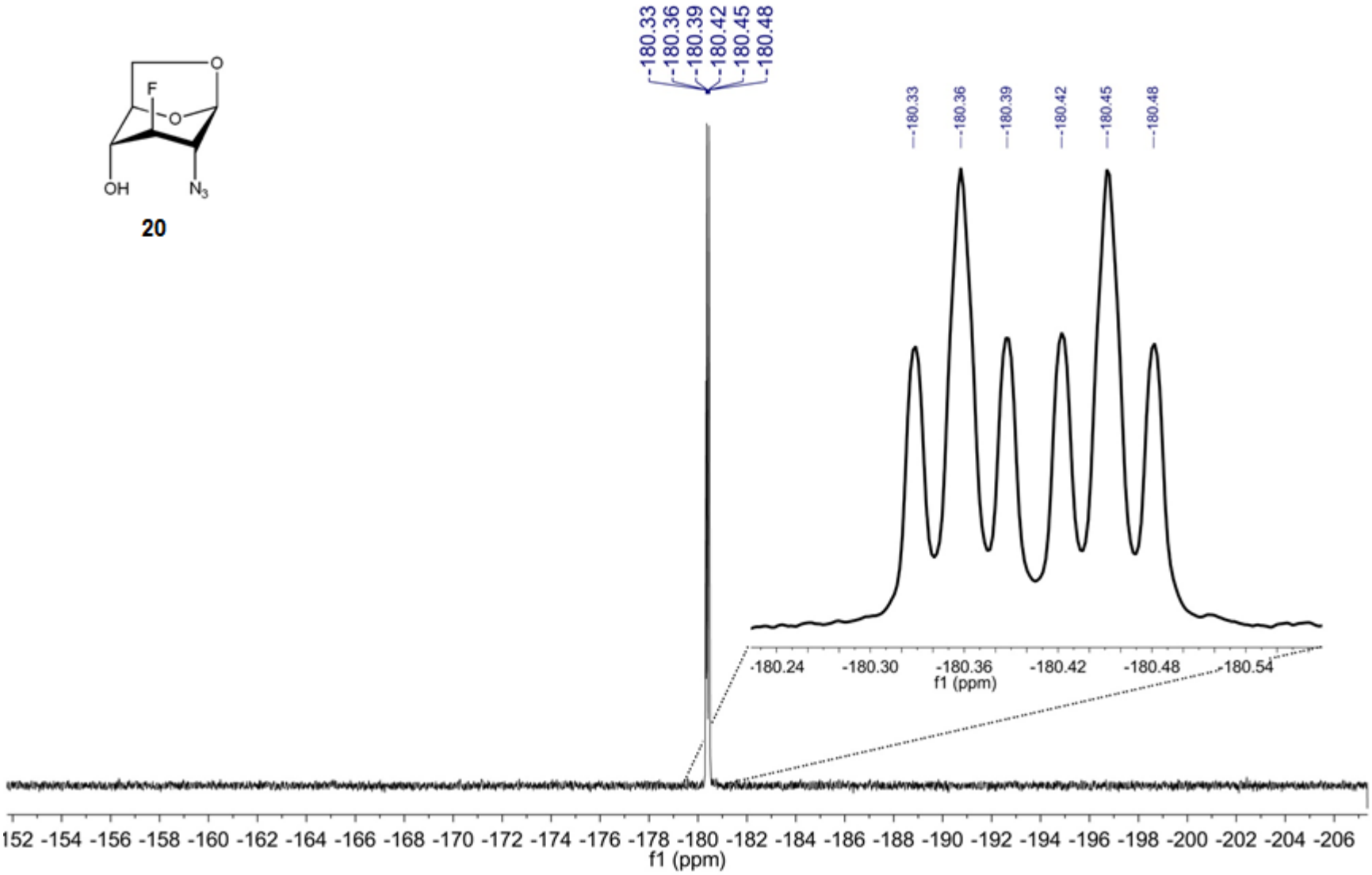
^{19}F NMR (470 MHz, $CDCl_3$) of **19**



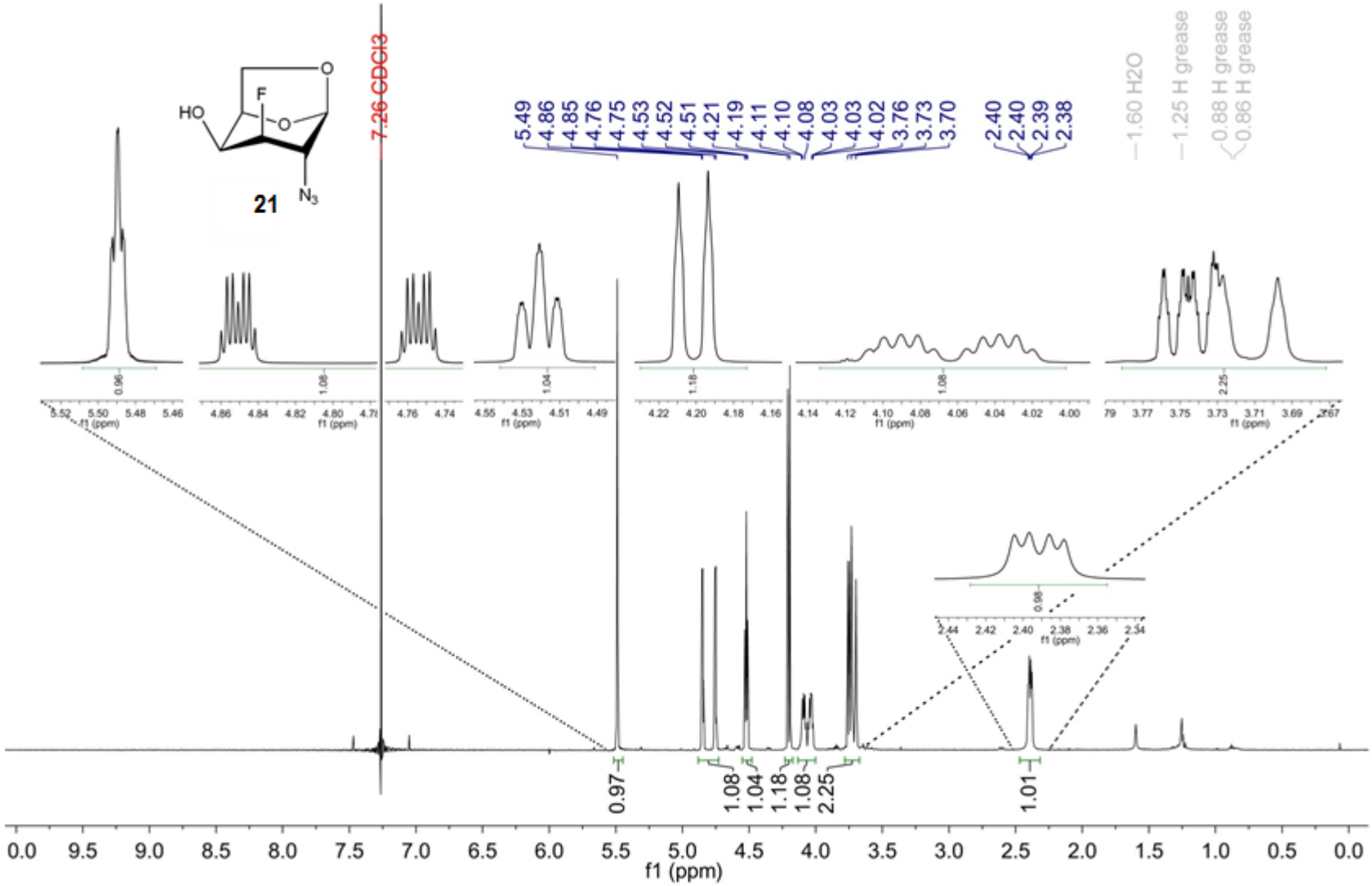
^{1}H NMR (300 MHz, $CDCl_3$) of **20**



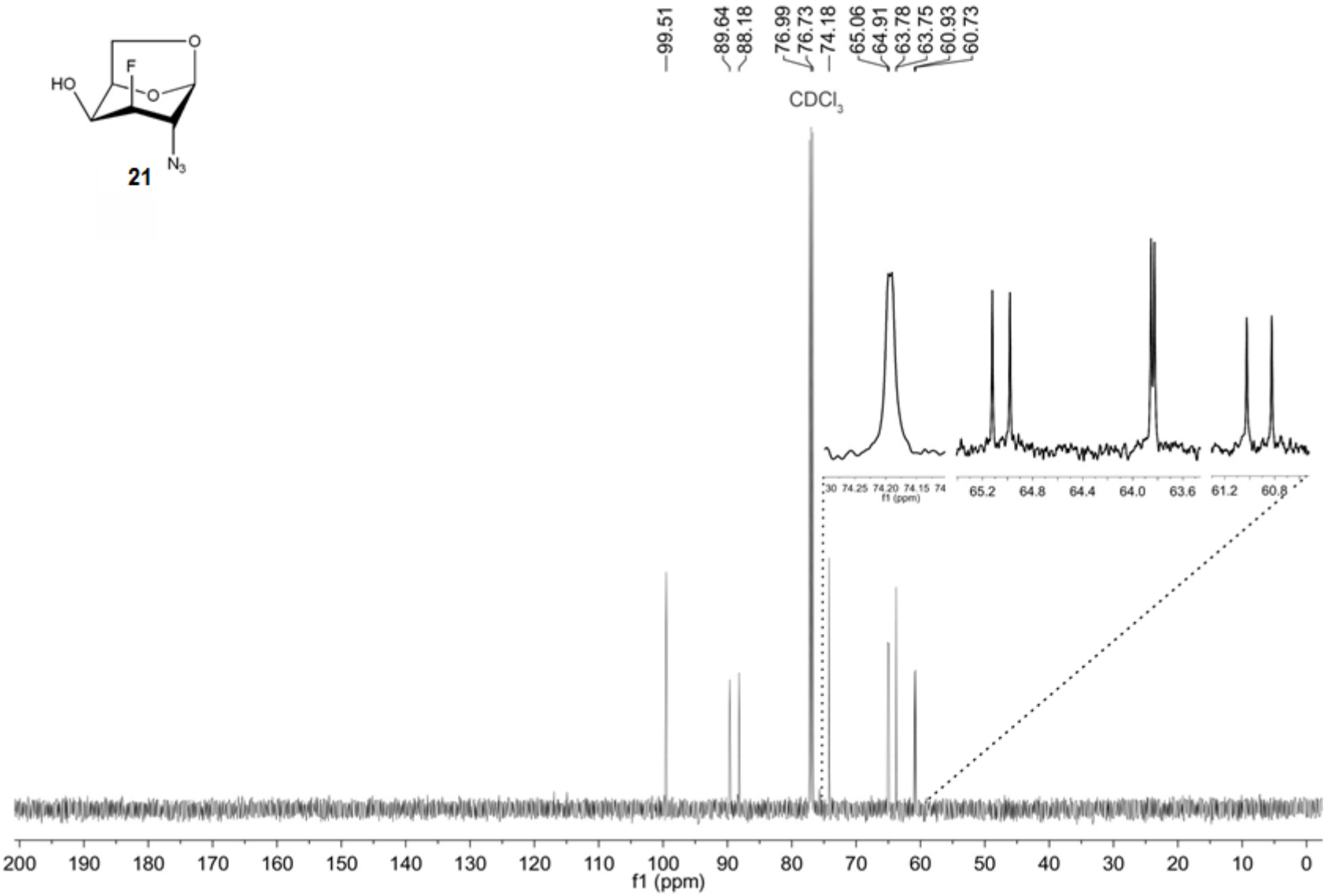
^{13}C {^{1}H} NMR (75 MHz, $CDCl_3$) of **20**



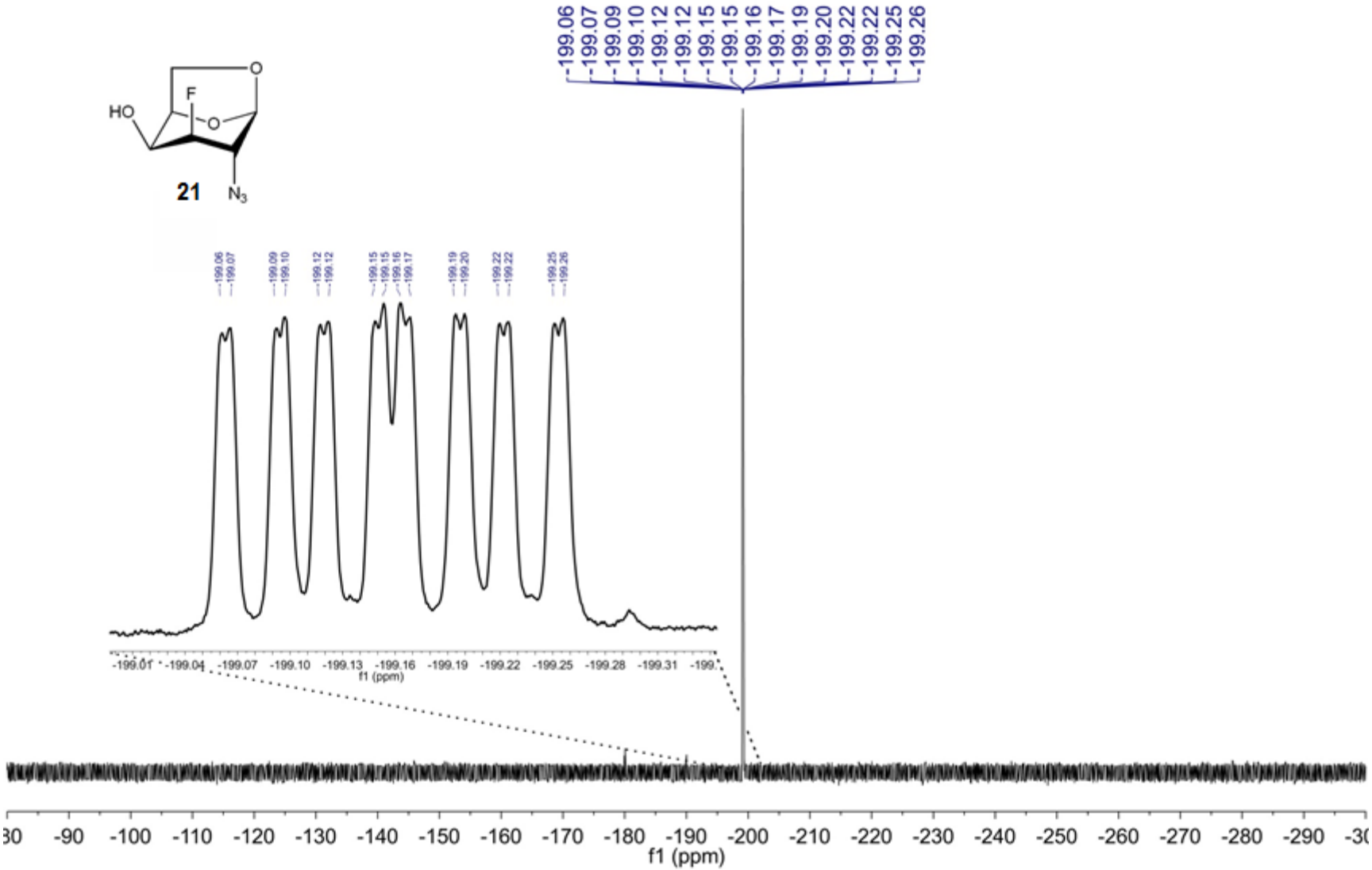
^{19}F NMR (282 MHz, $CDCl_3$) of **20**



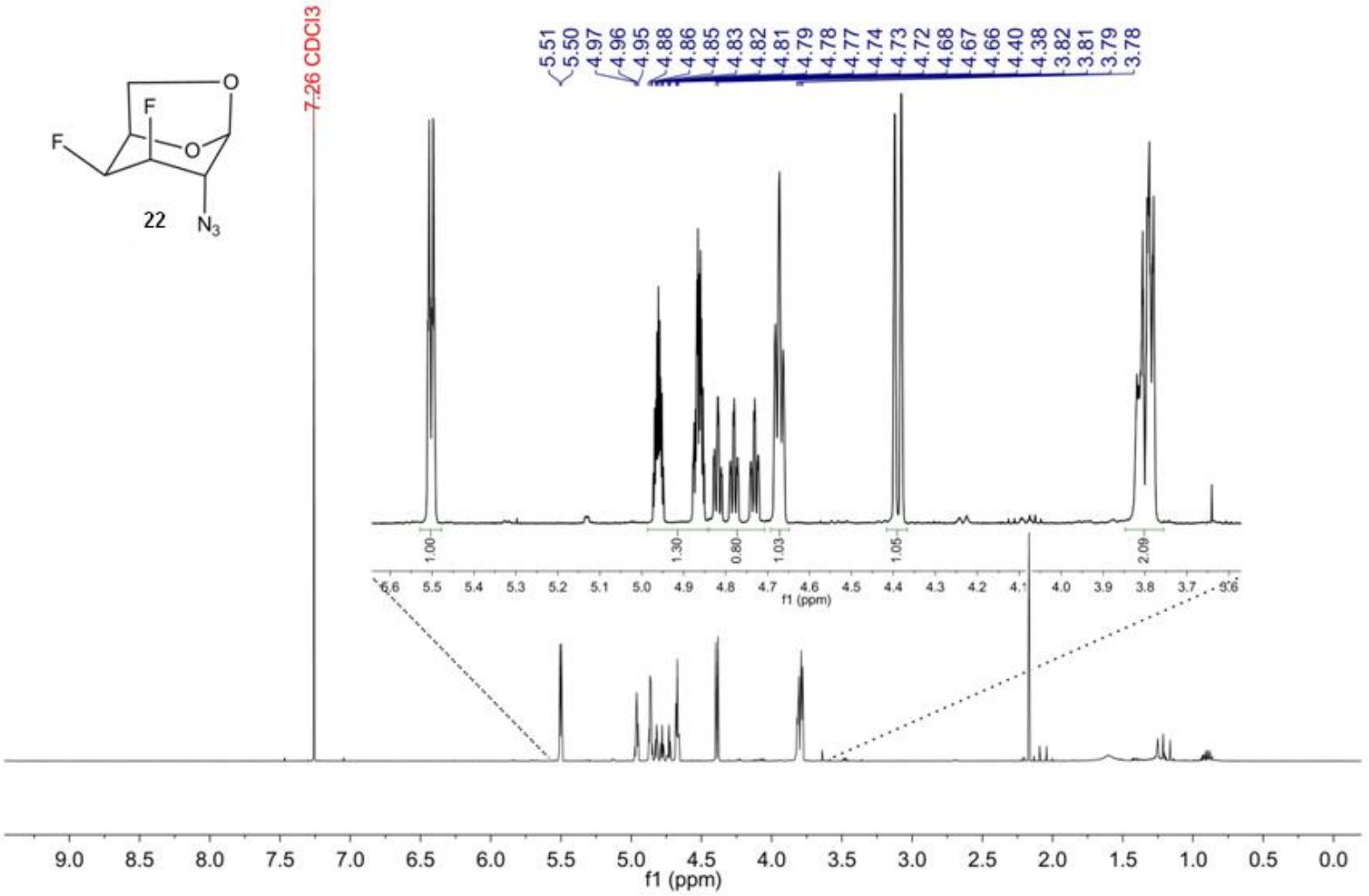
^{1}H NMR (300 MHz, $CDCl_3$) of **21**.



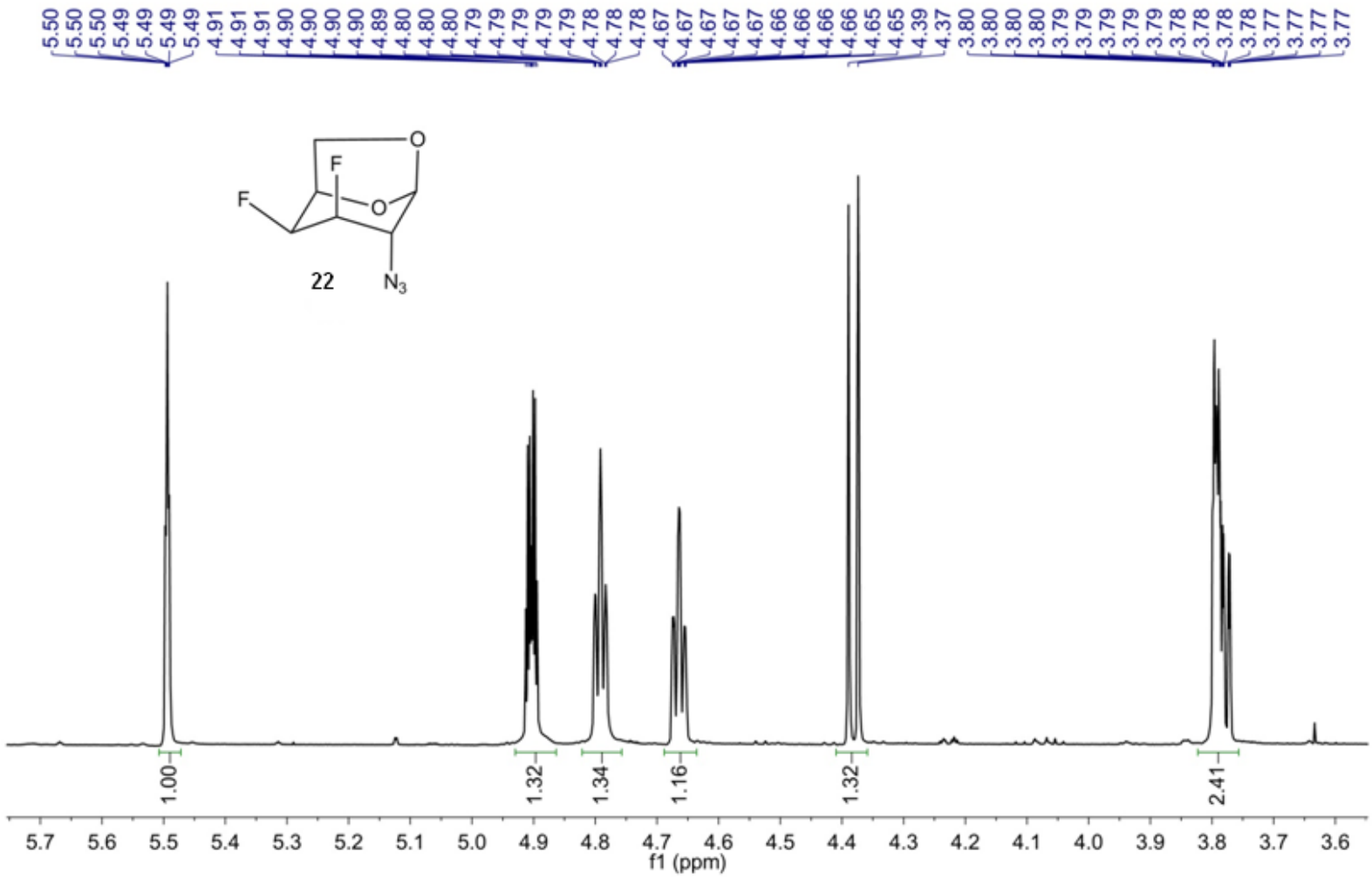
^{13}C {^{1}H} NMR (75 MHz, $CDCl_3$) of **21**



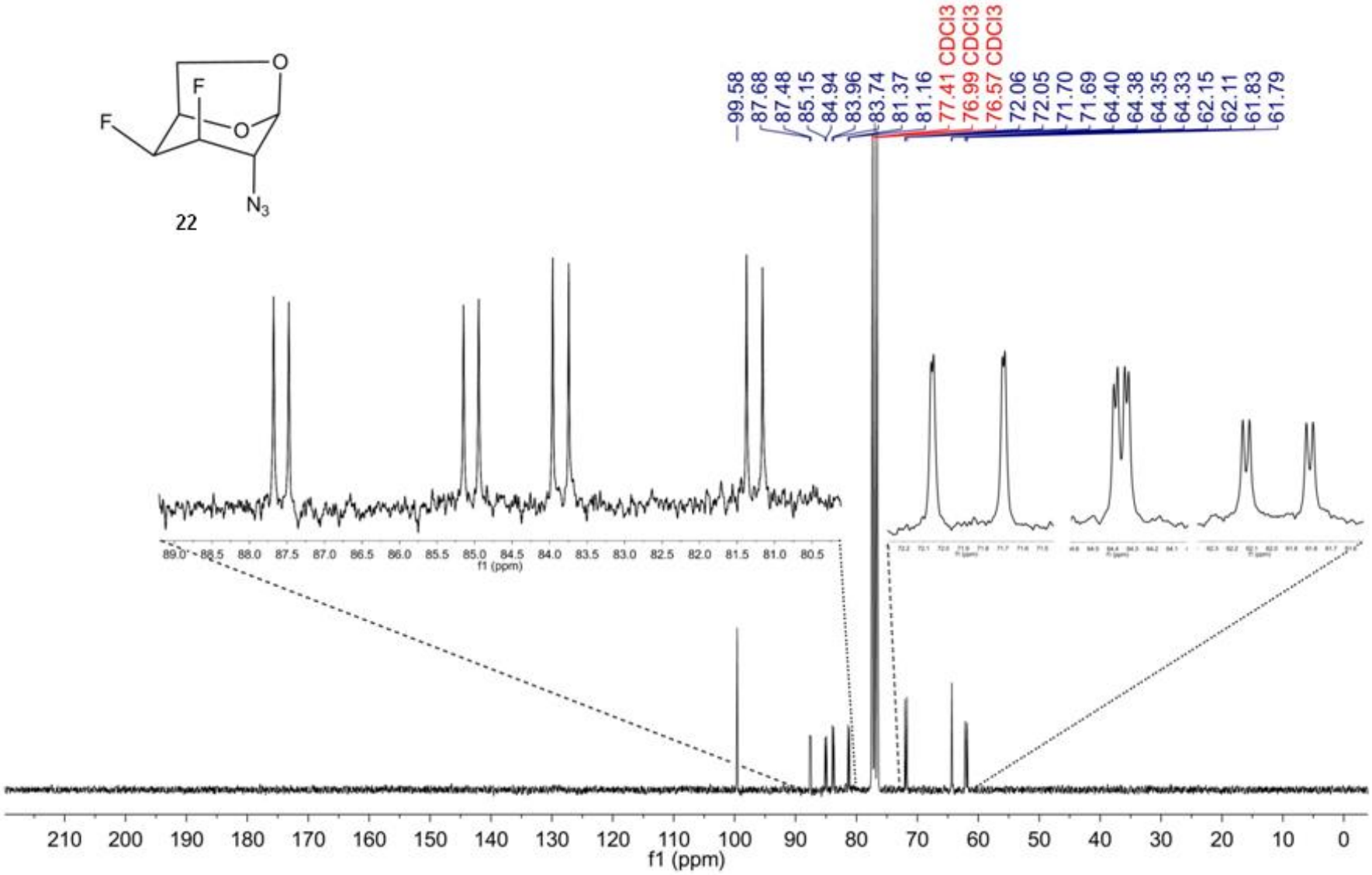
^{19}F NMR (282 MHz, $CDCl_3$) of **21**



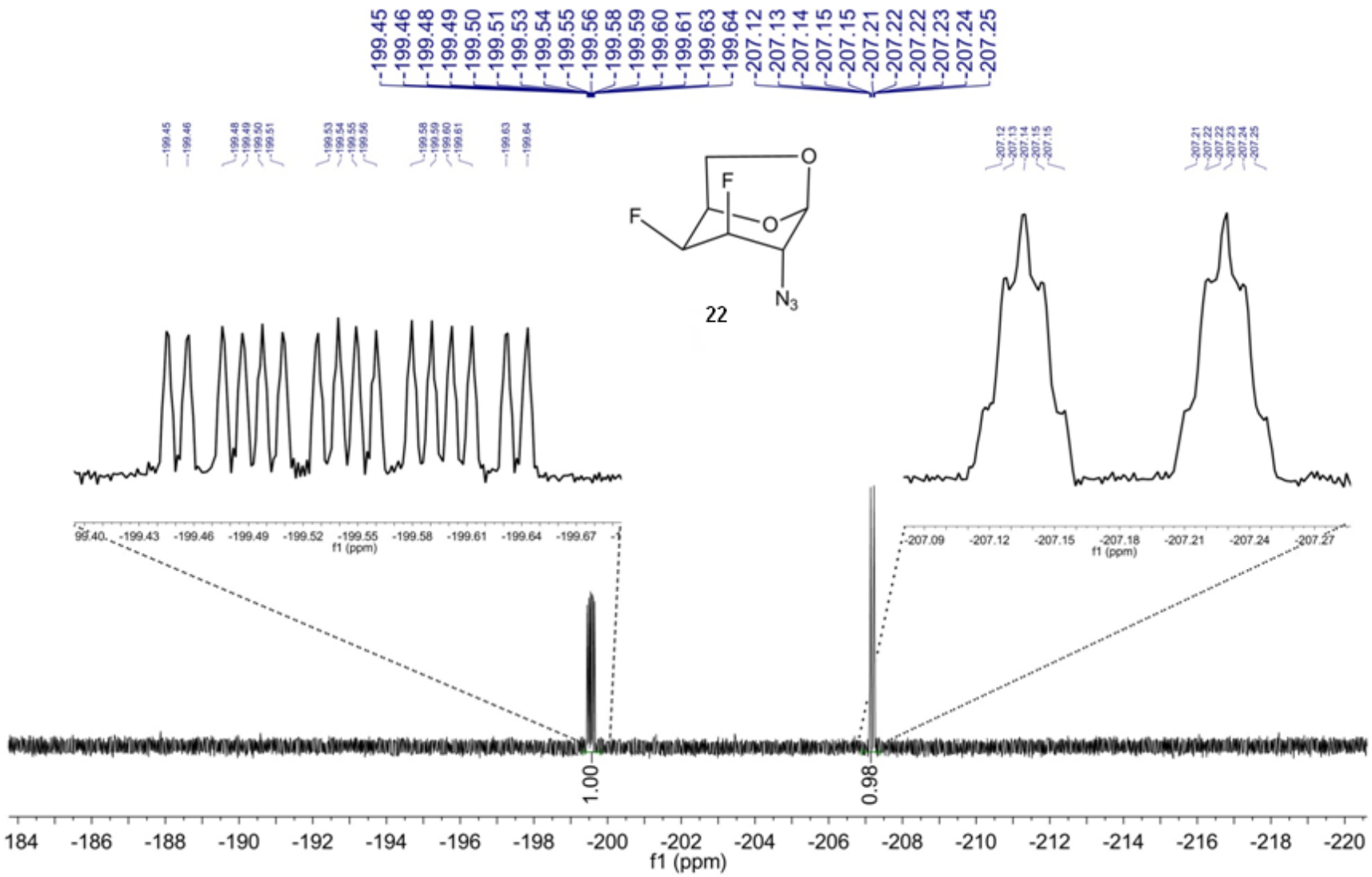
^{1}H NMR (500 MHz, $CDCl_3$) of **22**



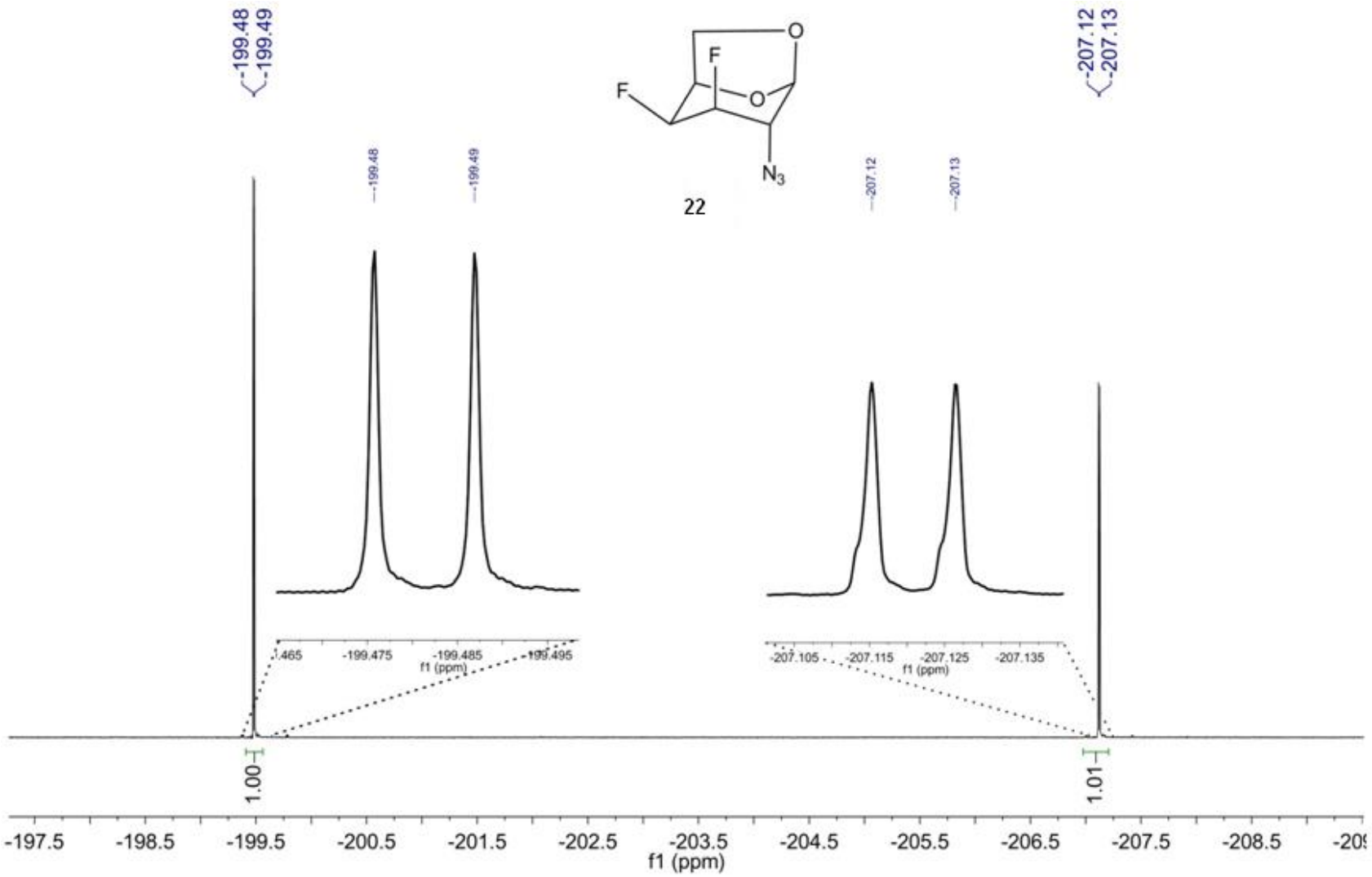
^{1}H {^{19}F} NMR (500 MHz, $CDCl_3$) of **22**



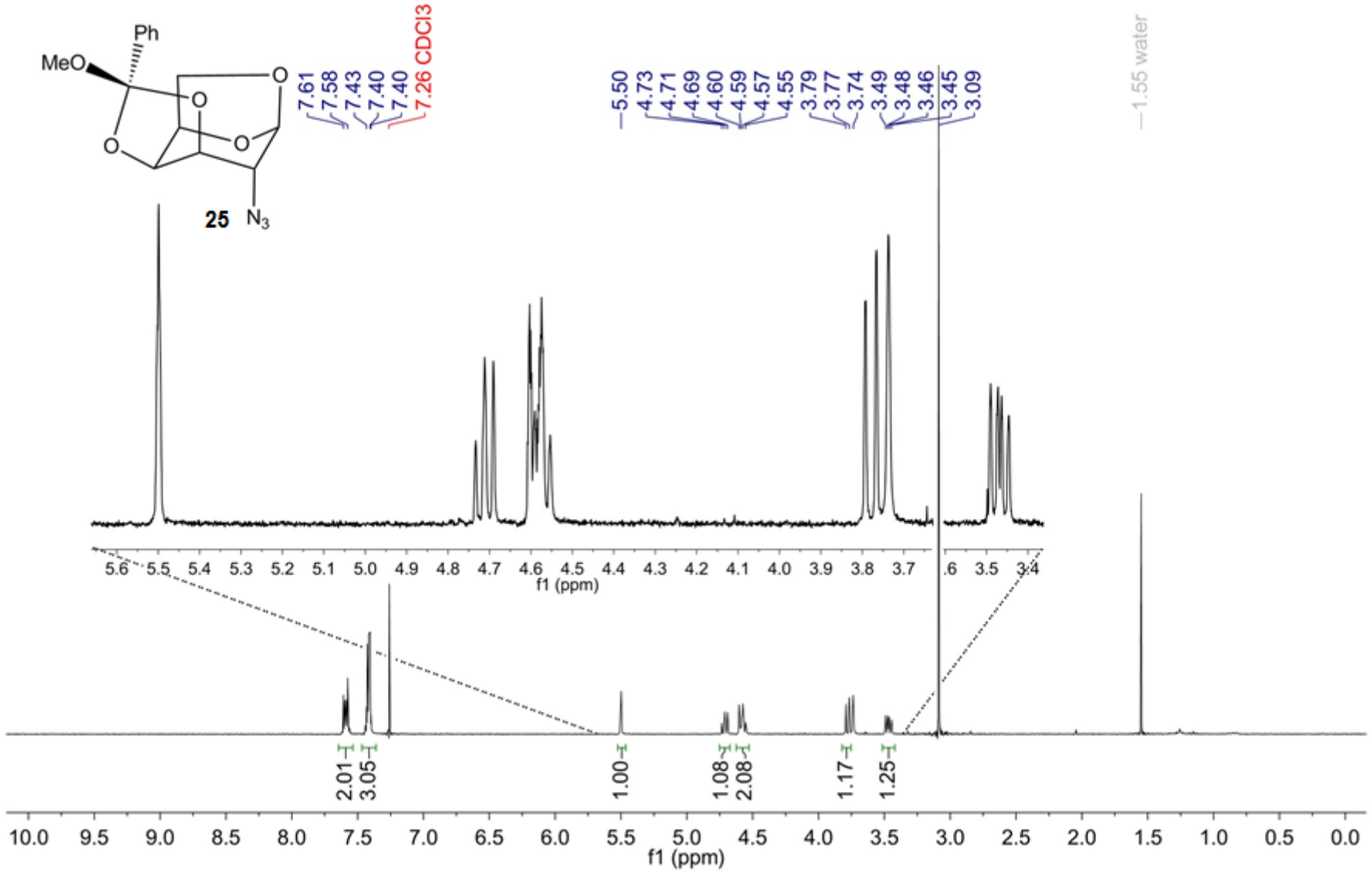
^{13}C {^{1}H} NMR (75 MHz, $CDCl_3$) of **22**



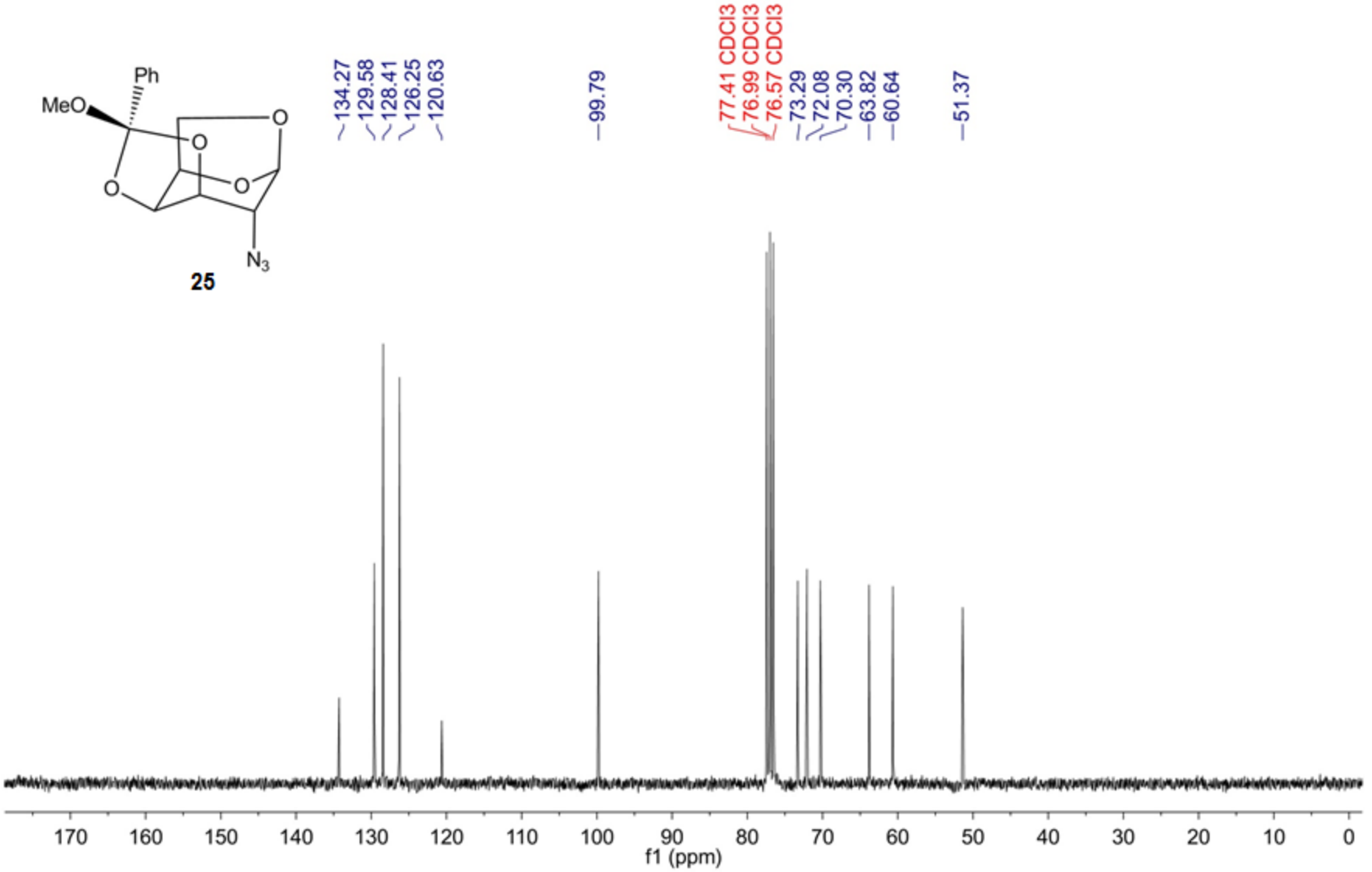
^{19}F NMR (470 MHz, $CDCl_3$) of **22**



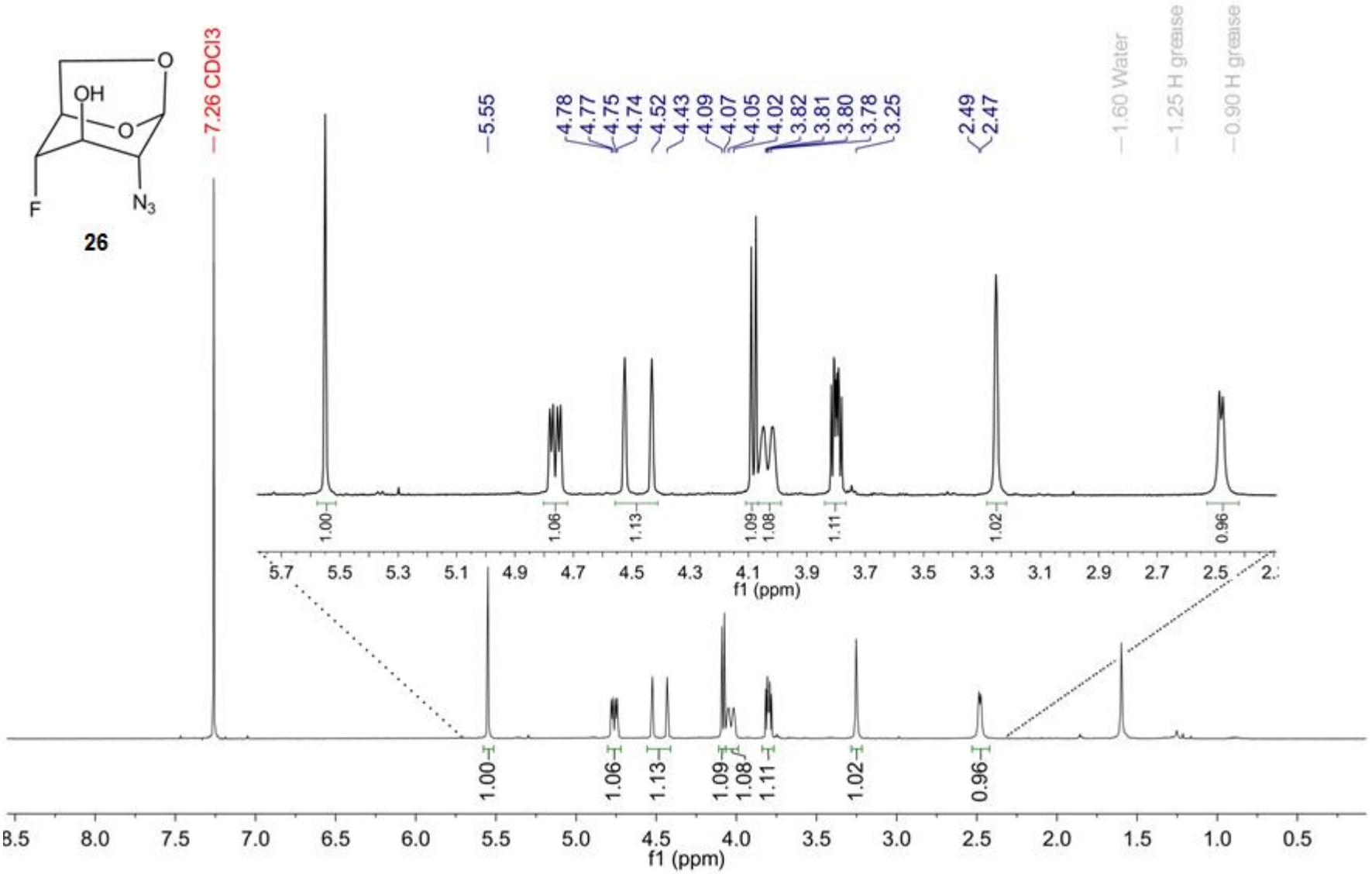
^{19}F {^{1}H} NMR (470 MHz, $CDCl_3$) of **22**



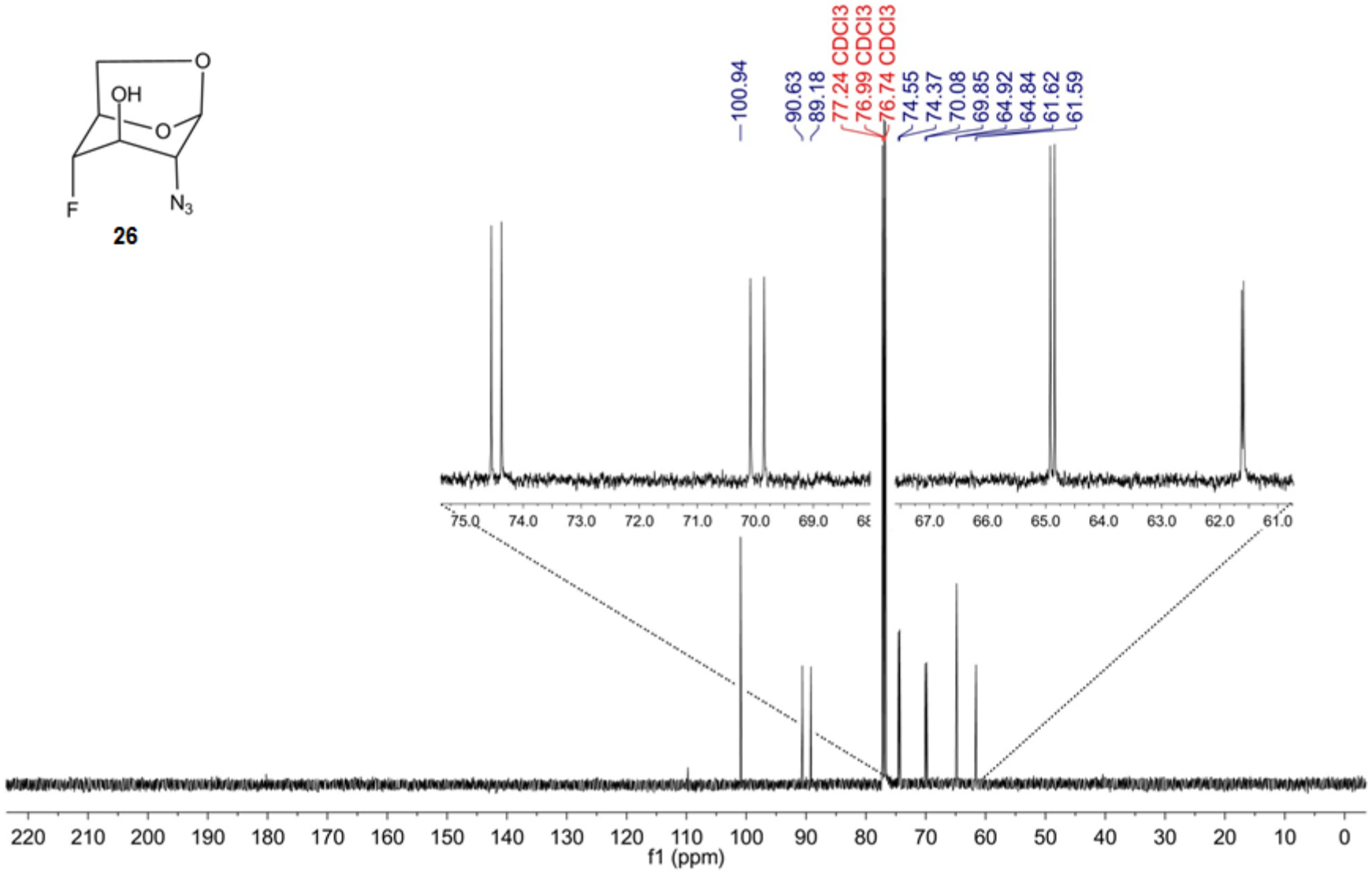
^{1}H NMR (500 MHz, $CDCl_3$) of **25**



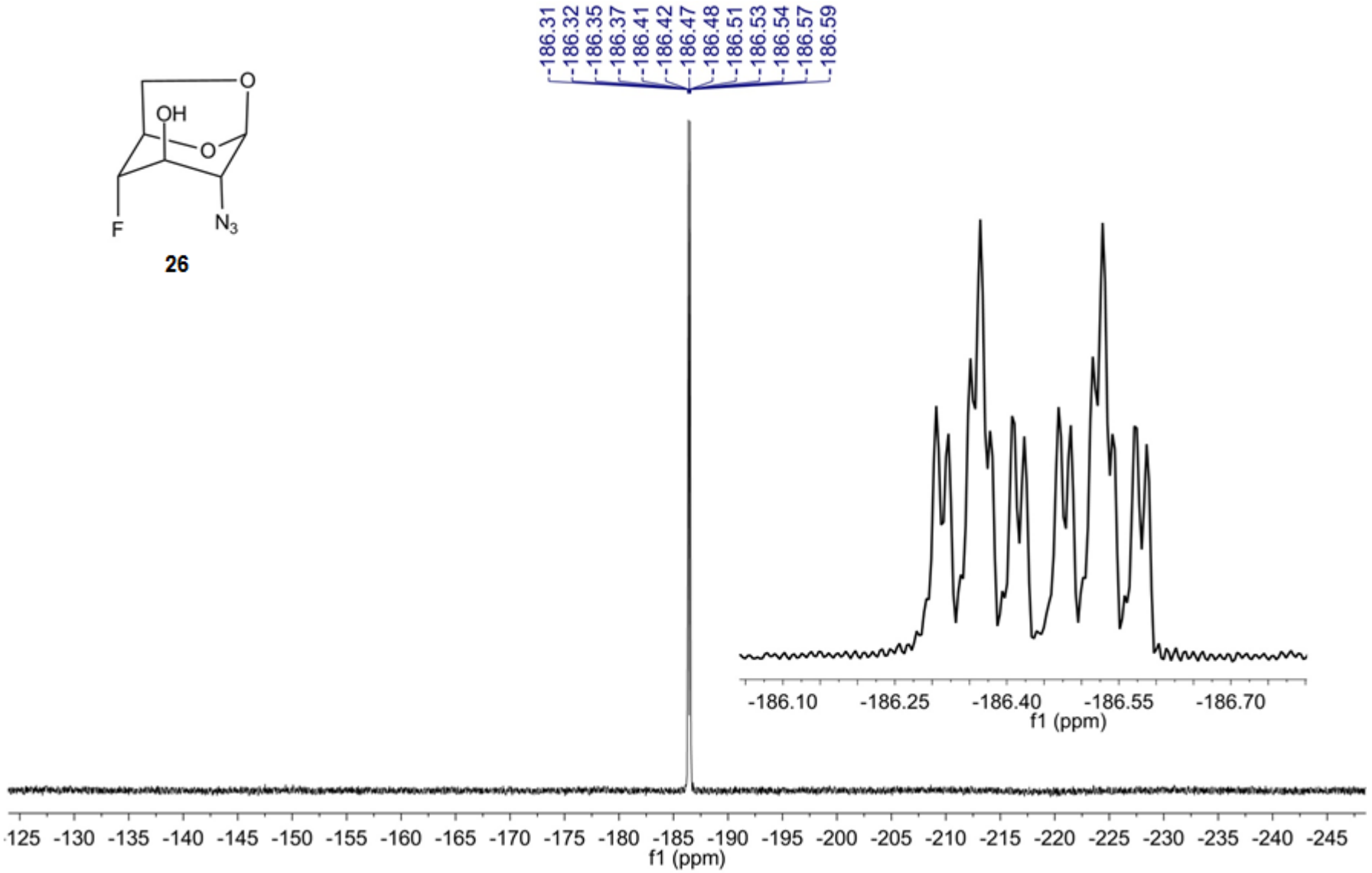
^{13}C {^{1}H} NMR (125 MHz, $CDCl_3$) of **25**



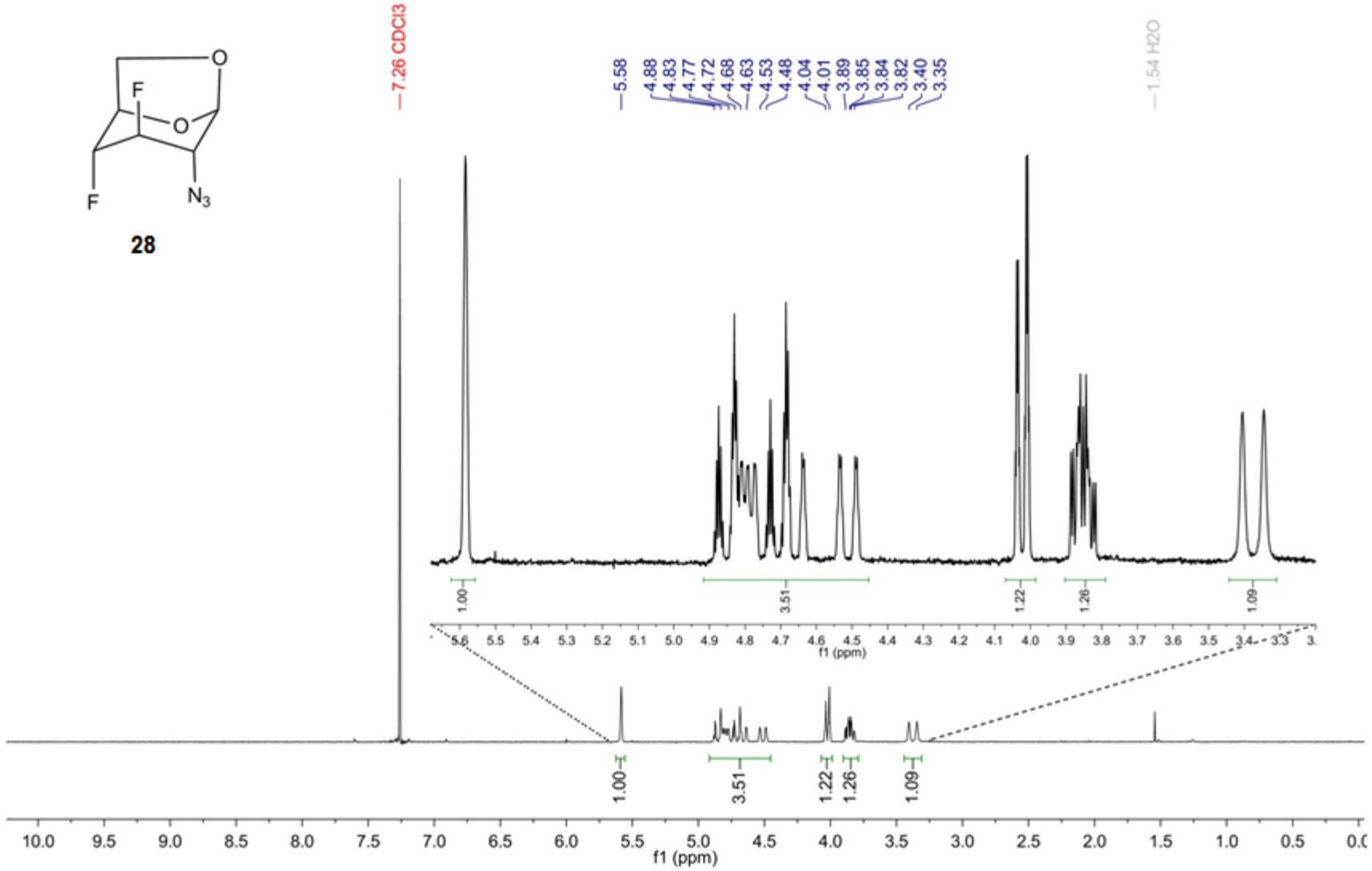
^{1}H NMR (300 MHz, $CDCl_3$) of **26**



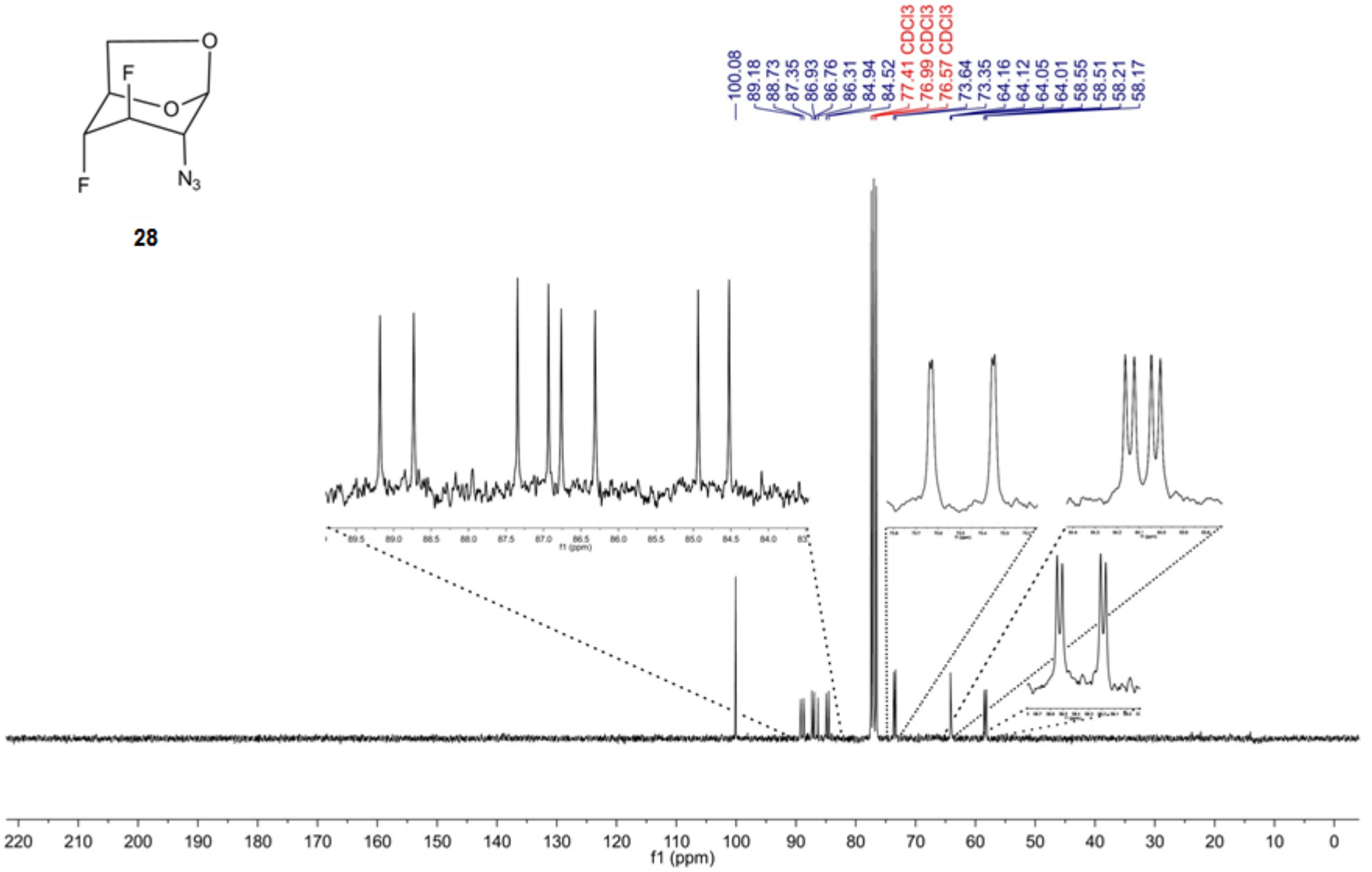
^{13}C {^{1}H} NMR (75 MHz, $CDCl_3$) of **26**



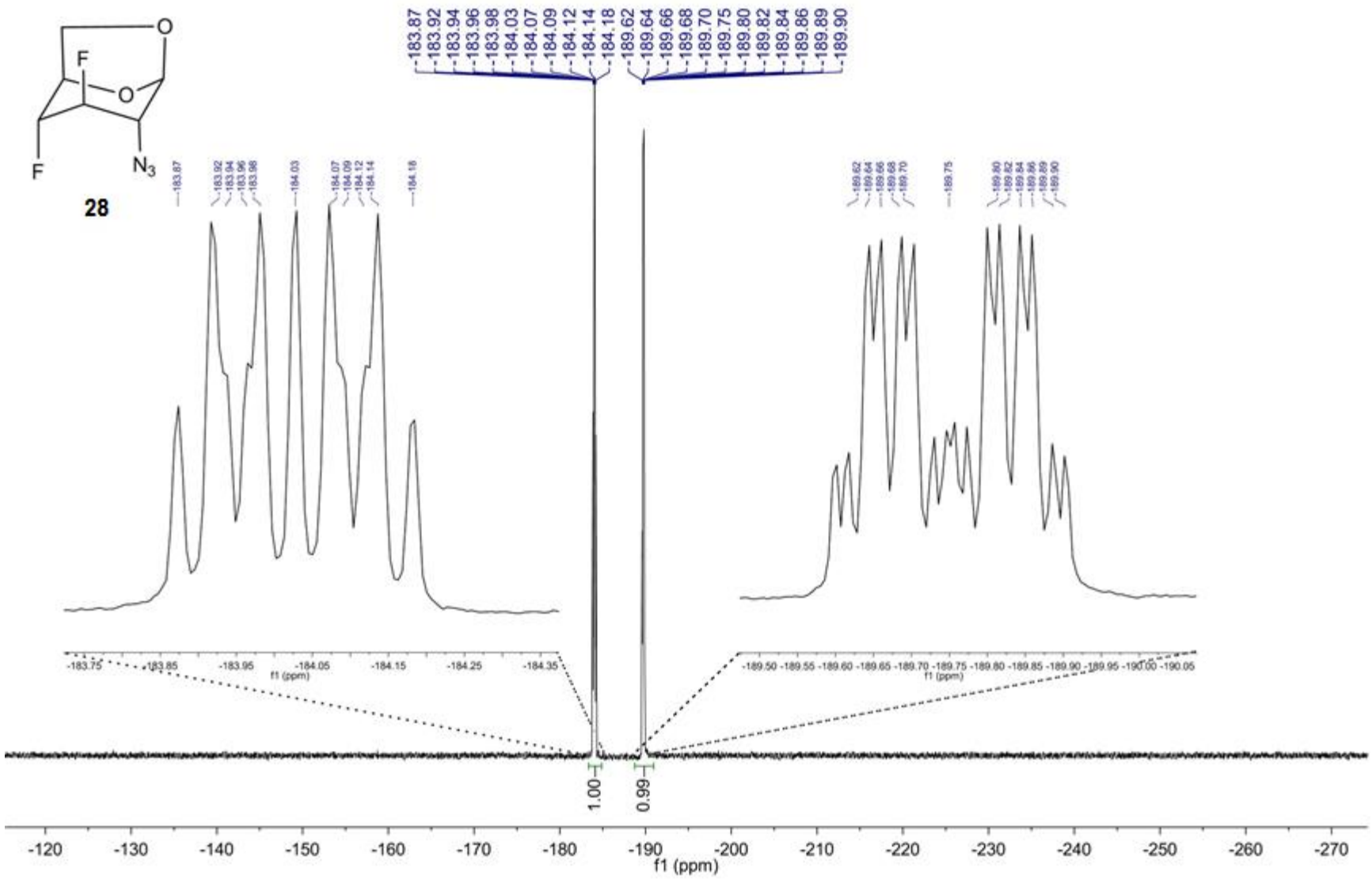
^{19}F NMR (282 MHz, $CDCl_3$) of **26**



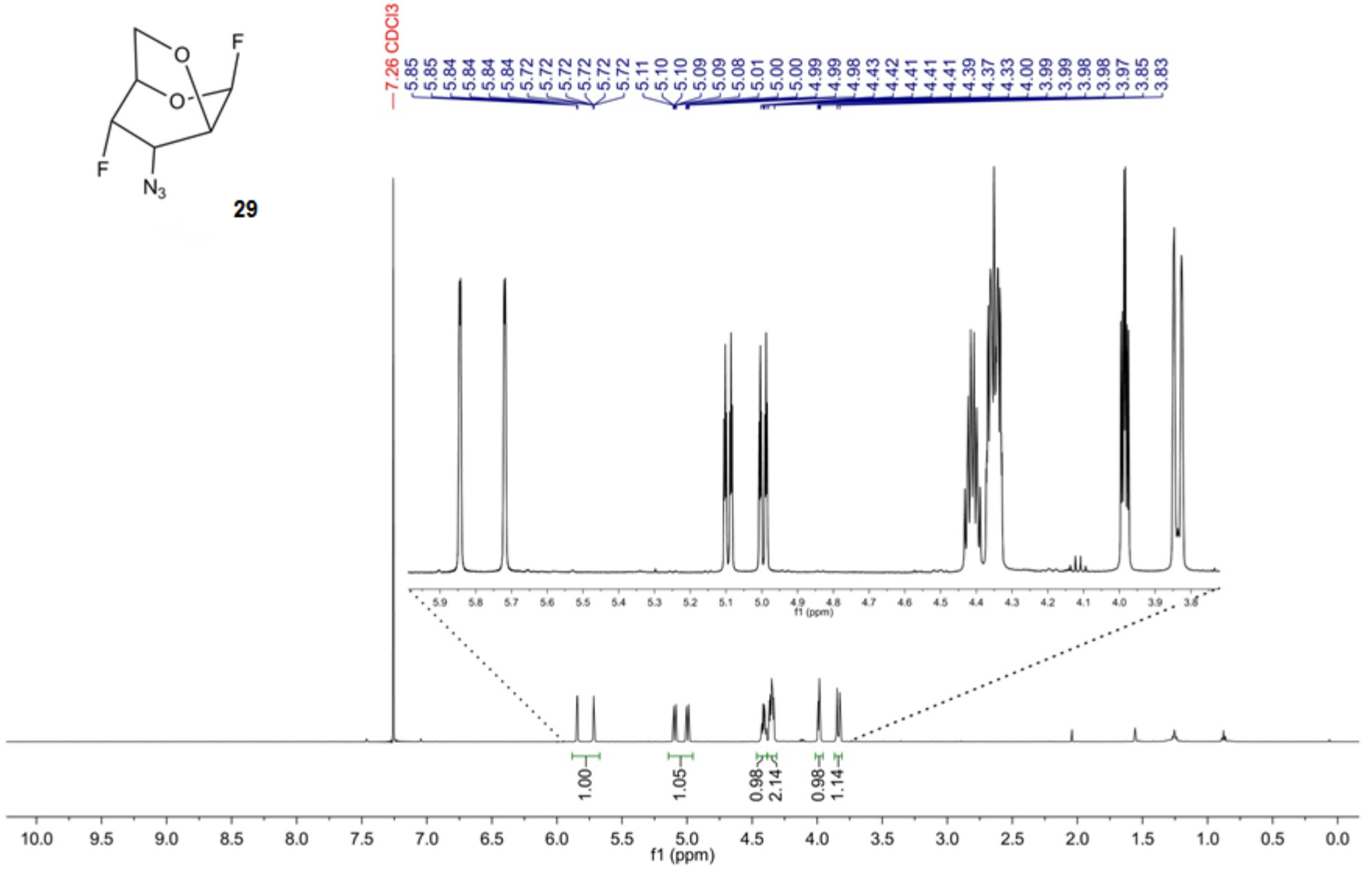
^{1}H NMR (300 MHz, $CDCl_3$) of **28**



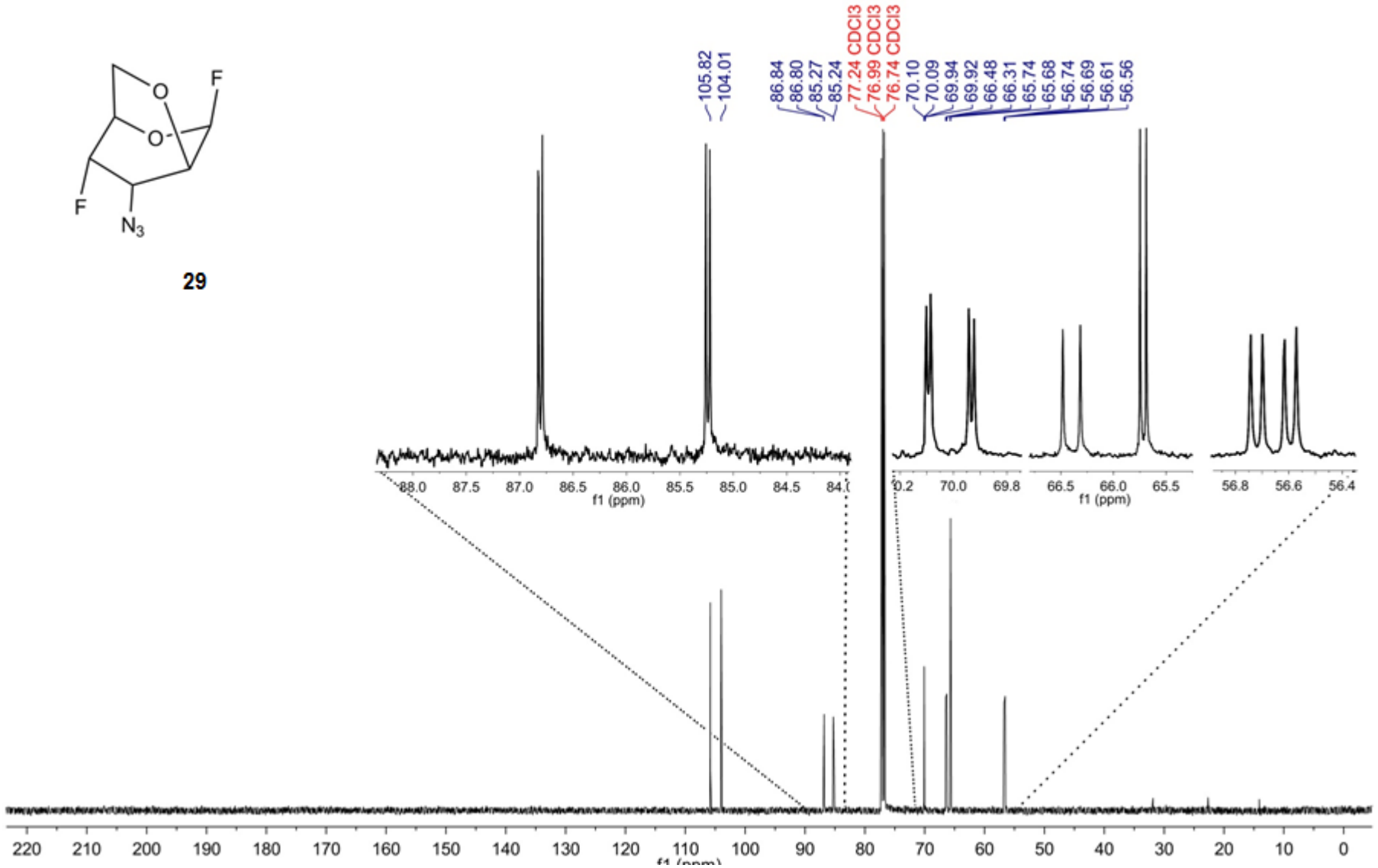
^{13}C {^{1}H} NMR (75 MHz, $CDCl_3$) of **28**



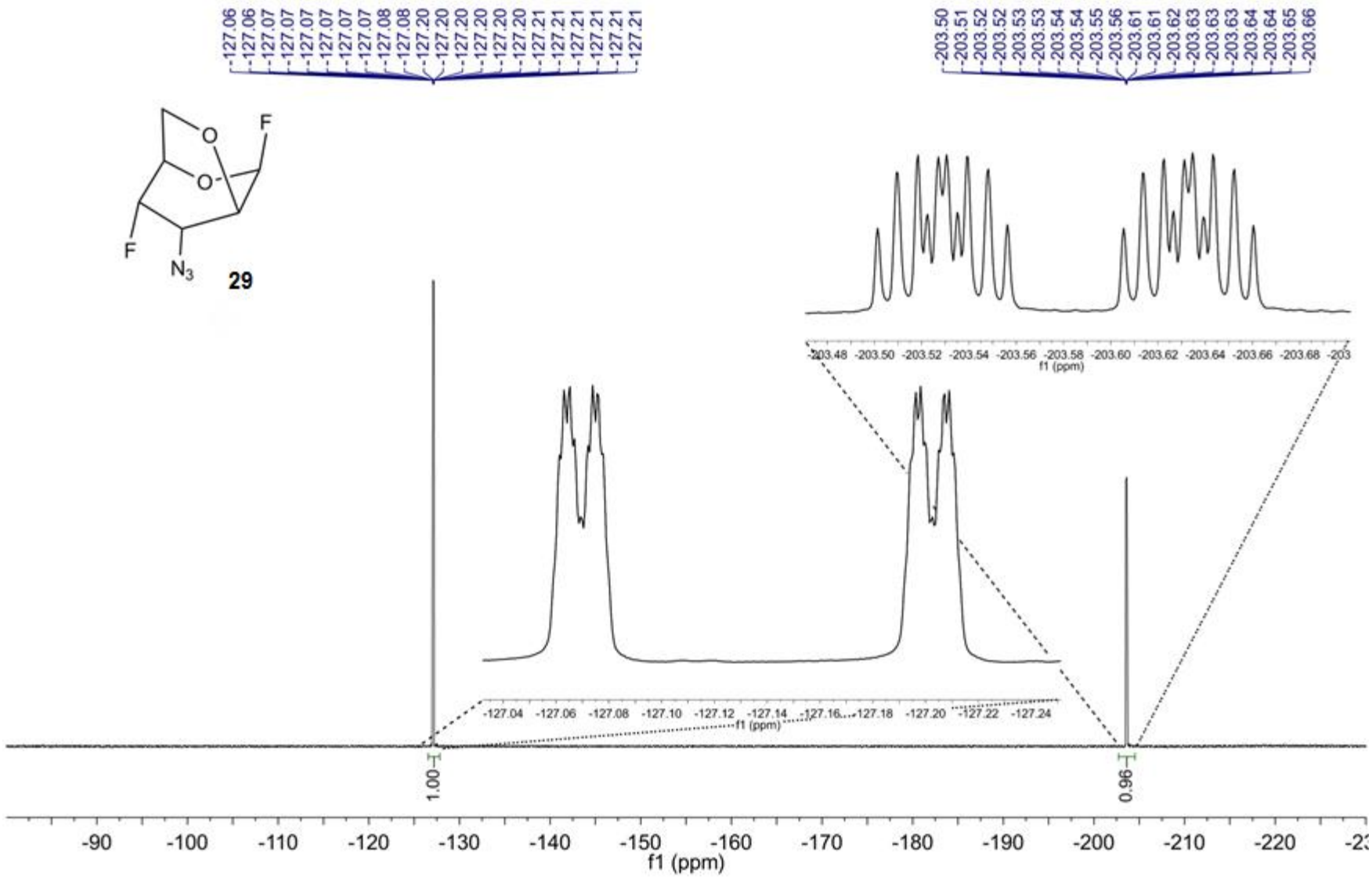
^{19}F NMR (282 MHz, $CDCl_3$) of **28**



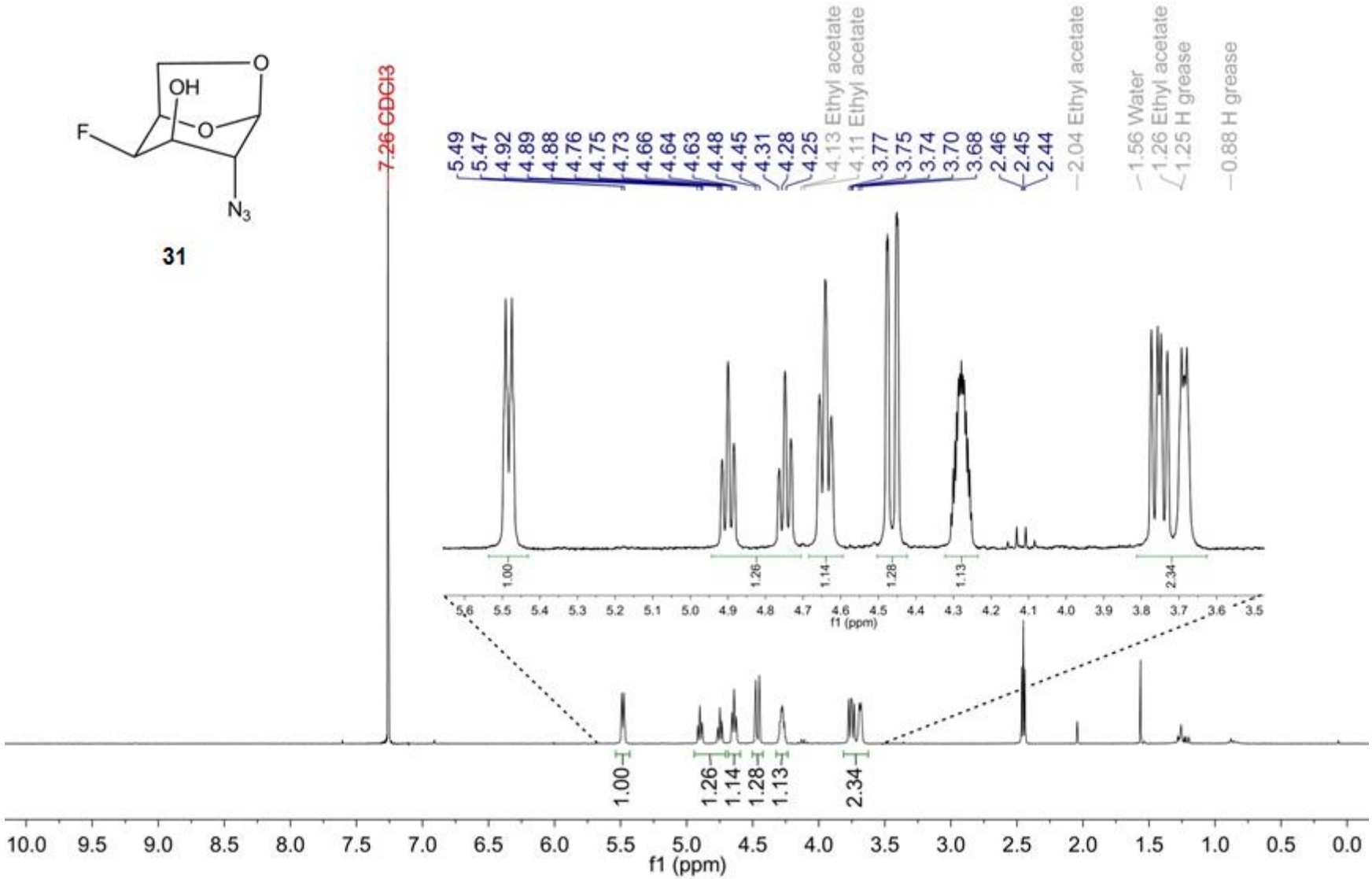
^{1}H NMR (500 MHz, $CDCl_3$) of **29**



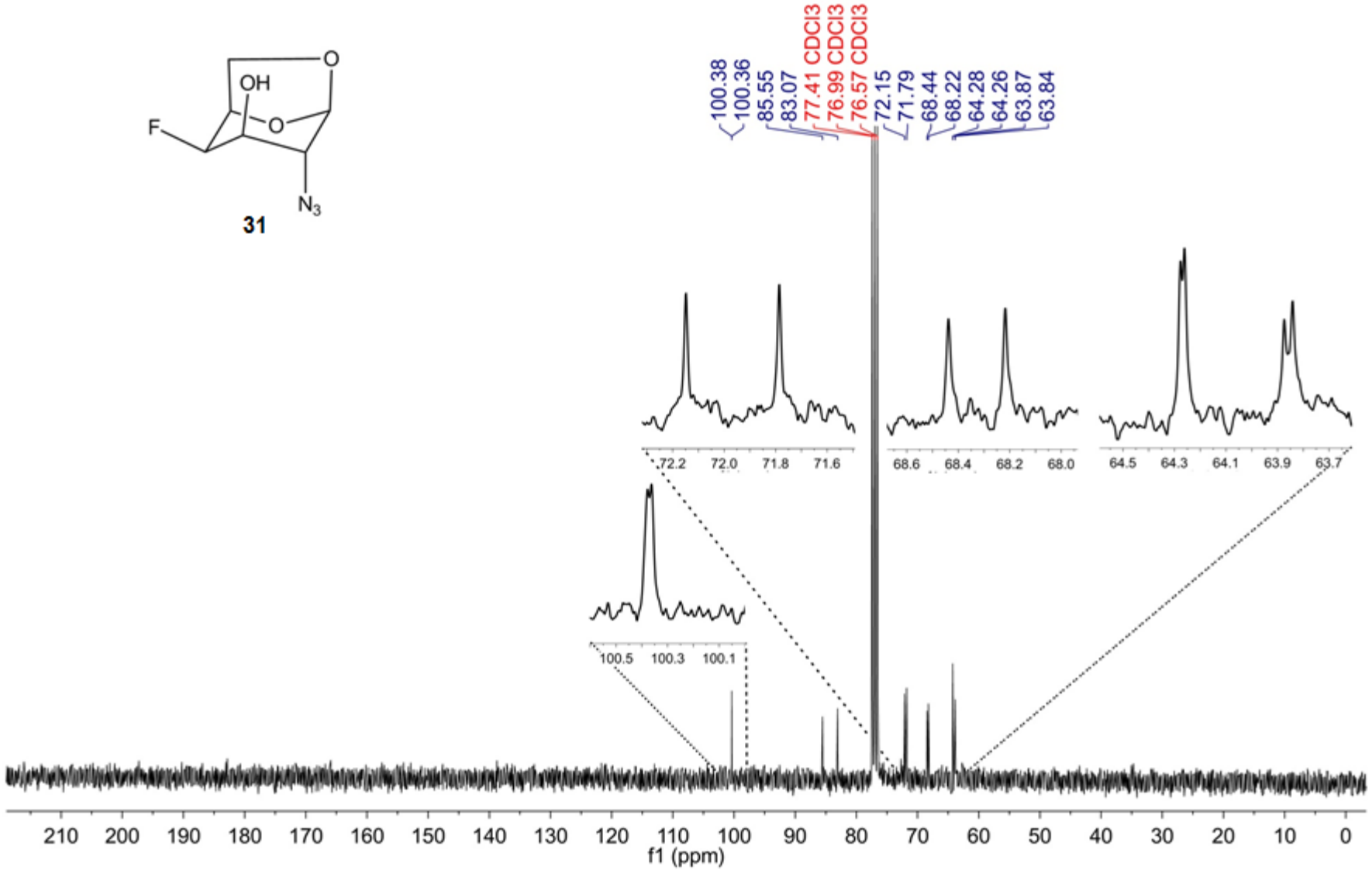
^{13}C {^{1}H} NMR (75 MHz, $CDCl_3$) of **29**



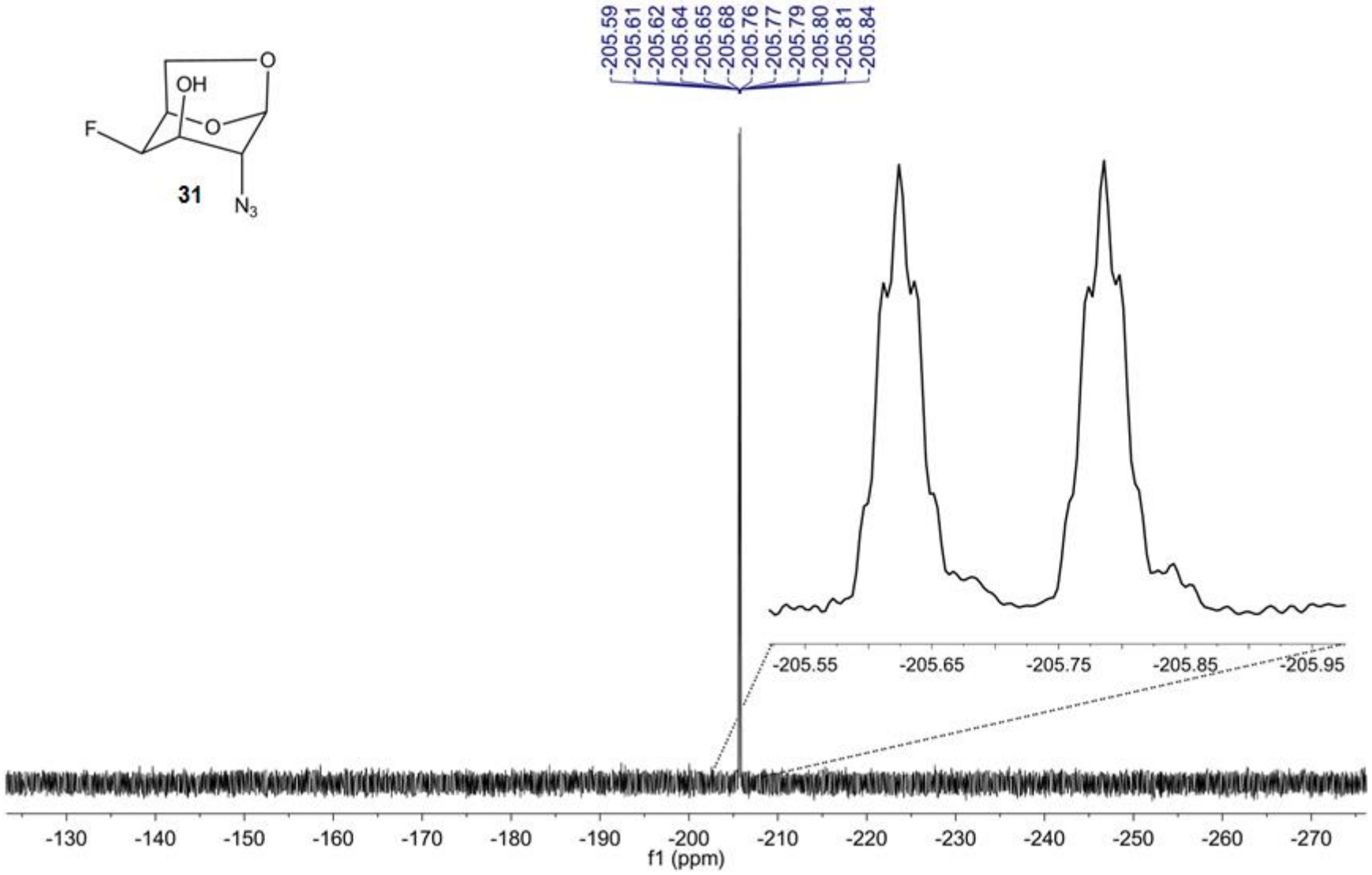
^{19}F NMR (470 MHz, $CDCl_3$) of **29**



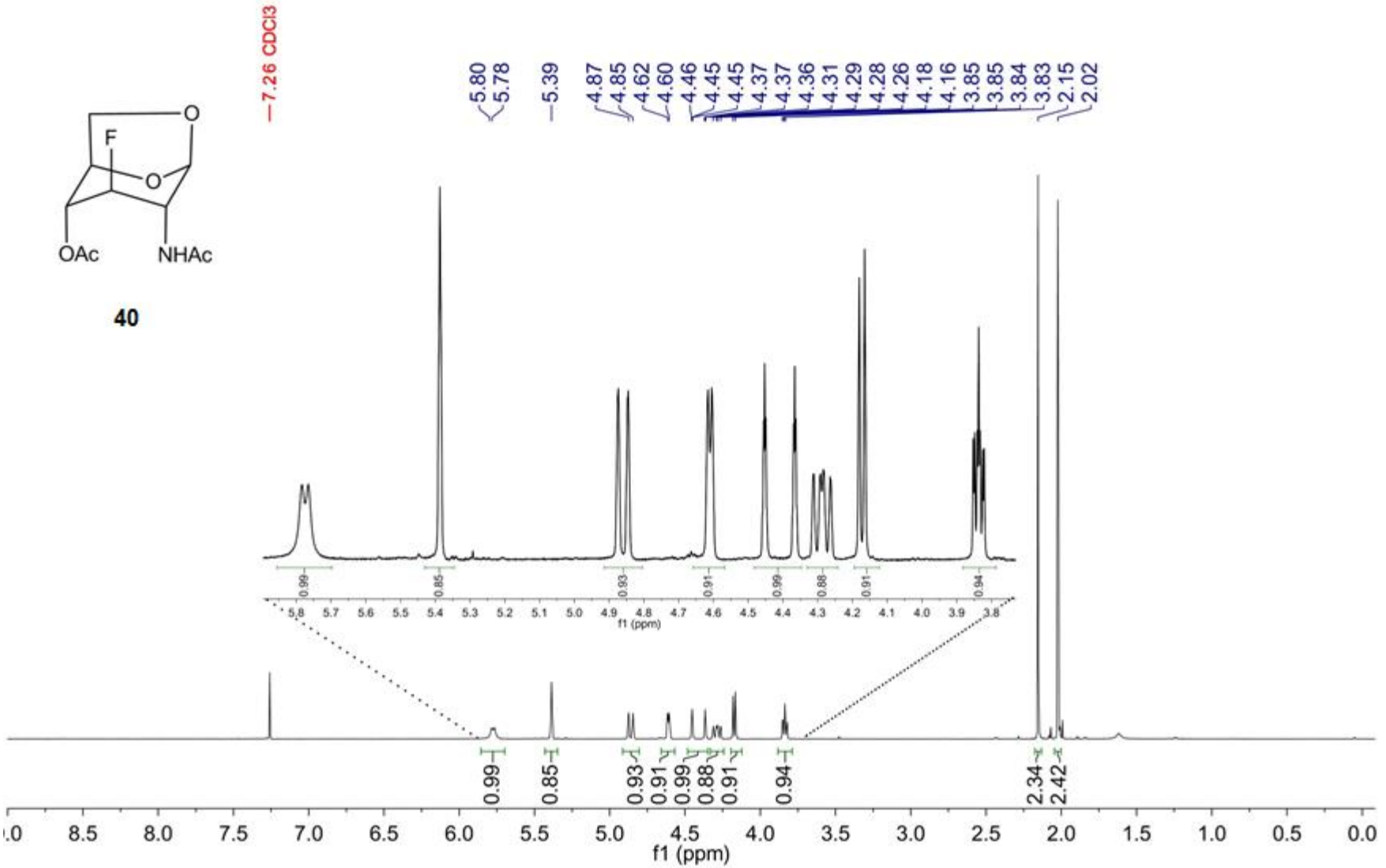
^{1}H NMR (300 MHz, $CDCl_3$) of **31**



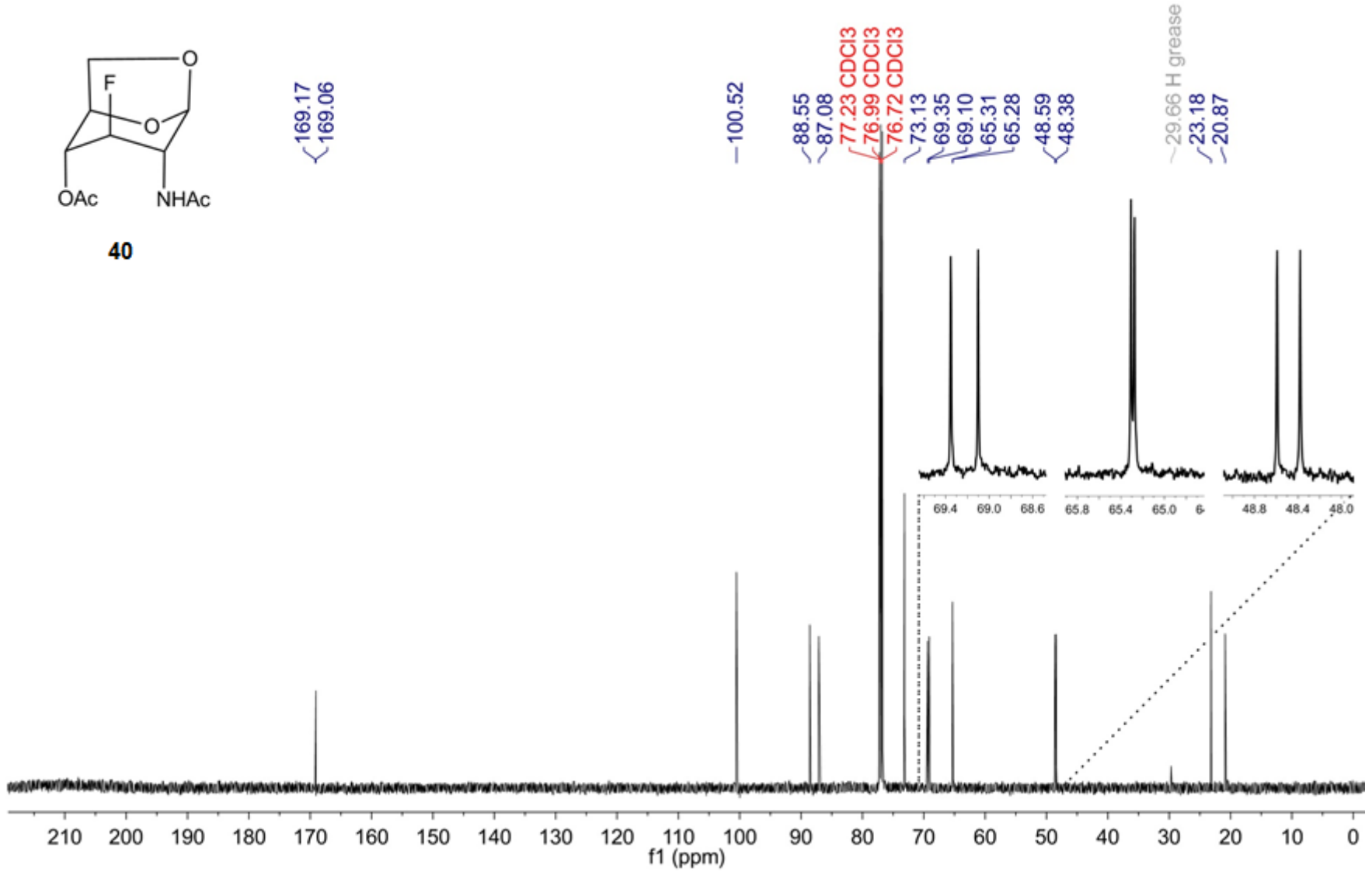
^{13}C {^{1}H} NMR (75 MHz, $CDCl_3$) of **31**



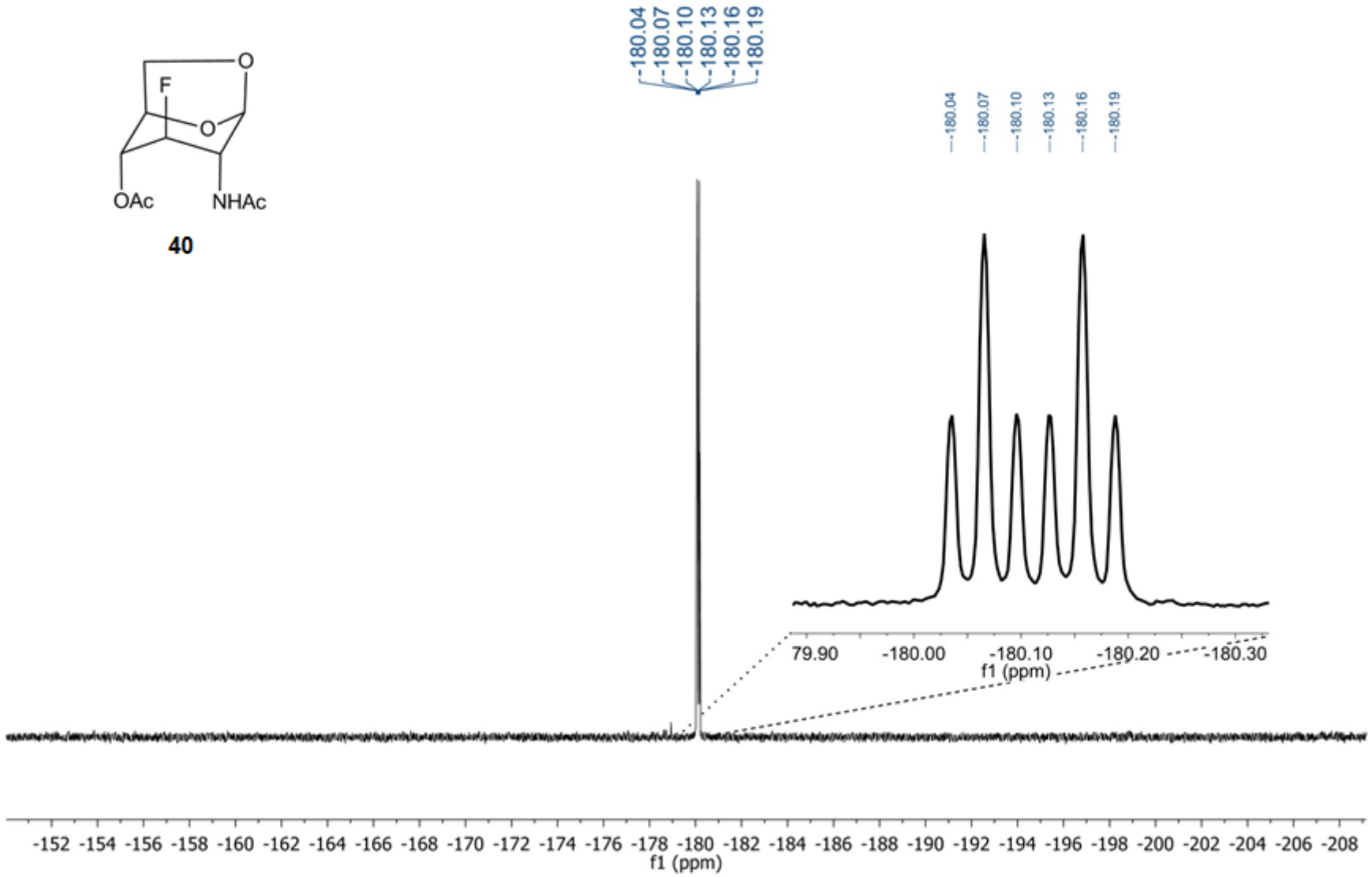
^{19}F NMR (282 MHz, $CDCl_3$) of **31**



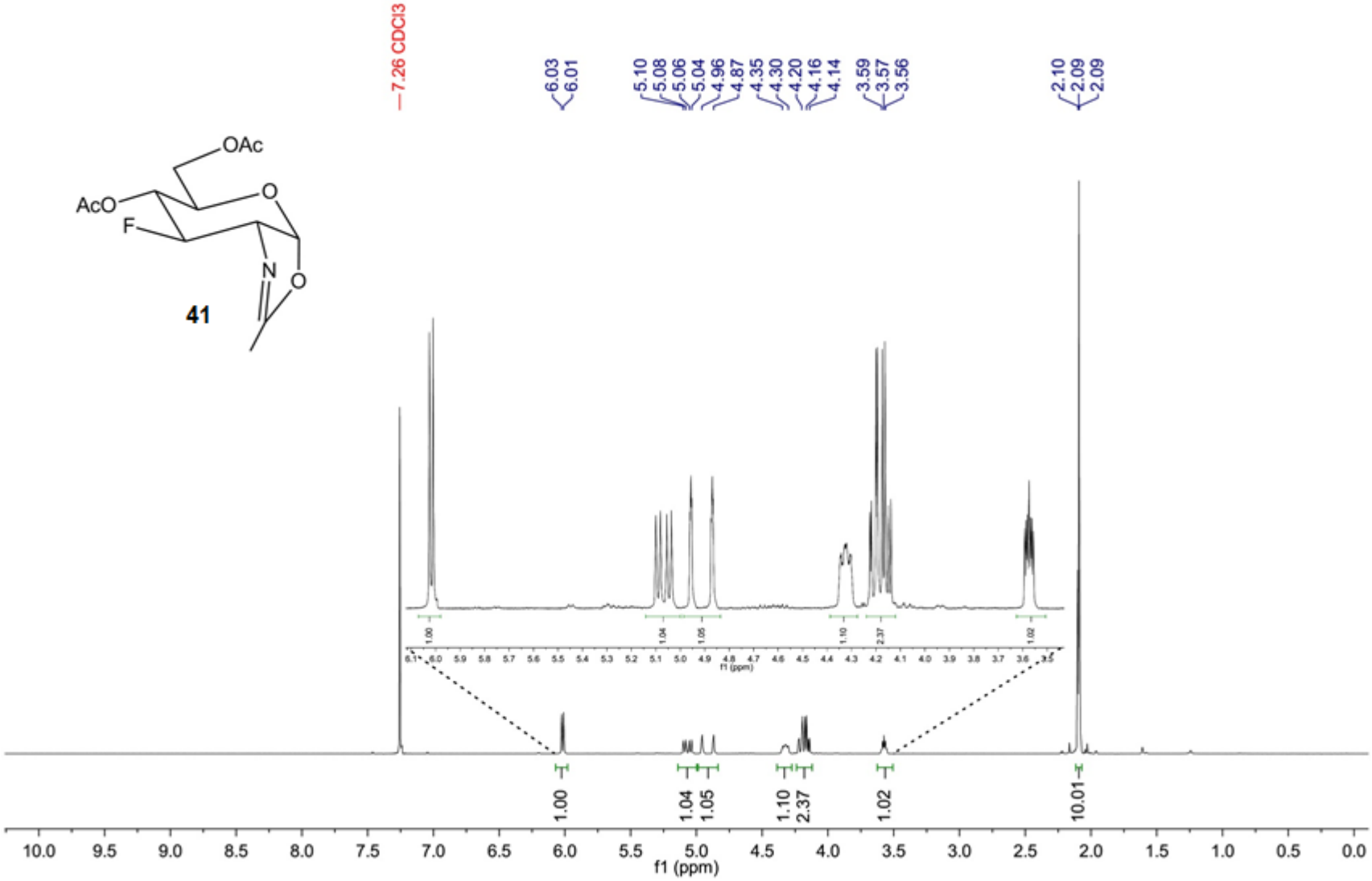
^{1}H NMR (500 MHz, $CDCl_3$) of **40**



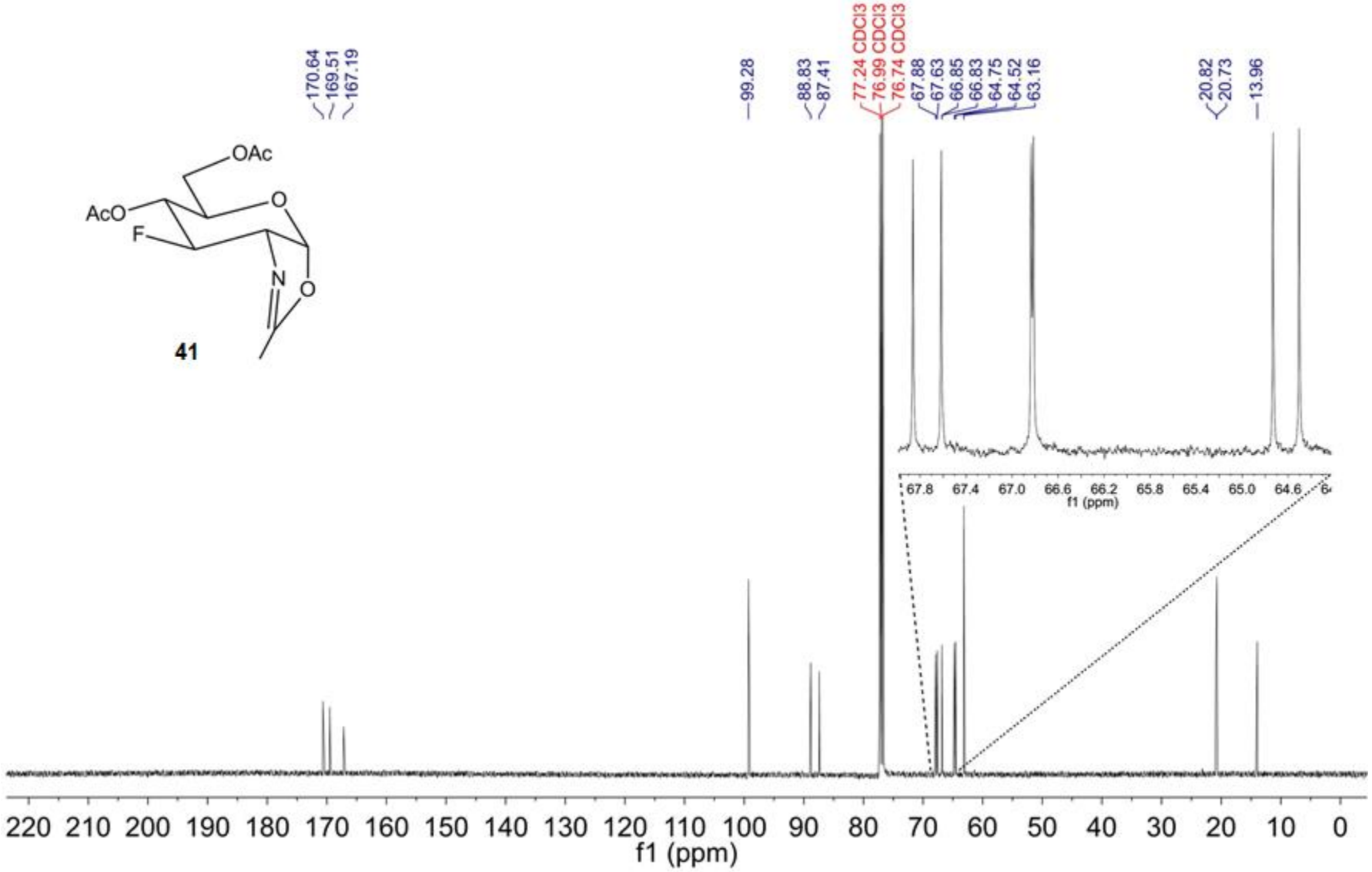
^{13}C {^{1}H} NMR (125 MHz, $CDCl_3$) of **40**



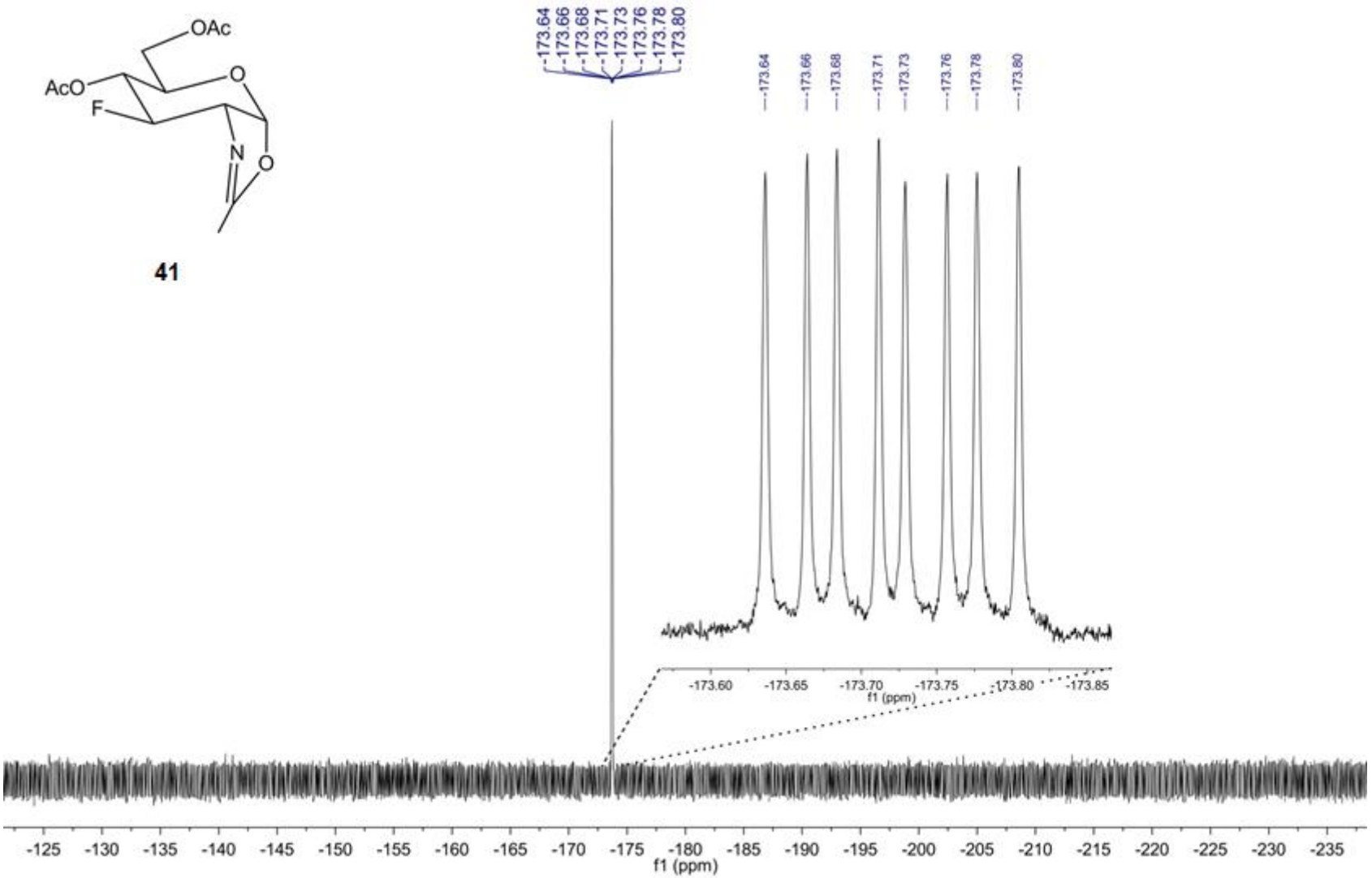
^{19}F NMR (470 MHz, $CDCl_3$) of **40**



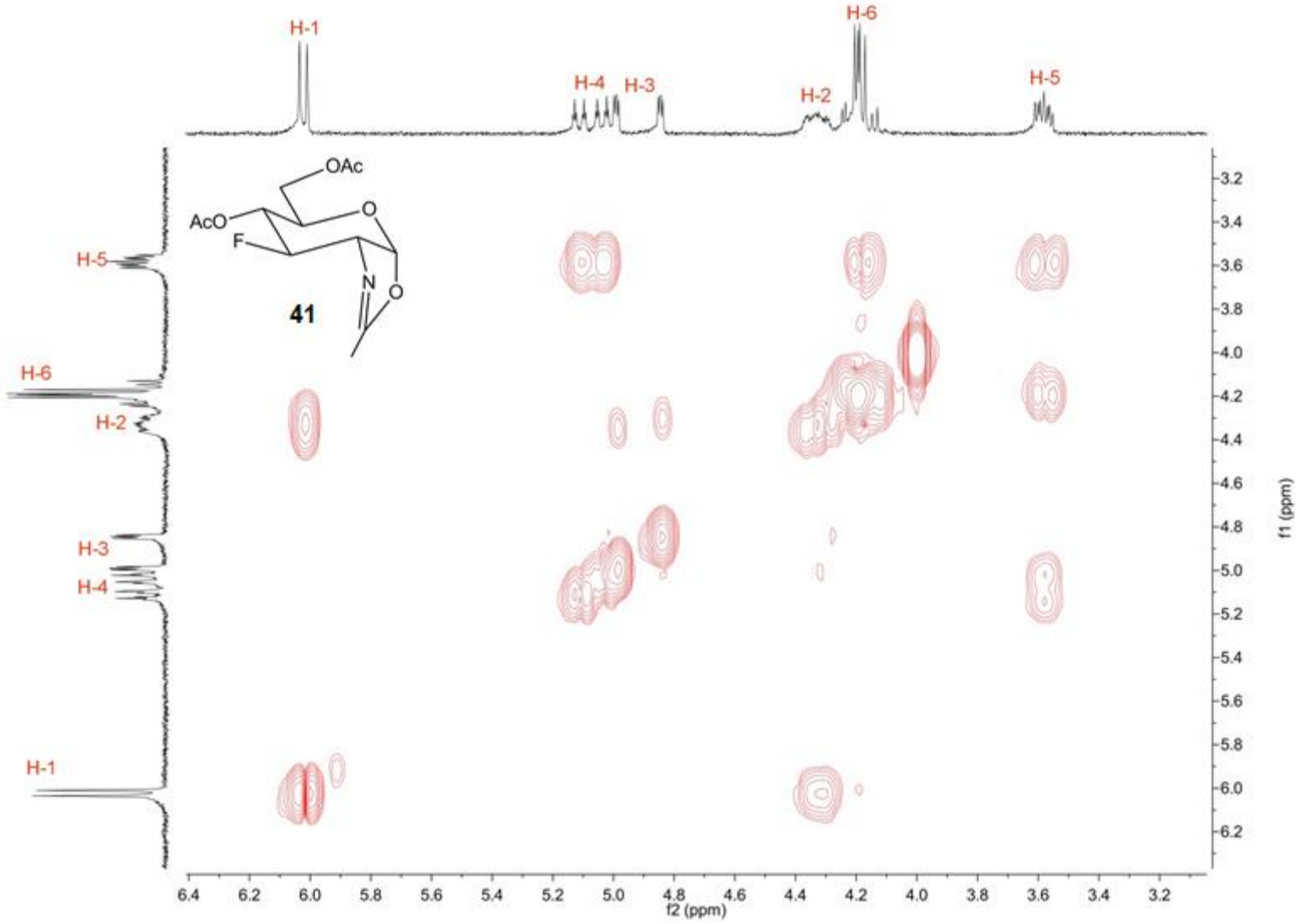
^{1}H NMR (500 MHz, $CDCl_3$) of **41**



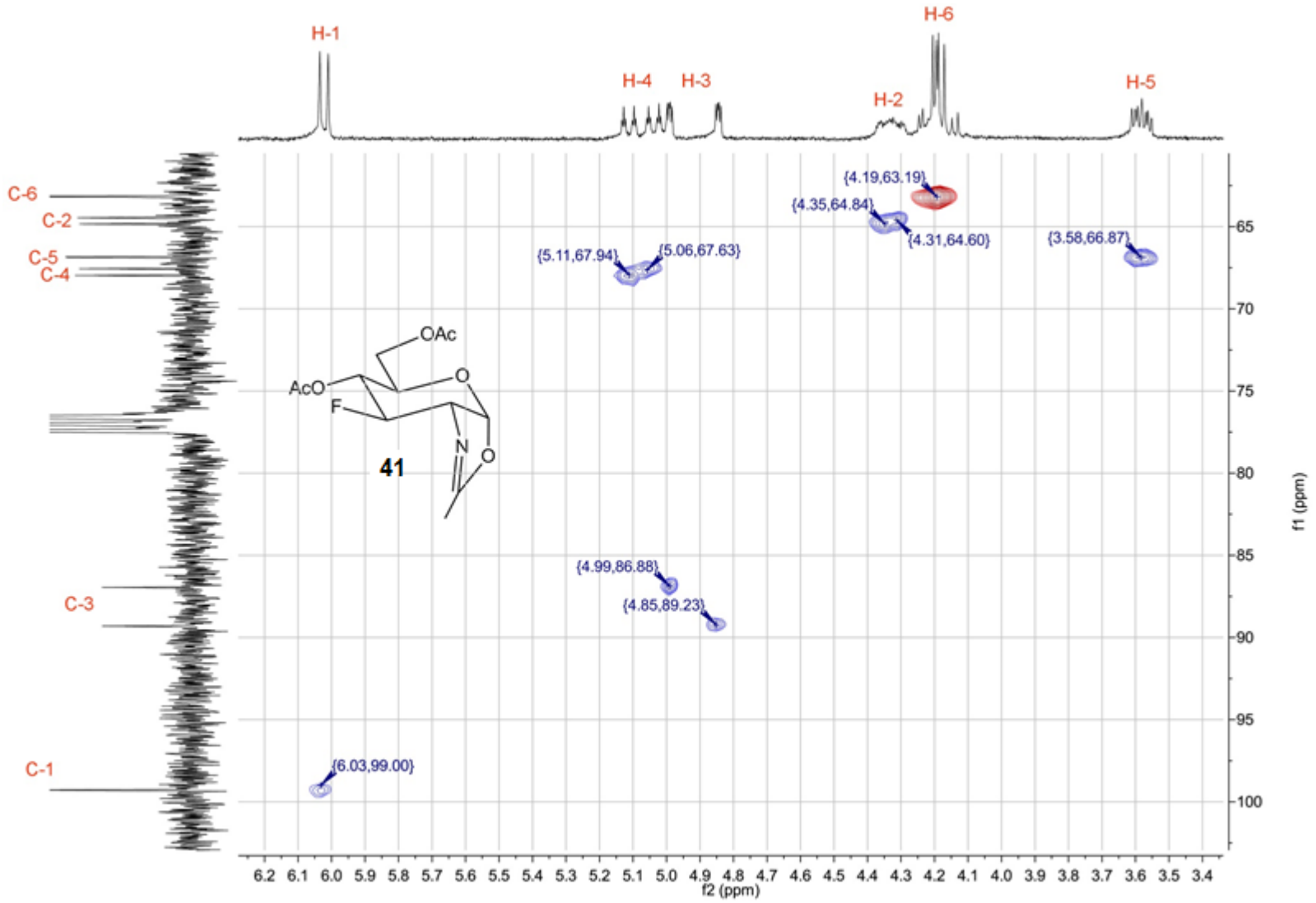
^{13}C {^{1}H} NMR (125 MHz, $CDCl_3$) of **41**



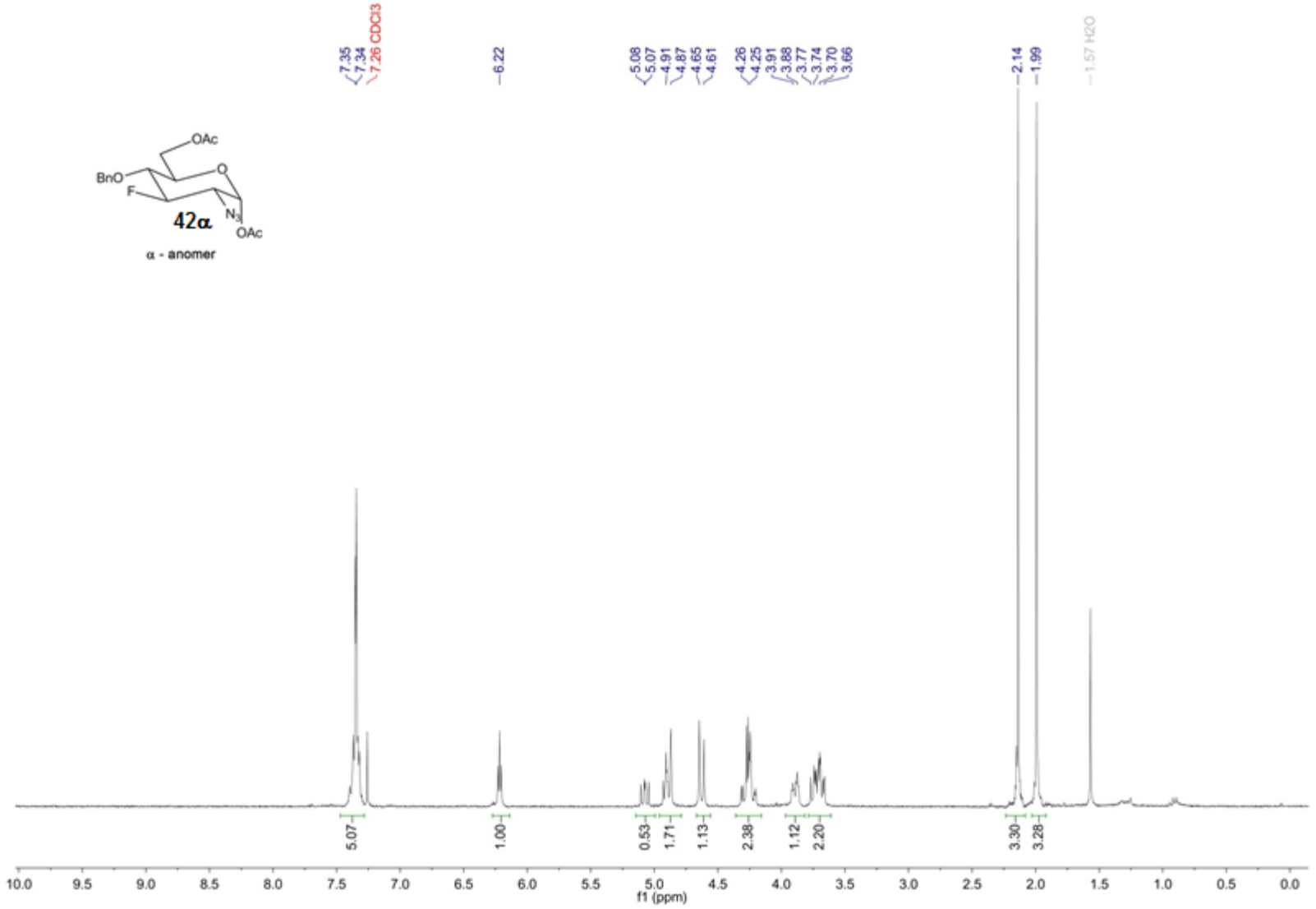
^{19}F NMR (470 MHz, $CDCl_3$) of **41**



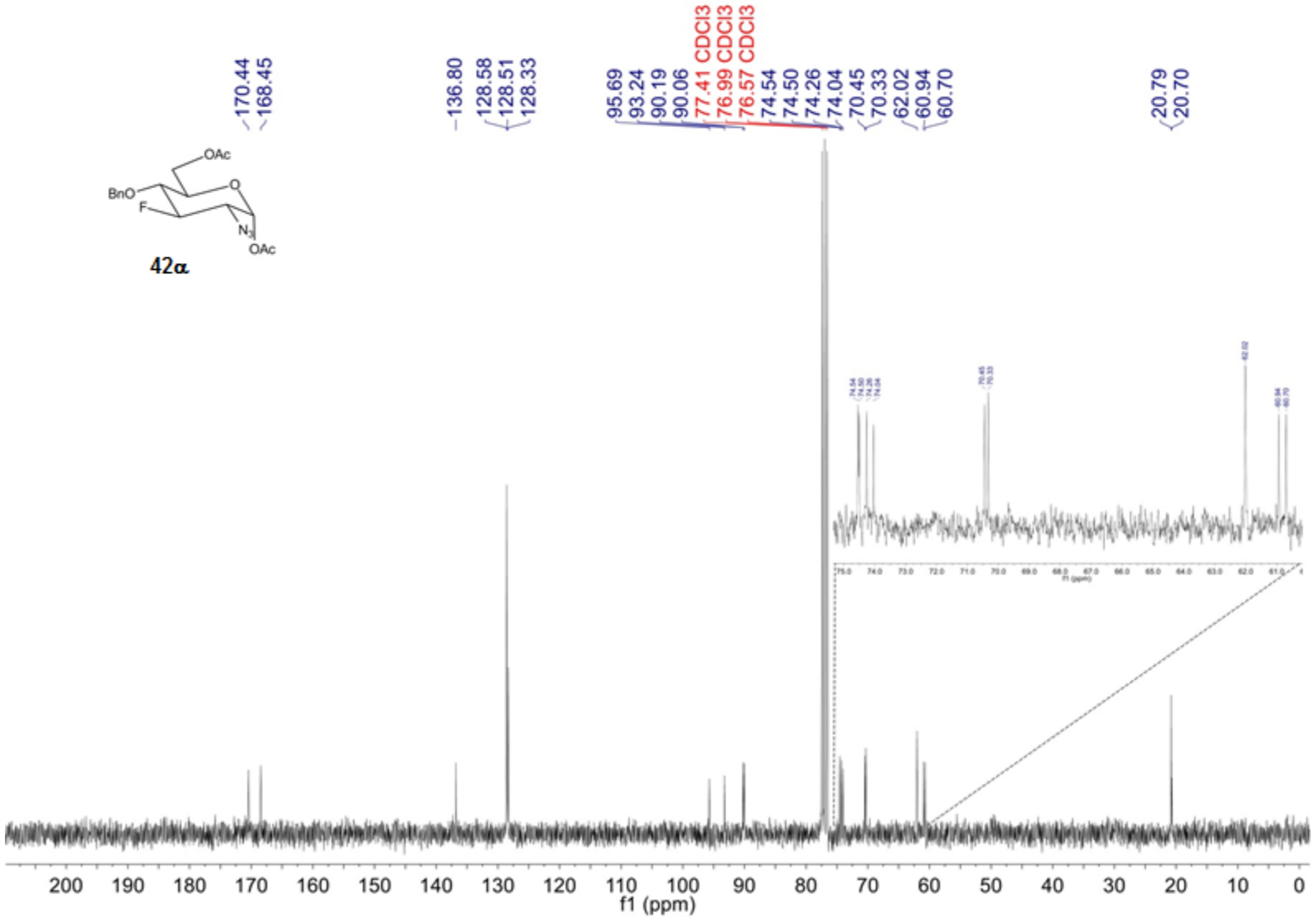
gCOSY NMR (500 MHz, $CDCl_3$) of **41**



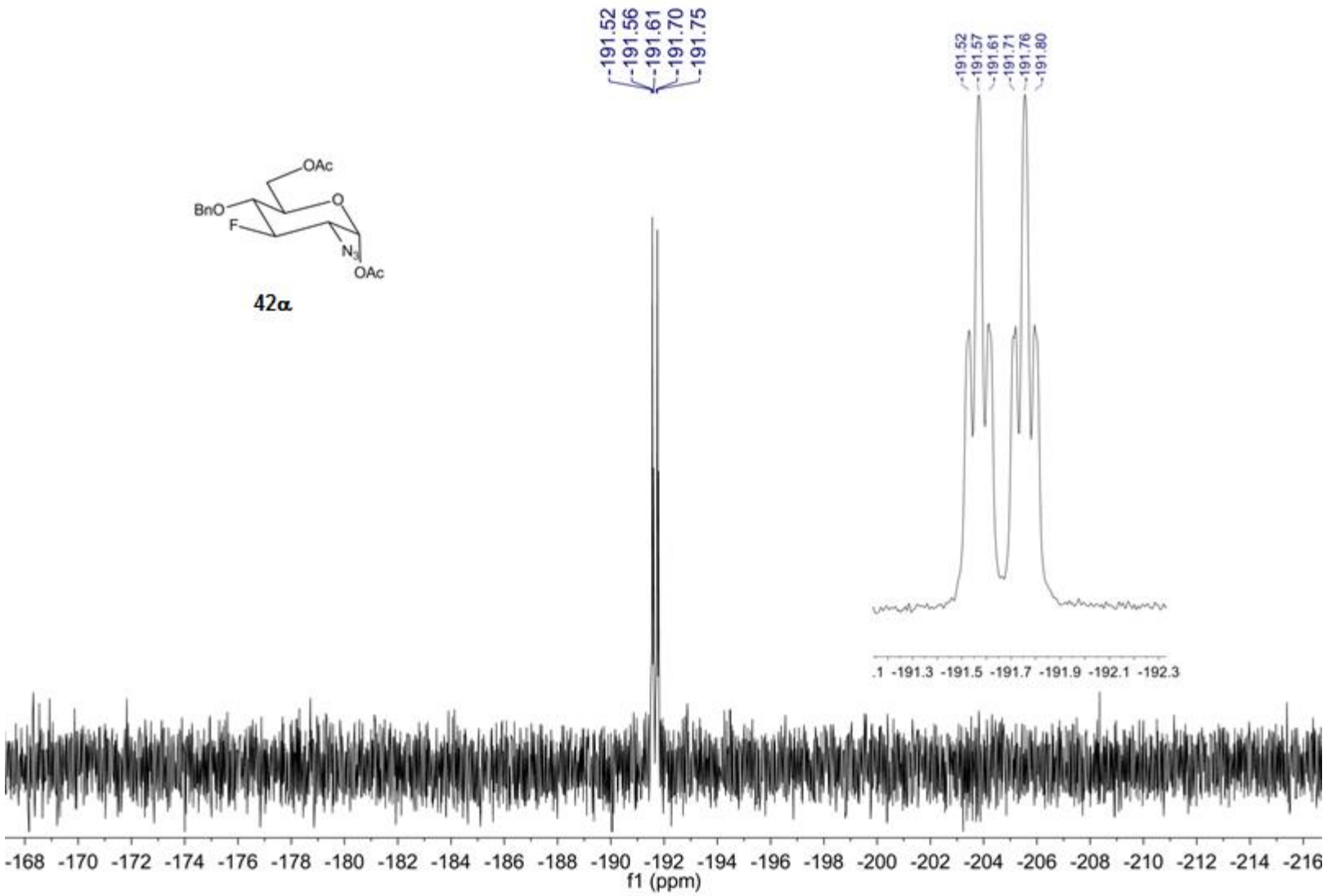
gHSQC NMR (500 MHz, $CDCl_3$) of **41**



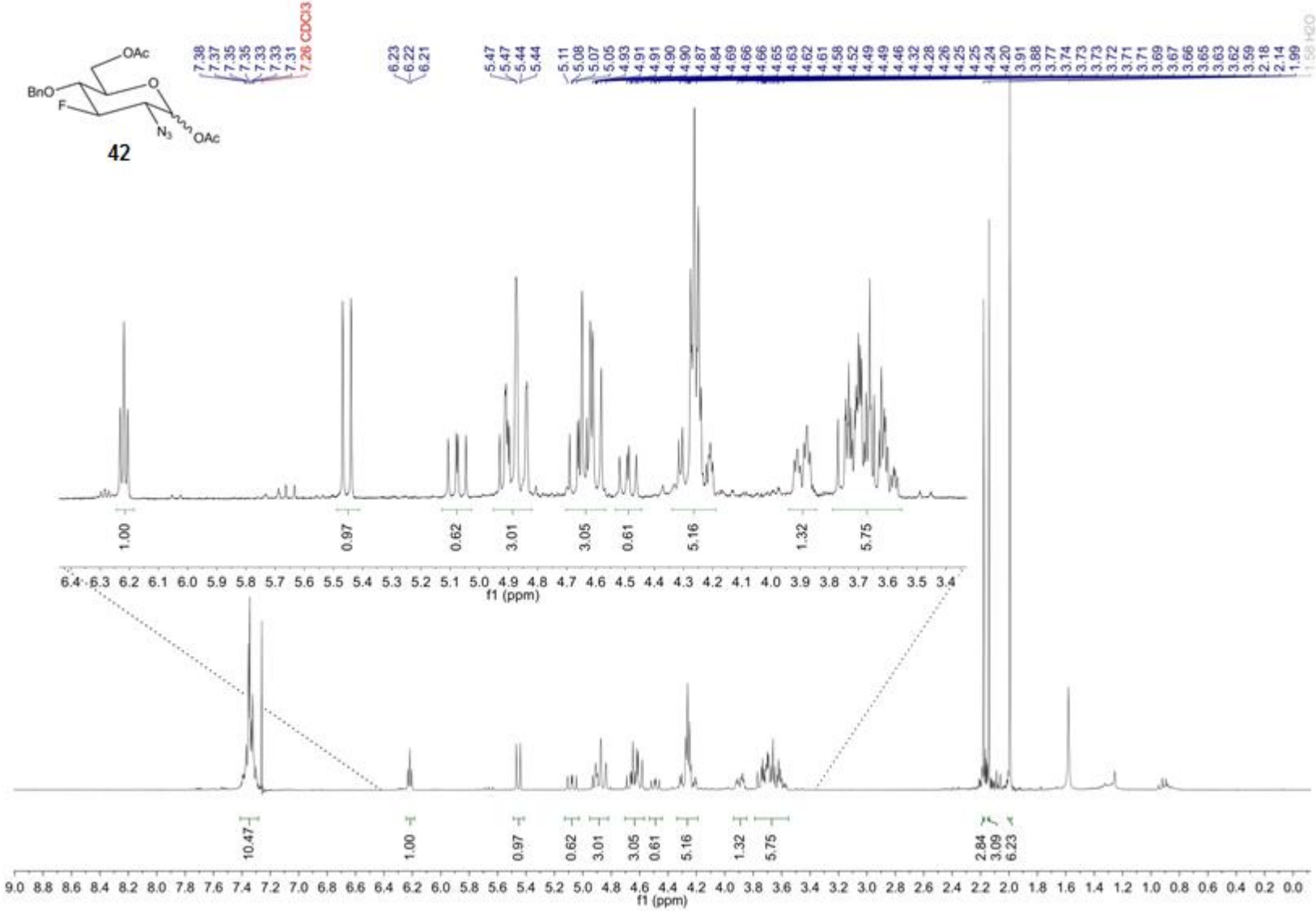
^{1}H NMR (300 MHz, $CDCl_3$) of **42α (**α-anomer)



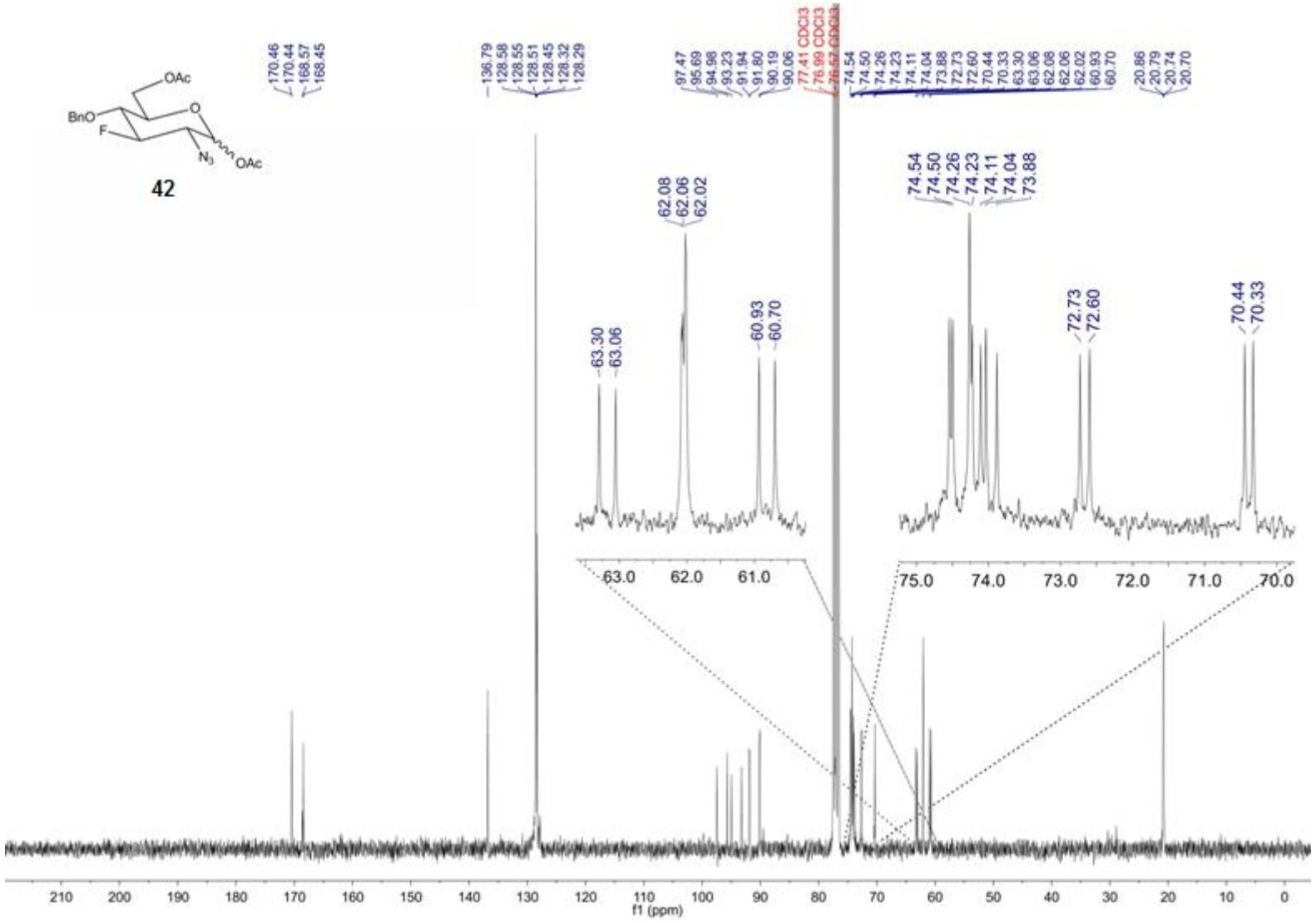
^{13}C {^{1}H} NMR (75 MHz, $CDCl_3$) of **42α** (α-anomer)



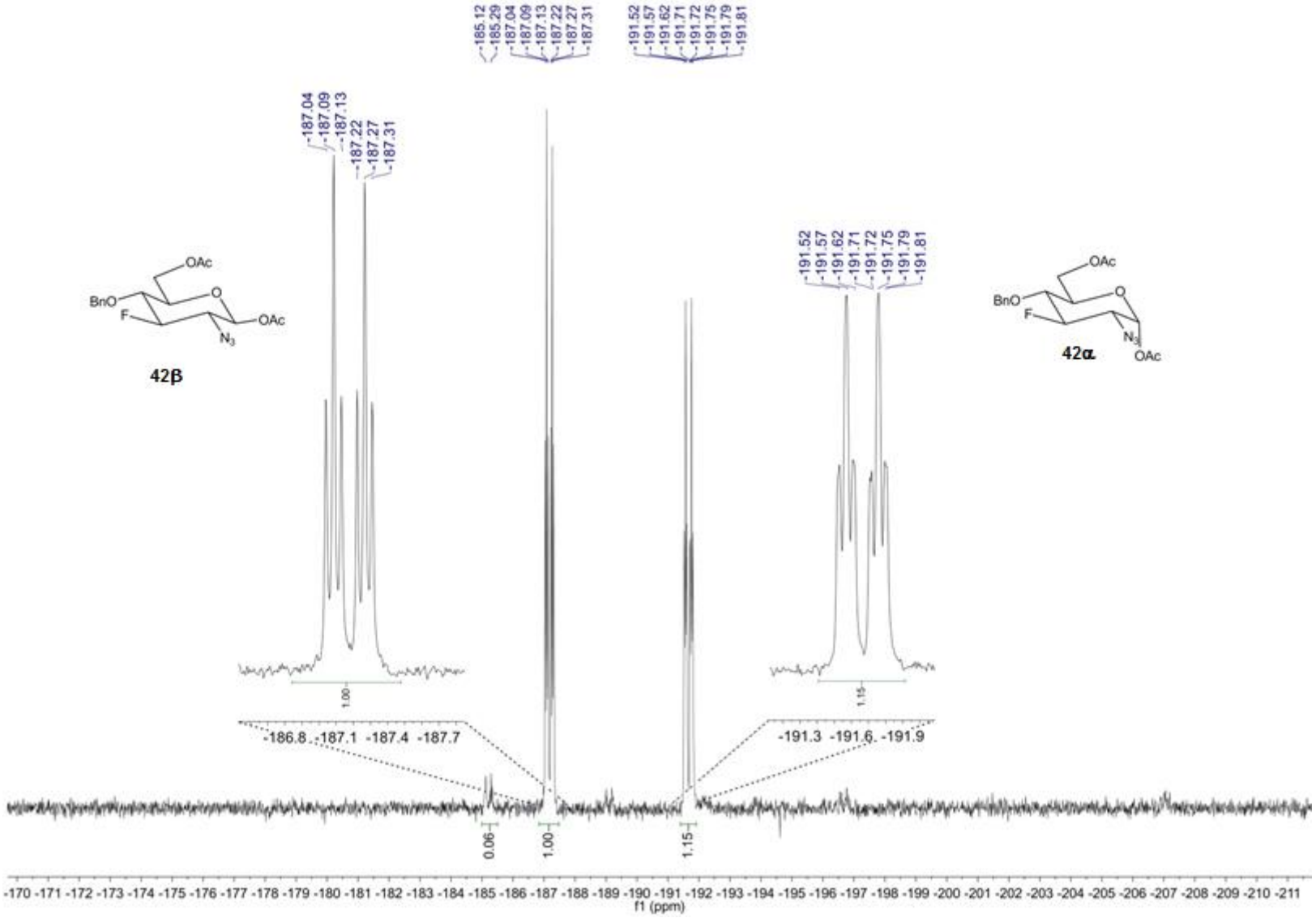
^{19}F NMR (470 MHz, $CDCl_3$) of **42α** (α-anomer)



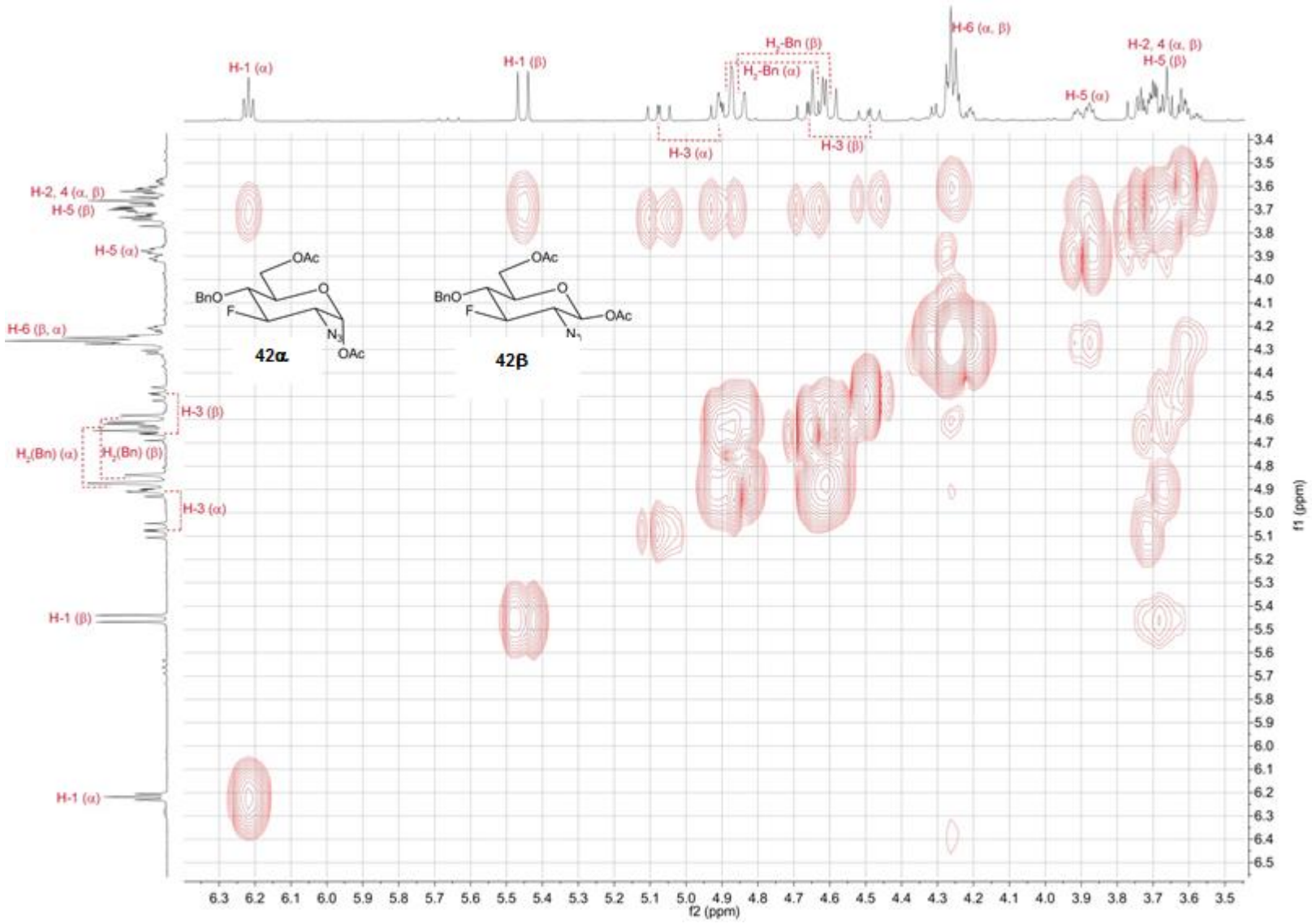
^{1}H NMR (300 MHz, $CDCl_3$) of **42** (α-anomer+β-anomer)



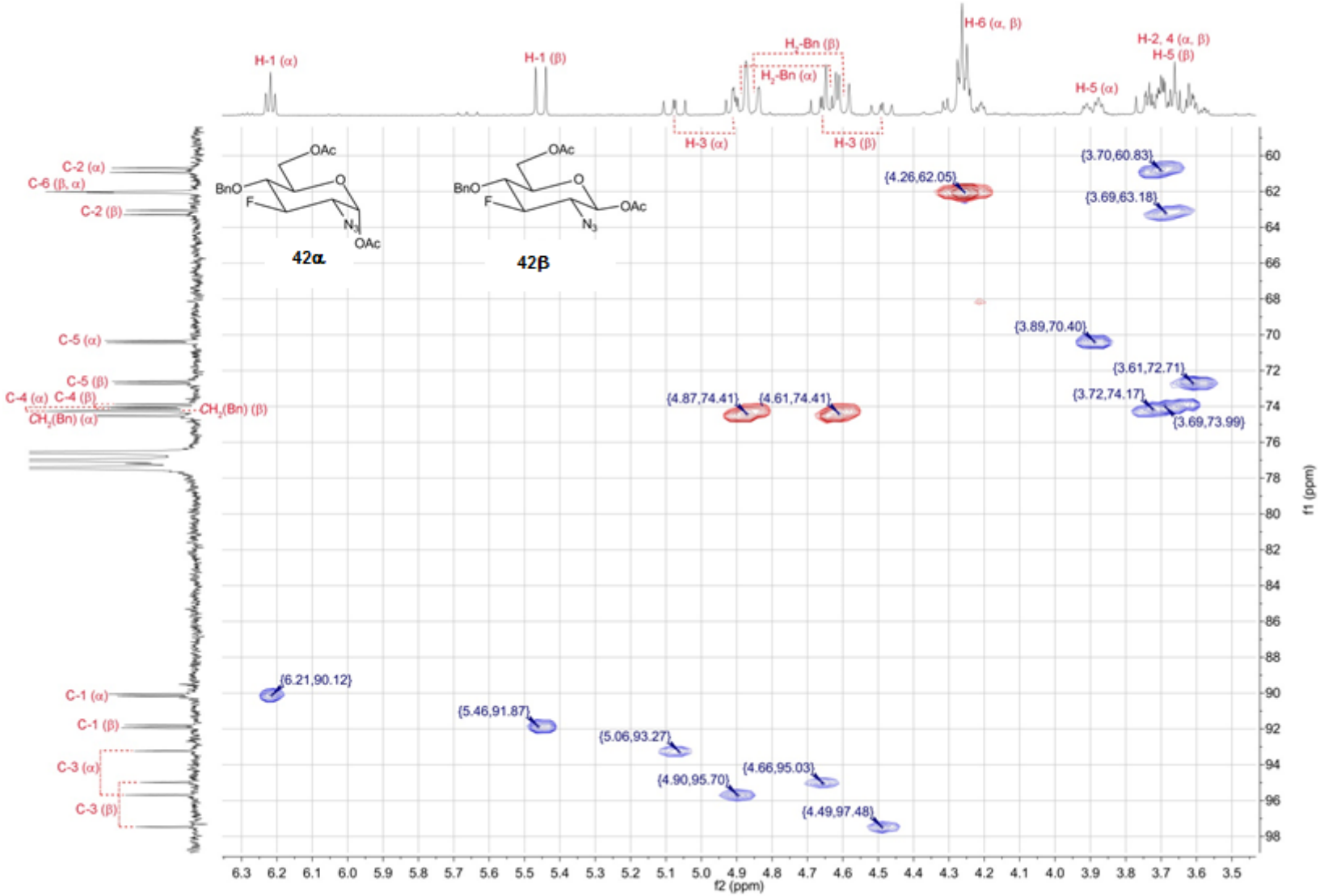
^{13}C {^{1}H} NMR (75 MHz, $CDCl_3$) of **42** (α-anomer+β-anomer)



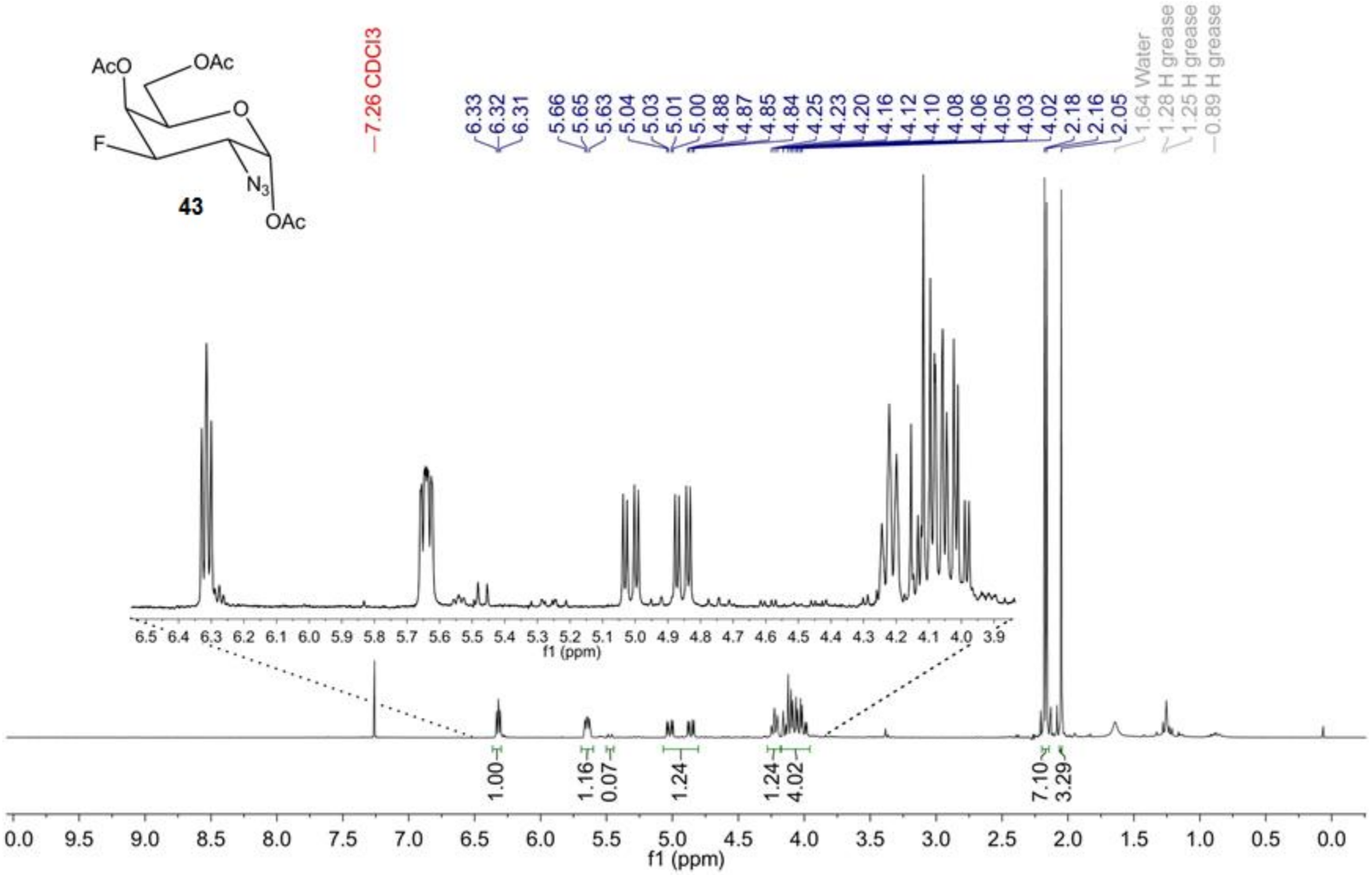
^{19} F NMR (282 MHz, $CDCl_3$) of **42** (α-anomer+β-anomer)



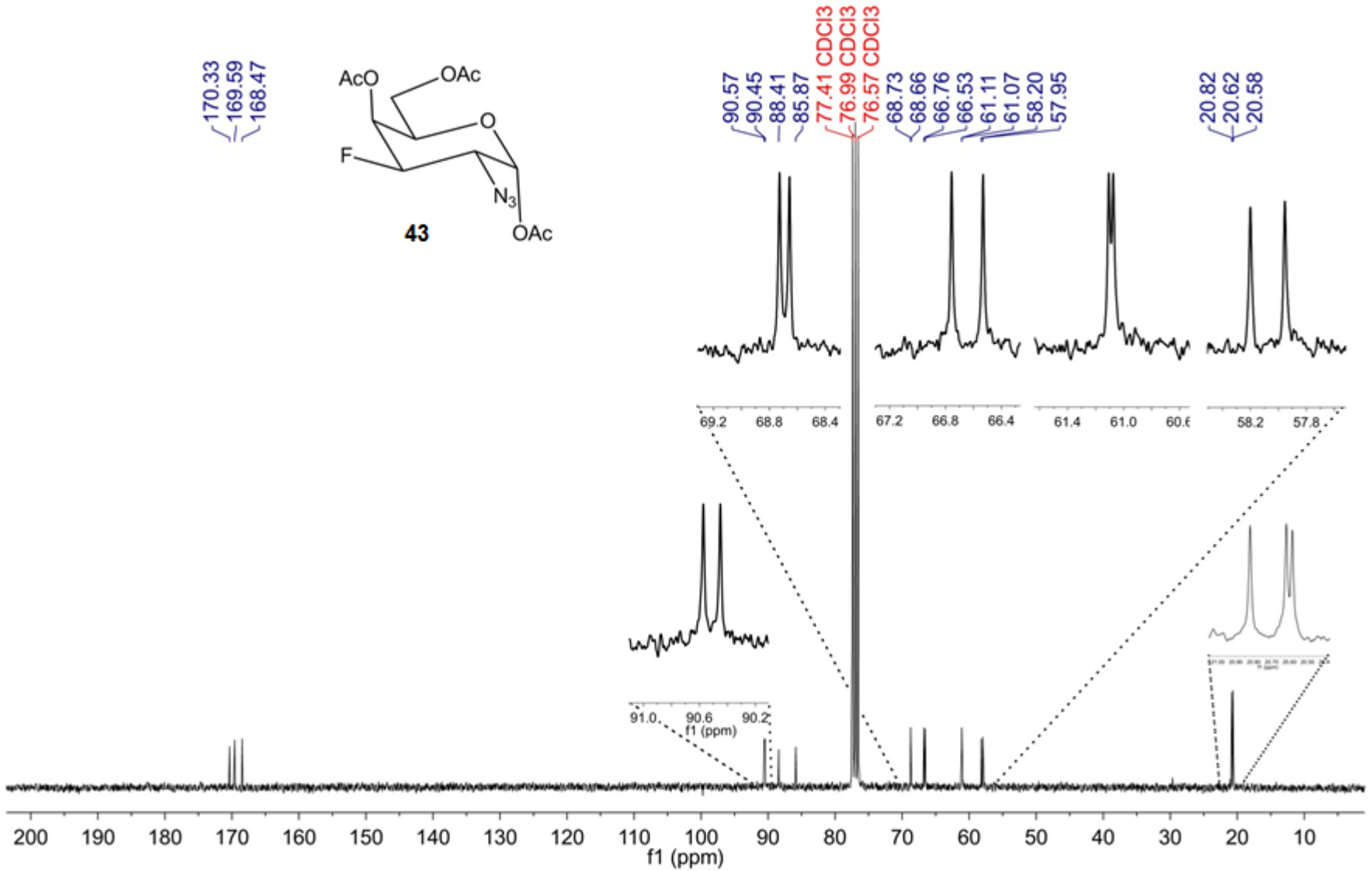
gCOSY NMR (300 MHz, $CDCl_3$) of **42** (α-anomer/β-anomer ca 1:1)



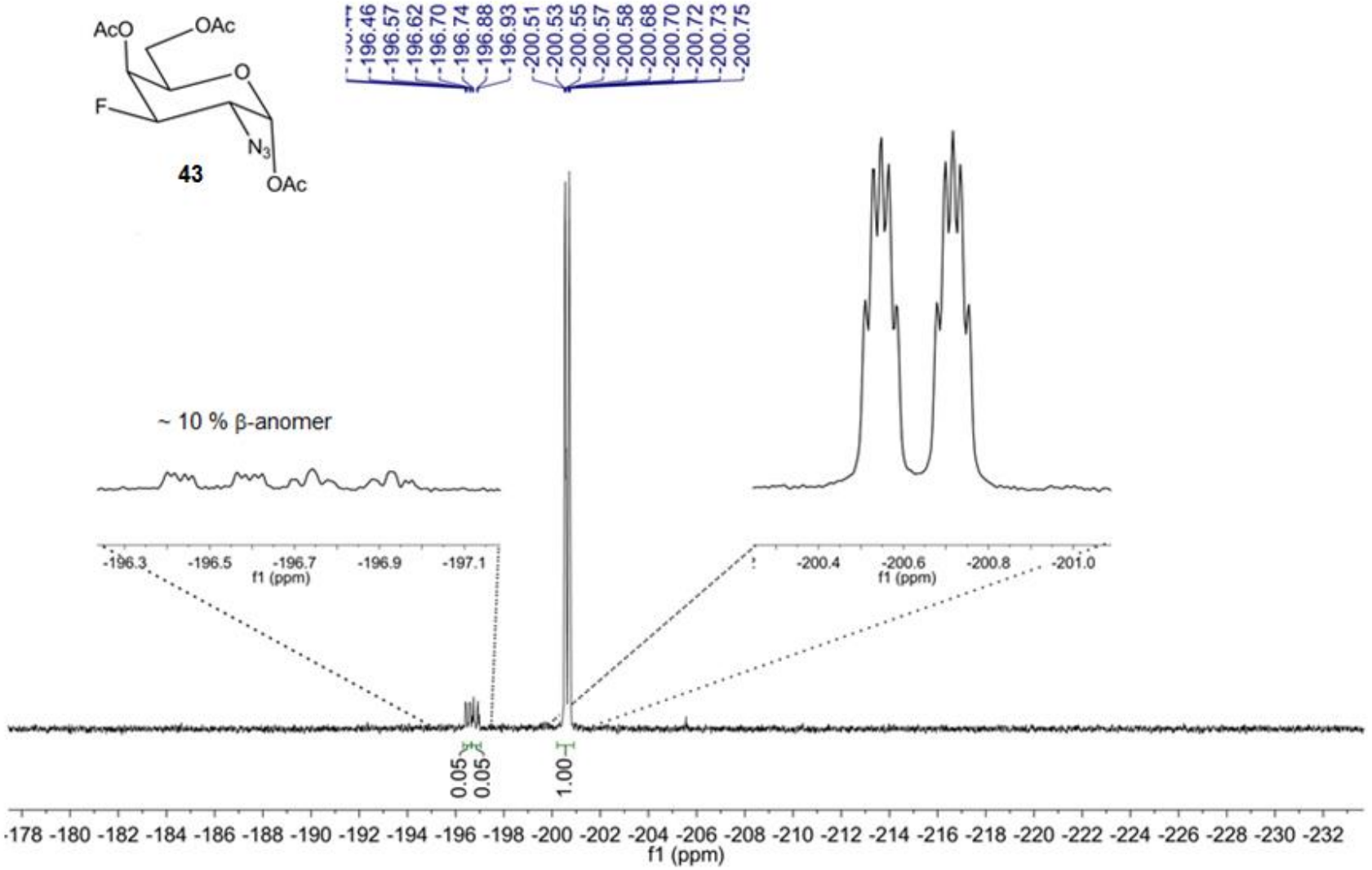
gHSQC NMR (300 MHz, $CDCl_3$) of **42** (α-anomer/β-anomer ca 1:1)



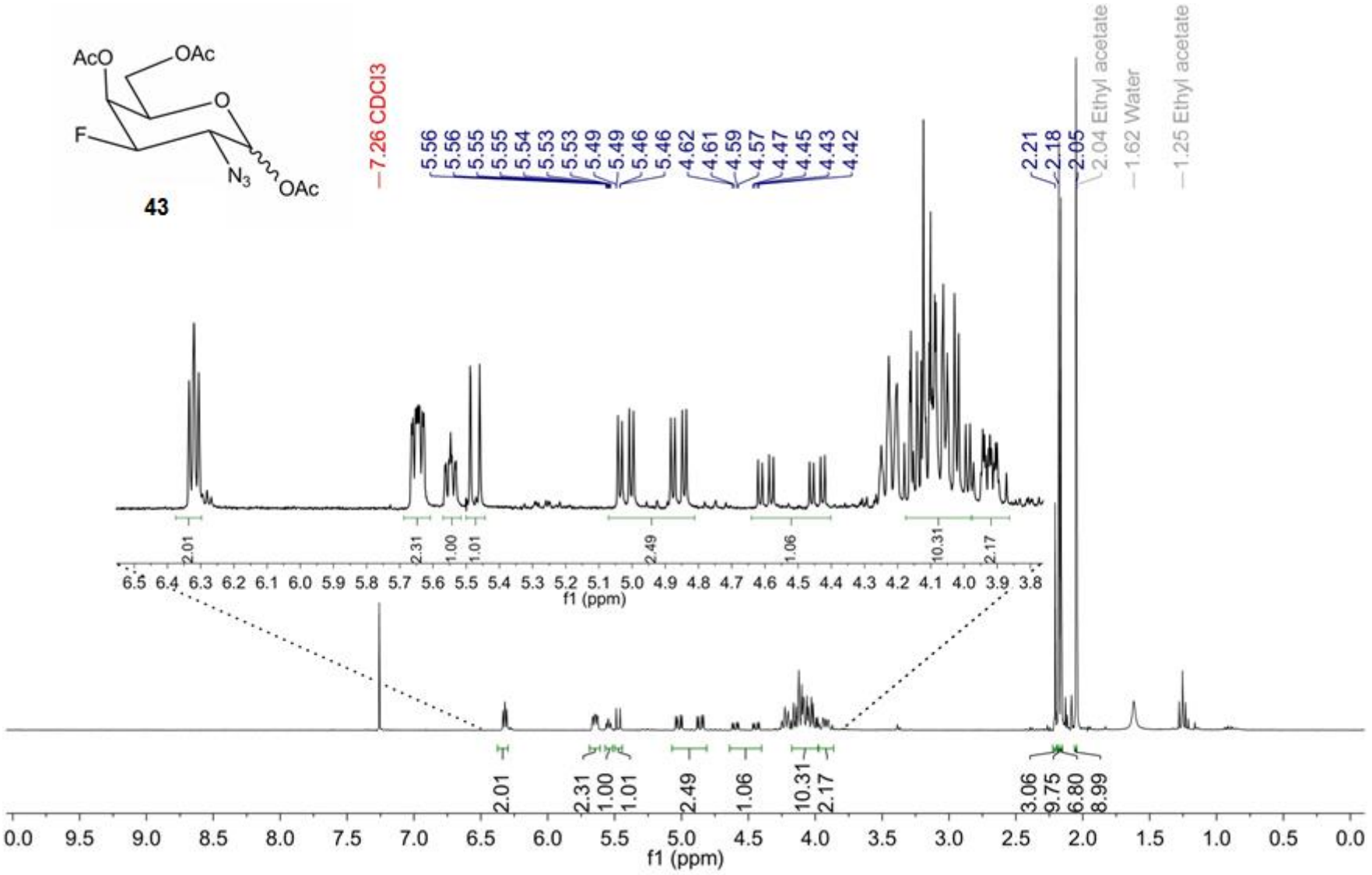
^{1}H NMR (300 MHz, $CDCl_3$) of **43** (α-anomer and ca. 10% β-anomer)



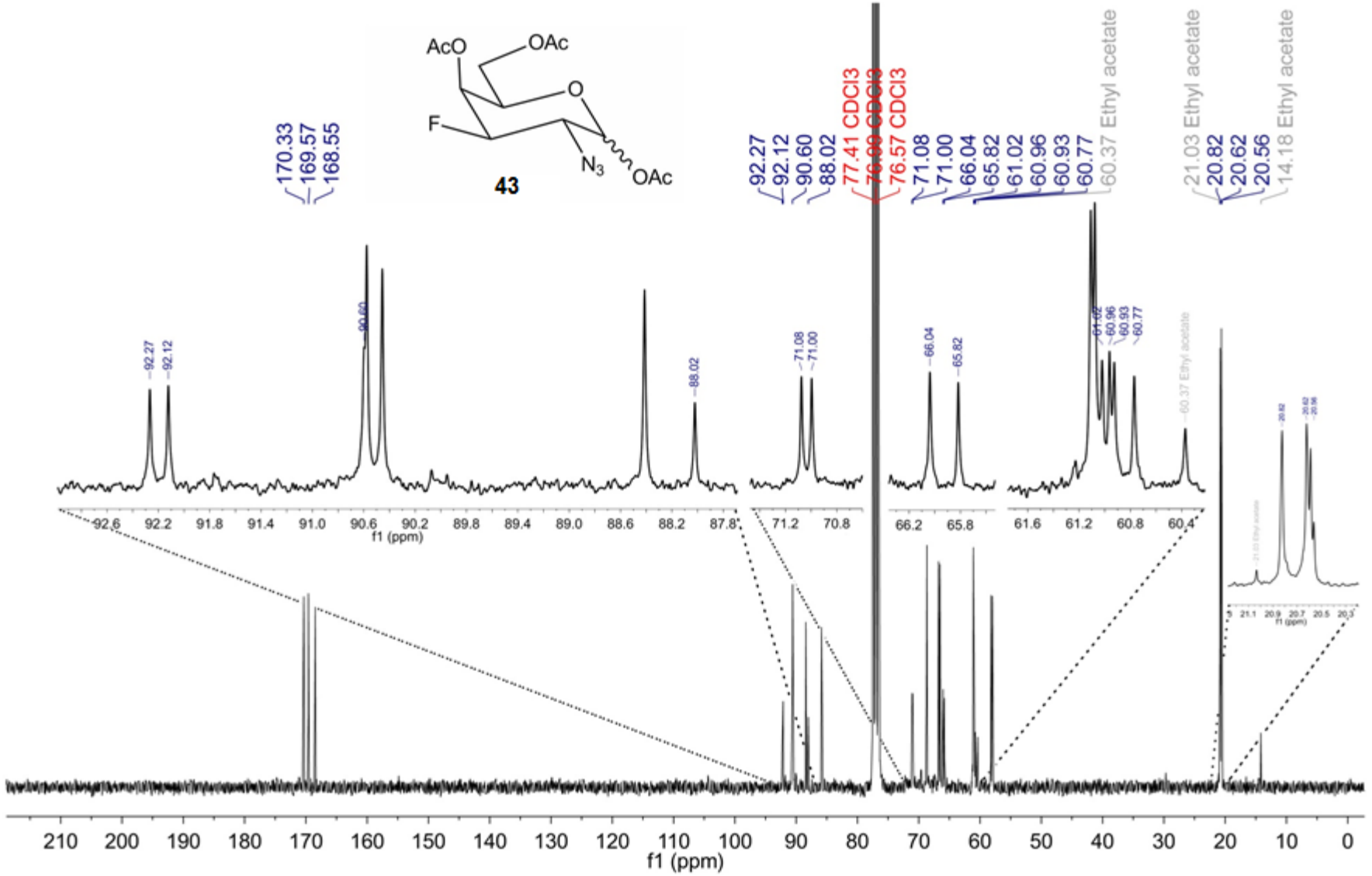
^{13}C {^{1}H} NMR (75 MHz, $CDCl_3$) of **43** (α-anomer and ca. 10% β-anomer).



^{19}F NMR (282 MHz, $CDCl_3$) of **43** (α-anomer and ca. 10% β-anomer)



^{1}H NMR (300 MHz, $CDCl_3$) of **43** (α/β ca 3:7)



^{13}C {^{1}H} NMR (75 MHz, $CDCl_3$) of **43** (α/β ca 3:7)

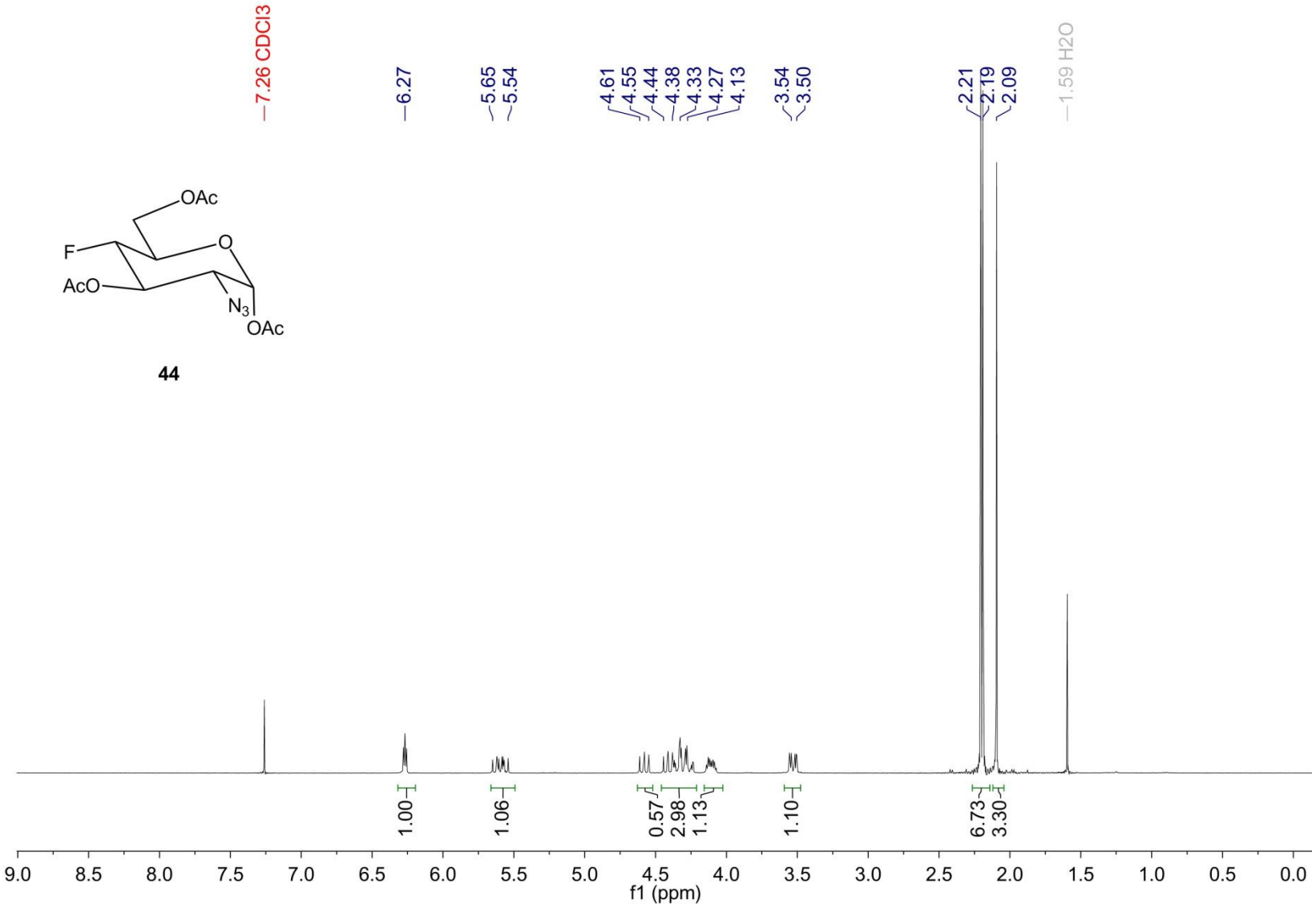


Figure SII-90. ^{1}H NMR (300 MHz, $CDCl_3$) of **44** (α-anomer)

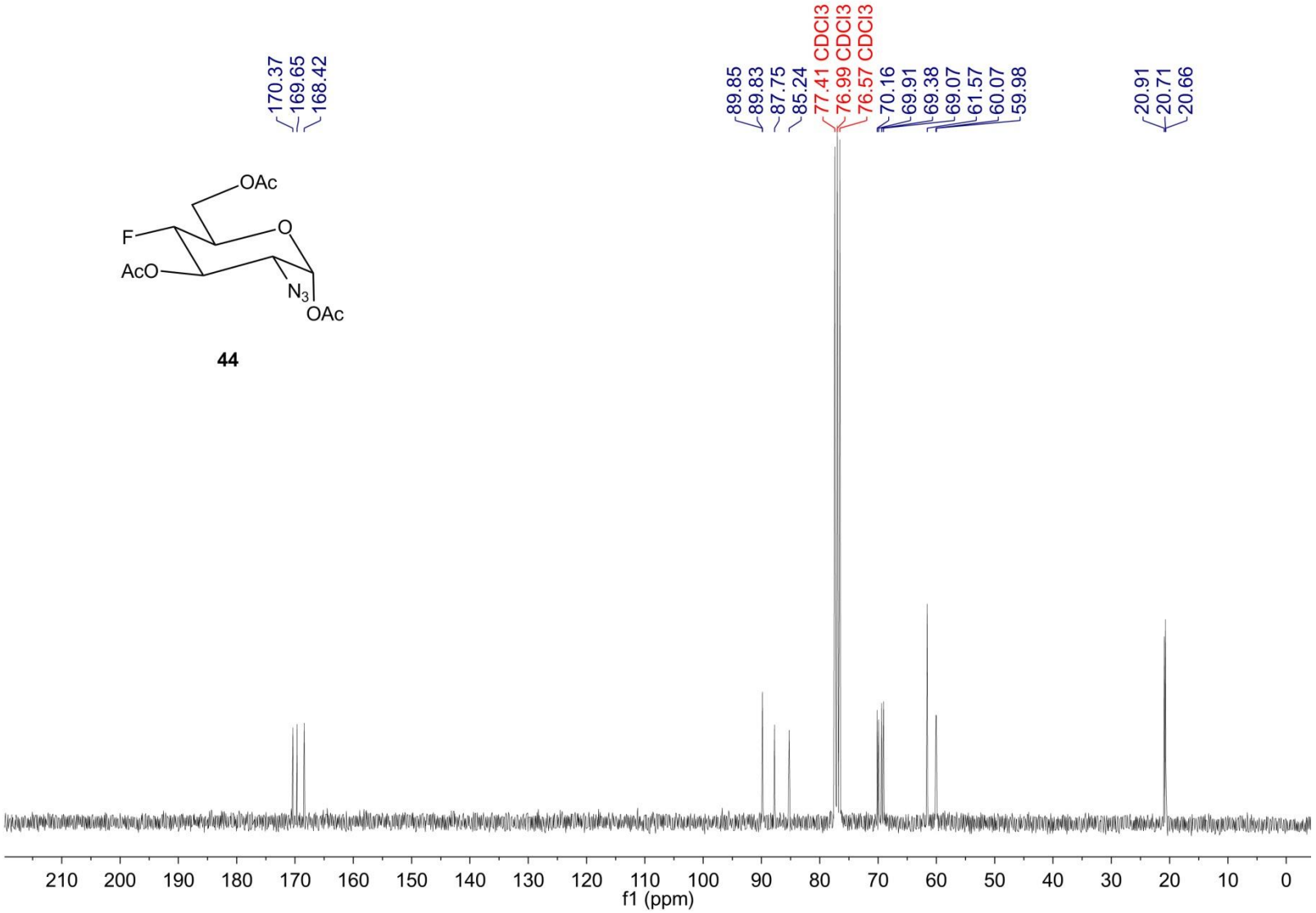
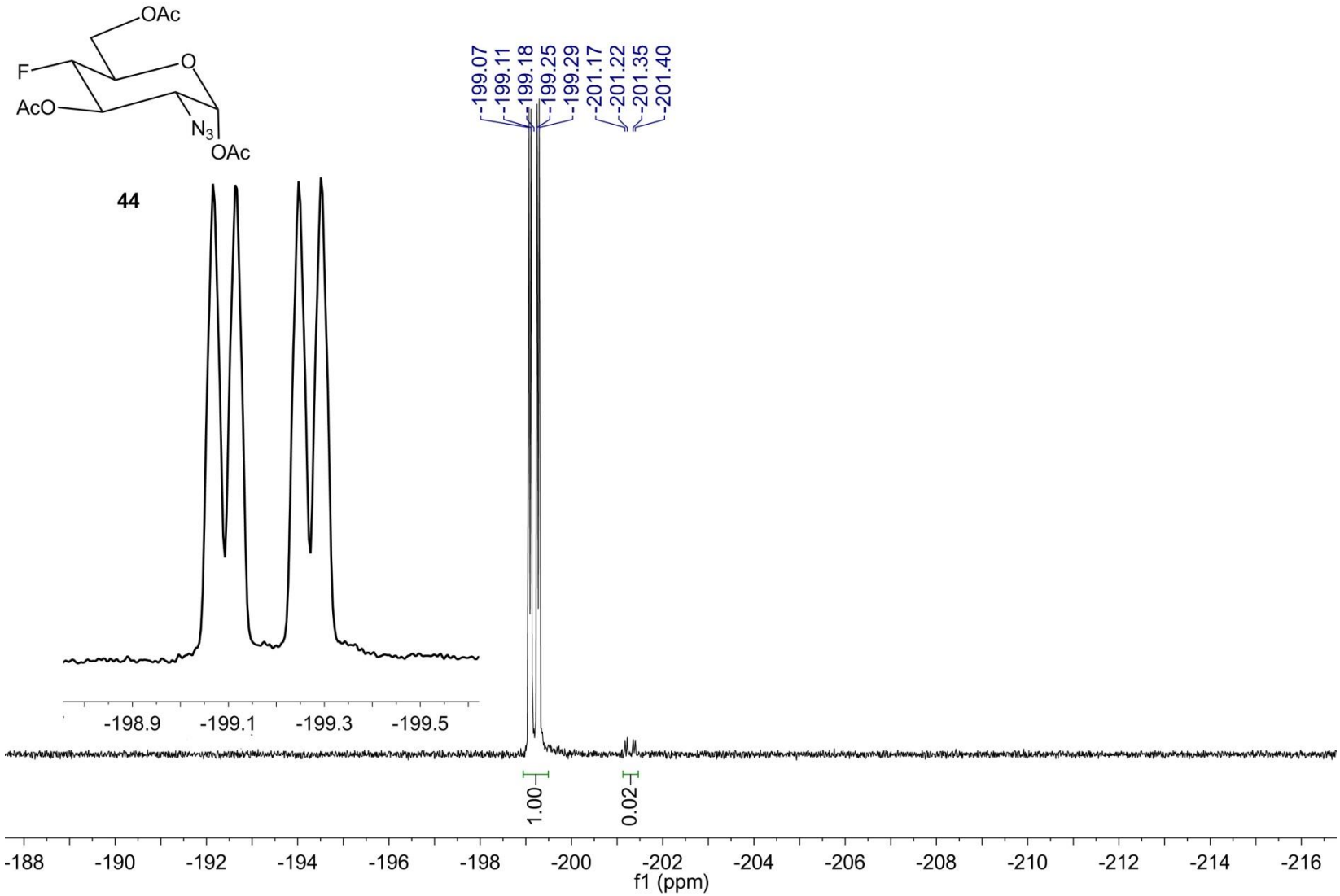
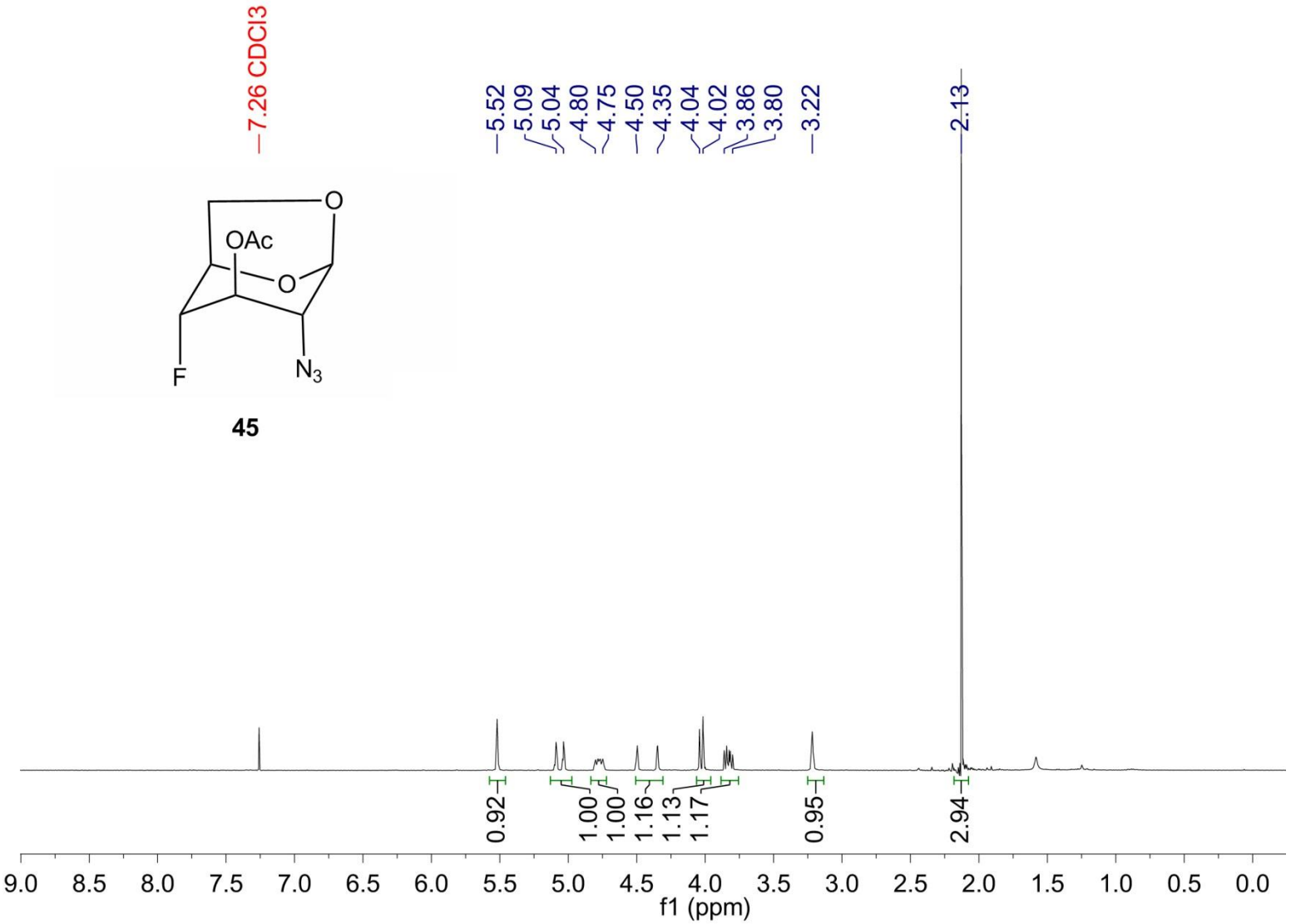


Figure SII-91. ^{13}C {^{1}H} NMR (75 MHz, $CDCl_3$) of **44** (α-anomer)

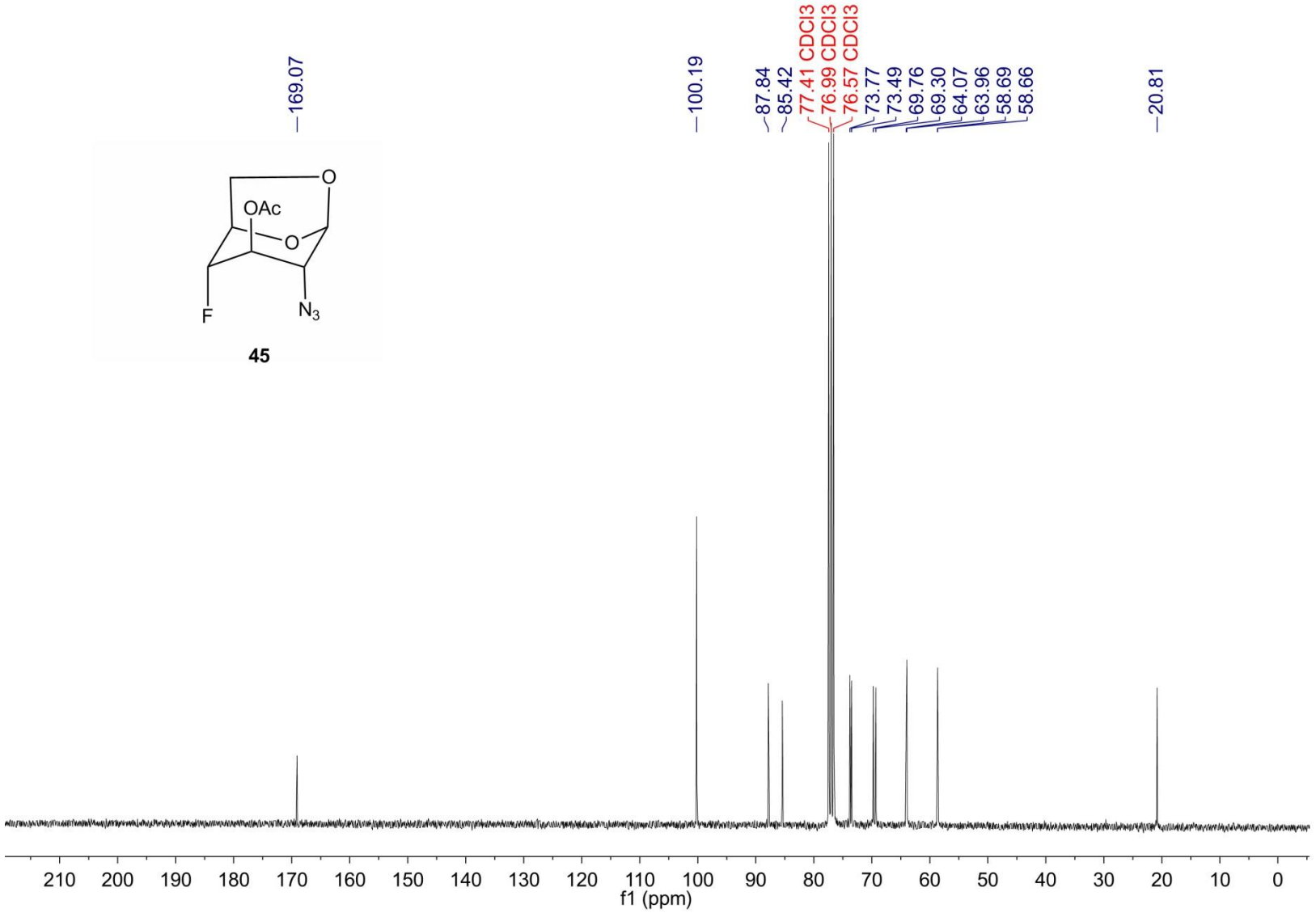


^{19}F NMR (282 MHz, $CDCl_3$) of **44** (α-anomer)

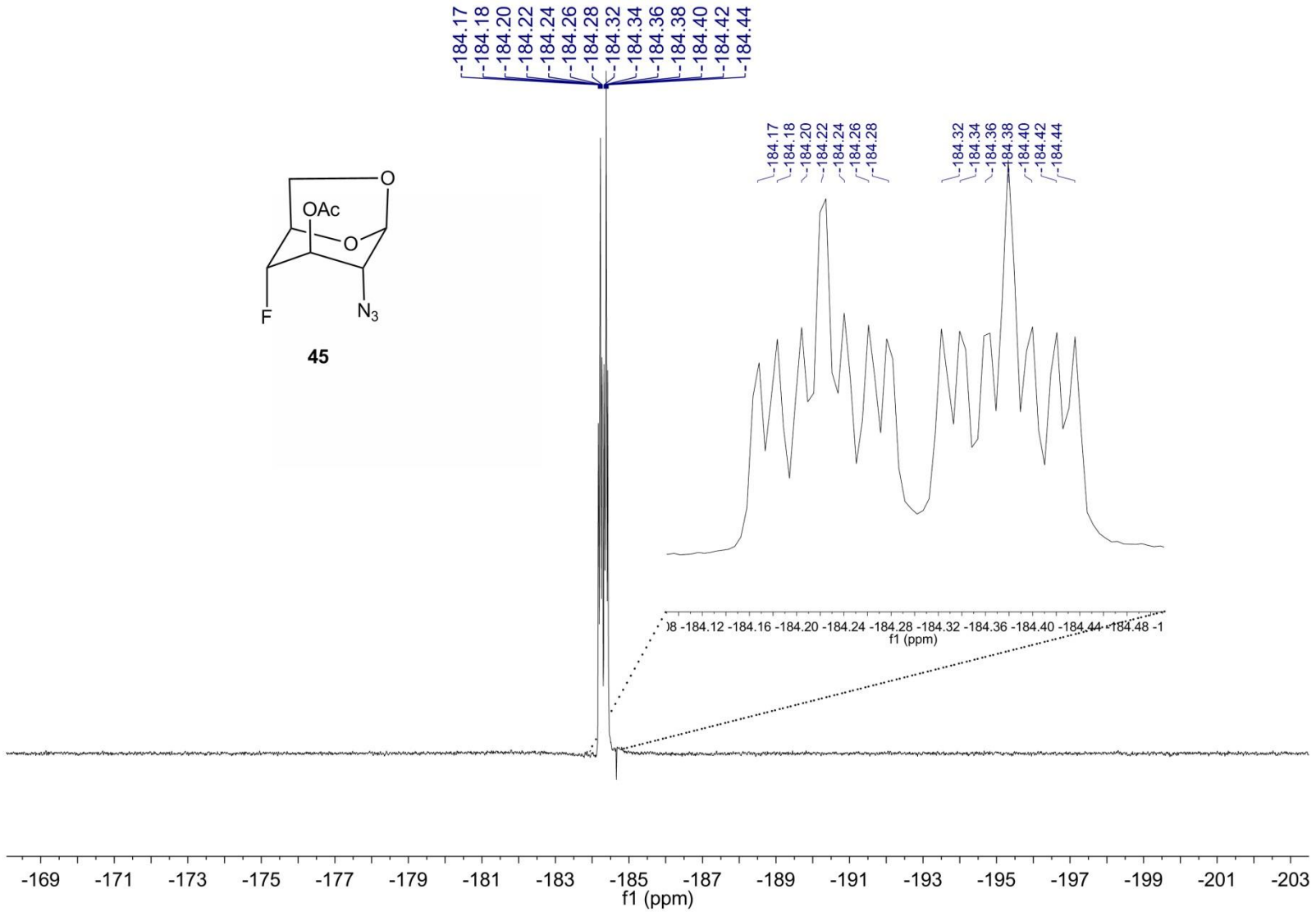


45

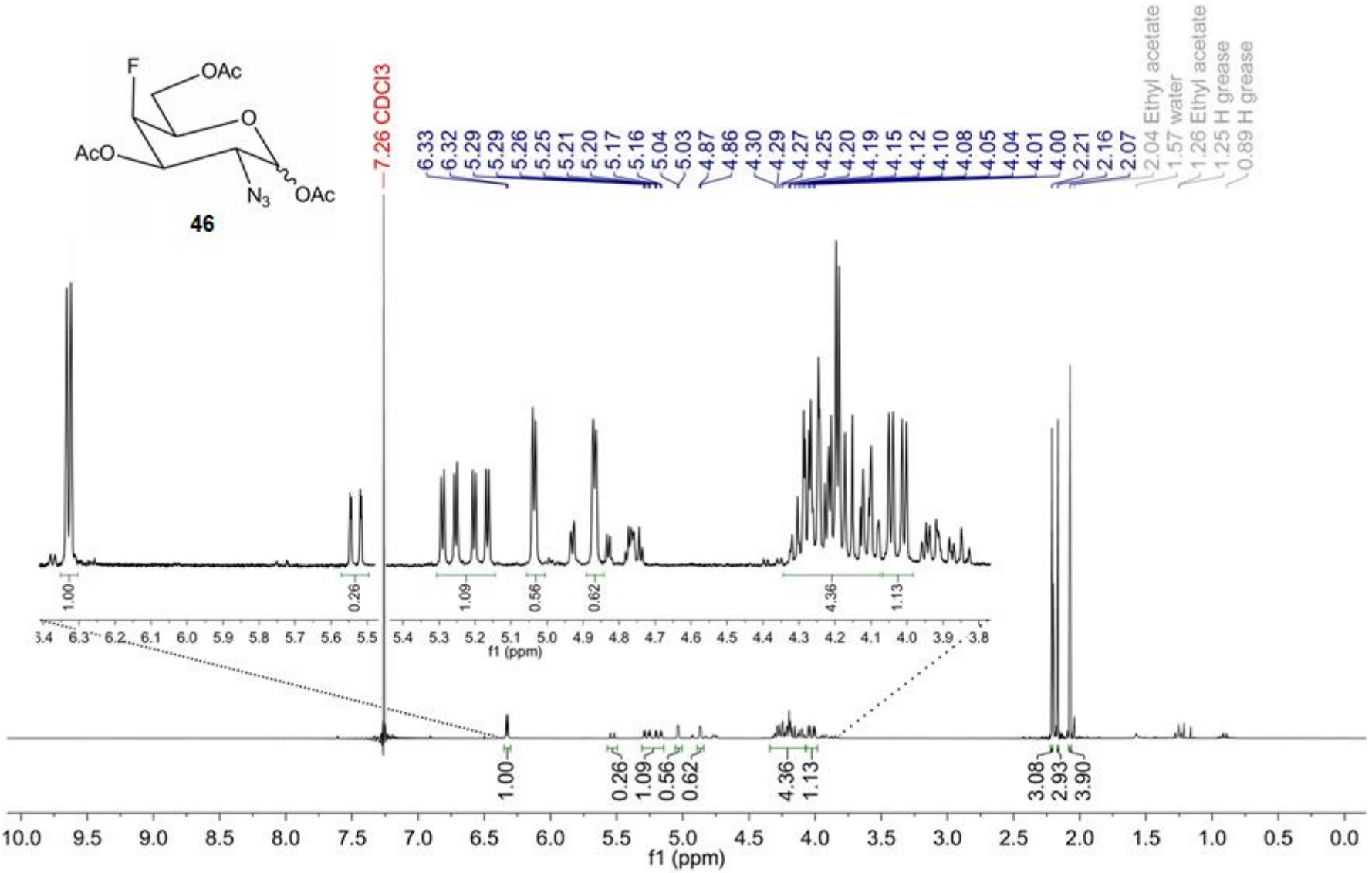
^{1}H NMR (300 MHz, $CDCl_3$) of **45**



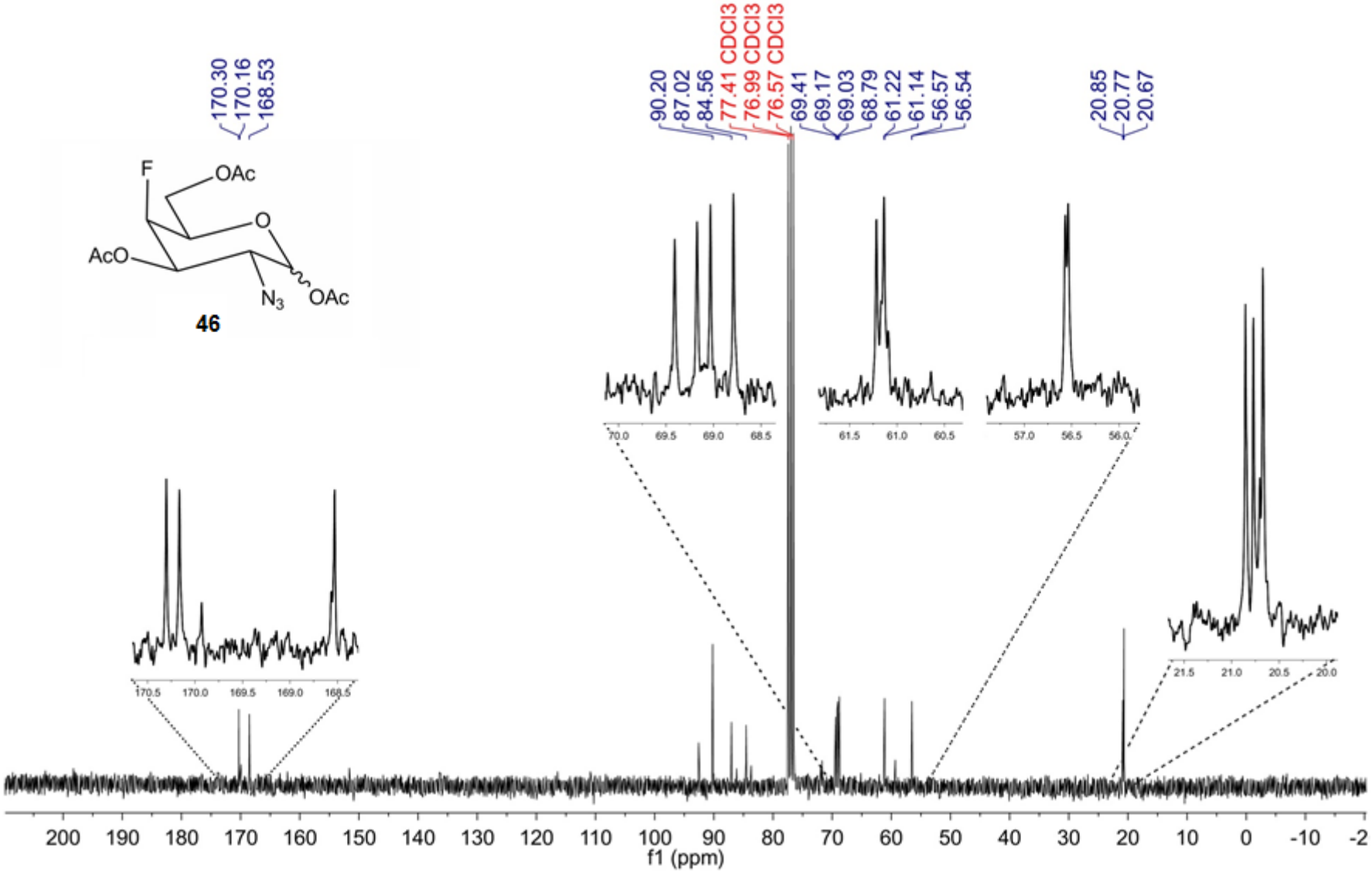
^{13}C {^{1}H} NMR (75 MHz, $CDCl_3$) of **45**



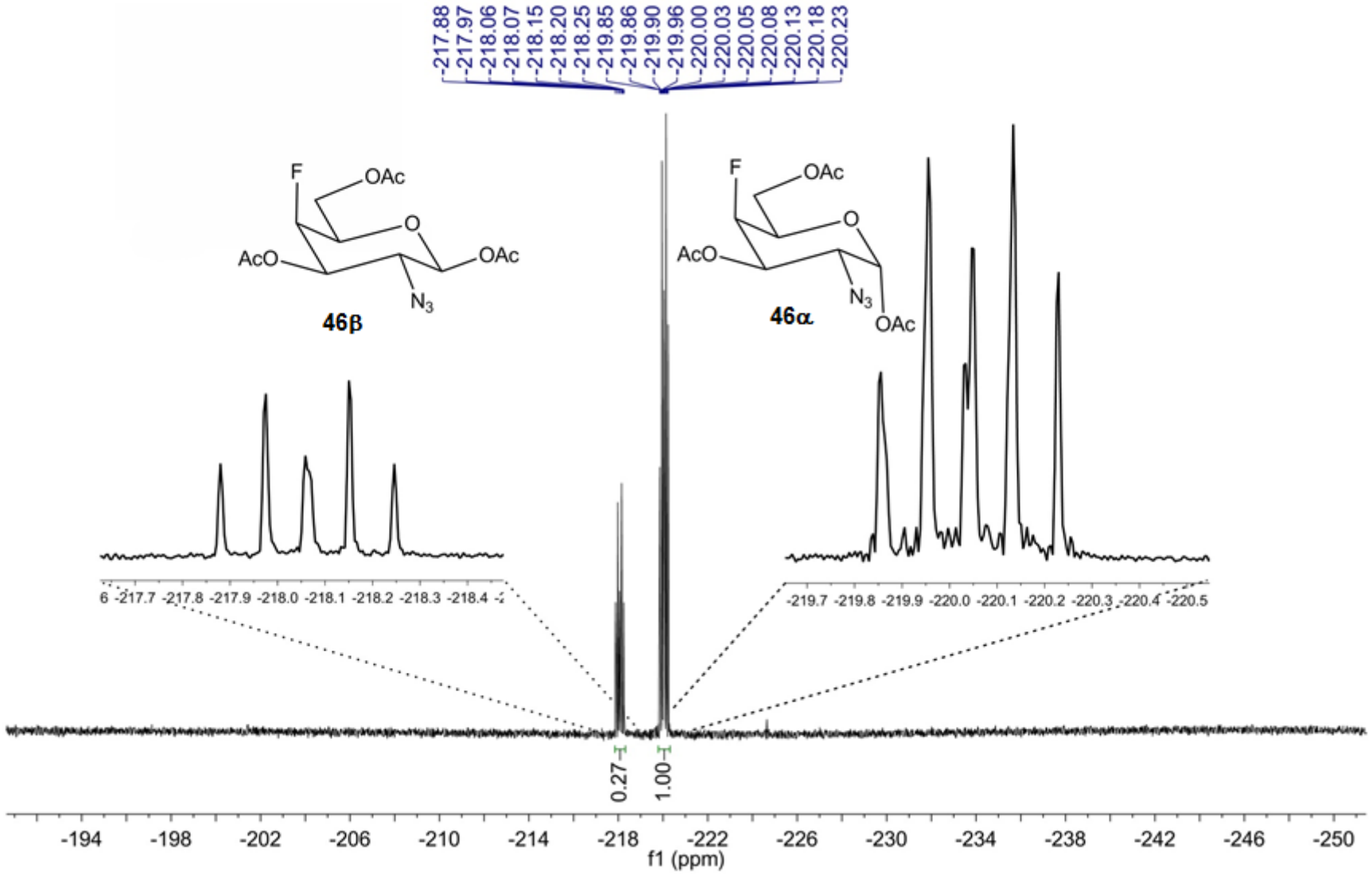
^{19}F NMR (282 MHz, $CDCl_3$) of **45**



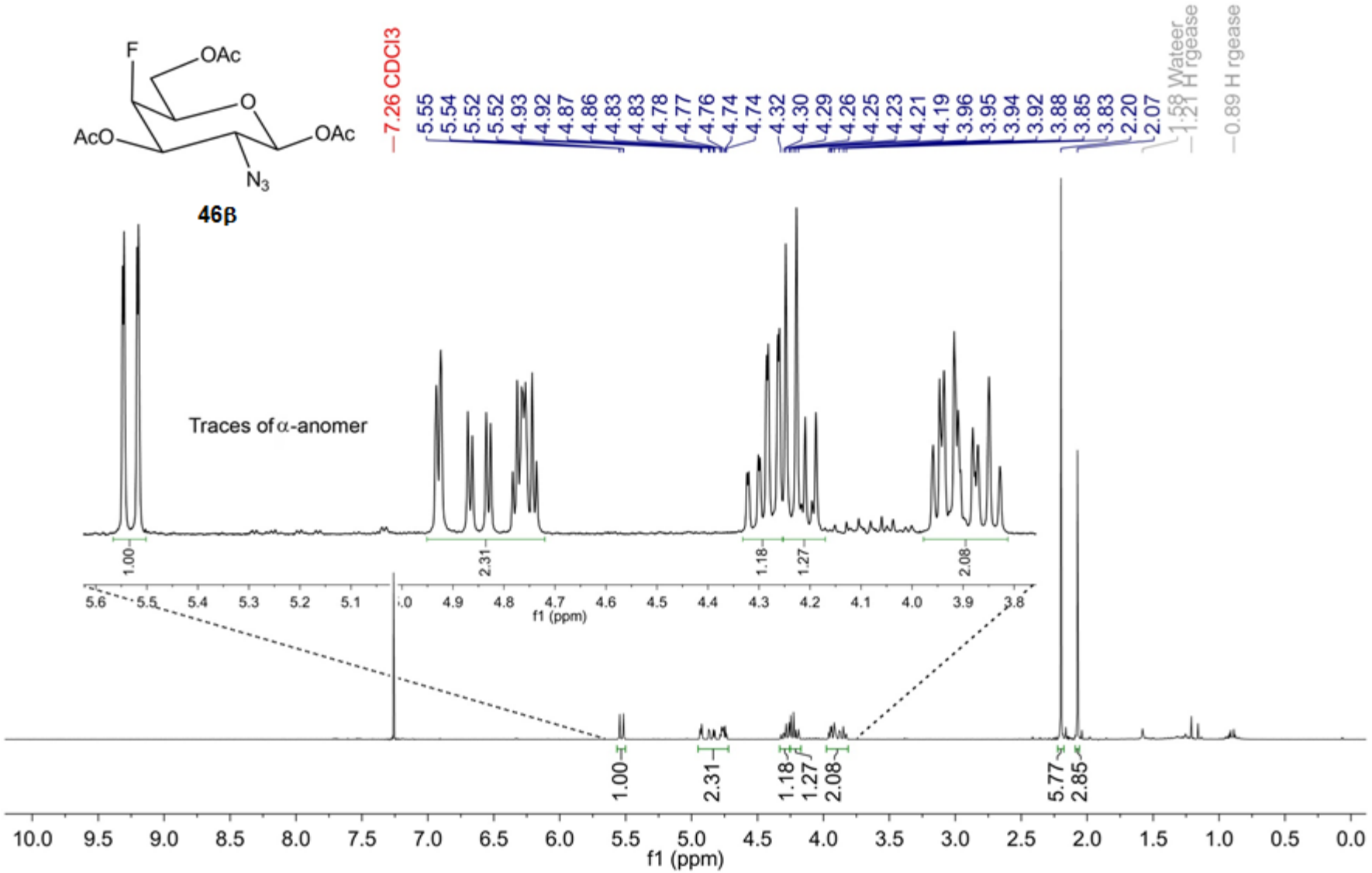
^{1}H NMR (300 MHz, $CDCl_3$) of **46** (α-anomer/β-anomer ca 1:0.3)



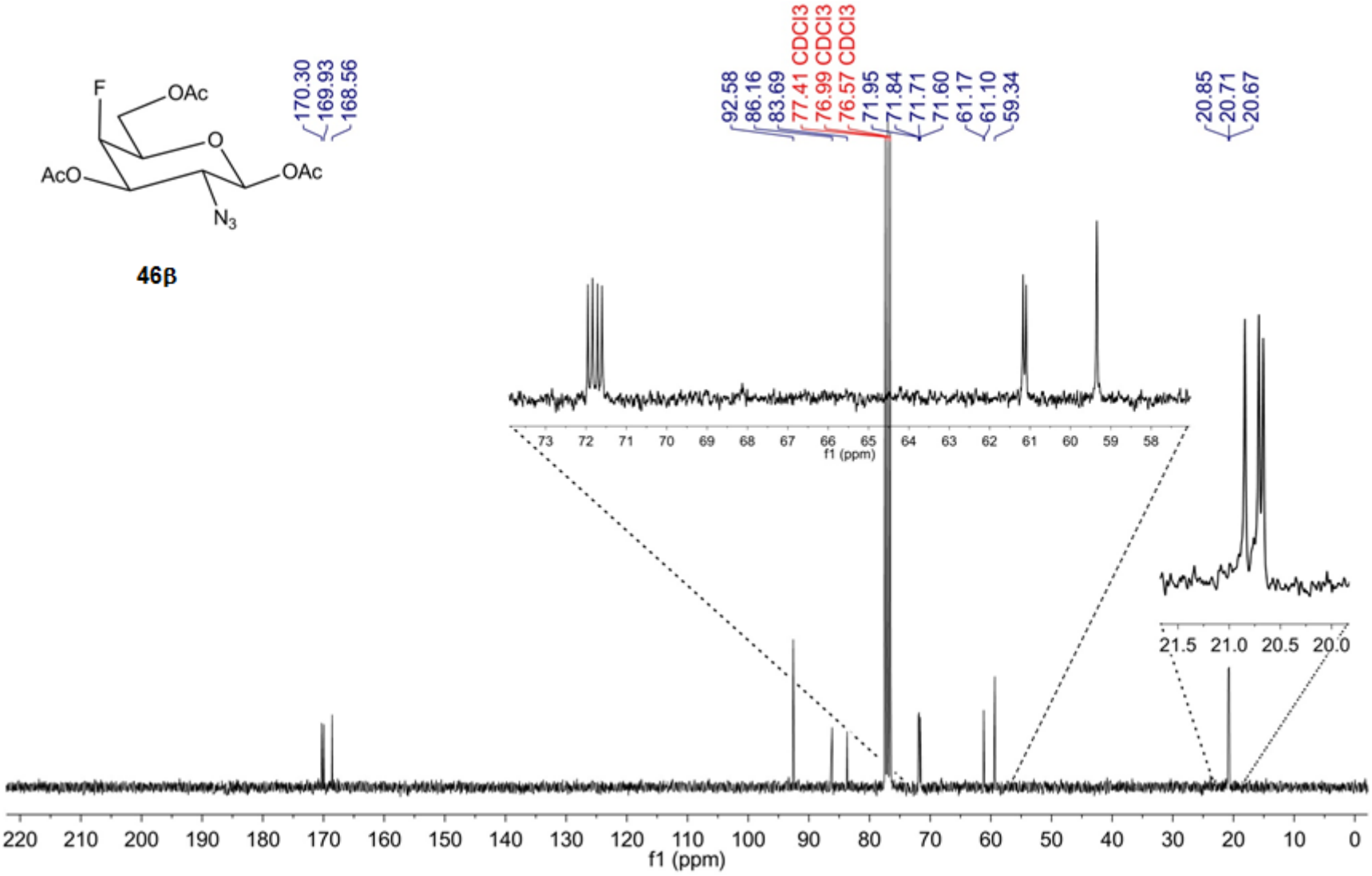
^{13}C {^{1}H} NMR (75 MHz, $CDCl_3$) of **46** (α-anomer/β-anomer ca 1:0.3)



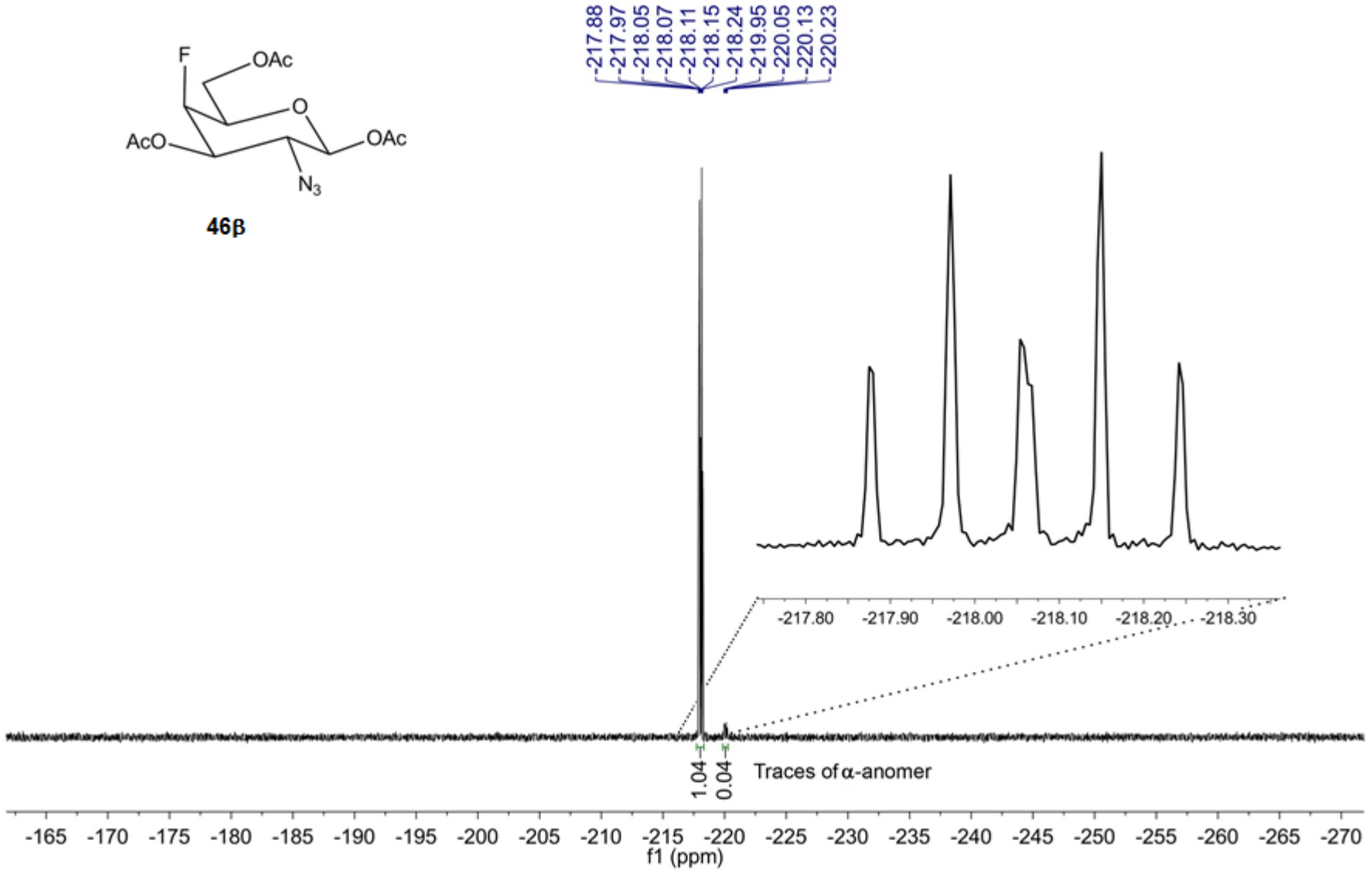
^{19}F NMR (282 MHz, $CDCl_3$) of **46** (α-anomer/β-anomer ca 1:0.3)



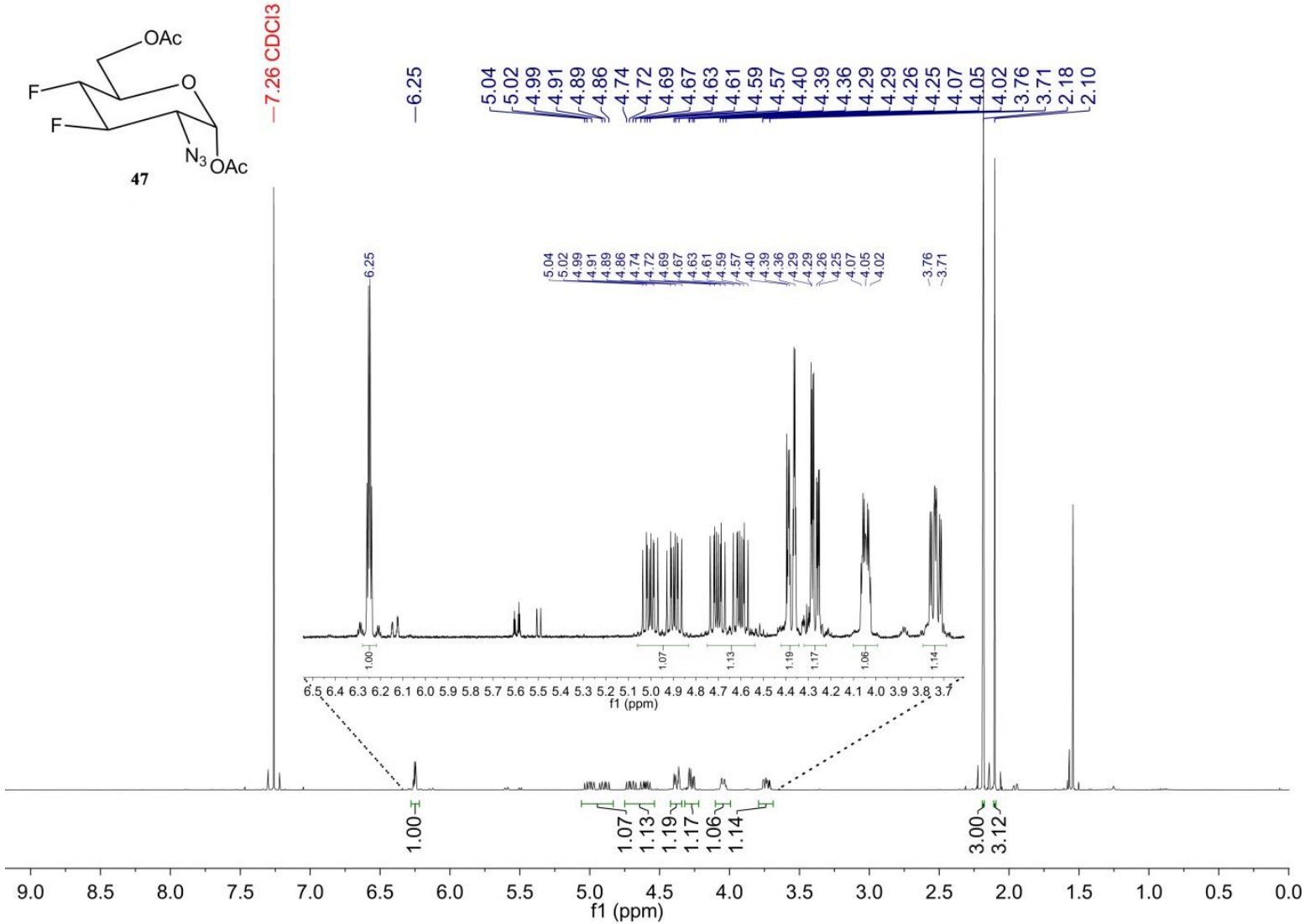
^{1}H NMR (300 MHz, $CDCl_3$) of **46β** (β-anomer)



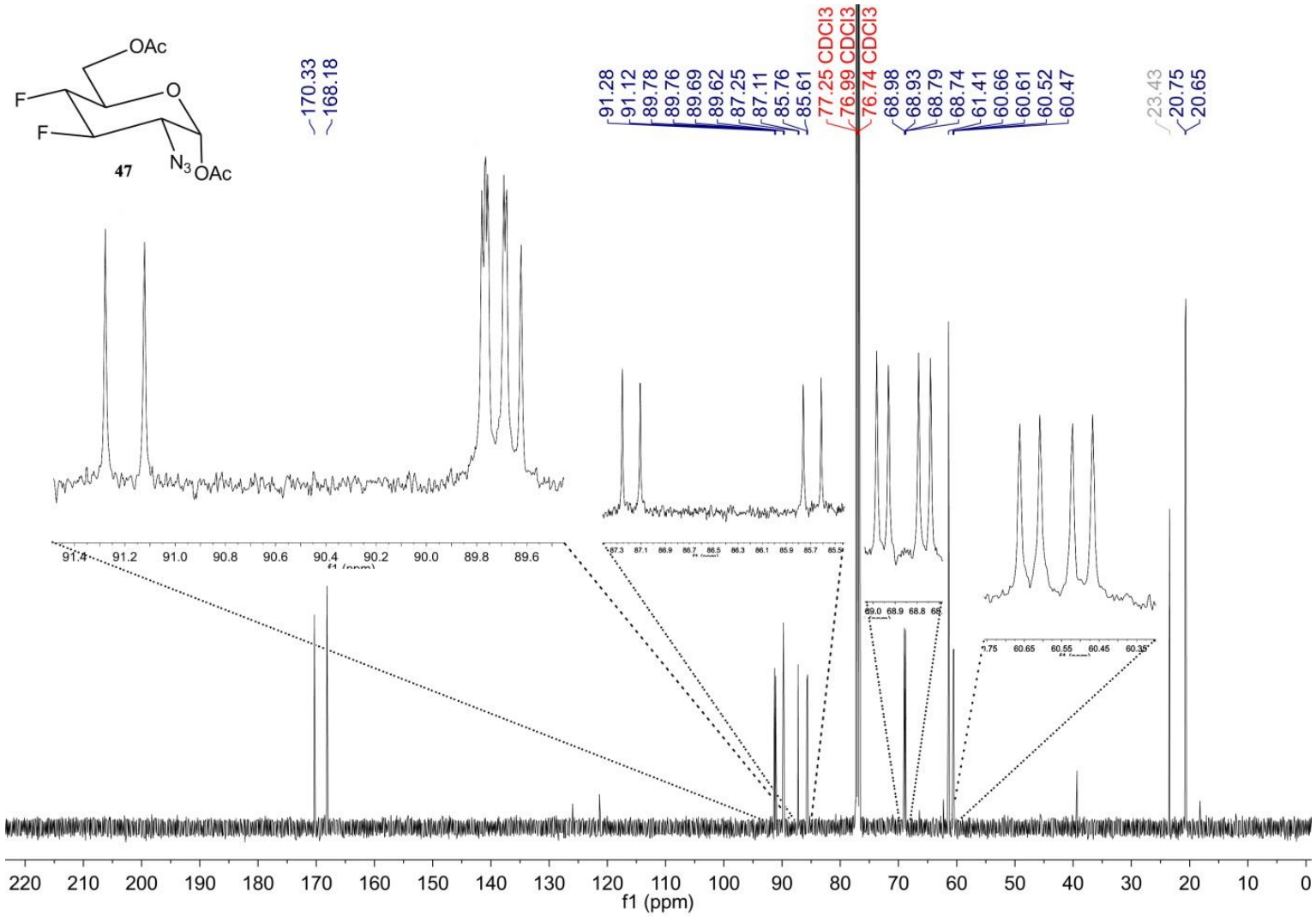
^{13}C {^{1}H} NMR (75 MHz, $CDCl_3$) of **46β** (β-anomer)



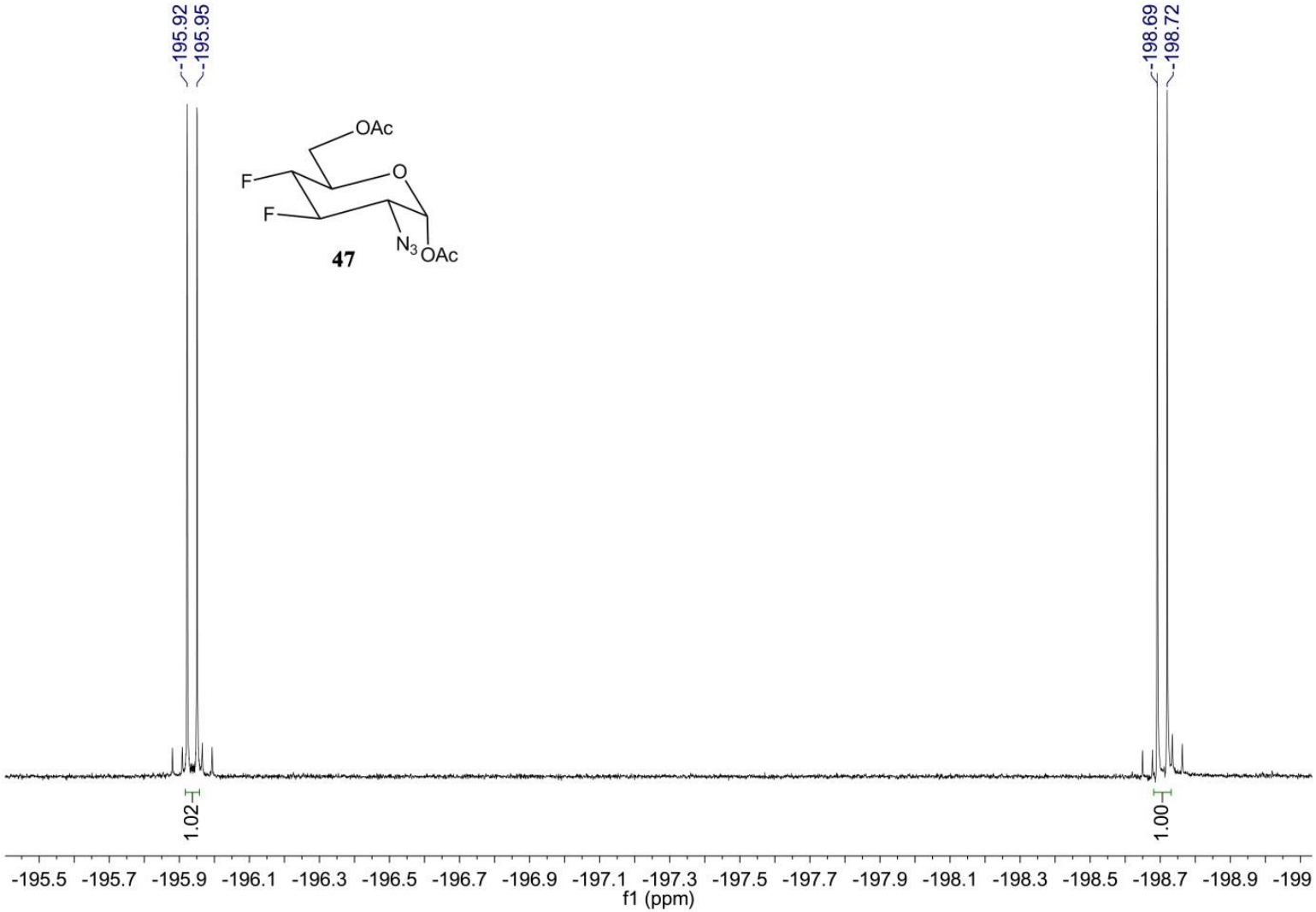
^{19}F NMR (282 MHz, $CDCl_3$) of **46** (β-anomer + ca 4% α-anomer)



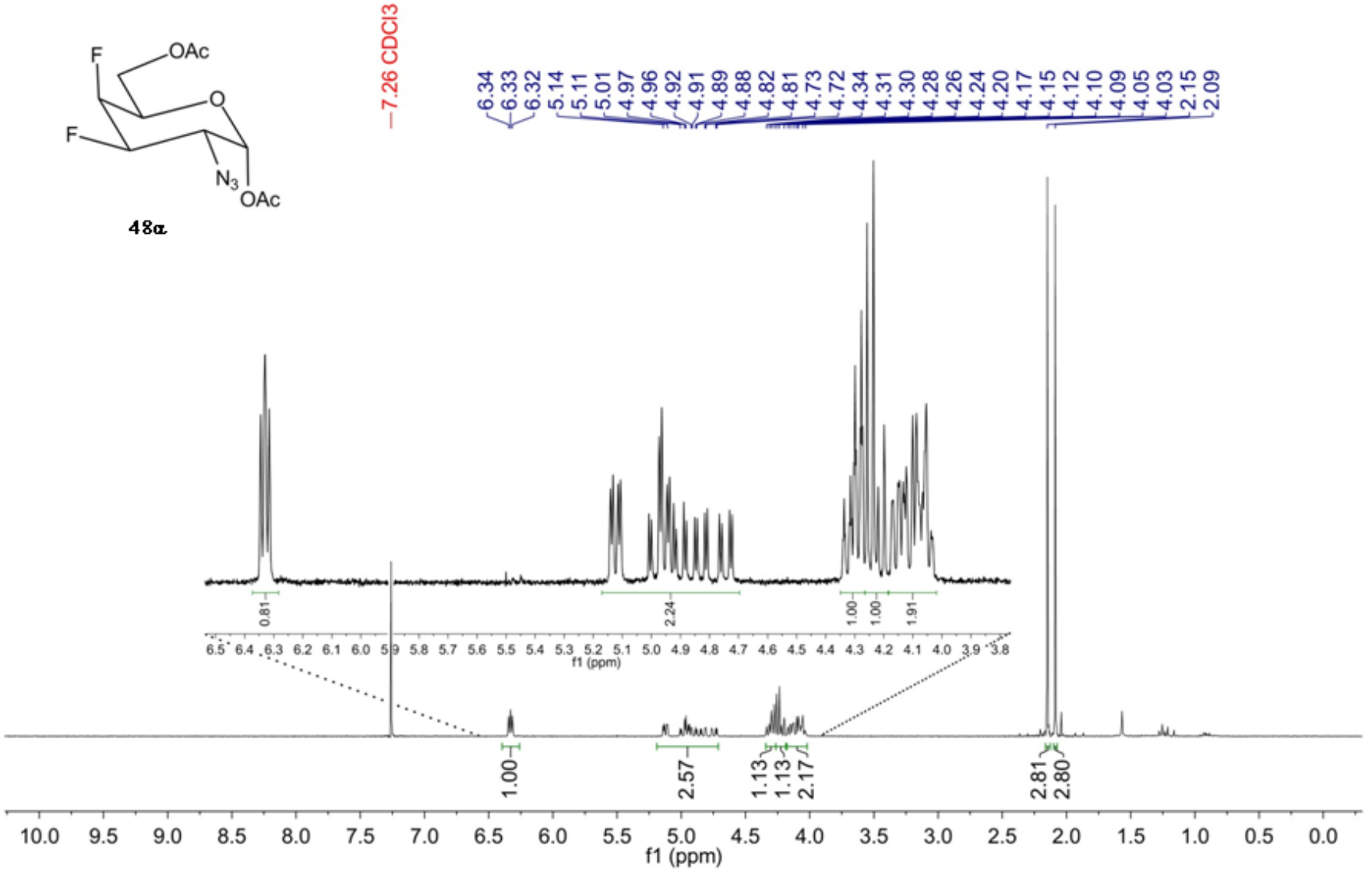
^{1}H {^{19}F} NMR (500 MHz, $CDCl_3$) of **47** (α-anomer), ca 5% impurities



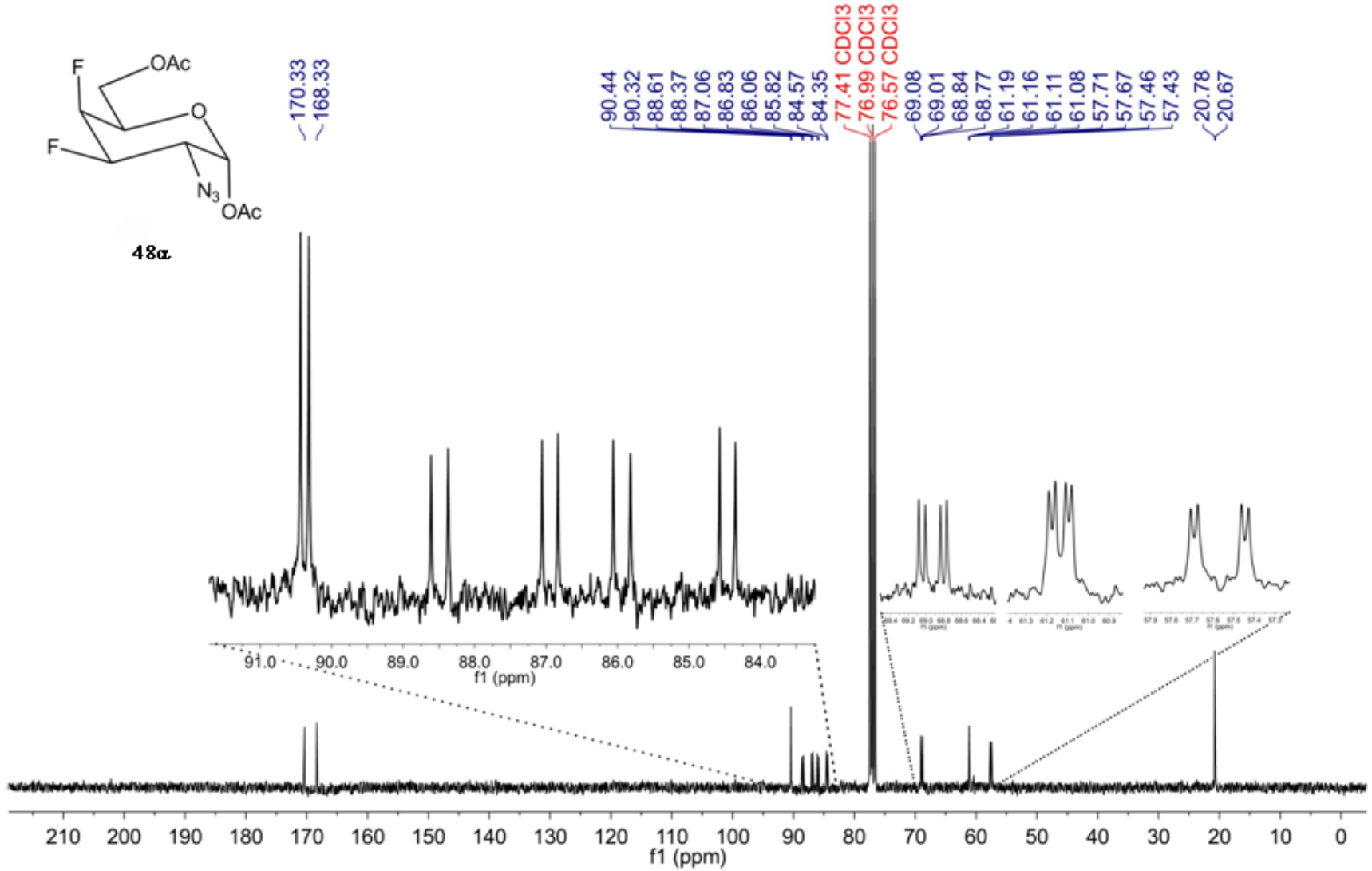
^{13}C {^{1}H} NMR (125 MHz, $CDCl_3$) of **47**. (α-anomer), ca 5% impurities



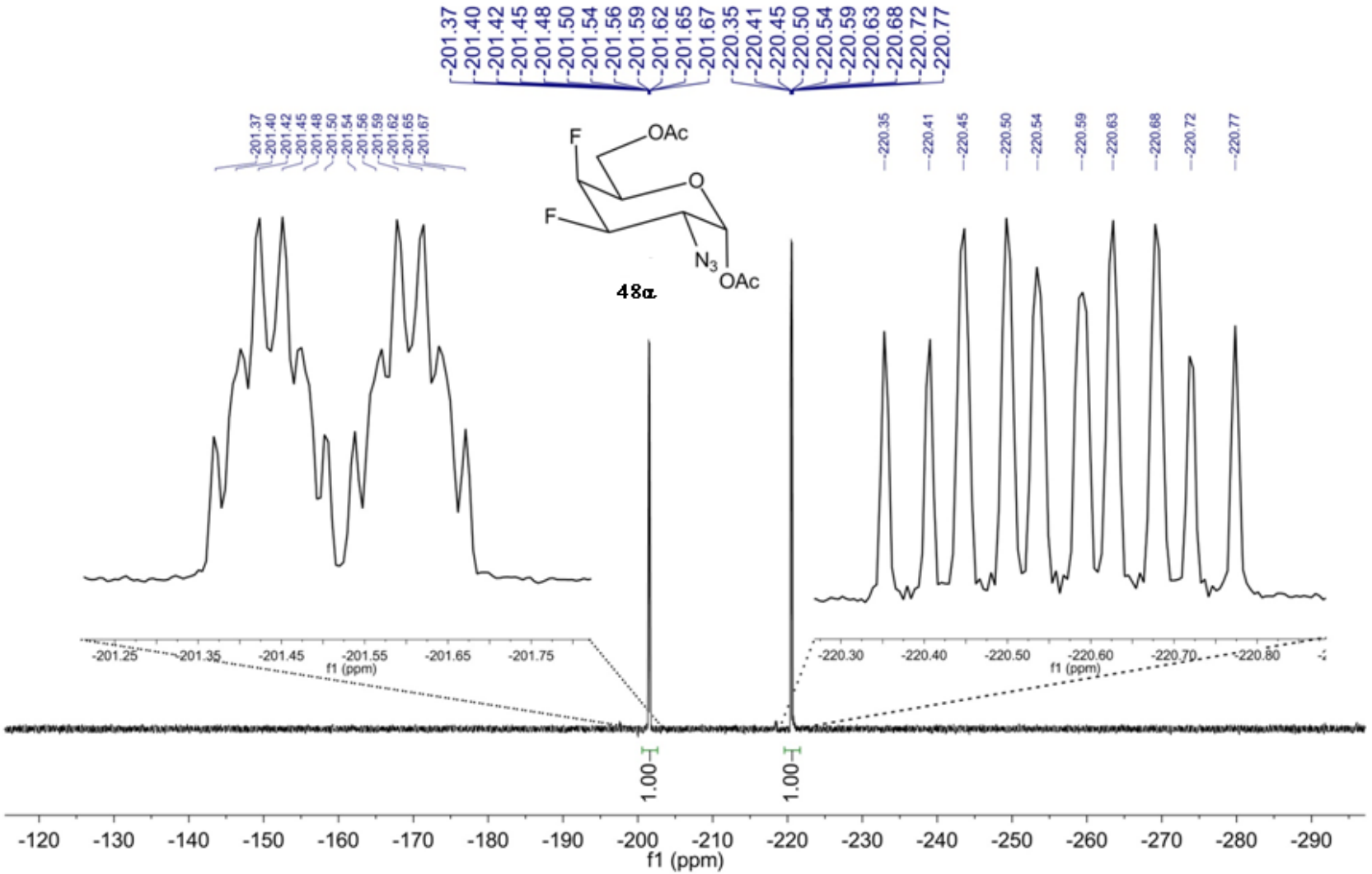
^{19}F {^{1}H} NMR (470 MHz, $CDCl_3$) of **47**. (α-anomer), ca 5% impurities



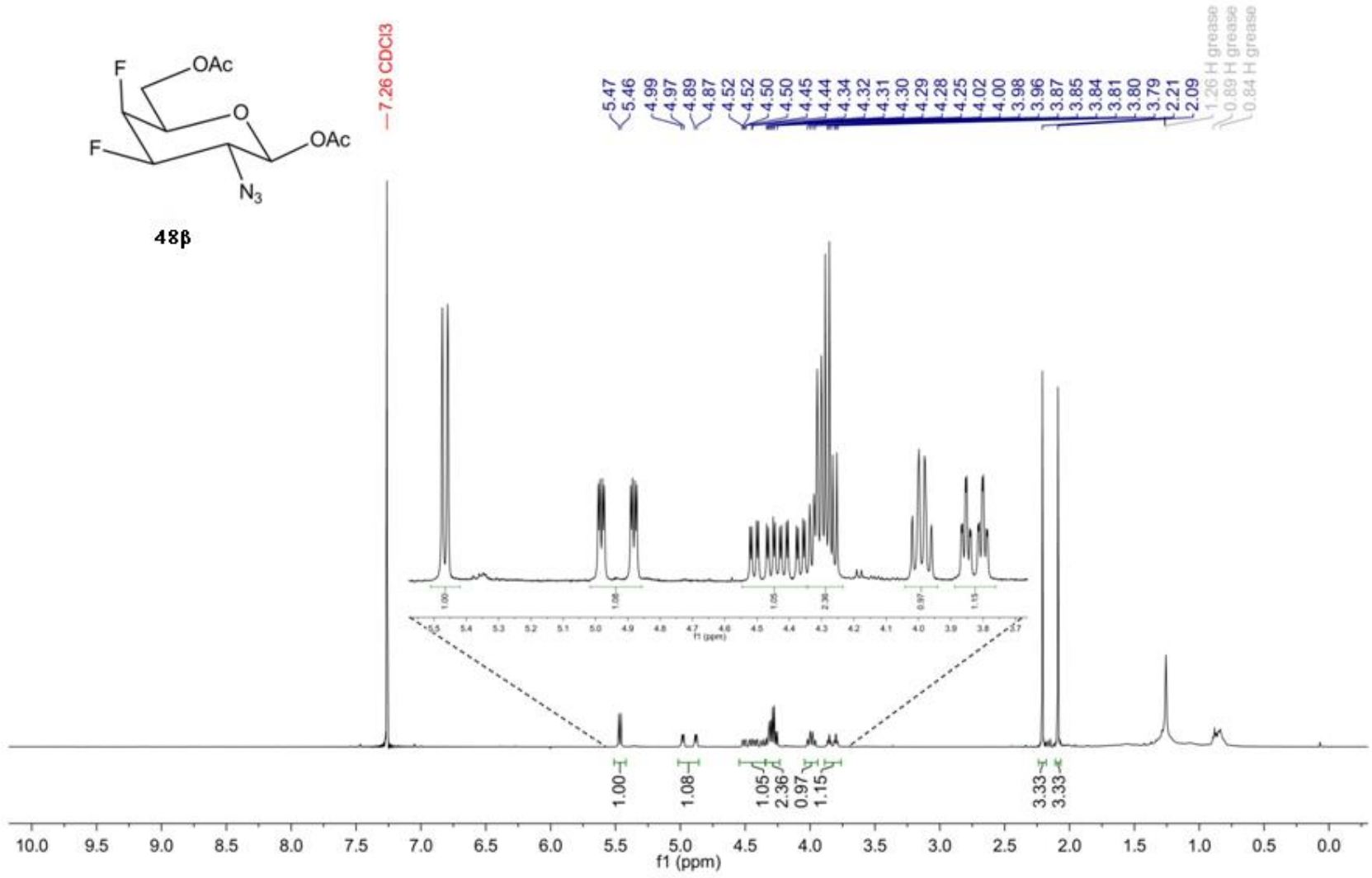
^{1}H NMR (300 MHz, $CDCl_3$) of **48** (α-anomer)



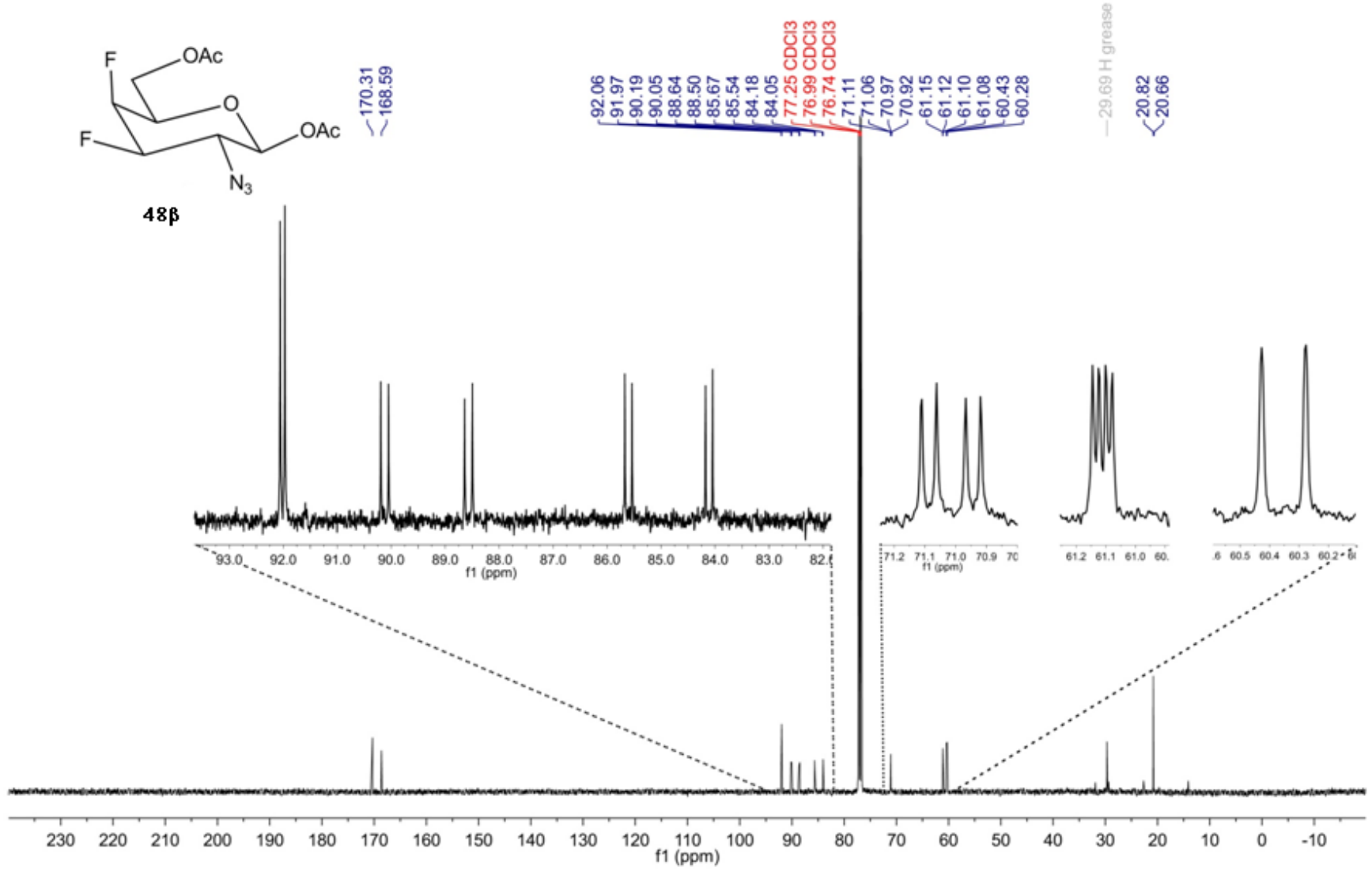
^{13}C {^{1}H} NMR (75 MHz, $CDCl_3$) of **48** (α-anomer)



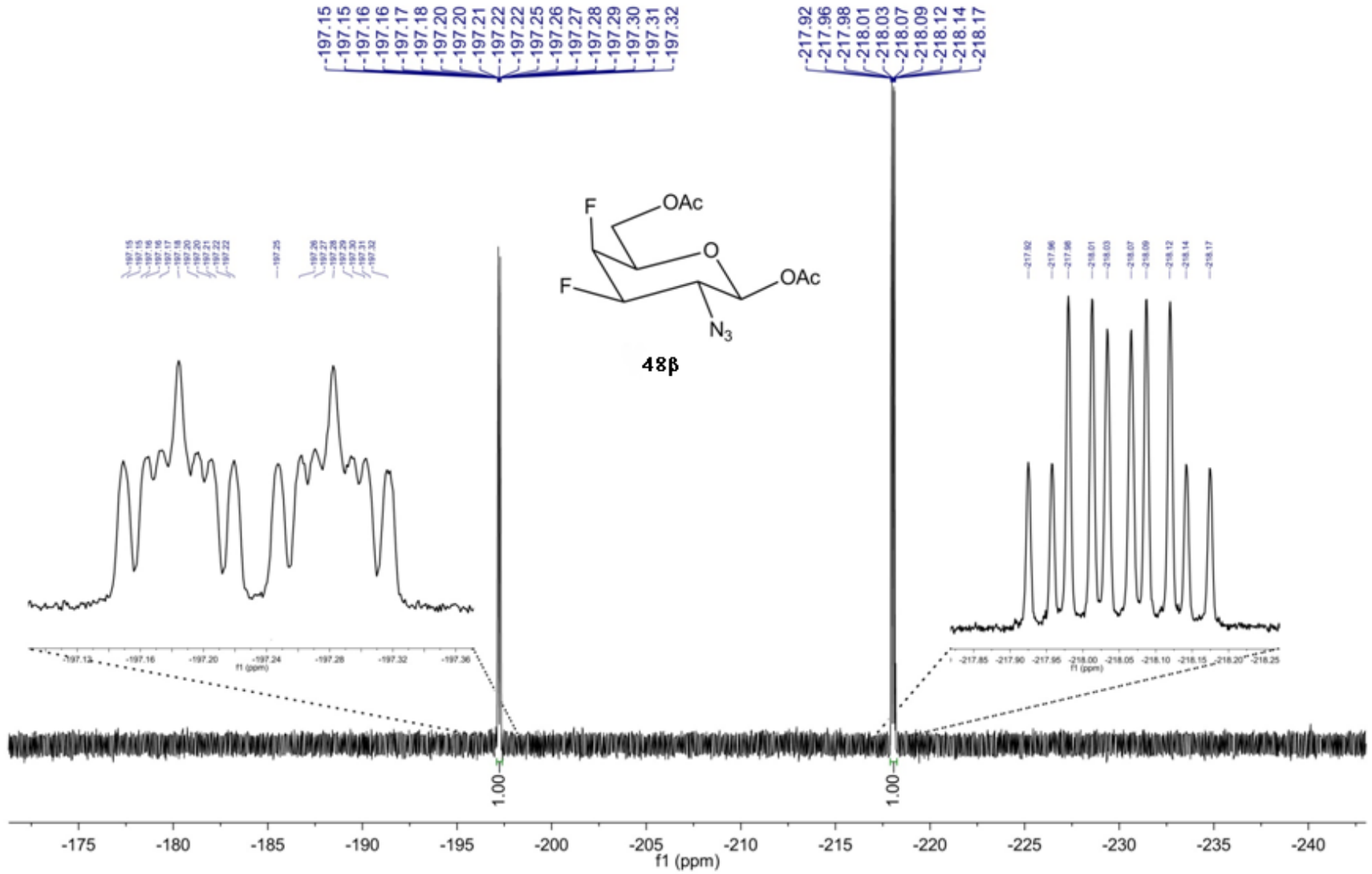
^{19}F NMR (282 MHz, $CDCl_3$) of **48** (α-anomer)



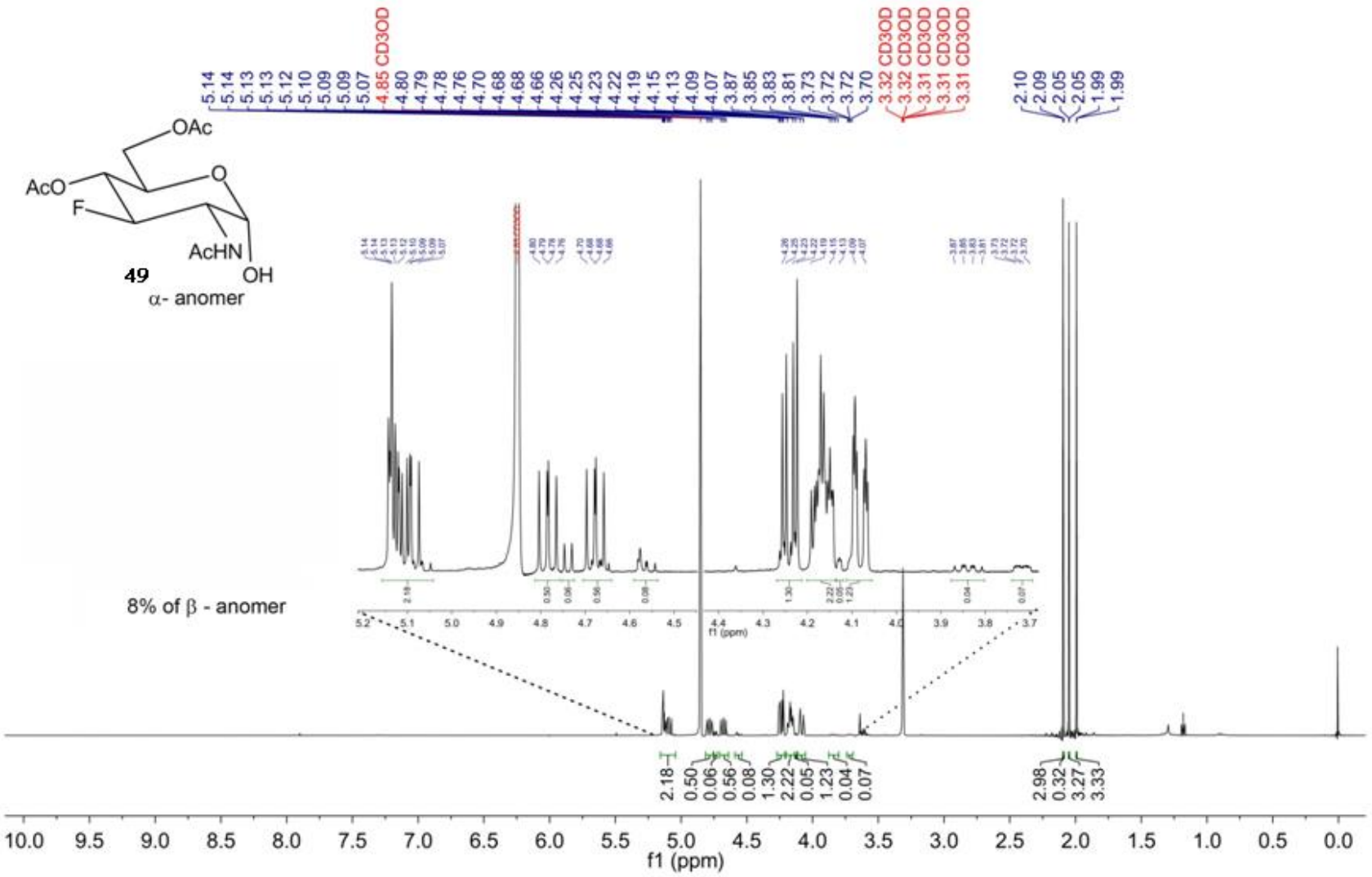
^{1}H NMR (500 MHz, $CDCl_3$) of **48** (β-anomer)



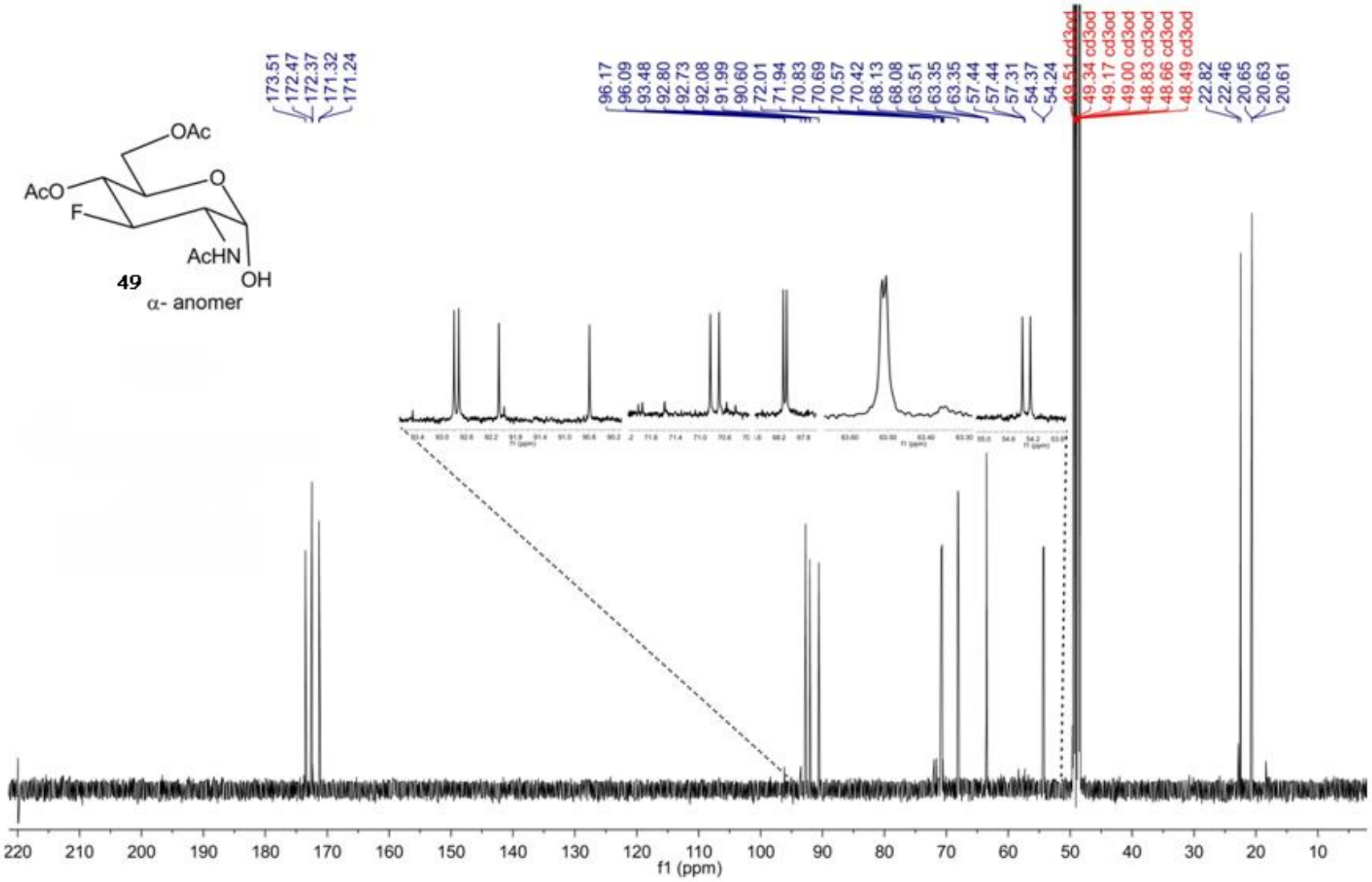
^{13}C {^{1}H} NMR (125 MHz, $CDCl_3$) of **48** (β-anomer)



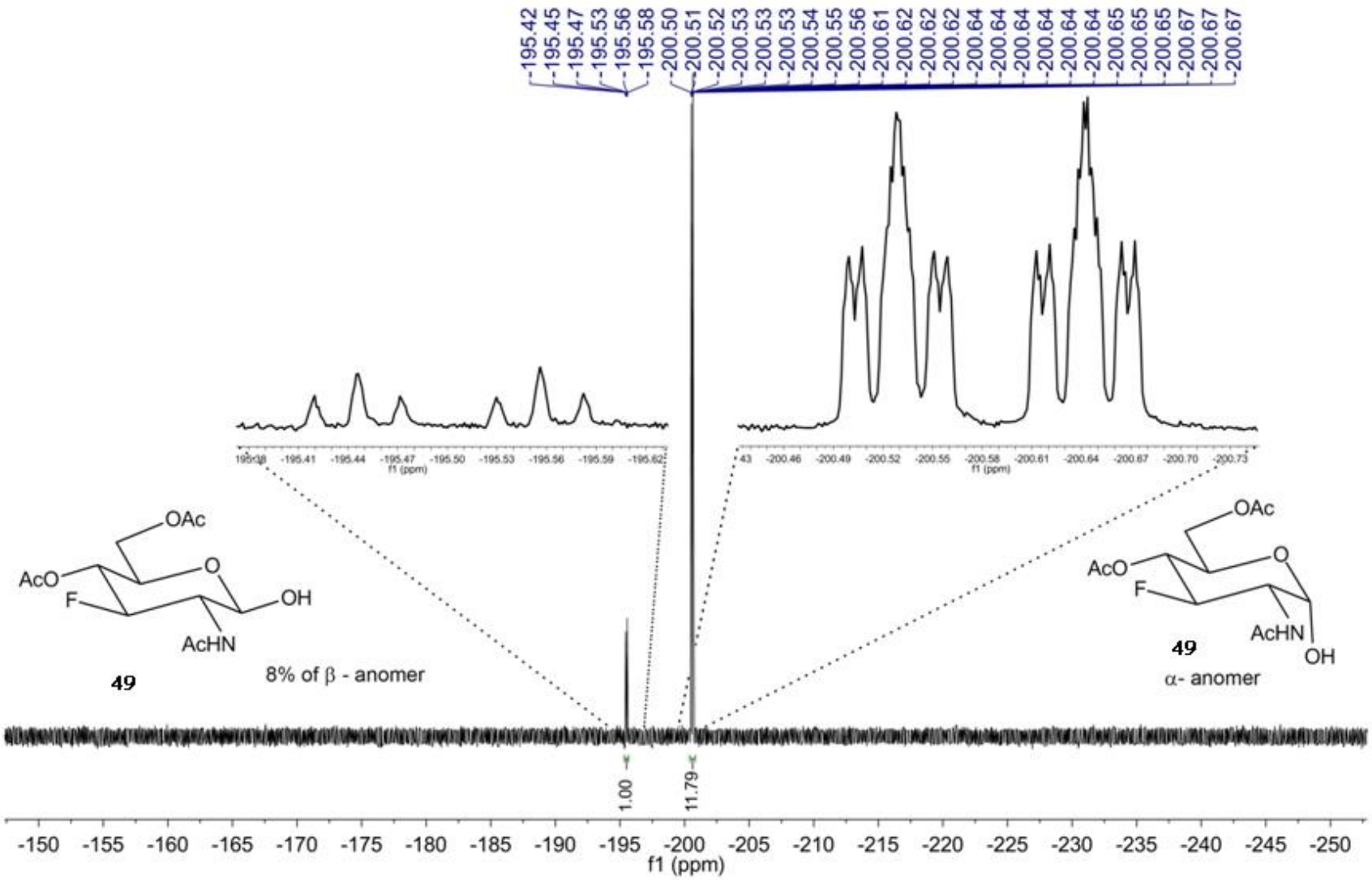
^{19}F NMR (470 MHz, $CDCl_3$) of **48** (β-anomer)



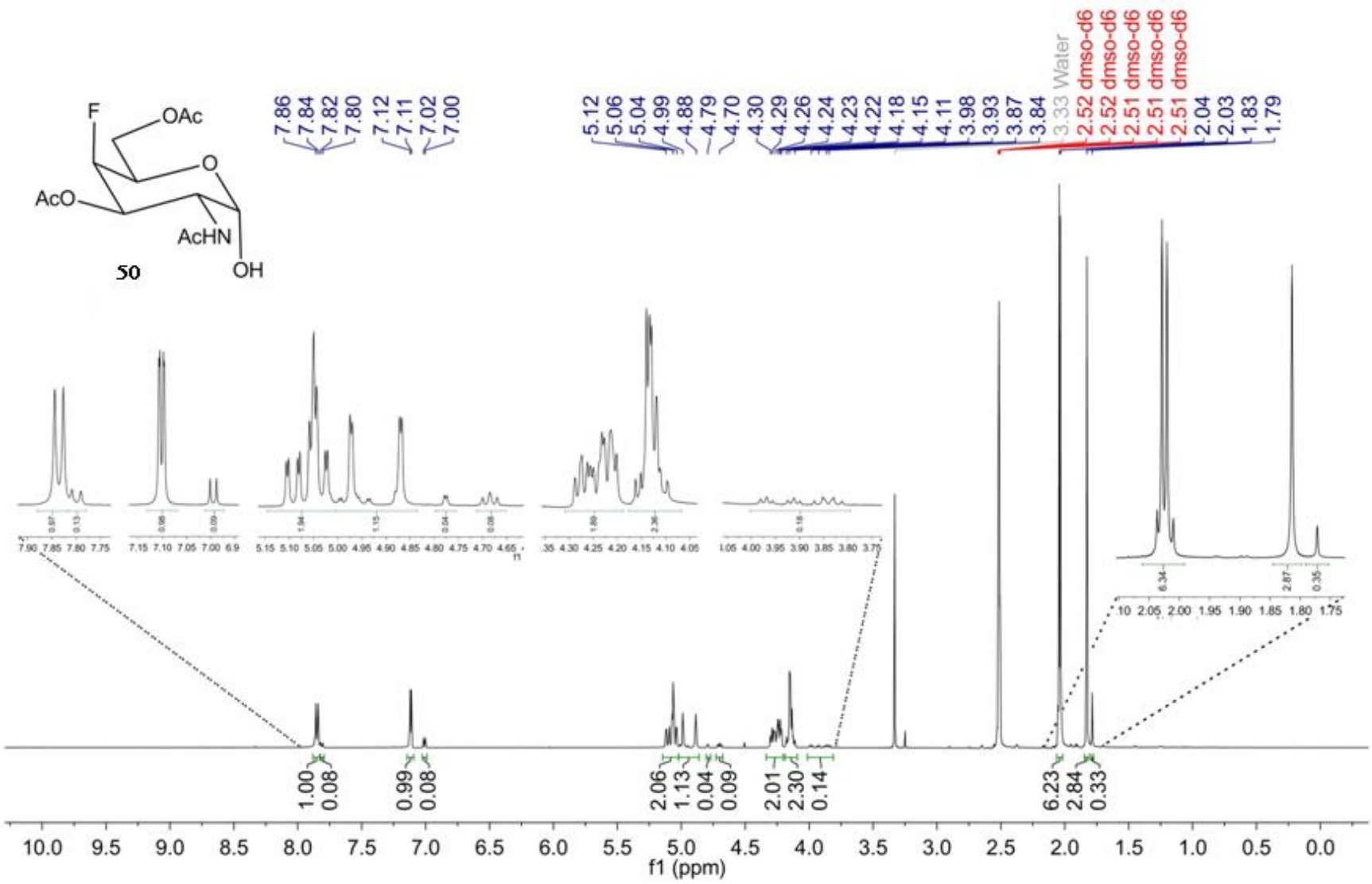
^{1}H NMR (500 MHz, CD_3OD) of **49** (α-anomer and ca 8% β-anomer)



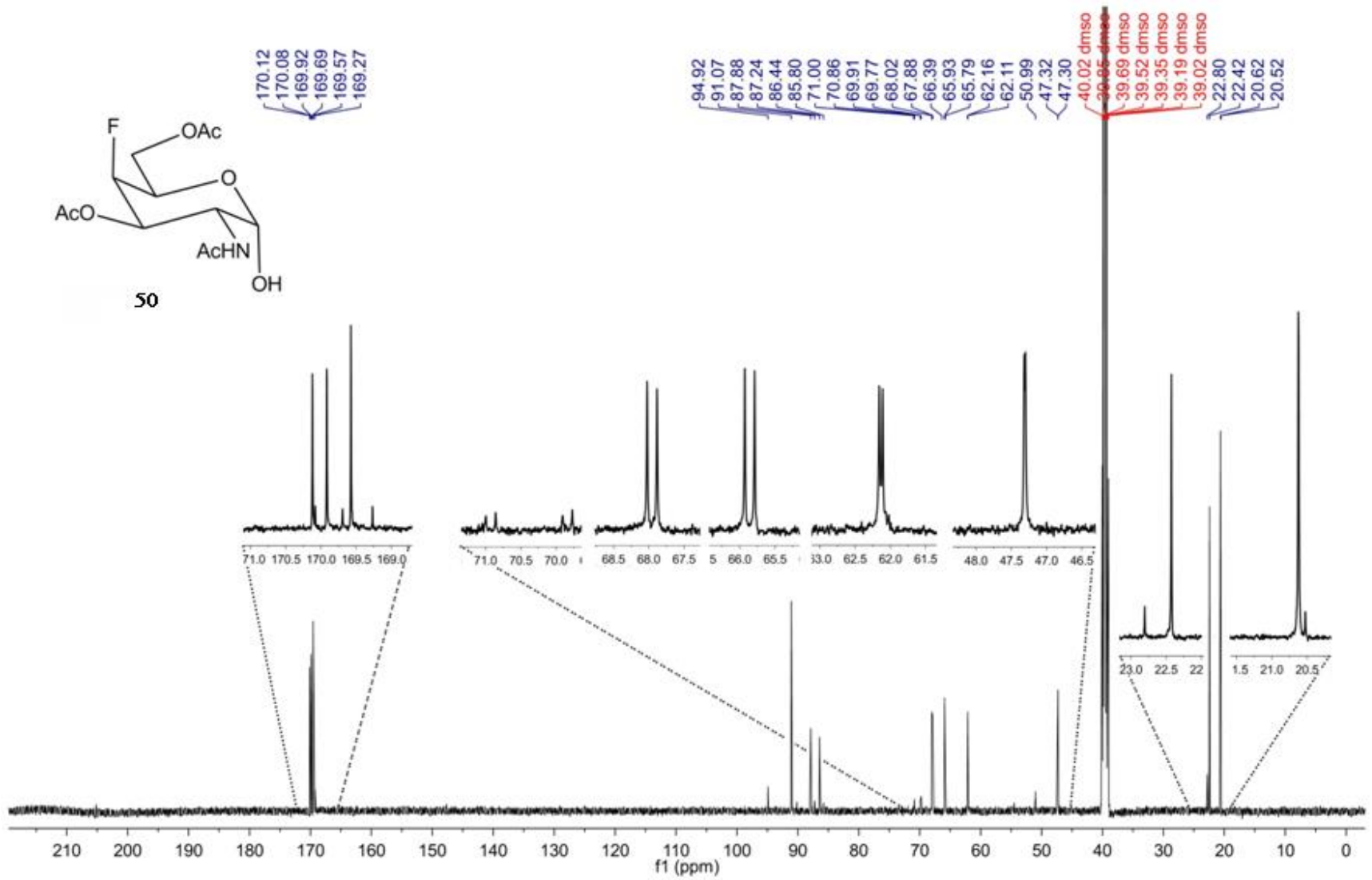
^{13}C {^{1}H} NMR (125 MHz, CD_3OD) of **49** (α-anomer and ca 8% β-anomer)



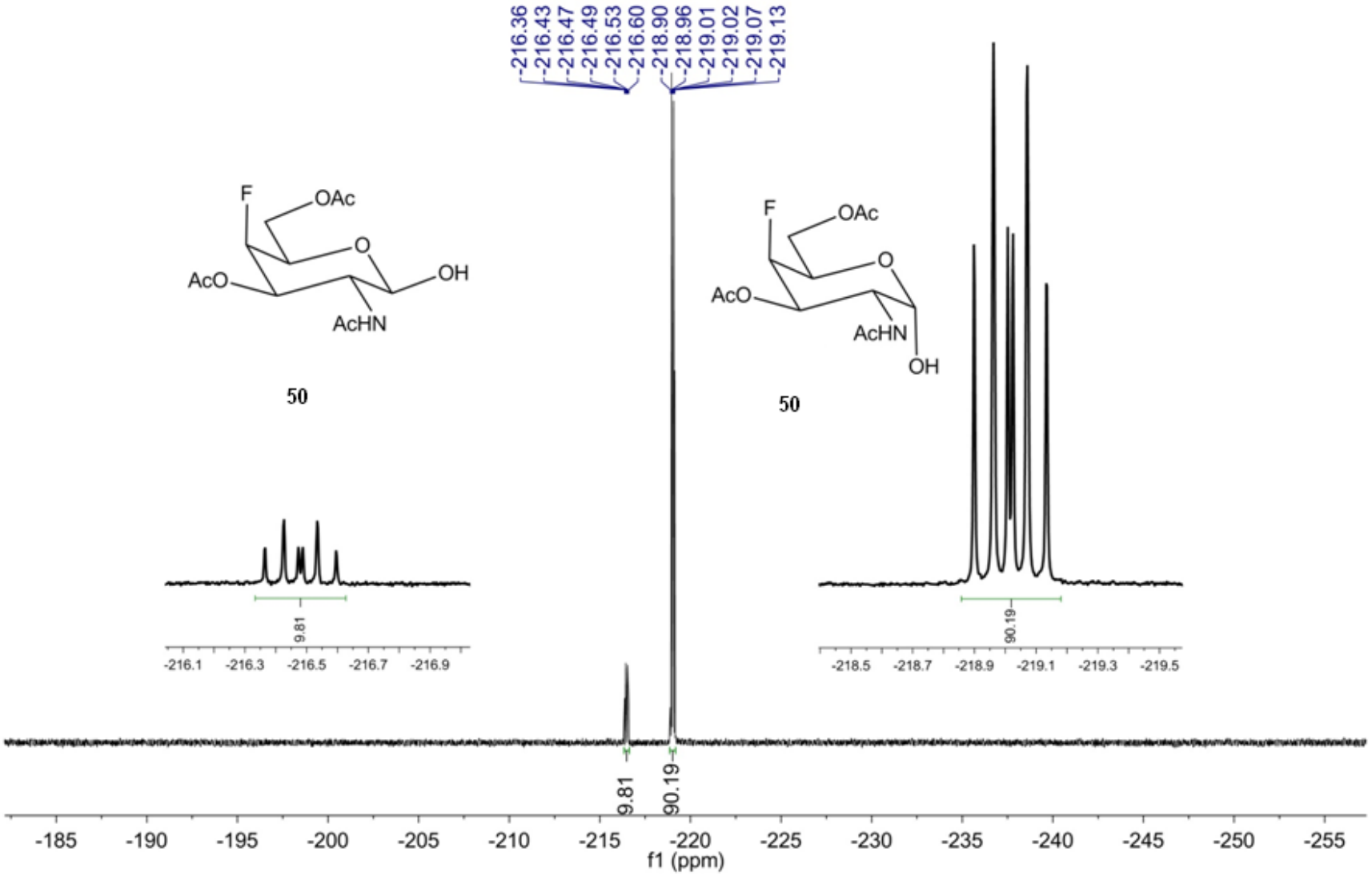
^{19}F NMR (470 MHz, CD_3OD) of **49** (α-anomer and ca 8% β-anomer)



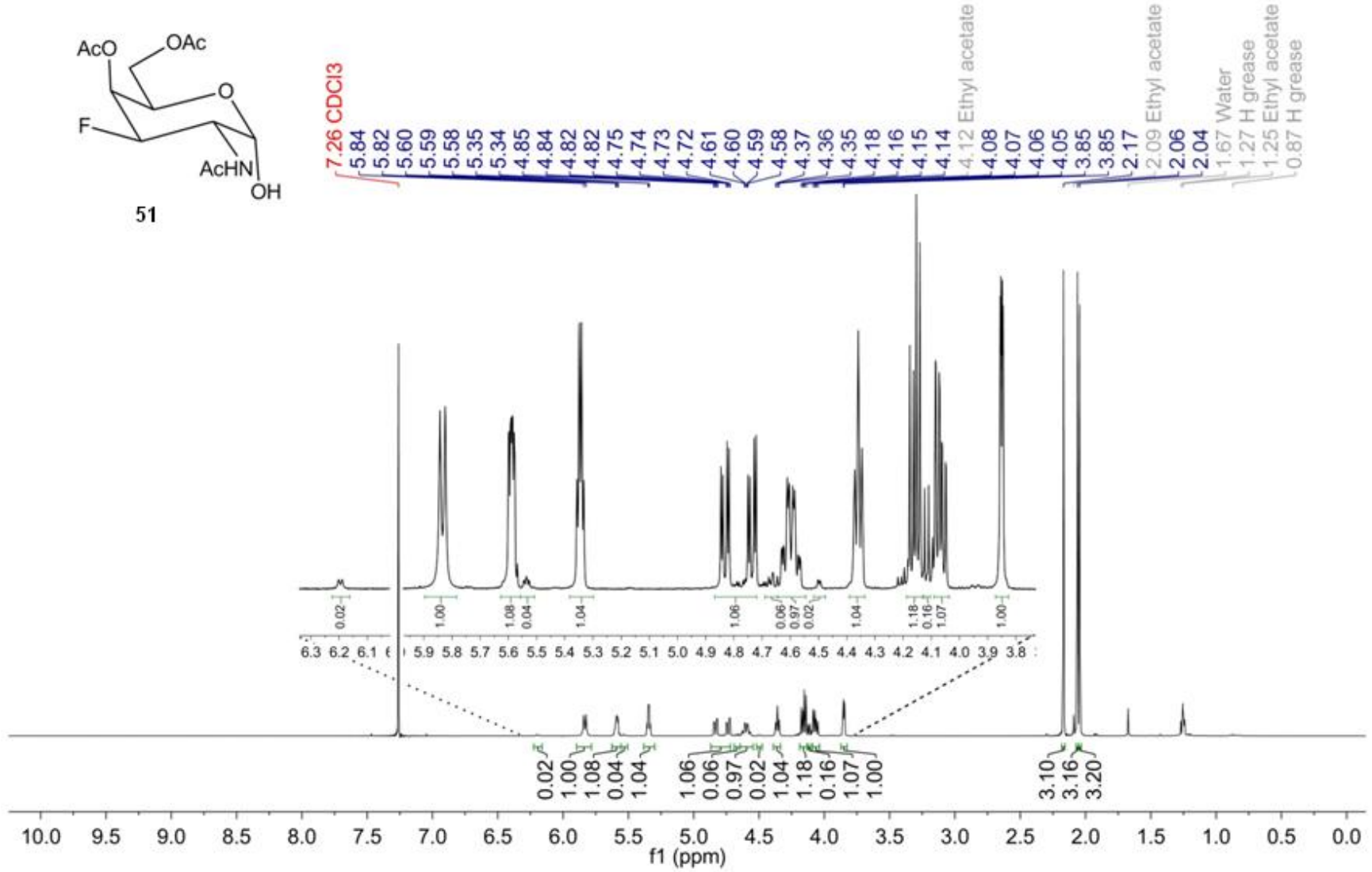
^{1}H NMR (500 MHz, $CDCl_3$) of **50** (α-anomer and ca. 10% β-anomer)



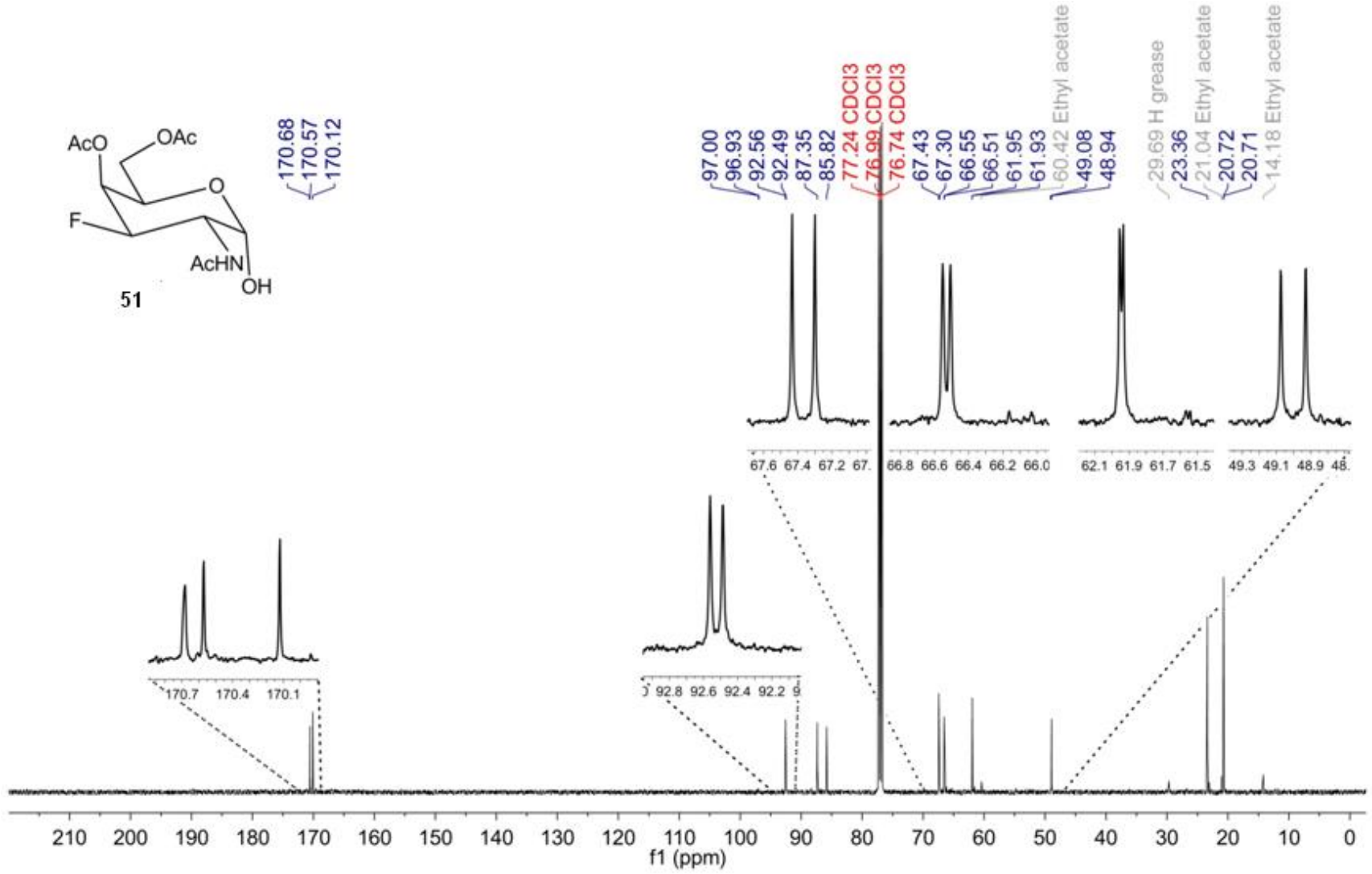
^{13}C {^{1}H} NMR (125 MHz, $CDCl_3$) of **50** (α-anomer and ca. 10% β-anomer)



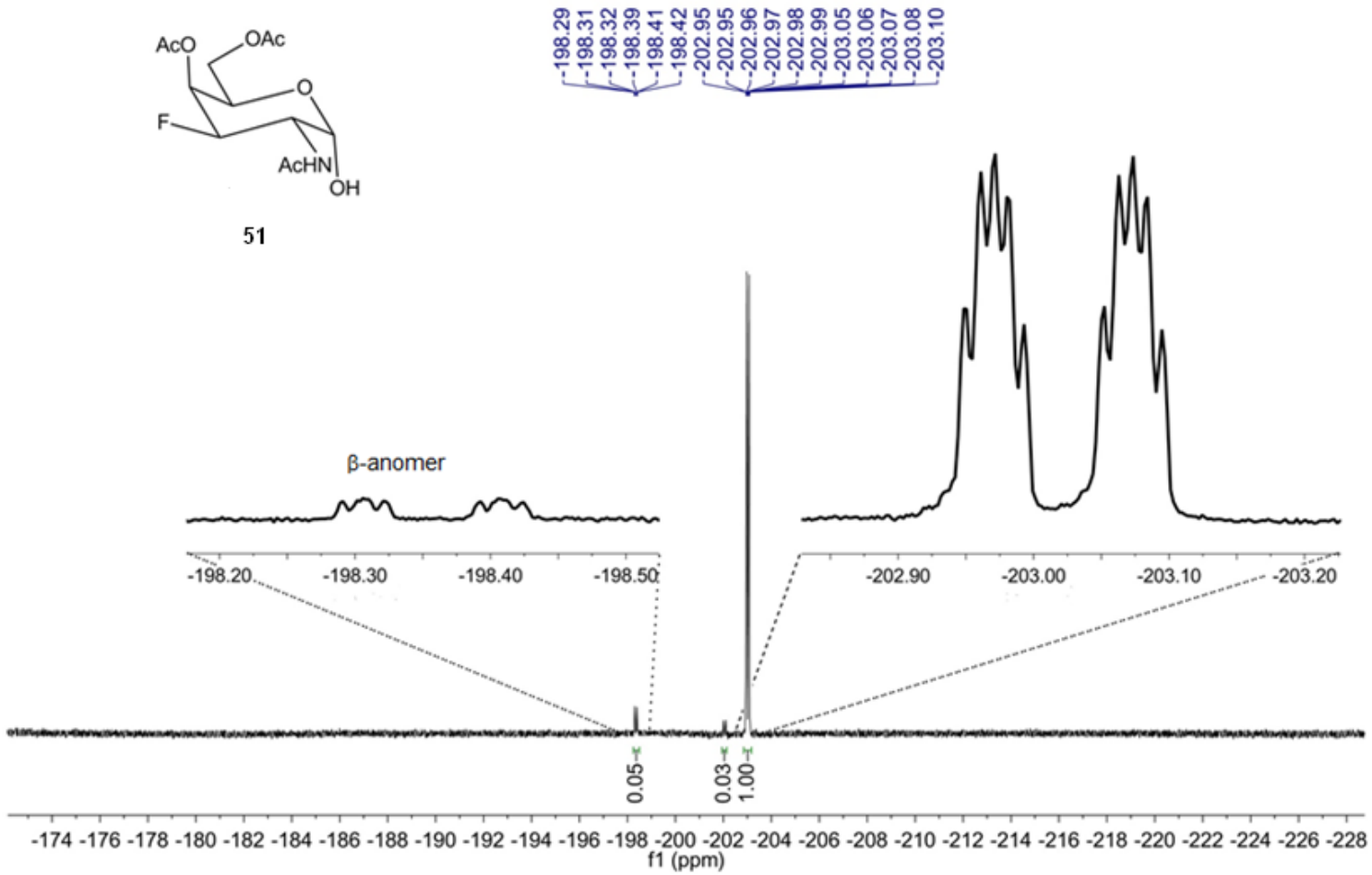
^{19}F NMR (470 MHz, $CDCl_3$) of **50** (α-anomer and ca. 10% β-anomer)



^{1}H NMR (500 MHz, $CDCl_3$) of **51** (α-anomer and ca. 5% β-anomer)



^{13}C {^{1}H} NMR (125 MHz, $CDCl_3$) of **51** (α-anomer and ca. 5% β-anomer)



^{19}F NMR (470 MHz, $CDCl_3$) of **51** (α-anomer and ca. 5% β-anomer)