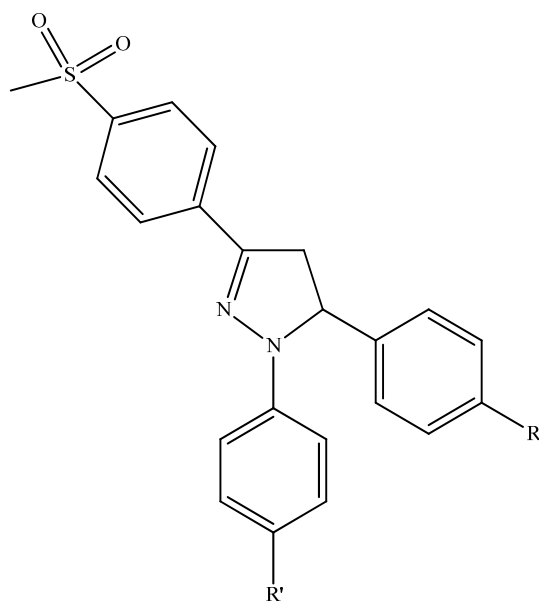


Supplementary Materials

Table S1. Some properties of compounds **2a–s**.



Compound	R	R'	Yield (%)	M.p. (°C)	Molecular Formula	Molecular Weight
2a	F	Cl	93	193	C ₂₂ H ₁₈ ClFN ₂ O ₂ S	428.91
2b	F	F	85	221	C ₂₂ H ₁₈ F ₂ N ₂ O ₂ S	412.45
2c	F	Br	77	169	C ₂₂ H ₁₈ BrFN ₂ O ₂ S	473.36
2d	F	OMe	60	170	C ₂₃ H ₂₁ FN ₂ O ₃ S	424.49
2e	F	Me	76	186	C ₂₃ H ₂₁ FN ₂ O ₂ S	408.49
2f	Cl	OMe	76	152	C ₂₃ H ₂₁ ClN ₂ O ₃ S	440.94
2g	Cl	F	87	203	C ₂₂ H ₁₈ ClFN ₂ O ₂ S	428.91
2h	Cl	Me	83	230	C ₂₃ H ₂₁ ClN ₂ O ₂ S	424.94
2i	Cl	Br	83	204	C ₂₂ H ₁₈ BrClN ₂ O ₂ S	489.81
2j	Cl	Cl	73	209	C ₂₂ H ₁₈ Cl ₂ N ₂ O ₂ S	445.36
2k	Br	OMe	68	145	C ₂₃ H ₂₁ BrN ₂ O ₃ S	485.39
2l	Br	F	75	196	C ₂₂ H ₁₈ BrFN ₂ O ₂ S	473.36
2m	Br	Me	87	227	C ₂₃ H ₂₁ BrN ₂ O ₂ S	469.39
2n	Br	Br	94	225	C ₂₂ H ₁₈ Br ₂ N ₂ O ₂ S	534.26
2o	Br	Cl	95	222	C ₂₂ H ₁₈ BrClN ₂ O ₂ S	489.81
2p	Br	H	86	205	C ₂₂ H ₁₉ BrN ₂ O ₂ S	455.37
2r	Cl	H	81	212	C ₂₂ H ₁₉ ClN ₂ O ₂ S	410.92
2s	F	H	78	219	C ₂₂ H ₁₉ FN ₂ O ₂ S	394.46

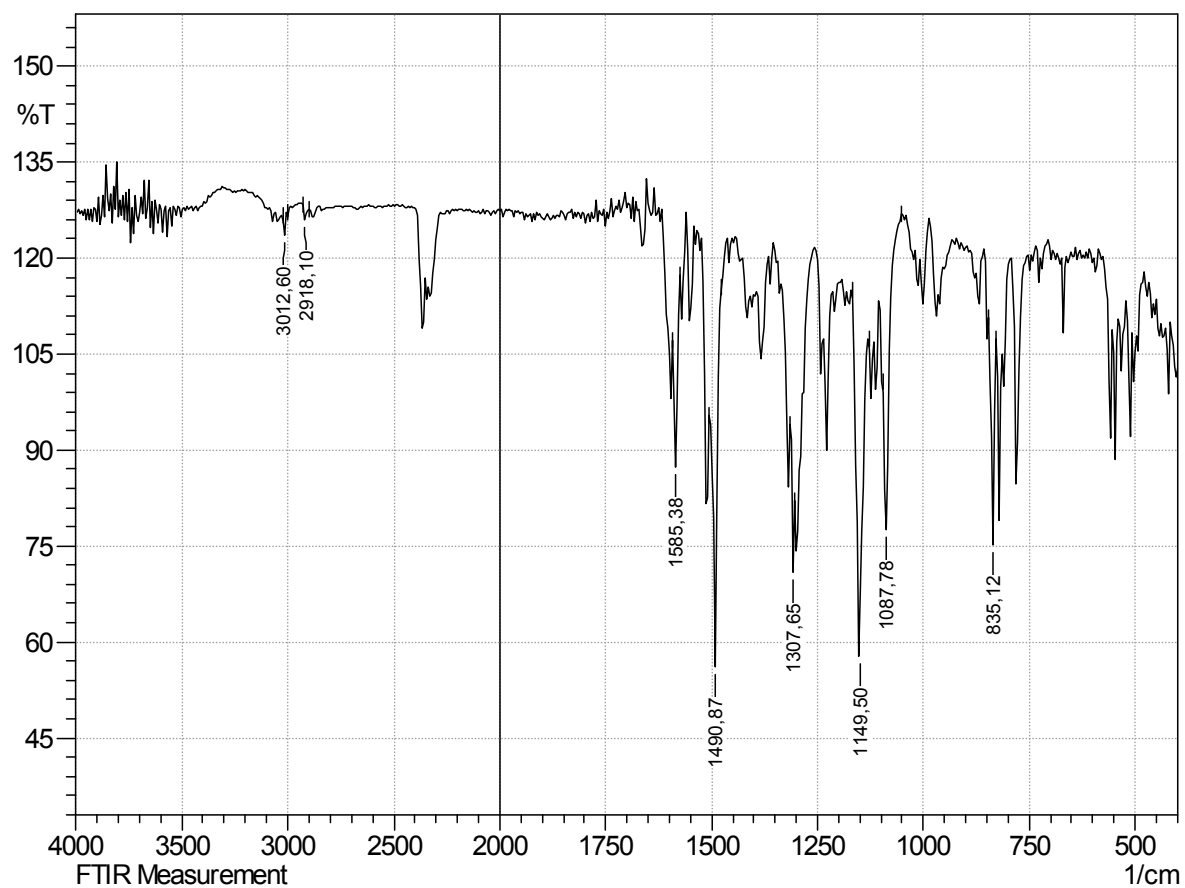
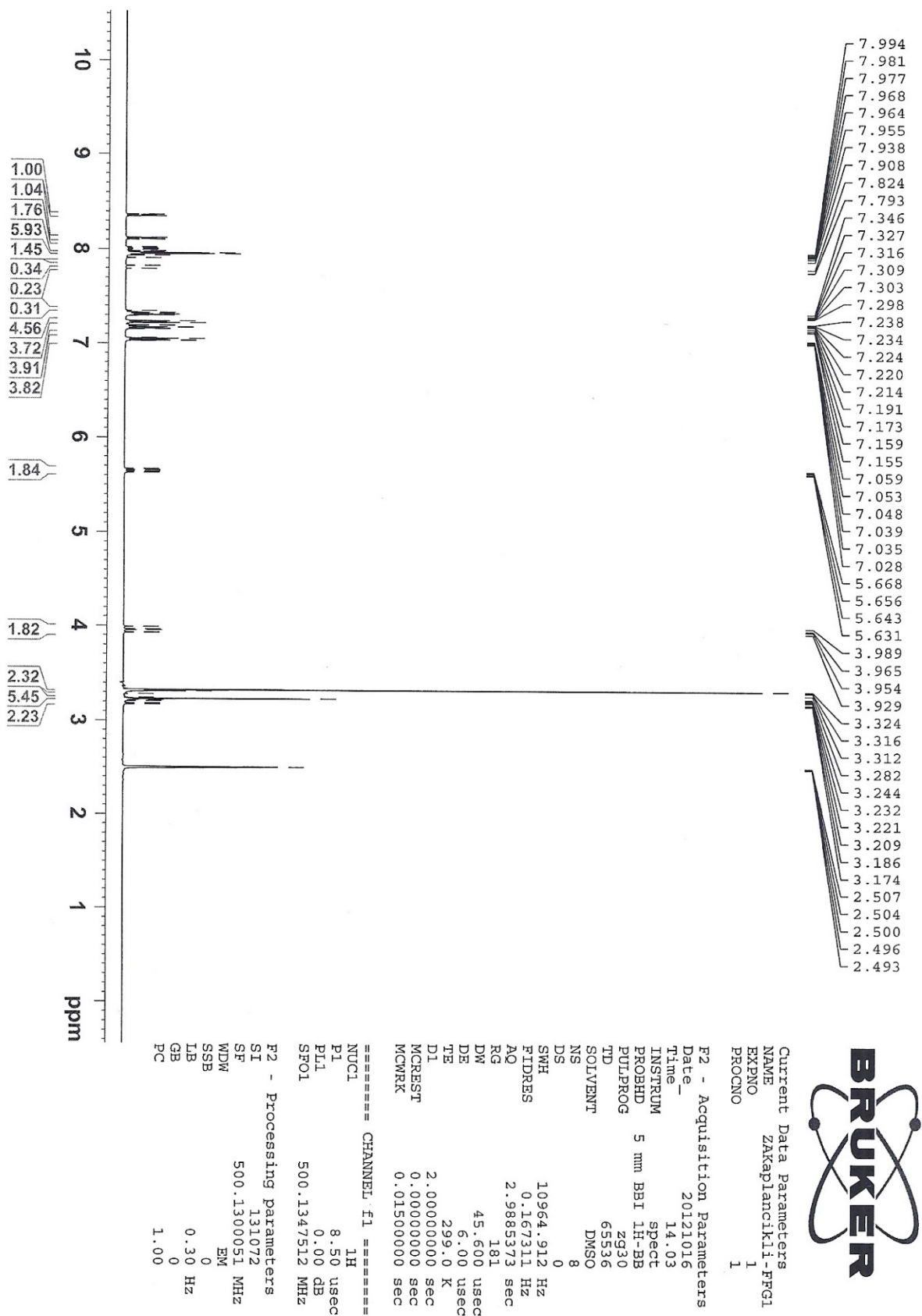
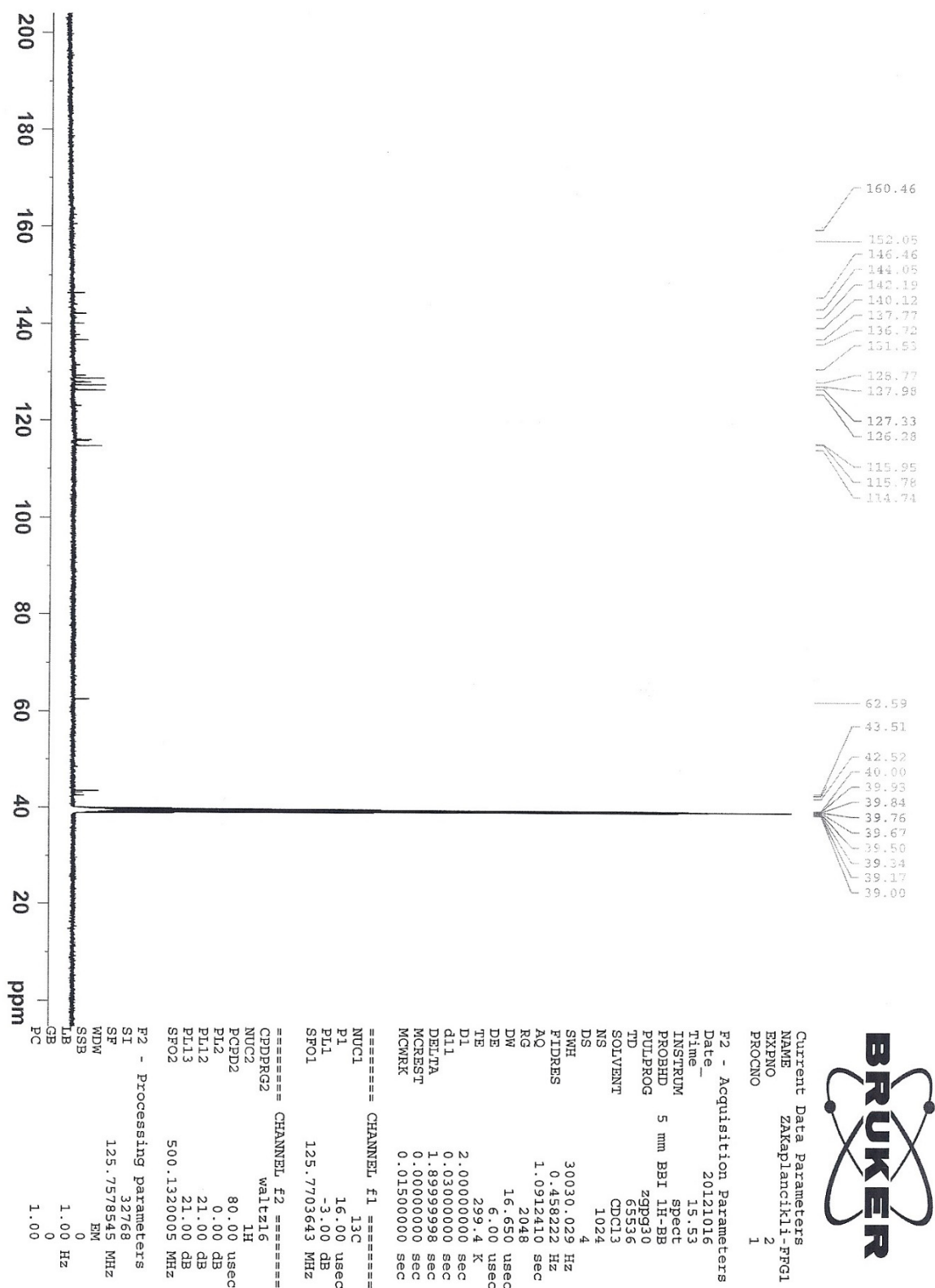


Figure S1. IR Spectrum of compound **2a**.

Figure S2. ^1H -NMR Spectrum of compound 2a.

Figure S3. ^{13}C -NMR Spectrum of compound 2a.

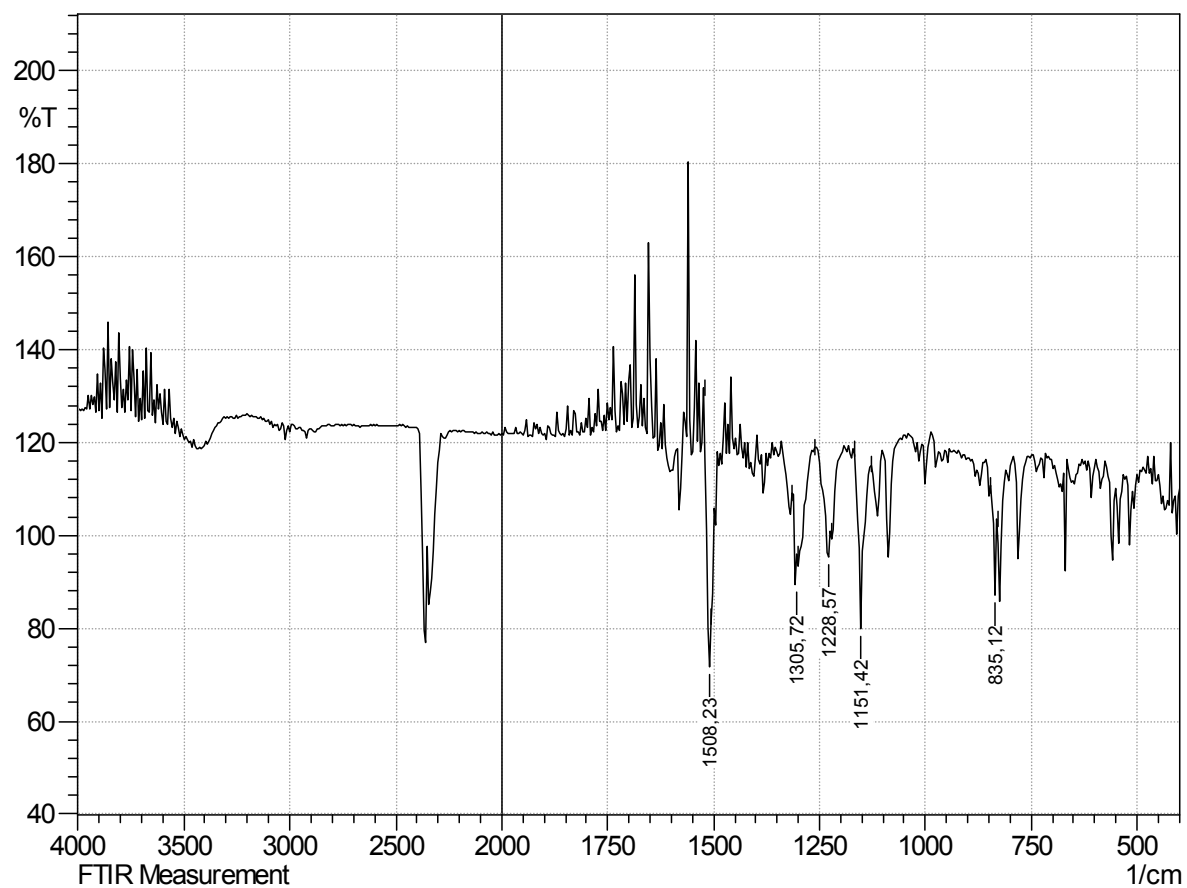
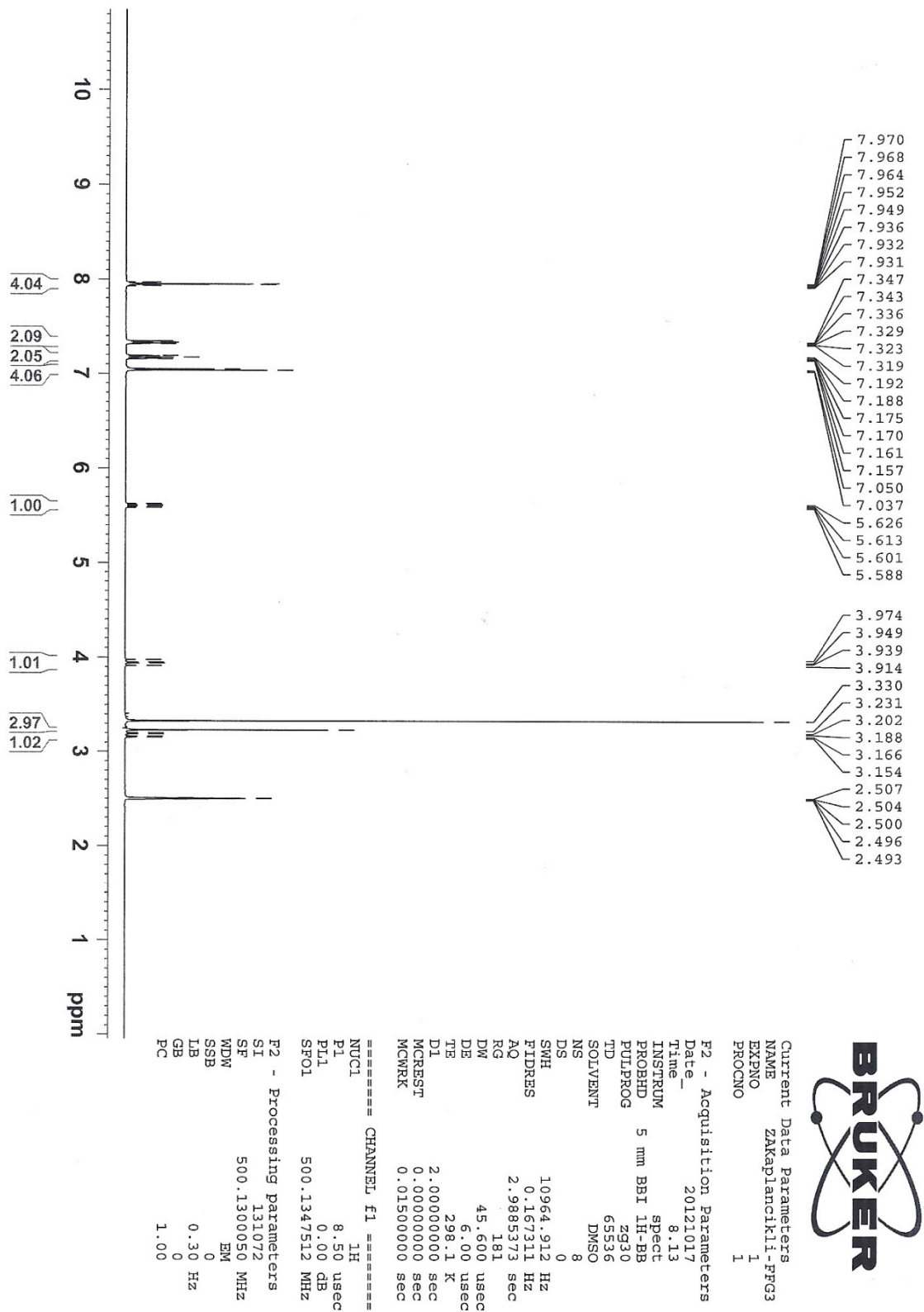
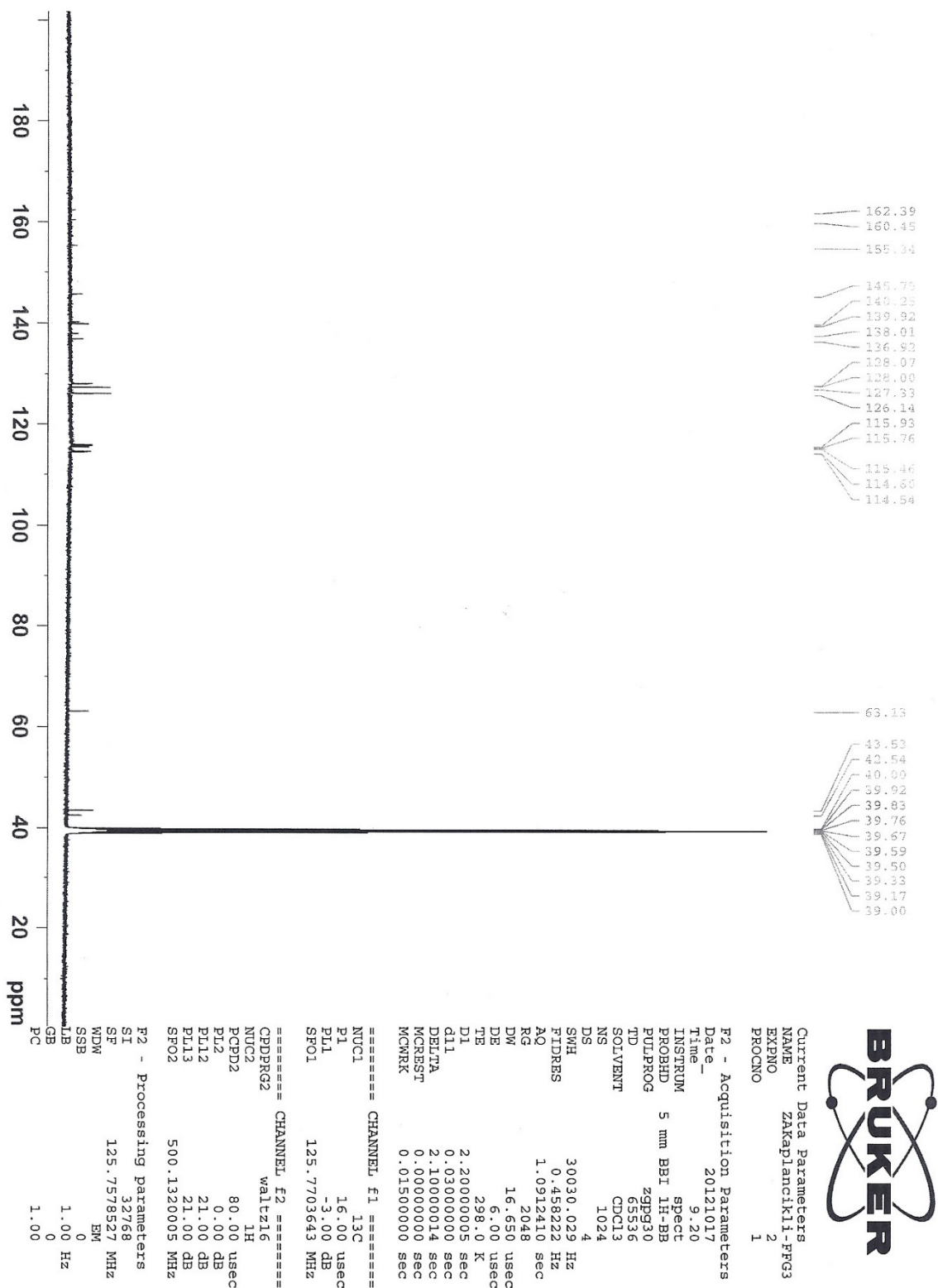


Figure S4. IR Spectrum of compound **2b**.

Figure S5. ¹H-NMR Spectrum of compound 2b.

Figure S6. ^{13}C -NMR Spectrum of compound 2b.

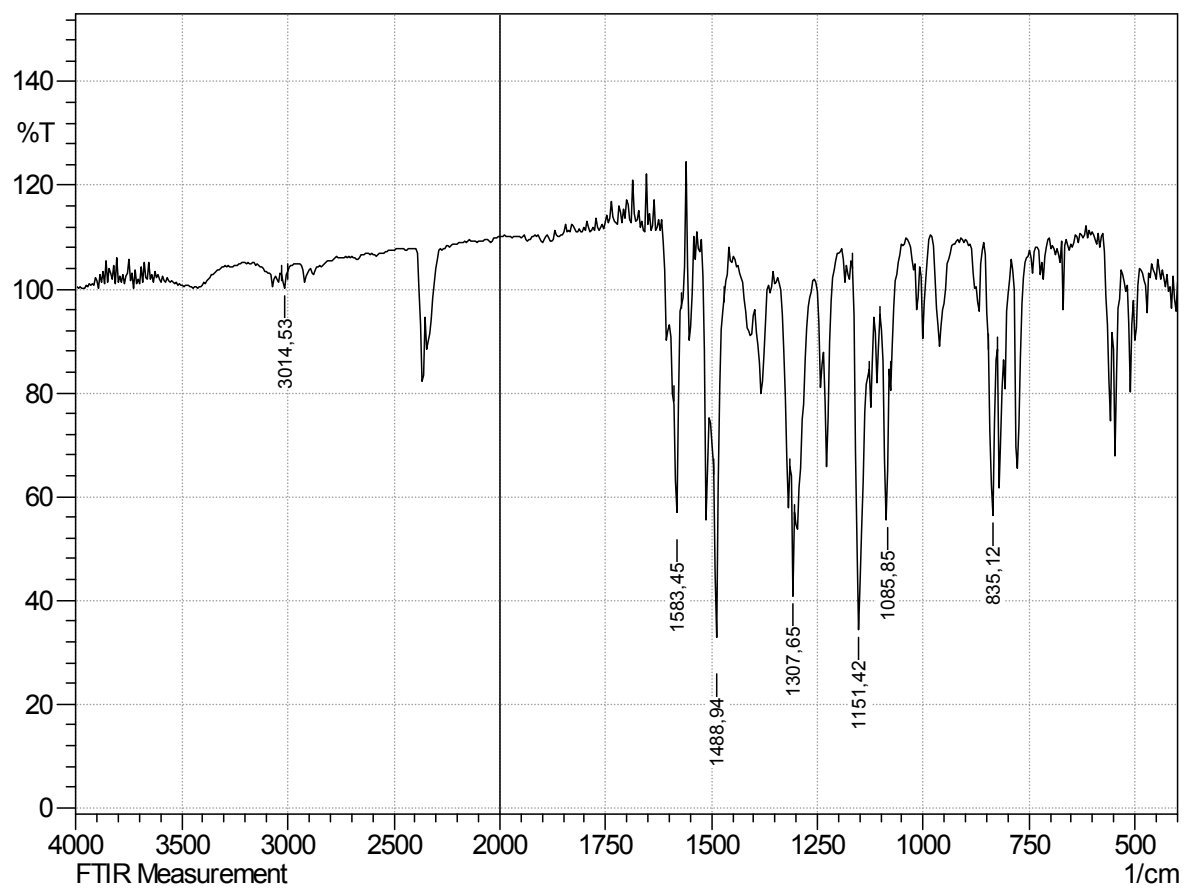
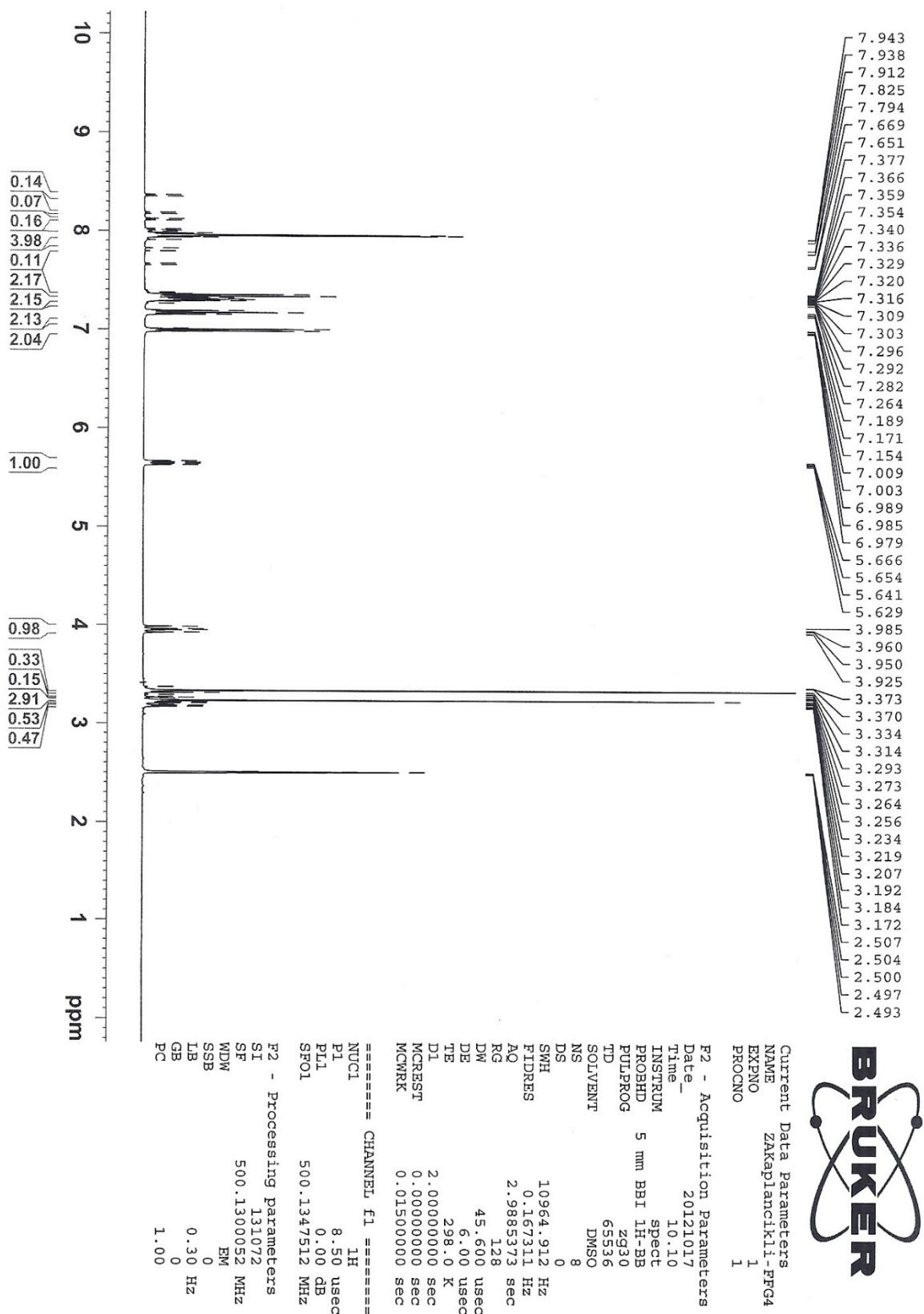
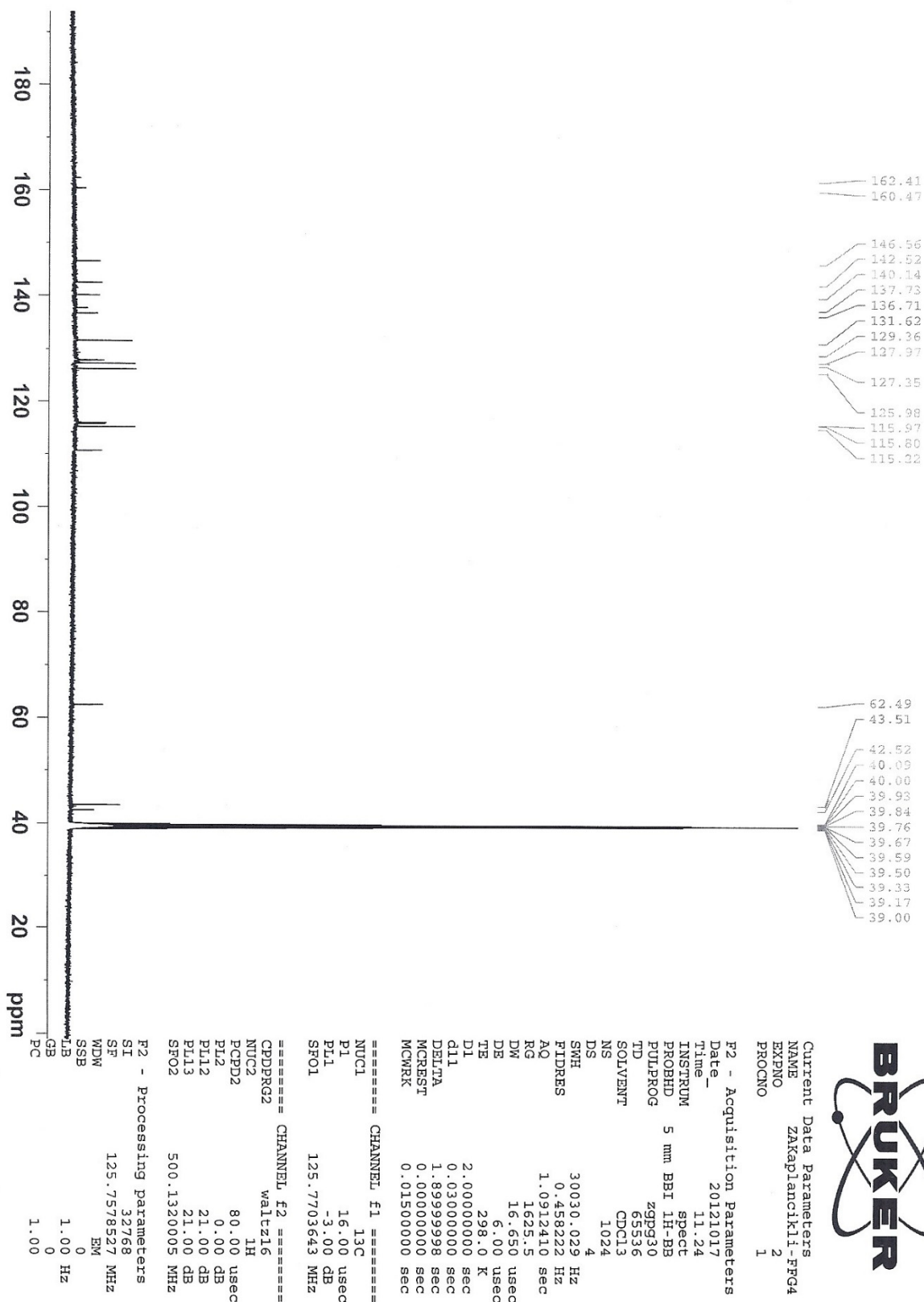


Figure S7. IR Spectrum of compound **2c**.

Figure S8. ^1H -NMR Spectrum of compound 2c.

Figure S9. ^{13}C -NMR Spectrum of compound **2c**.

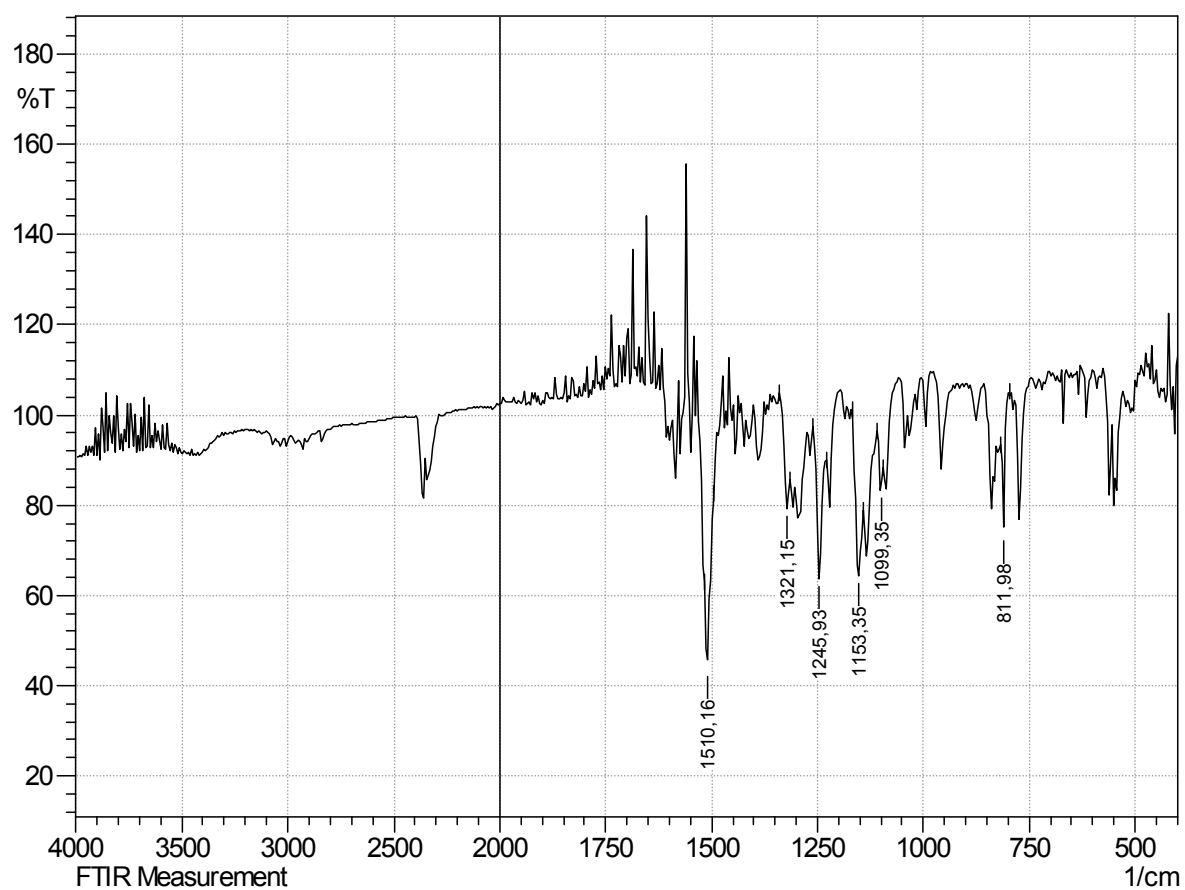
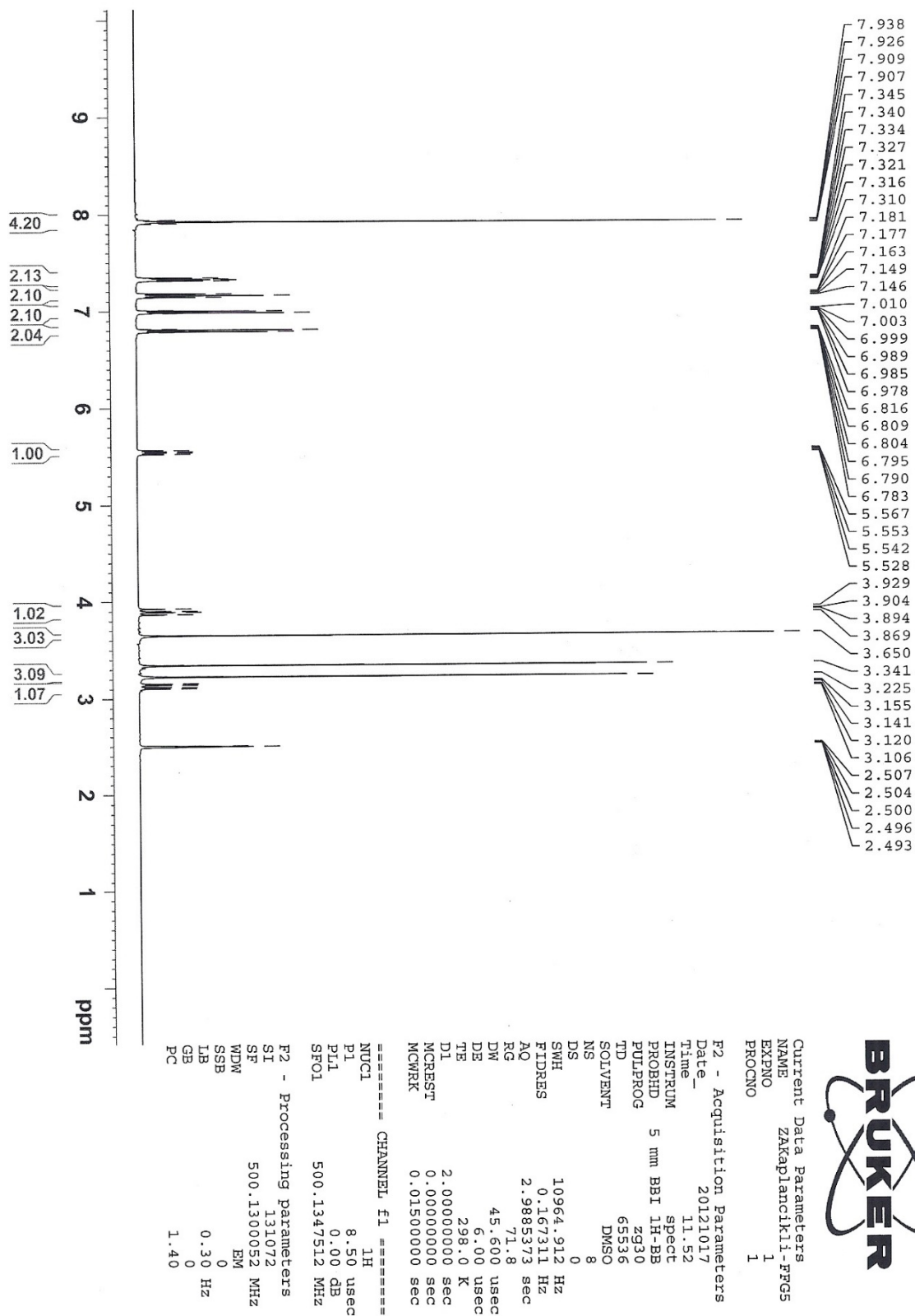
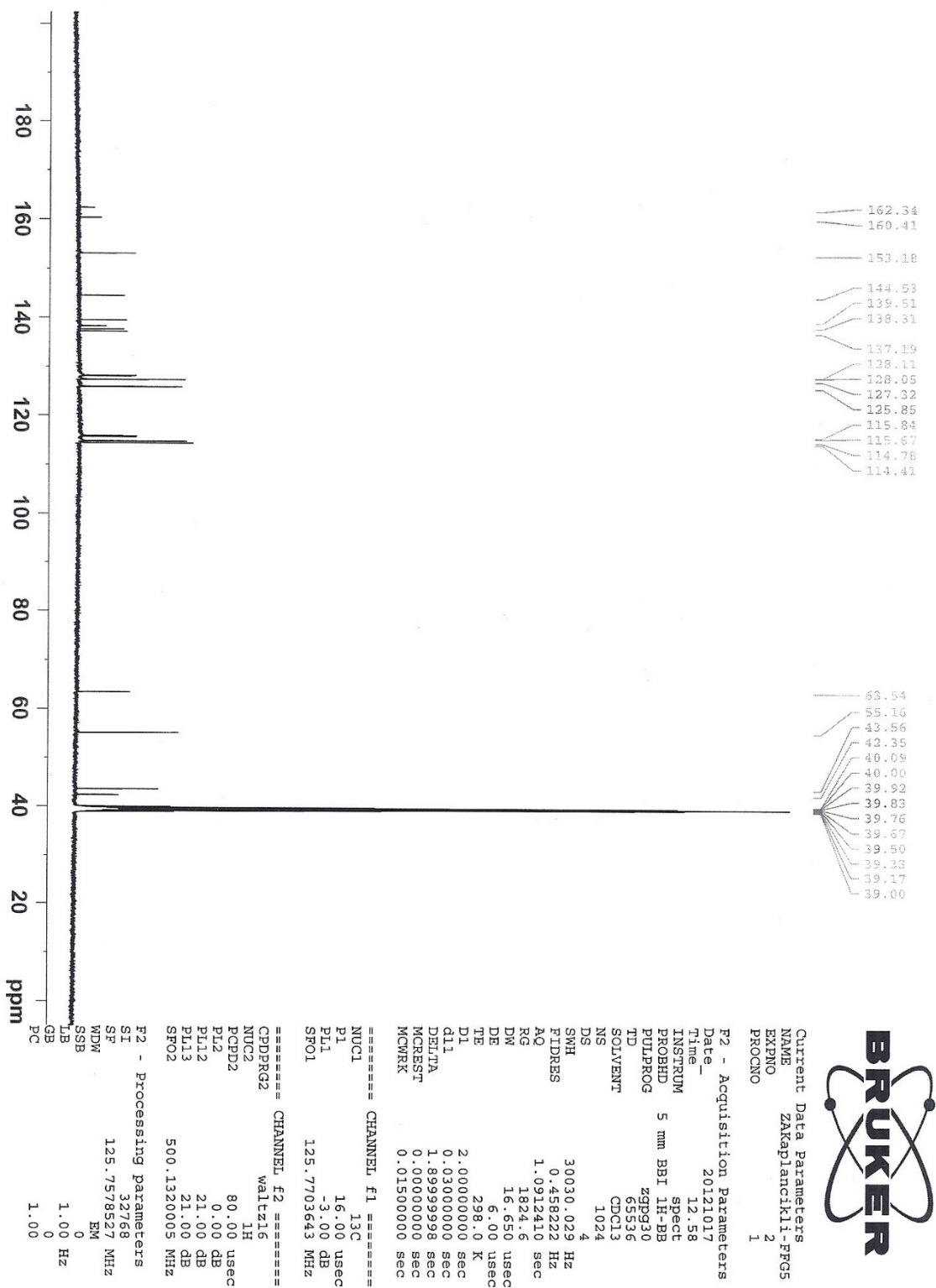


Figure S10. IR Spectrum of compound **2d**.

Figure S11. ^1H -NMR Spectrum of compound **2d**.

Figure S12. ^{13}C -NMR Spectrum of compound **2d**.

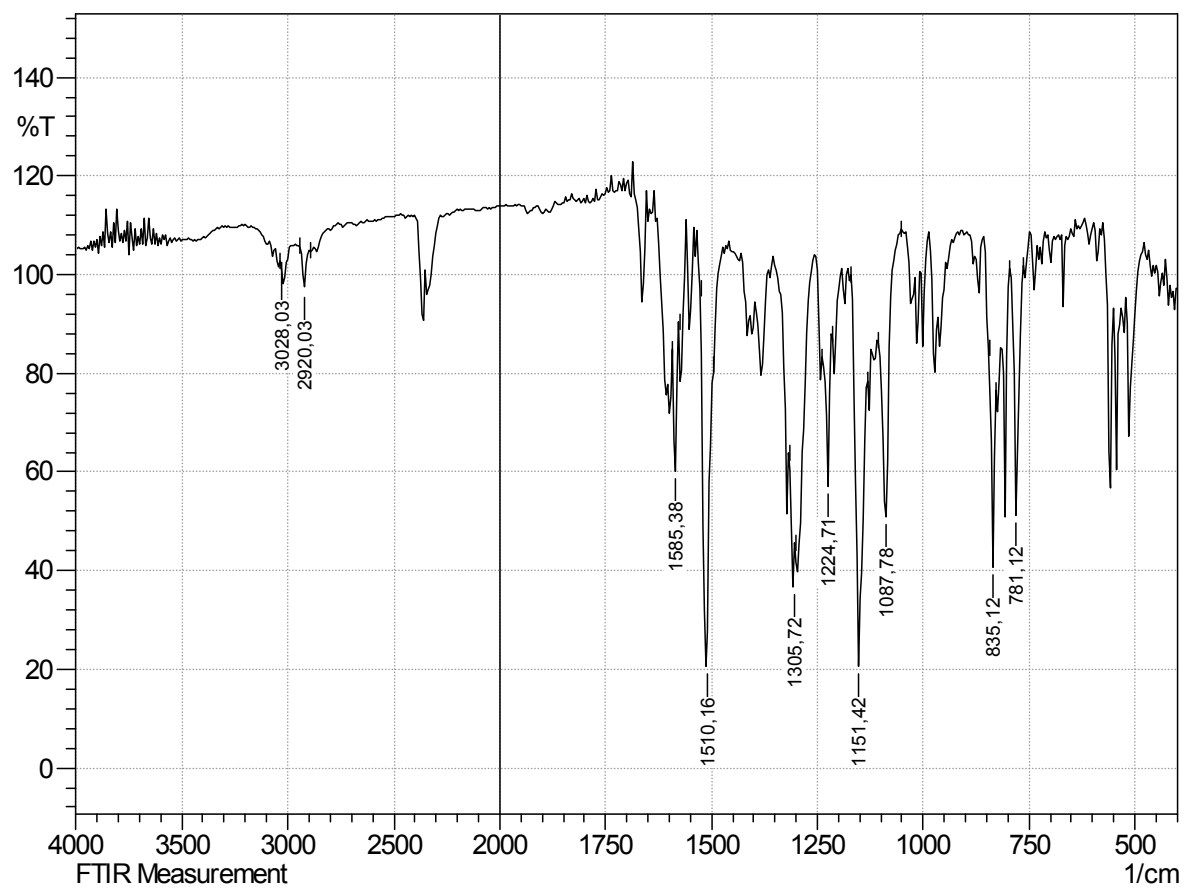
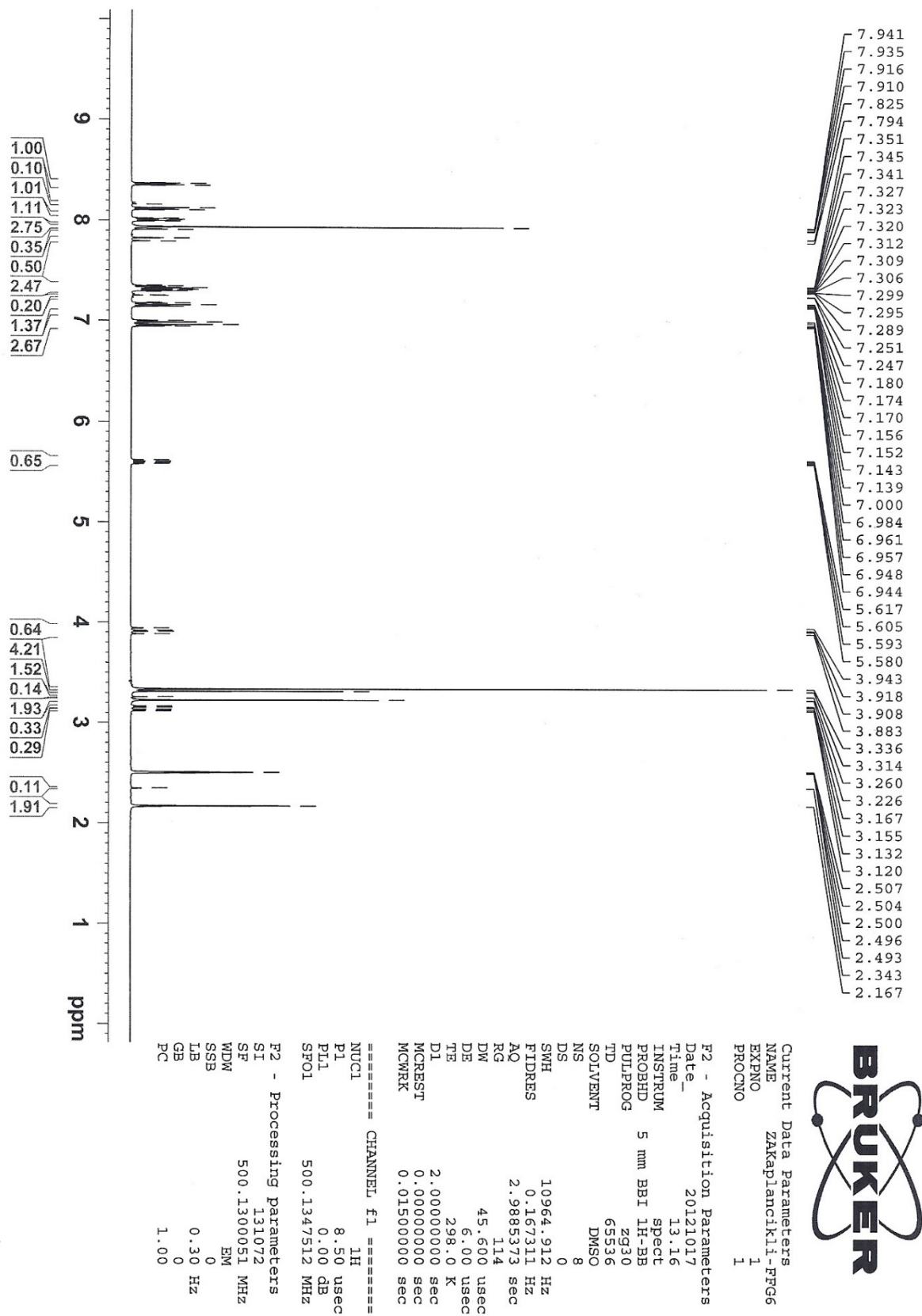
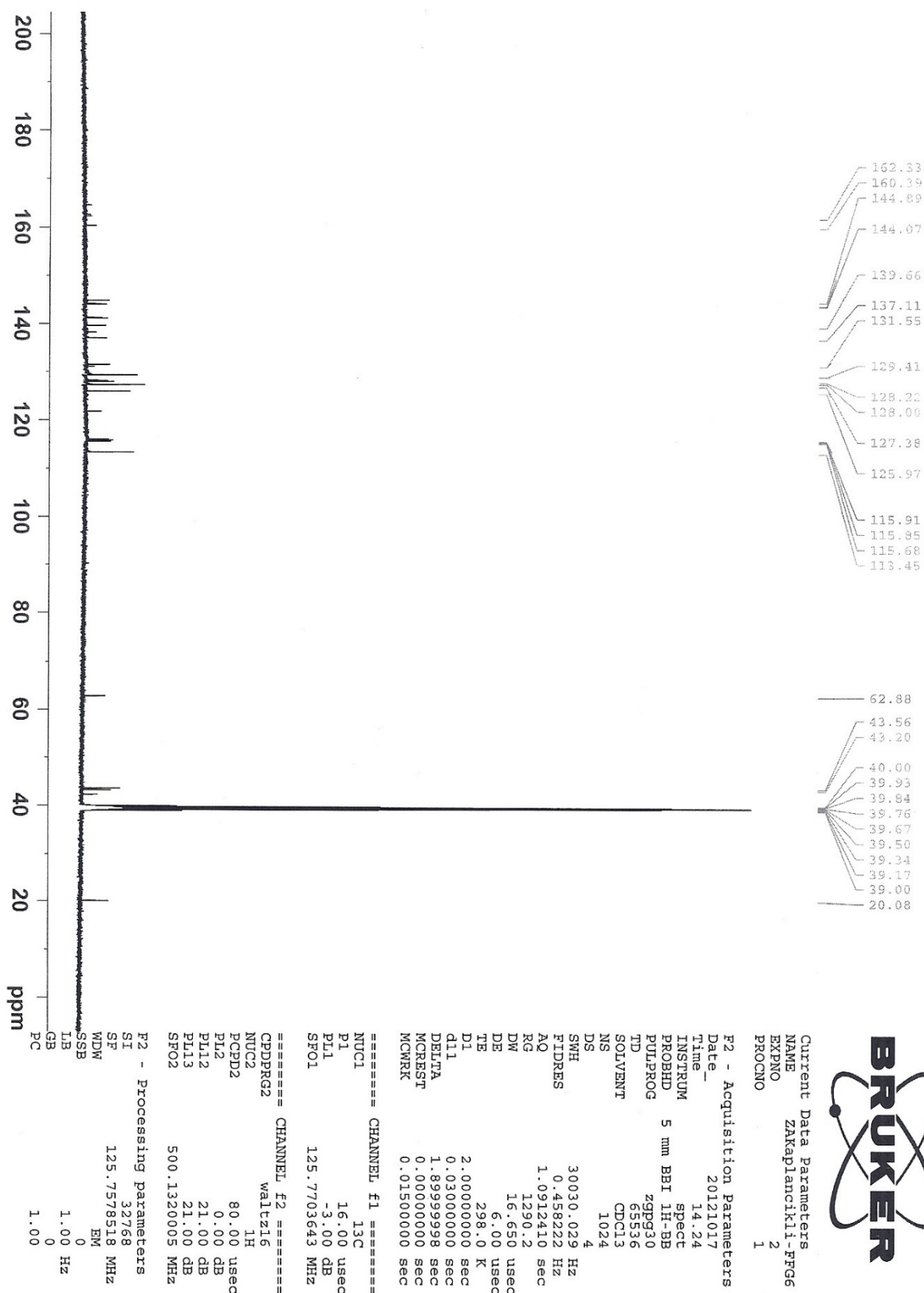


Figure S13. IR Spectrum of compound **2e**.

Figure S14. ¹H-NMR Spectrum of compound 2e.

Figure S15. ¹³C-NMR Spectrum of compound 2e.

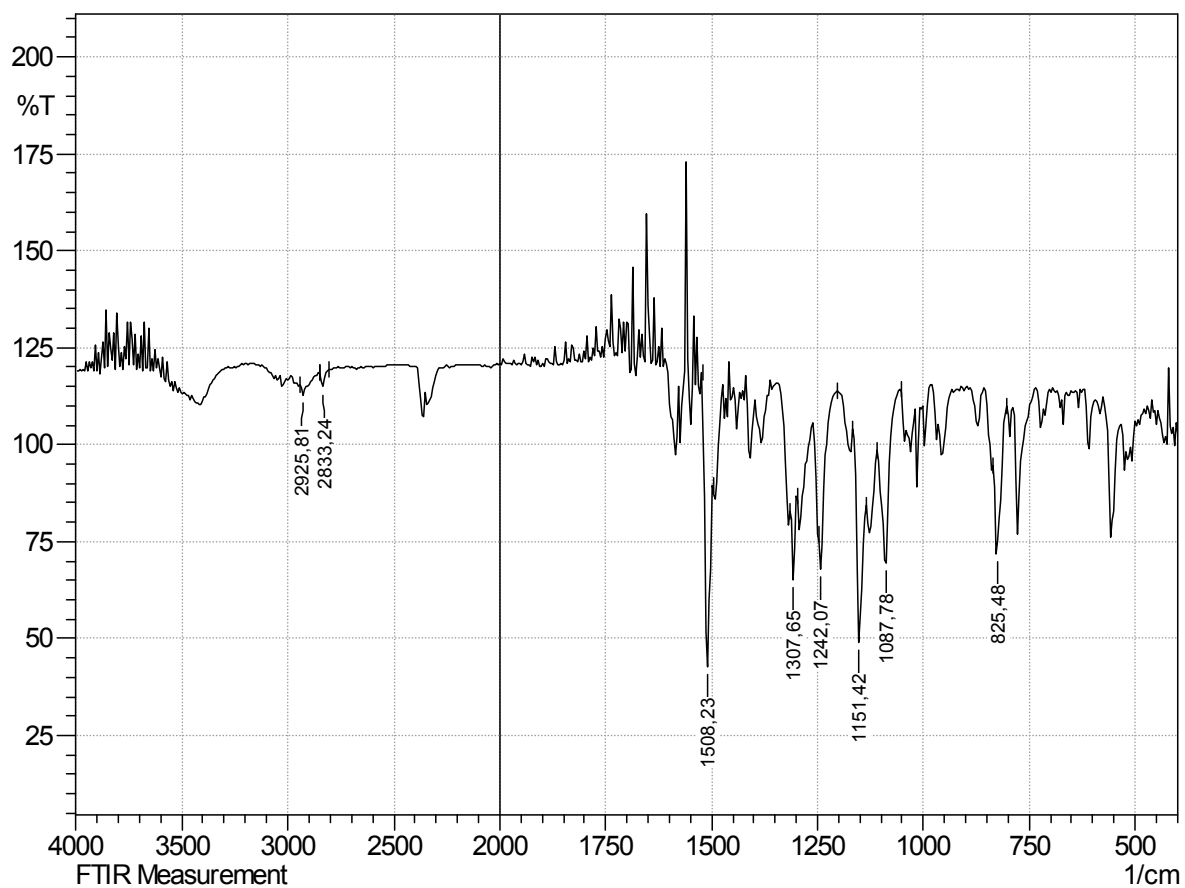
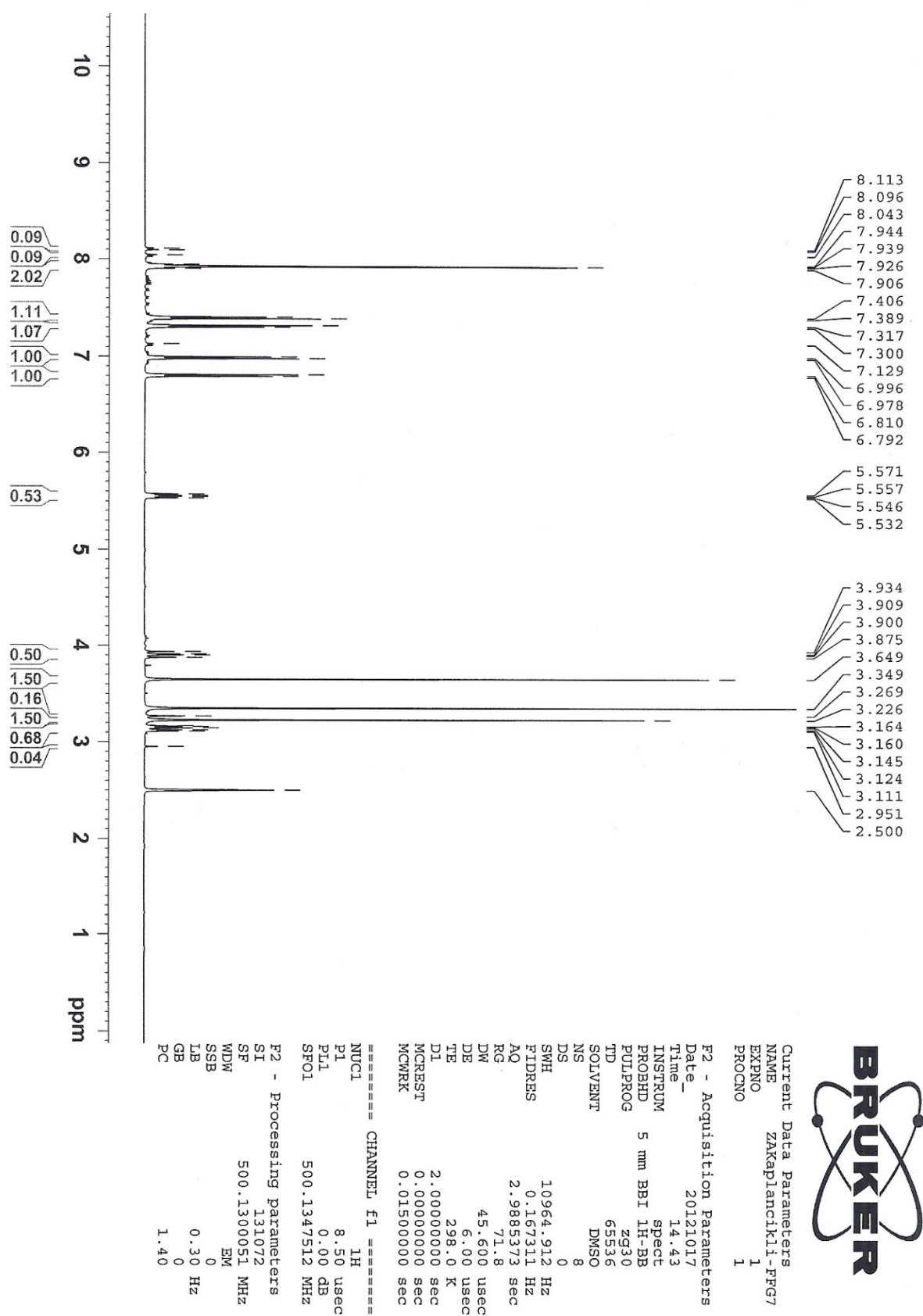
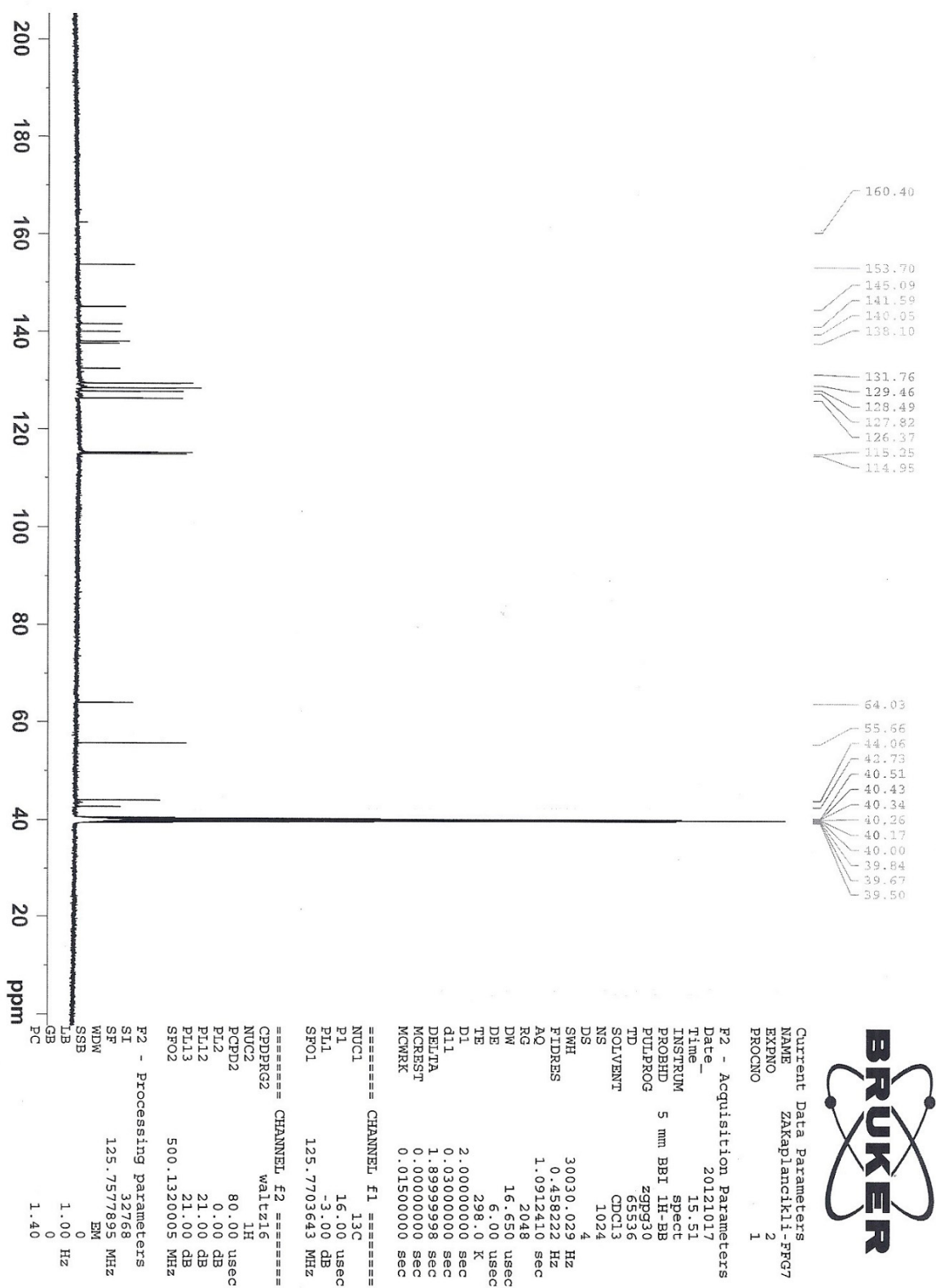


Figure S16. IR Spectrum of compound **2f**.

Figure S17. ¹H-NMR Spectrum of compound 2f.

Figure S18. ^{13}C -NMR Spectrum of compound **2f**.

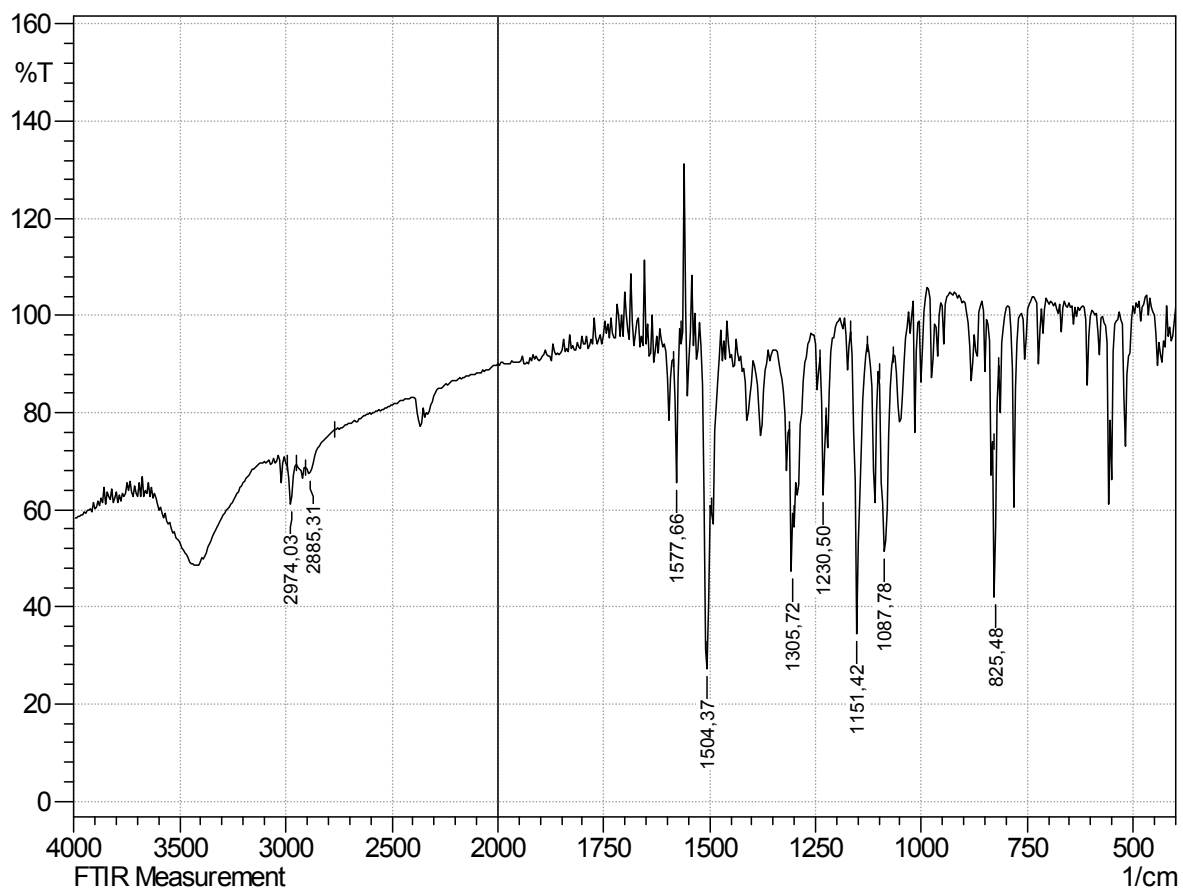
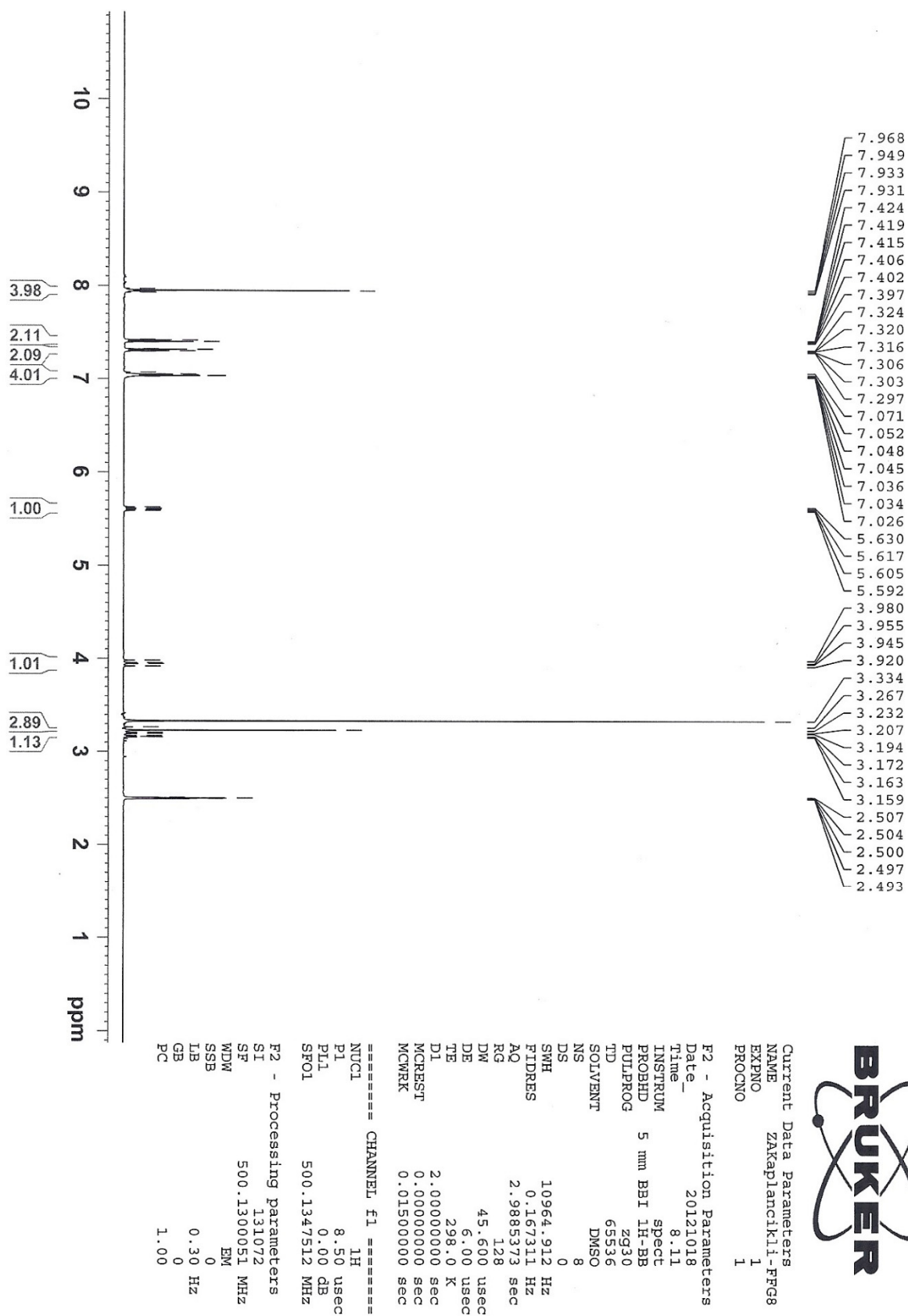
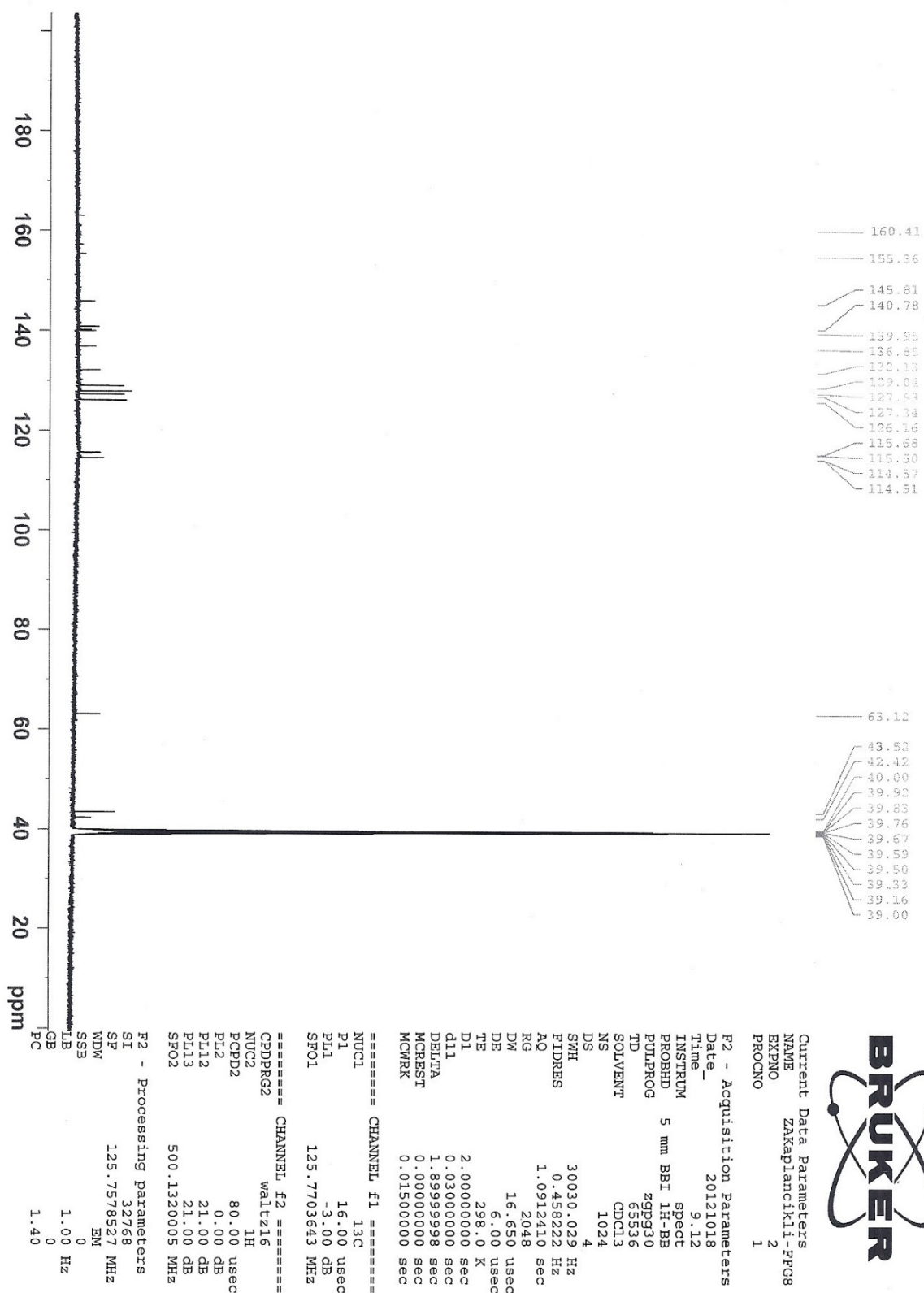


Figure S19. IR Spectrum of compound **2g**.

Figure S20. ¹H-NMR Spectrum of compound **2g**.

Figure S21. ^{13}C -NMR Spectrum of compound **2g**.

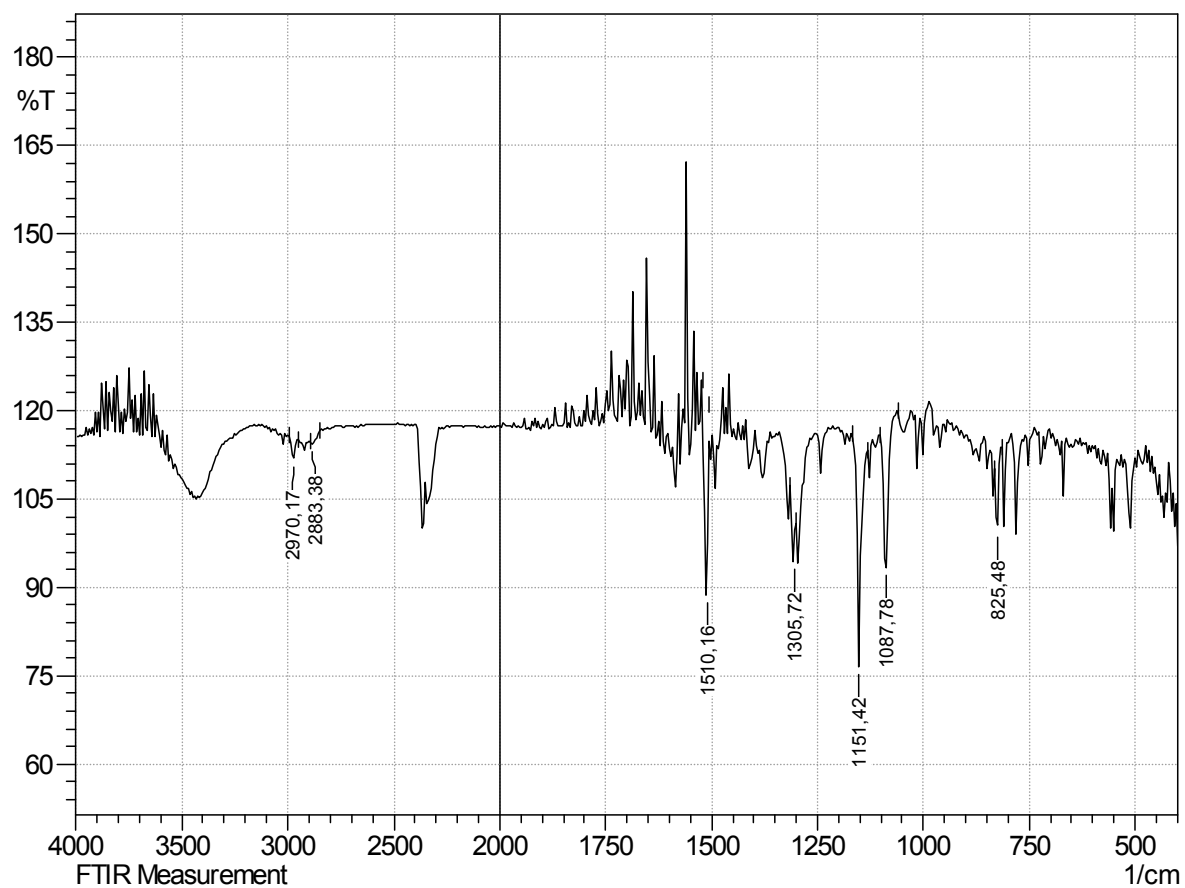
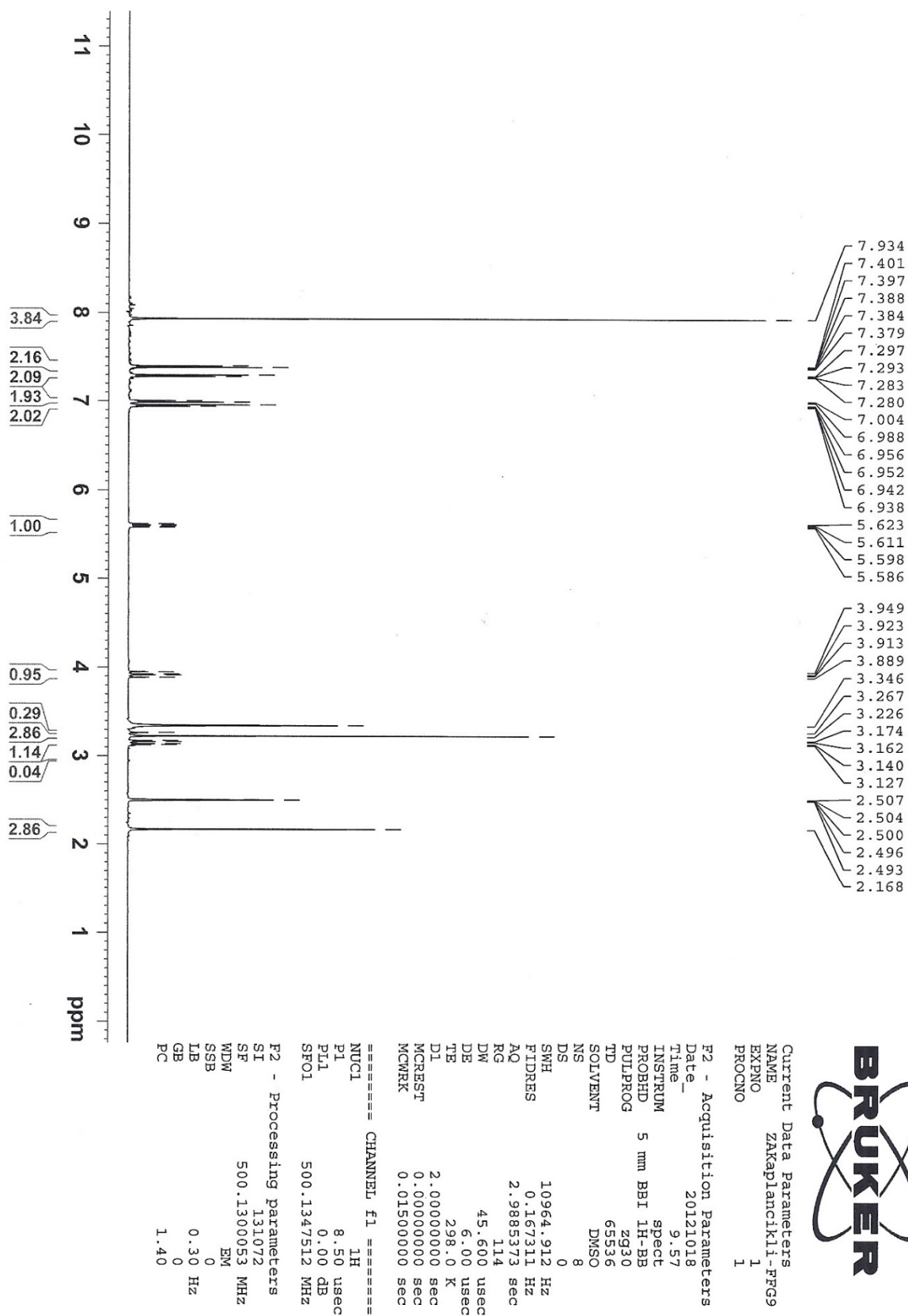
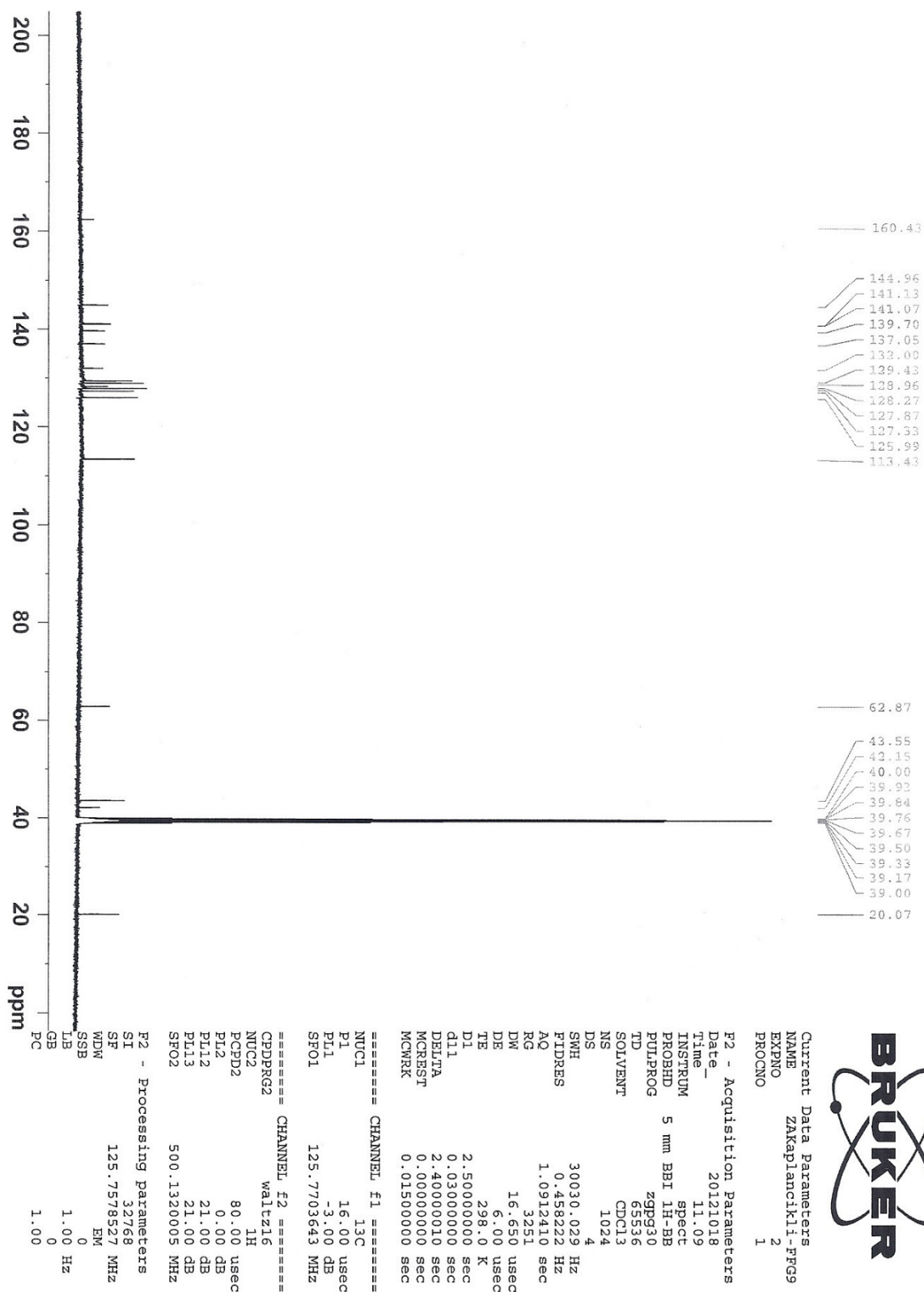


Figure S22. IR Spectrum of compound **2h**.

Figure S23. ^1H -NMR Spectrum of compound **2h**.

Figure S24. ¹³C-NMR Spectrum of compound **2h**.

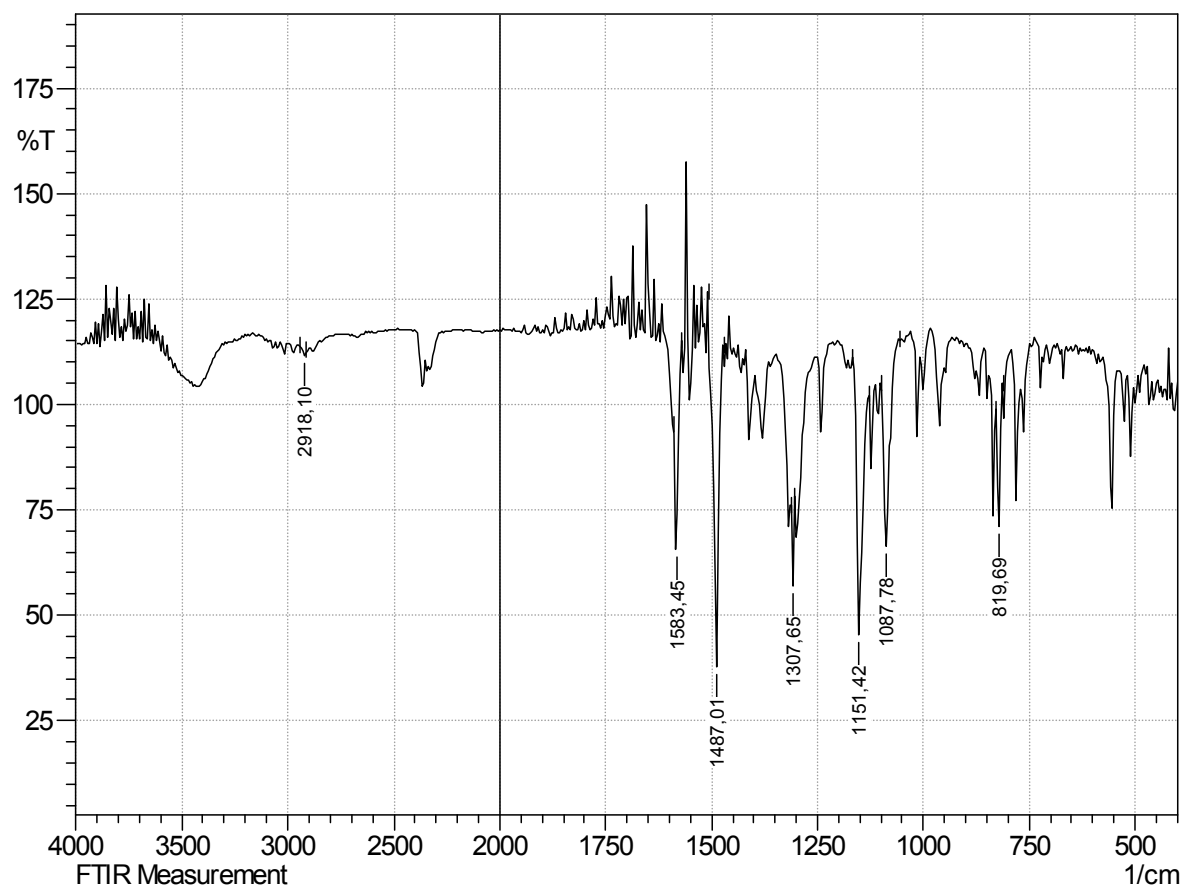
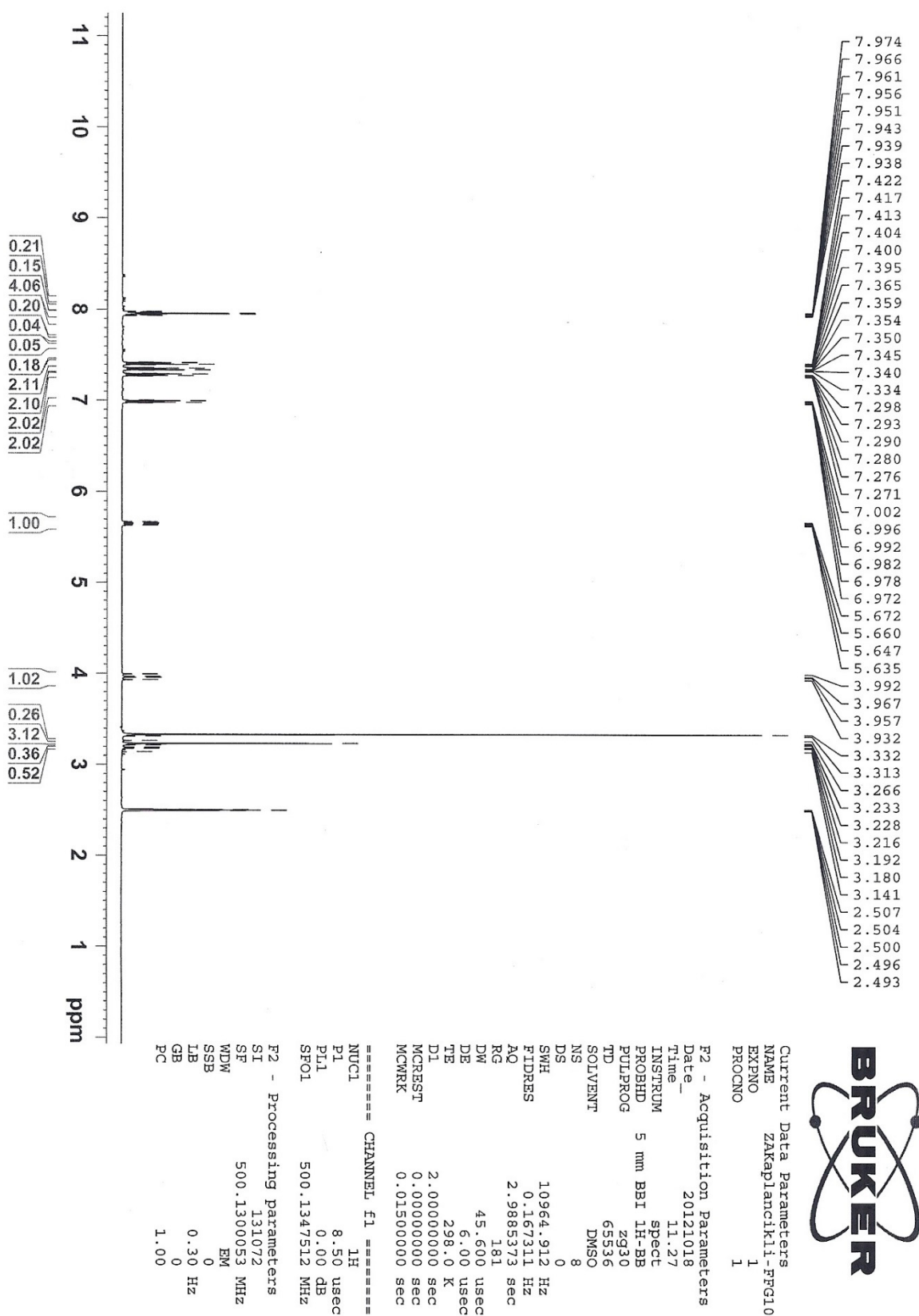
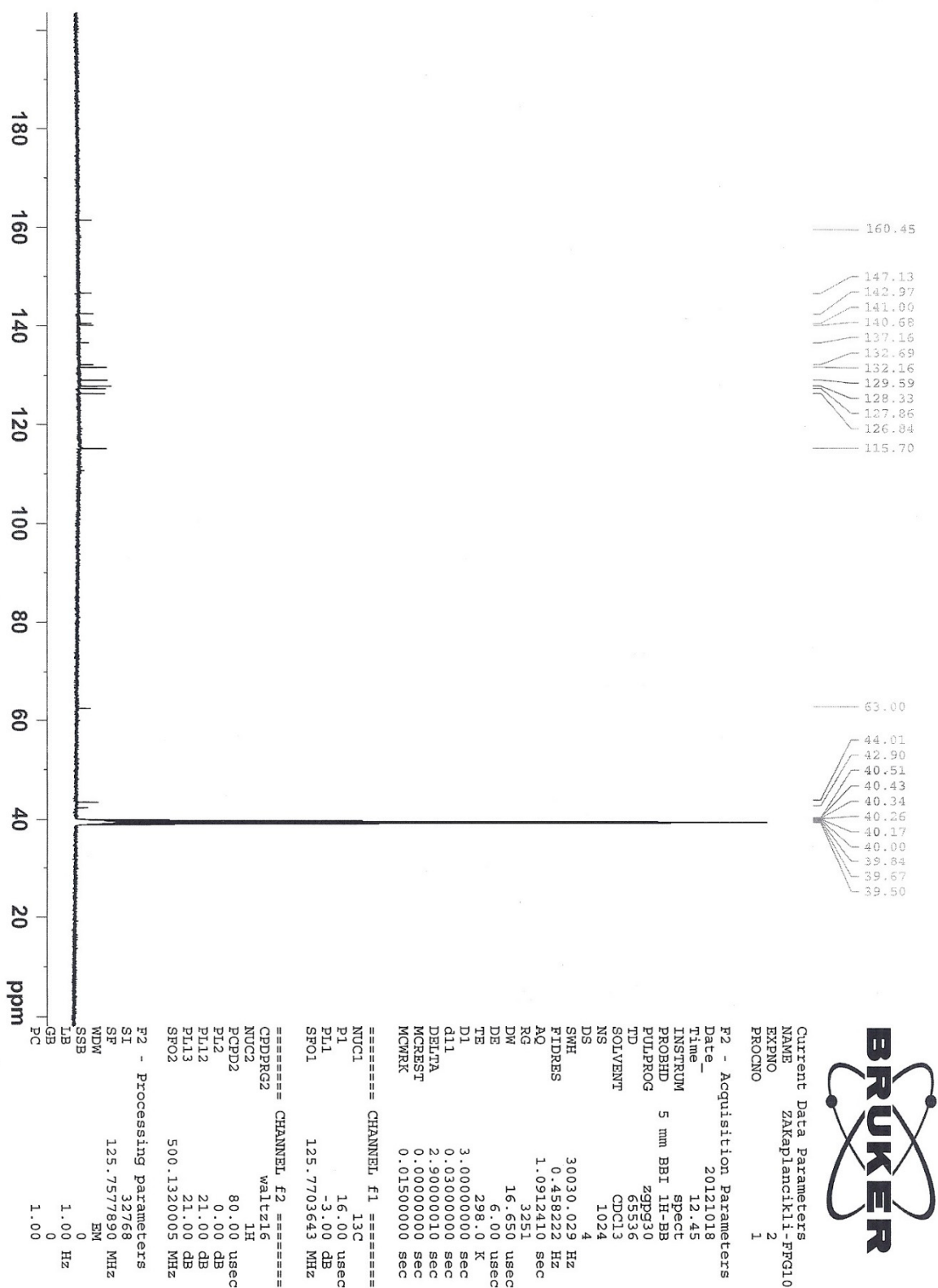


Figure S25. IR Spectrum of compound **2i**.

Figure S26. ^1H -NMR Spectrum of compound **2i**.

Figure S27. ^{13}C -NMR Spectrum of compound 2i.

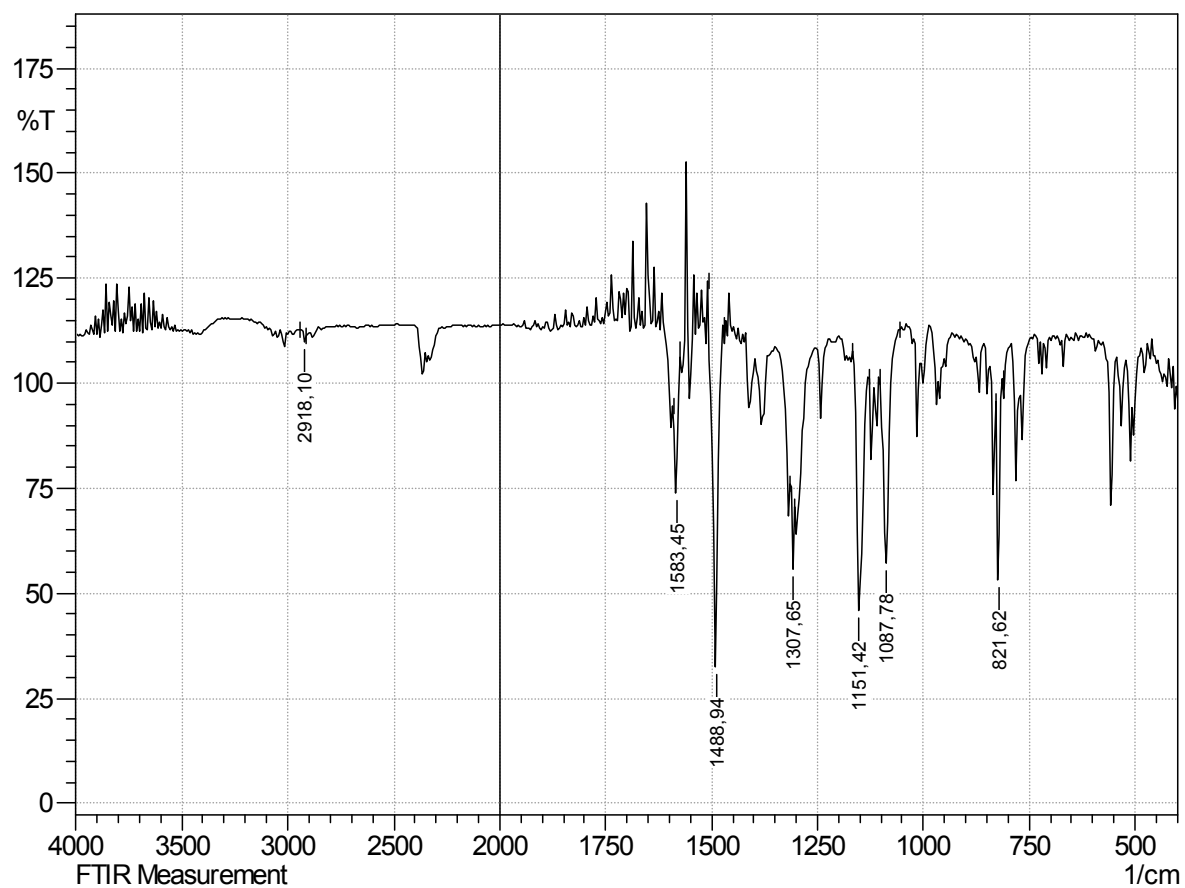
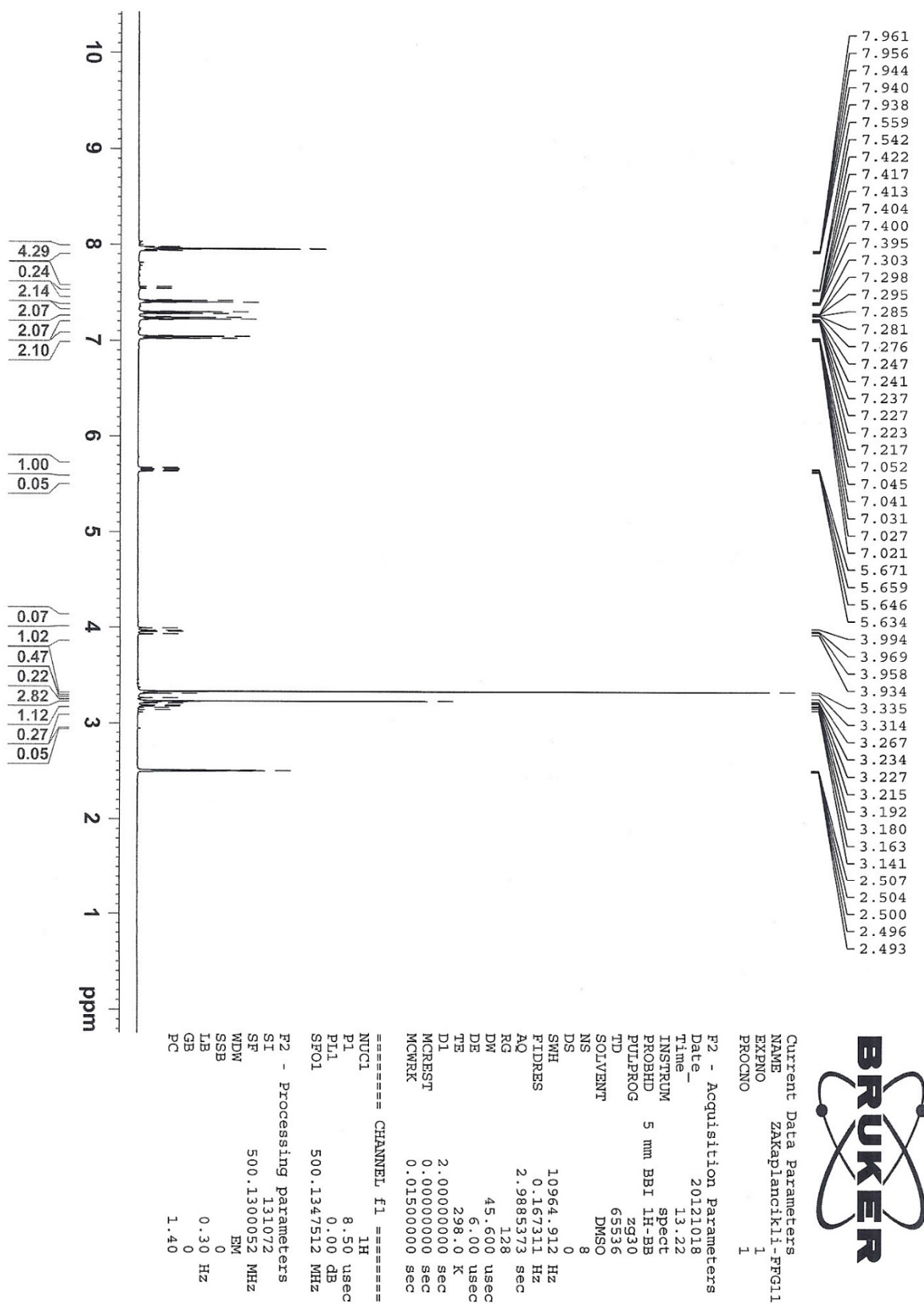
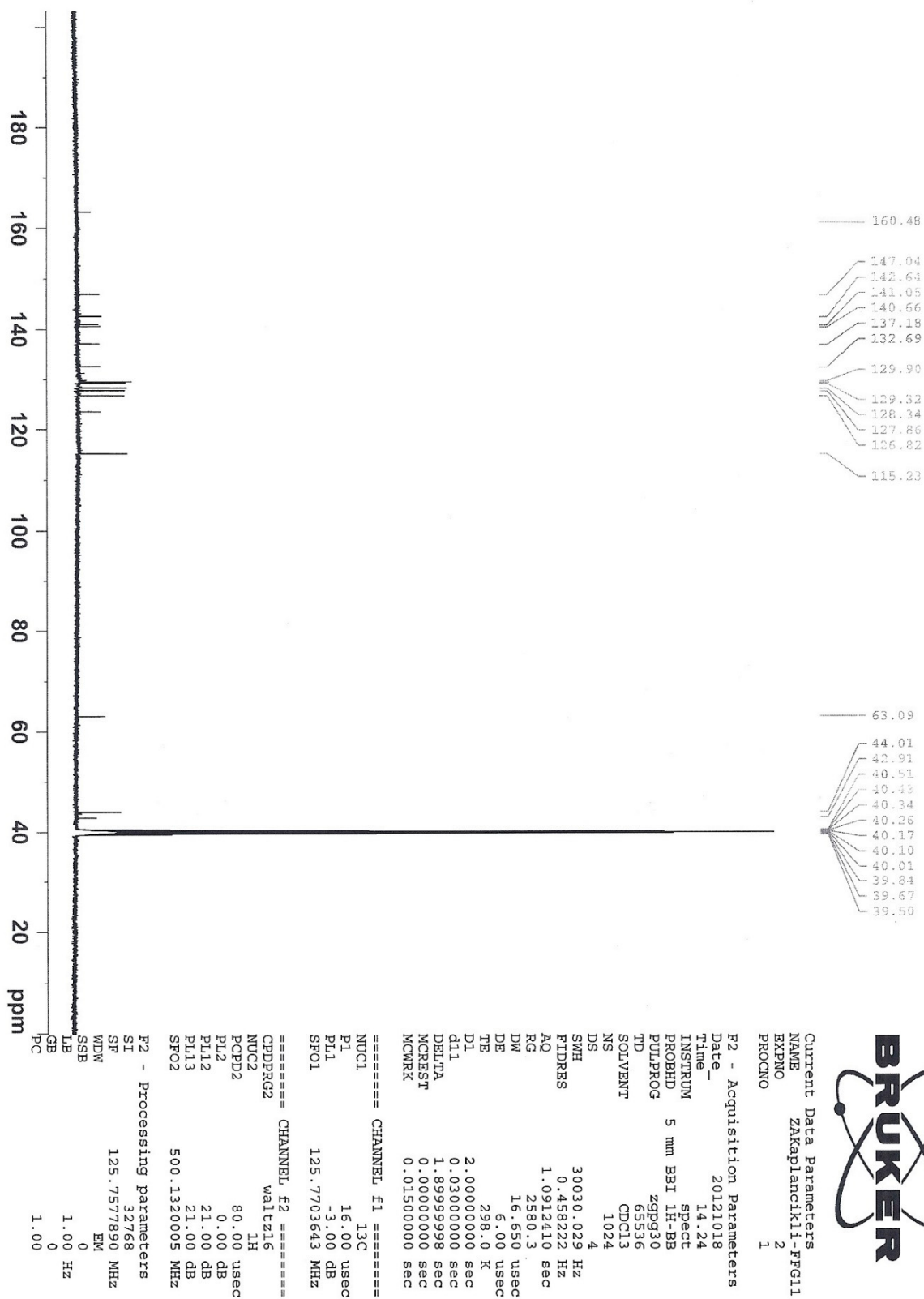


Figure S28. IR Spectrum of compound **2j**.

Figure S29. ^1H -NMR Spectrum of compound **2j**.

Figure S30. ^{13}C -NMR Spectrum of compound 2j.

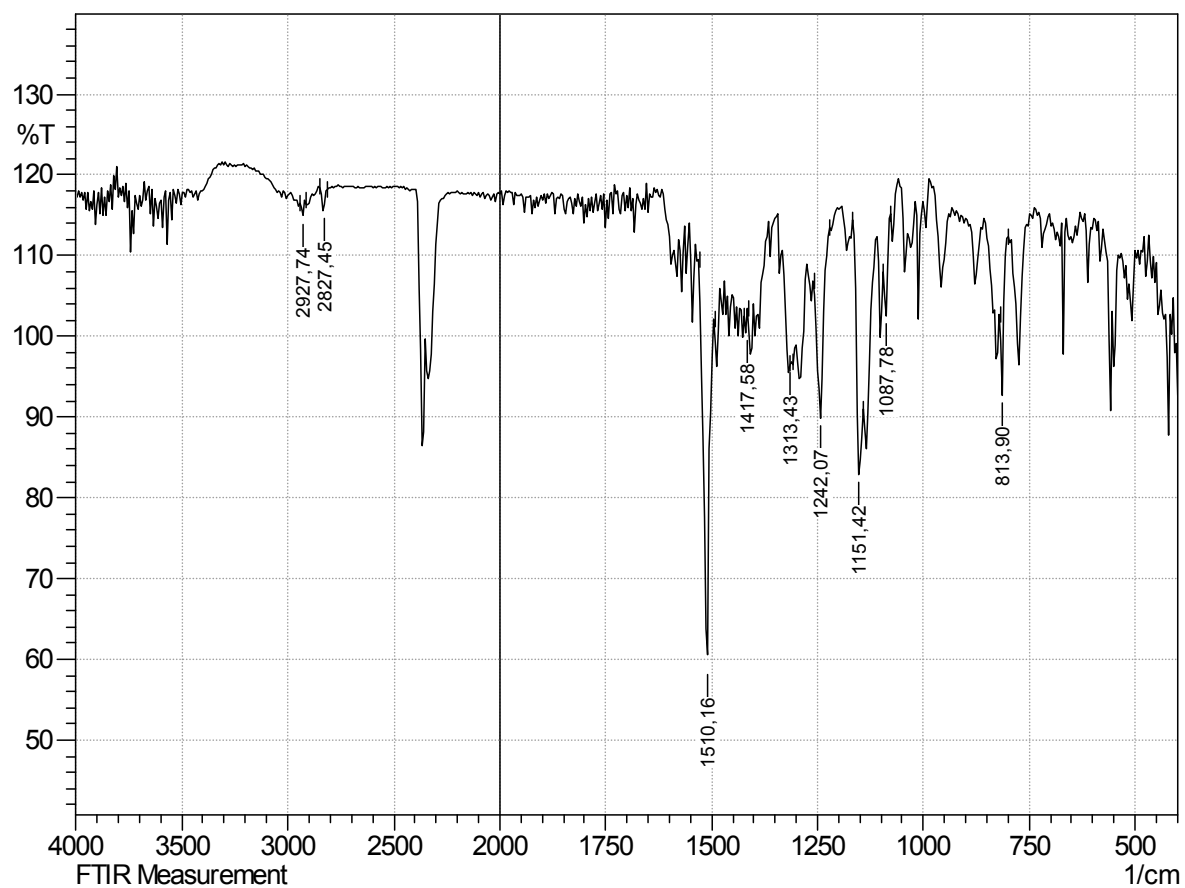
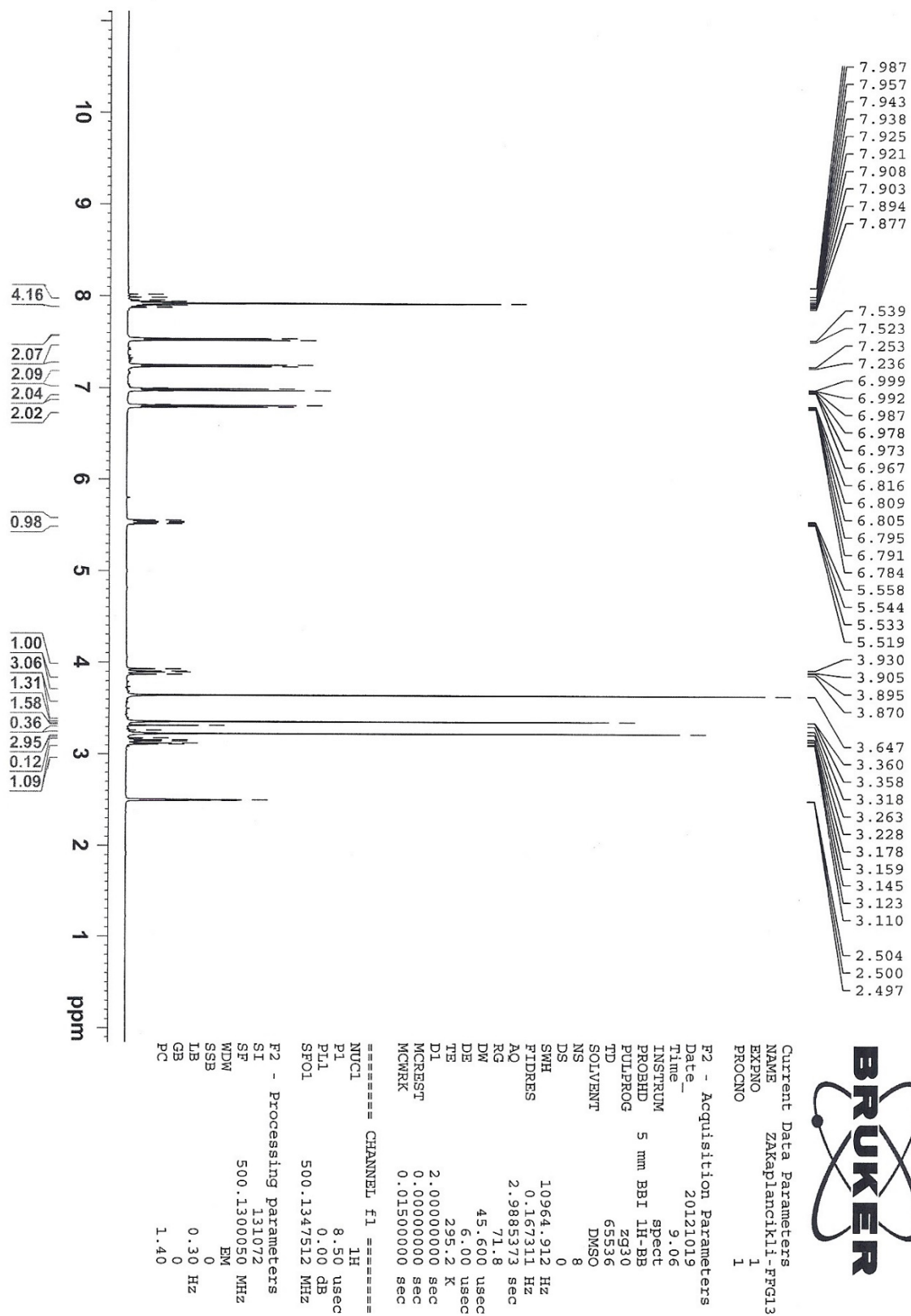
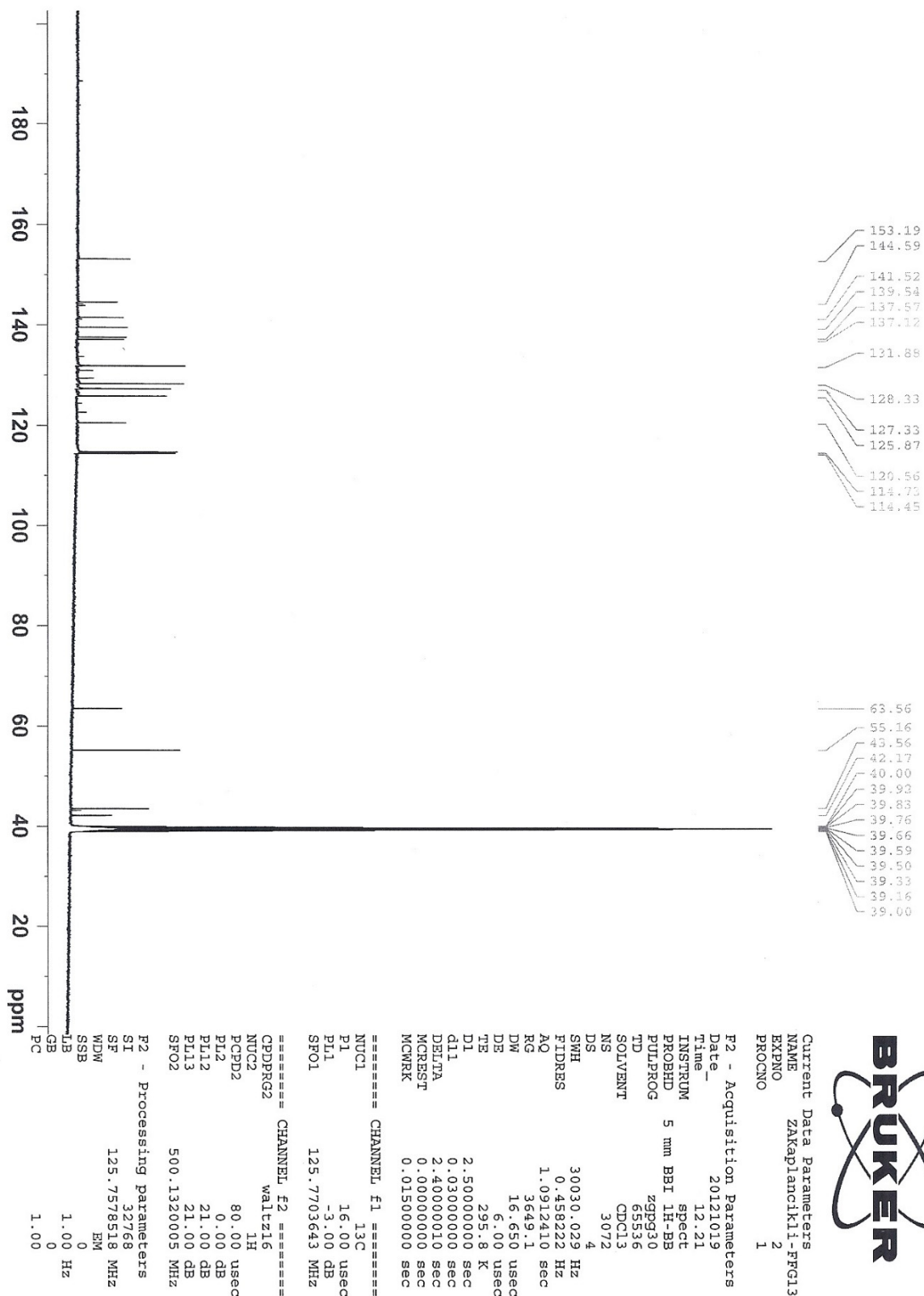


Figure S31. IR Spectrum of compound **2k**.

Figure S32. ^1H -NMR Spectrum of compound 2k.

Figure S33. ^{13}C -NMR Spectrum of compound 2k.

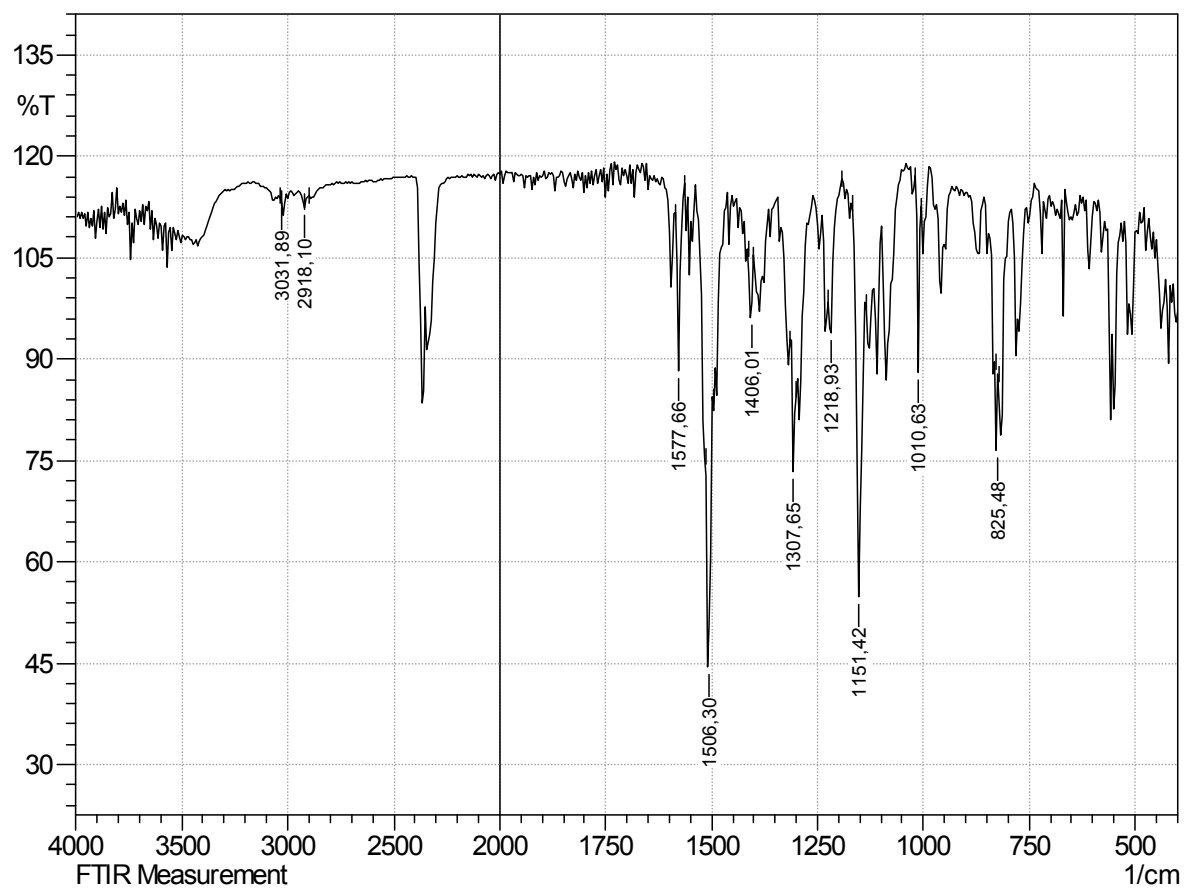
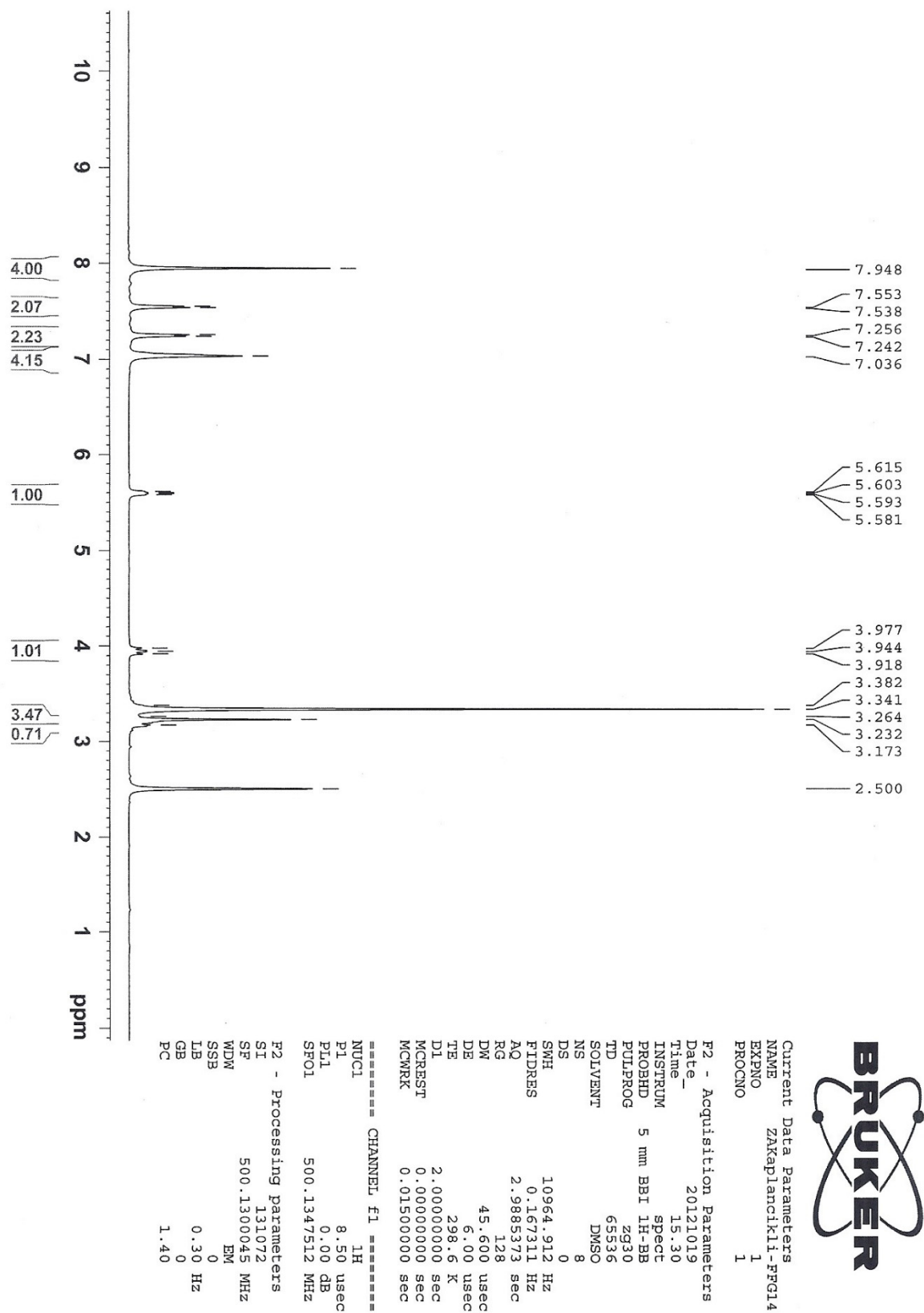
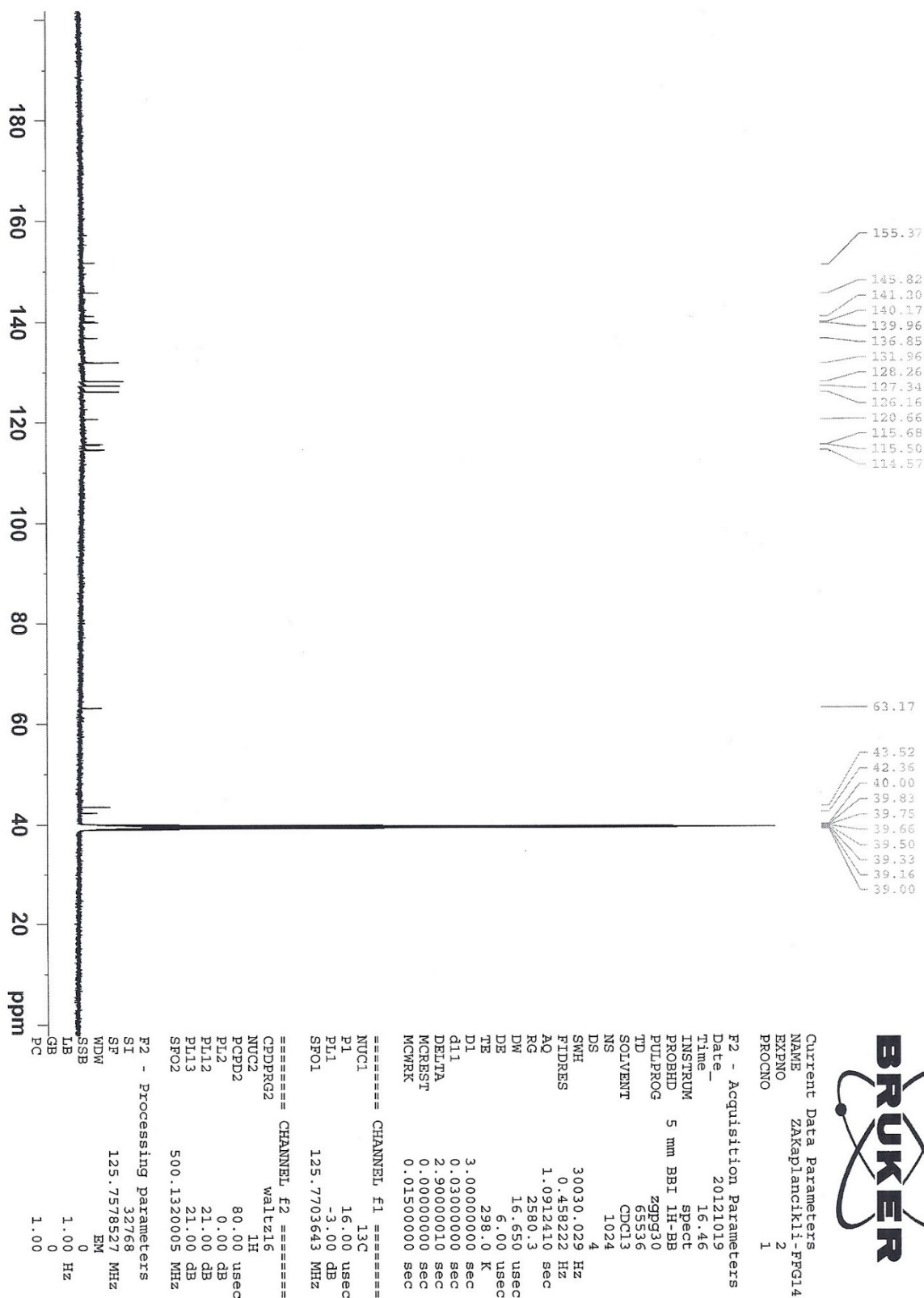


Figure S34. IR Spectrum of compound **2I**.

Figure S35. ^1H -NMR Spectrum of compound **21**.

Figure S36. ^{13}C -NMR Spectrum of compound 21.

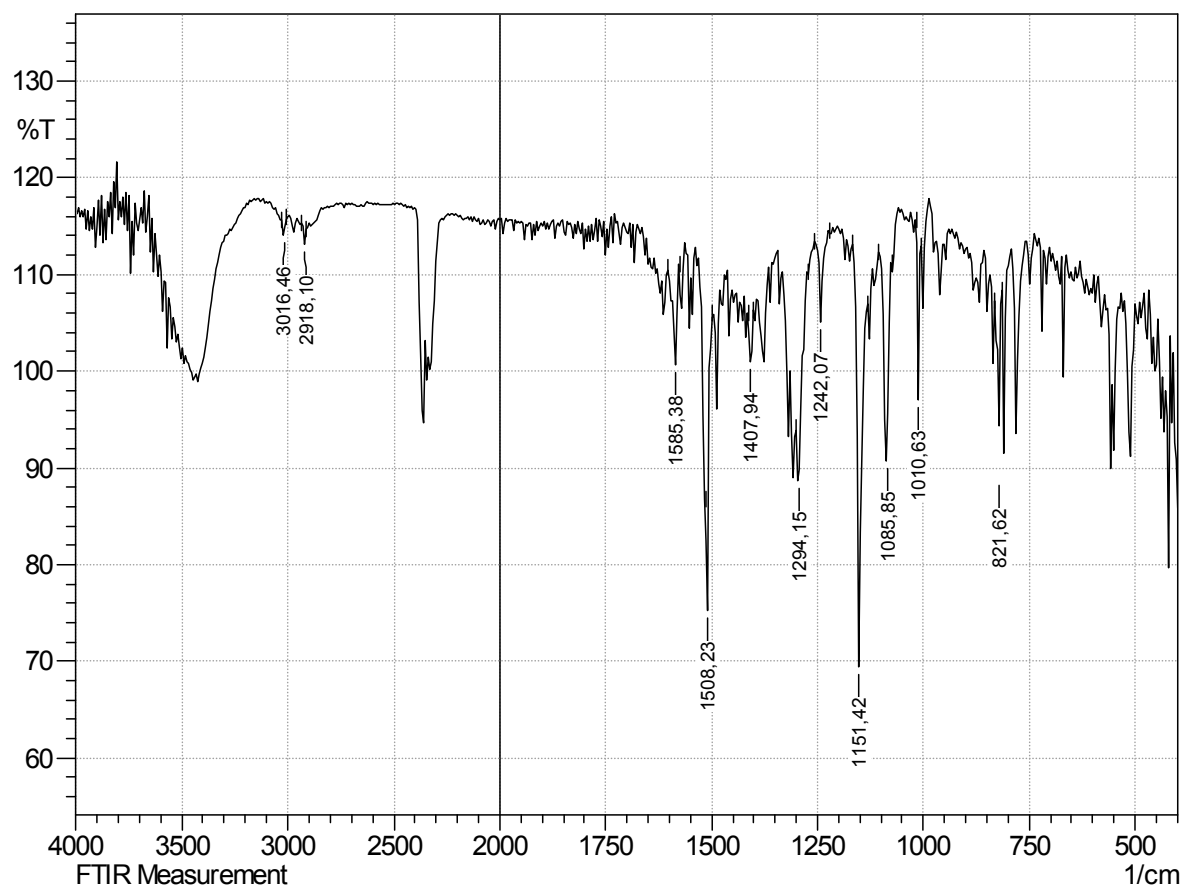
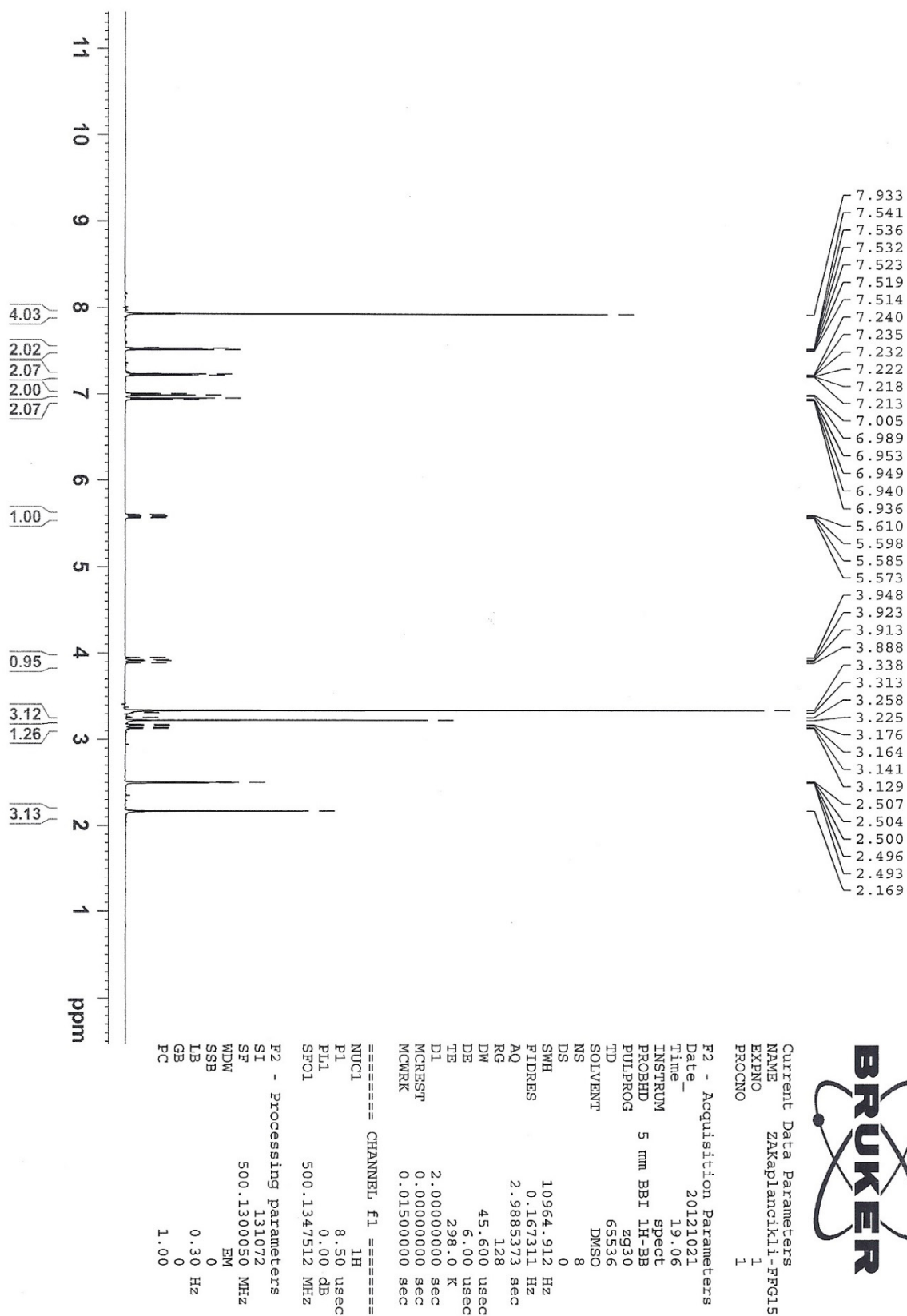
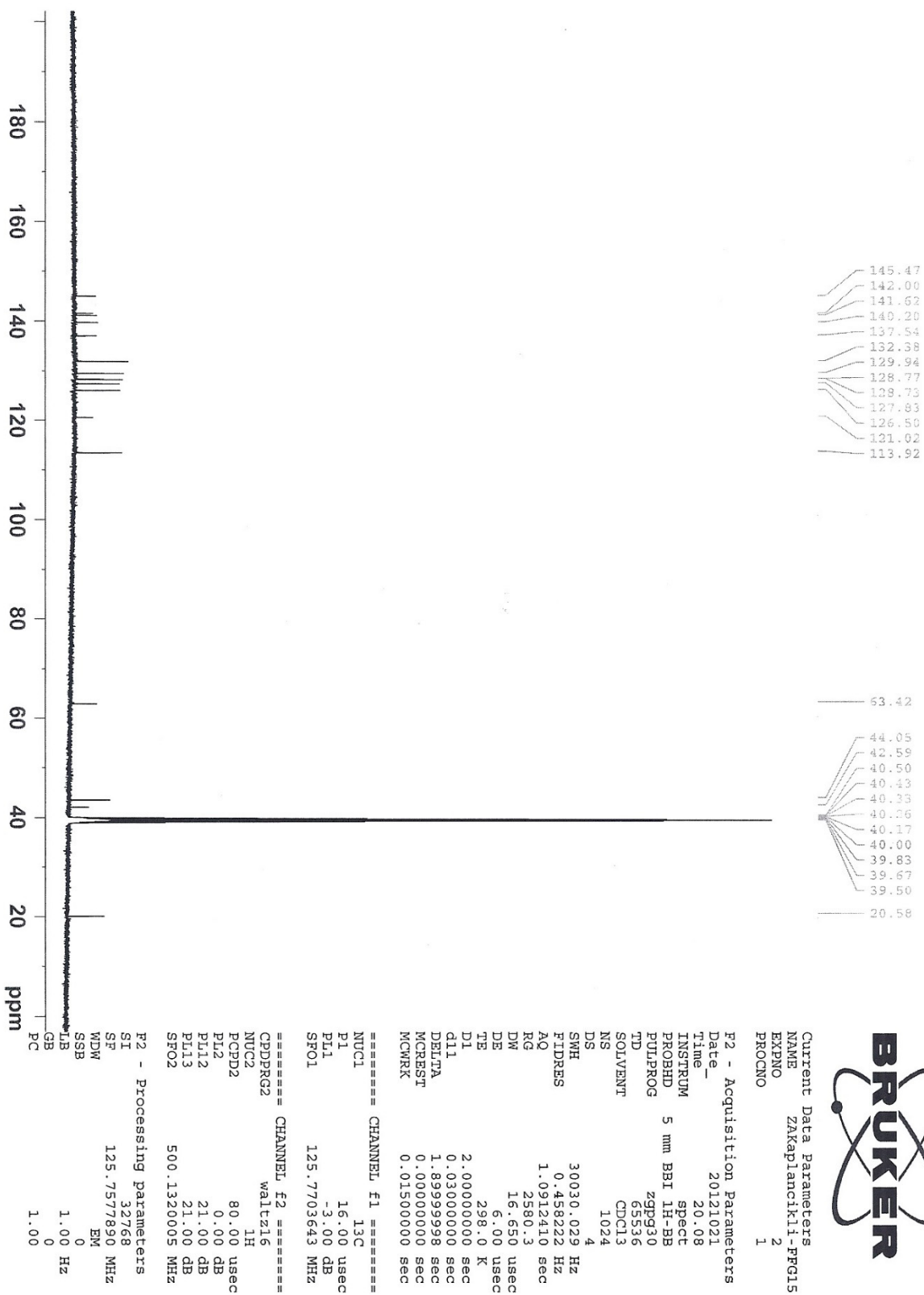


Figure S37. IR Spectrum of compound **2m**.

Figure S38. ^1H -NMR Spectrum of compound **2m**.

Figure S39. ^{13}C -NMR Spectrum of compound 2m.

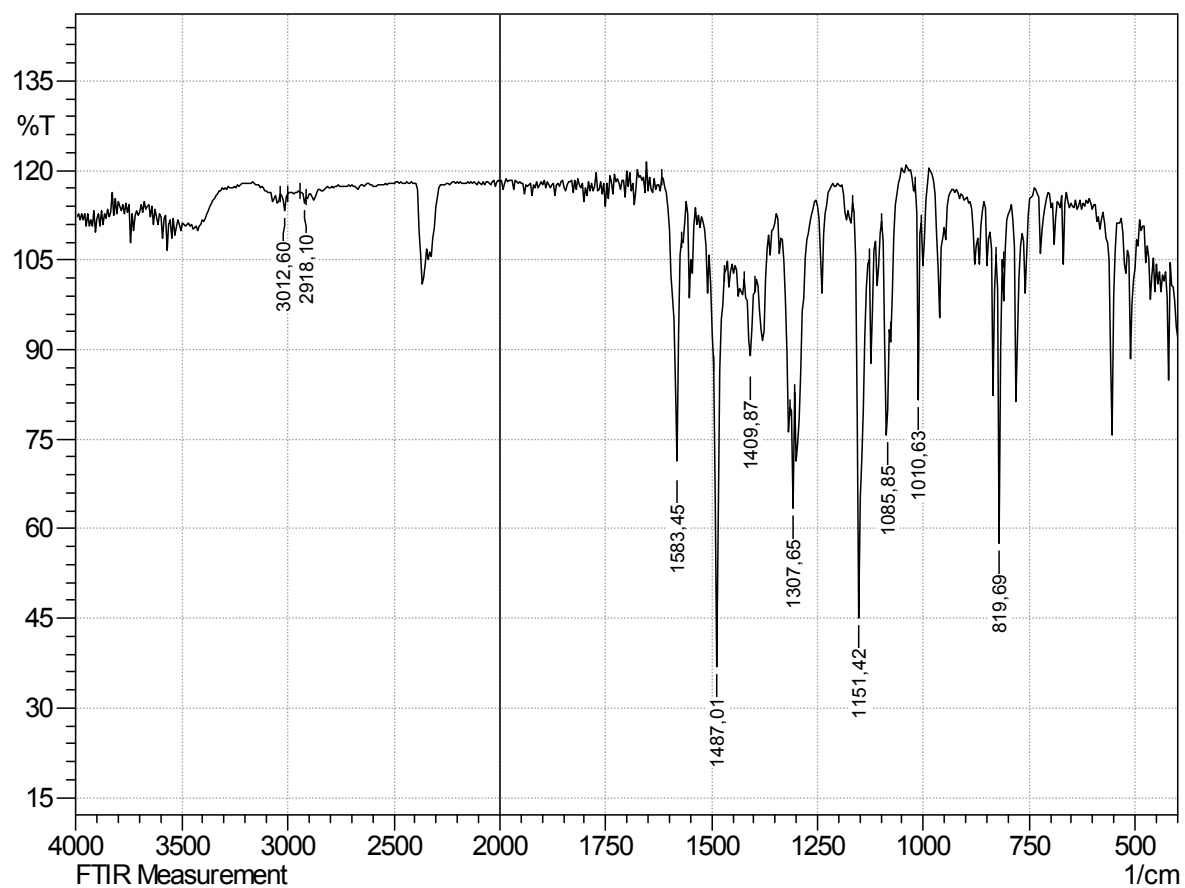
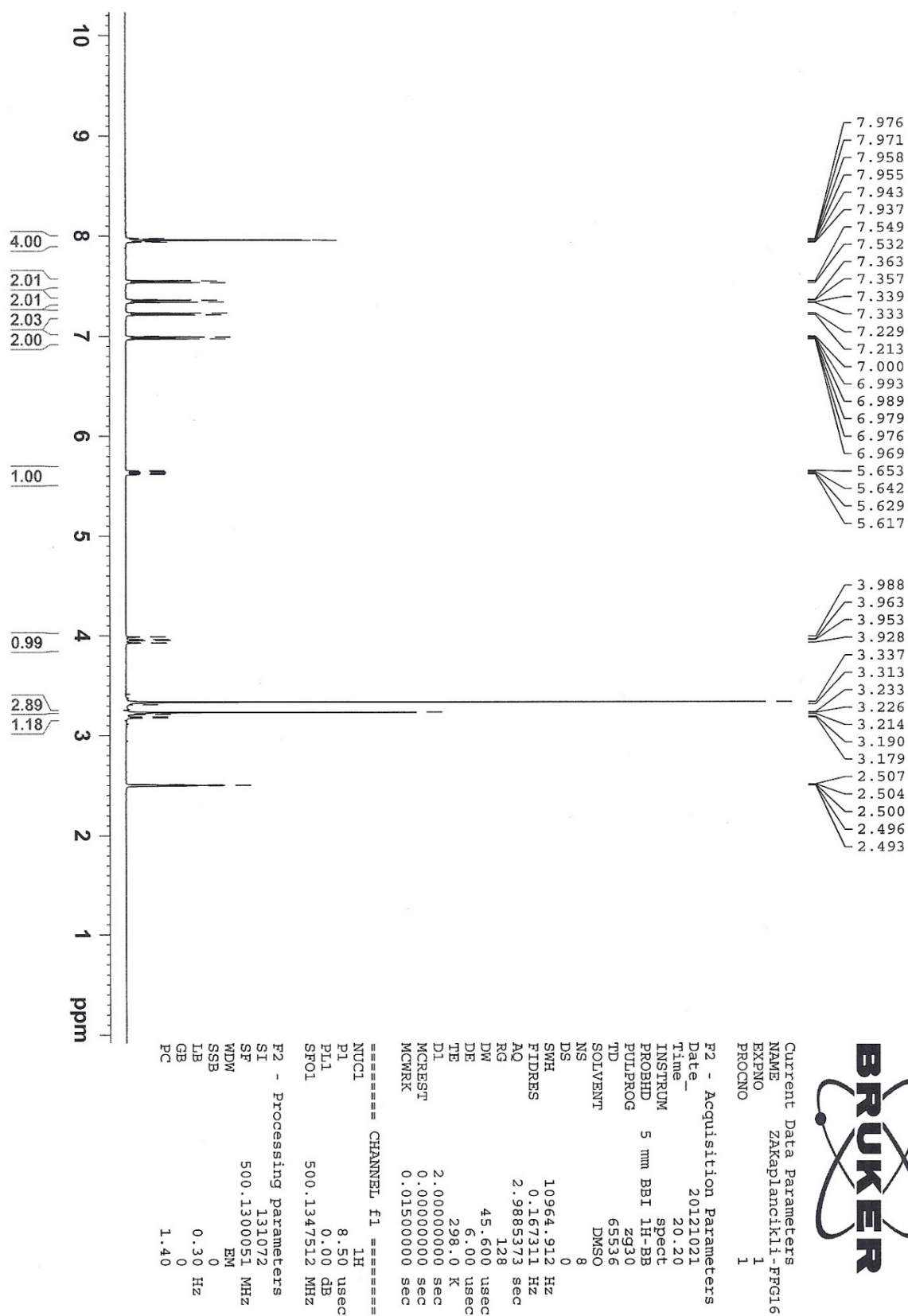
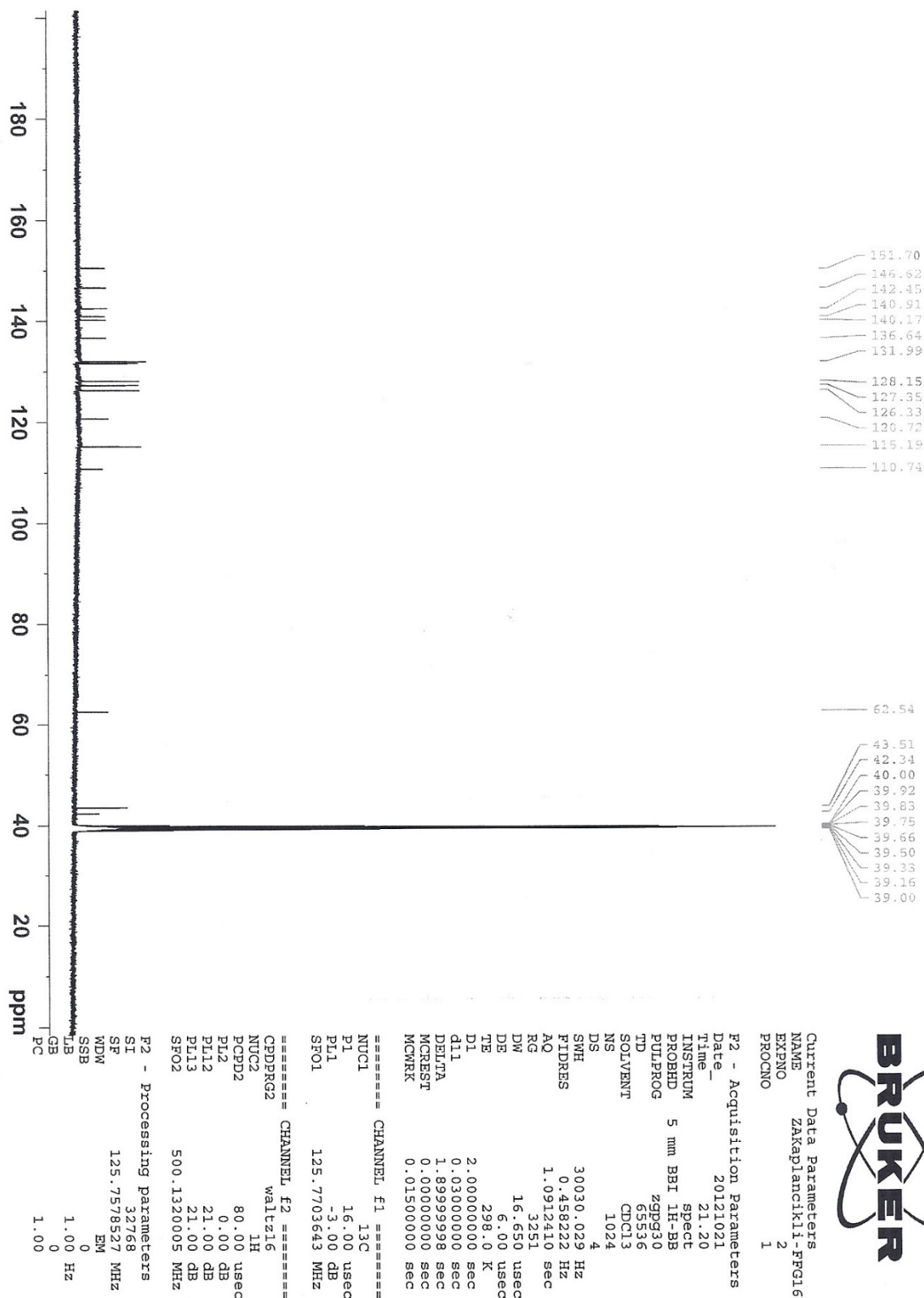


Figure S40. IR Spectrum of compound **2n**.

Figure S41. ¹H-NMR Spectrum of compound **2n**.

Figure S42. ^{13}C -NMR Spectrum of compound **2n**.

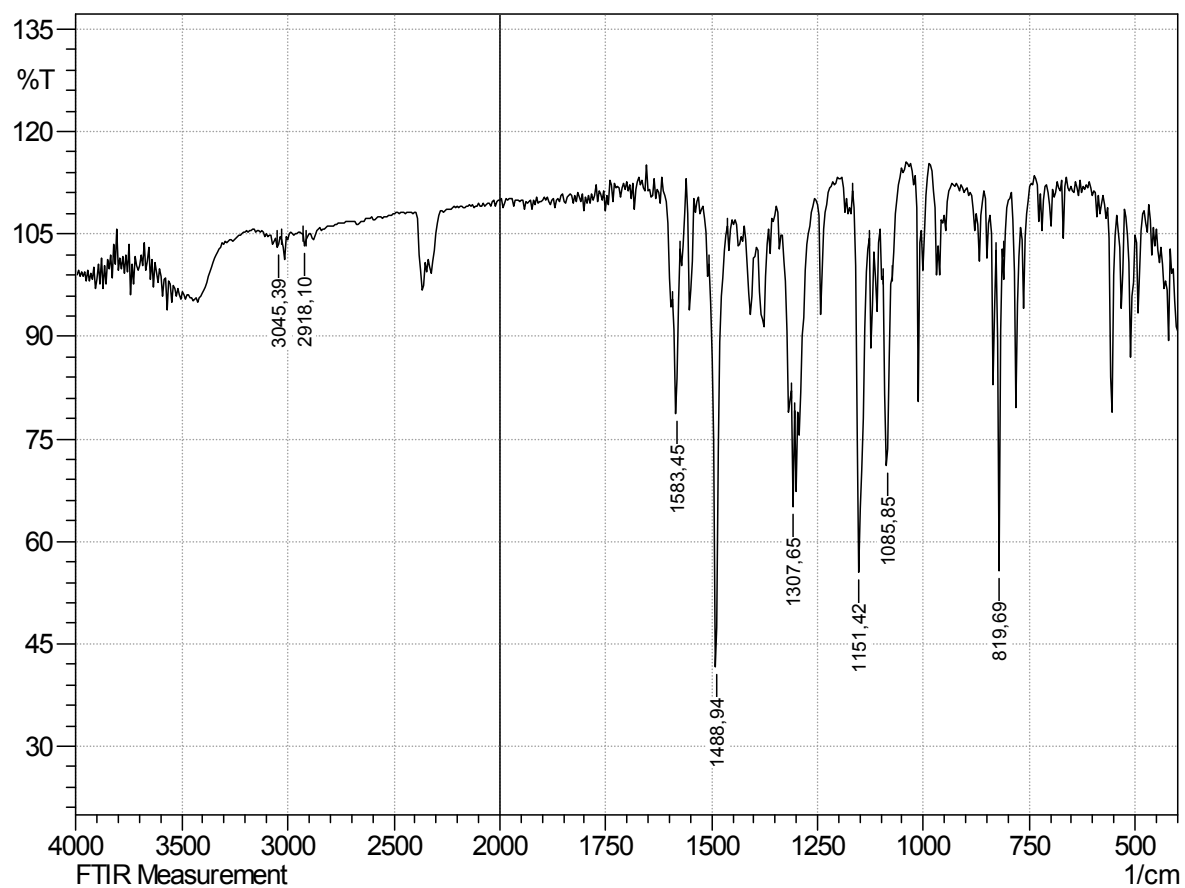
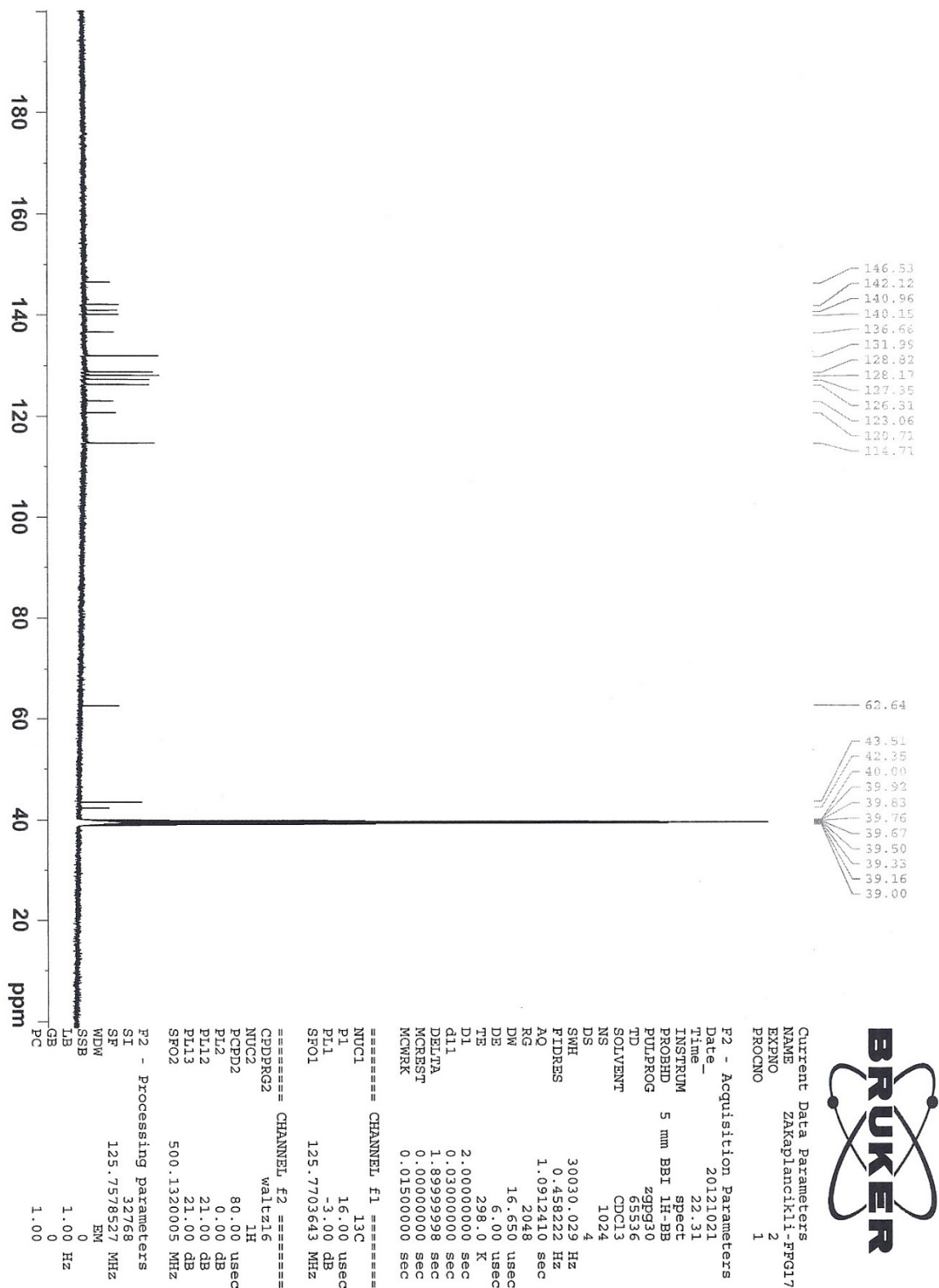


Figure S43. IR Spectrum of compound **2o**.



Figure S45. ^{13}C -NMR Spectrum of compound **2o**.

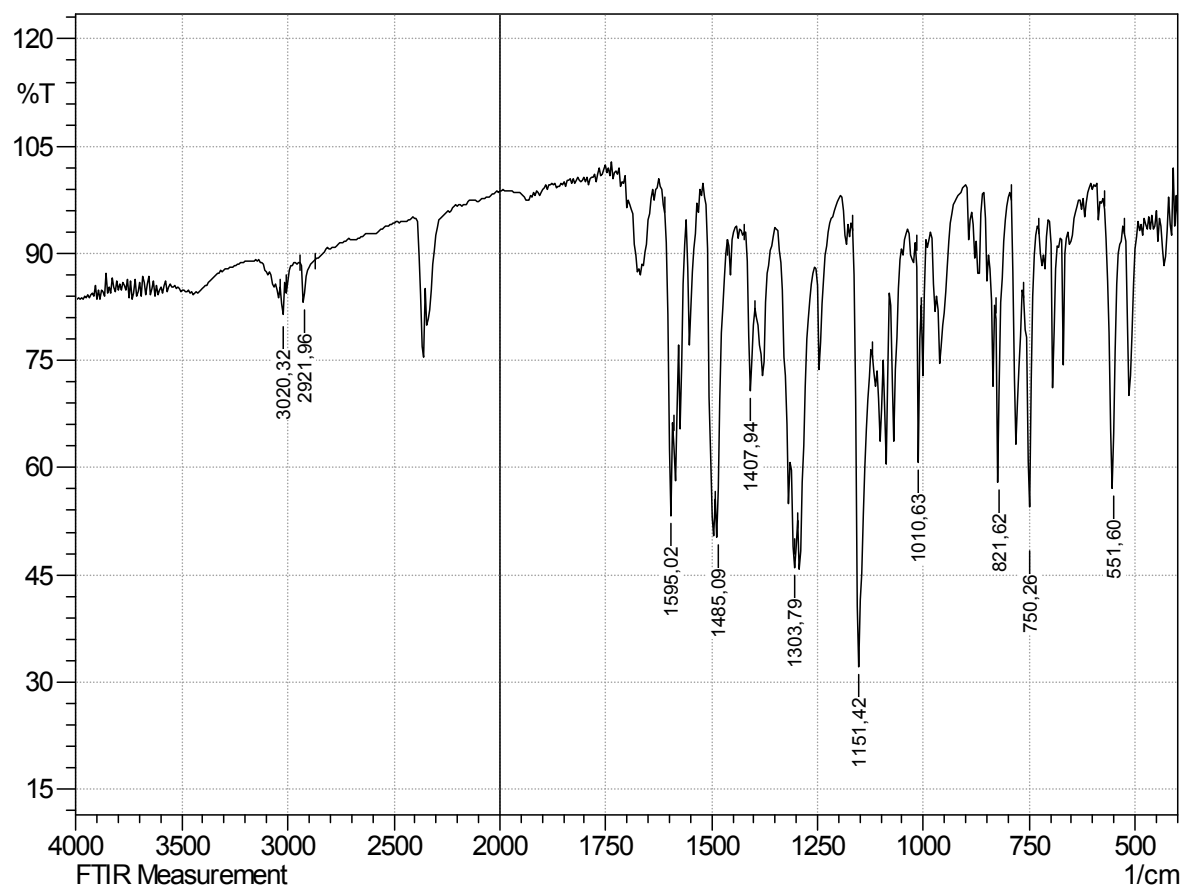
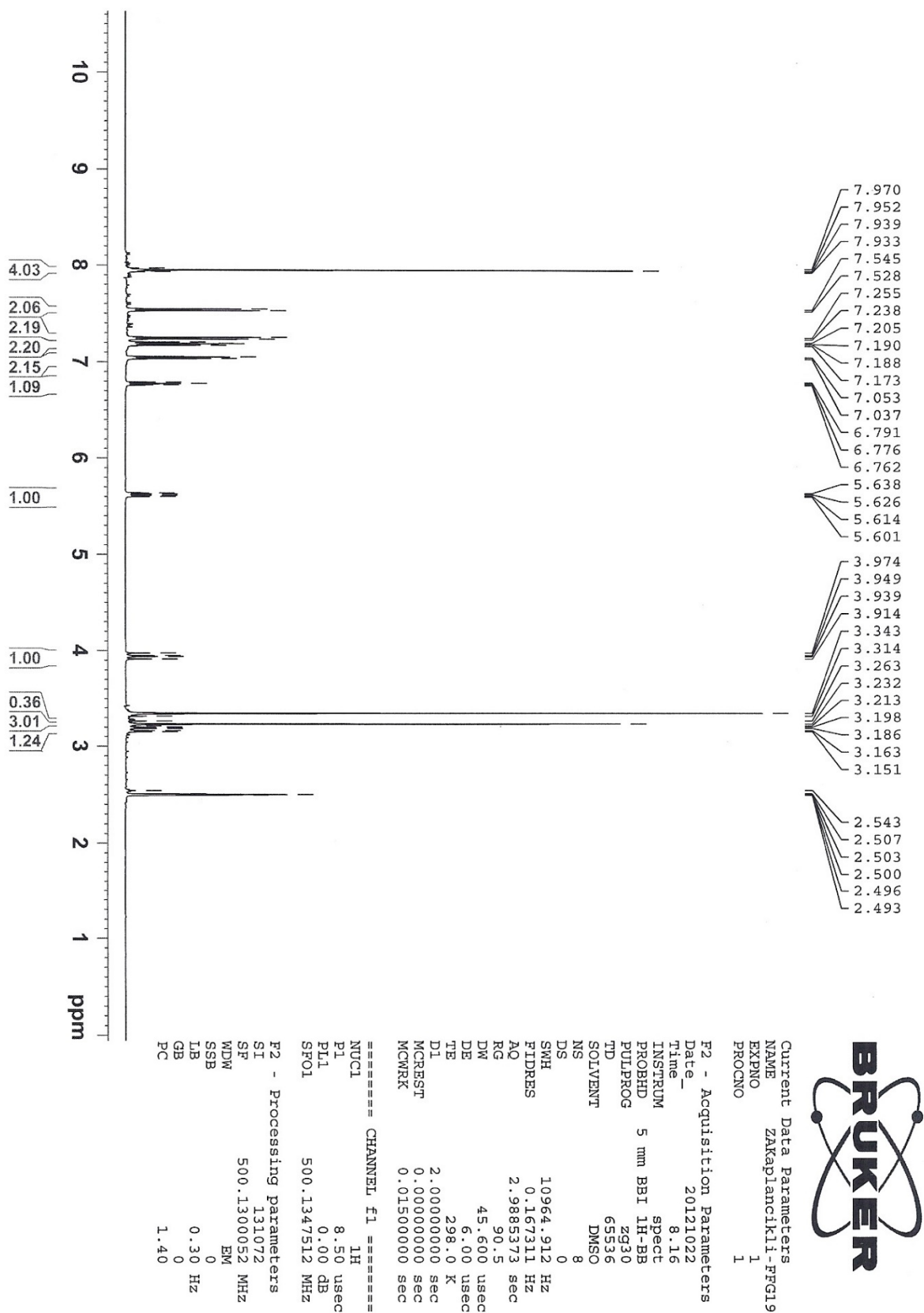
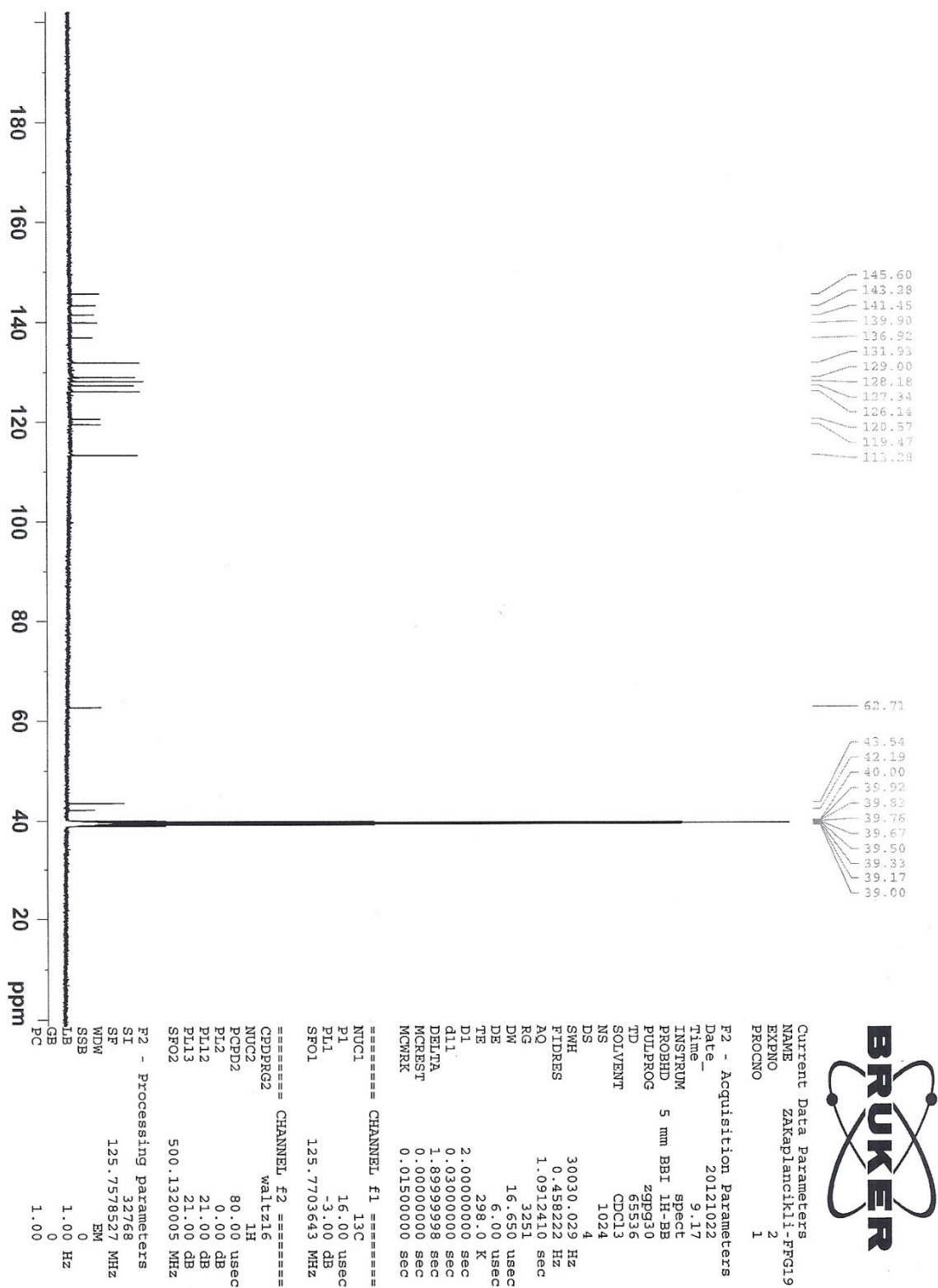


Figure S46. IR Spectrum of compound **2p**.

Figure S47. ^1H -NMR Spectrum of compound **2p**.

Figure S48. ^{13}C -NMR Spectrum of compound **2p**.

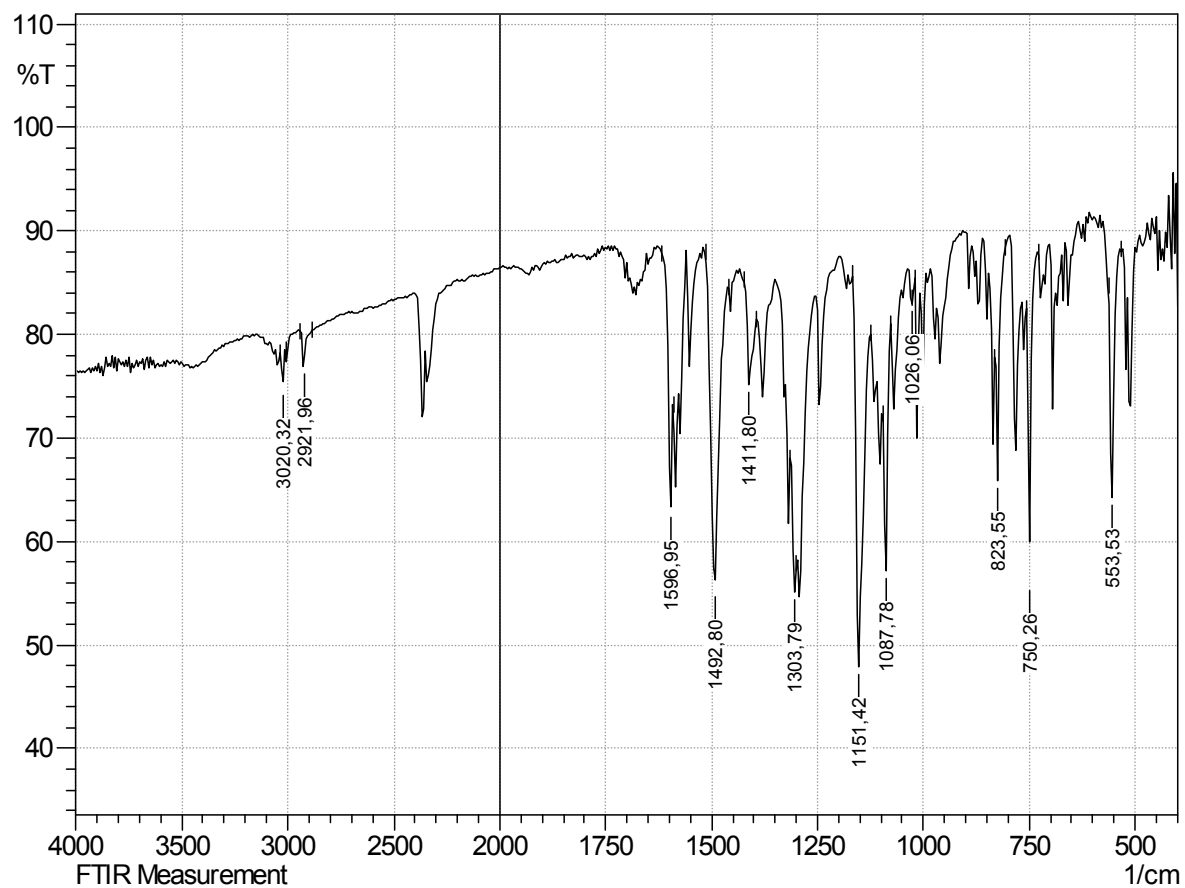
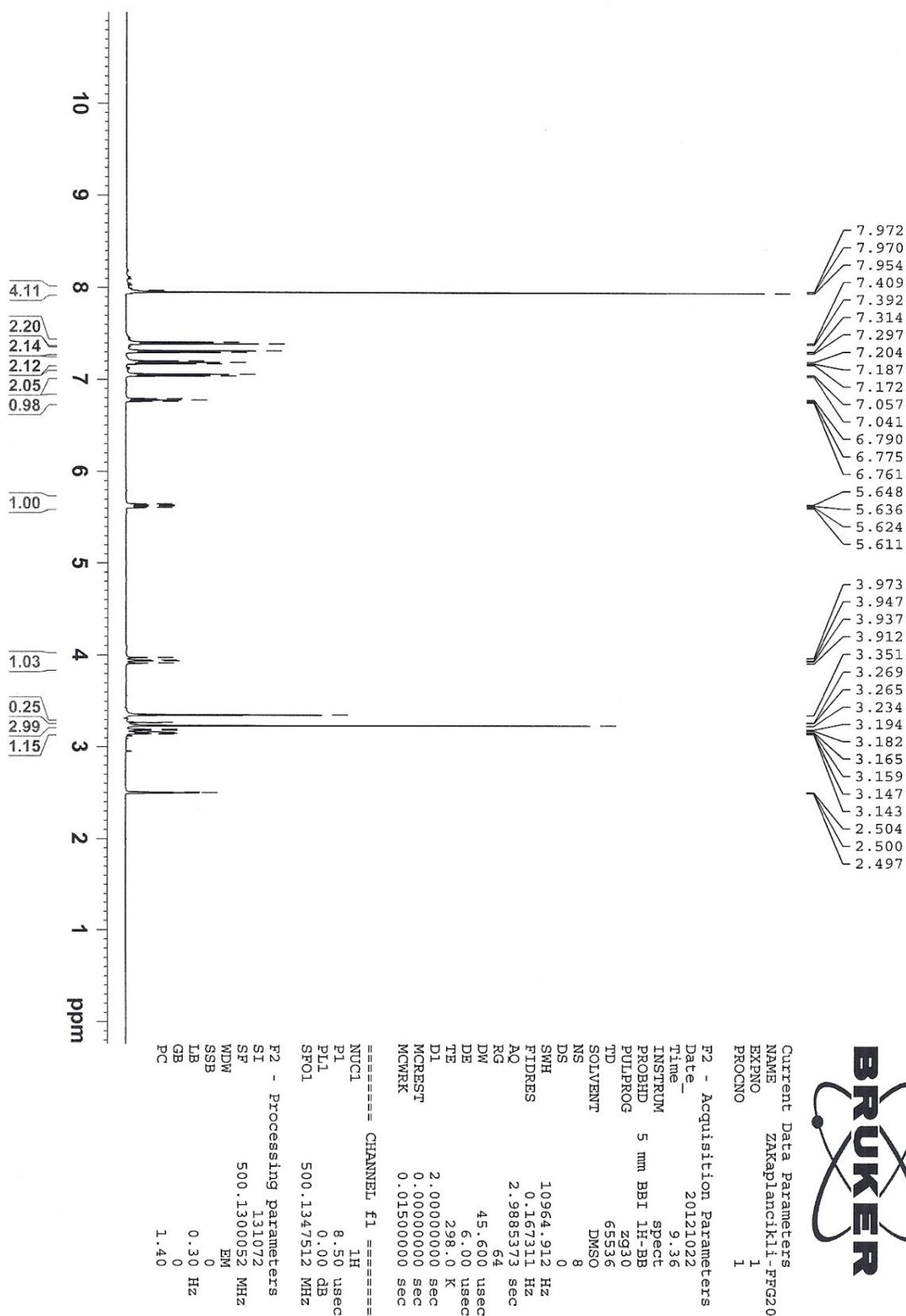
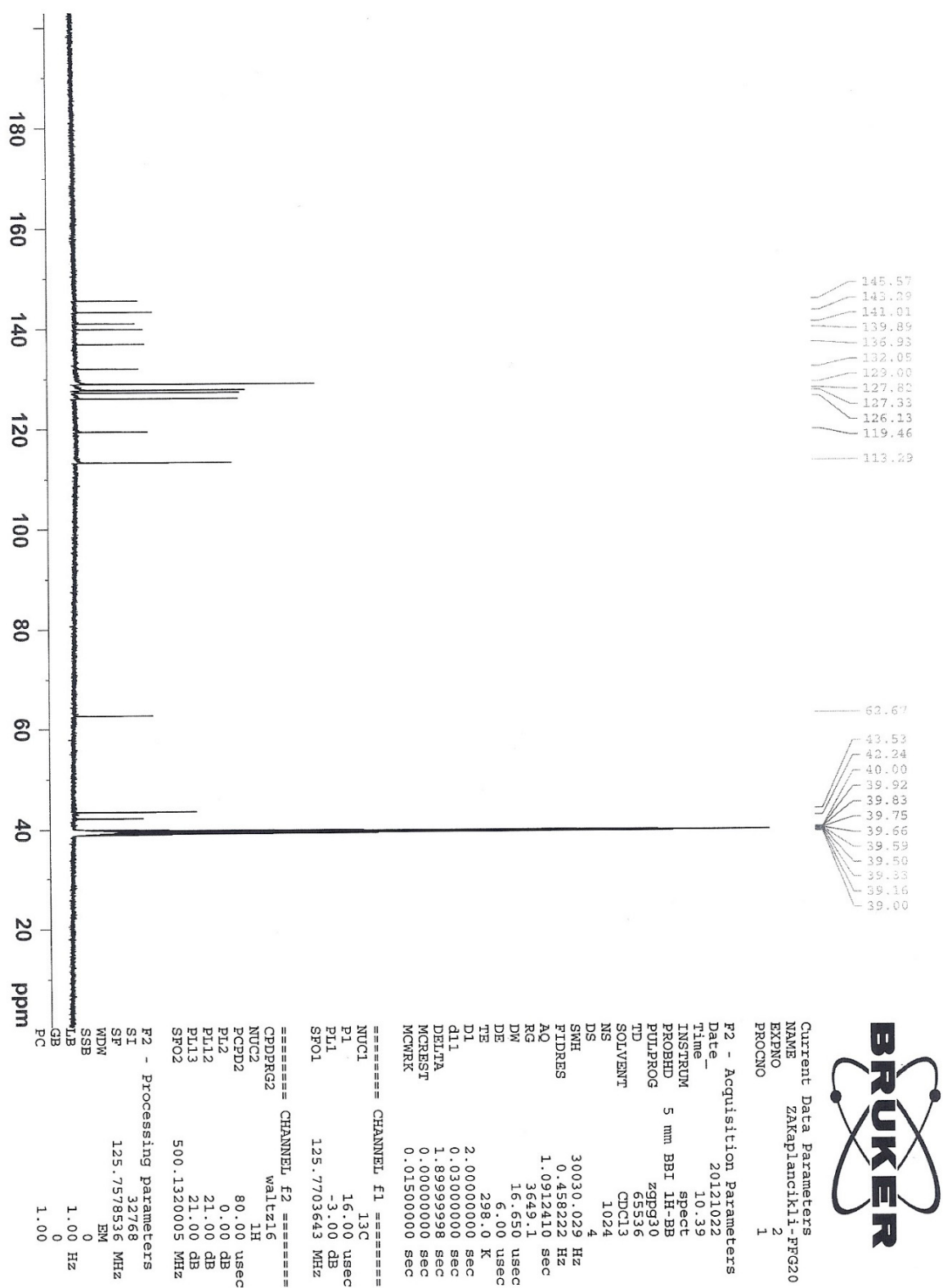


Figure S49. IR Spectrum of compound **2r**.

Figure S50. ^1H -NMR Spectrum of compound **2r**.

Figure S51. ¹³C-NMR Spectrum of compound 2r.

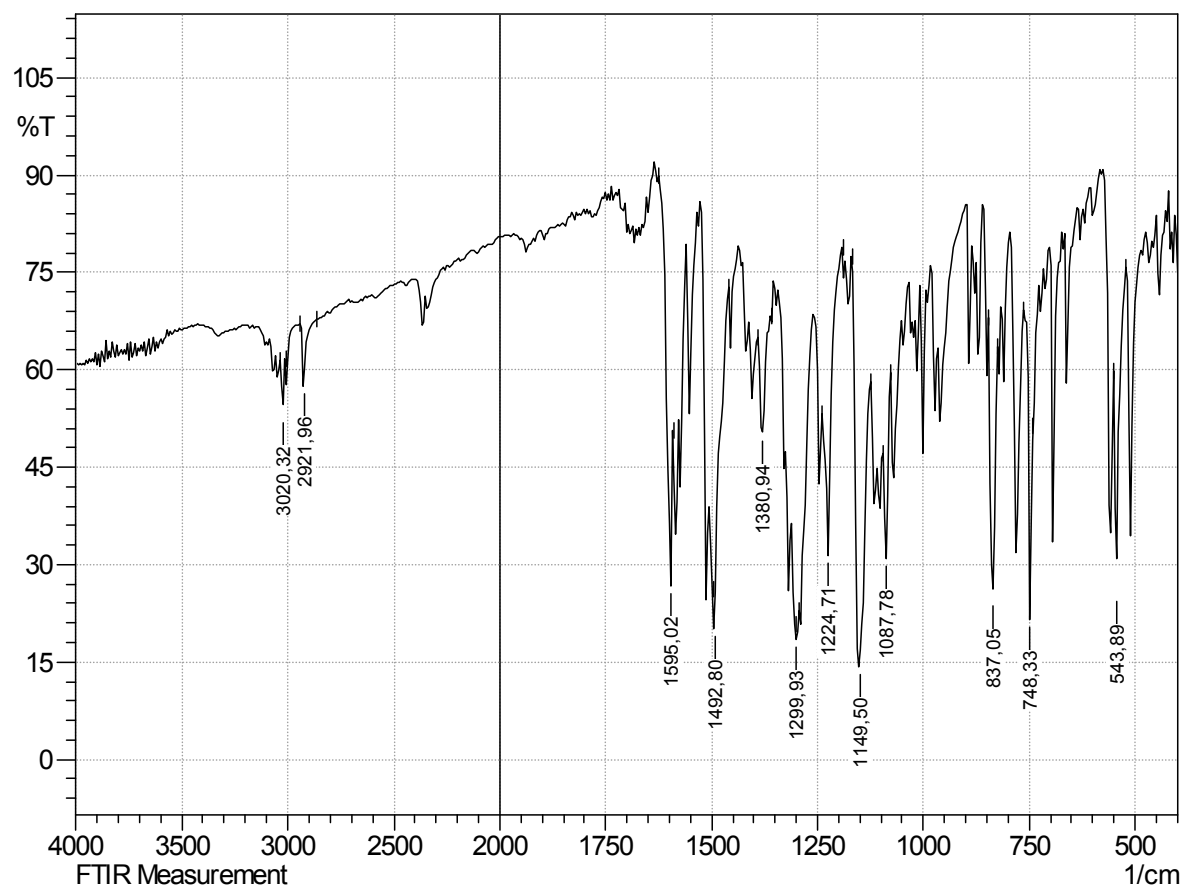
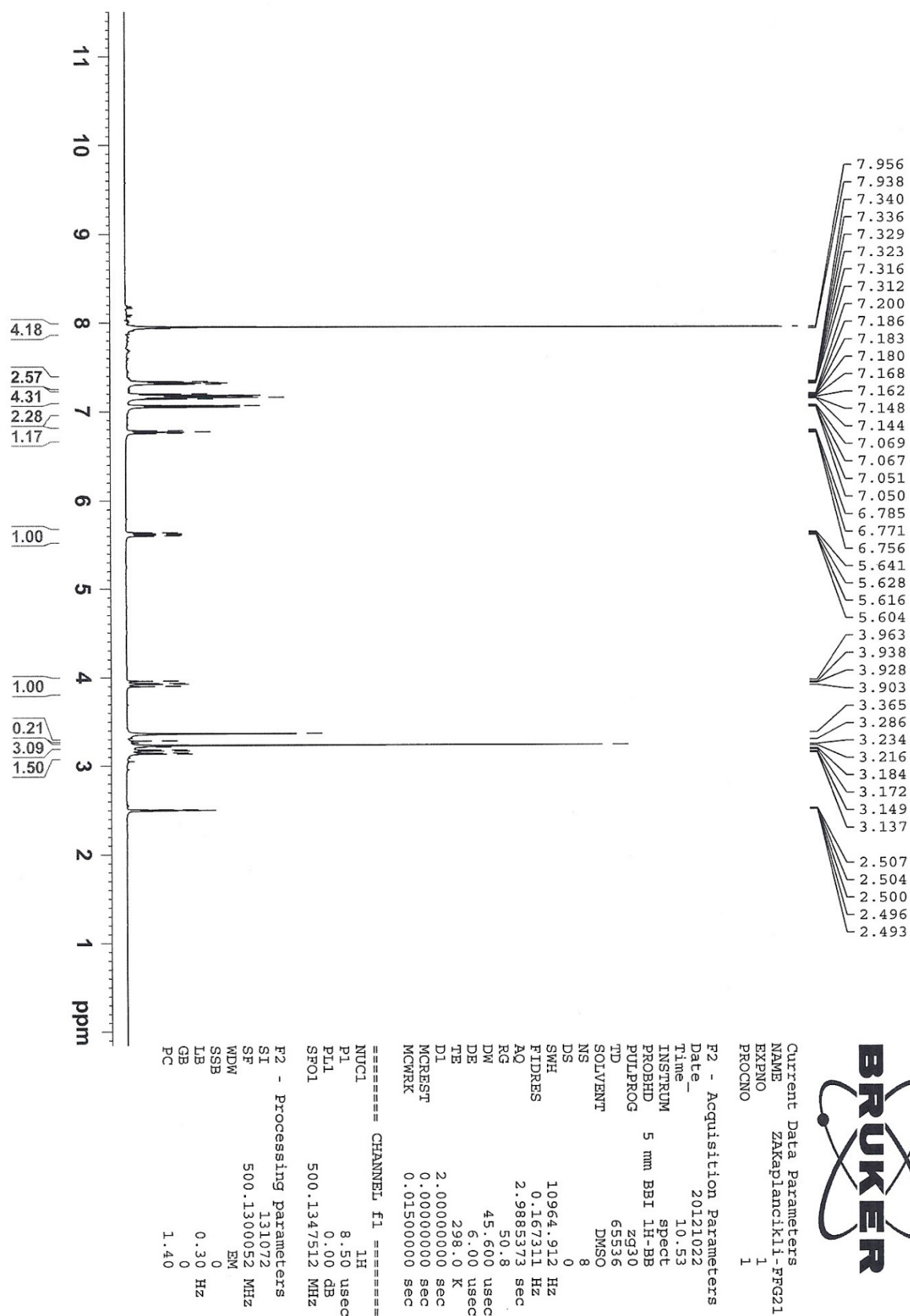
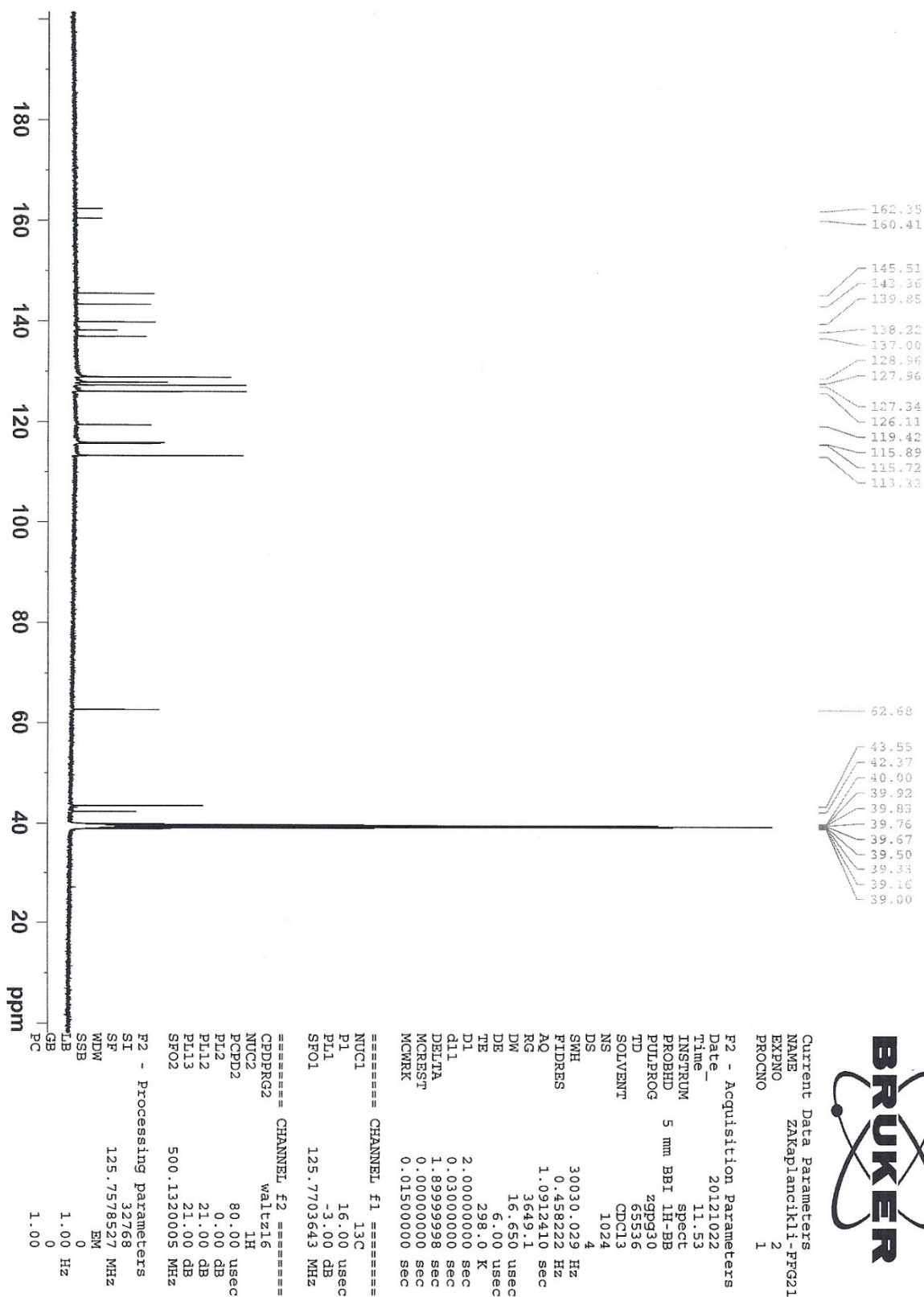


Figure S52. IR Spectrum of compound **2s**.

Figure S53. ^1H -NMR Spectrum of compound **2s**.

Figure S54. ¹³C-NMR Spectrum of compound 2s.