Supporting Information

Novel synthesis of fused spiro piperidone-cyclopropanes from cyclopropyl amides and electron-deficient alkene

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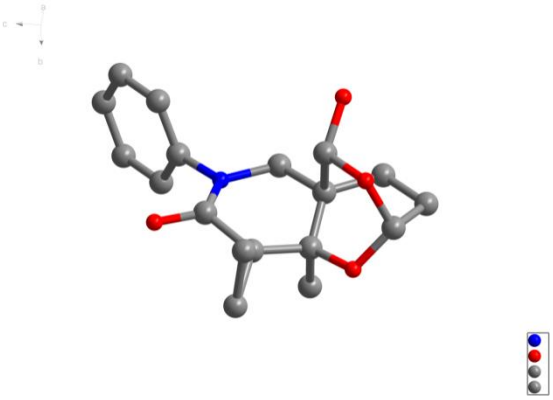
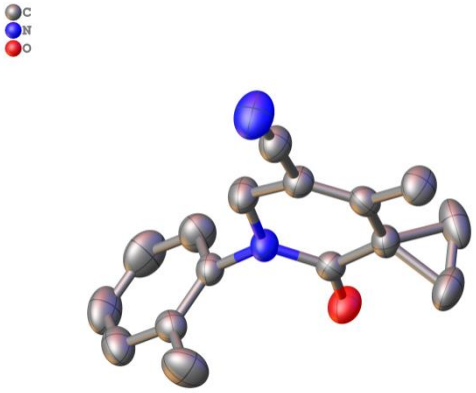
I. Crystal data and ORTEP drawing of compound **3a** and **5d**

Crystal data for **3a**: $C_{18}H_{21}NO_4$, colorless crystal, M =315.36, orthorhombic, Pnma, a = 15.2387(4) Å, b = 10.3818 (4)Å, c = 9.6545 (3)Å, α= 90.0 º, β = 90 º, γ = 90.0 º, V = 1527.39(9)Å^3, Z = 4, T = 150K, F_{000} = 672, R_1 = 0.0692(1315), wR_2 = 0.1658(1426). CCDC1948958.



Compound **3a**

Crystal data for **5d:** $C_{16}H_{16}N_2O$, colorless crystal, M = 250.29, monoclinic, P21/c, a = 11.4303(7)Å, b = 23.1780 (16)Å, c = 10.3616 (8)Å, α= 90.0 º, β = 91.780 (6) º, γ = 90.0 º, V = 2743.8(3)Å^3, Z = 8, T = 293, K, F_{000} = 1056, R_1 = 0.0728(3987), wR_2 = 0.2095(4833). CCDC 1948938.



Compound **5d**

II. Copies of ^{1}H NMR and ^{13}C NMR spectra of compounds 3, 4 and 5

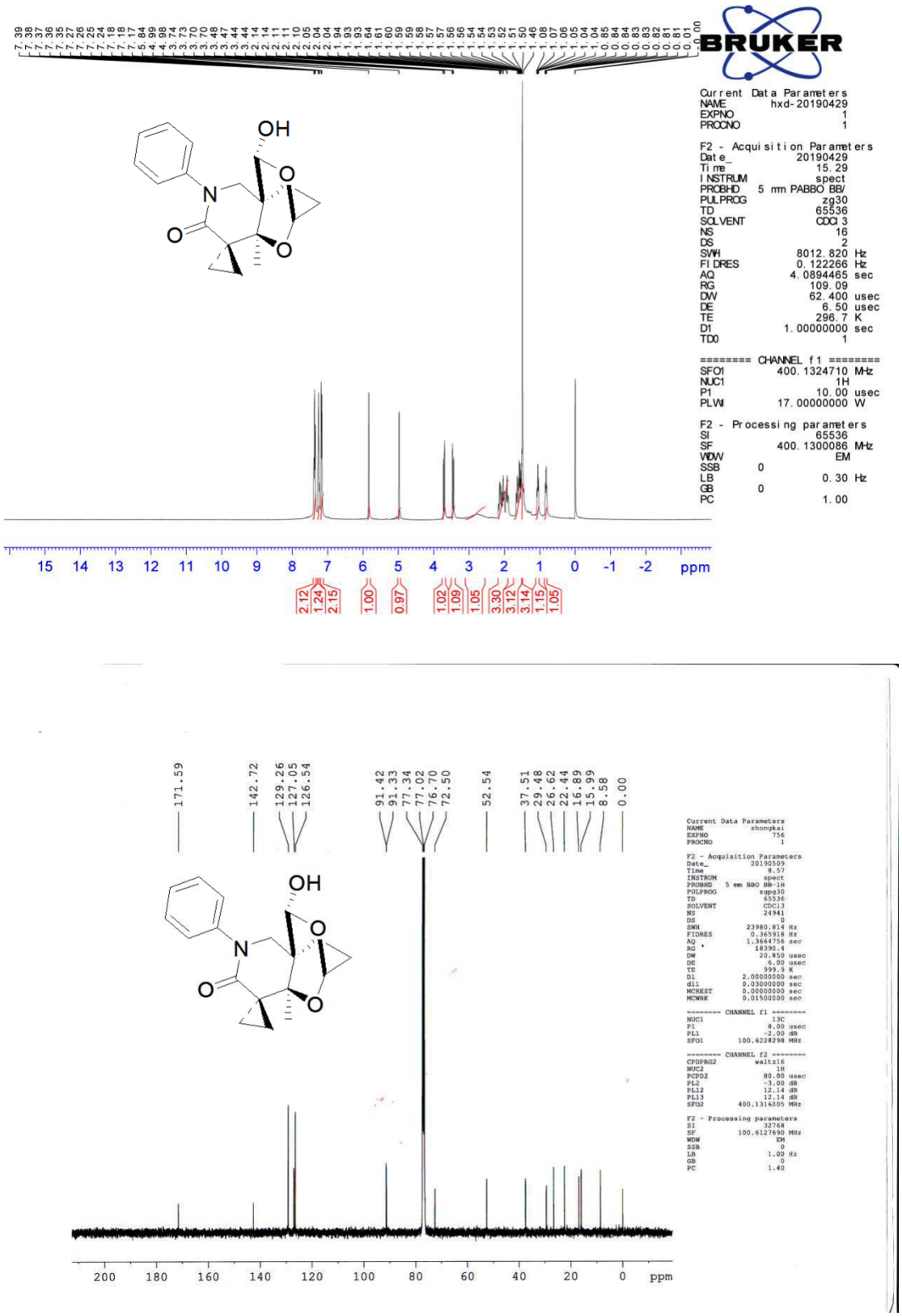


Figure 1.[1]H-(upper) and [13]C-NMR (lower) spectra of compound **3a**.

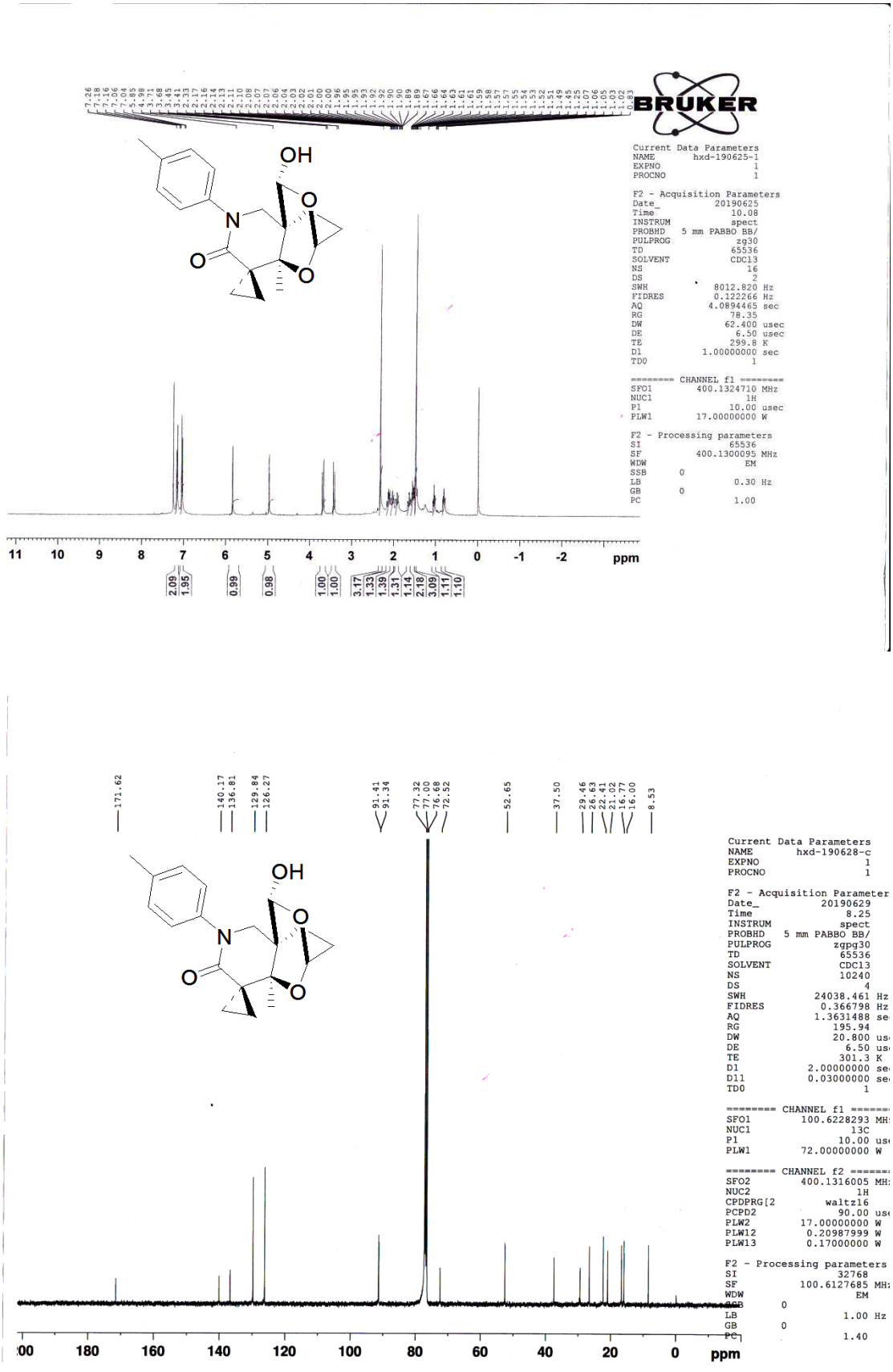


Figure 2.[1]H-(upper) and [13]C-NMR (lower) spectra of compound **3b**.

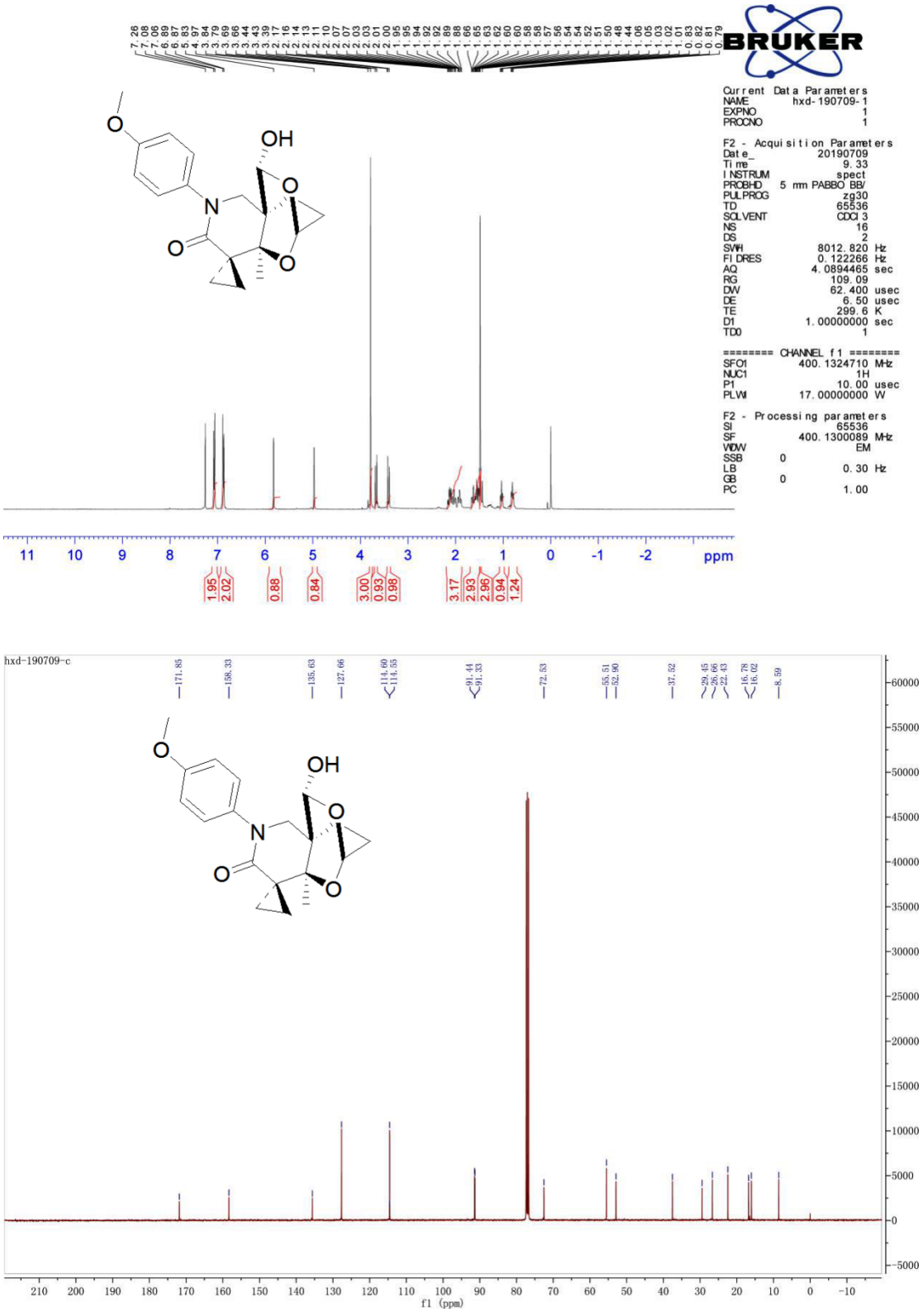


Figure 3. ^{1}H-(upper) and ^{13}C-NMR (lower) spectra of compound **3c**.

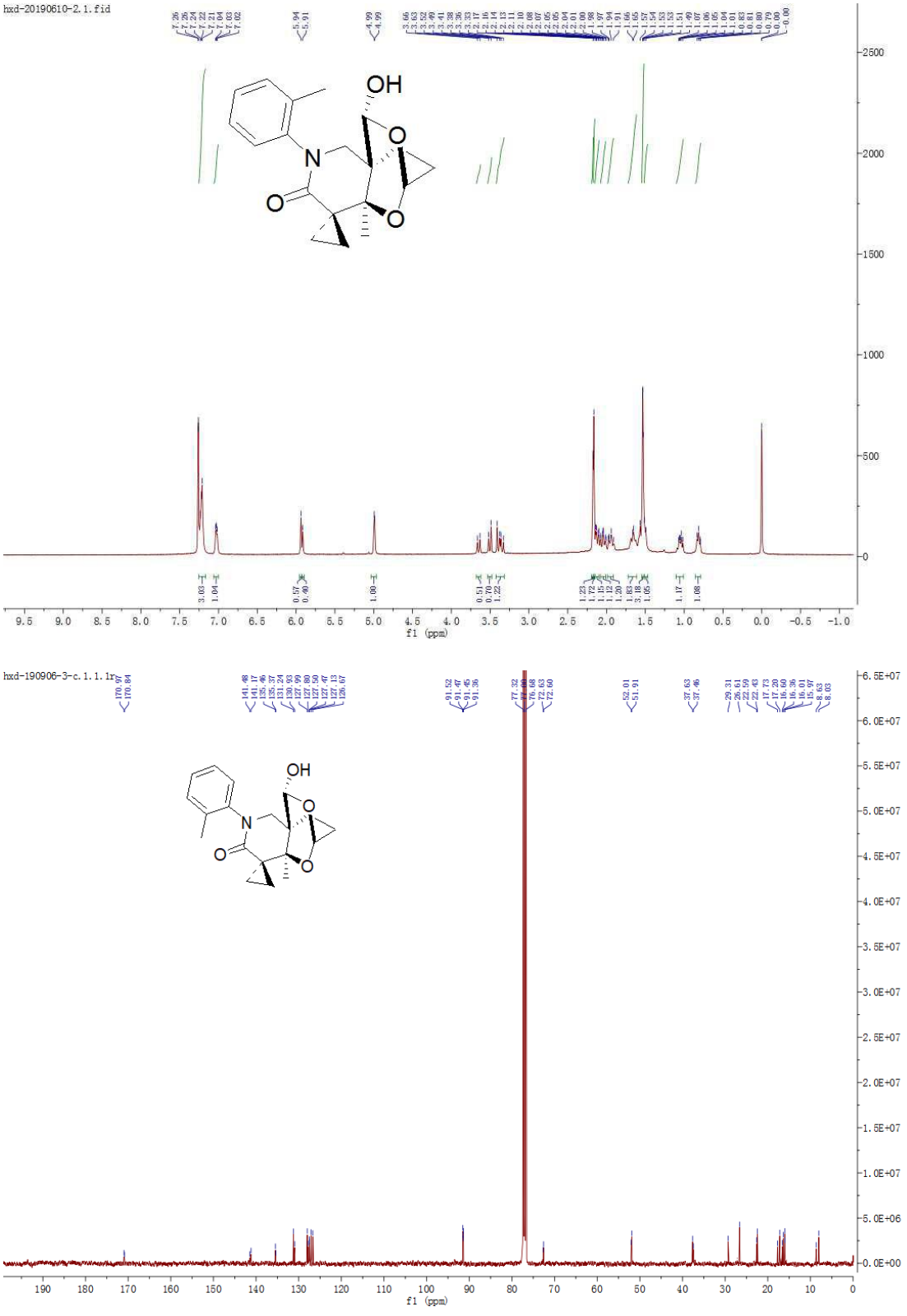


Figure 4.[1]H-(upper) and [13]C-NMR (lower) spectra of compound **3d**.

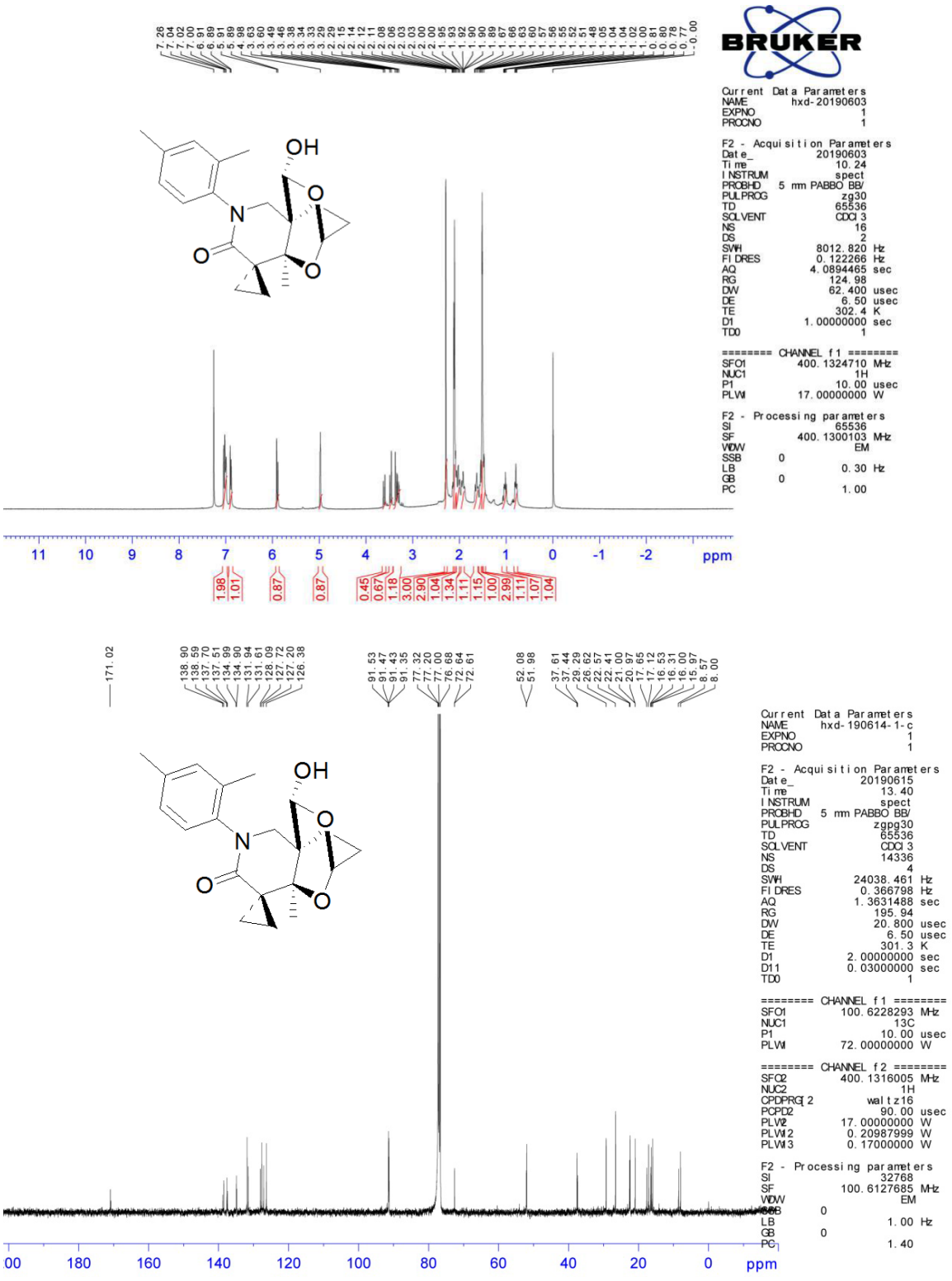


Figure 5. ^{1}H-(upper) and ^{13}C-NMR (lower) spectra of compound **3e**.

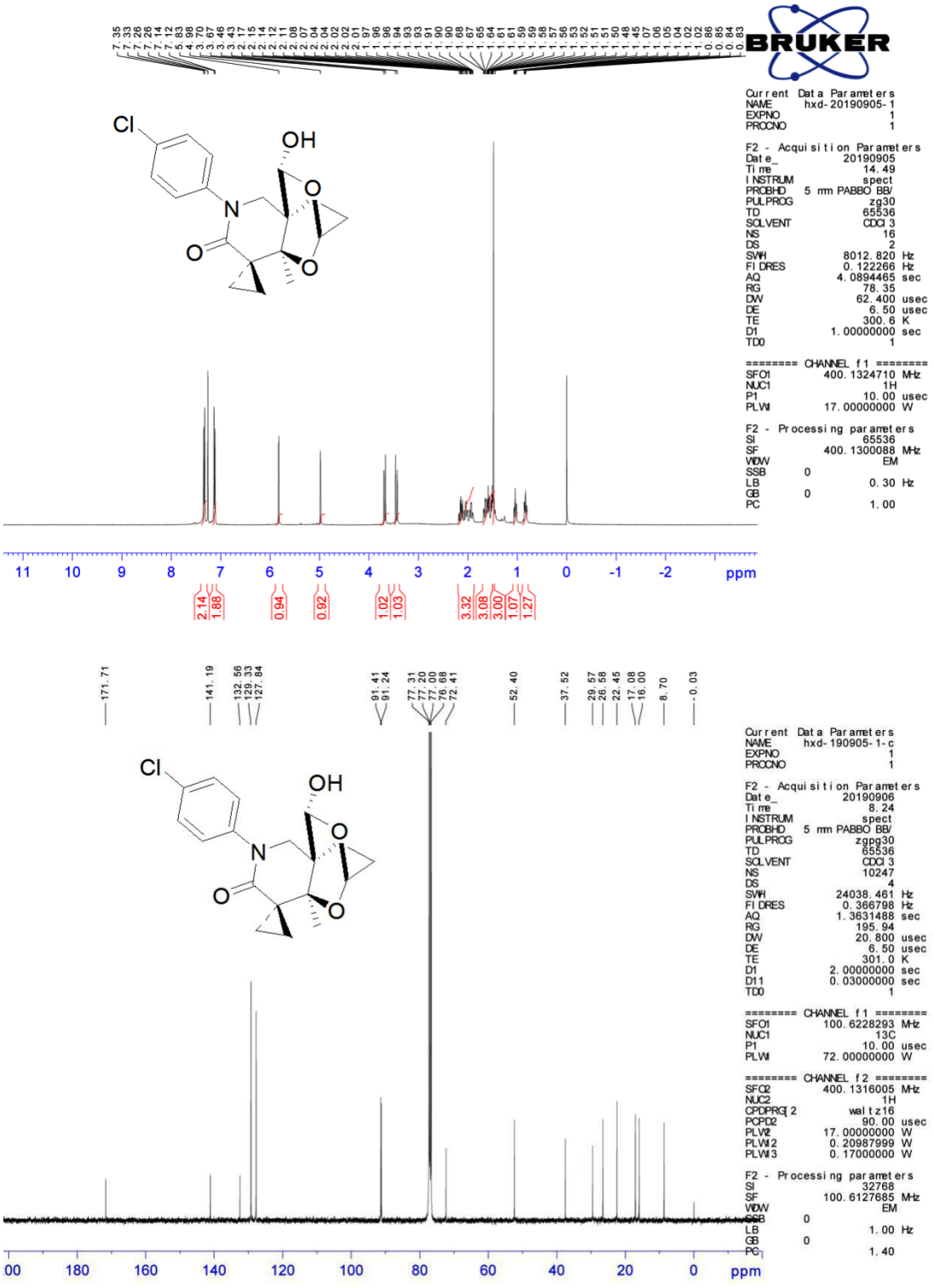


Figure 6. ^{1}H-(upper) and ^{13}C-NMR (lower) spectra of compound **3f**.

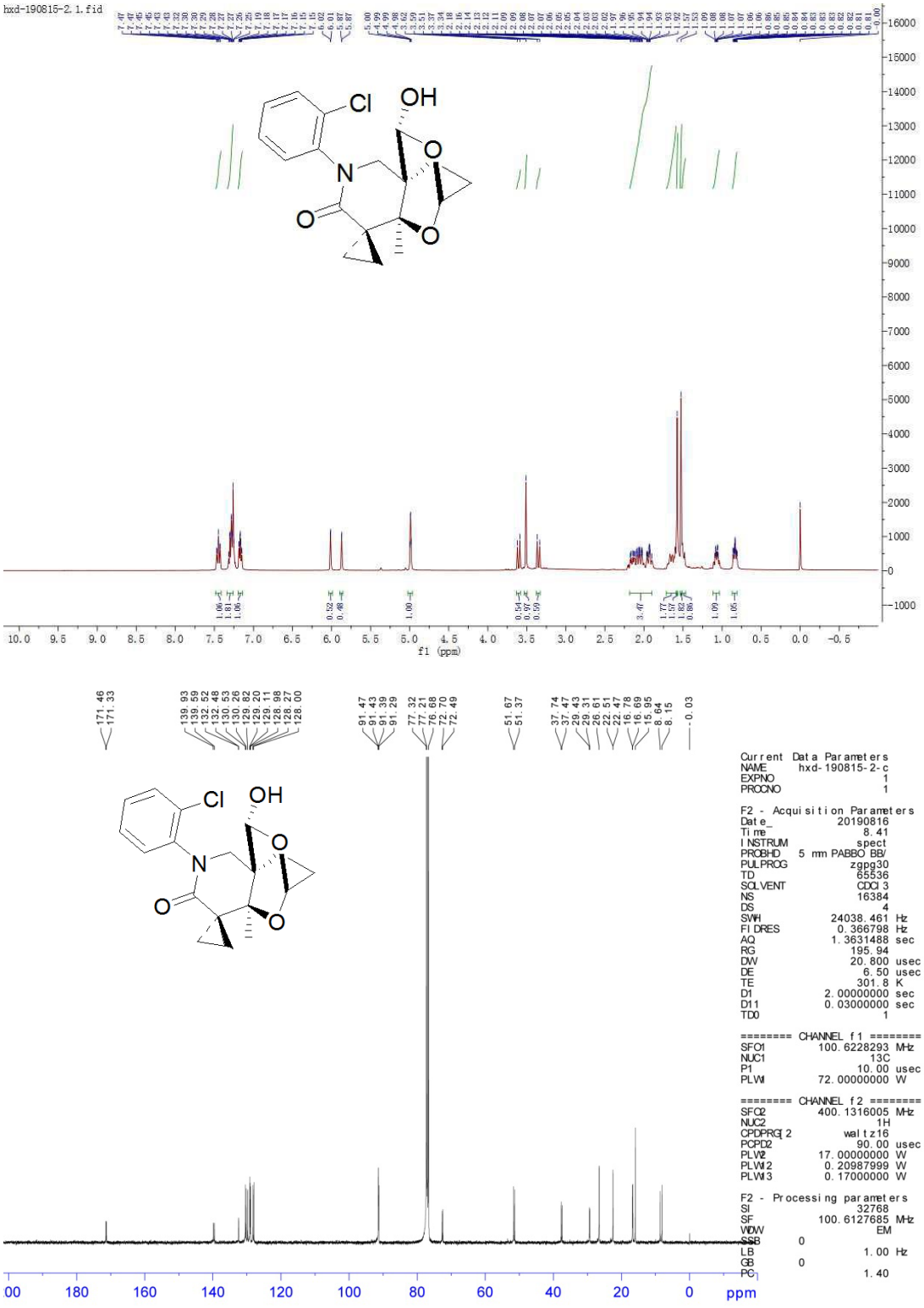
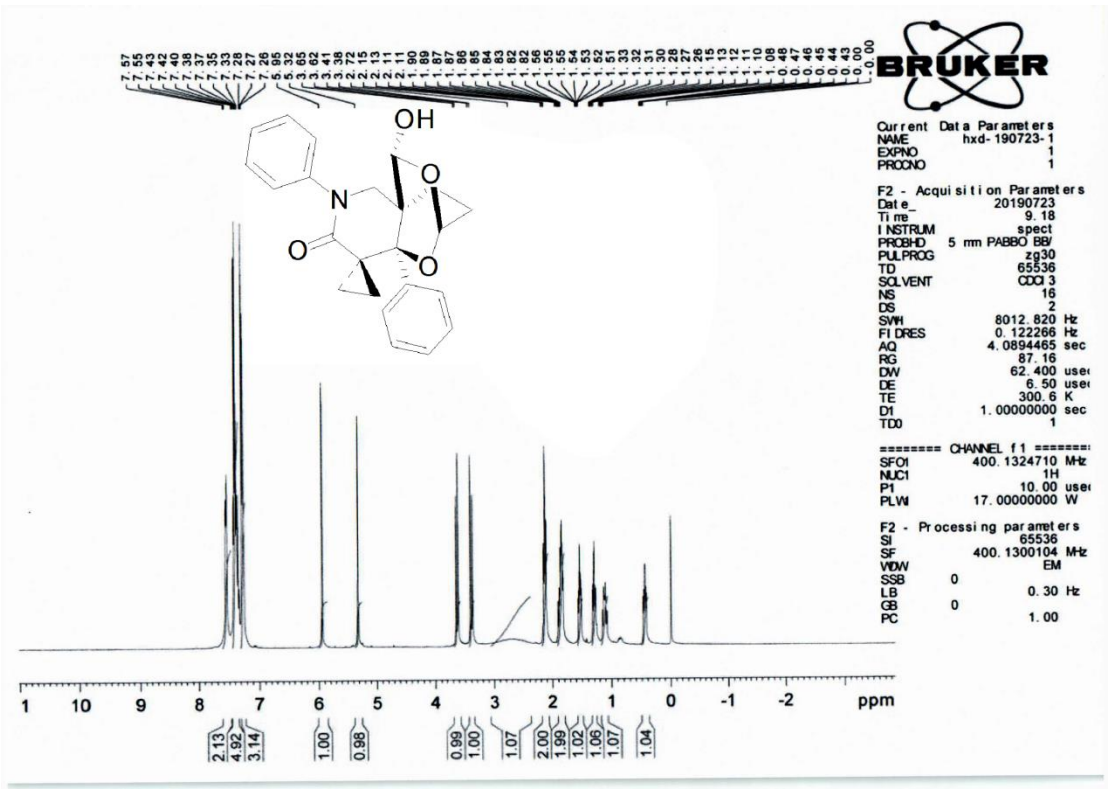


Figure 7.^{1}H-(upper) and ^{13}C-NMR (lower) spectra of compound **3g**.



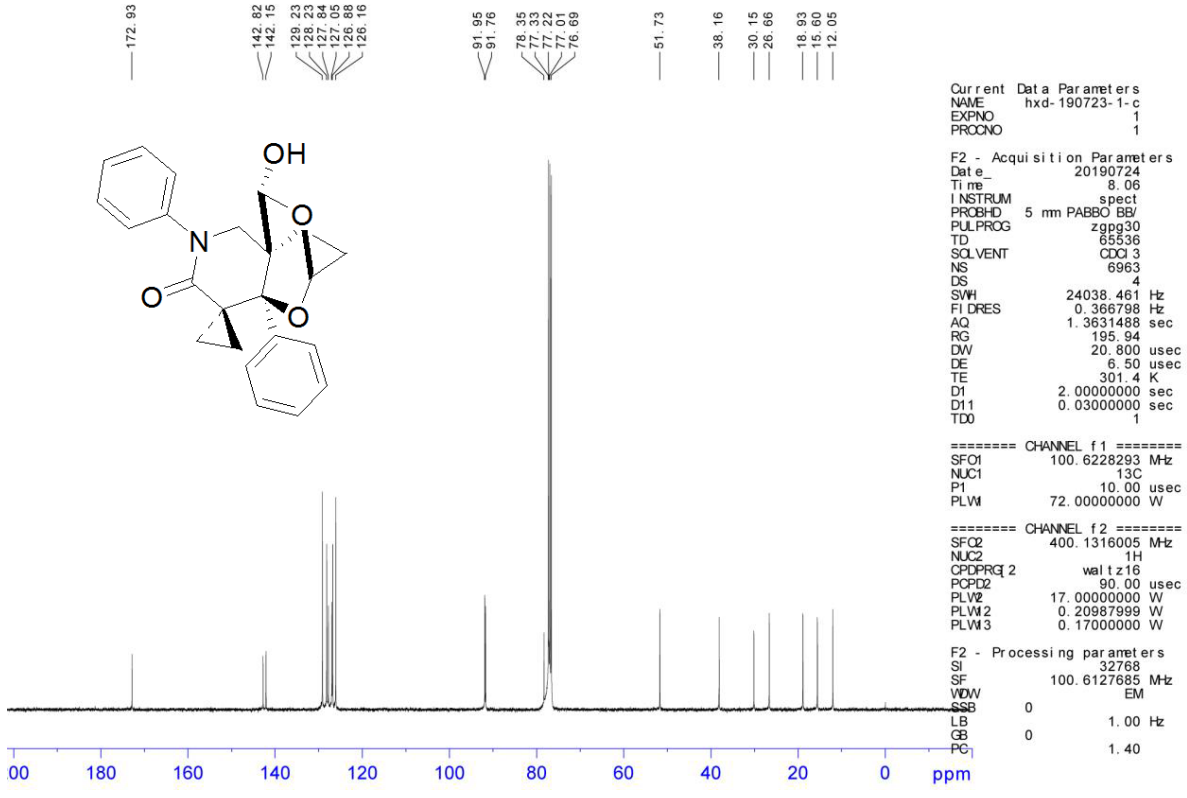


Figure 8.[1]H-(upper) and [13]C-NMR (lower) spectra of compound **3h**.

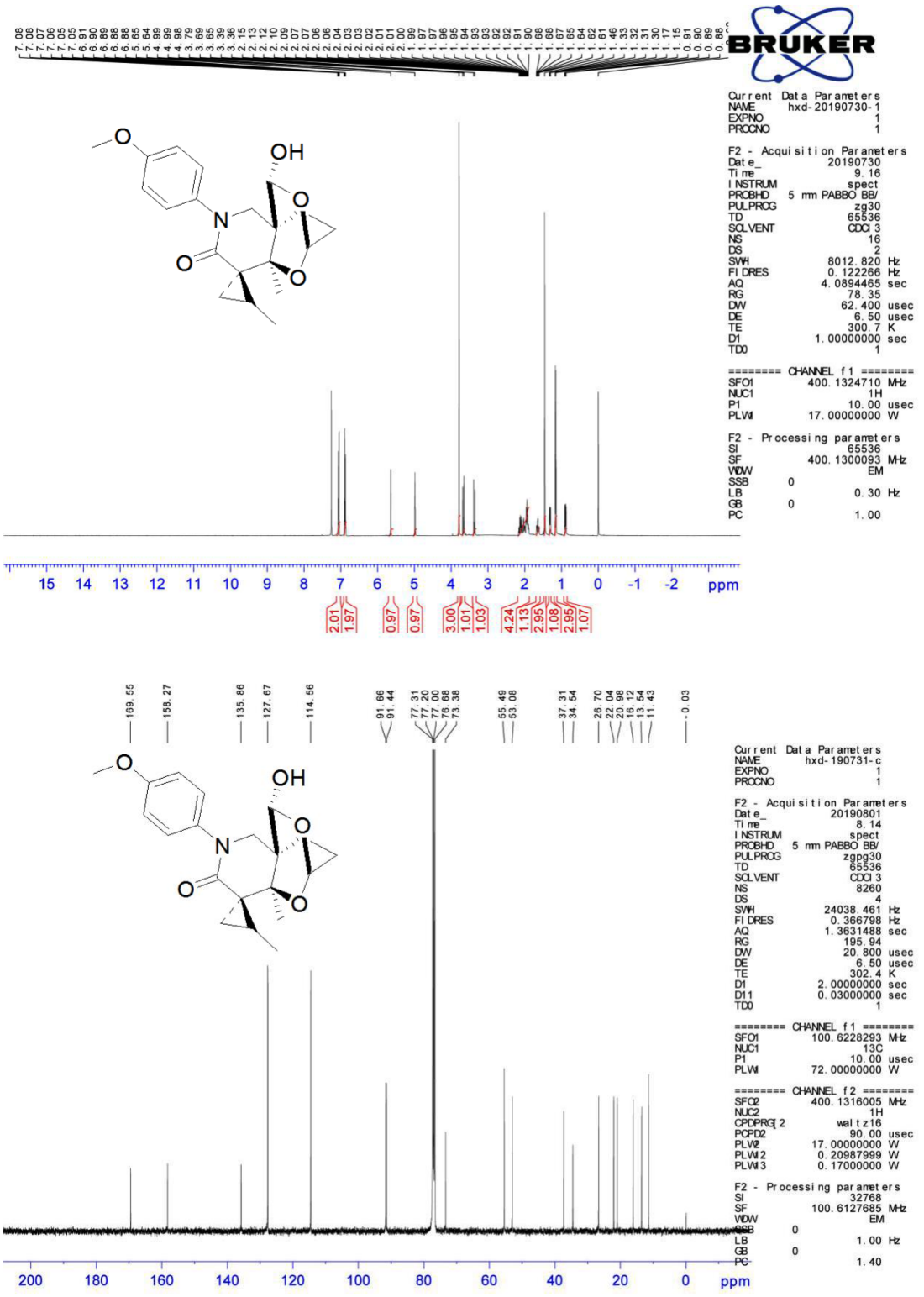


Figure 9.[1]H-(upper) and [13]C-NMR (lower) spectra of compound **3j**.

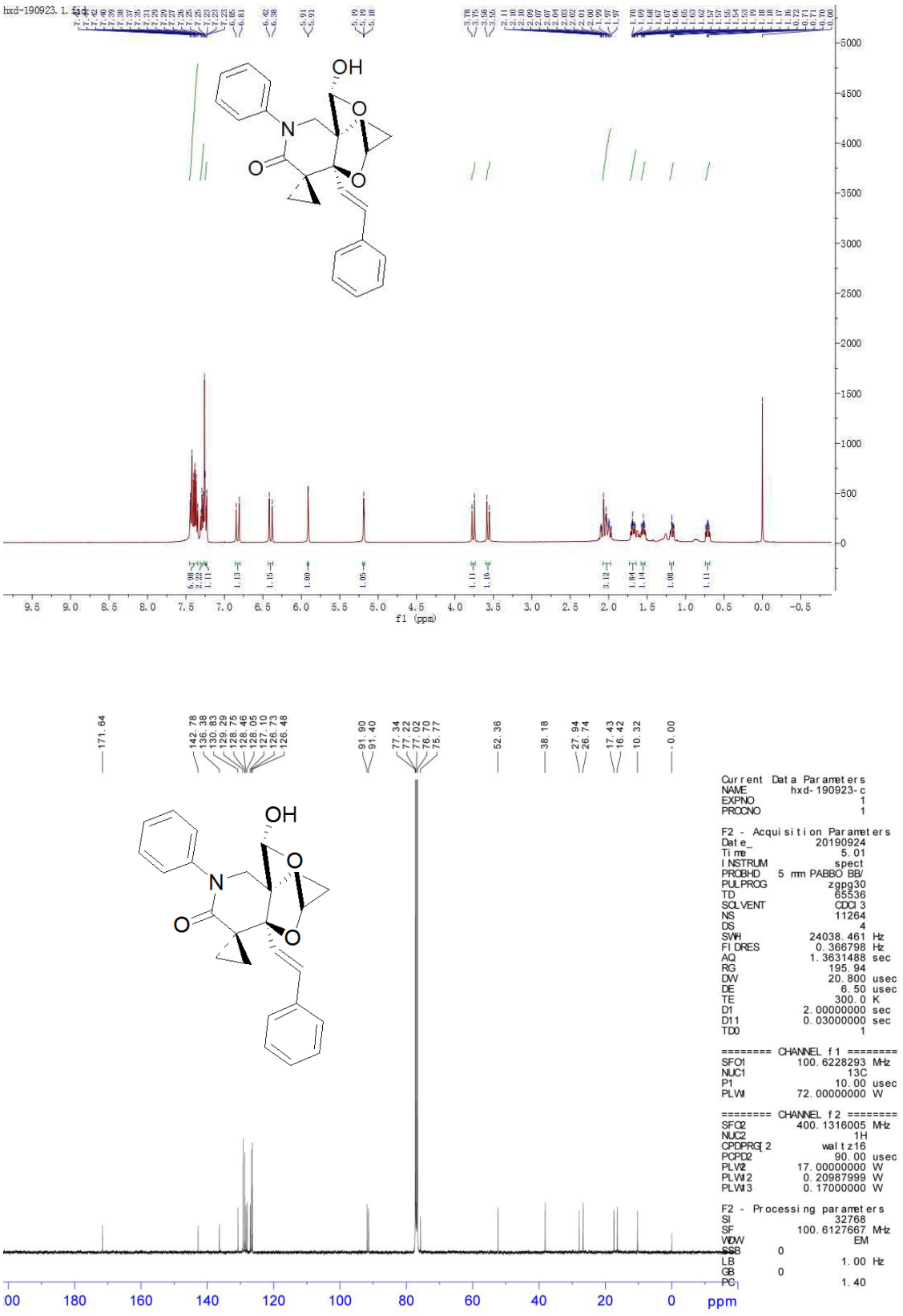


Figure 10. ^{1}H-(upper) and ^{13}C-NMR (lower) spectra of compound **3k**.

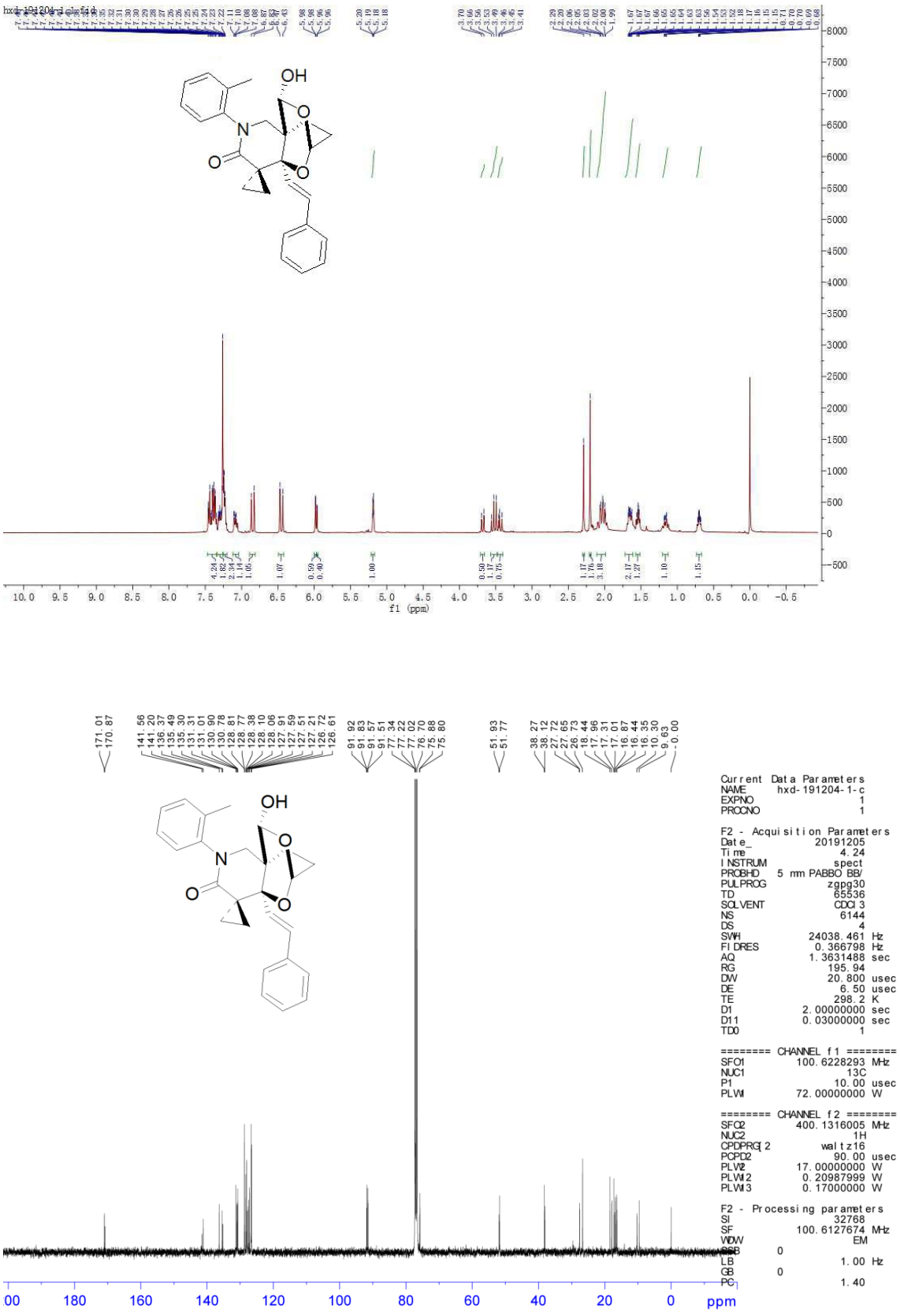


Figure 11. ^{1}H-(upper) and ^{13}C-NMR (lower) spectra of compound **3l**.

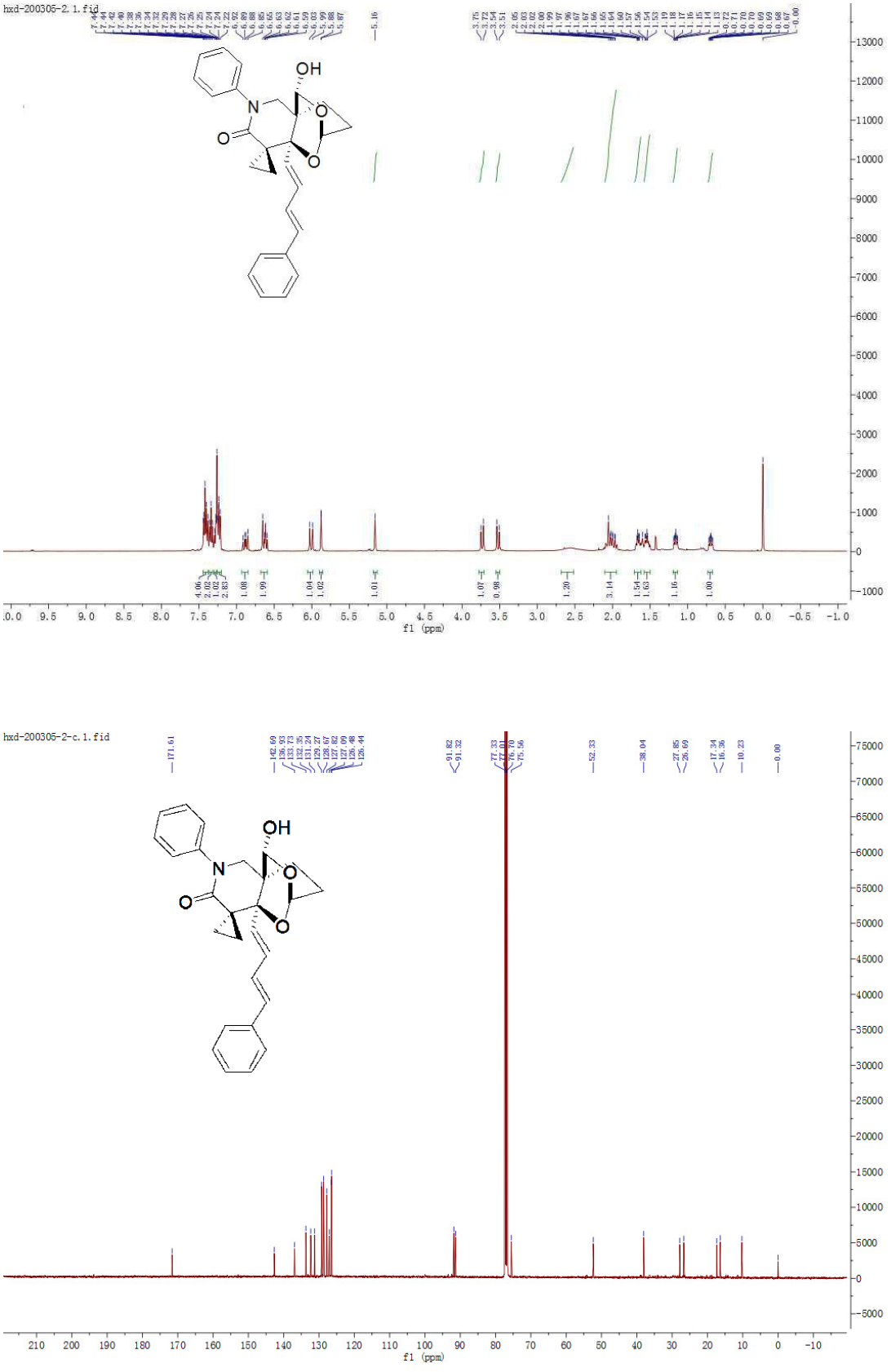


Figure 12. ^{1}H-(upper) and ^{13}C-NMR (lower) spectra of compound **3m**.

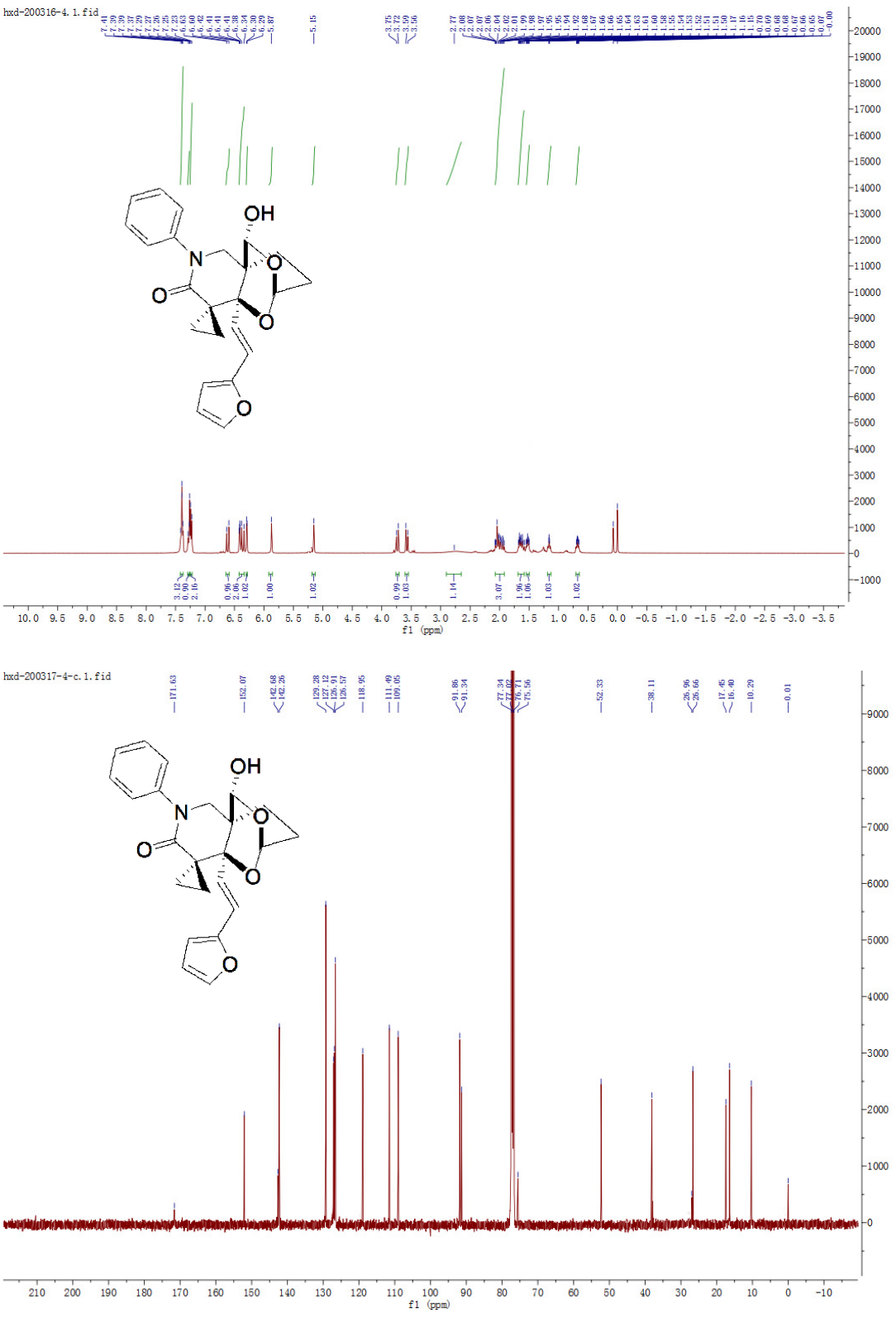
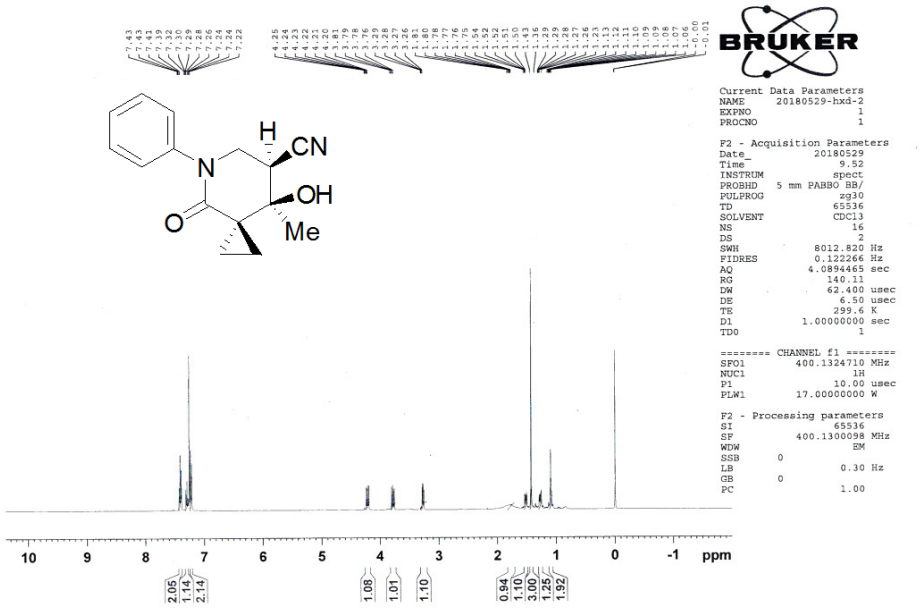


Figure 13. ^{1}H-(upper) and ^{13}C-NMR (lower) spectra of compound **3n**.



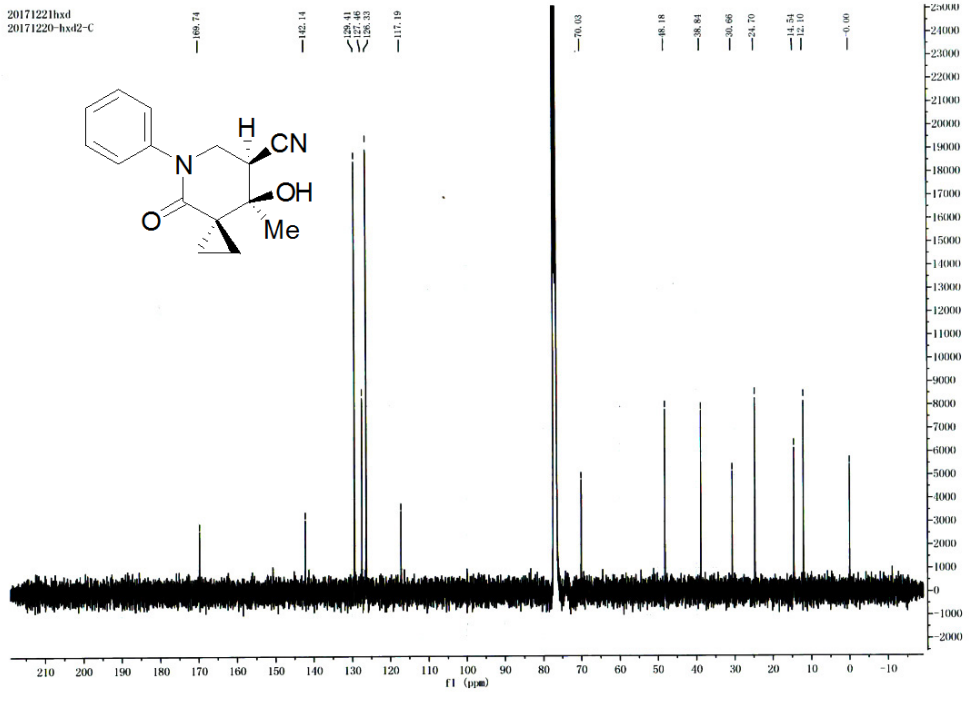


Figure 14. ^{1}H-(upper) and ^{13}C-NMR (lower) spectra of compound **4a**.

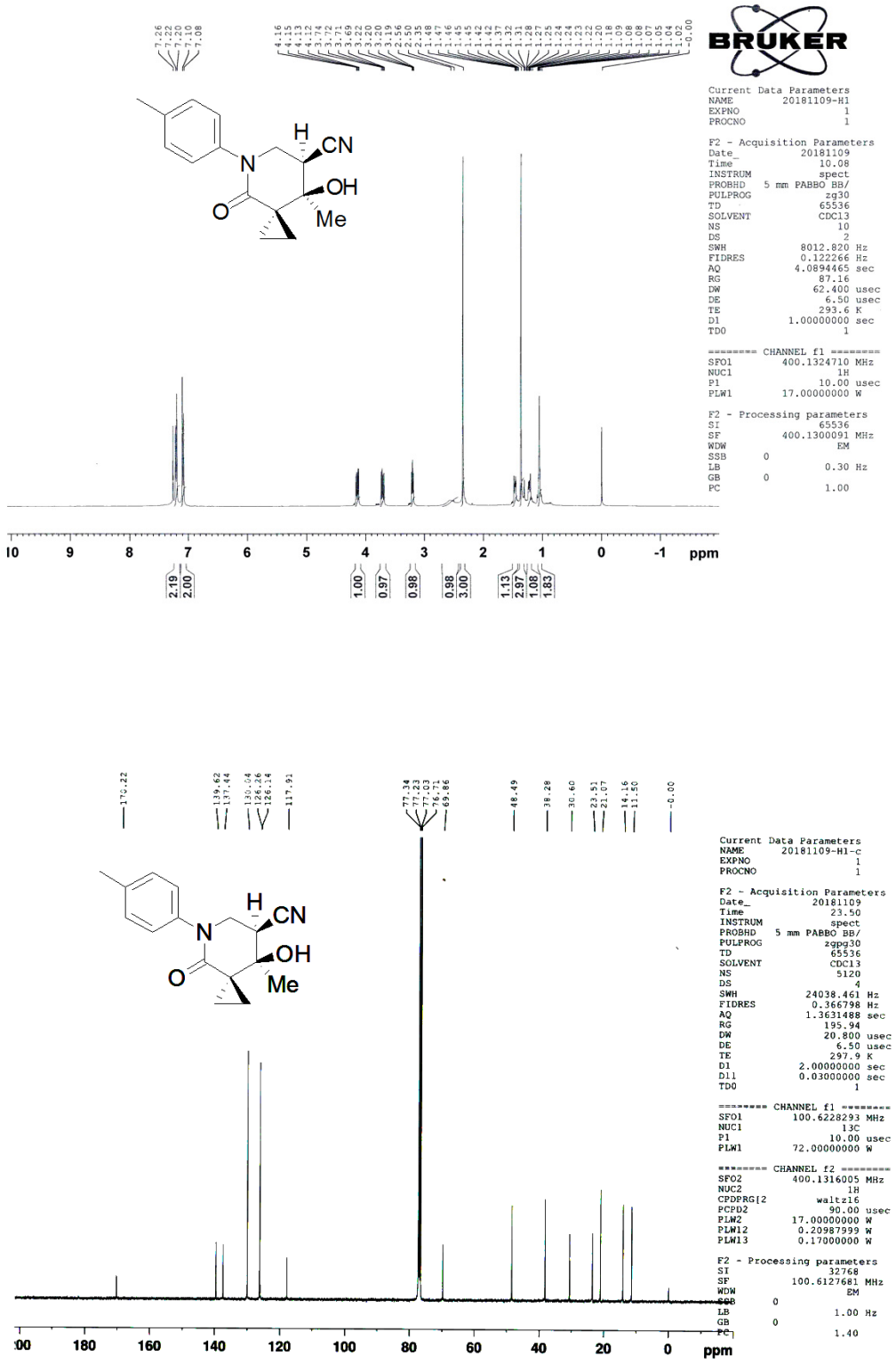
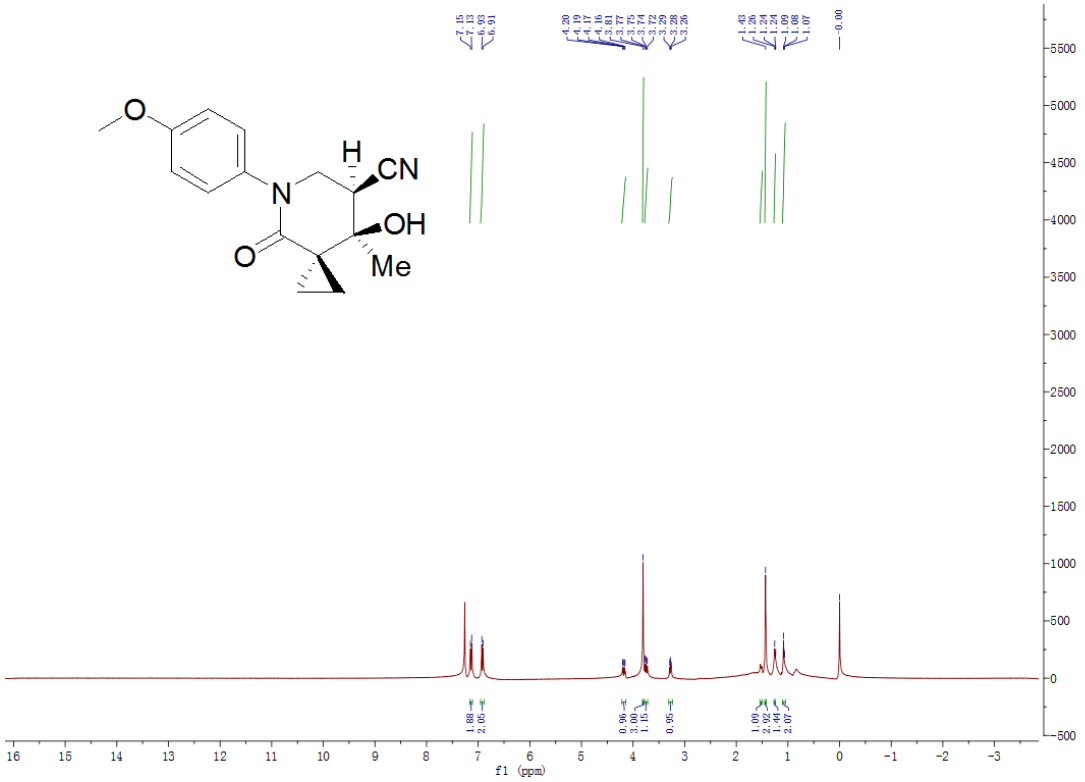


Figure 15. ^{1}H-(upper) and ^{13}C-NMR (lower) spectra of compound **4b**.



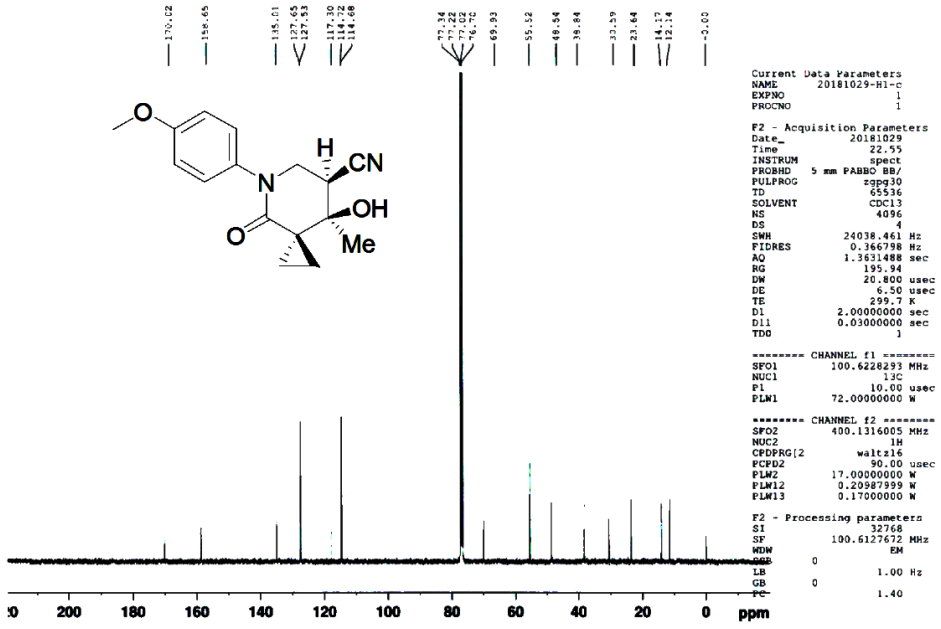


Figure 16. ^{1}H-(upper) and ^{13}C-NMR (lower) spectra of compound **4c**.

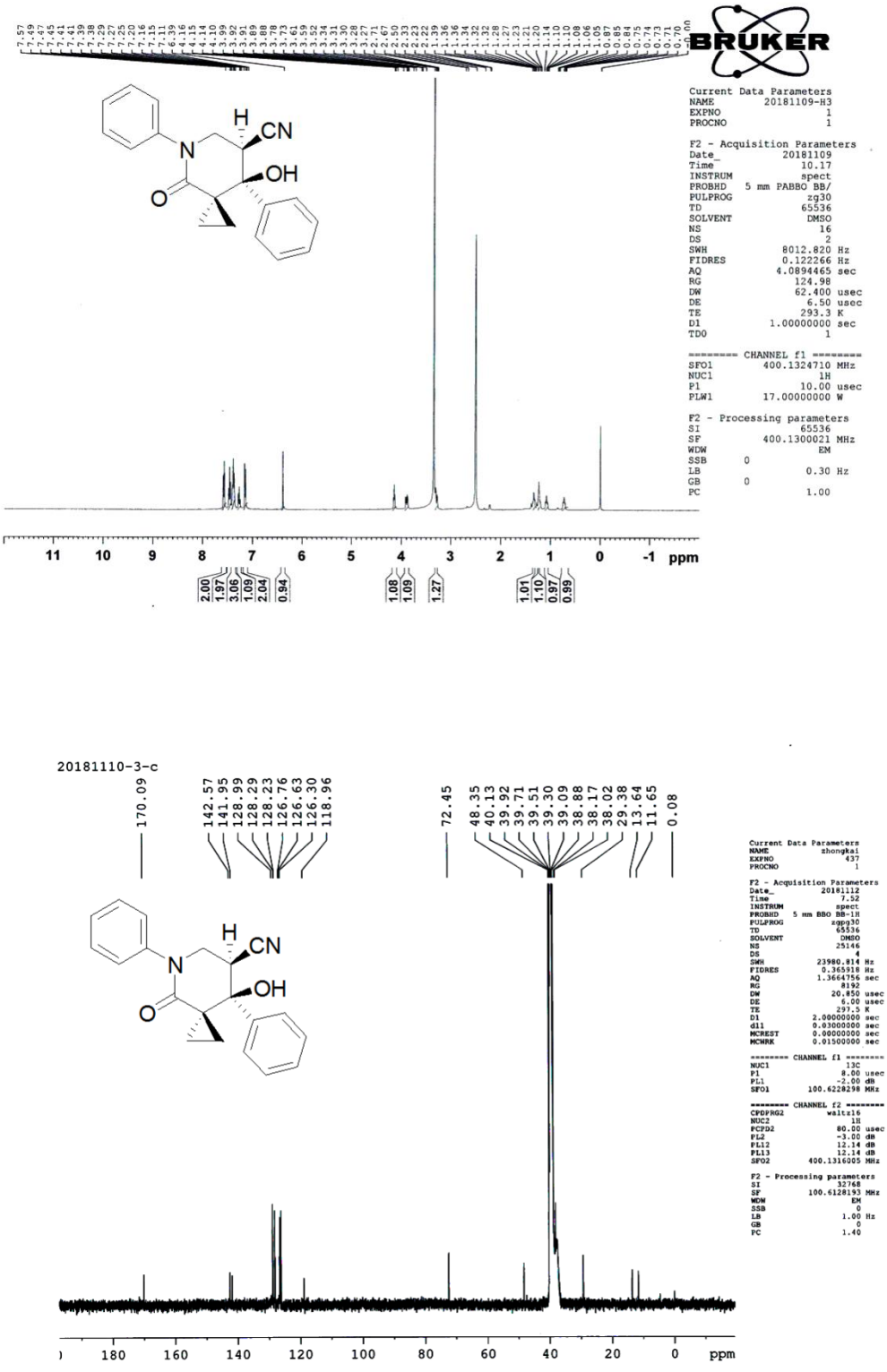


Figure 17. ^{1}H-(upper) and ^{13}C-NMR (lower) spectra of compound **4d**.

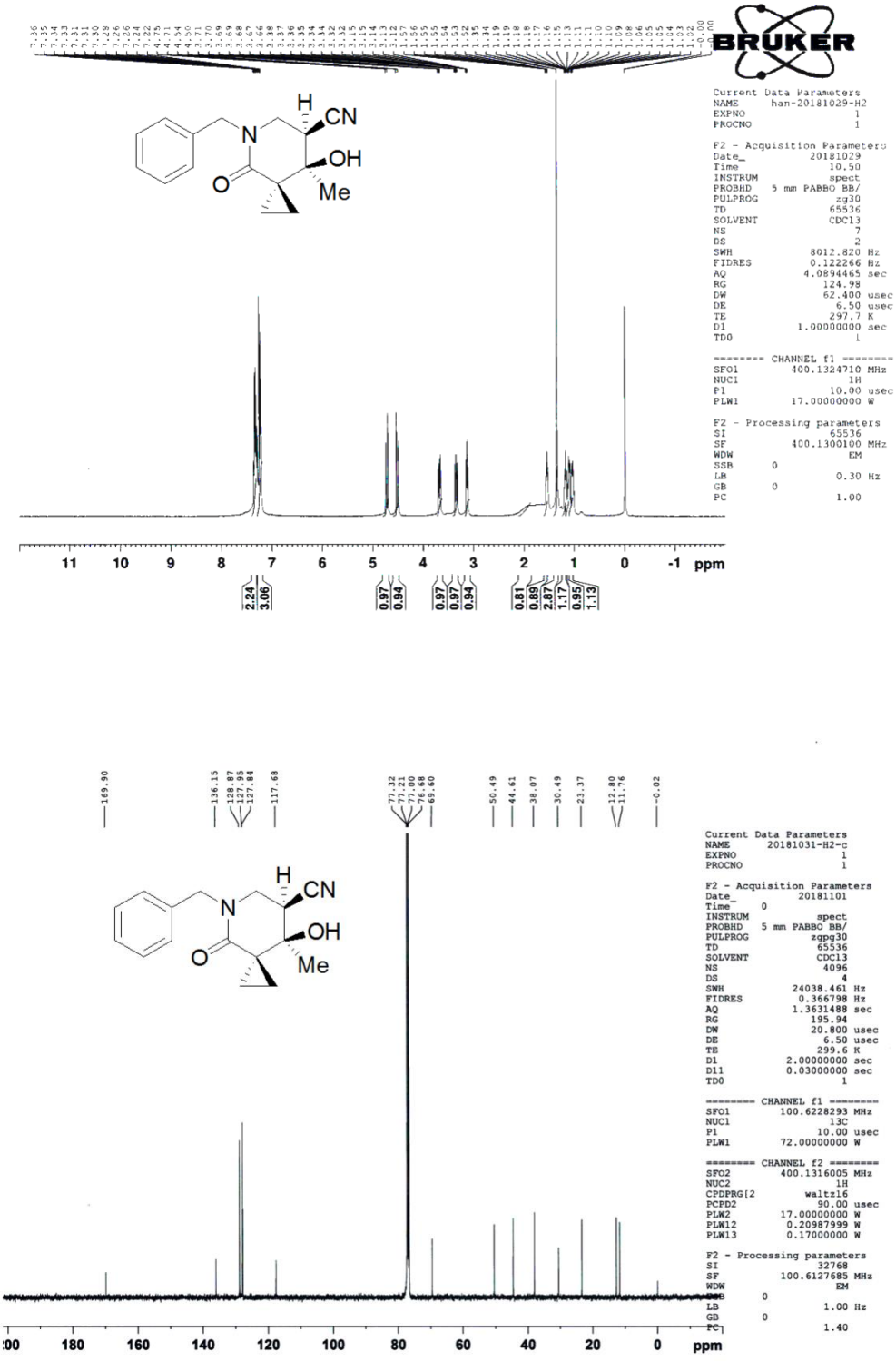


Figure 18. ^{1}H-(upper) and ^{13}C-NMR (lower) spectra of compound **4e**.

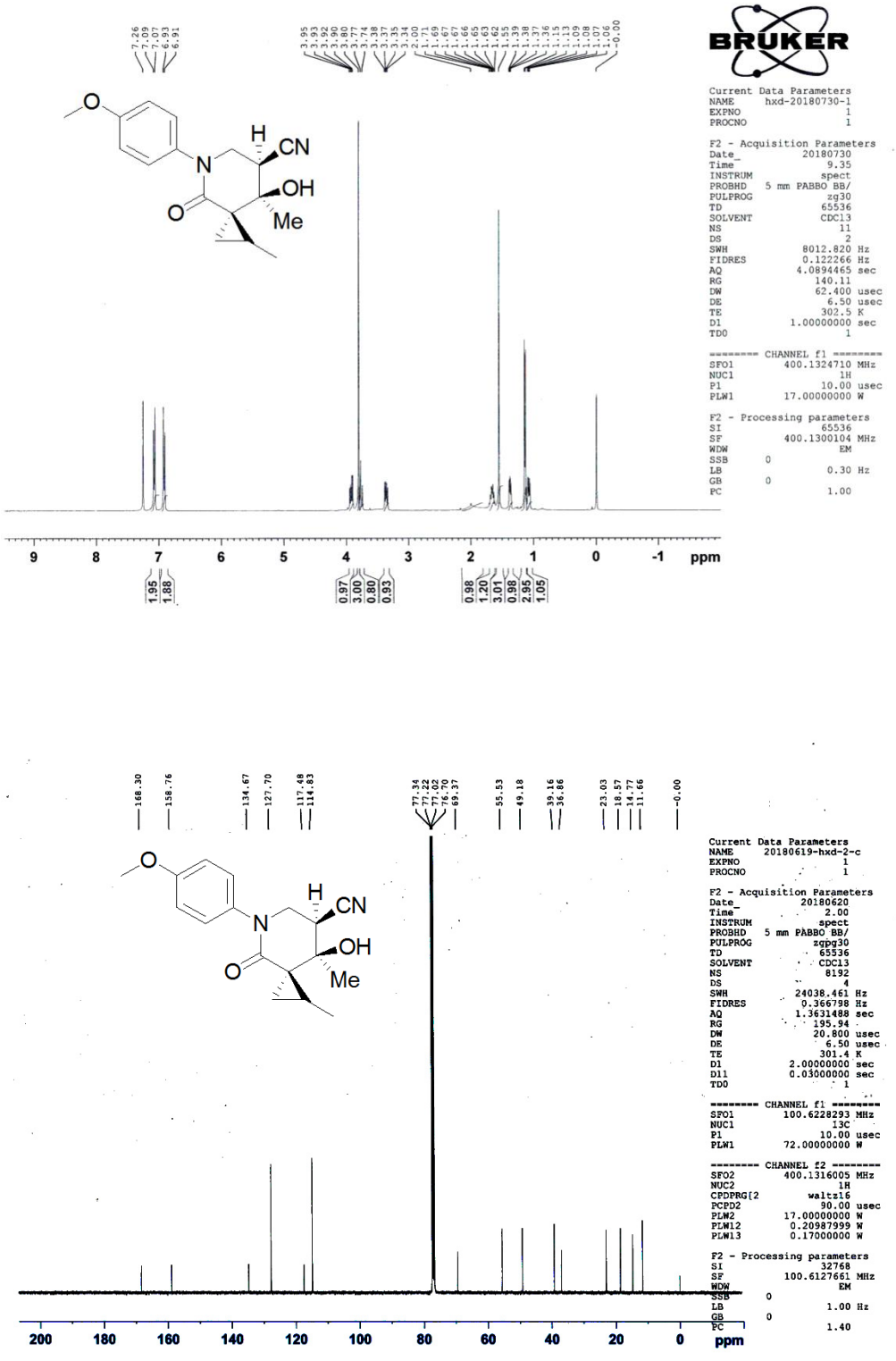


Figure 19. ^{1}H-(upper) and ^{13}C-NMR (lower) spectra of compound **4f**.

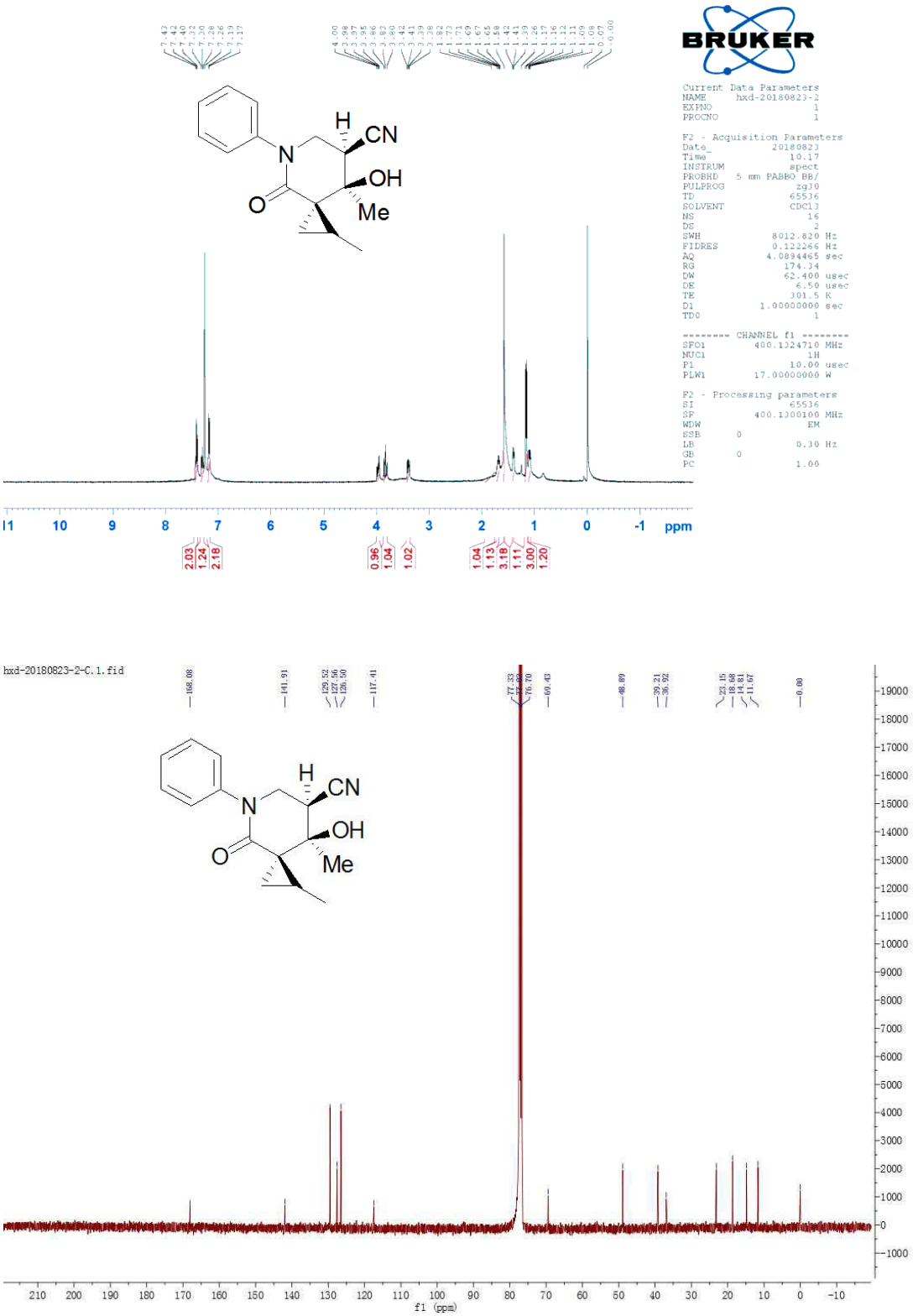


Figure 20. ^{1}H-(upper) and ^{13}C-NMR (lower) spectra of compound **4g**.

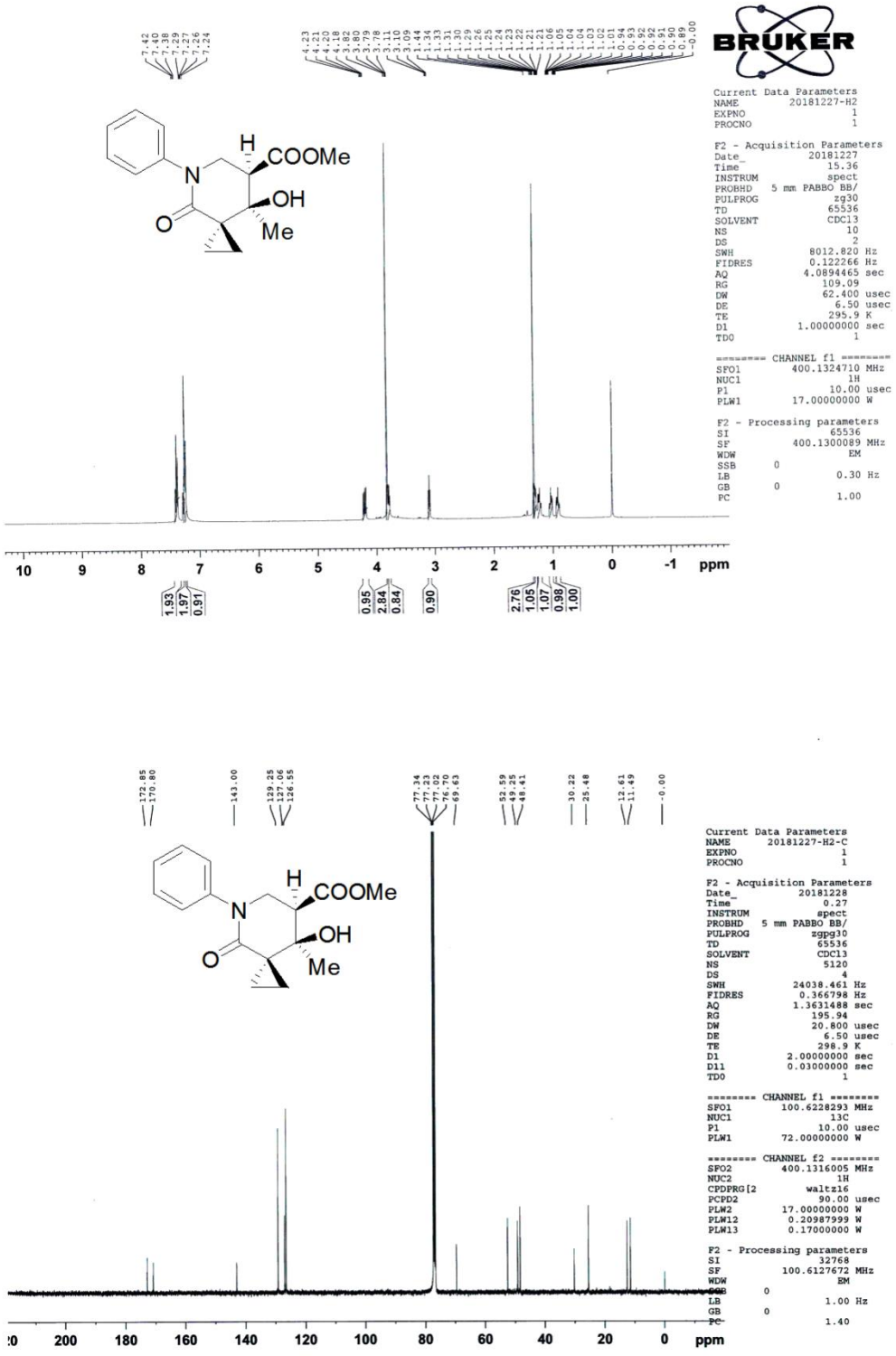


Figure 21. ^{1}H-(upper) and ^{13}C-NMR (lower) spectra of compound **4h**.

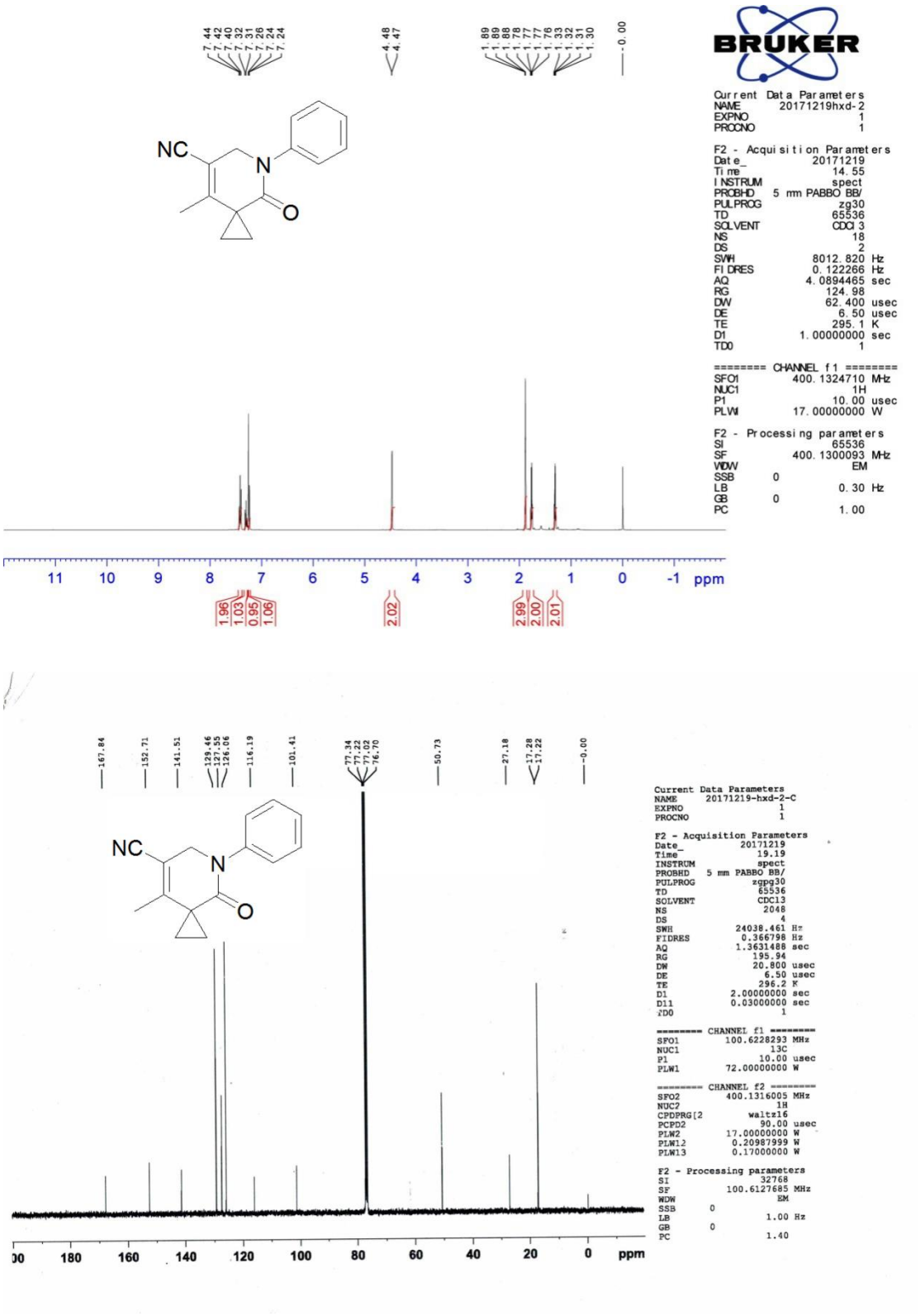
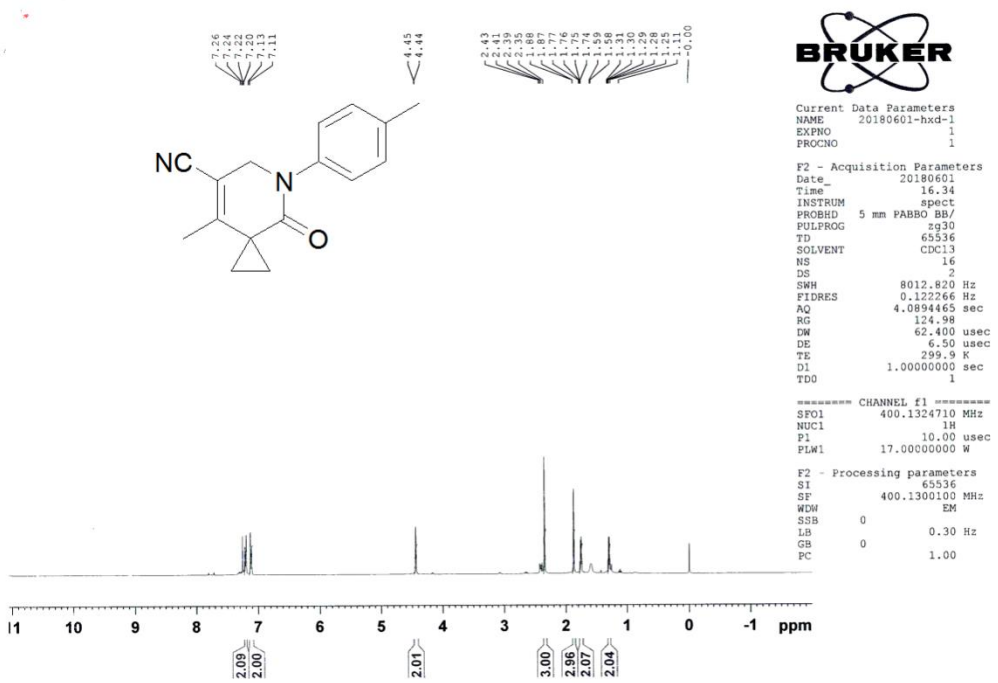


Figure 22. ^{1}H-(upper) and ^{13}C-NMR (lower) spectra of compound **5a**.



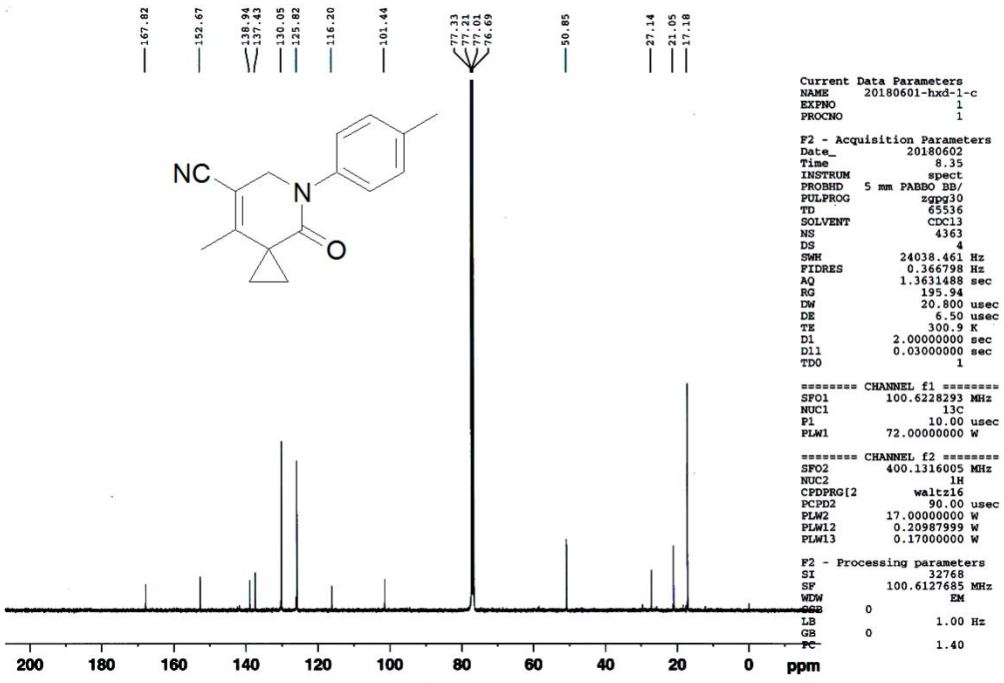


Figure 23. ^{1}H-(upper) and ^{13}C-NMR (lower) spectra of compound **5b**.

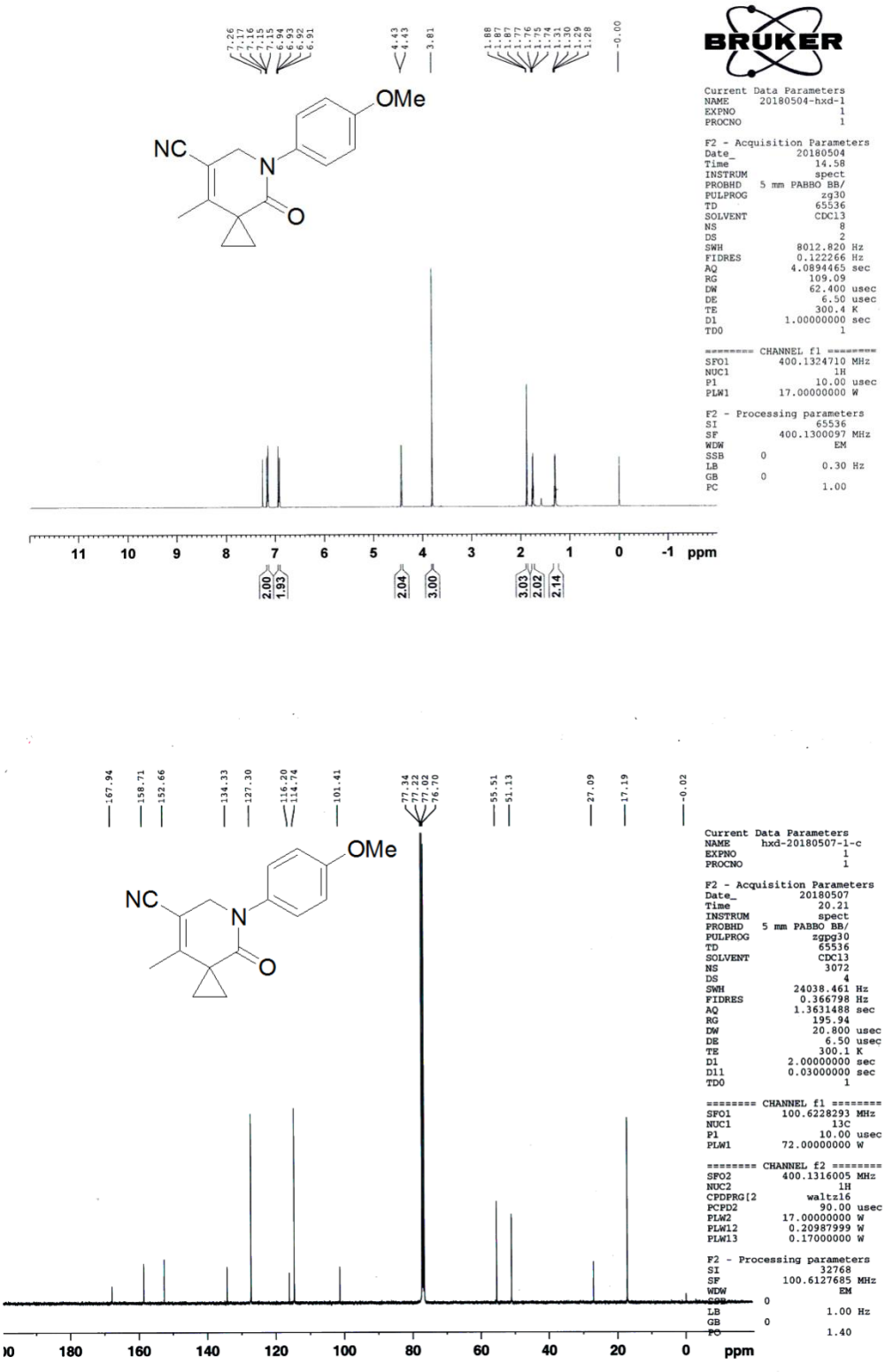


Figure 24. ^{1}H-(upper) and ^{13}C-NMR (lower) spectra of compound **5c**.

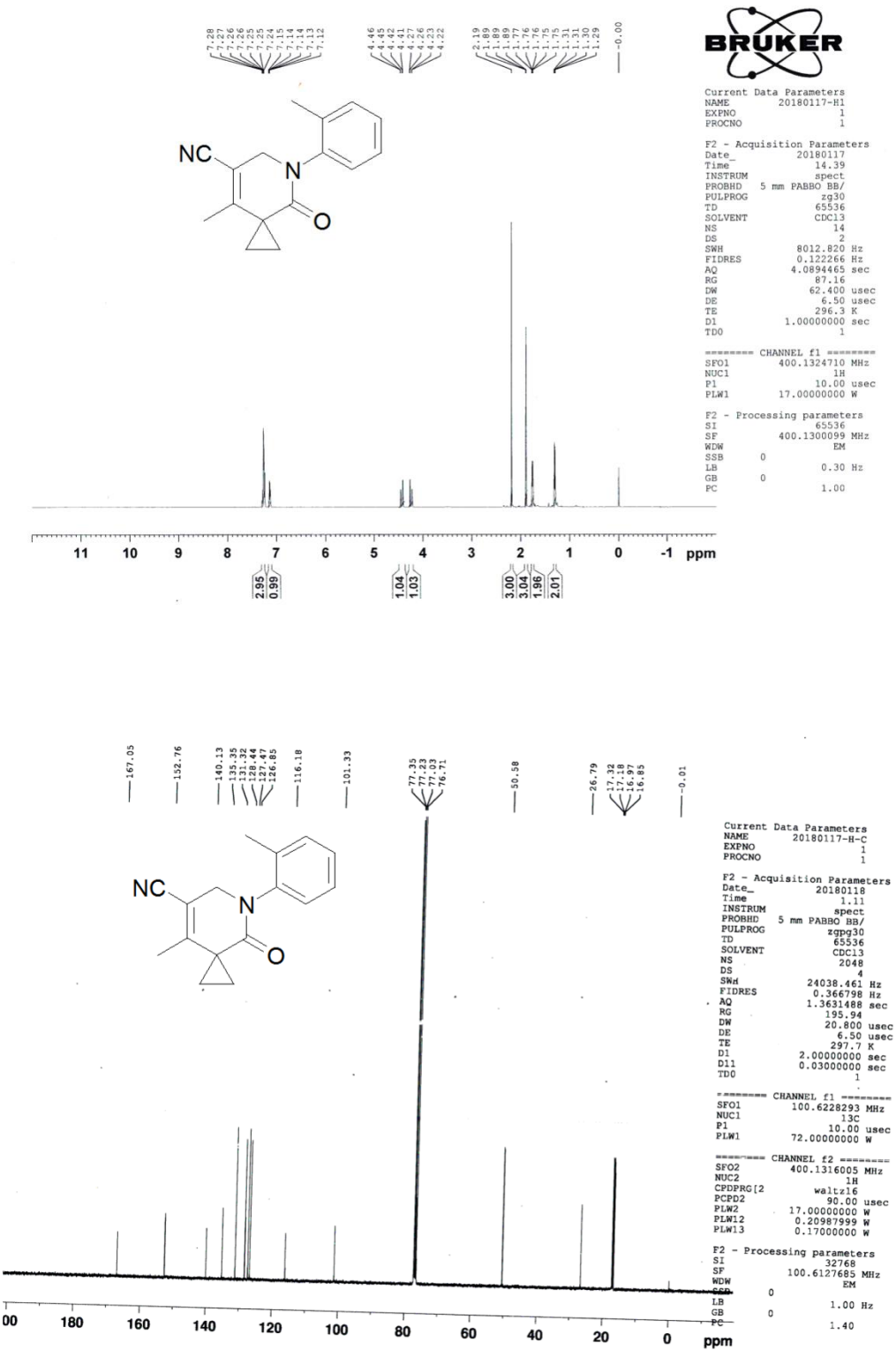


Figure 25. ^{1}H-(upper) and ^{13}C-NMR (lower) spectra of compound **5d**.

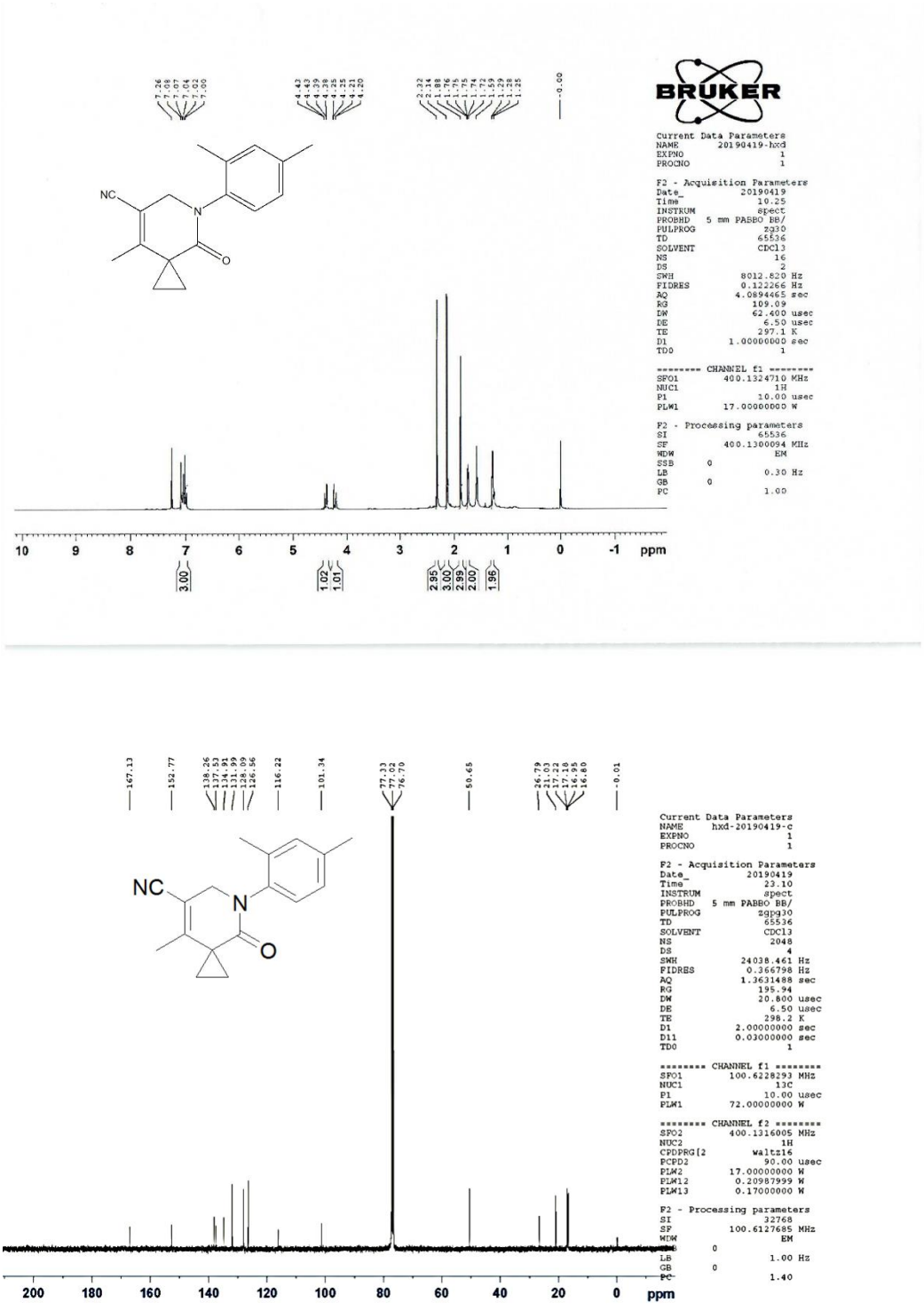


Figure 26. ^{1}H-(upper) and ^{13}C-NMR (lower) spectra of compound **5e**.

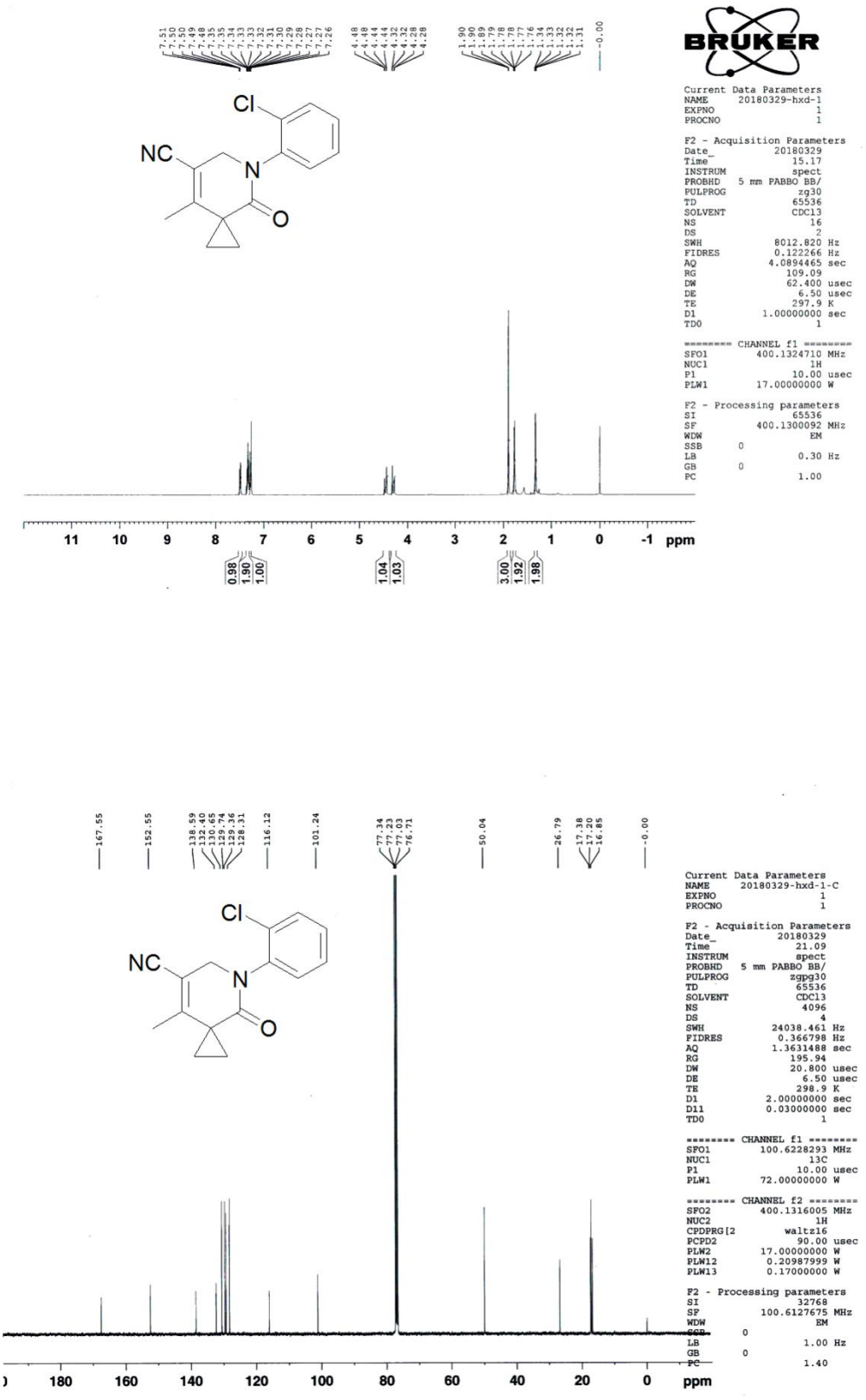


Figure 27. ^{1}H-(upper) and ^{13}C-NMR (lower) spectra of compound **5f**.

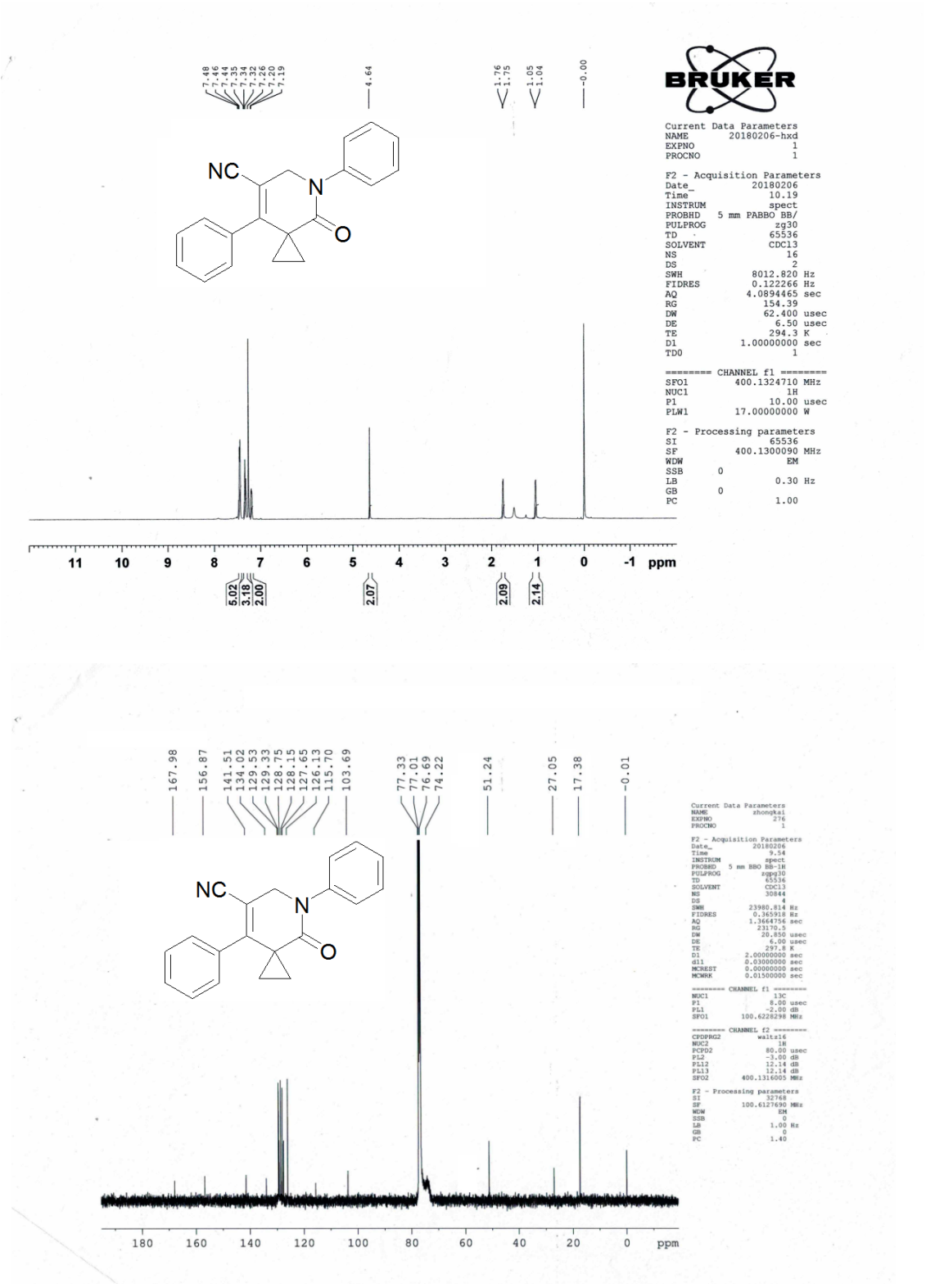
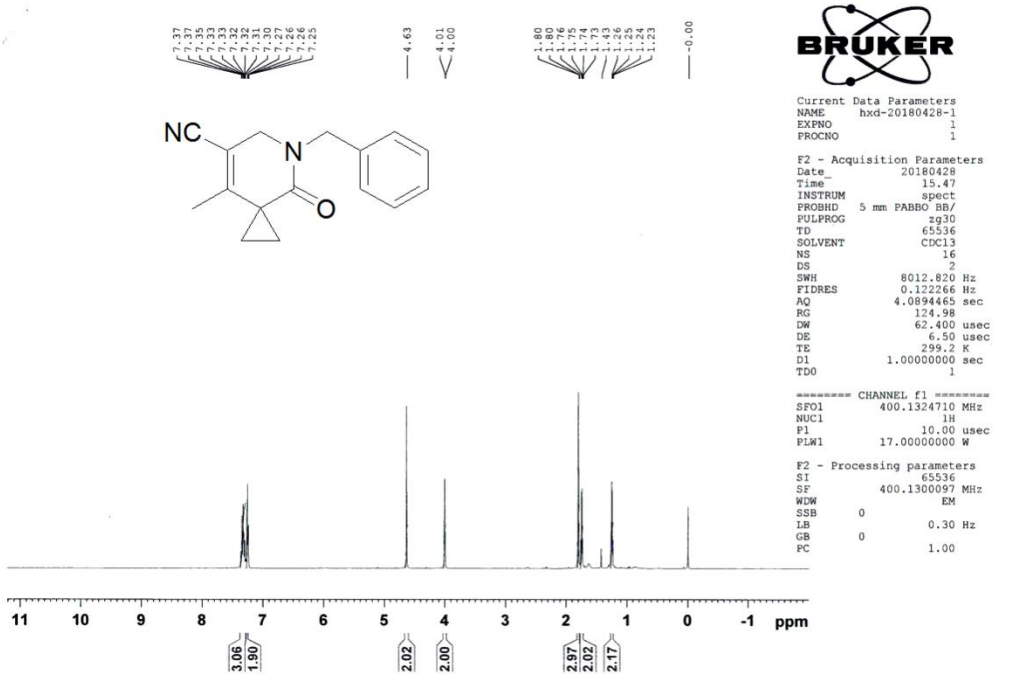


Figure 28. ^{1}H-(upper) and ^{13}C-NMR (lower) spectra of compound **5g**.



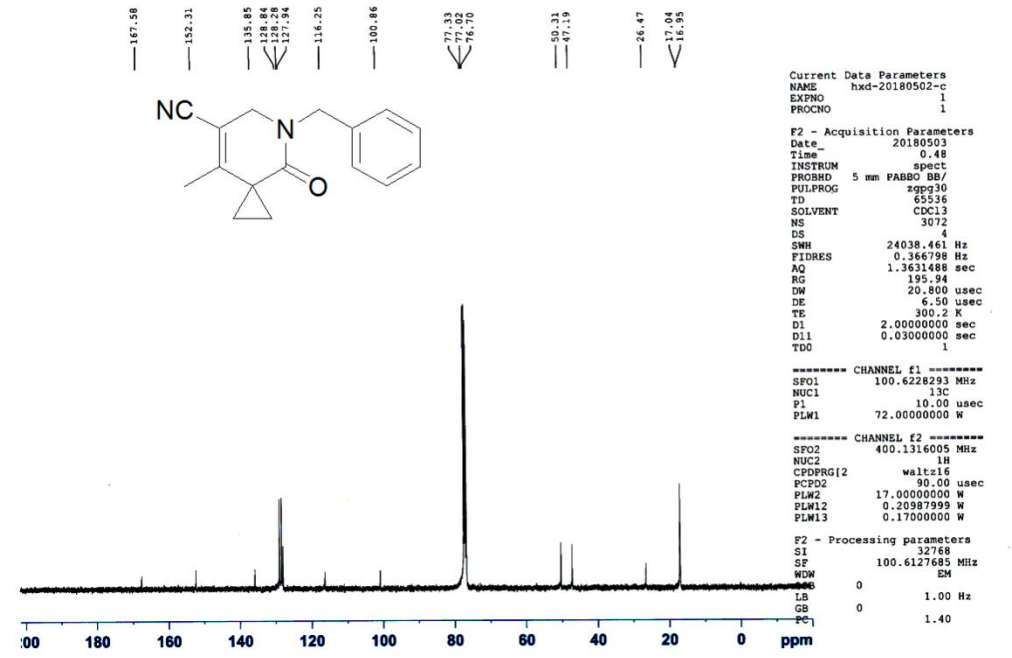


Figure 29. ^{1}H-(upper) and ^{13}C-NMR (lower) spectra of compound **5h**.

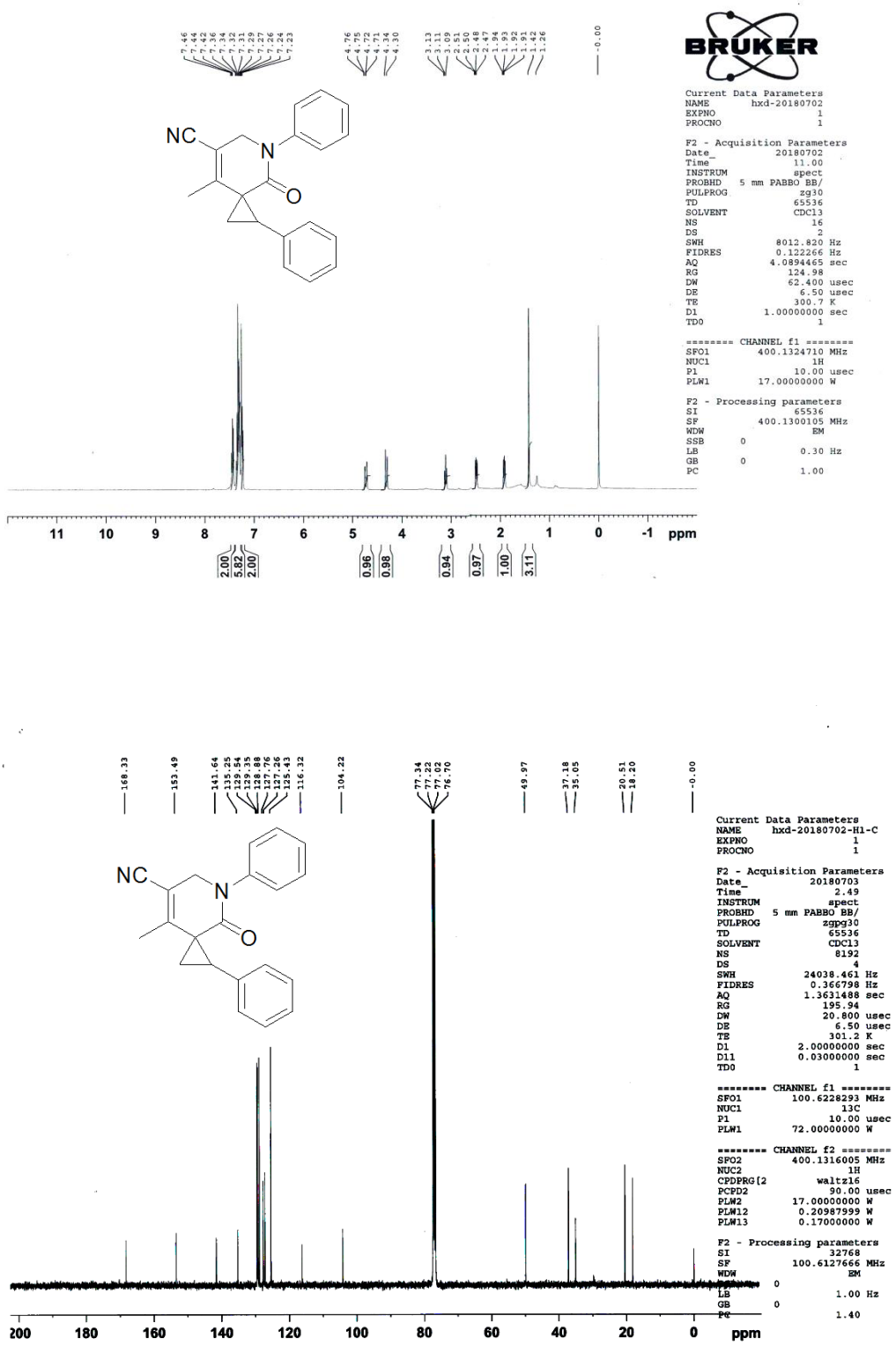


Figure 30. ^{1}H-(upper) and ^{13}C-NMR (lower) spectra of compound **5i**.

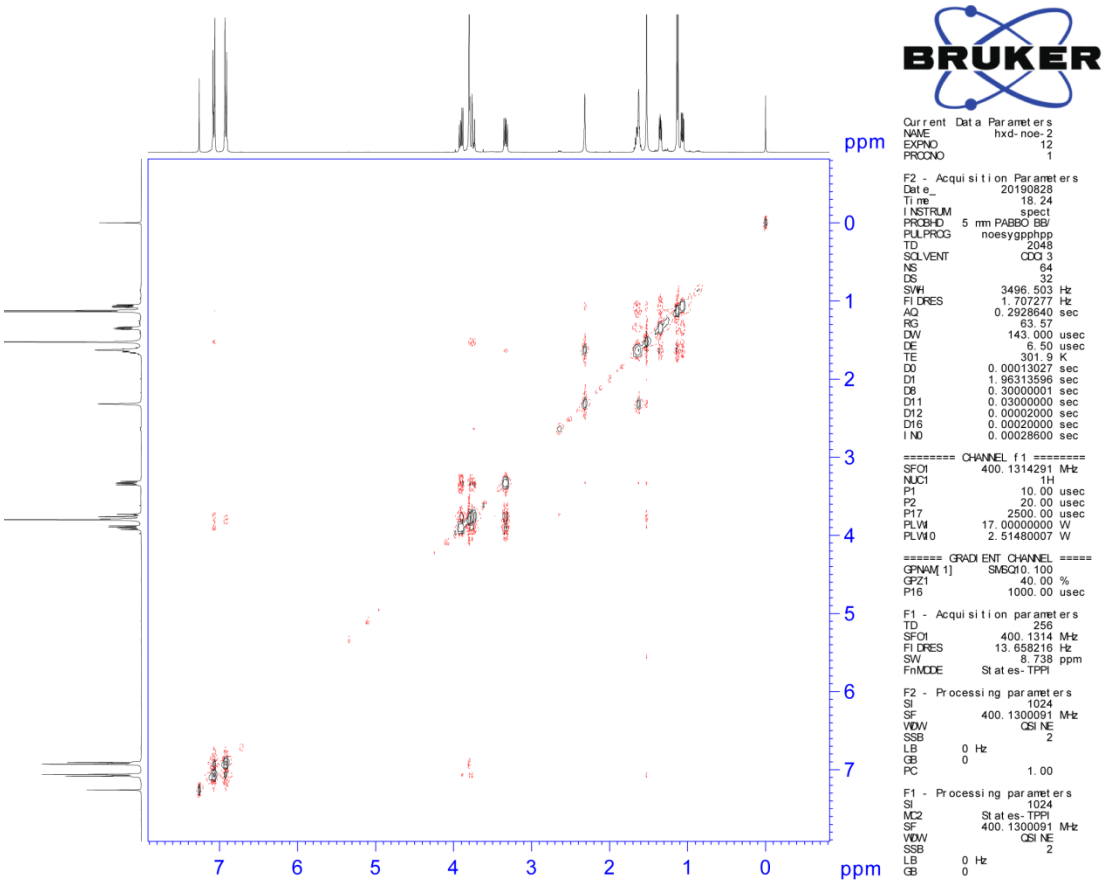


Figure 31. Noesy spectra of compound **4f**