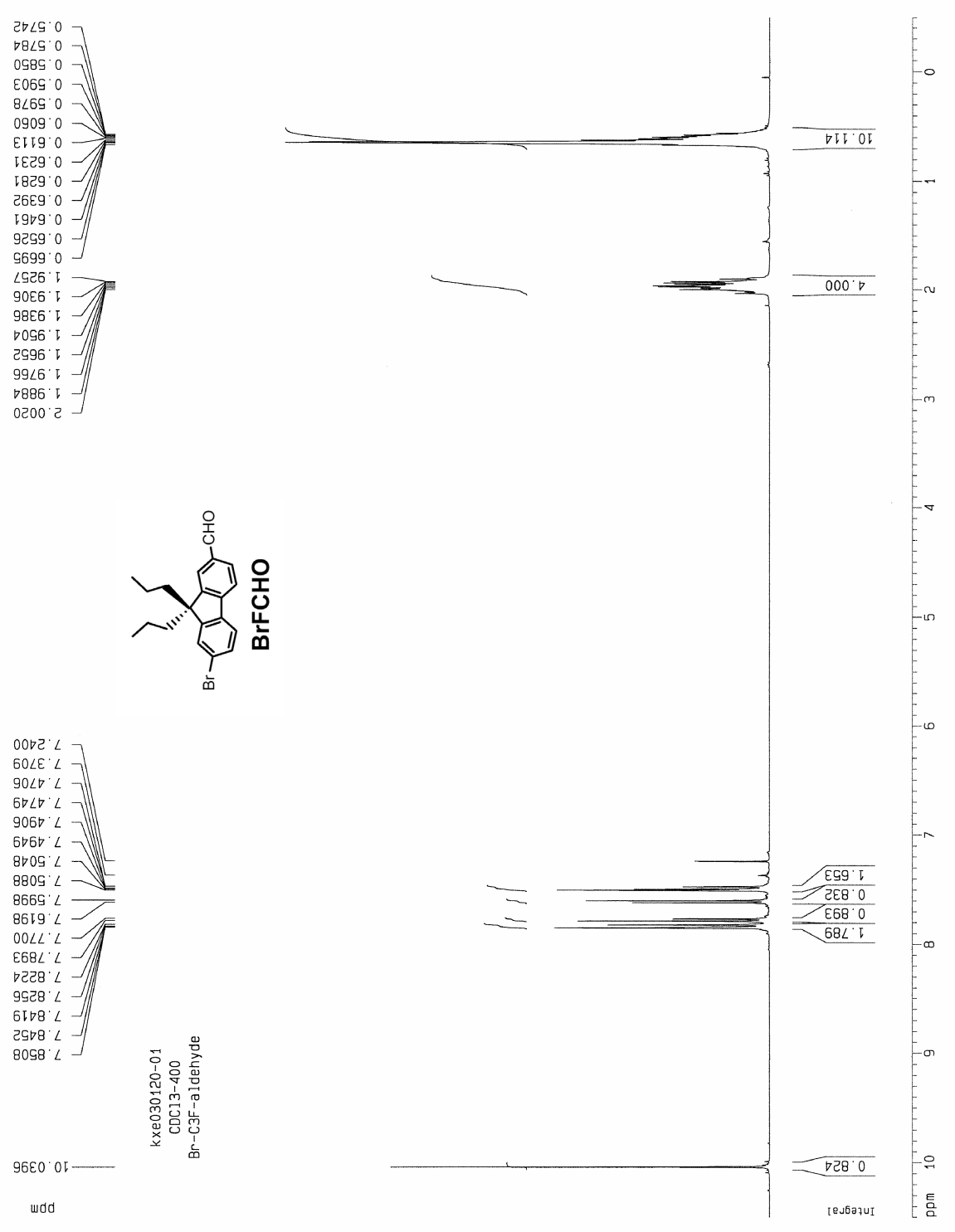

Figure S1. ^{1}H-NMR spectrum of 7-bromo-9,9’-dipropyl-9H-fluorene-2-carboxaldehyde (BrFCHO).

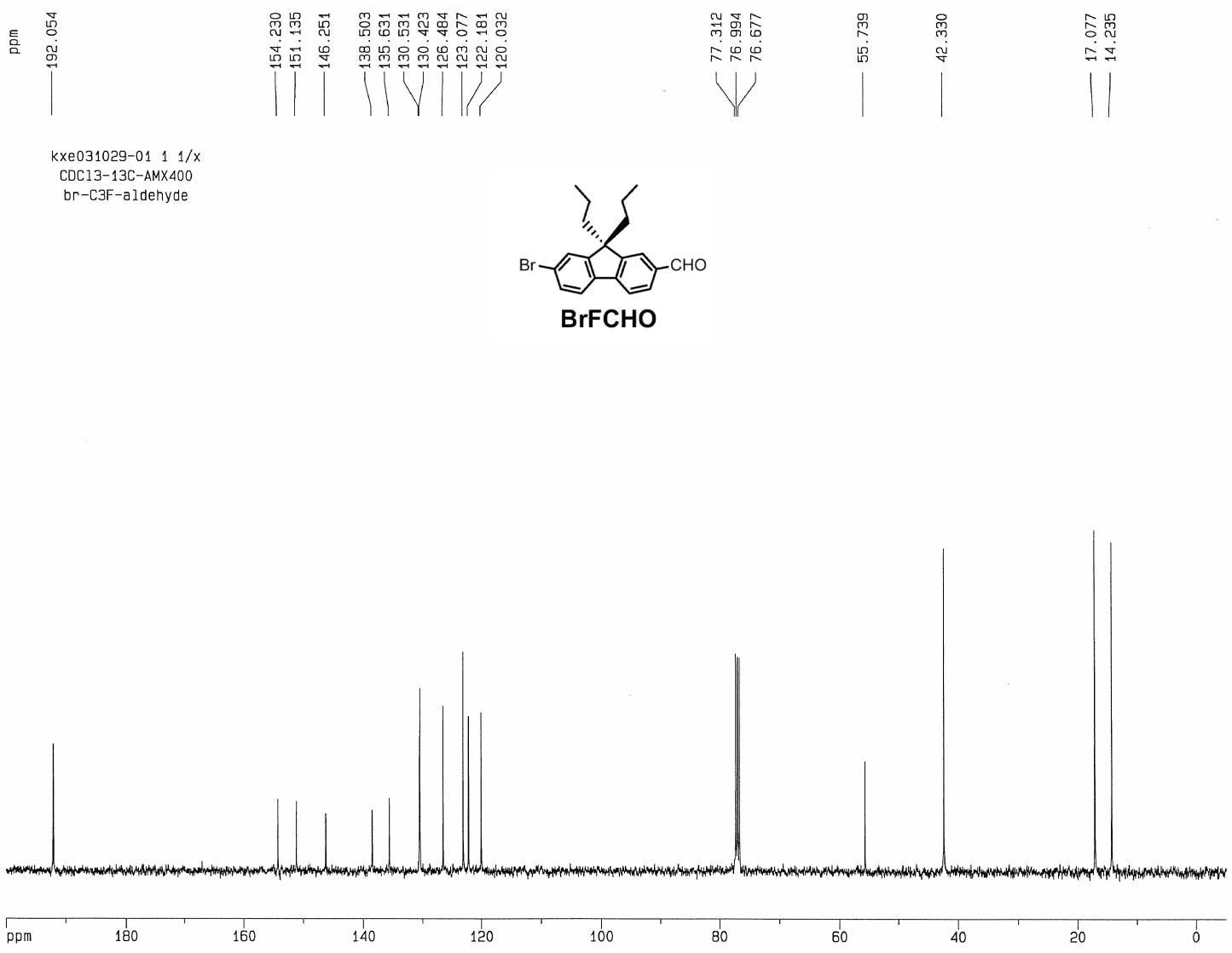

Figure S2. ^{13}C-NMR spectrum of 7-bromo-9,9'-dipropyl-9H-fluorene-2-carboxaldehyde (BrFCHO)..

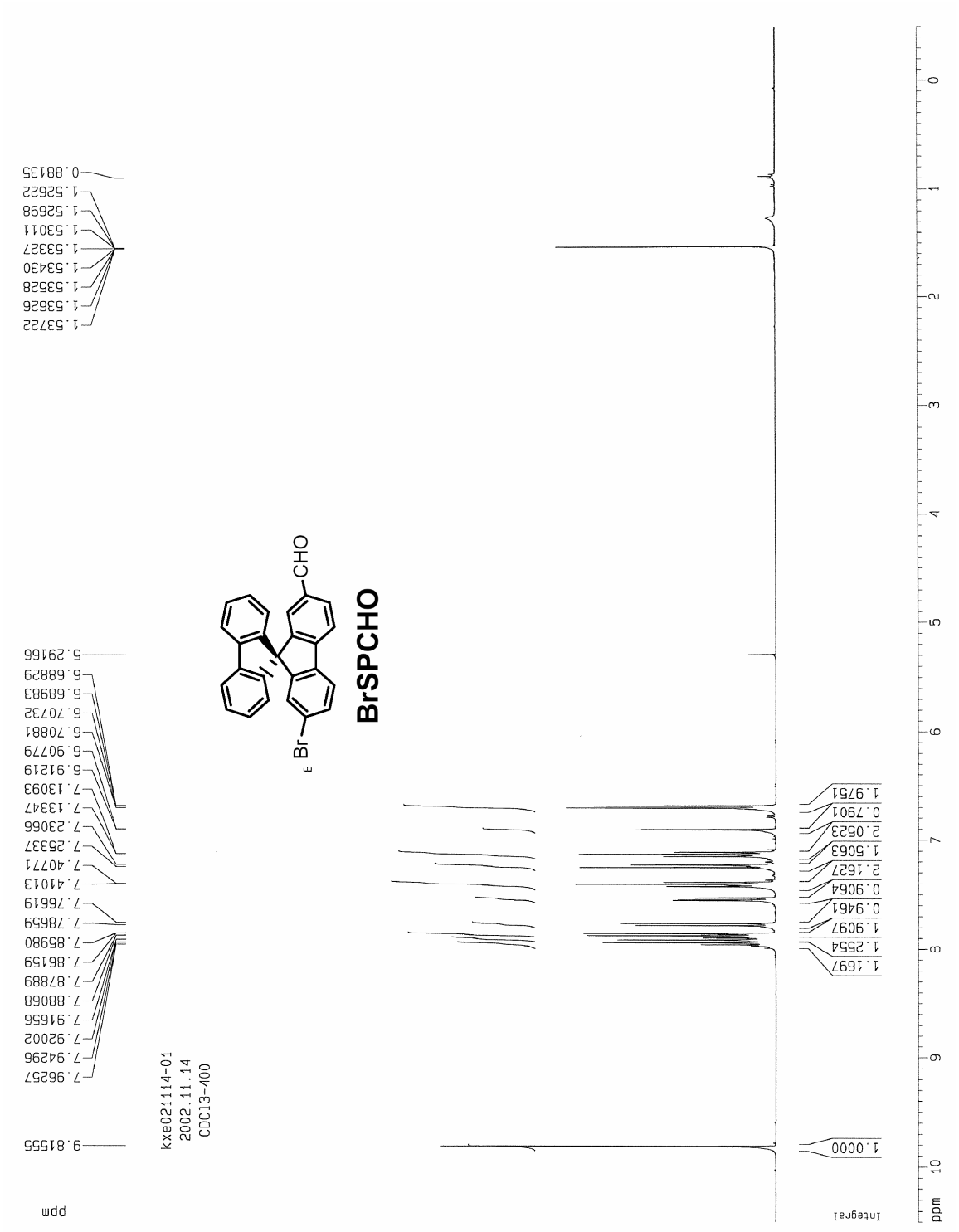

Figure S3. ^{1}H-NMR spectrum of 7-bromo-9,9’-spirobifluorene-2-carboxaldehyde (BrSPCHO).

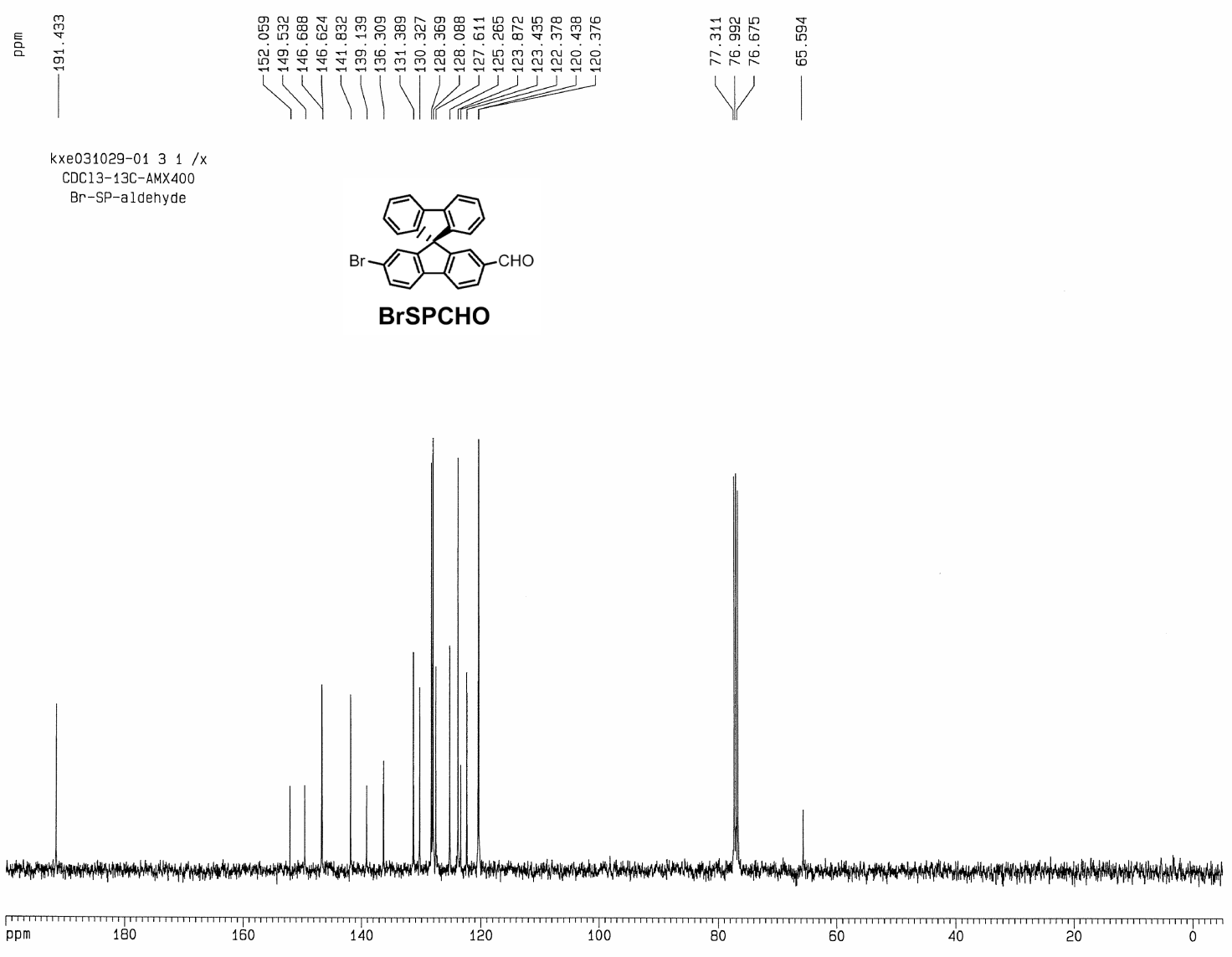

Figure S4. ^{13}C-NMR spectrum of 7-bromo-9,9'-spirobifluorene-2-carboxaldehyde (BrSPCHO).

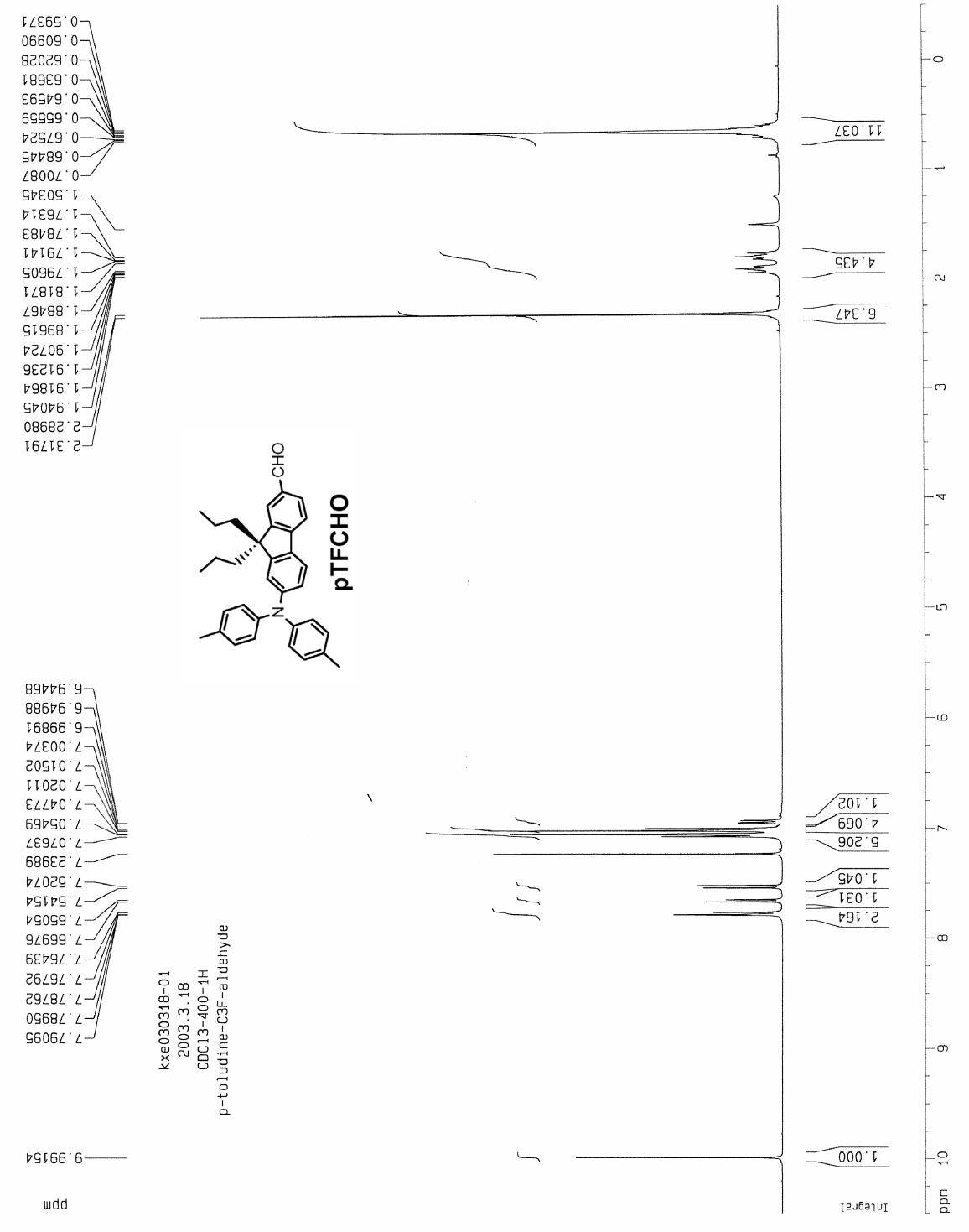

Figure S5. ^{1}H-NMR spectrum of 7-(di-*p*-tolylamino)-9,9’-dipropyl-9H-fluorene-2-carboxaldehyde (pTFCHO).

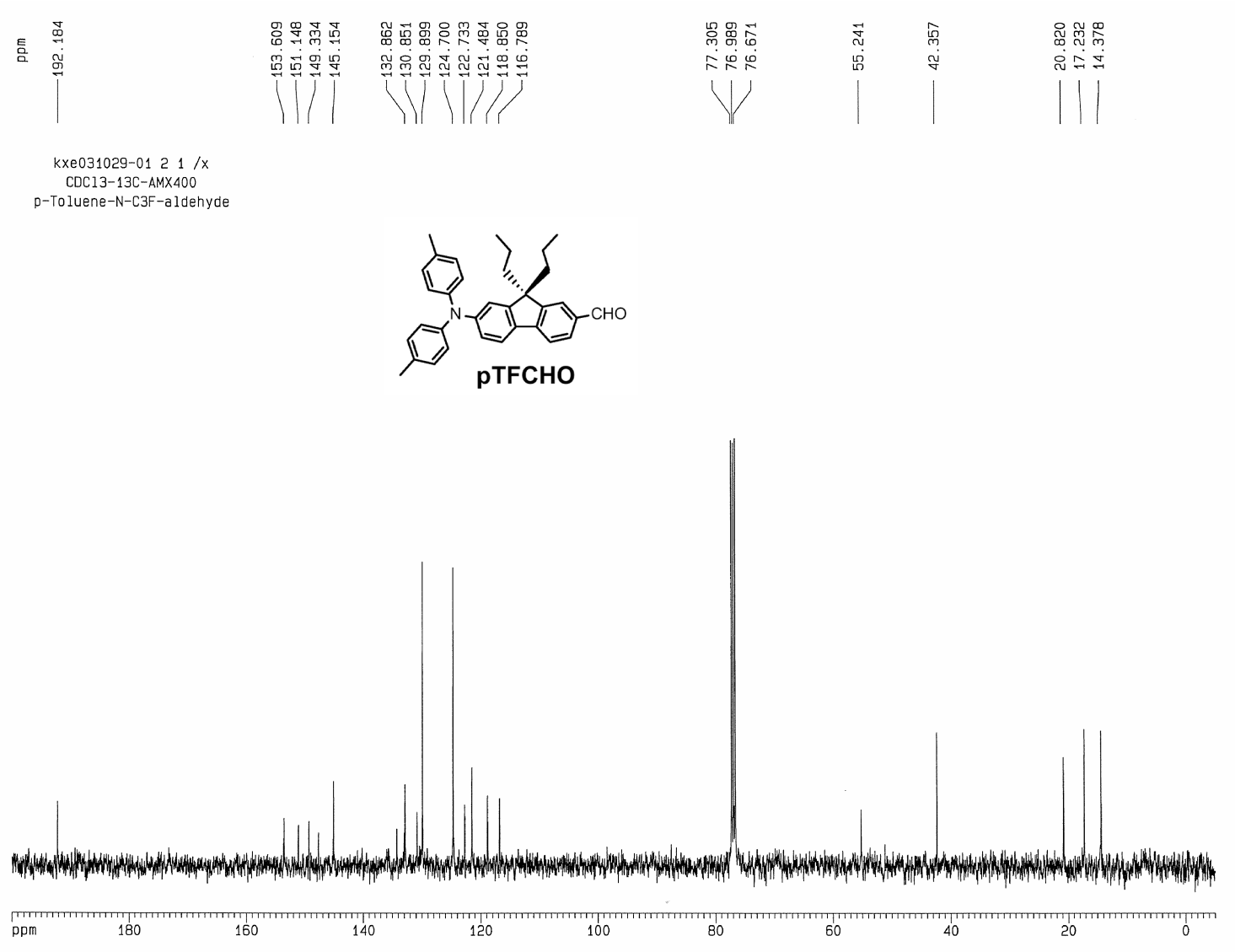

Figure S6. ^{13}C-NMR spectrum of 7-(di-*p*-tolylamino)-9,9'-dipropyl-9H-fluorene-2-carboxaldehyde (pTFCHO).

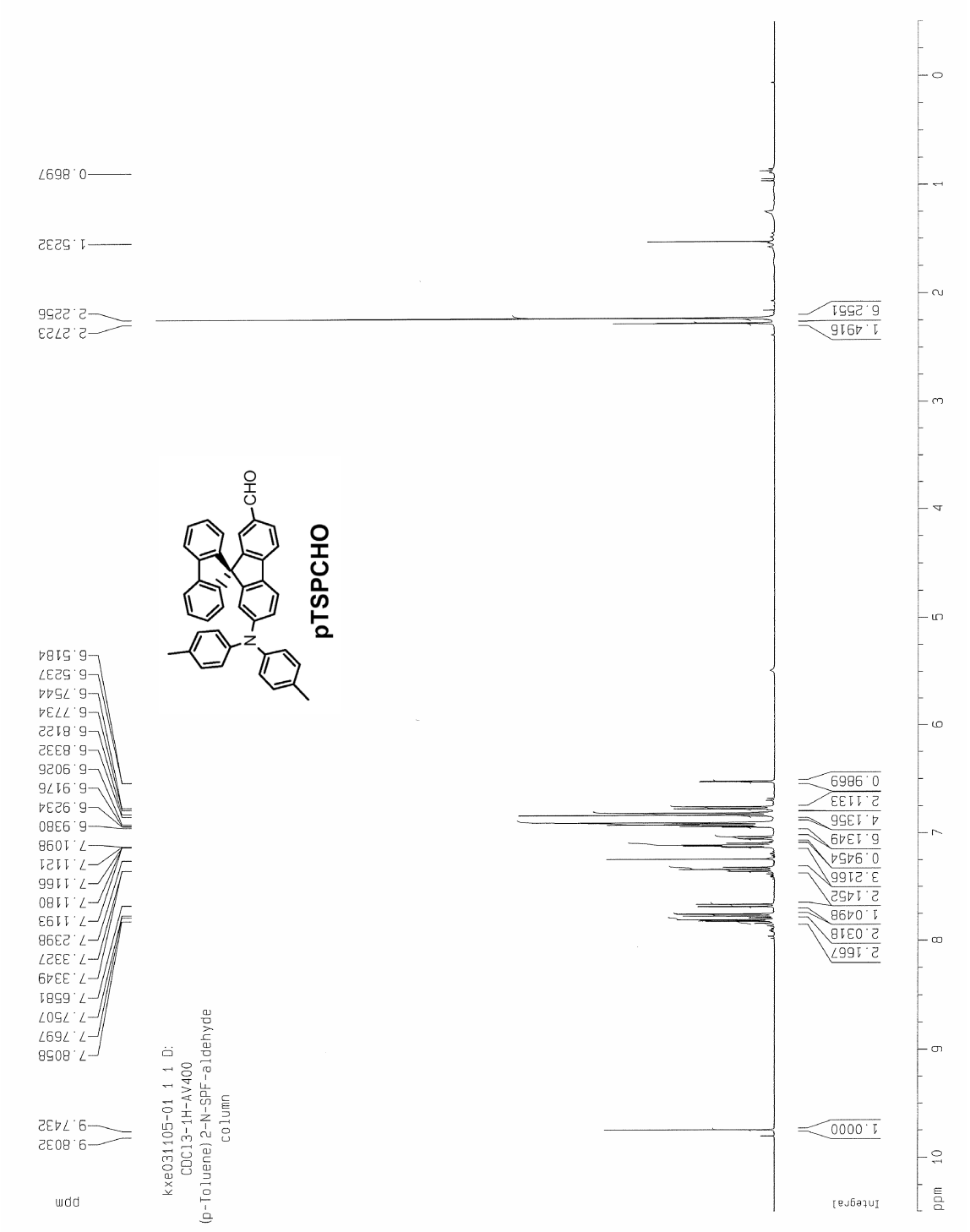

Figure S7. ^{1}H-NMR spectrum of 7-(di-*p*-tolylamino)-9,9'-spirobifluorene-2-carboxaldehyde (pTSPCHO).

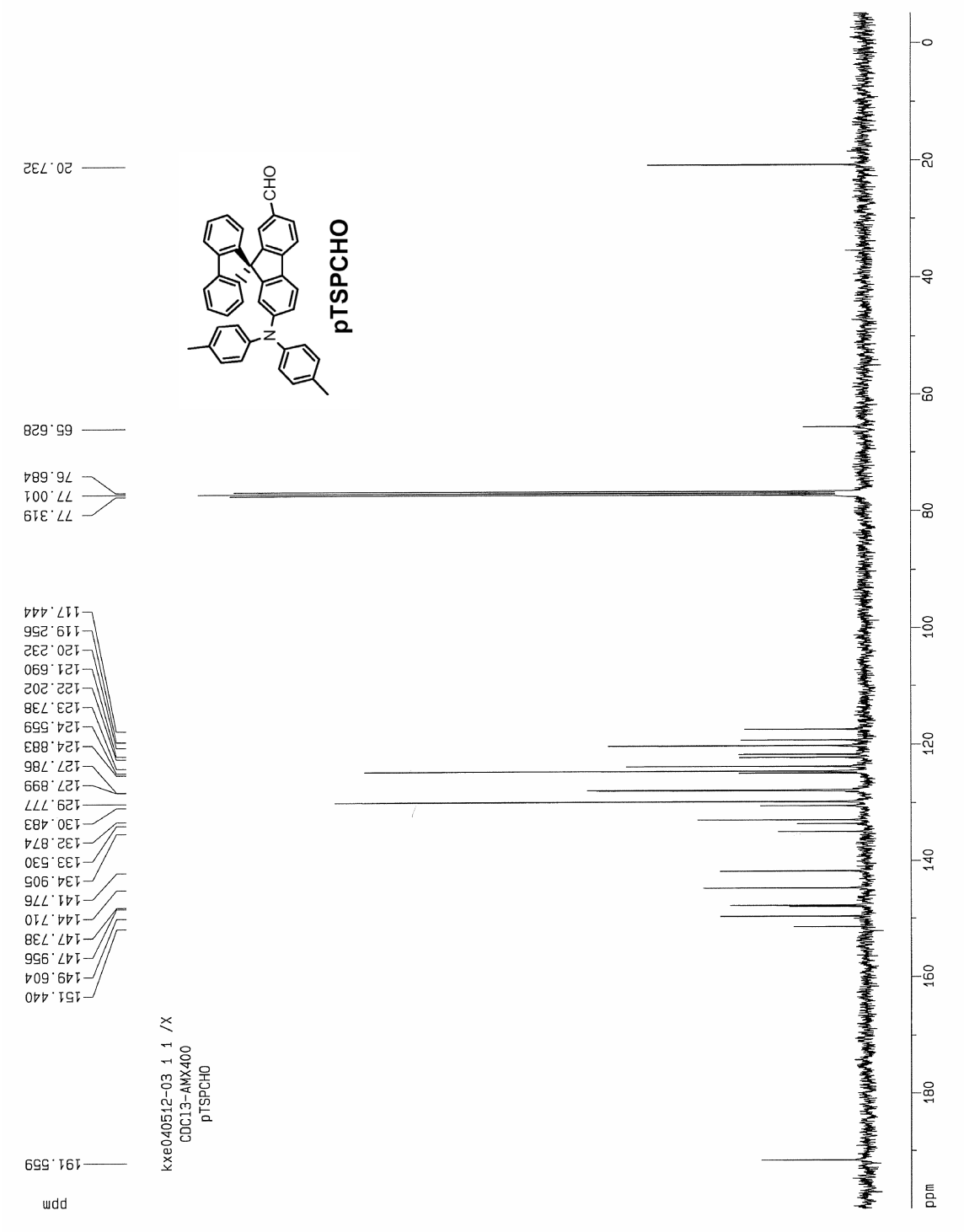

Figure S8. ^{13}C-NMR spectrum of 7-(di-*p*-tolylamino)-9,9'-spirobifluorene-2-carboxaldehyde (pTSPCHO).

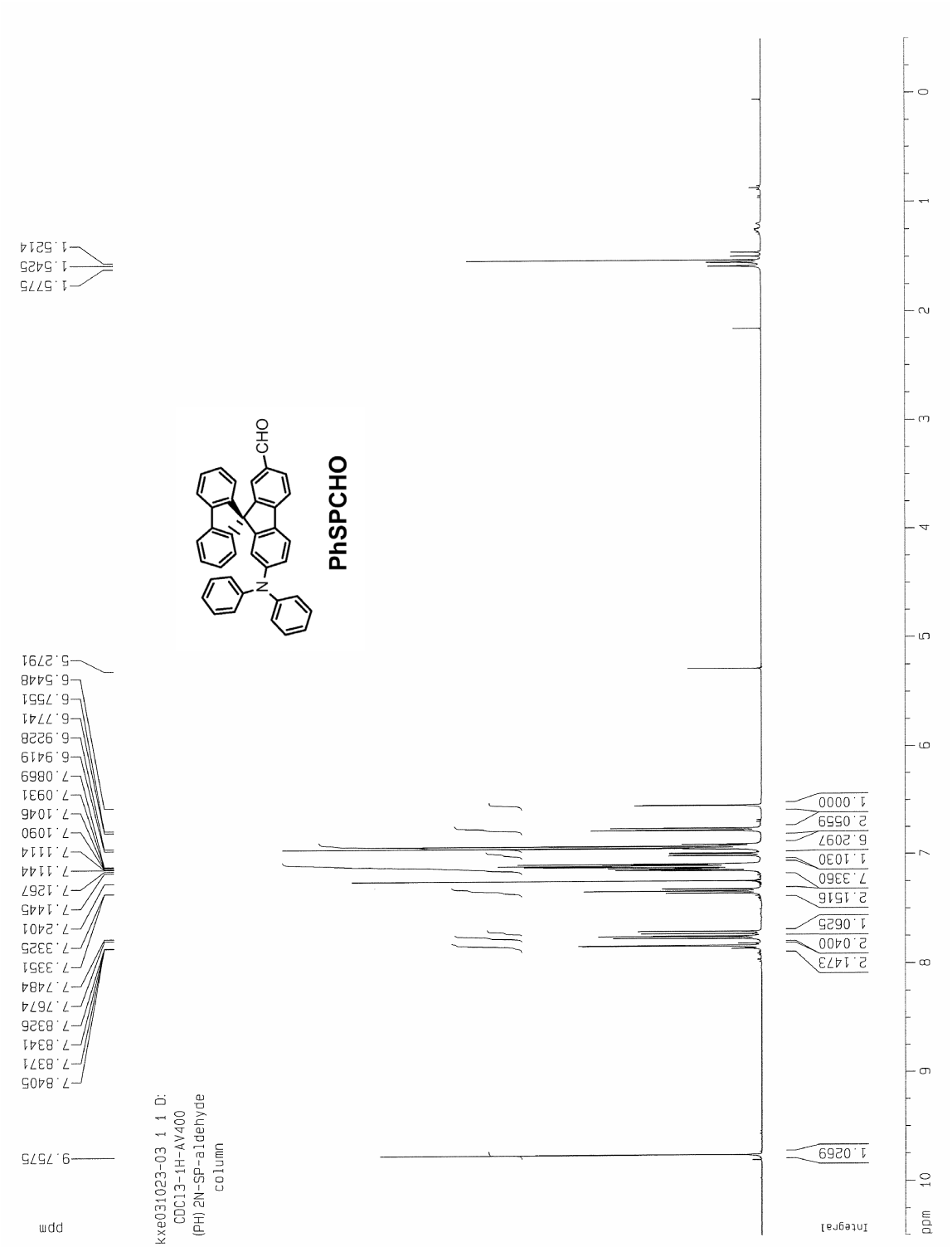

Figure S9. ^{1}H-NMR spectrum of 7-(diphenylamino)-9,9’-spirobifluorene-2-carboxaldehyde (PhSPCHO)

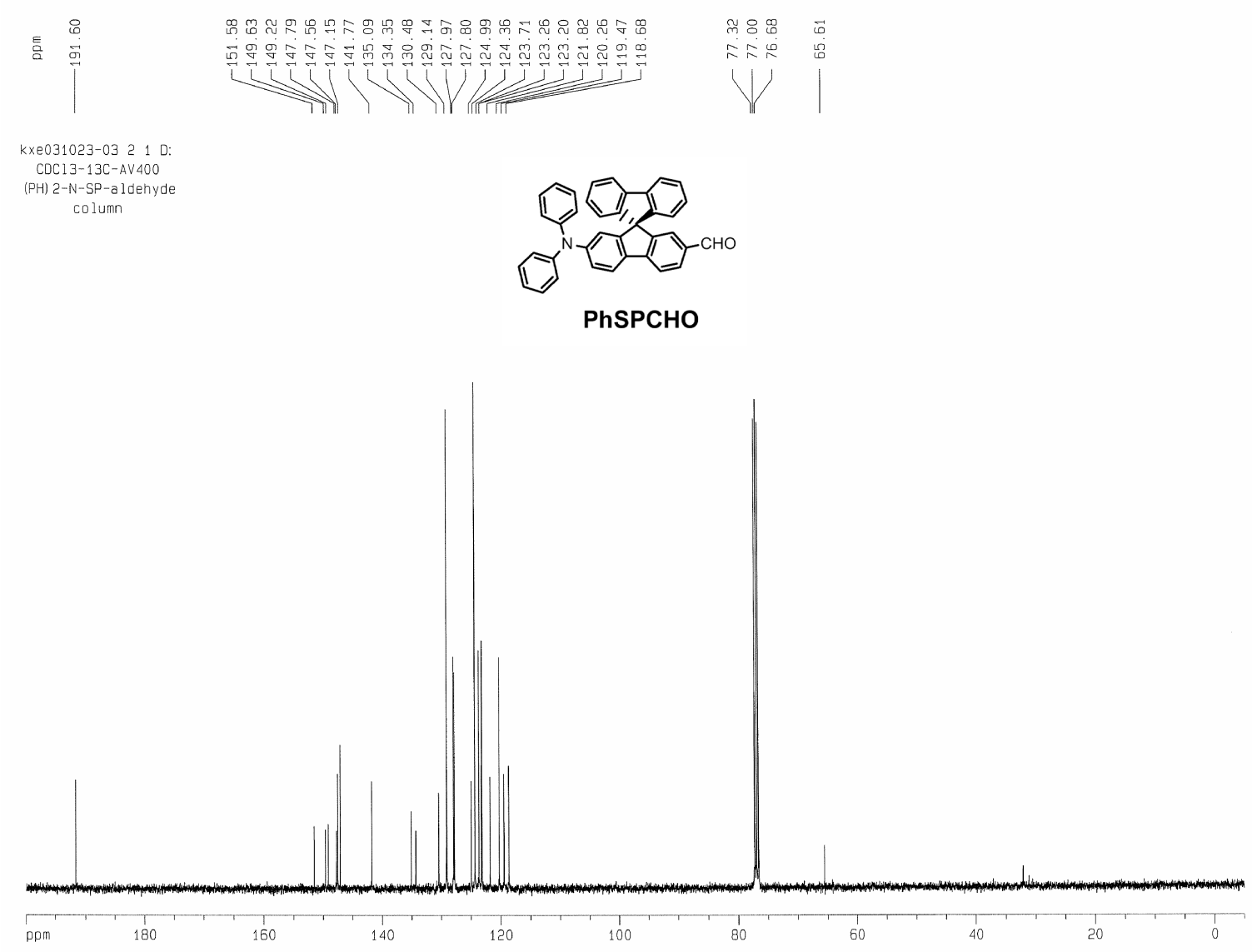

Figure S10. ^{13}C-NMR spectrum of 7-(diphenylamino)-9,9'-spirobifluorene-2-carboxaldehyde (PhSPCHO)

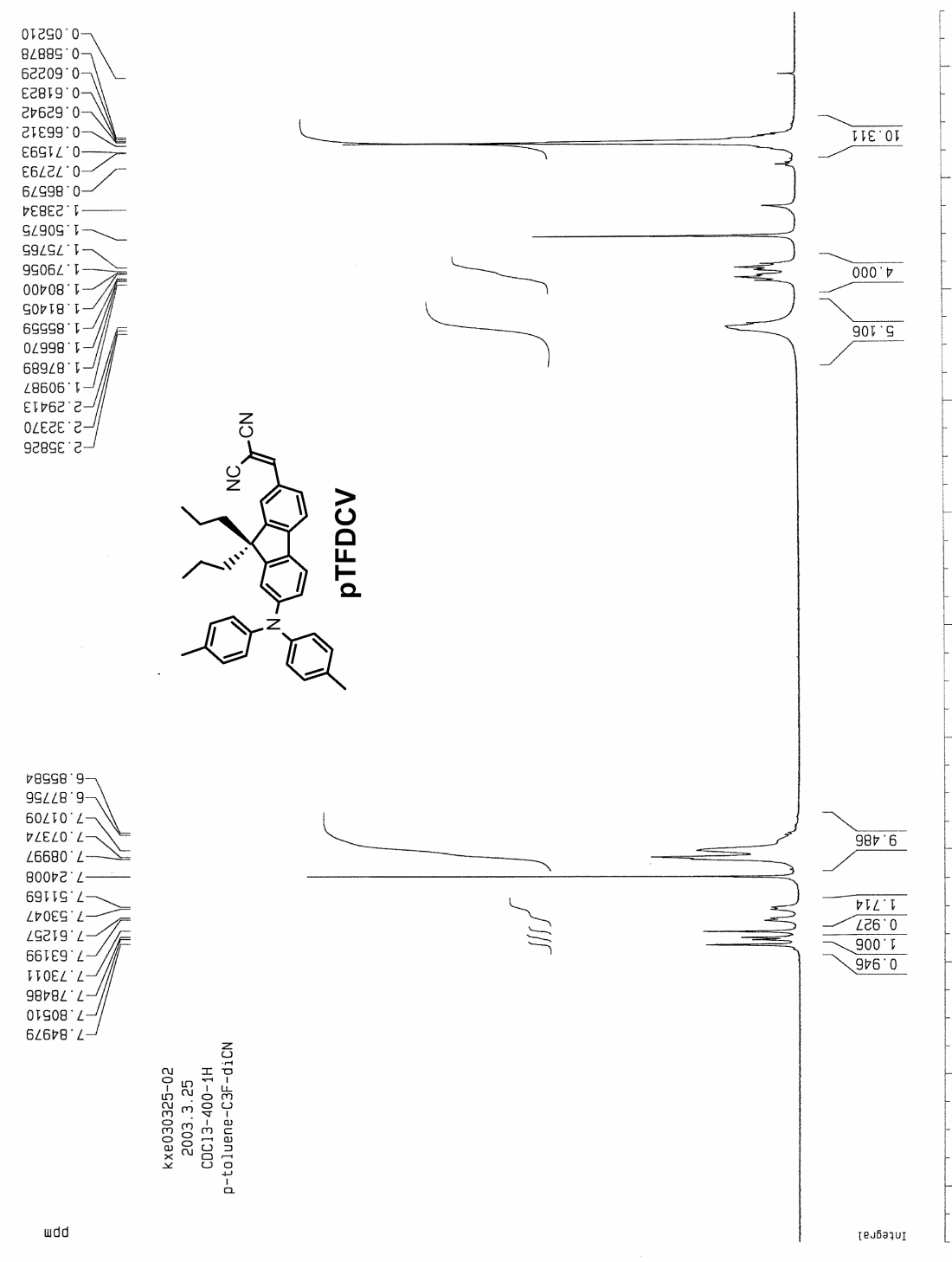

Figure S11. ^{1}H-NMR spectrum of 2-[7-(di-*p*-tolylamino)-9,9'-dipropyl-9H-fluoren-2-ylmethylene]malononitrile (pTFDCV)

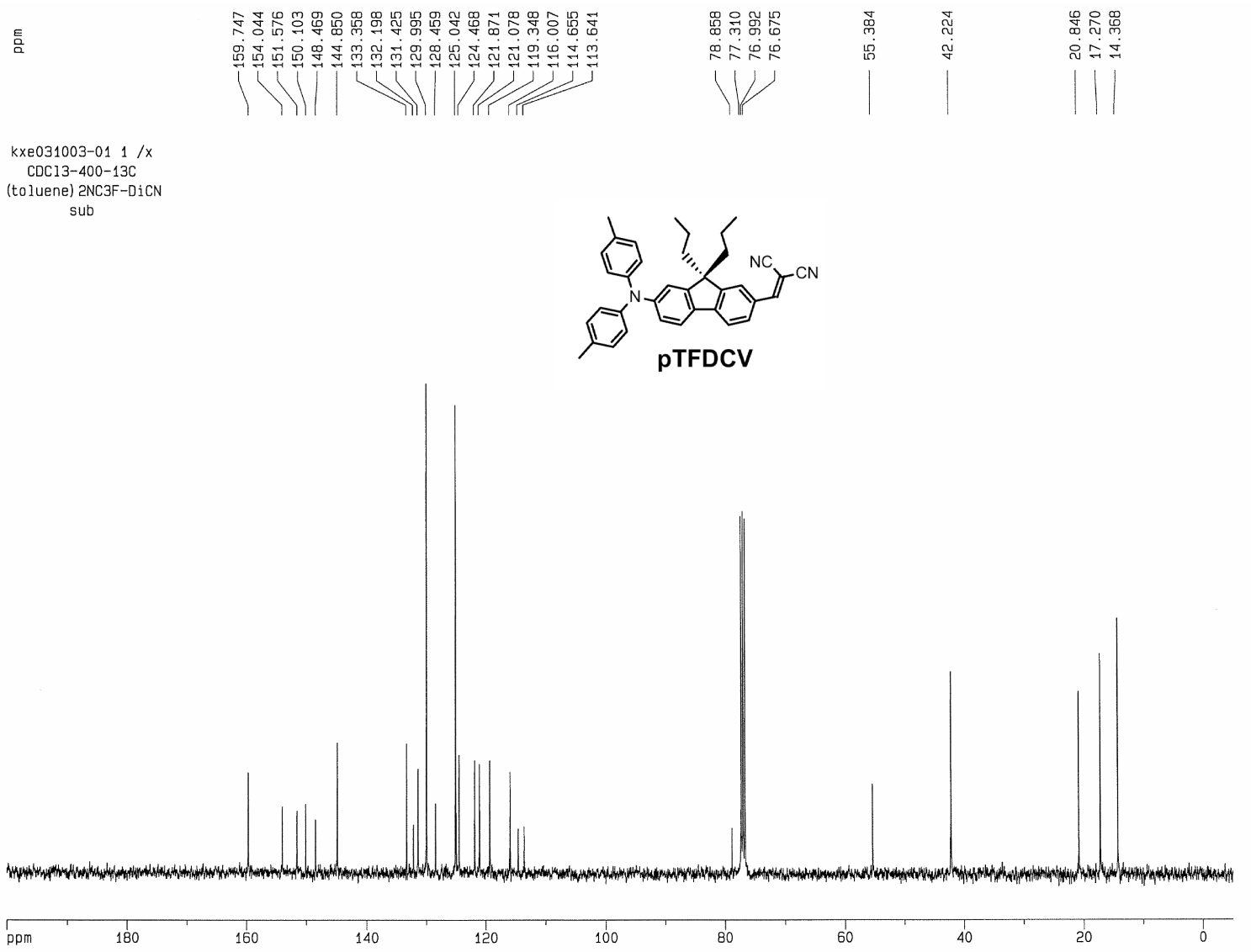

Figure S12. ^{13}C-NMR spectrum of 2-[7-(di-*p*-tolylamino)-9,9'-dipropyl-9H-fluoren-2-ylmethylene]malononitrile (pTFDCV)

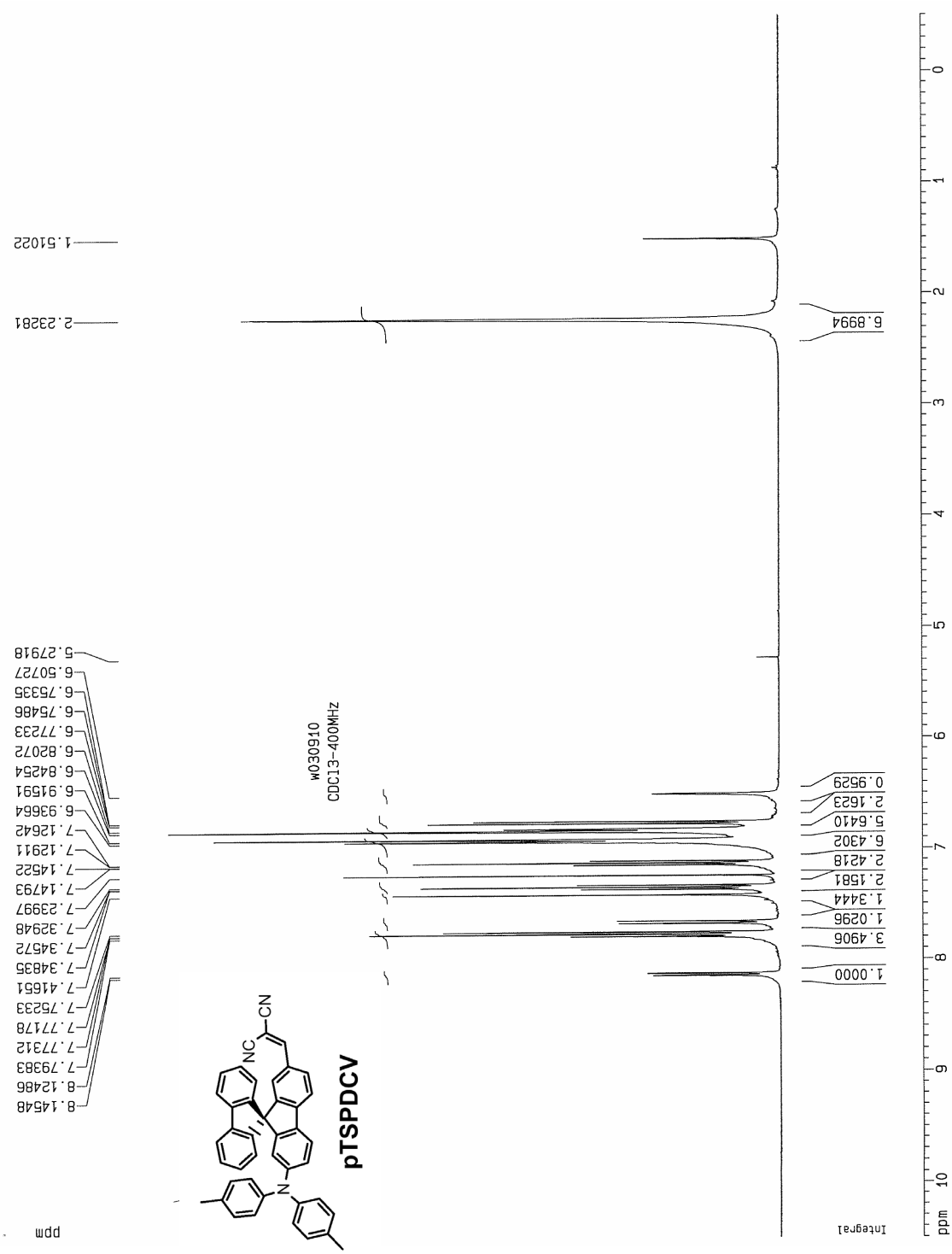

Figure S13. ^{1}H-NMR spectrum of 2-[7-(di-*p*-tolylamino)-9,9'-spirobifluorene-2-ylmethylene]malononitrile (pTSPDCV)

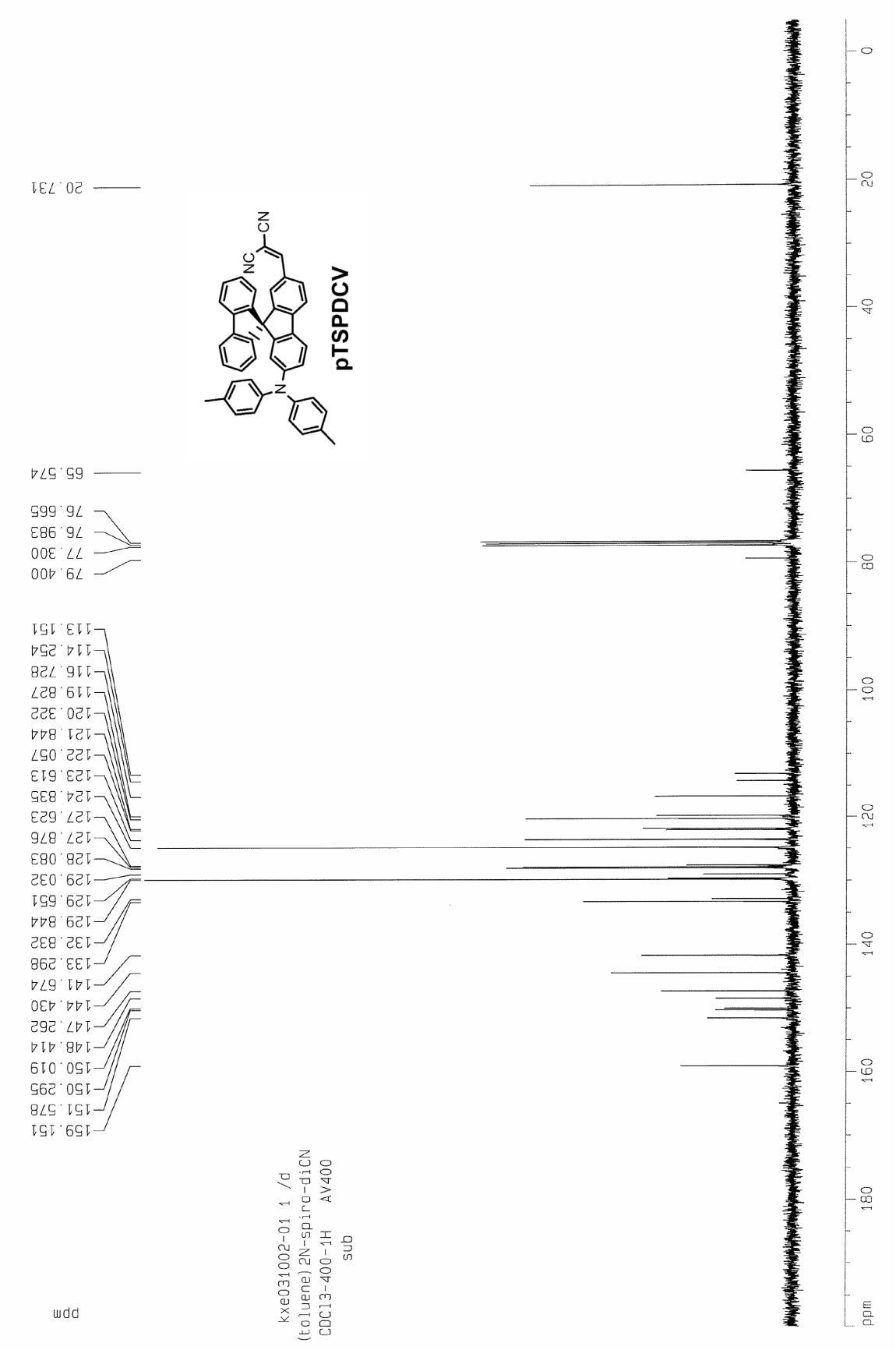

Figure S14. ^{13}C-NMR spectrum of 2-[7-(di-*p*-tolylamino)-9,9'-spirobifluorene-2-ylmethylene]malononitrile (pTSPDCV)

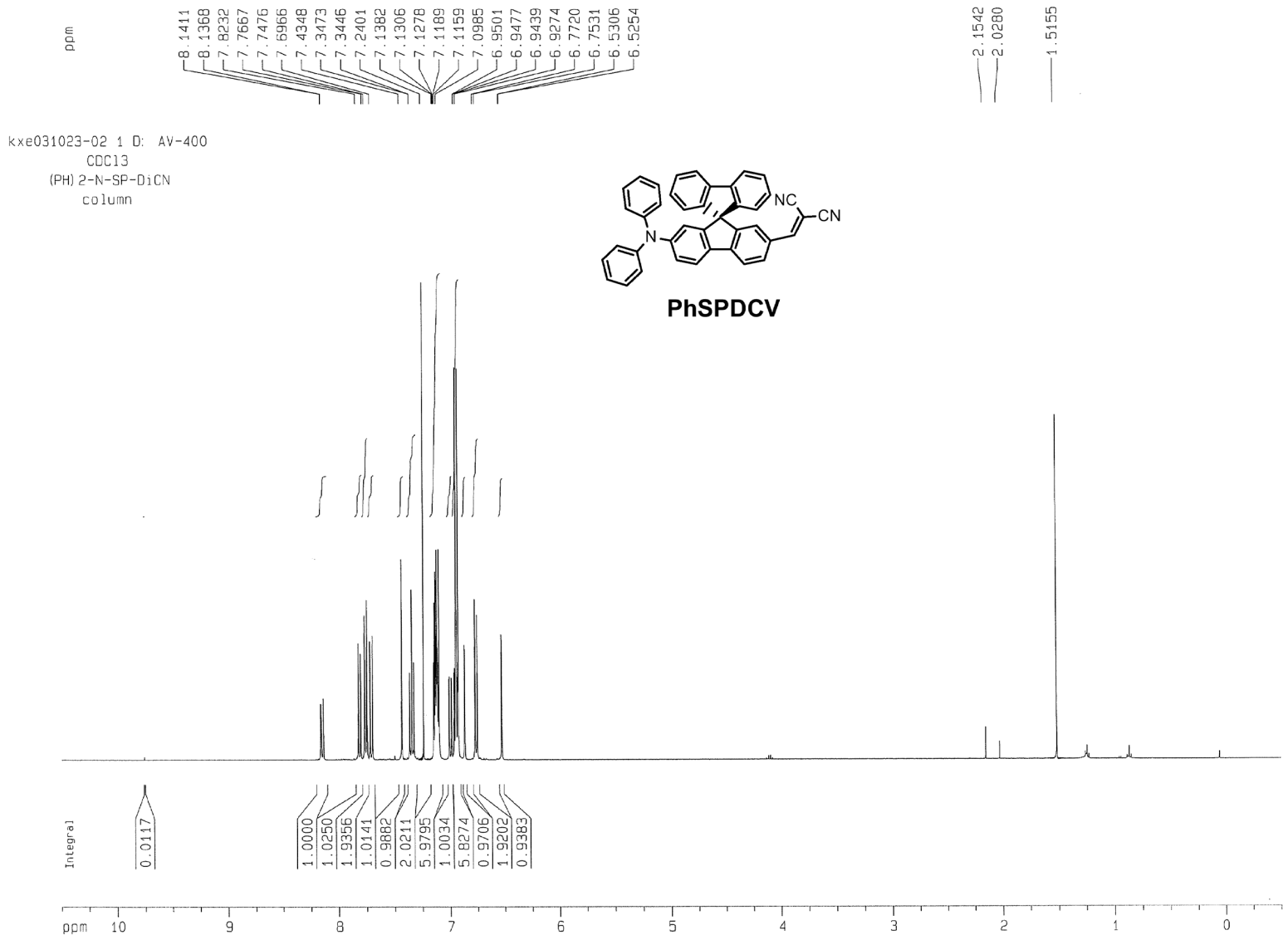

Figure S15. ^{1}H-NMR spectrum of 2-[7-(diphenylamino)-9,9'-spirobifluorene-2-ylmethylene]malononitrile (PhSPDCV)

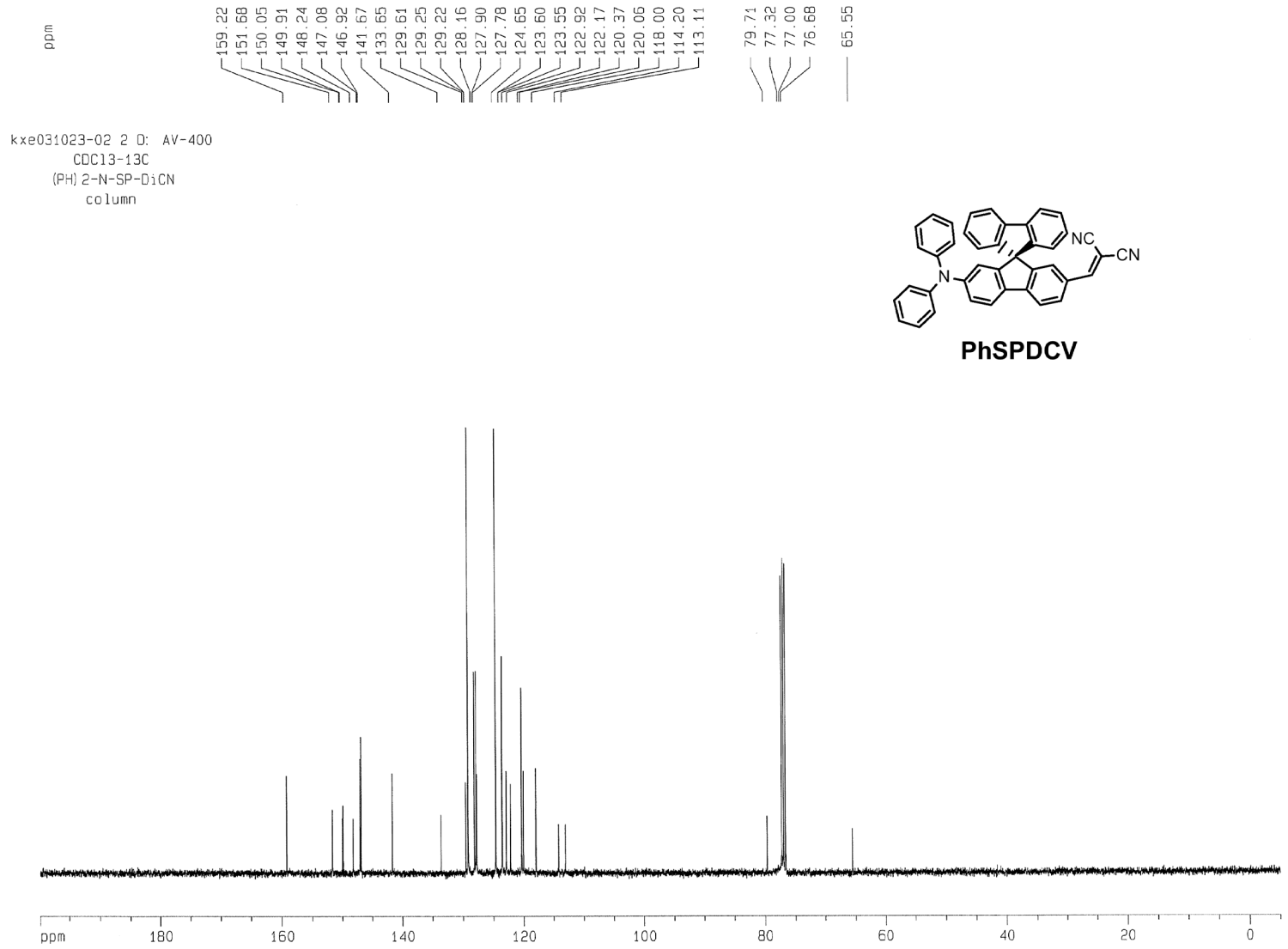

Figure S16. ^{13}C-NMR spectrum of 2-[7-(diphenylamino)-9,9'-spirobifluorene-2-ylmethylene]malononitrile (PhSPDCV)

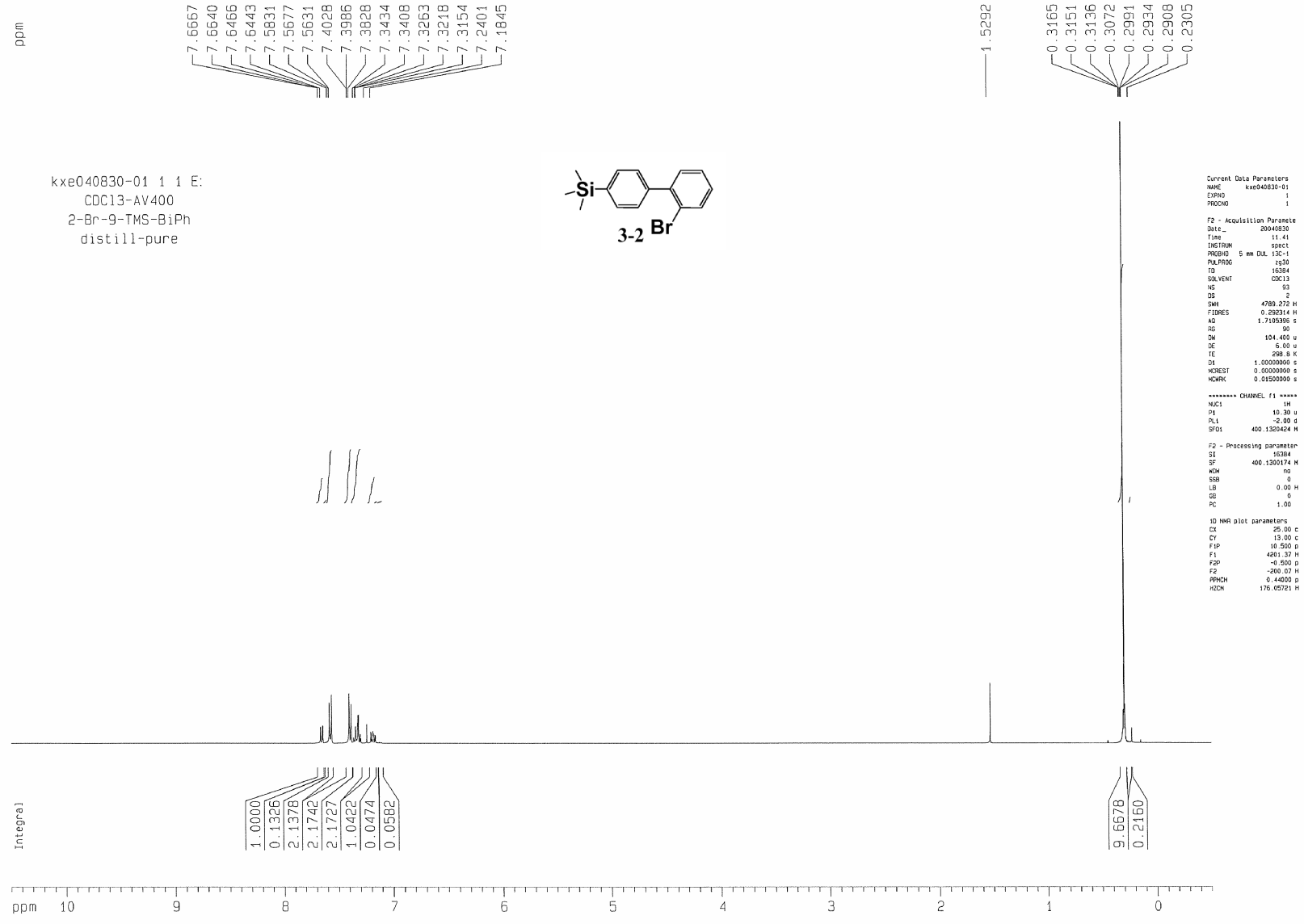

Figure S17. ^{1}H-NMR spectrum of 2'-bromobiphenyl-4-yl)trimethylsilane (3-2)

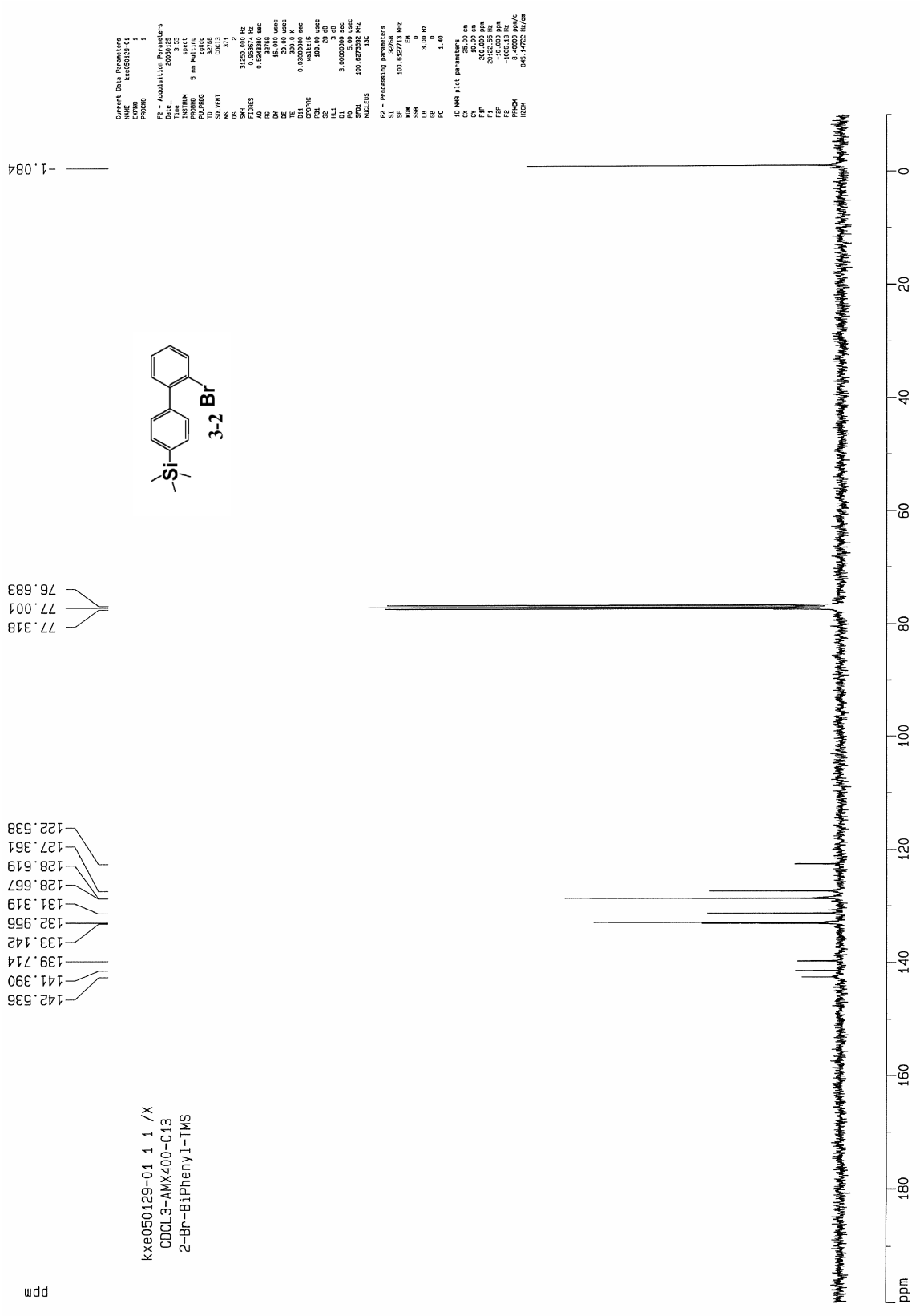

Figure S18. ^{13}C-NMR spectrum of 2'-bromobiphenyl-4-yl)trimethylsilane (3-2)

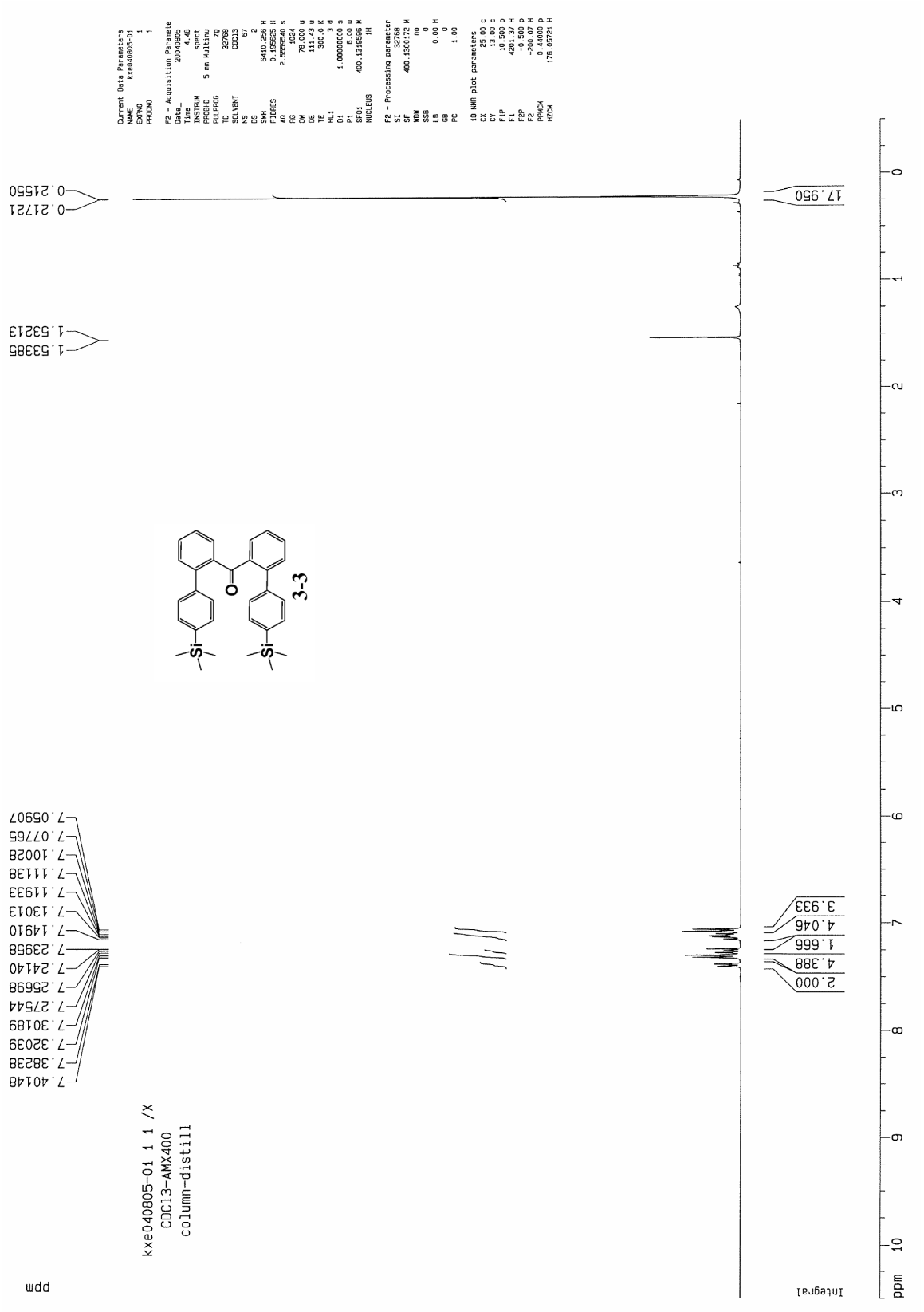

Figure S19. ^{1}H-NMR spectrum of bis(4'-trimethylsilanylbiphenyl-2-yl)methanone (3-3)

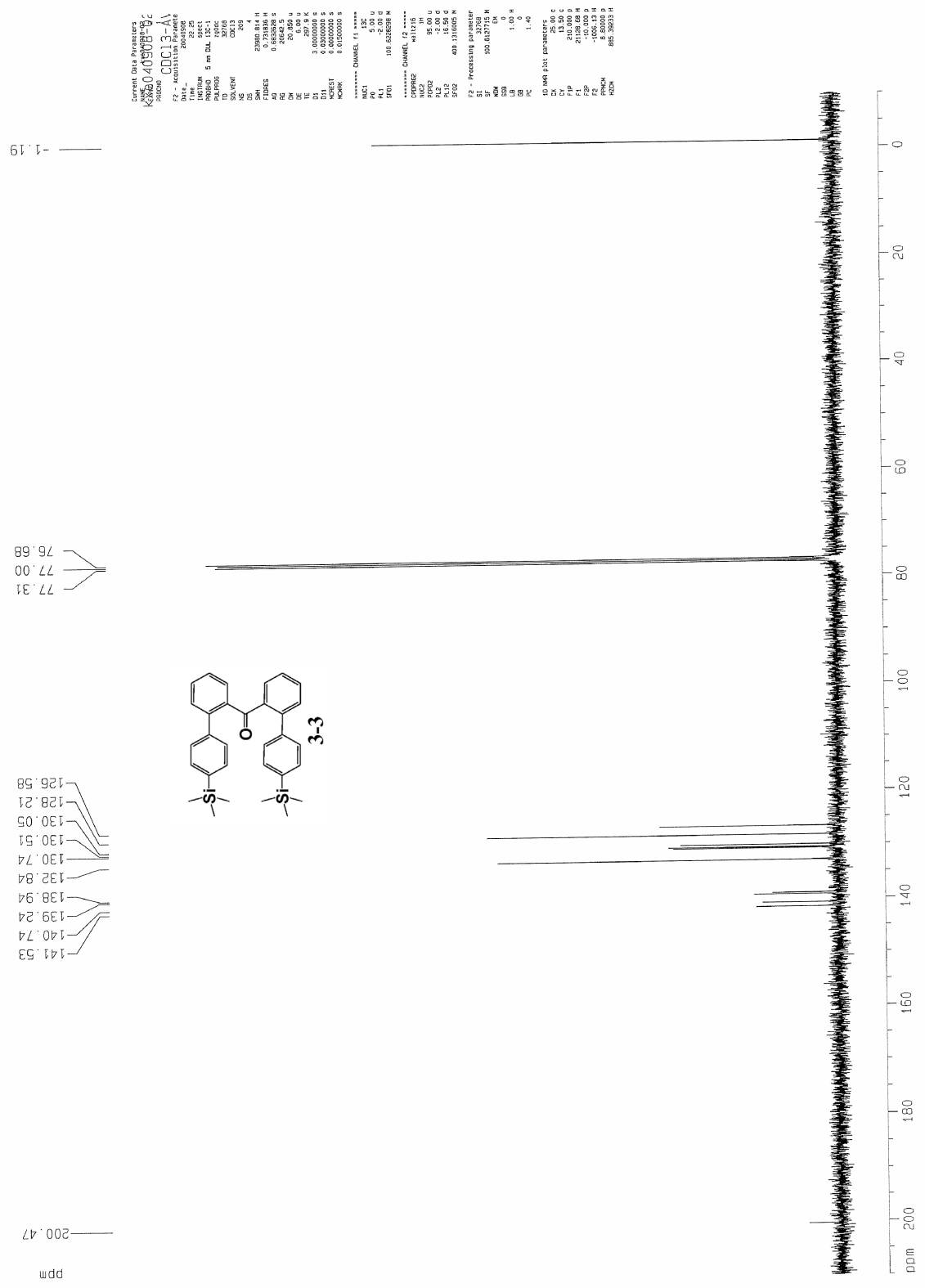

Figure S20. ^{13}C-NMR spectrum of bis(4'-trimethylsilanylbiphenyl-2-yl)methanone (3-3)

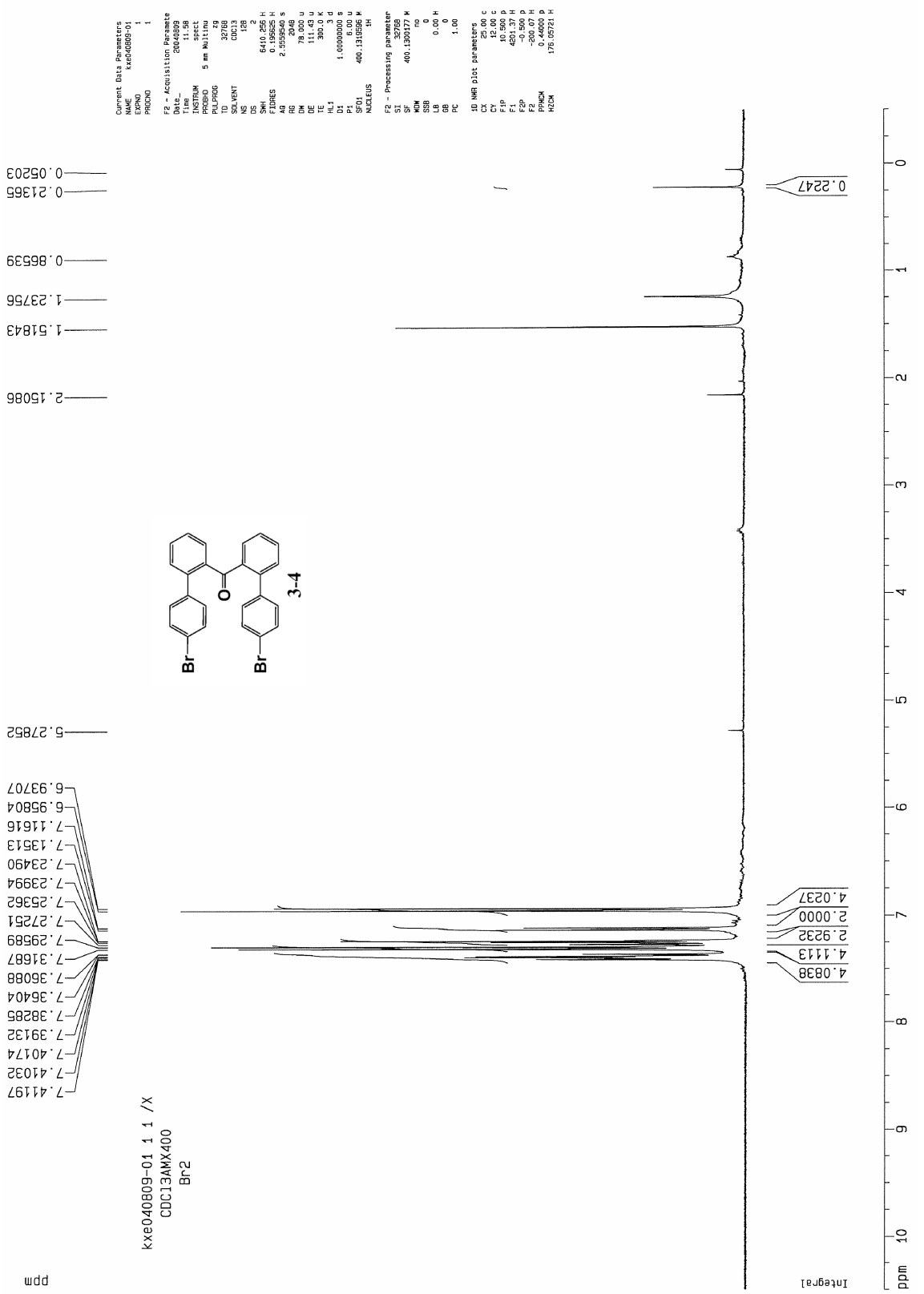

Figure S21. ^{1}H-NMR spectrum of bis(4'-bromobiphenyl-2-yl)methanone (3-4)

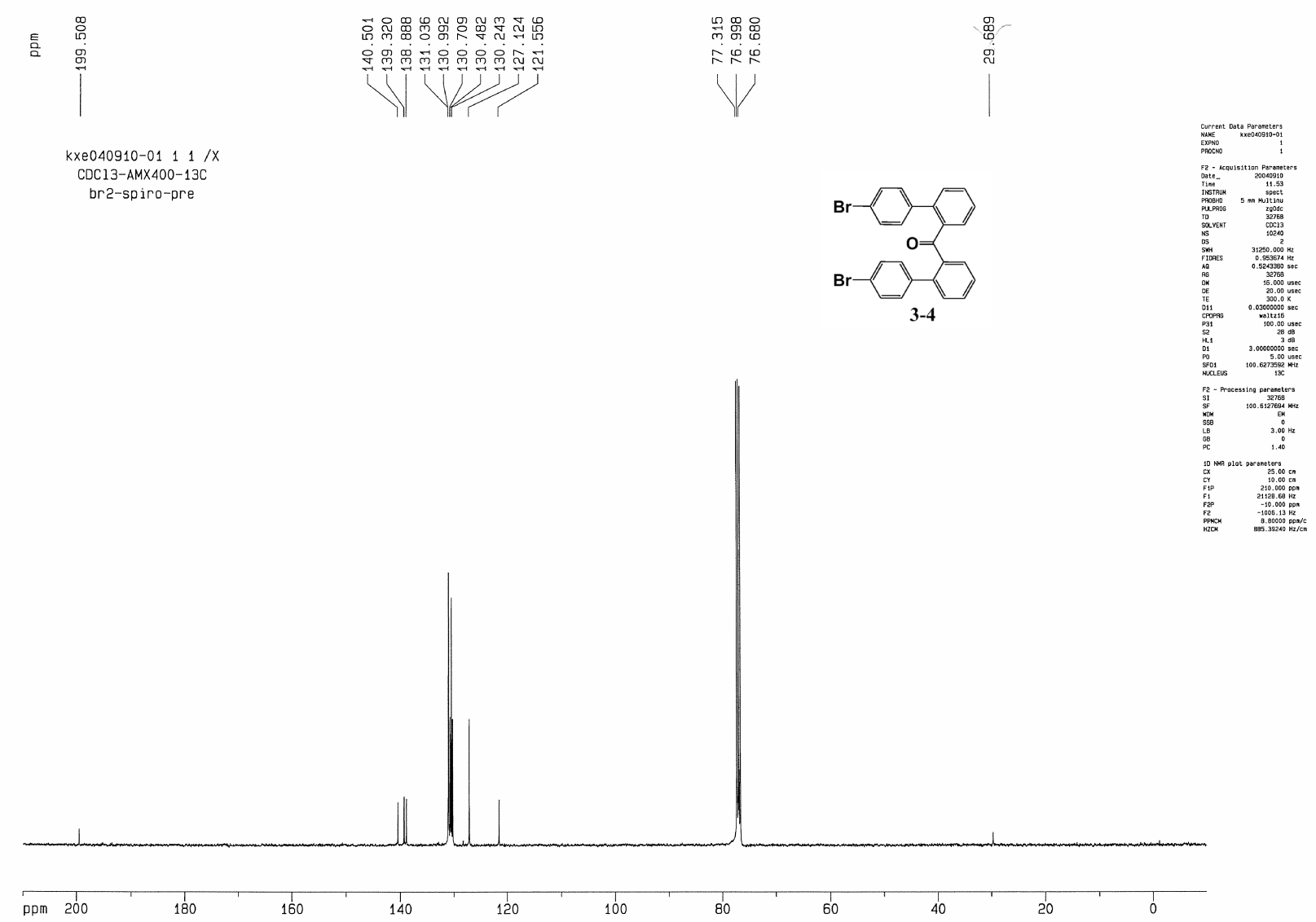

Figure S22. ^{13}C-NMR spectrum of bis(4'-bromobiphenyl-2-yl)methanone (3-4)

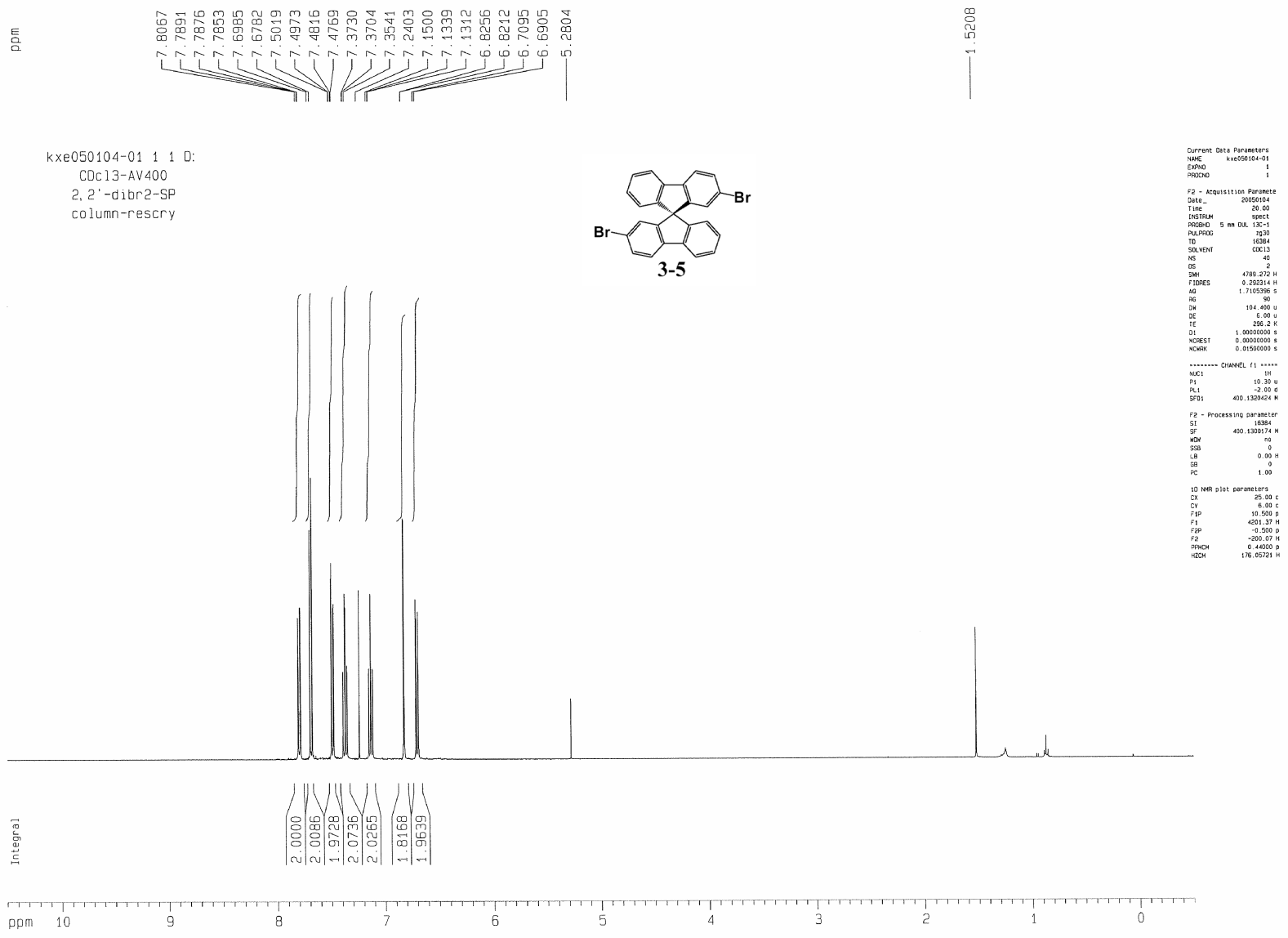

Figure S23. ^{1}H-NMR spectrum of 2,2'-dibromo-9,9'-spirobifluorene (3-5)

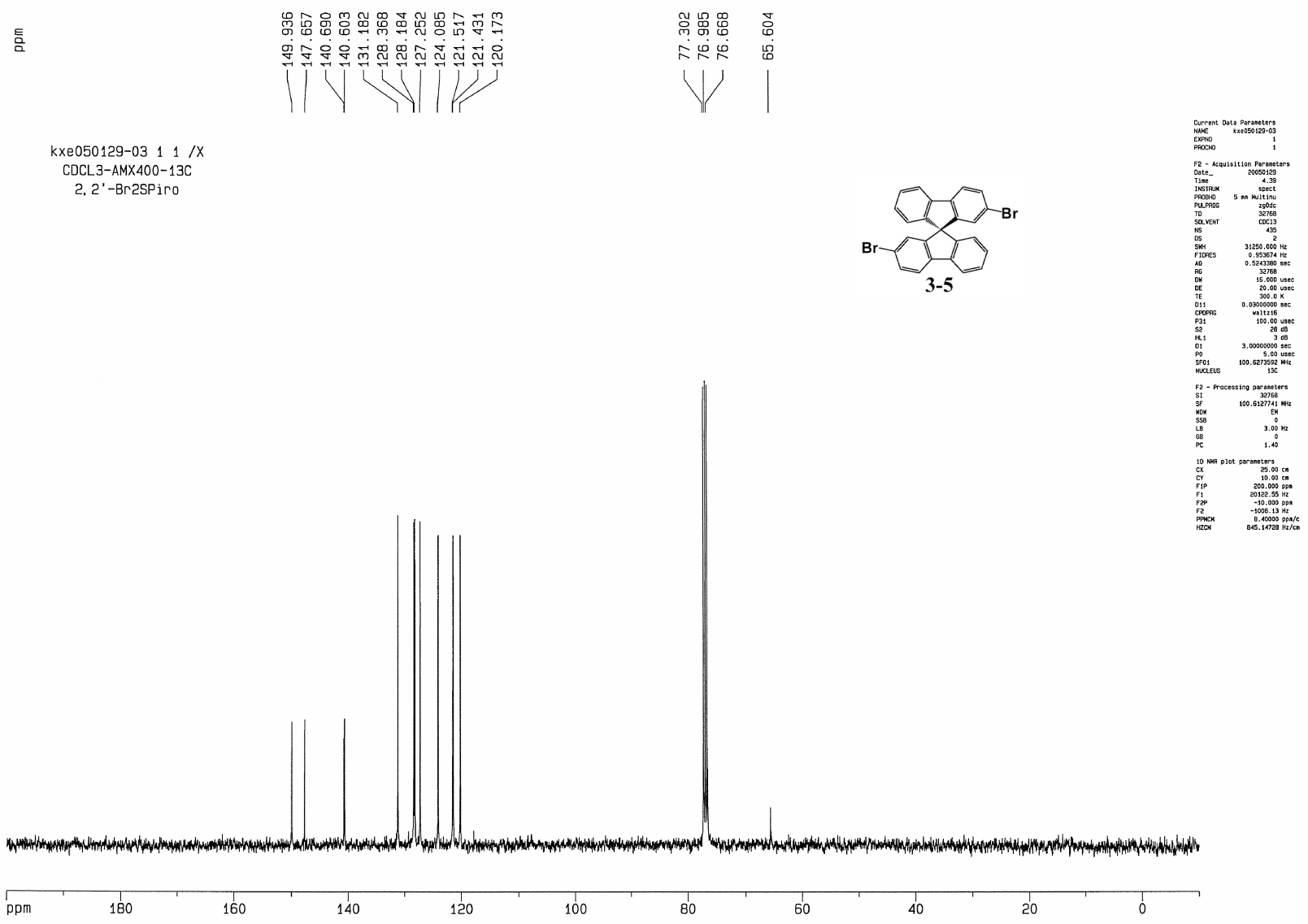

Figure S24. ^{13}C-NMR spectrum of 2,2'-dibromo-9,9'-spirobifluorene (3-5)

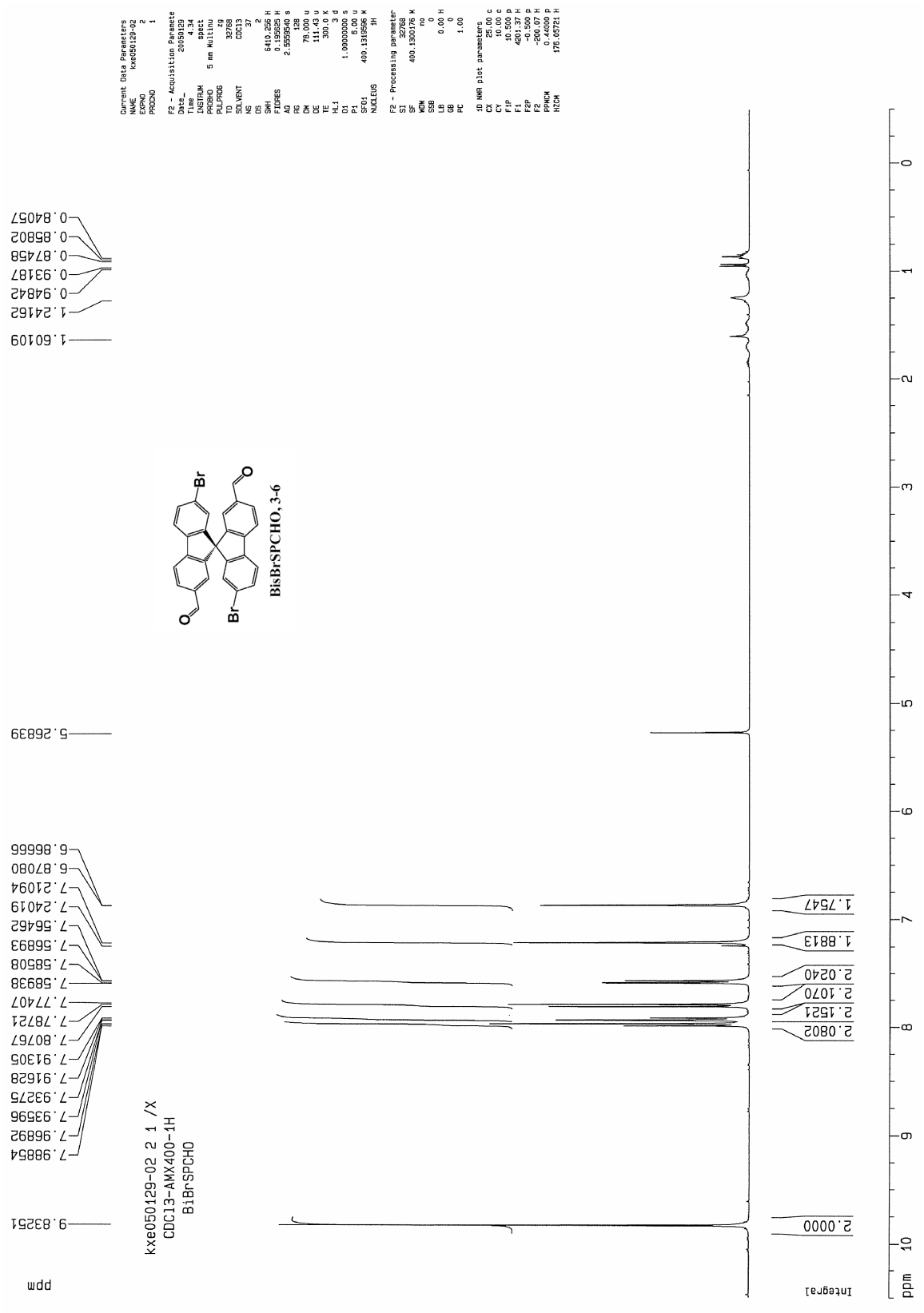

Figure S25. ^{1}H-NMR spectrum of 2,2’-dibromo-9,9’-spirobifluorene-7,7’-dicarboxaldehyde (BisBrSPCHO, 3-6)

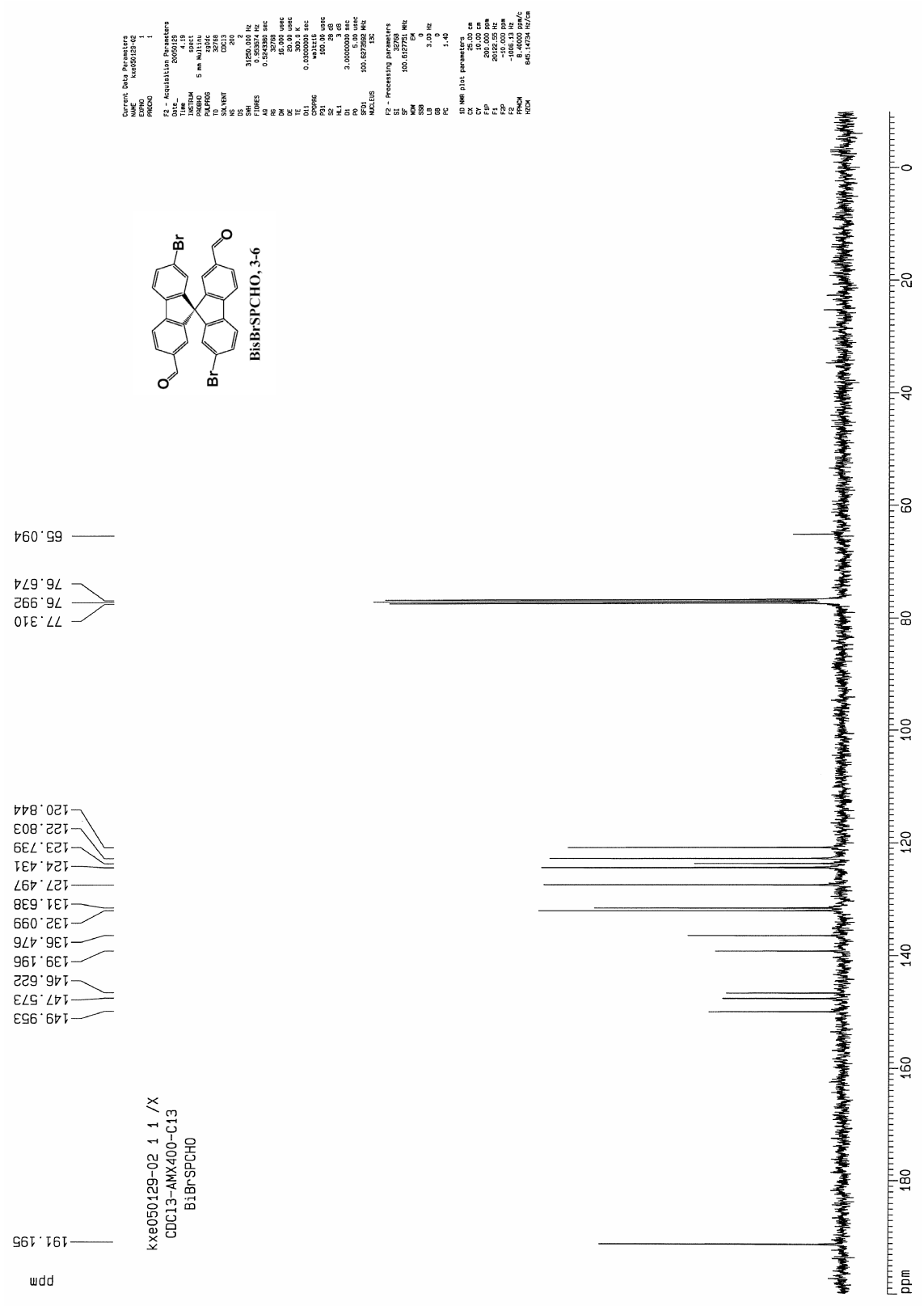

Figure S26. ^{13}C-NMR spectrum of 2,2’-dibromo-9,9’-spirobifluorene-7,7’-dicarboxaldehyde (BisBrSPCHO, 3-6)

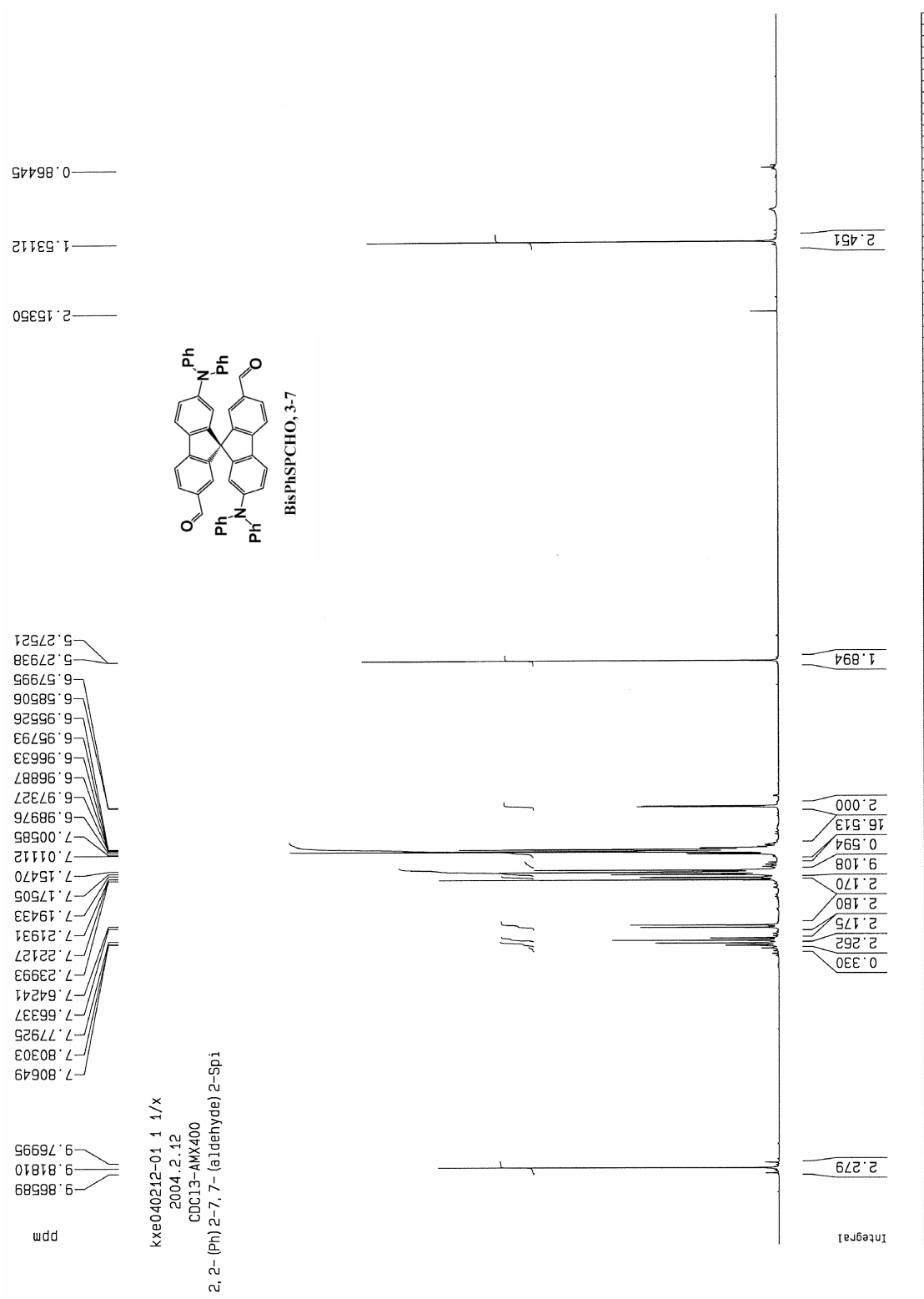

Figure S27. ^{1}H-NMR spectrum of 2,2'-bis(diphenylamino)-9,9'-spirobifluorene-7,7'-dicarboxaldehyde (BisPhSPCHO, 3-7)

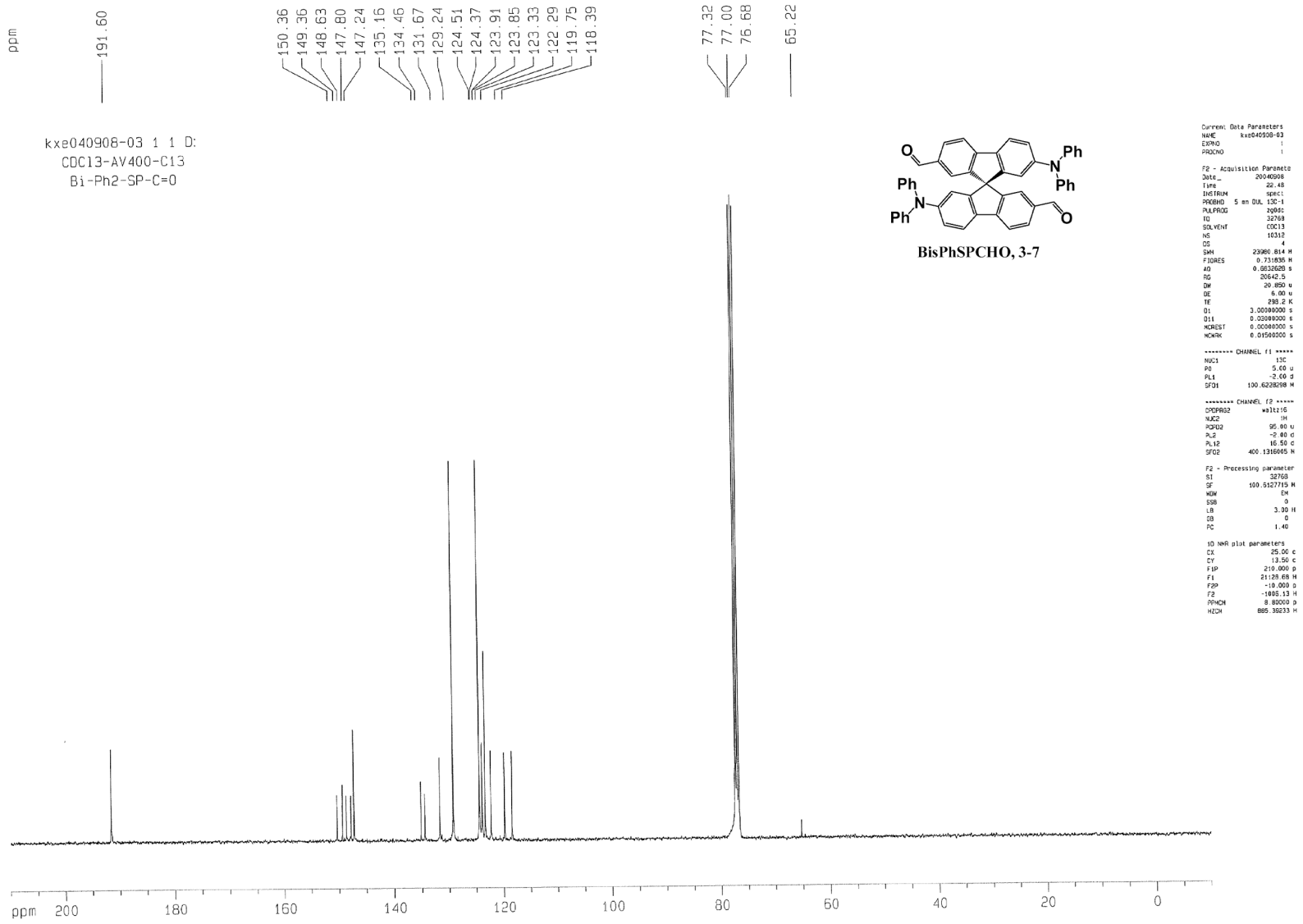

Figure S28. ^{13}C-NMR spectrum of 2,2'-bis(diphenylamino)-9,9'-spirobifluorene-7,7'-dicarboxaldehyde (BisPhSPCHO, 3-7)

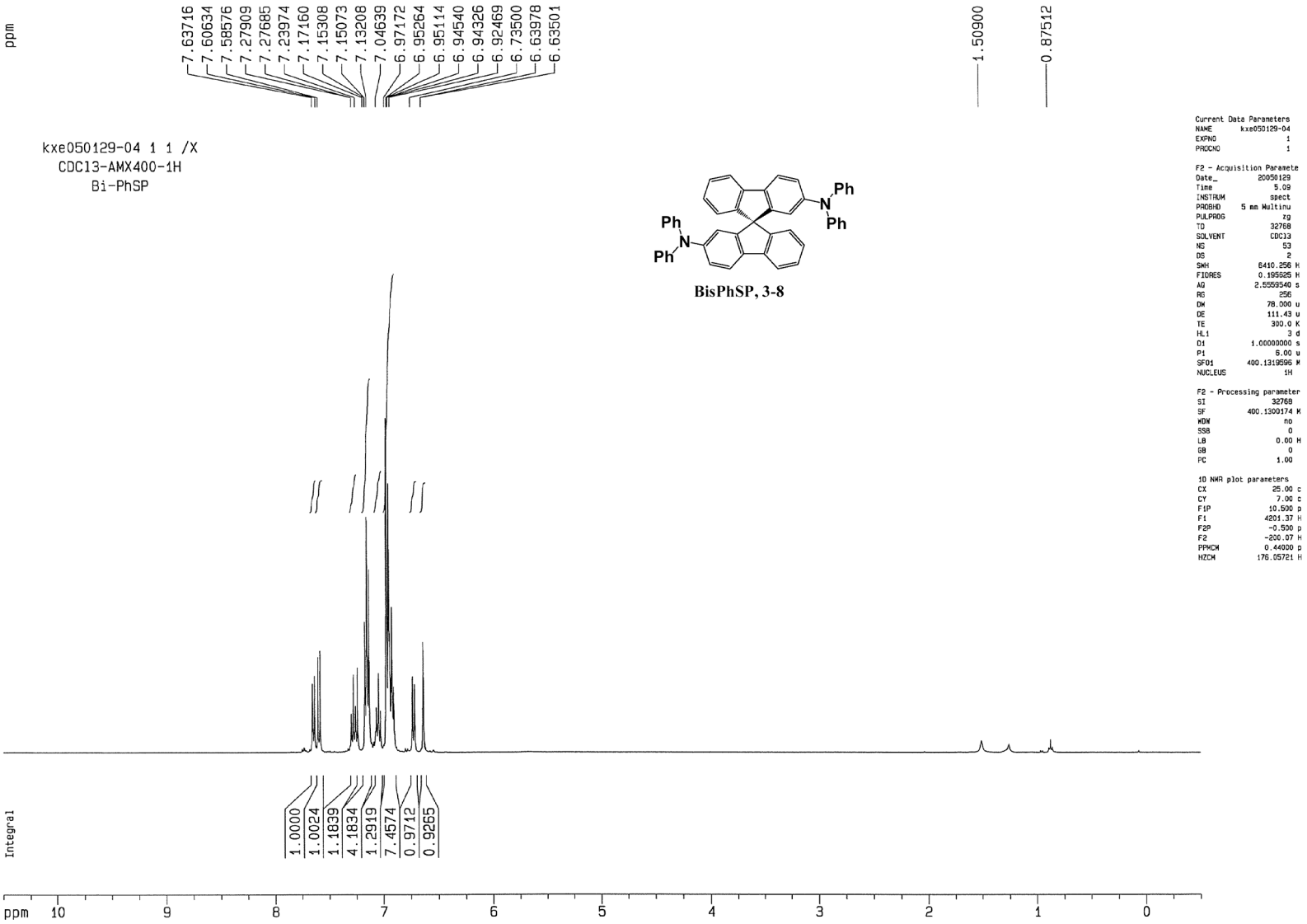

Figure S29. ^{1}H-NMR spectrum of 2,2'-bis(diphenylamino)-9,9'-spirobifluorene (BisPhSP, 3-8)

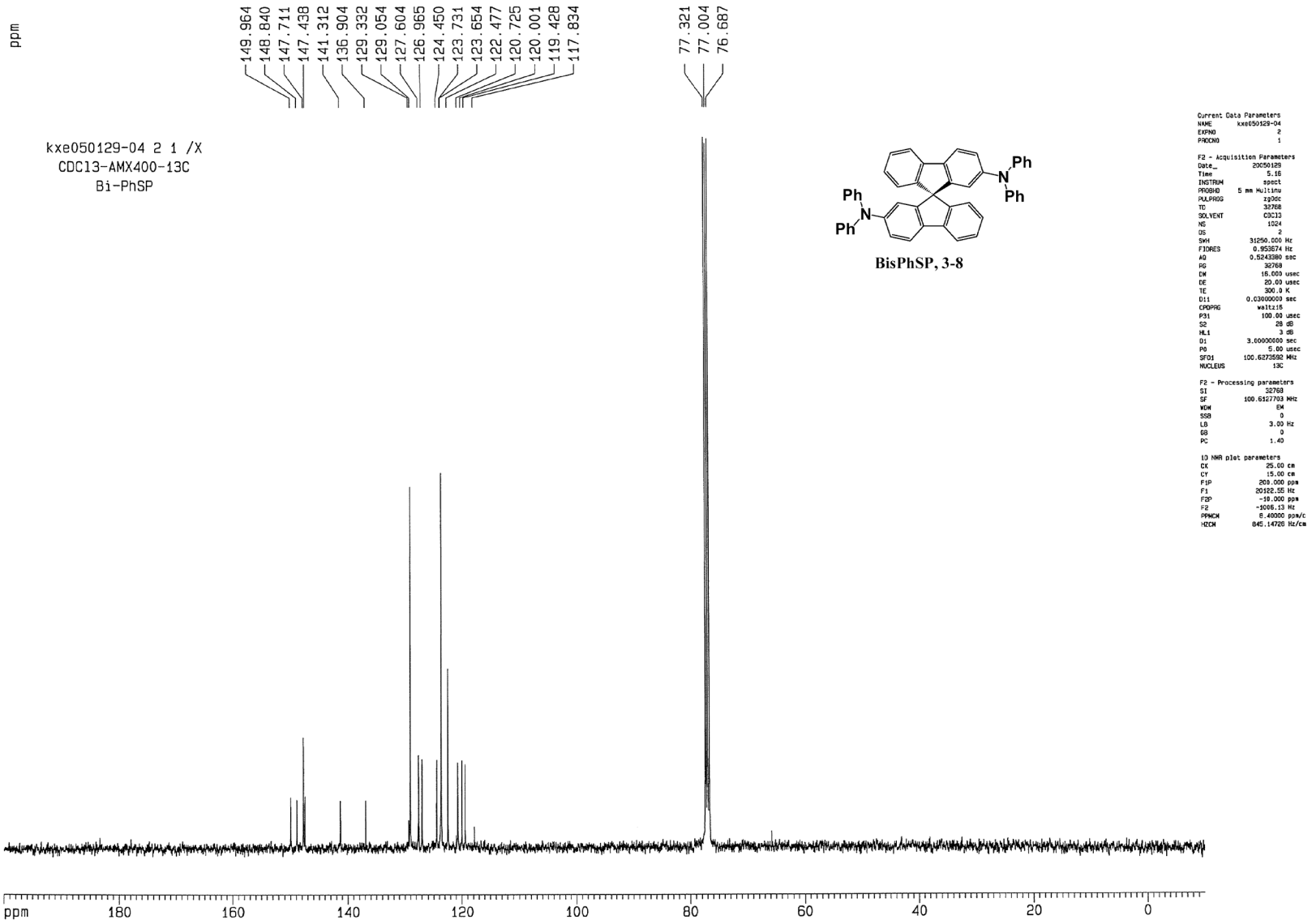

Figure S30. ^{13}C-NMR spectrum of 2,2'-bis(diphenylamino)-9,9'-spirobifluorene (BisPhSP, 3-8)

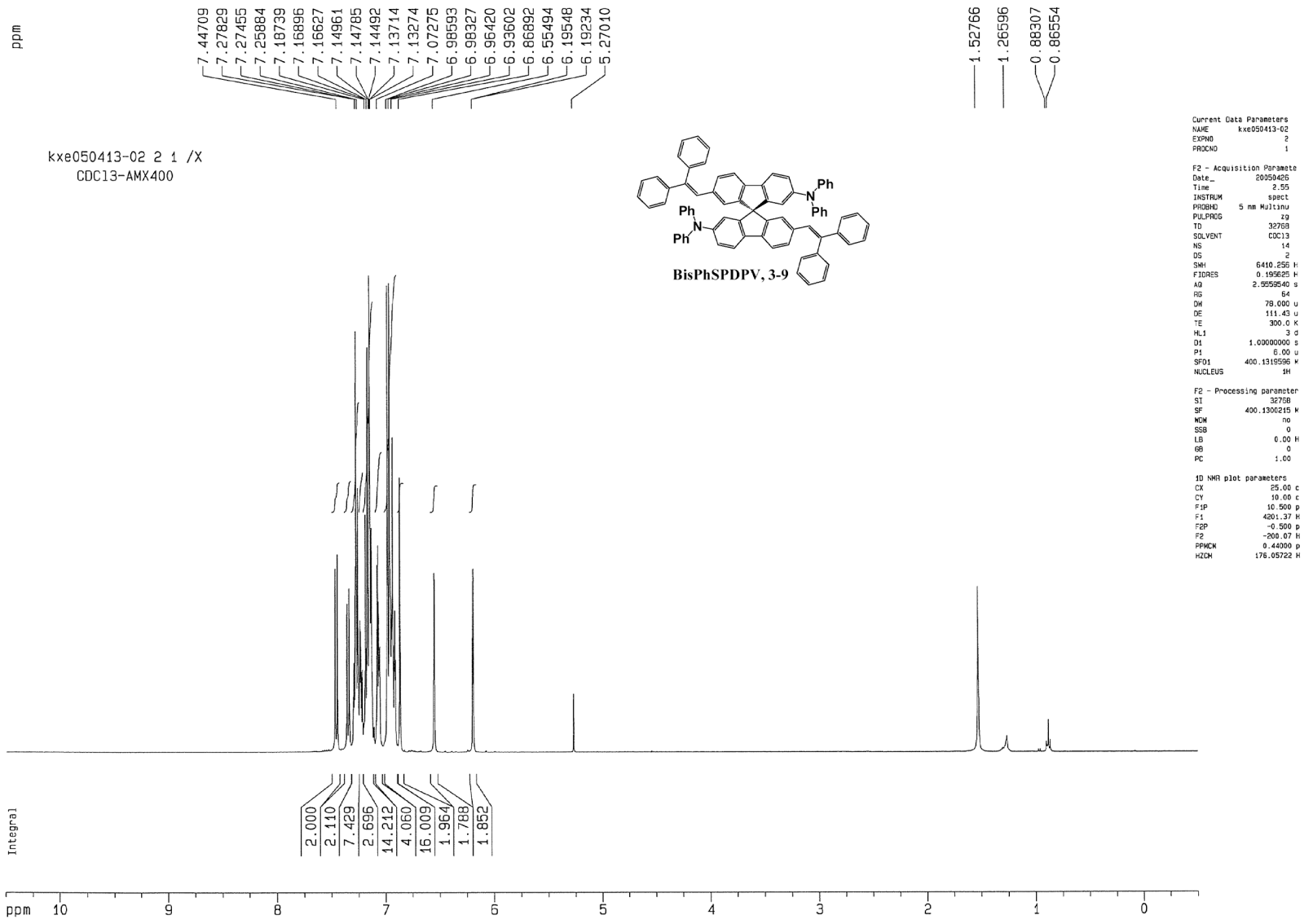

Figure S31. ^{1}H-NMR spectrum of 2,2'-bis(diphenylamino)-7,7'-bis(2,2-diphenylvinyl)-9,9'-spirobifluorene (BisPhSPDPV, 3-9)

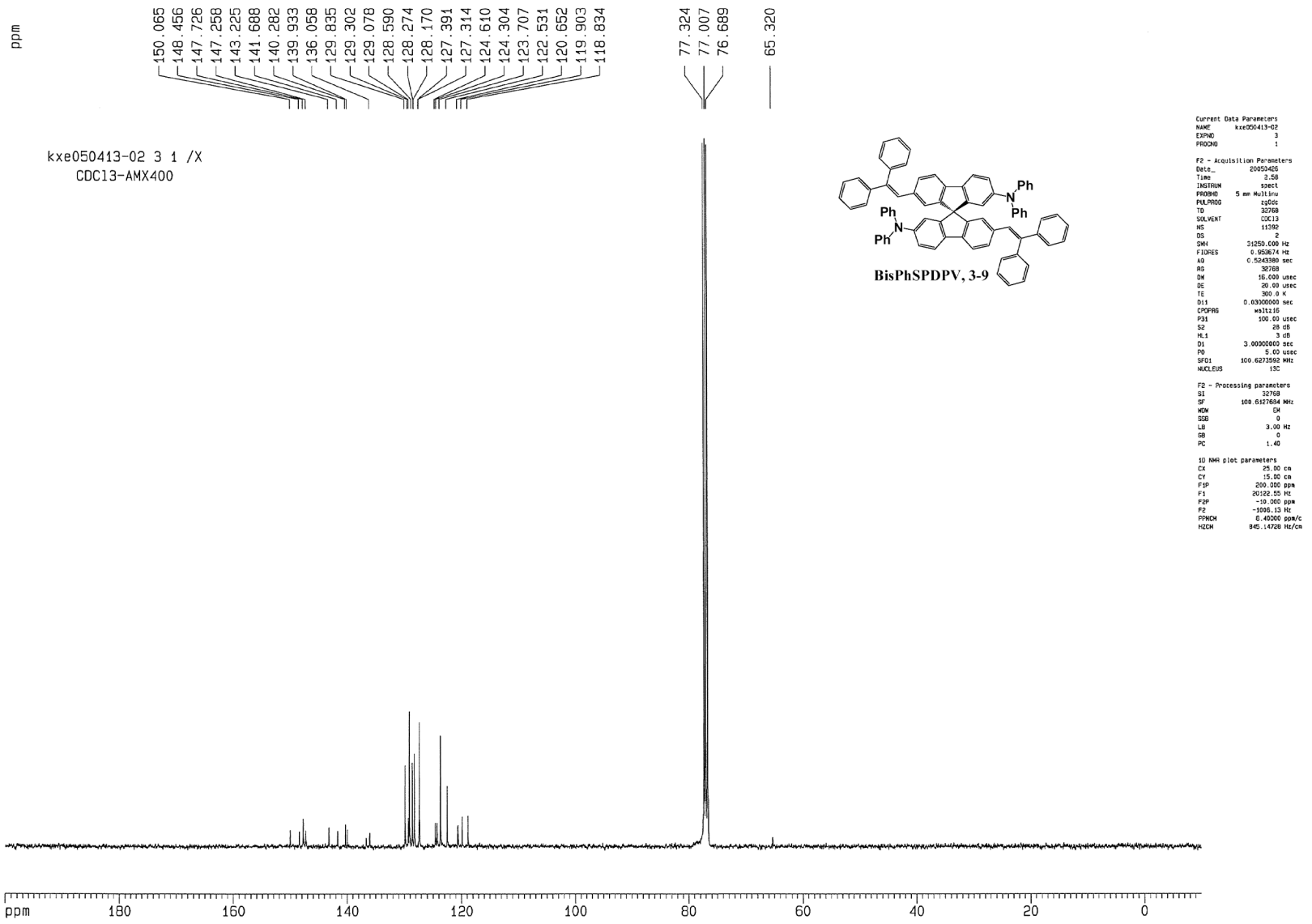

Figure S32. ^{13}C-NMR spectrum of 2,2'-bis(diphenylamino)-7,7'-bis(2,2-diphenylvinyl)-9,9'-spirobifluorene (BisPhSPDPV, 3-9)

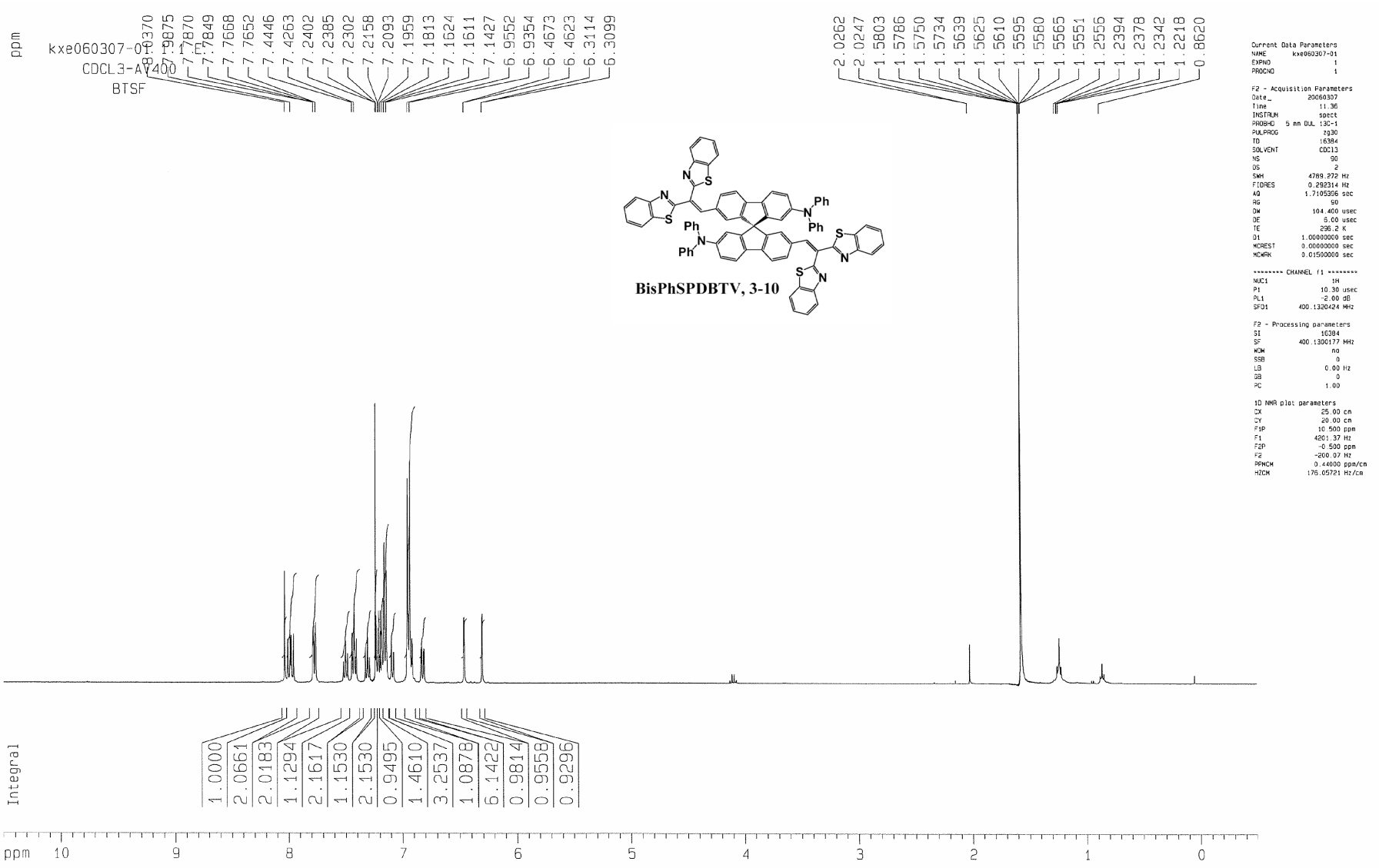

Figure S33. ^{1}H-NMR spectrum of 7,7’-bis(2,2-bis(benzothiazol-2-yl)vinyl)-2,2’-bis(diphenylamino)-9,9’-spirobifluorene (BisPhSPDBTV, 3-10)

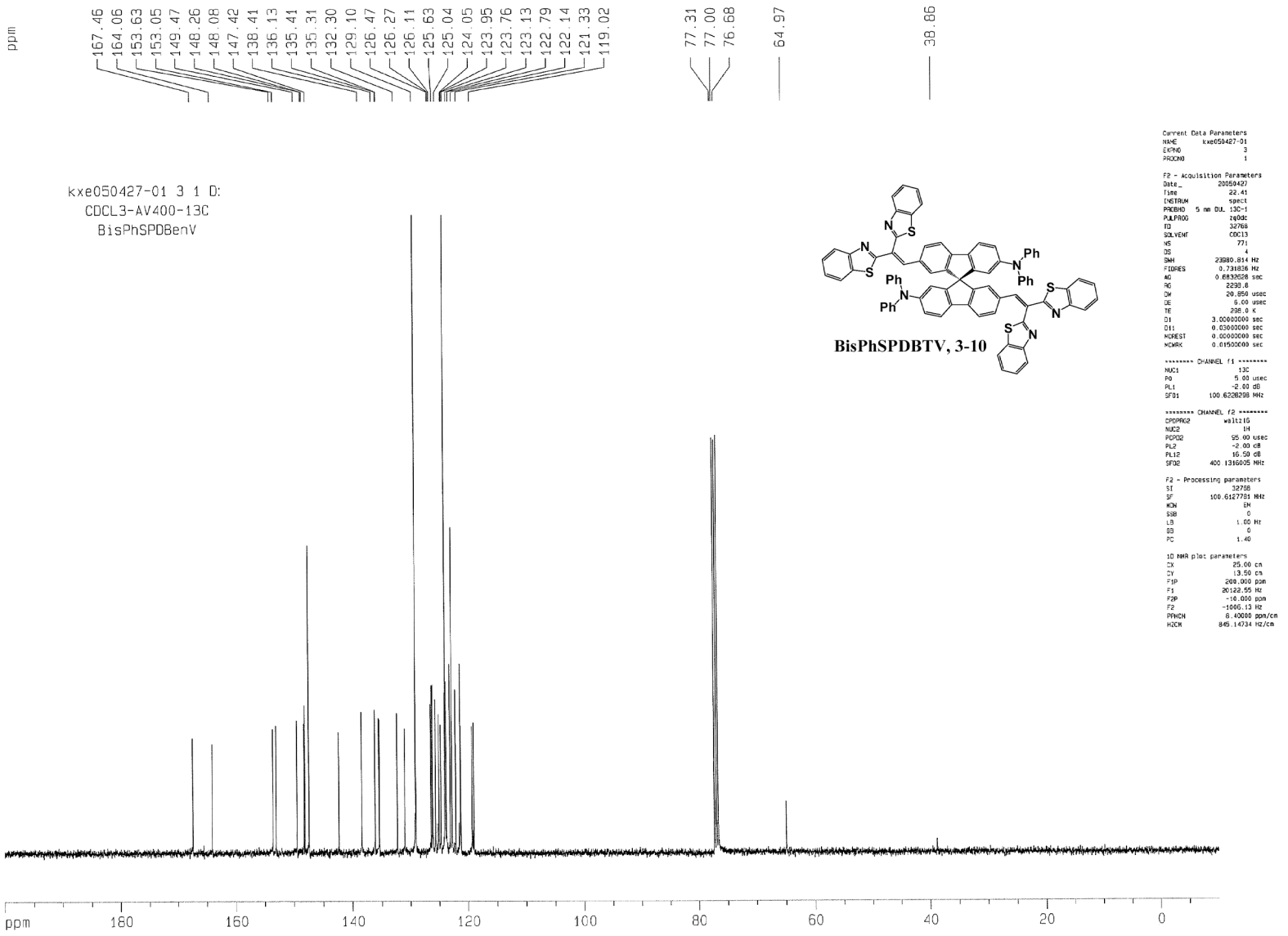

Figure S34. ^{13}C-NMR spectrum of 7,7'-bis(2,2-bis(benzothiazol-2-yl)vinyl)-2,2'-bis(diphenylamino)-9,9'-spirobifluorene (BisPhSPDBTV, 3-10)

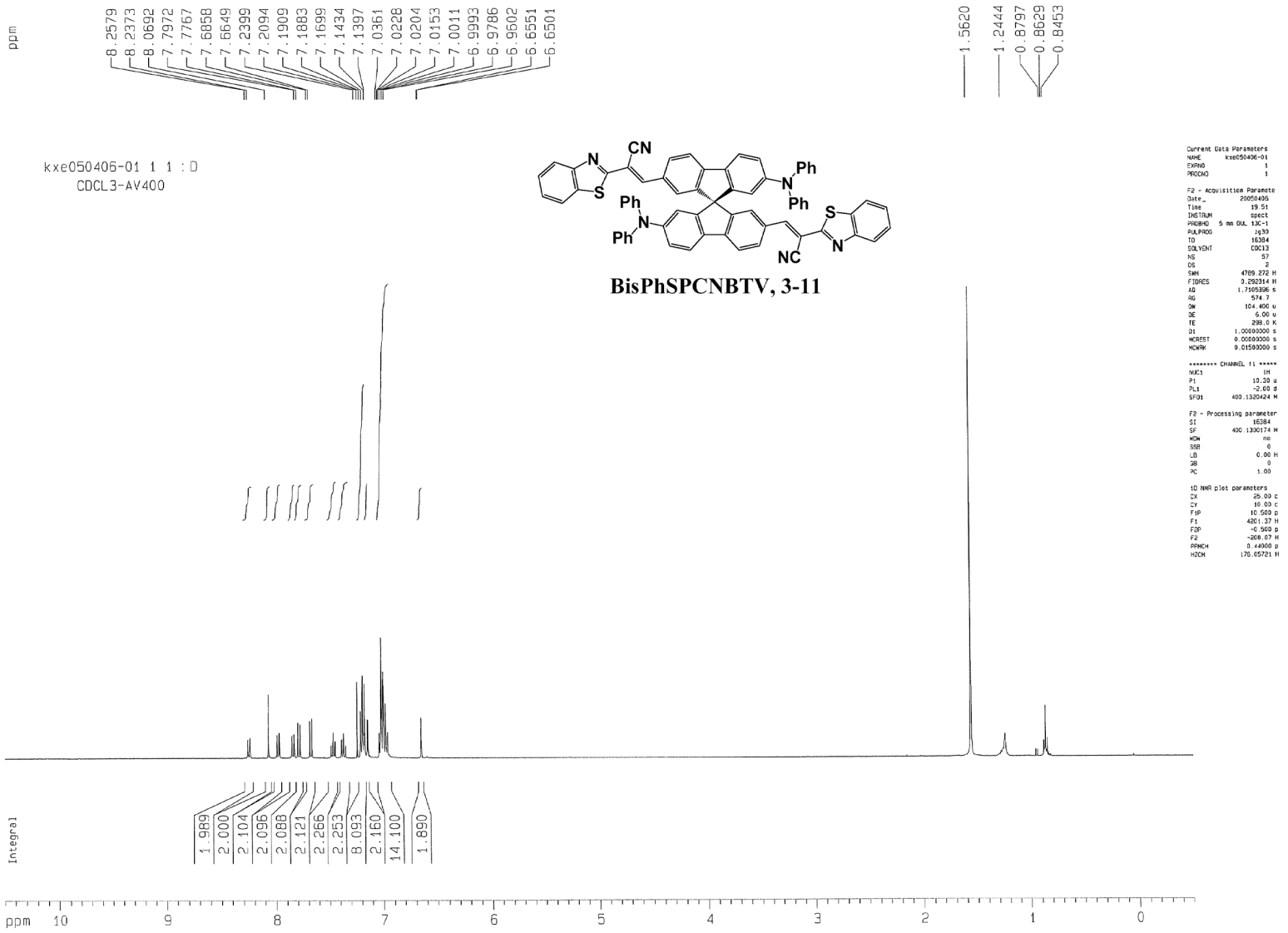

Figure S35. ^{1}H-NMR spectrum of 7,7'-Bis(2-benzothiazol-2-yl-2-cyanovinyl)-2,2'-bis(diphenylamino)-9,9'-spirobifluorene (BisPhSPCNBTV, 3-11)

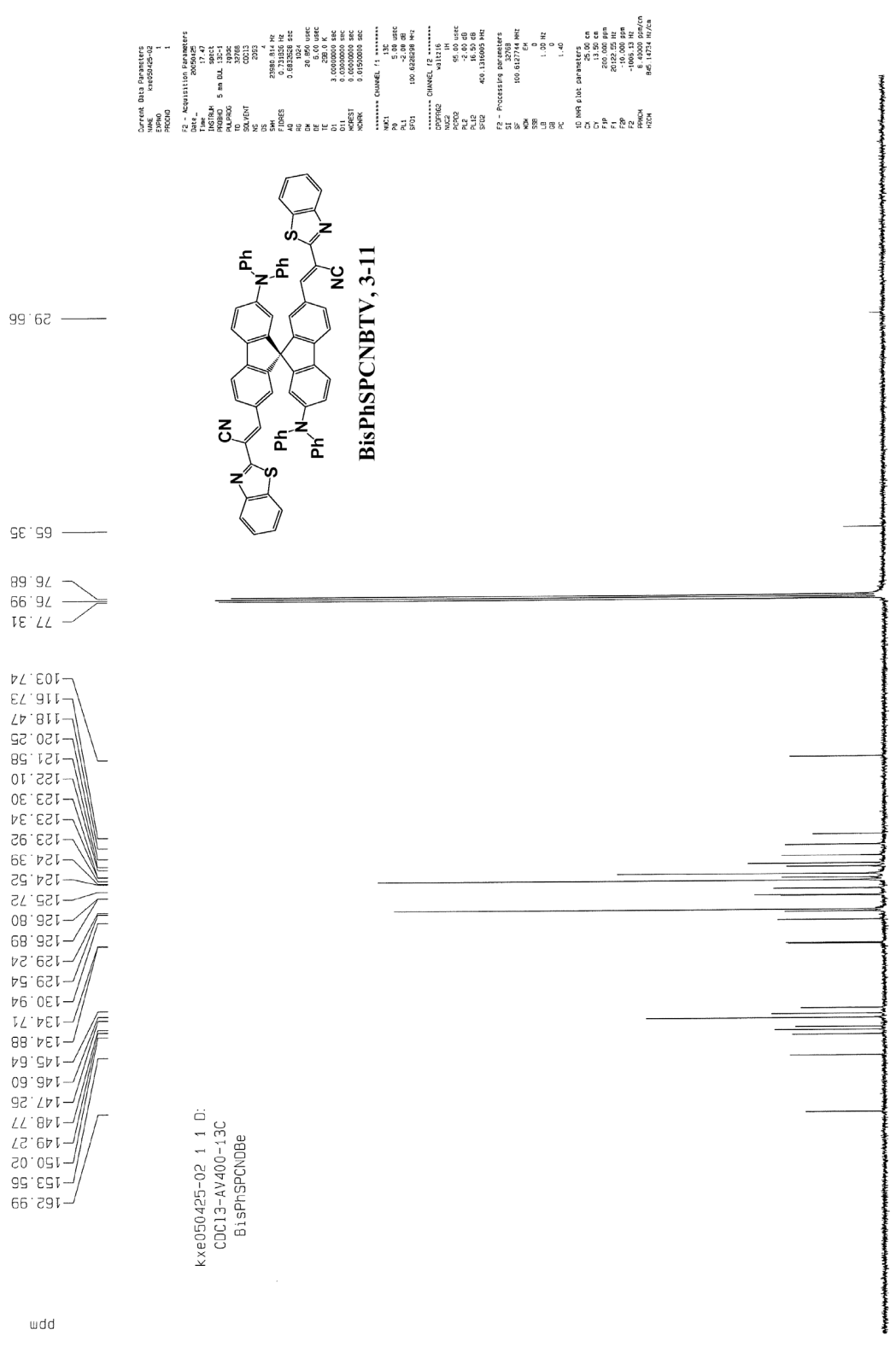

Figure S36. ^{13}C-NMR spectrum of 7,7'-Bis(2-benzothiazol-2-yl-2-cyanovinyl)-2,2'-bis(diphenylamino)-9,9'-spirobifluorene (BisPhSPCNBTV, 3-11)

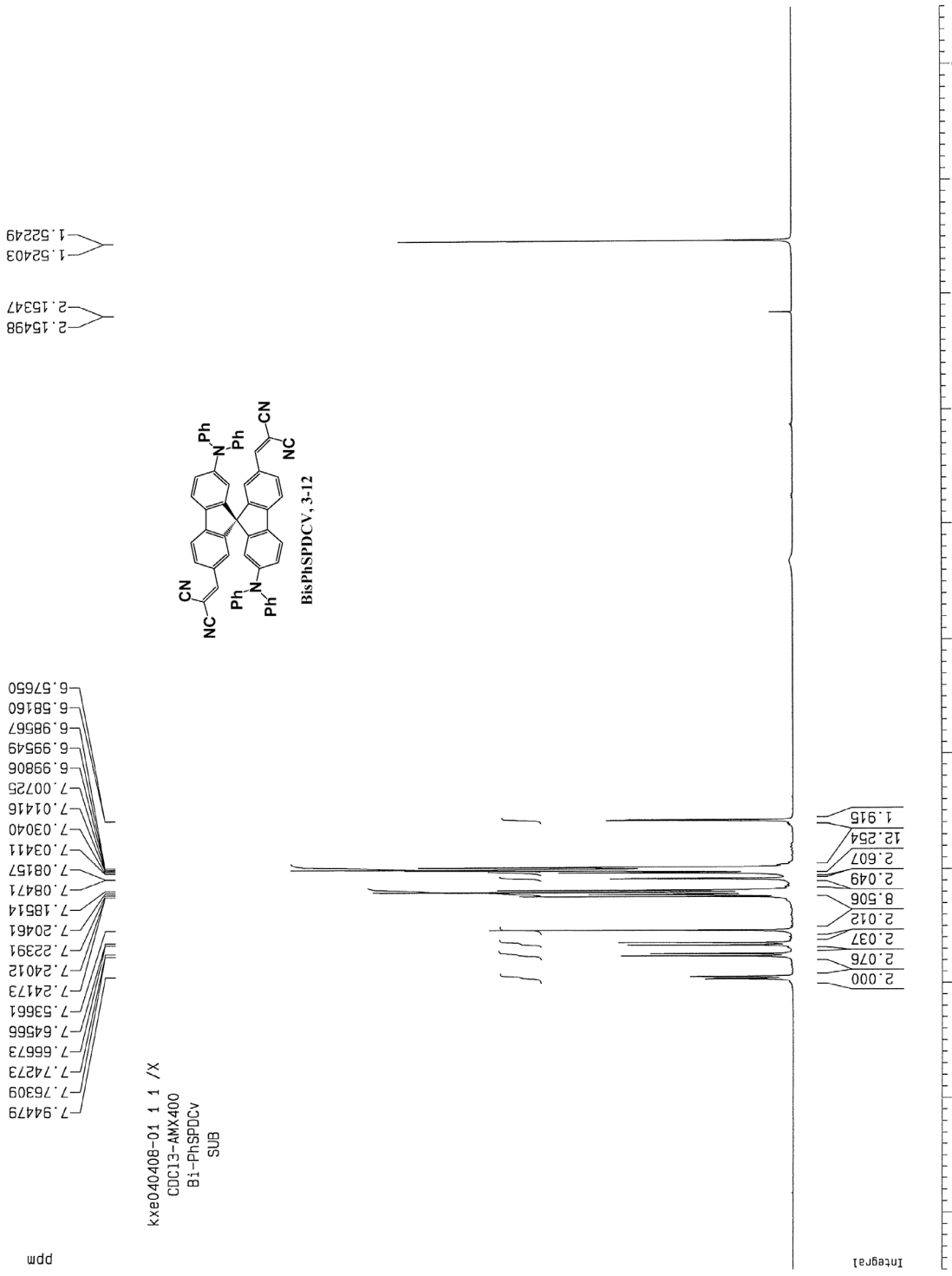

Figure S37. ^{1}H-NMR spectrum of 7,7’-bis(2,2-dicyanovinyl)-2,2’-bis(diphenylamino)-9,9’-spirobifluorene (BisPhSPDCV, 3-12)

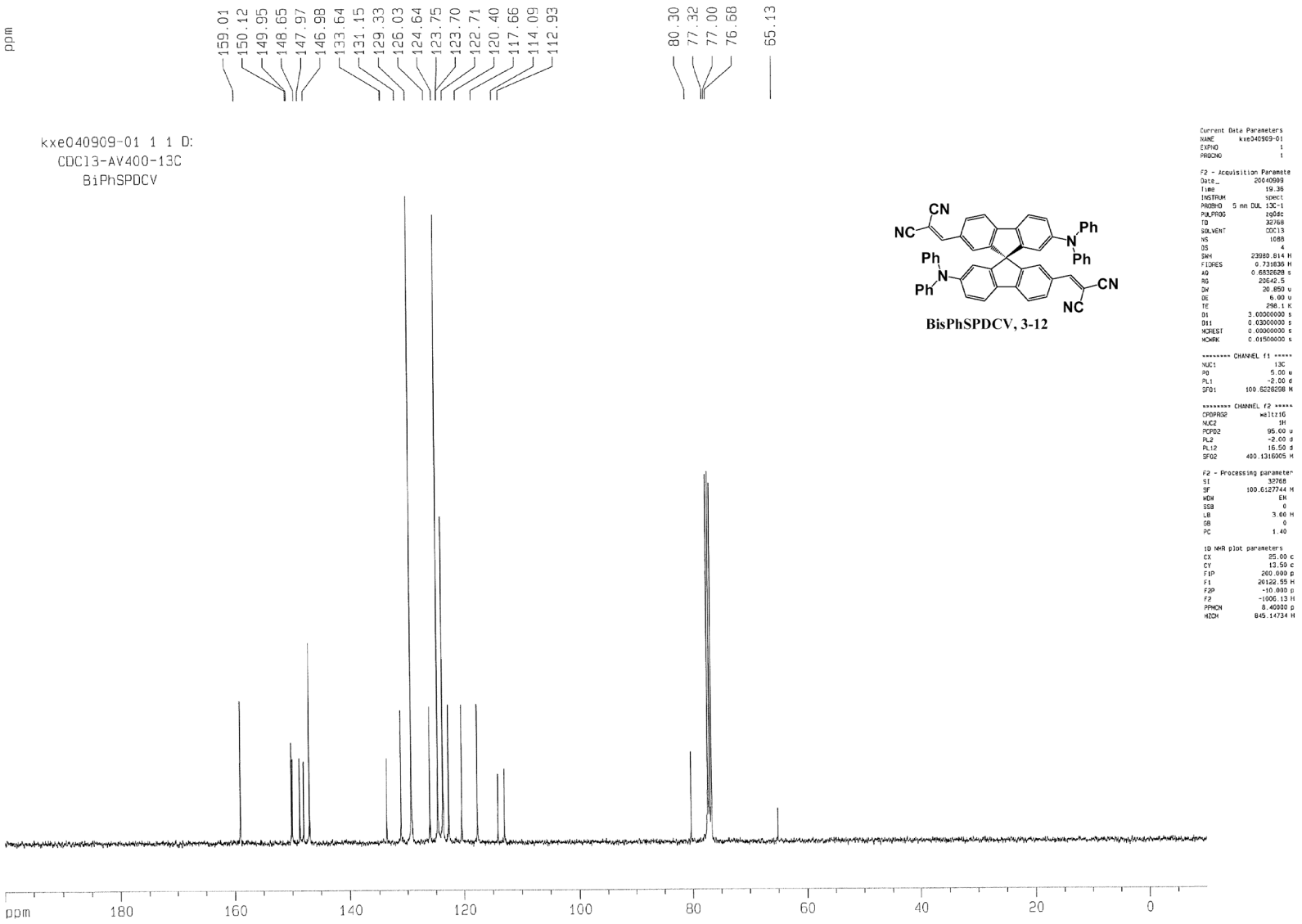

Figure S38. ^{13}C-NMR spectrum of 7,7'-bis(2,2-dicyanovinyl)-2,2'-bis(diphenylamino)-9,9'-spirobifluorene (BisPhSPDCV, 3-12)

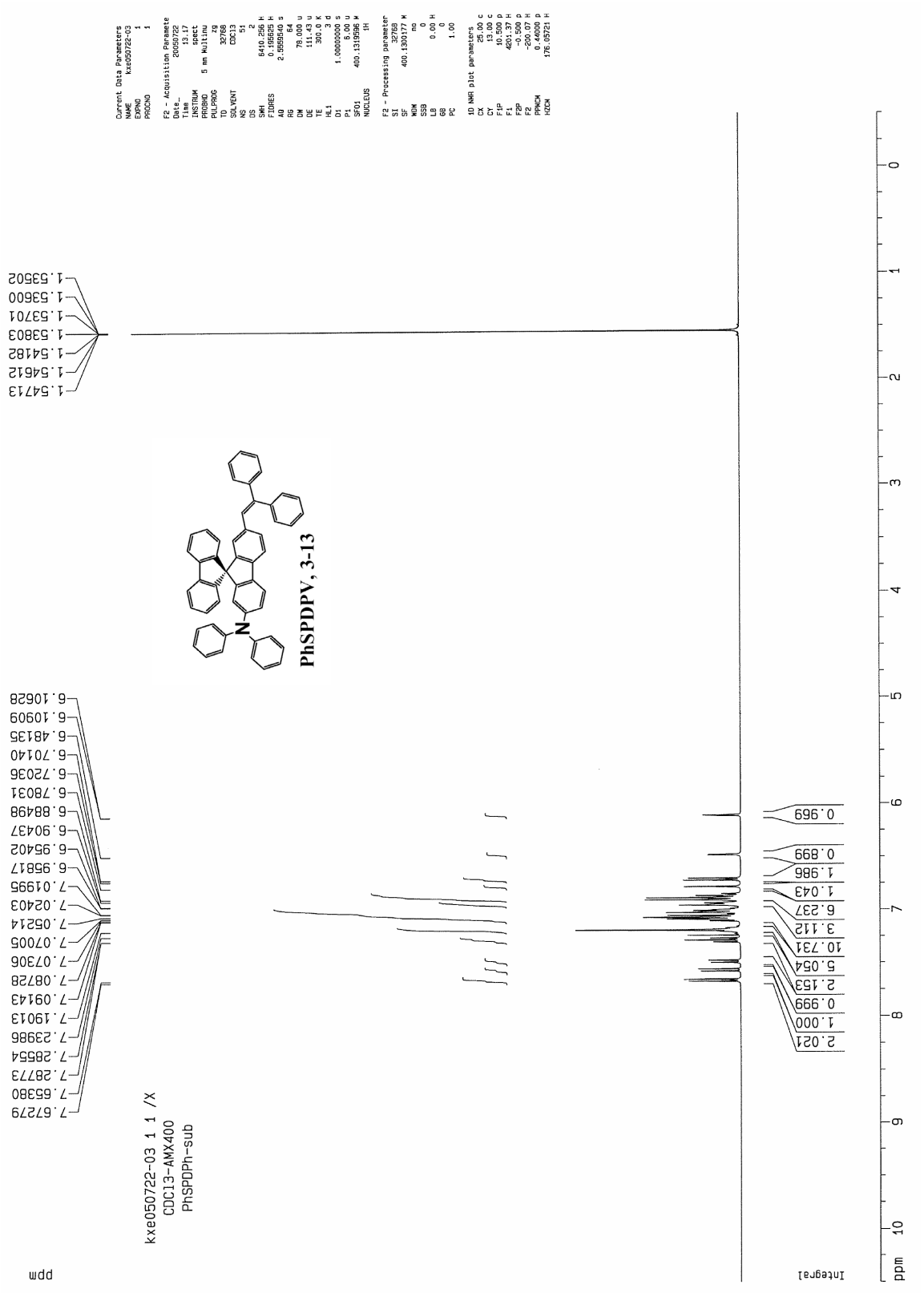

Figure S39. ^{1}H-NMR spectrum of 2-diphenylamino-7-2,2-diphenylvinyl-9,9'-spirobifluorene (PhSPDPV, 3-13)

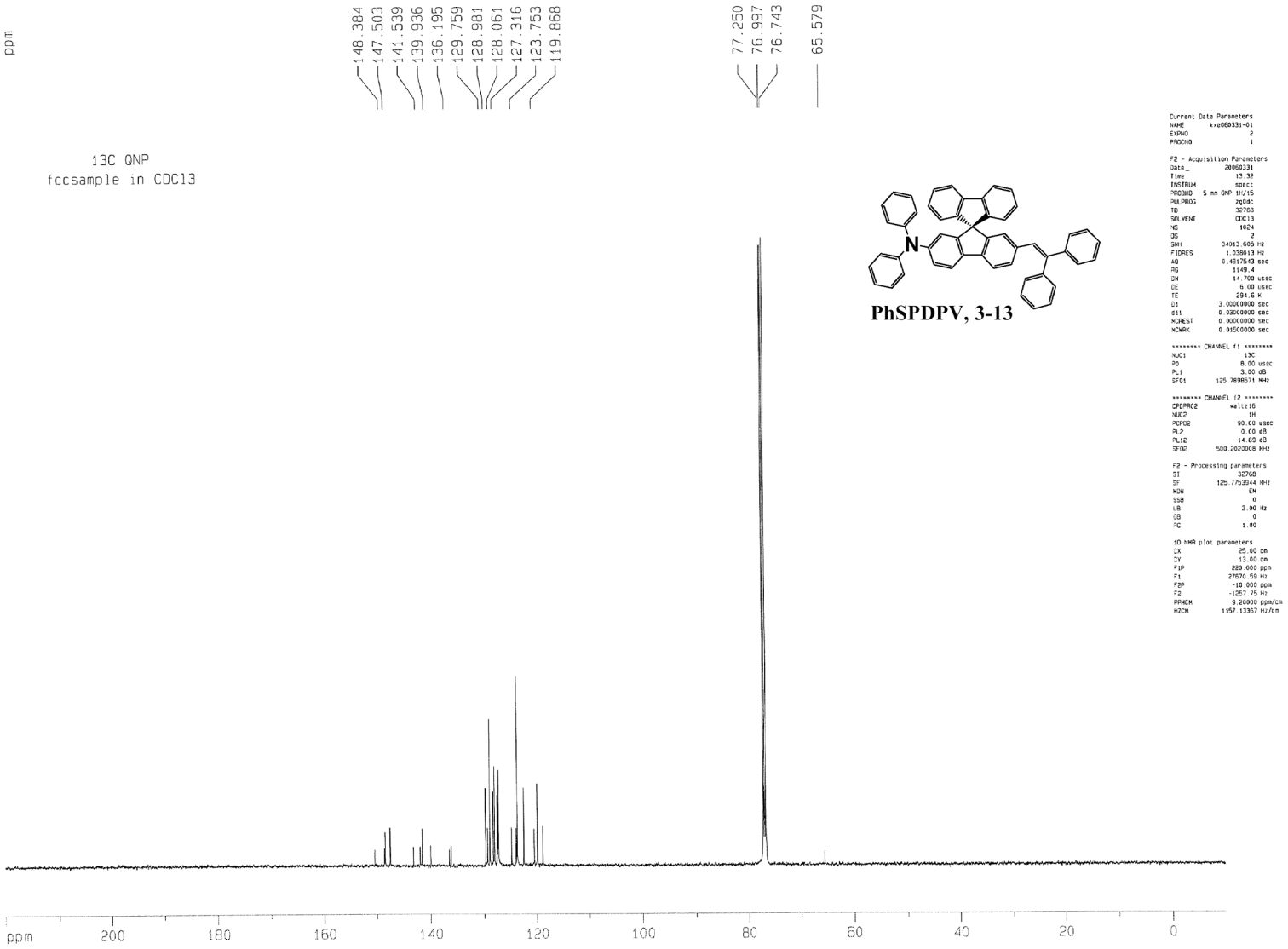

Figure S40. ^{13}C-NMR spectrum of 2-diphenylamino-7-2,2-diphenylvinyl-9,9'-spirobifluorene (PhSPDPV, 3-13)

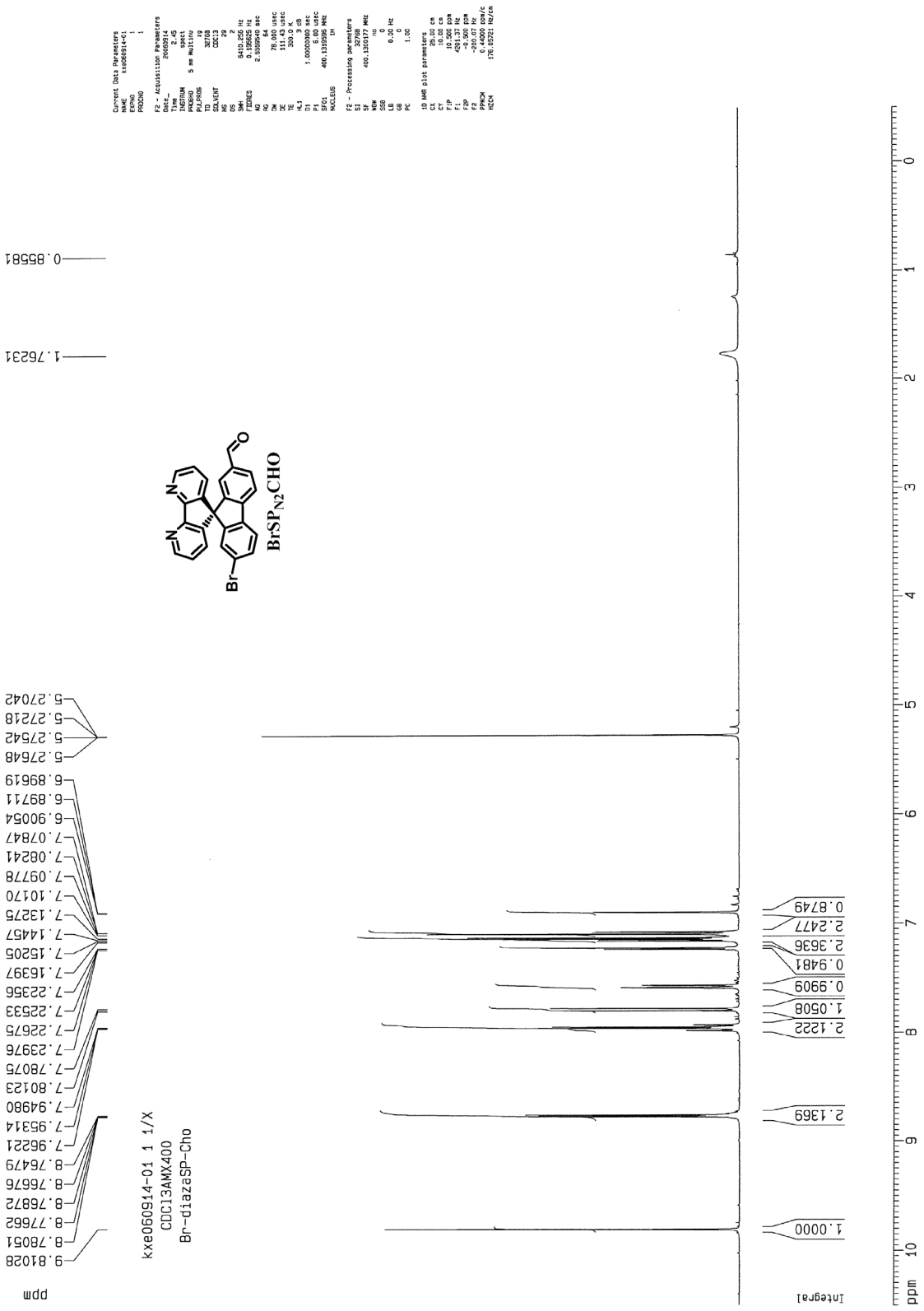

Figure S41. ^{1}H-NMR spectrum of 4,5-diaza-2'-bromo-9,9'-spirobifluorene-7'-carboxaldehyde (BrSP$_{N2}$CHO)

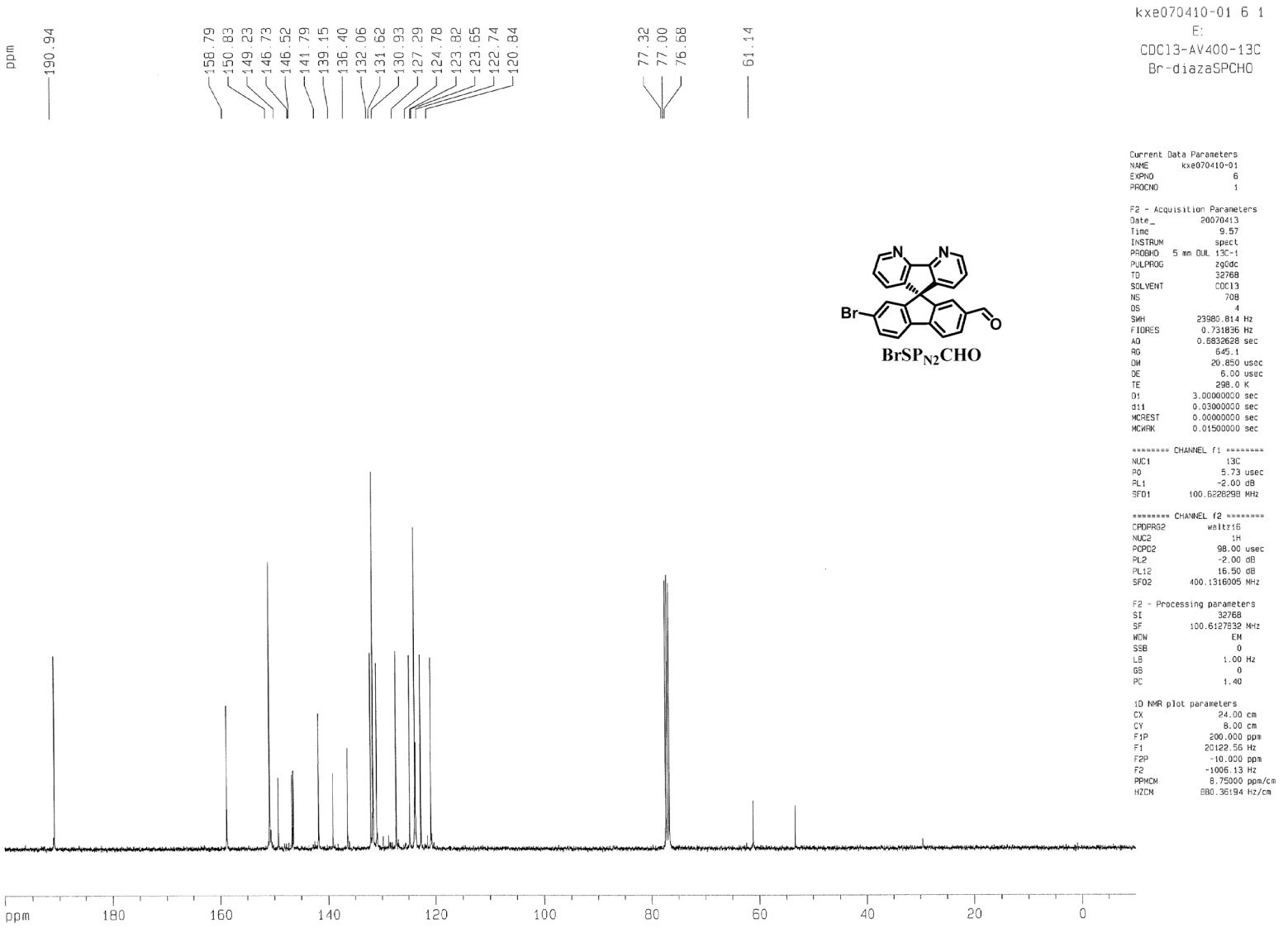

Figure S42. ^{13}C-NMR spectrum of 4,5-diaza-2'-bromo-9,9'-spirobifluorene-7'-carboxaldehyde (BrSP$_{N2}$CHO)

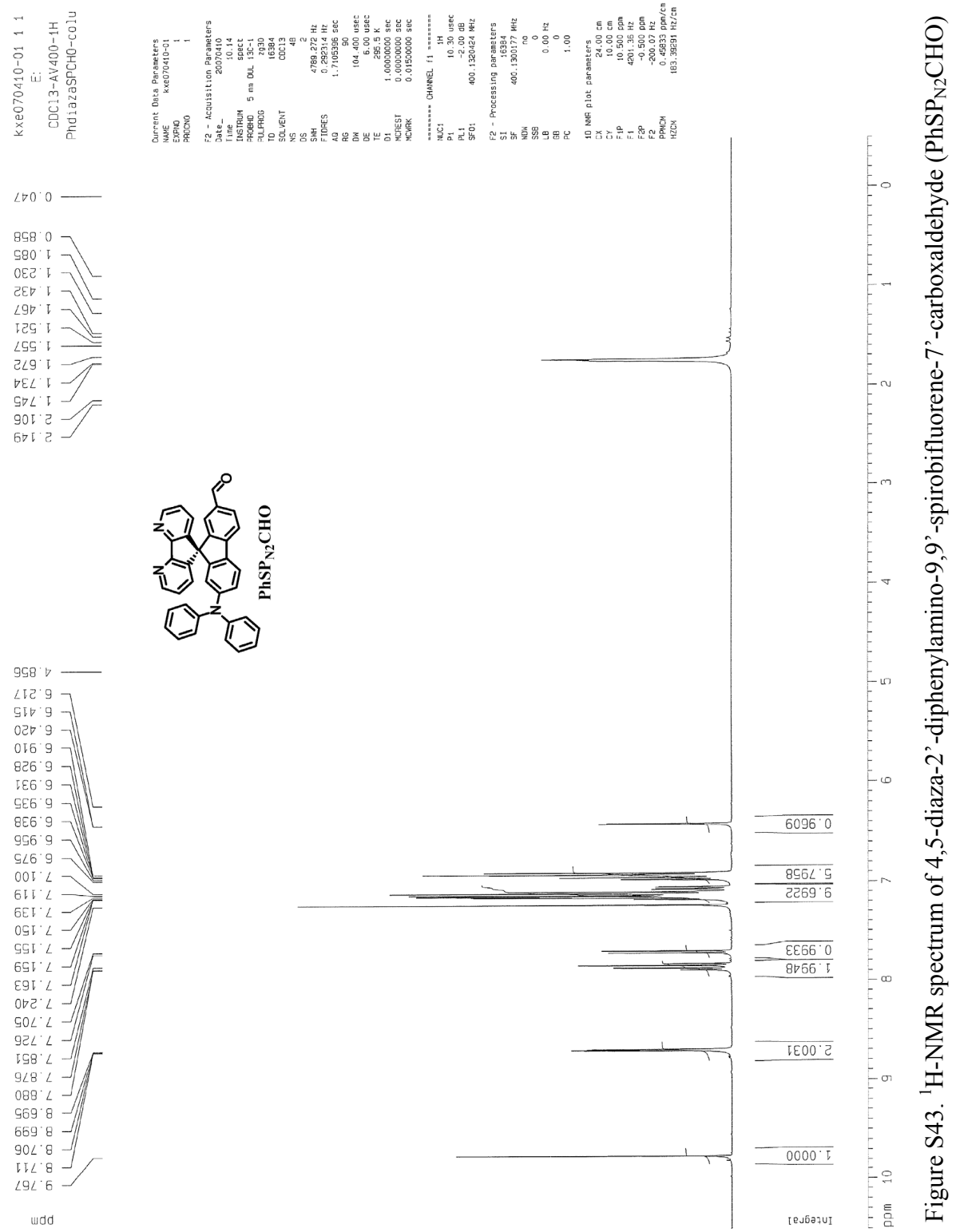

Figure S43. ^{1}H-NMR spectrum of 4,5-diaza-2'-diphenylamino-9,9'-spirobifluorene-7'-carboxaldehyde (PhSP$_{N2}$CHO)

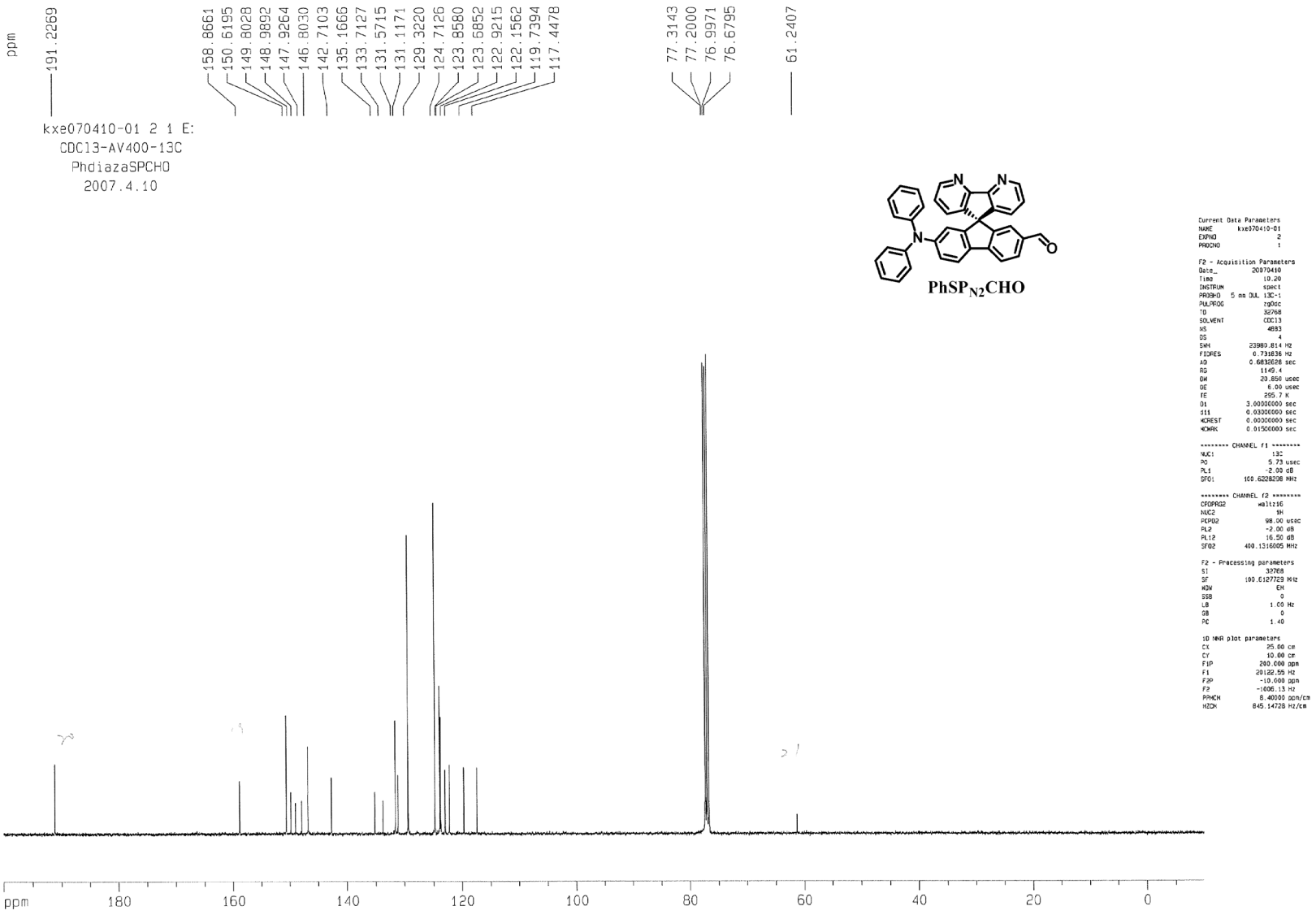

Figure S44. ^{13}C-NMR spectrum of 4,5-diaza-2'-diphenylamino-9,9'-spirobifluorene-7'-carboxaldehyde (PhSP$_{N2}$CHO)

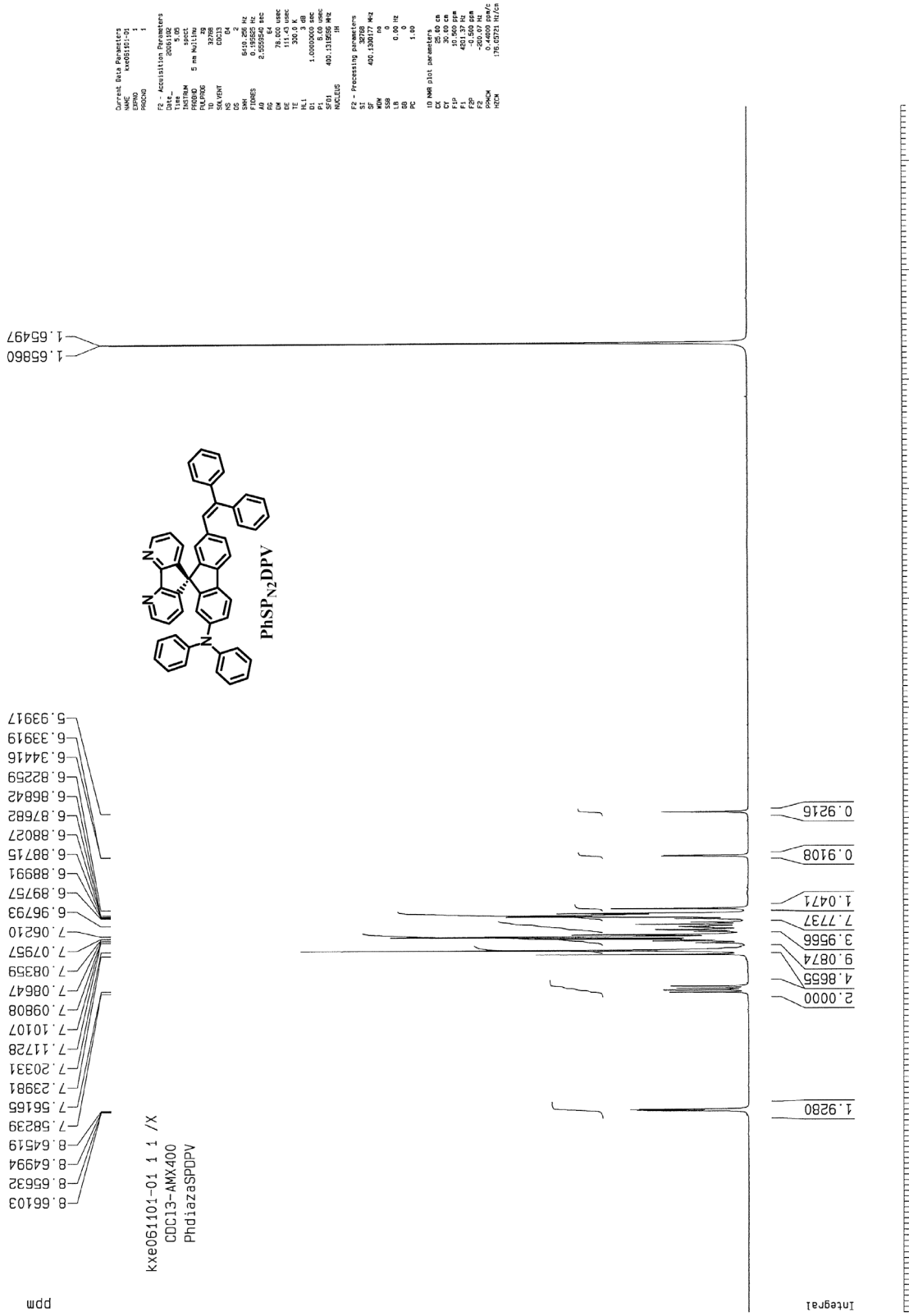

Figure S45. ^{1}H-NMR spectrum of 4,5-diaza-2'-diphenylamino-7'-(2,2-diphenylvinyl)-9,9'-spirobifluorene (PhSP$_{N2}$DPV)

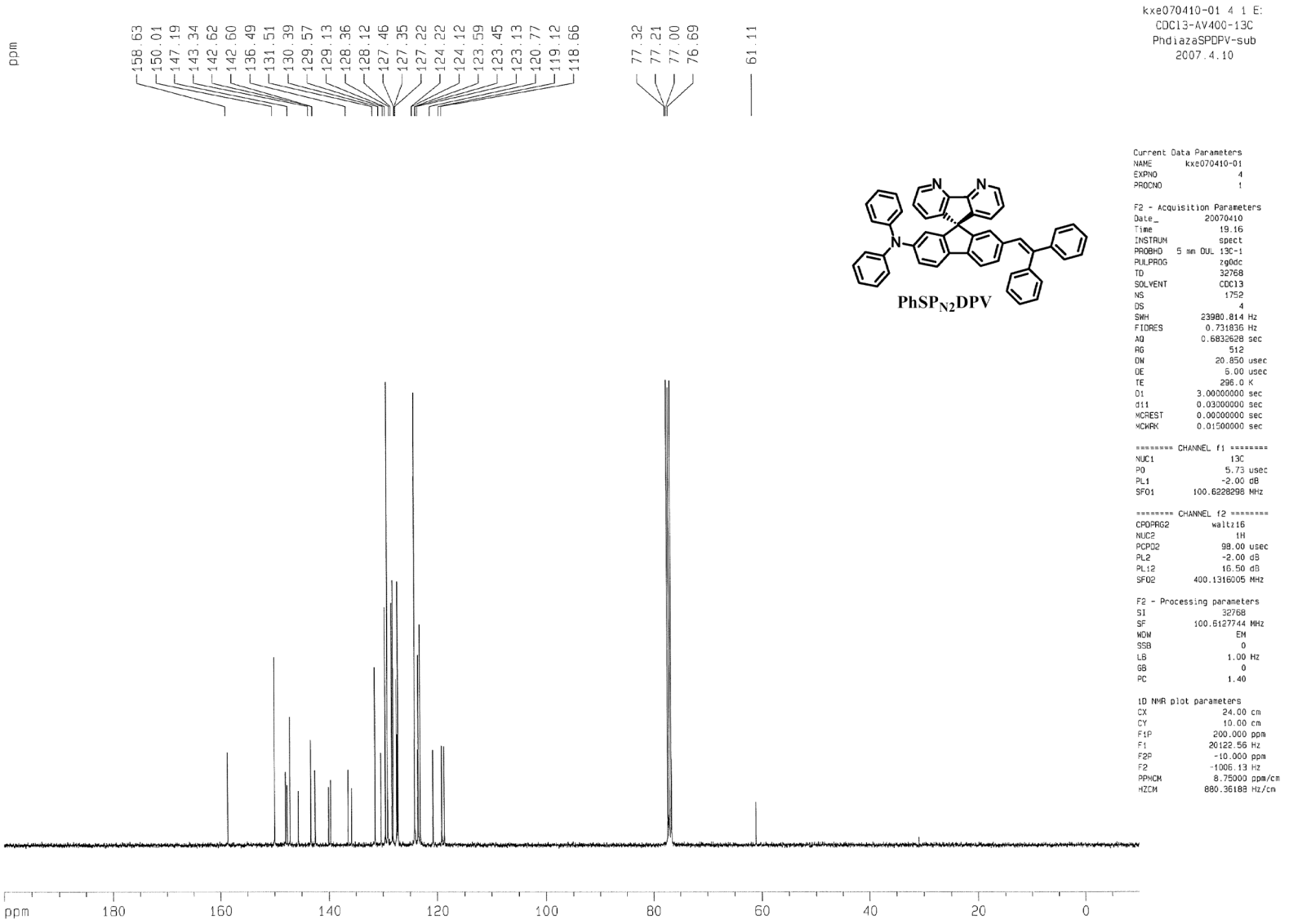

Figure S46. ^{13}C-NMR spectrum of 4,5-diaza-2'-diphenylamino-7'-(2,2-diphenylvinyl)-9,9'-spirobifluorene (PhSP$_{N2}$DPV)

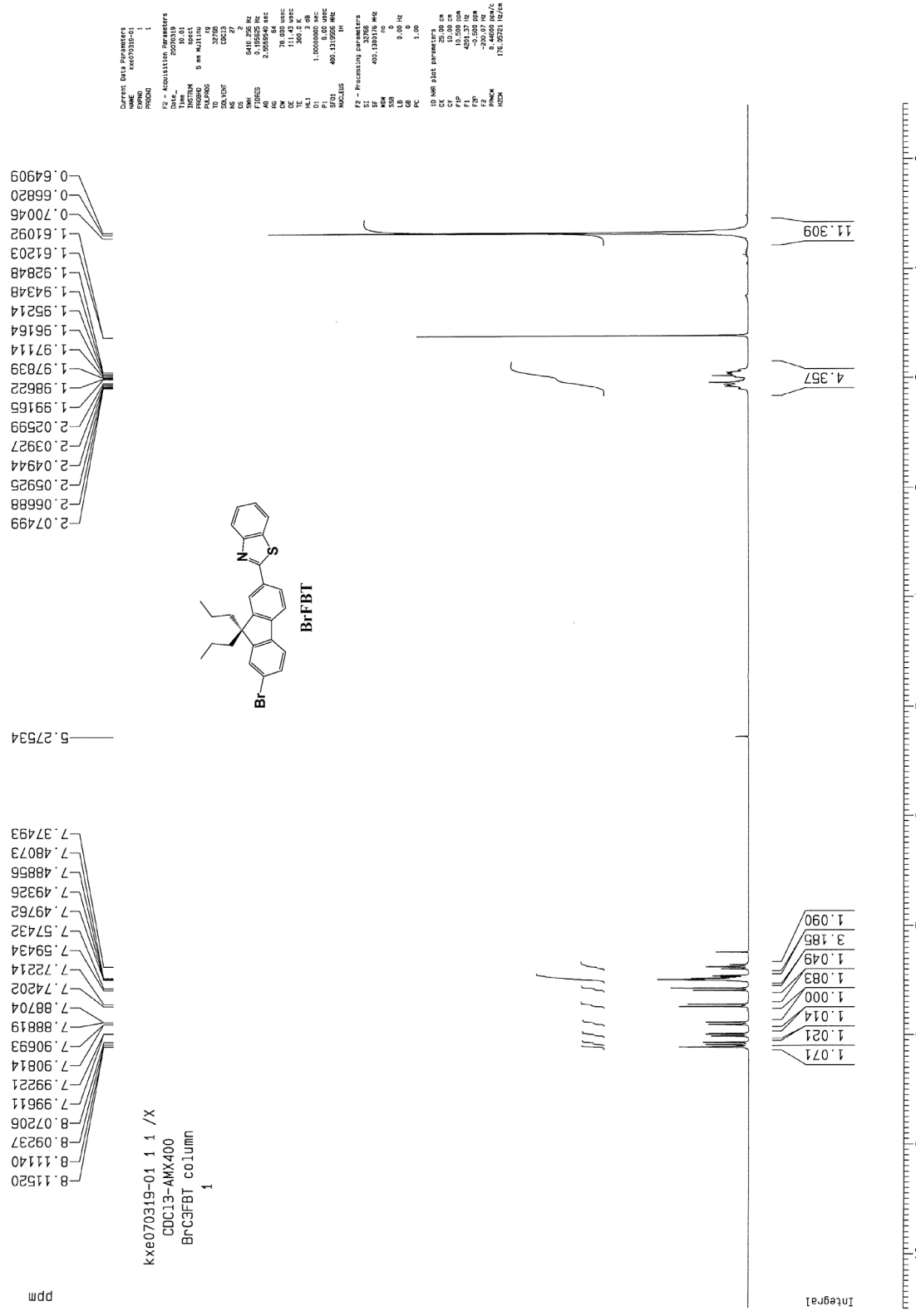

Figure S47. ^{1}H-NMR spectrum of 2-(7-bromo-9,9’-dipropyl-9*H*-fluoren-2-yl)-benzothiazole (BrFBT)

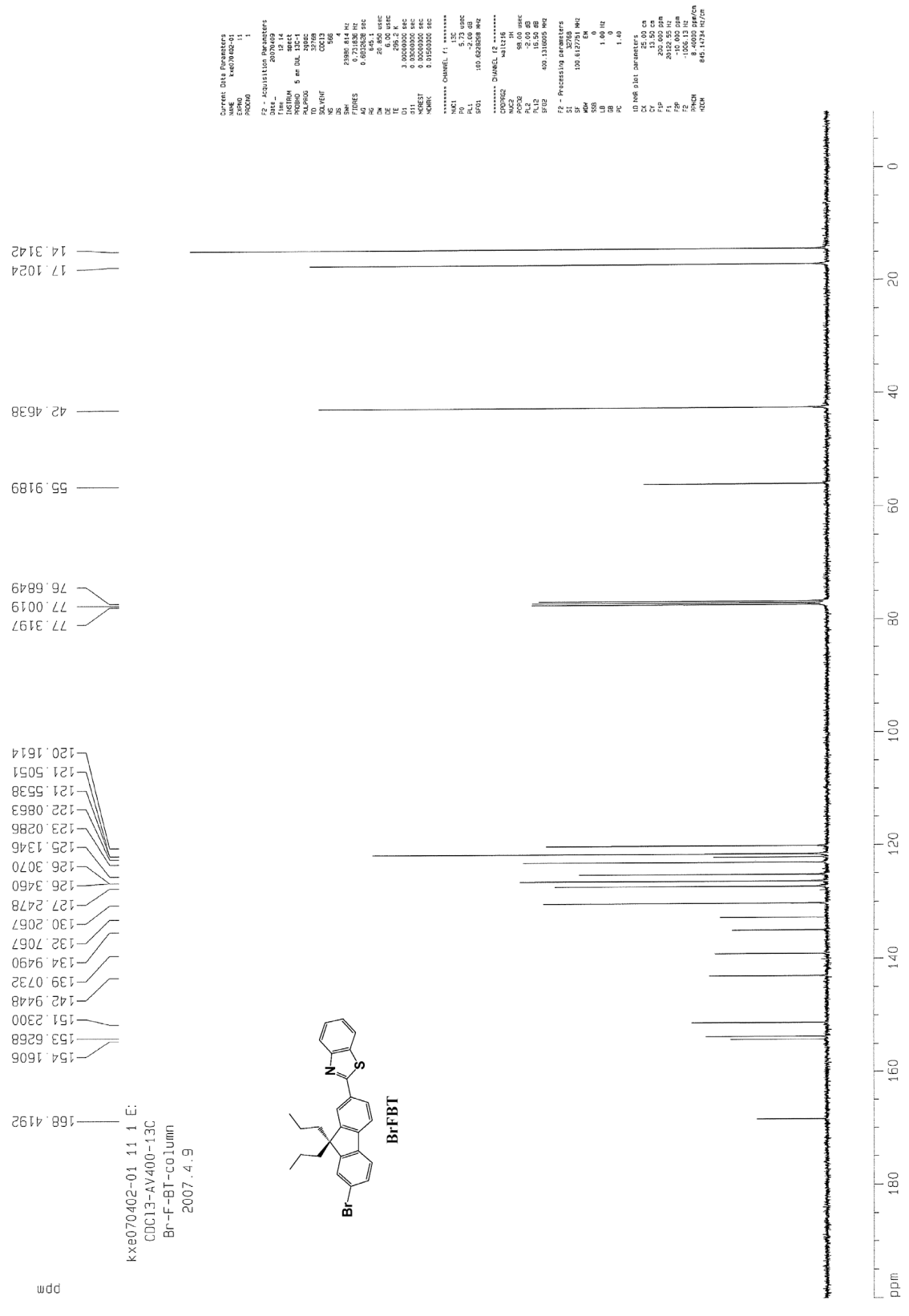

Figure S48. ^{13}C-NMR spectrum of 2-(7-bromo-9,9’-dipropyl-9*H*-fluoren-2-yl)-benzothiazole (BrFBT)

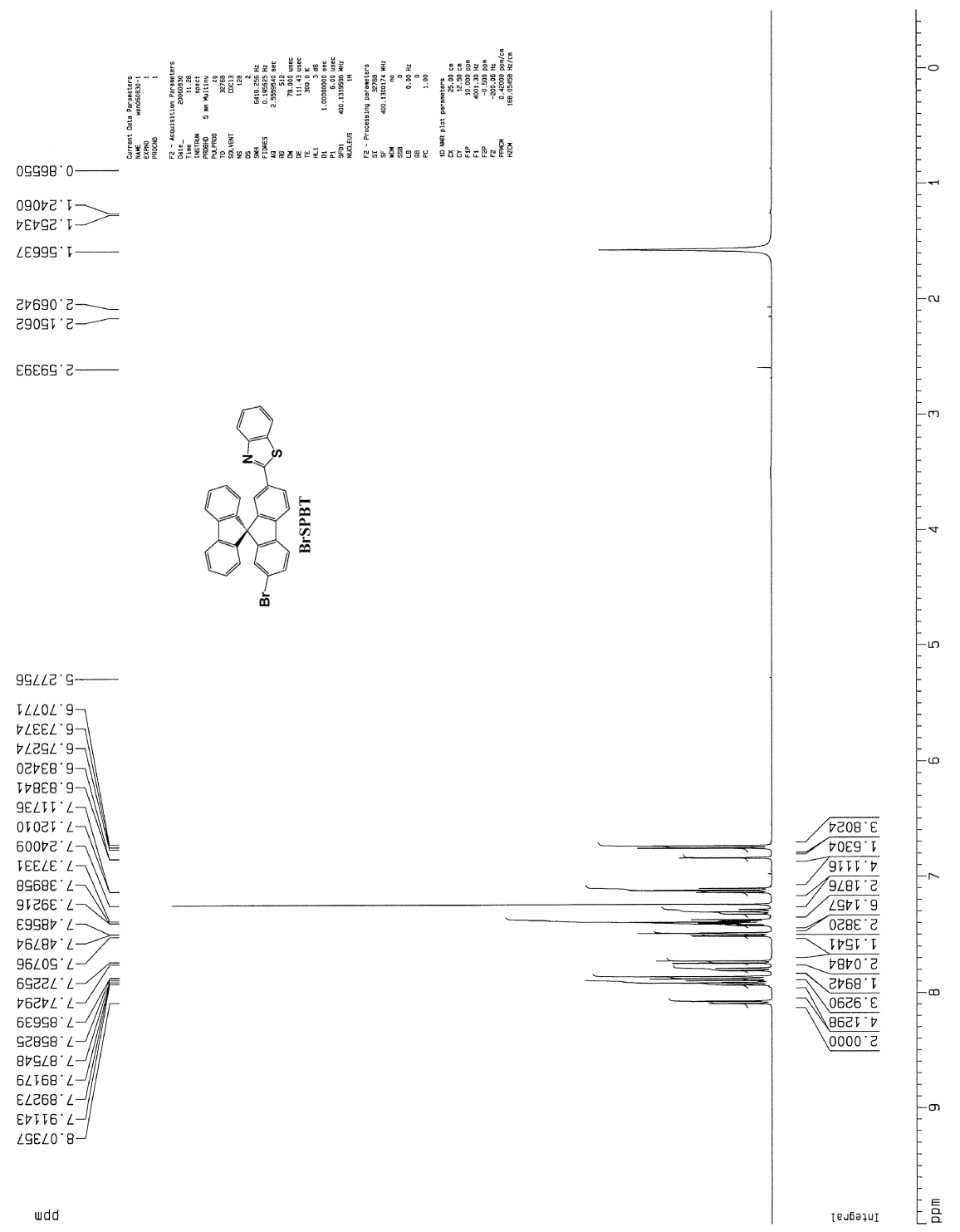

Figure S49. ^{1}H-NMR spectrum of 2-(7-bromo-9,9’-spirobifluorene)-benzothiazole (BrSPBT)

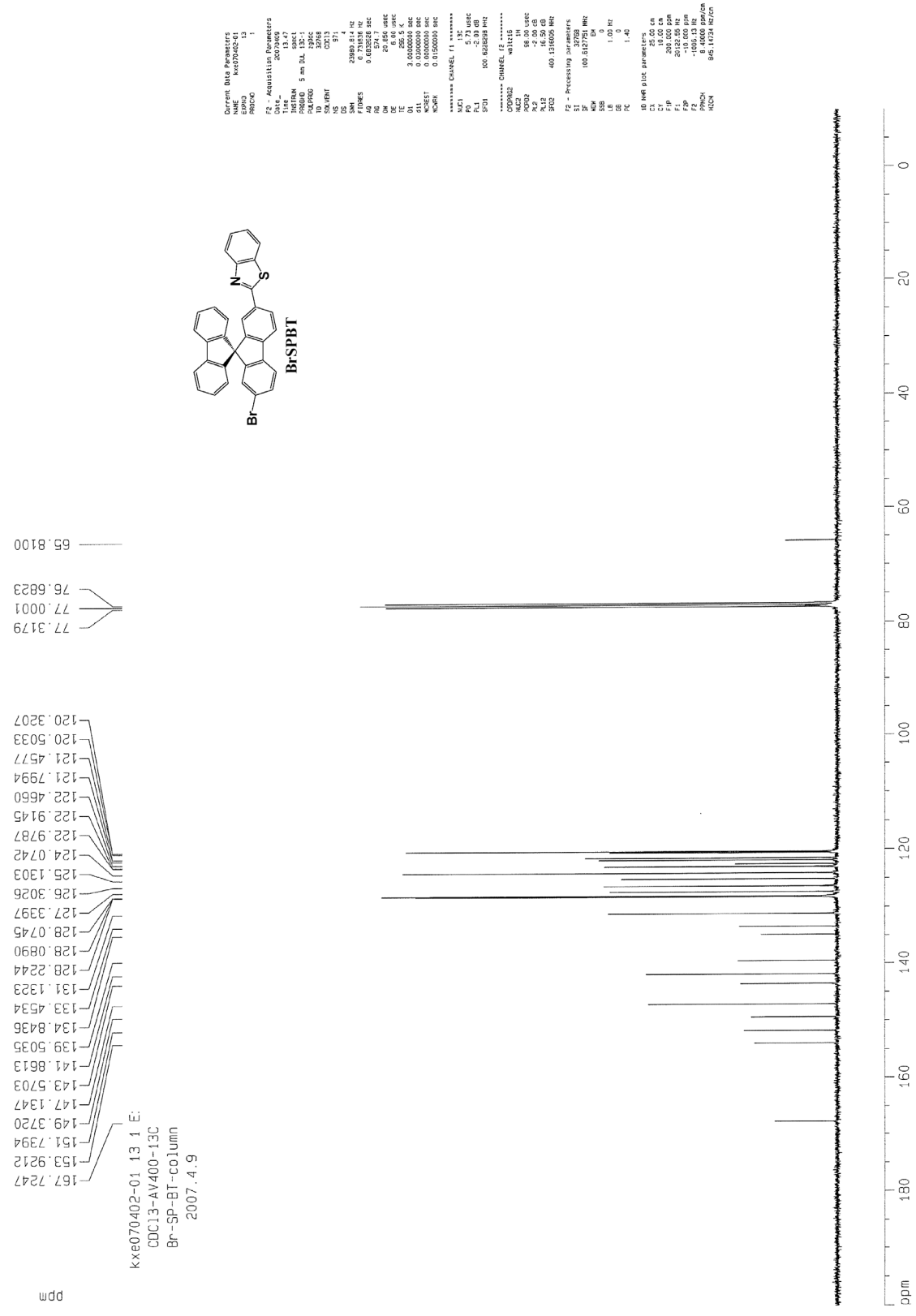

Figure S50. ^{13}C-NMR spectrum of 2-(7-bromo-9,9’-spirobifluorene)-benzothiazole (BrSPBT)

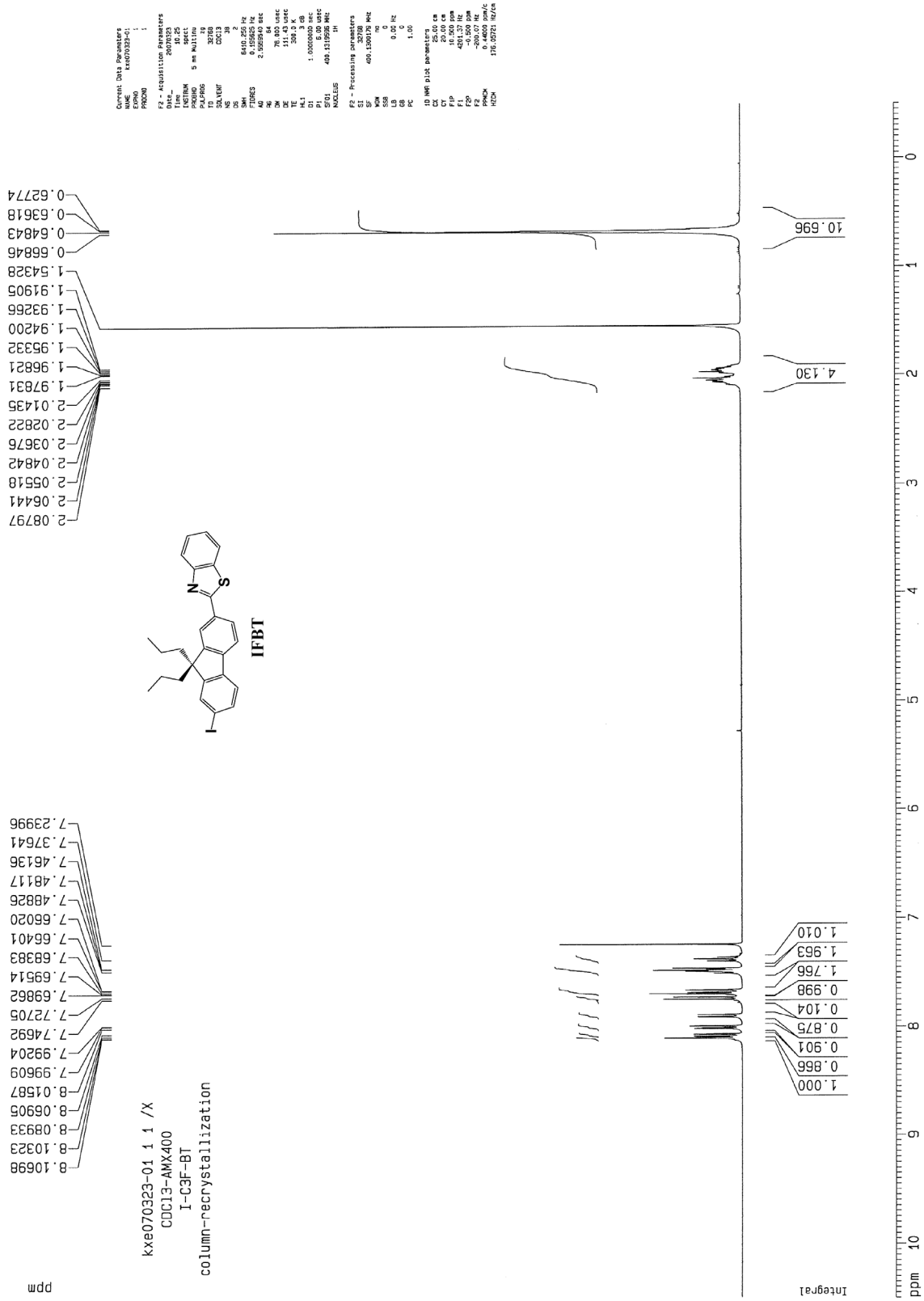

Figure S51. ^{1}H-NMR spectrum of 2-(7-iodo-9,9’-dipropyl-9*H*-fluoren-2-yl)-benzothiazole (IFBT)

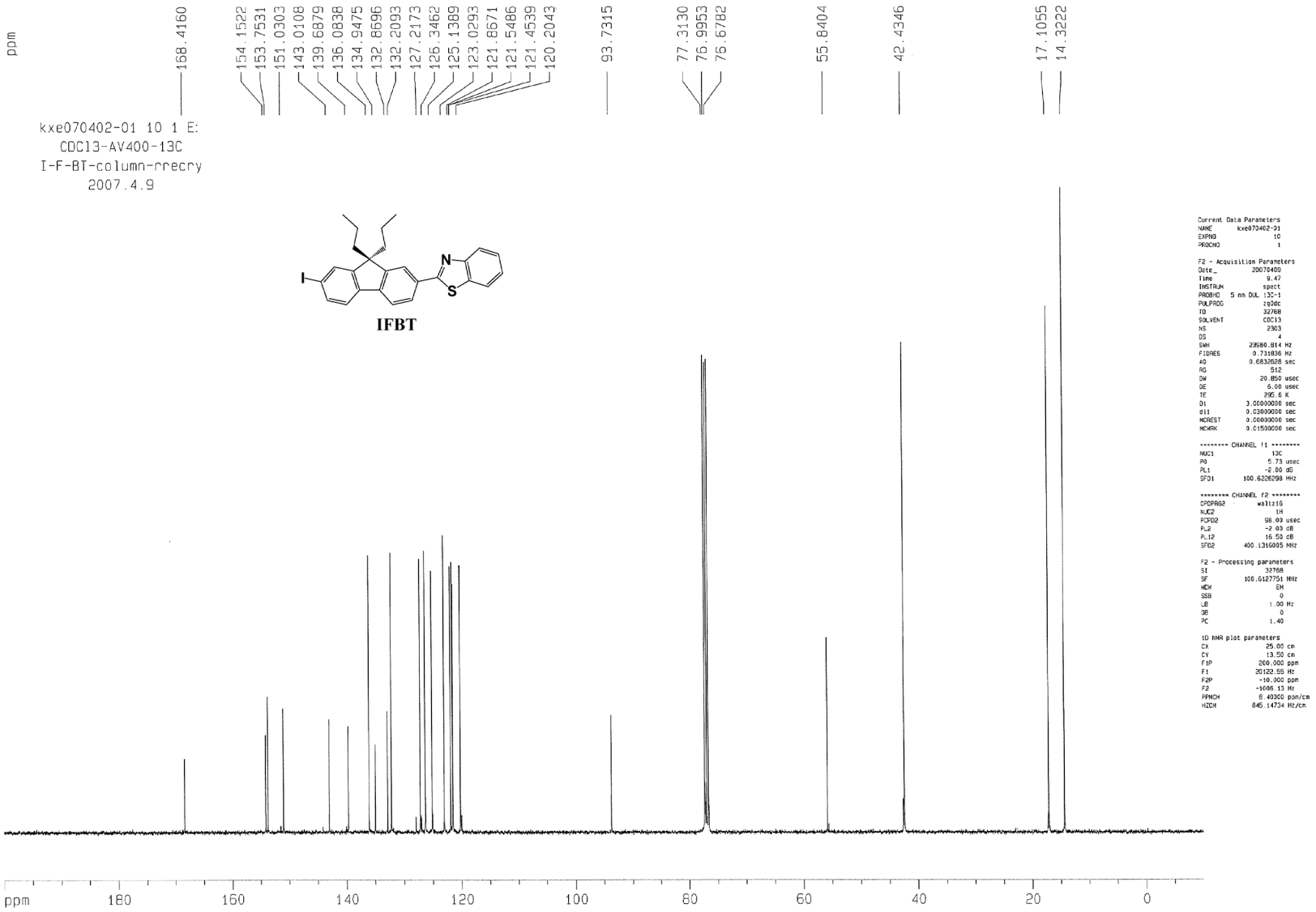

Figure S52. ^{13}C-NMR spectrum of 2-(7-iodo-9,9'-dipropyl-9*H*-fluoren-2-yl)-benzothiazole (IFBT)

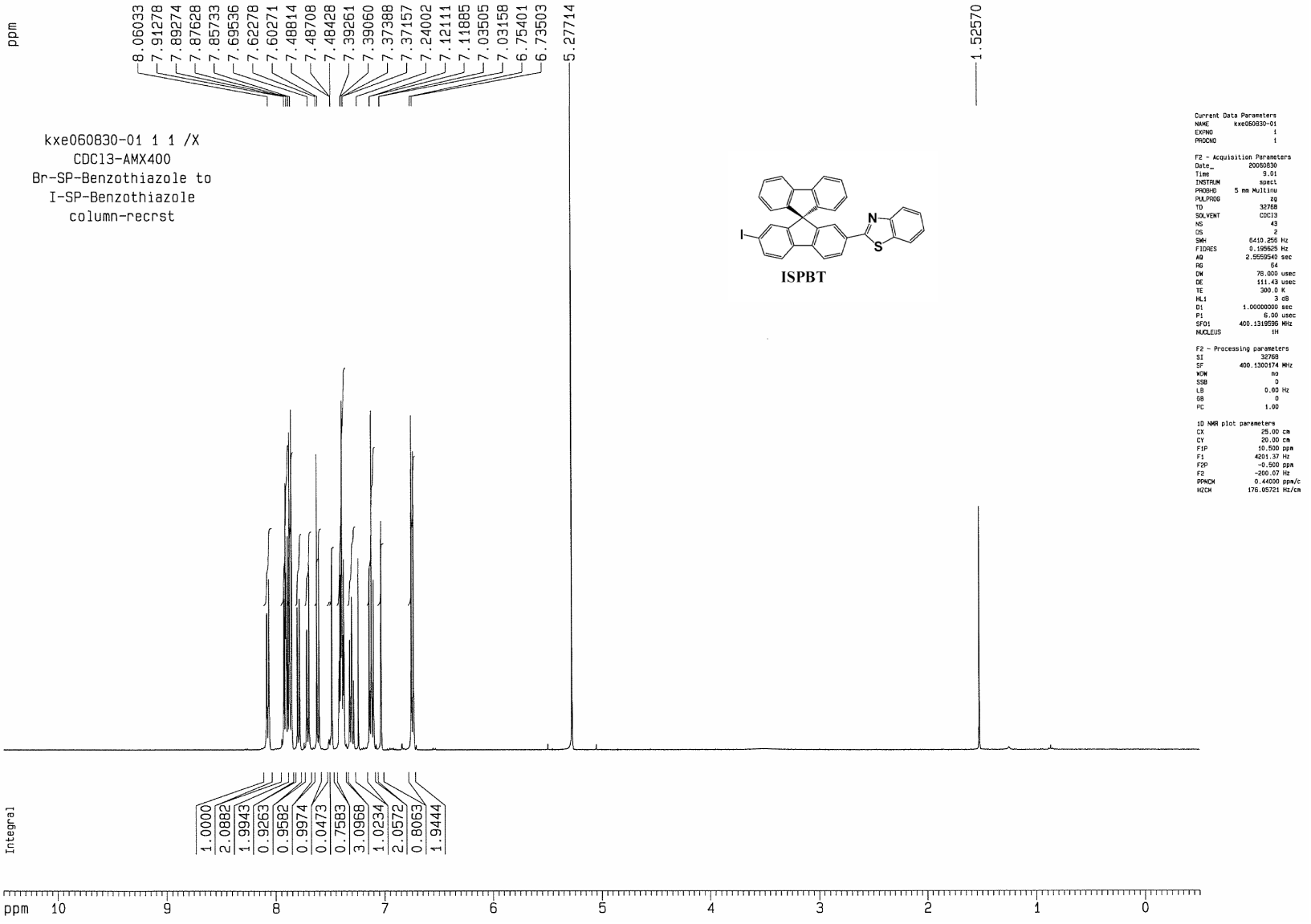

Figure S53. ^{1}H-NMR spectrum of 2-(7-iodo-9,9'-spirobifluorene)-benzothiazole (ISPBT)

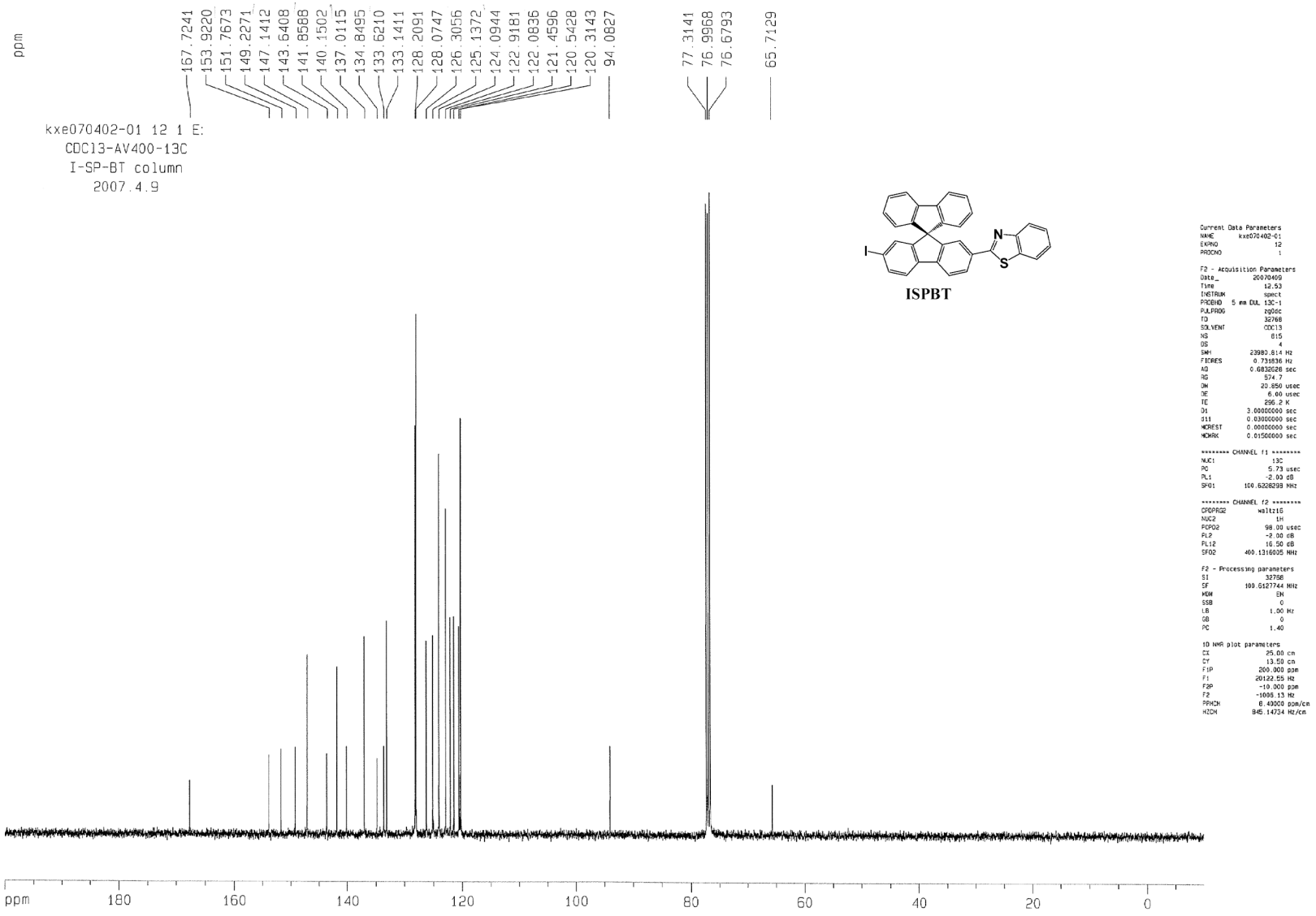

Figure S54. ^{13}C-NMR spectrum of 2-(7-iodo-9,9'-spirobifluorene)-benzothiazole (ISPBT)

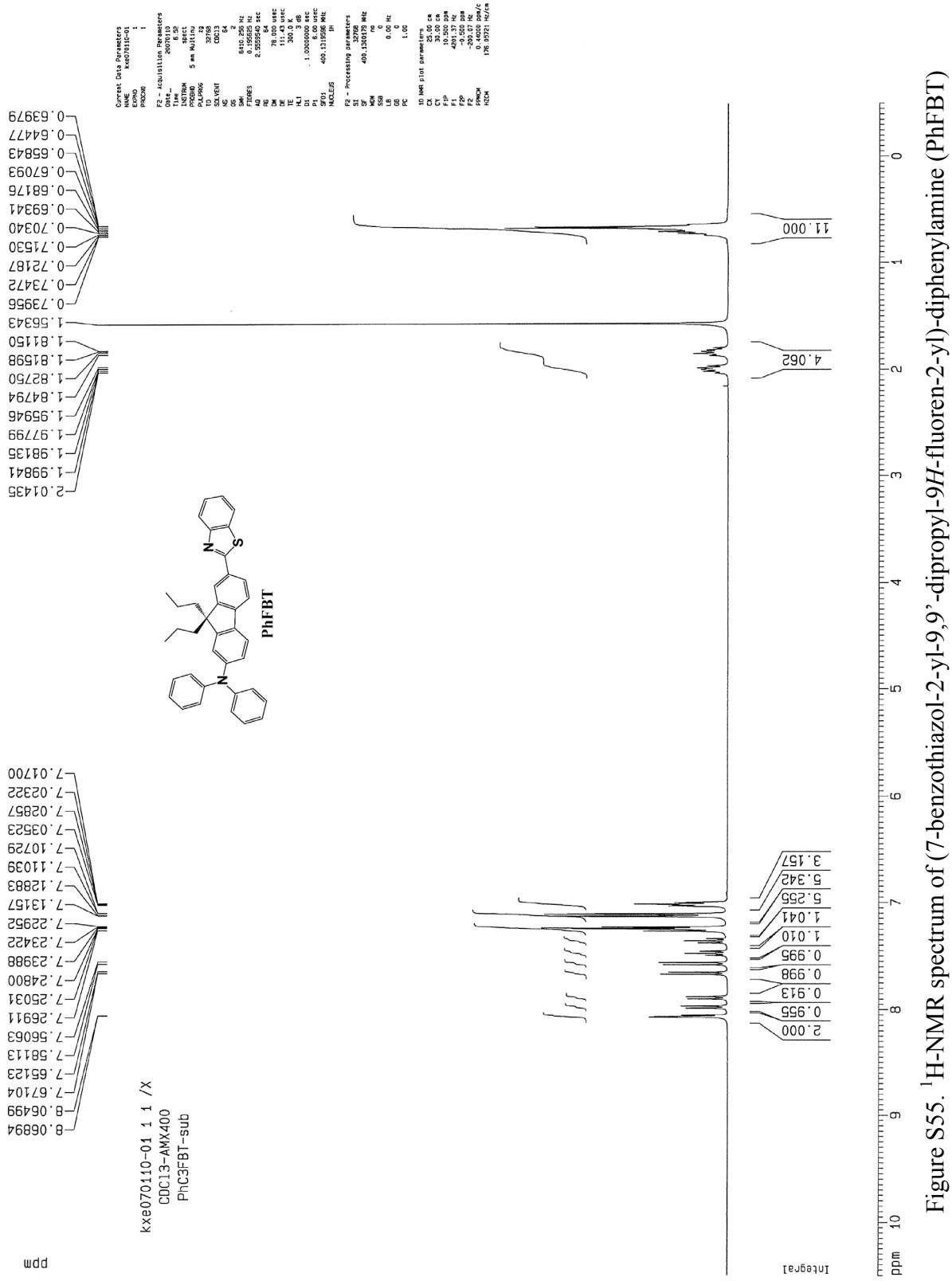

Figure S55. ^{1}H-NMR spectrum of (7-benzothiazol-2-yl-9,9’-dipropyl-9*H*-fluoren-2-yl)-diphenylamine (PhFBT)

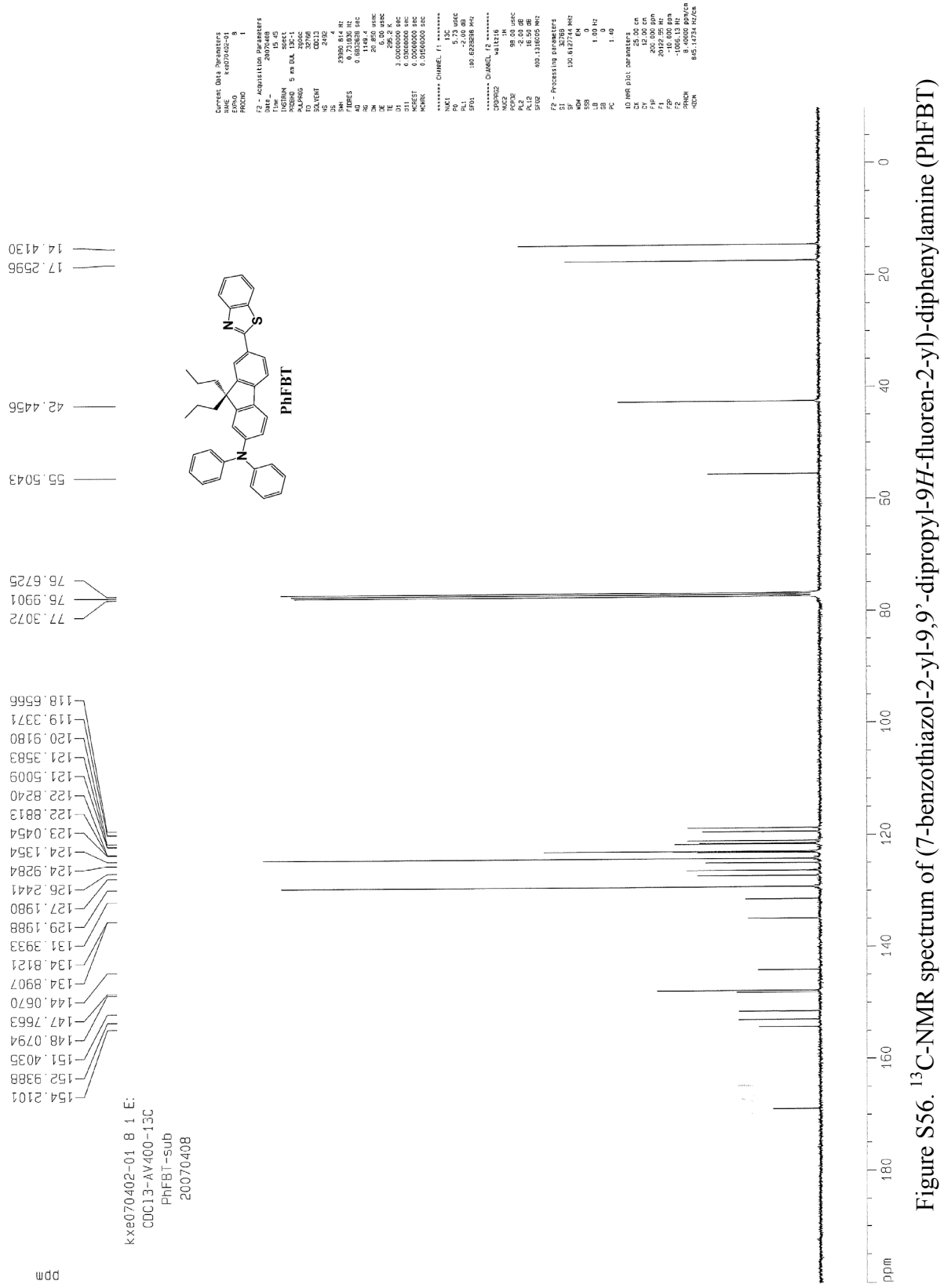

Figure S56. ^{13}C-NMR spectrum of (7-benzothiazol-2-yl-9,9’-dipropyl-9*H*-fluoren-2-yl)-diphenylamine (PhFBT)

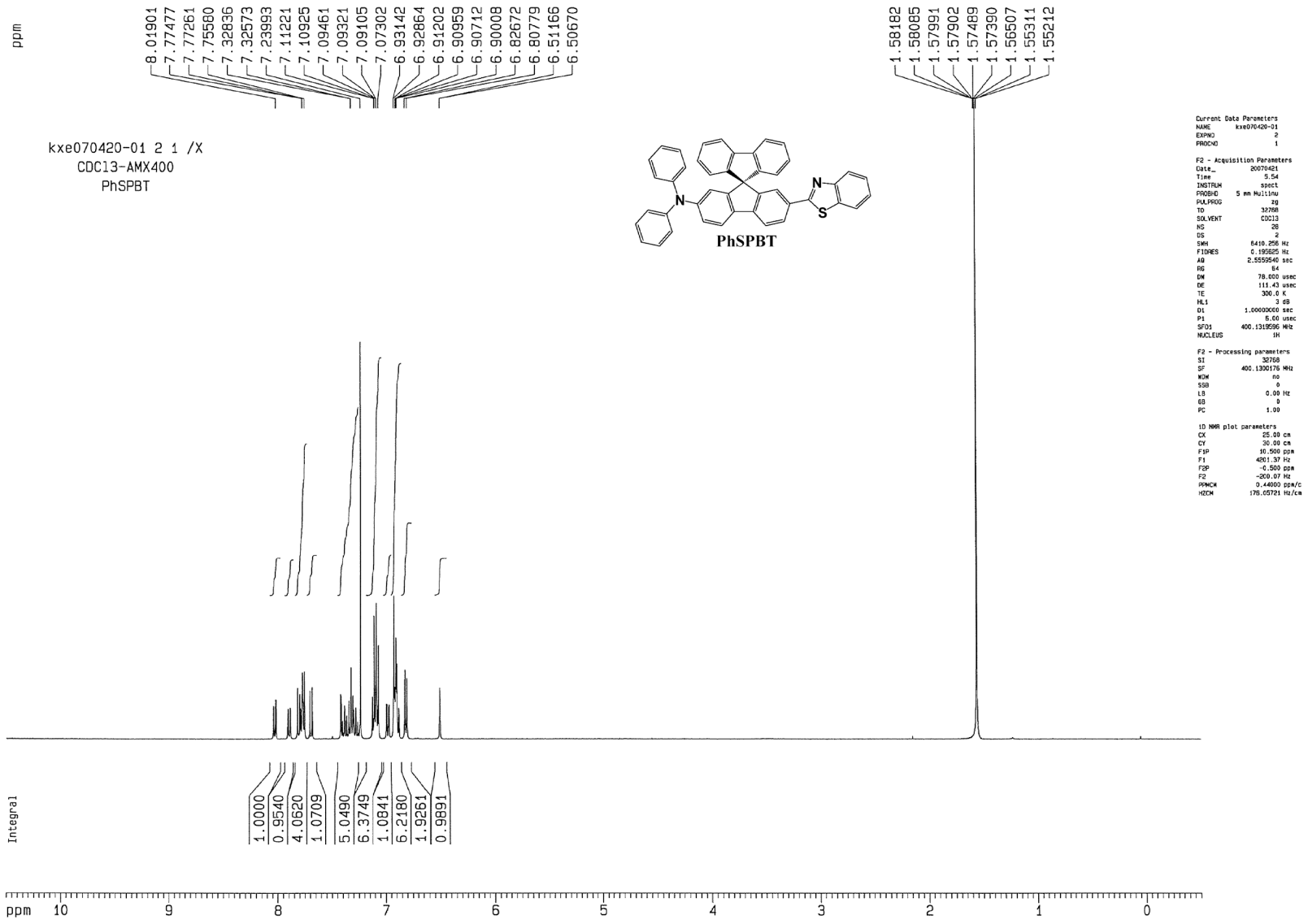

Figure S57. ^{1}H-NMR spectrum of (7-benzothiazol-2-yl-9,9'-spirobifluorene)-diphenylamine (PhSPBT)

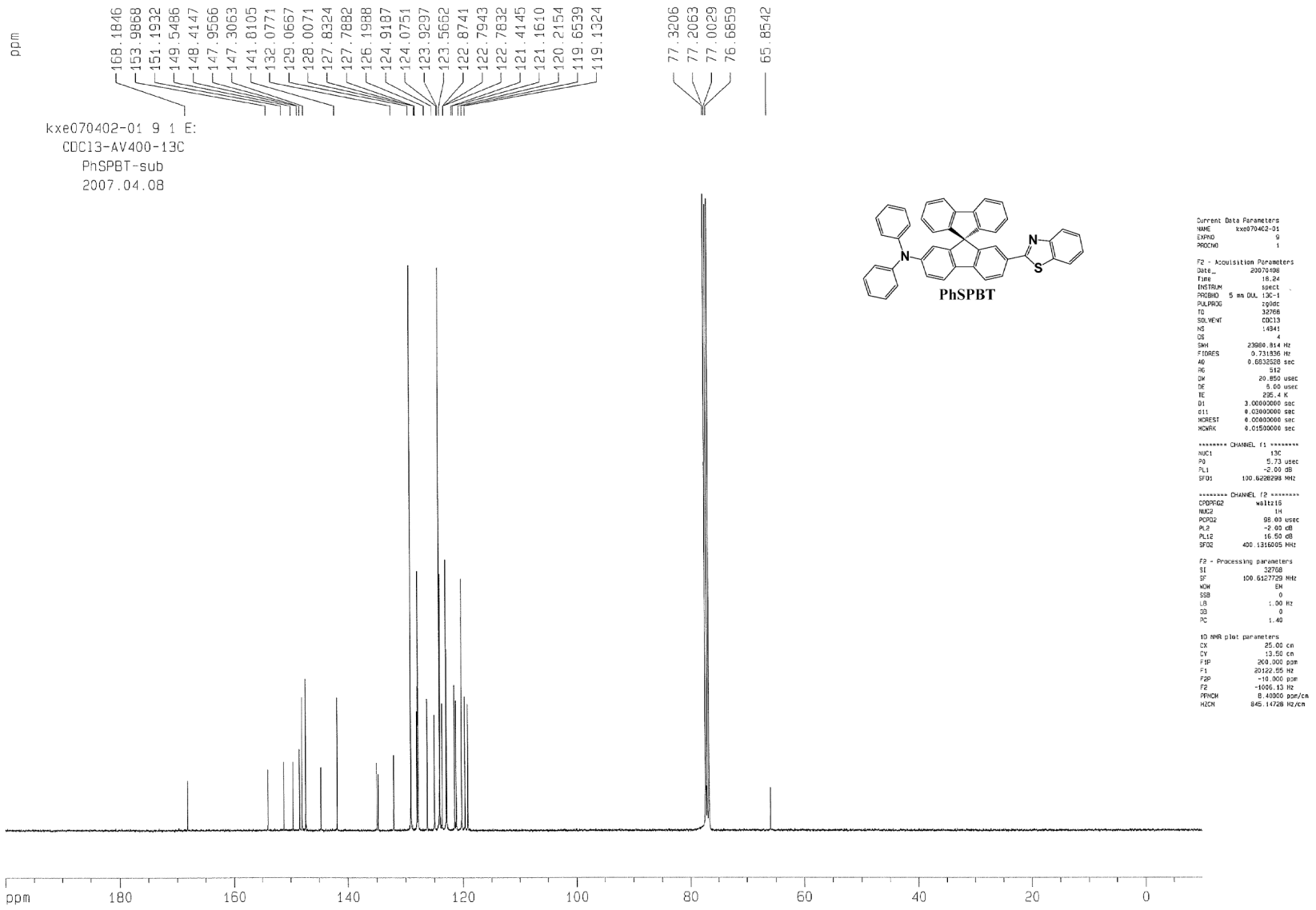

Figure S58. ^{13}C-NMR spectrum of (7-benzothiazol-2-yl-9,9'-spirobifluorene)-diphenylamine (PhSPBT)

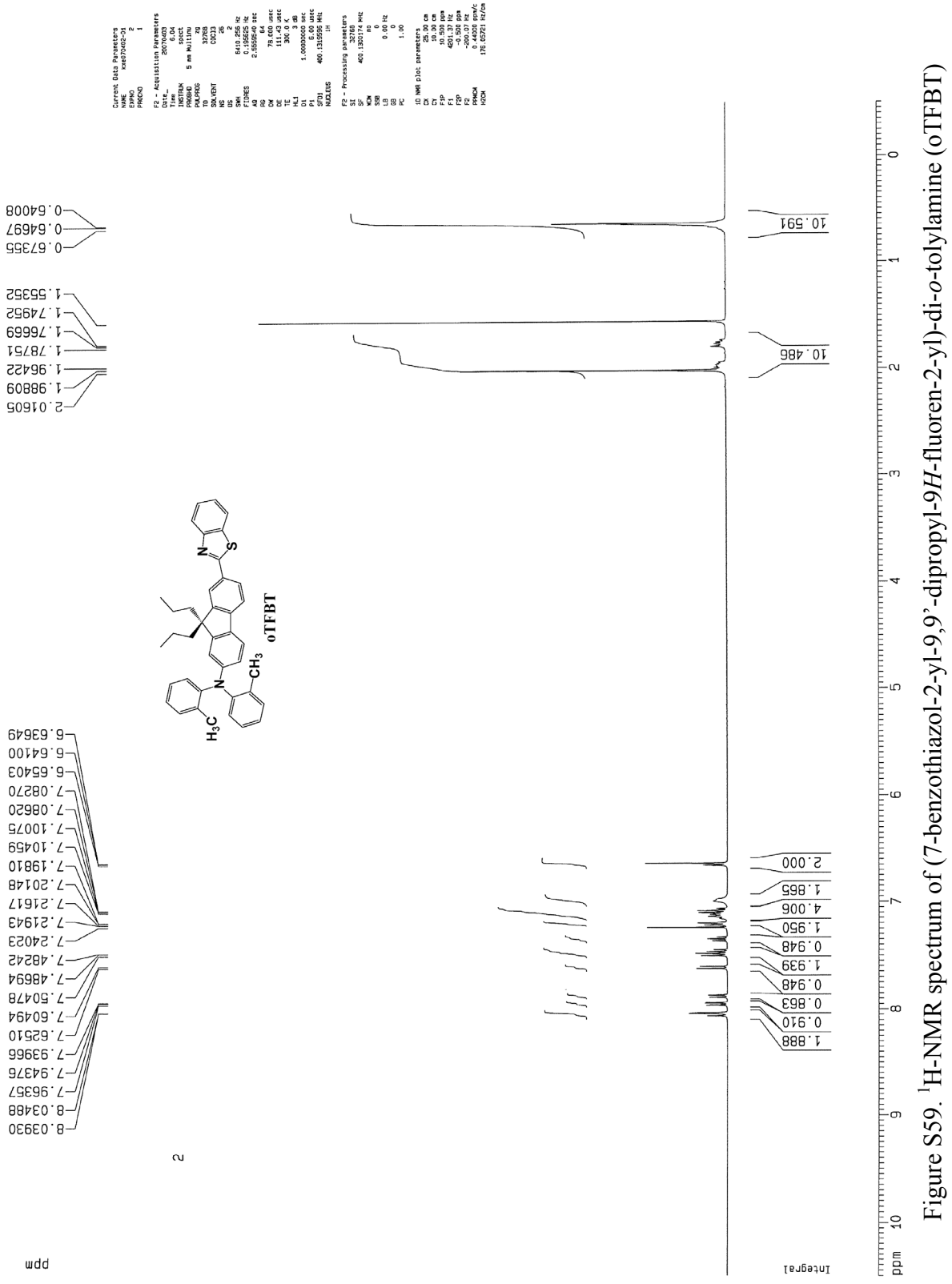

Figure S59. ^{1}H-NMR spectrum of (7-benzothiazol-2-yl-9,9’-dipropyl-9*H*-fluoren-2-yl)-di-*o*-tolylamine (oTFBT)

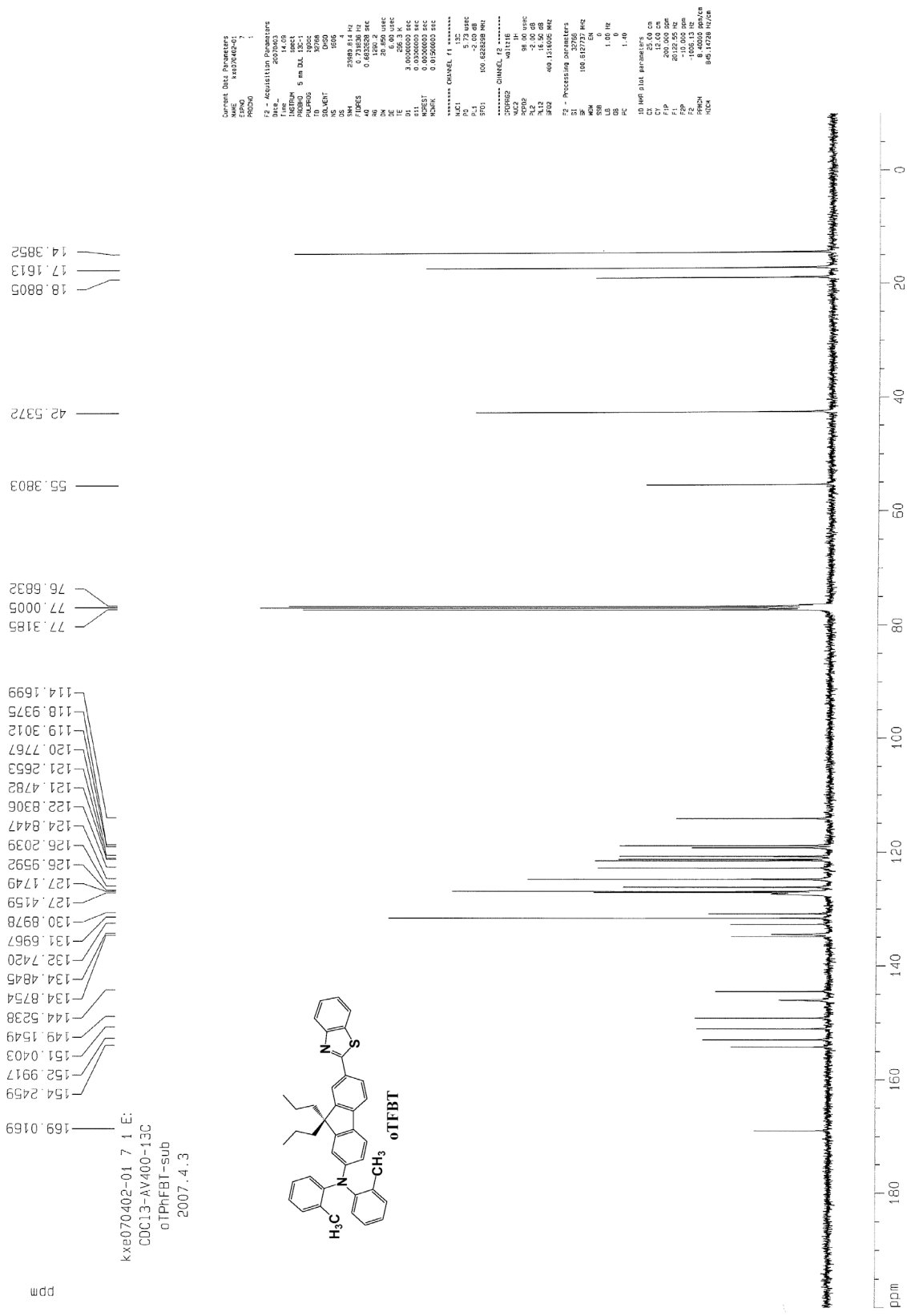

Figure S60. ^{13}C-NMR spectrum of (7-benzothiazol-2-yl-9,9’-dipropyl-9*H*-fluoren-2-yl)-di-*o*-tolylamine (oTFBT)

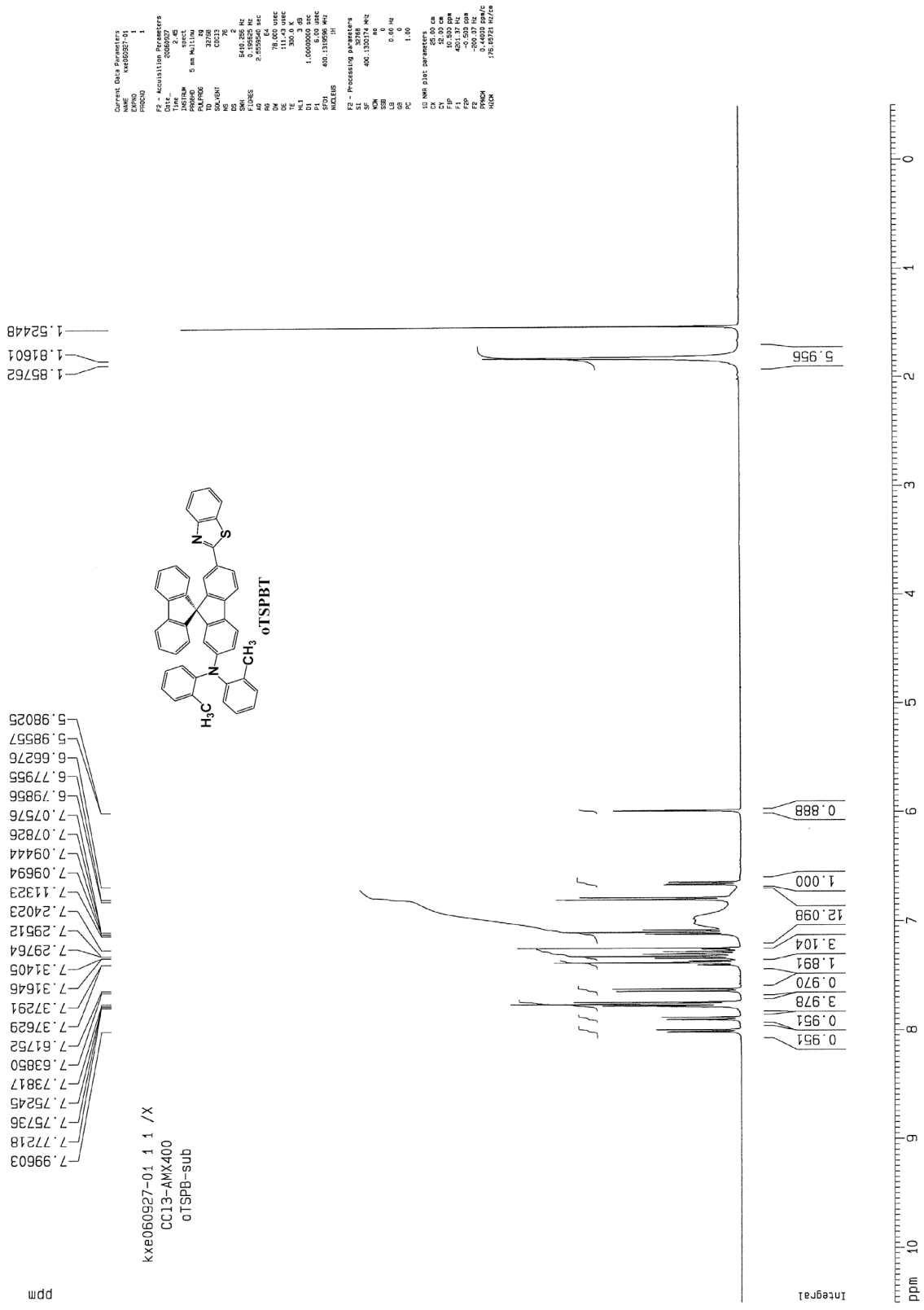

Figure S61. ^{1}H-NMR spectrum of (7-benzothiazol-2-yl-9,9'-spirobifluorene)-di-*o*-tolylamine (oTSPBT)

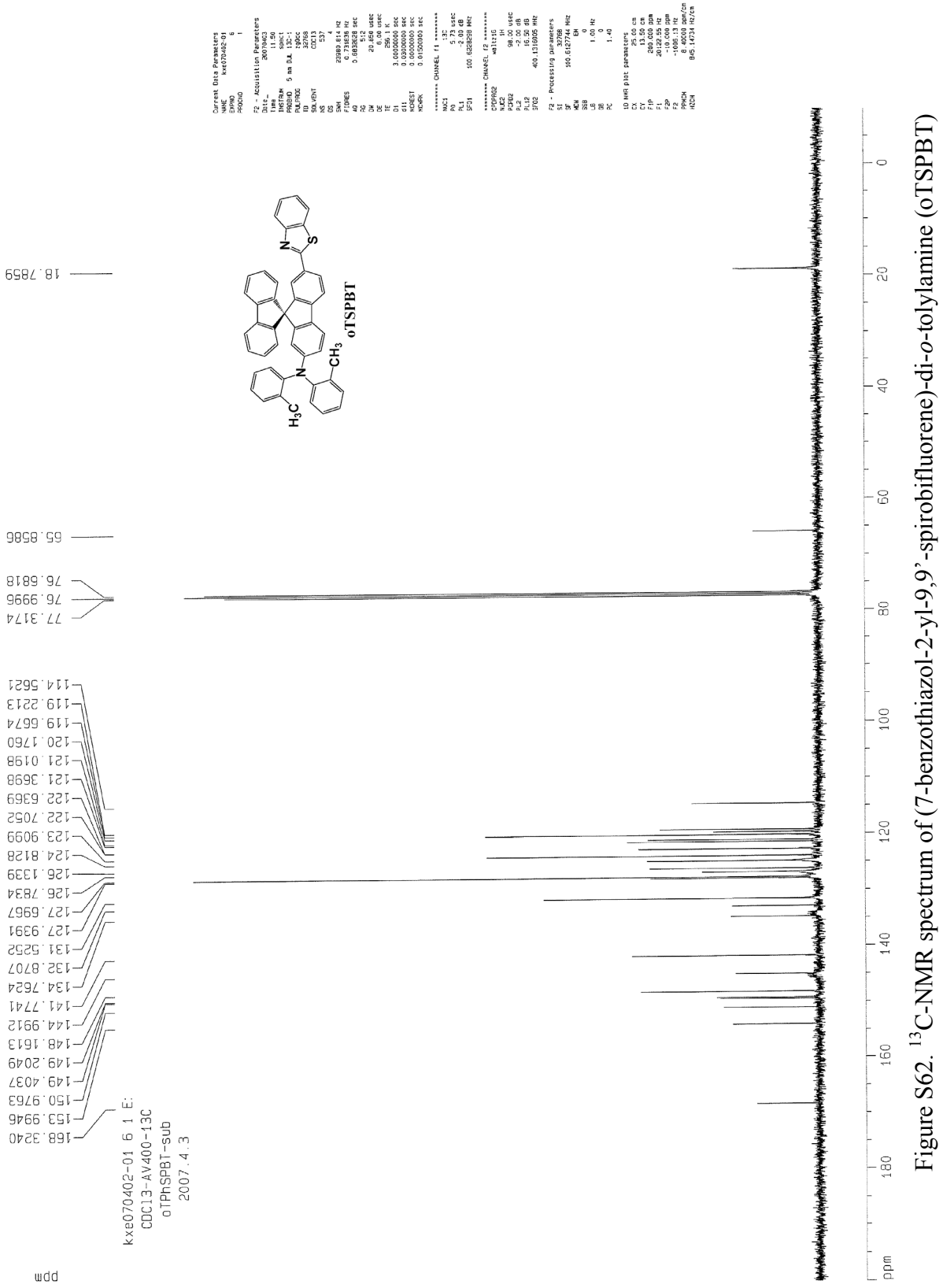

Figure S62. ^{13}C-NMR spectrum of (7-benzothiazol-2-yl-9,9'-spirobifluorene)-di-*o*-tolylamine (oTSPBT)

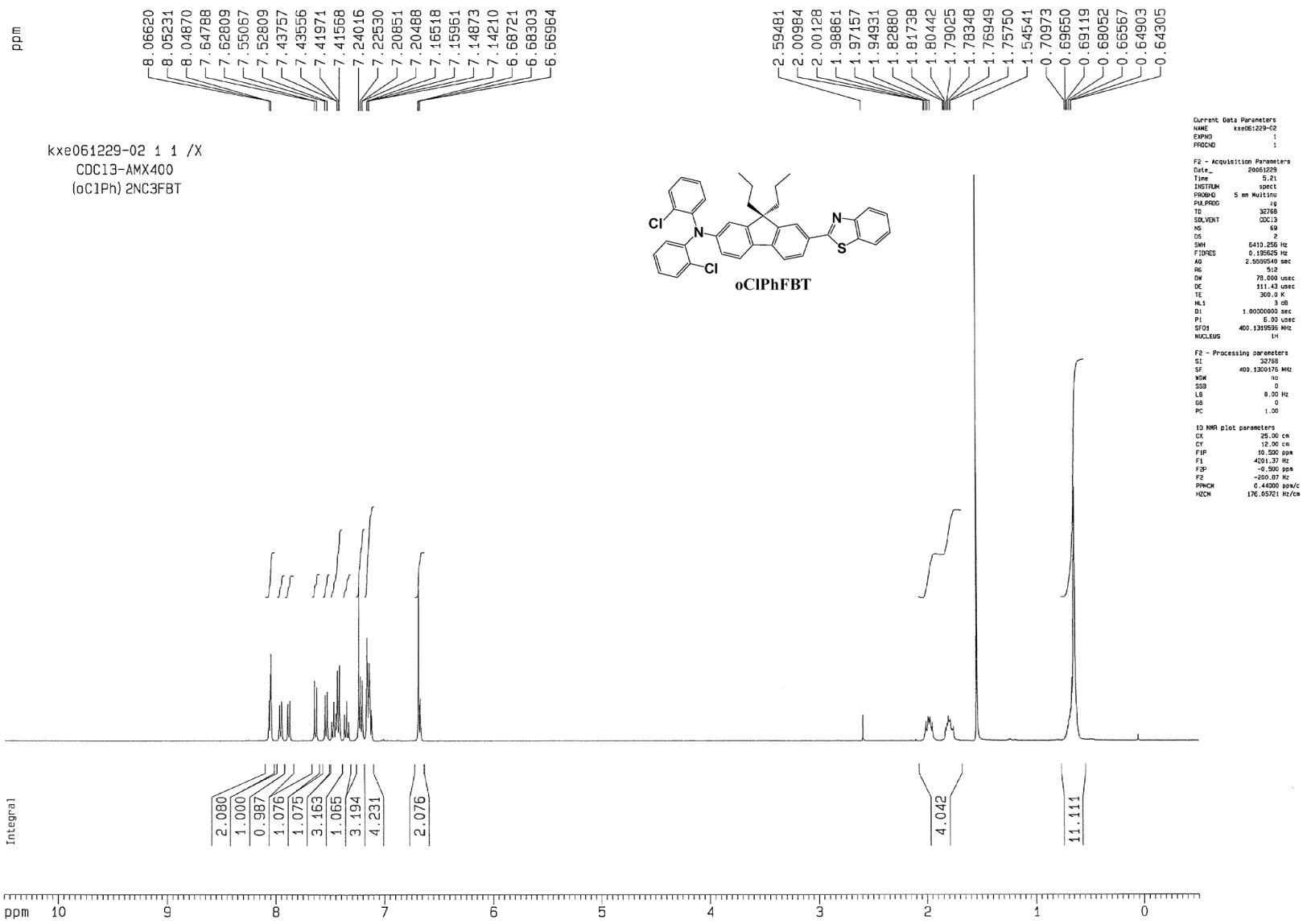

Figure S63. ^{1}H-NMR spectrum of (7-benzothiazol-2-yl-9,9'-dipropyl-9*H*-fluoren-2-yl)-bis-(2-chlorophenyl)amine (oClPhFBT)

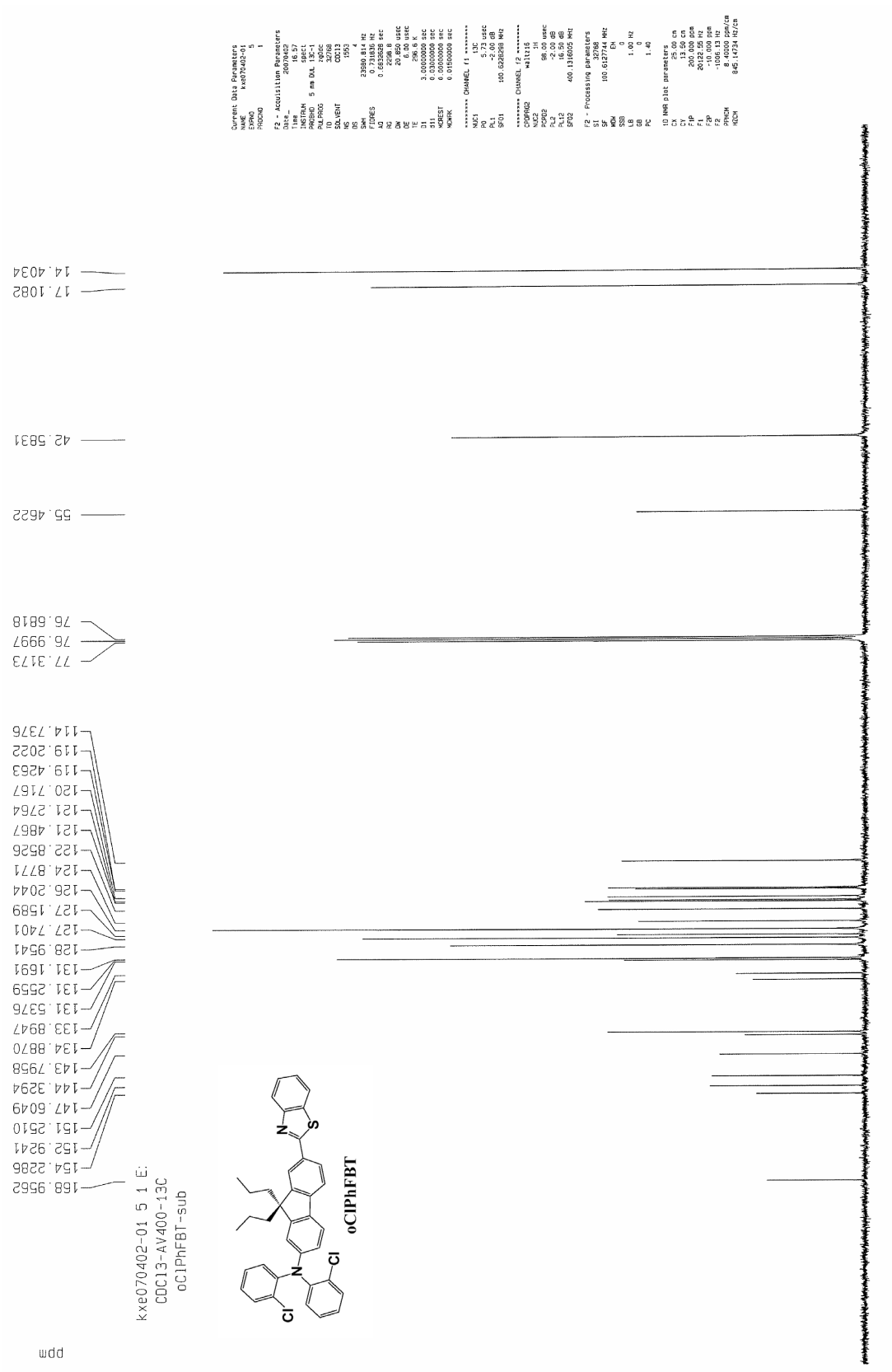

Figure S64. ^{13}C-NMR spectrum of (7-benzothiazol-2-yl-9,9’-dipropyl-9*H*-fluoren-2-yl)-bis-(2-chlorophenyl)amine (oClPhFBT)

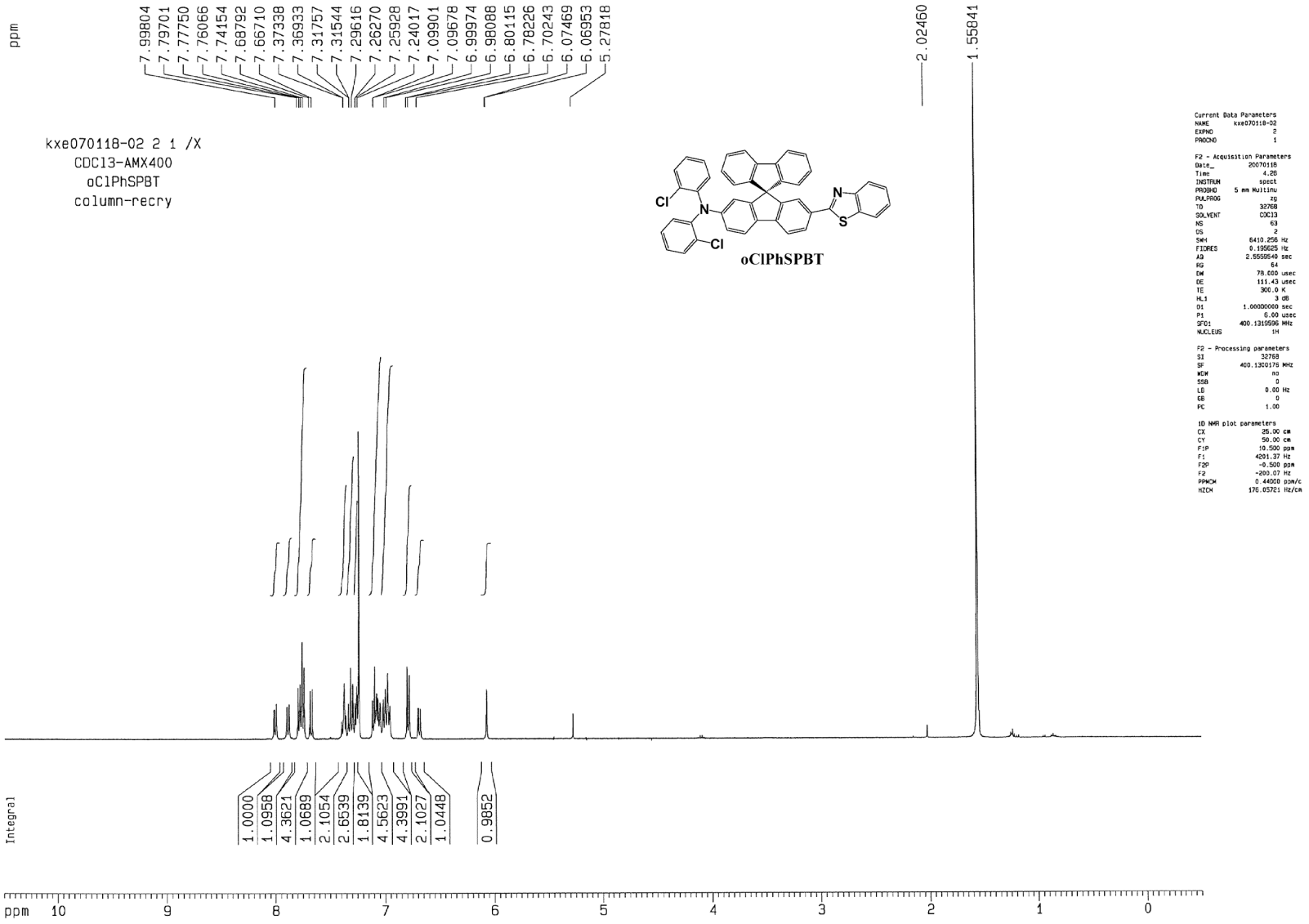

Figure S65. ^{1}H-NMR spectrum of (7-benzothiazol-2-yl-9,9'-spirobifluorene)-bis-(2-chlorophenyl)amine (oClPhSPBT)

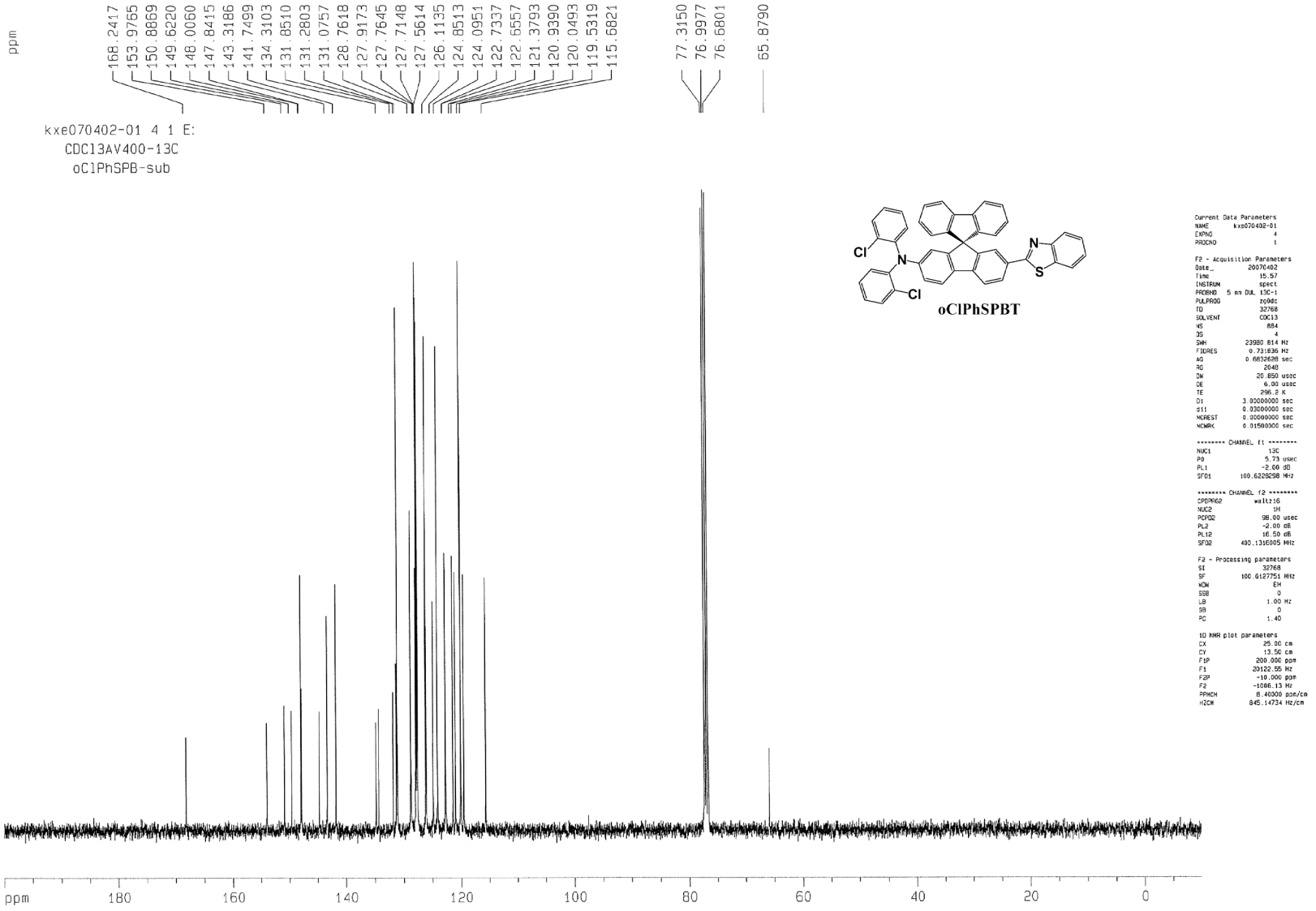

Figure S66. ^{13}C-NMR spectrum of (7-benzothiazol-2-yl-9,9'-spirobifluorene)-bis-(2-chlorophenyl)amine (oClPhSPBT)

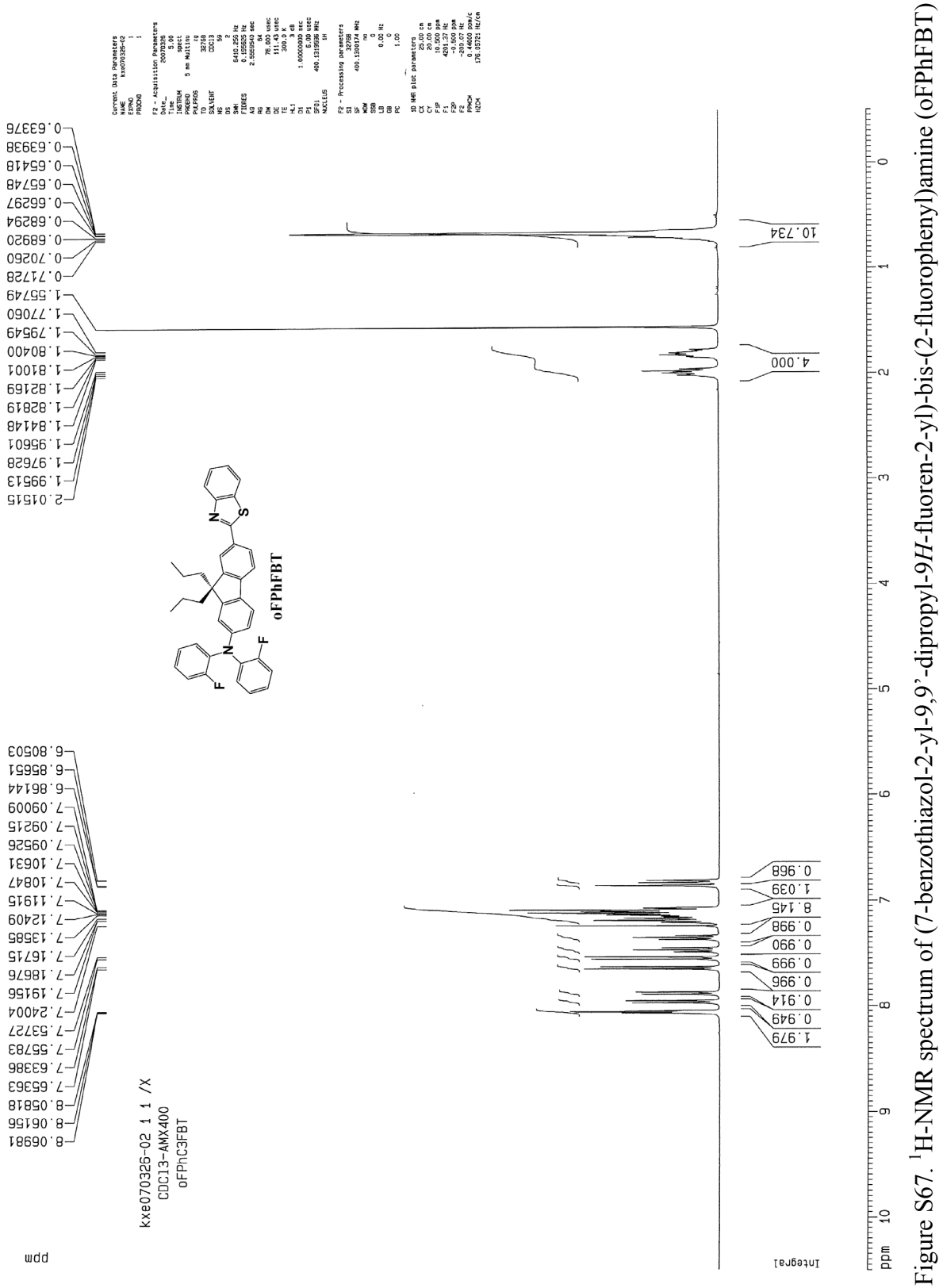

Figure S67. ^{1}H-NMR spectrum of (7-benzothiazol-2-yl-9,9’-dipropyl-9*H*-fluoren-2-yl)-bis-(2-fluorophenyl)amine (oFPhFBT)

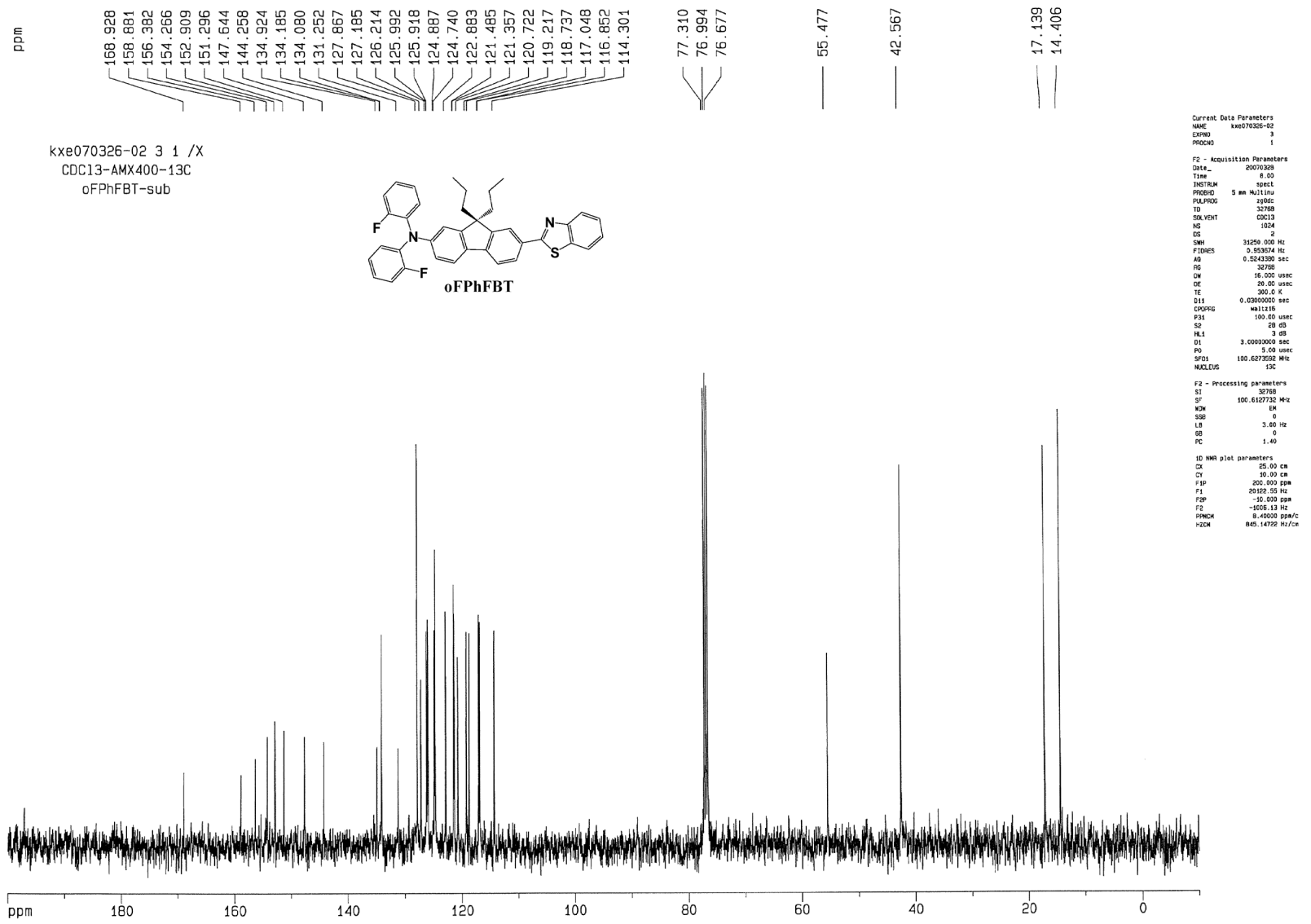

Figure S68. ^{13}C-NMR spectrum of (7-benzothiazol-2-yl-9,9'-dipropyl-9*H*-fluoren-2-yl)-bis-(2-fluorophenyl)amine (oFPhFBT)

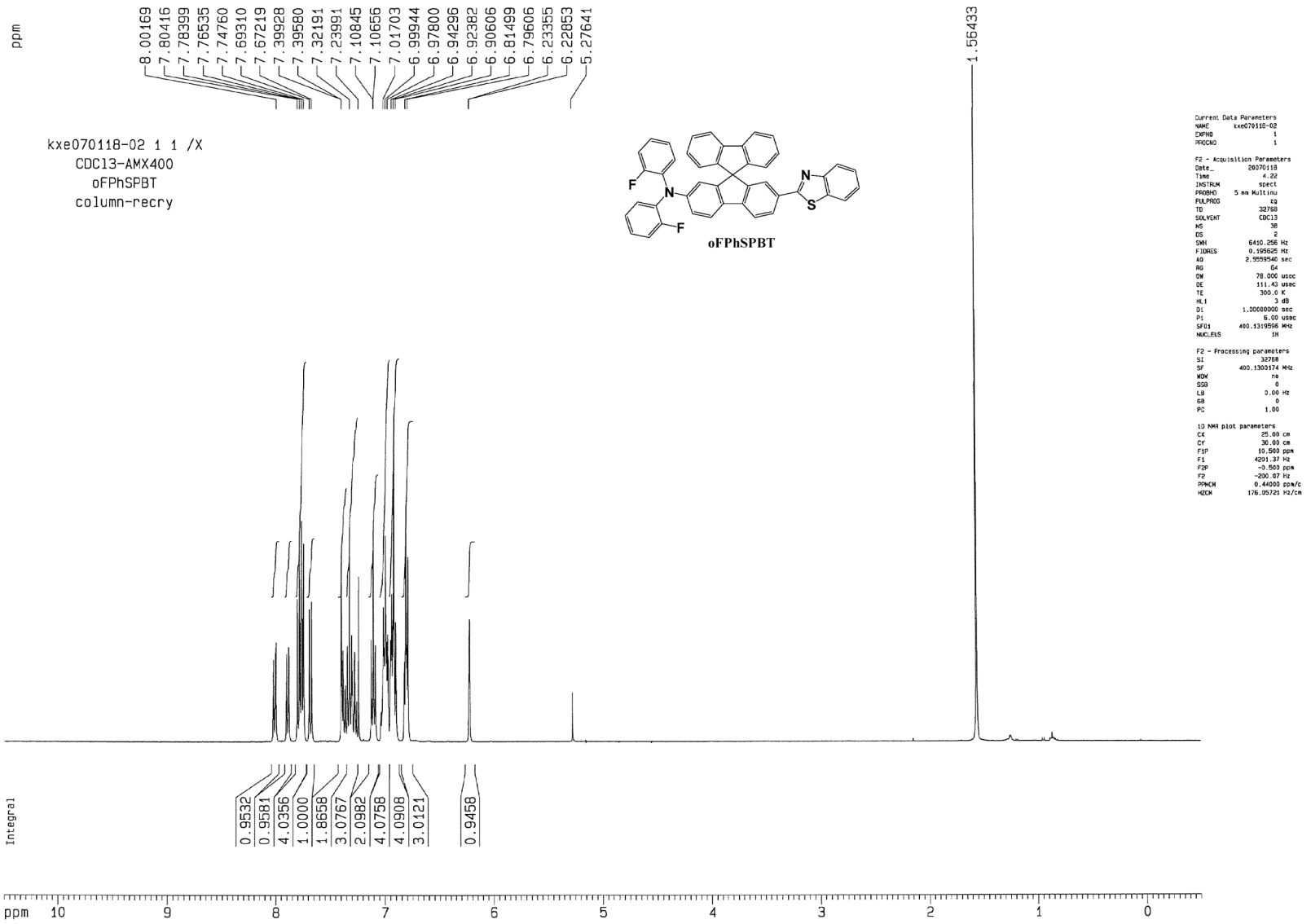

Figure S69. ^{1}H-NMR spectrum of (7-benzothiazol-2-yl-9,9'-spirobifluorene)-bis-(2-fluorophenyl)amine (oFPhSPBT)

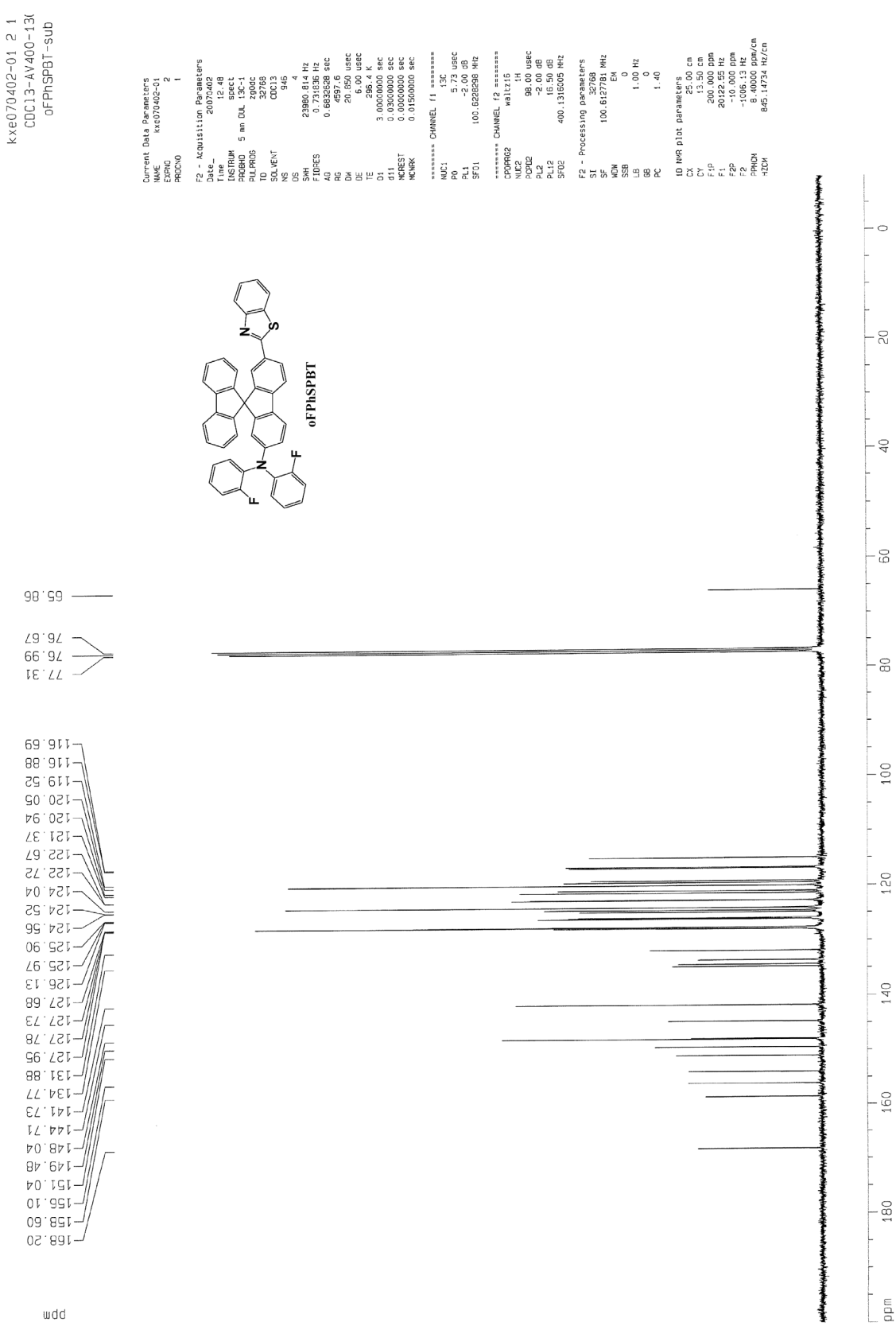

Figure S70. ^{13}C-NMR spectrum of (7-benzothiazol-2-yl-9,9'-spirobifluorene)-bis-(2-fluorophenyl)amine (oFPhSPBT)

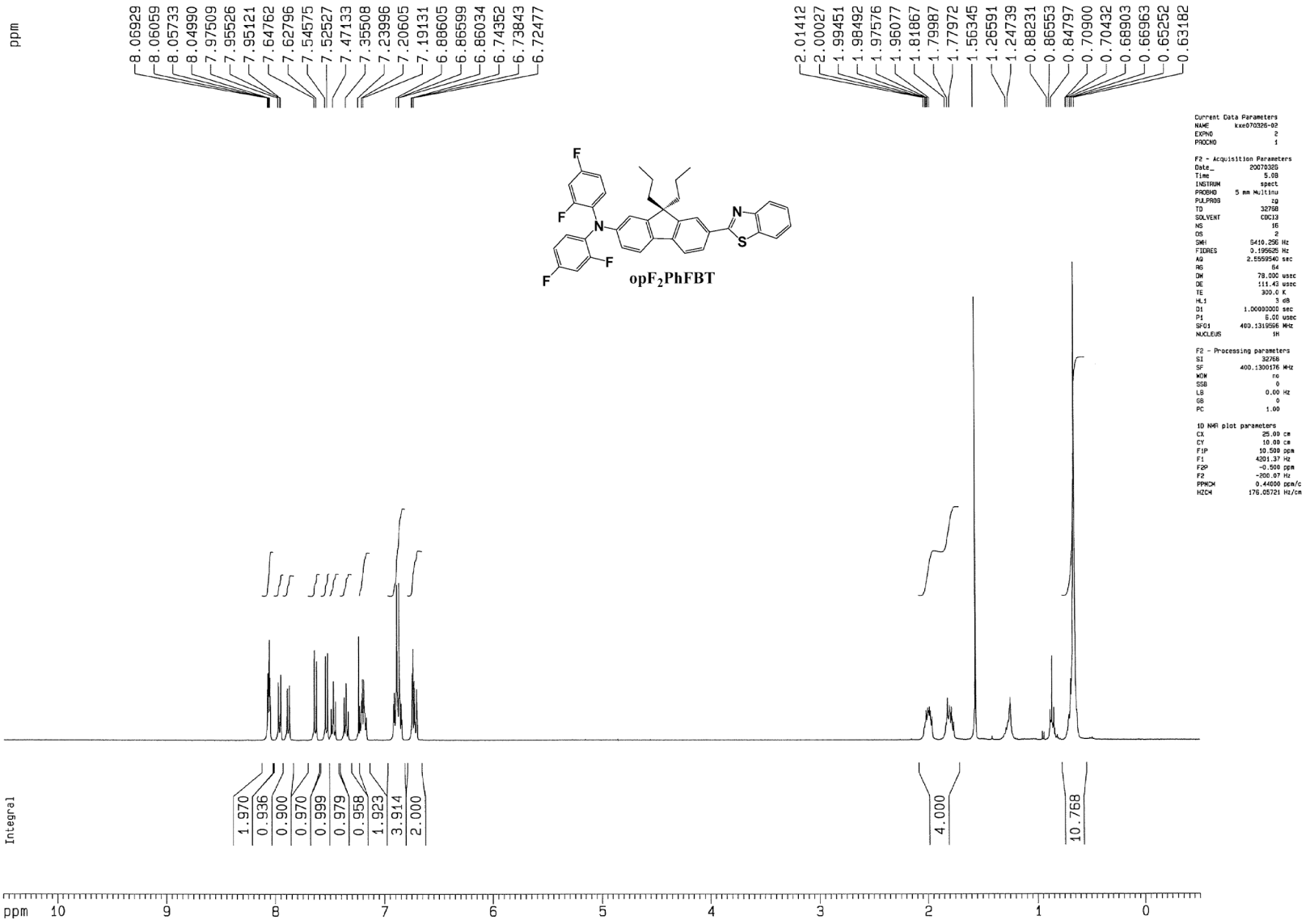

Figure S71. ^{1}H-NMR spectrum of (7-benzothiazol-2-yl-9,9'-dipropyl-9*H*-fluoren-2-yl)-bis-(2,4-difluorophenyl)amine (opF2PhFBT)

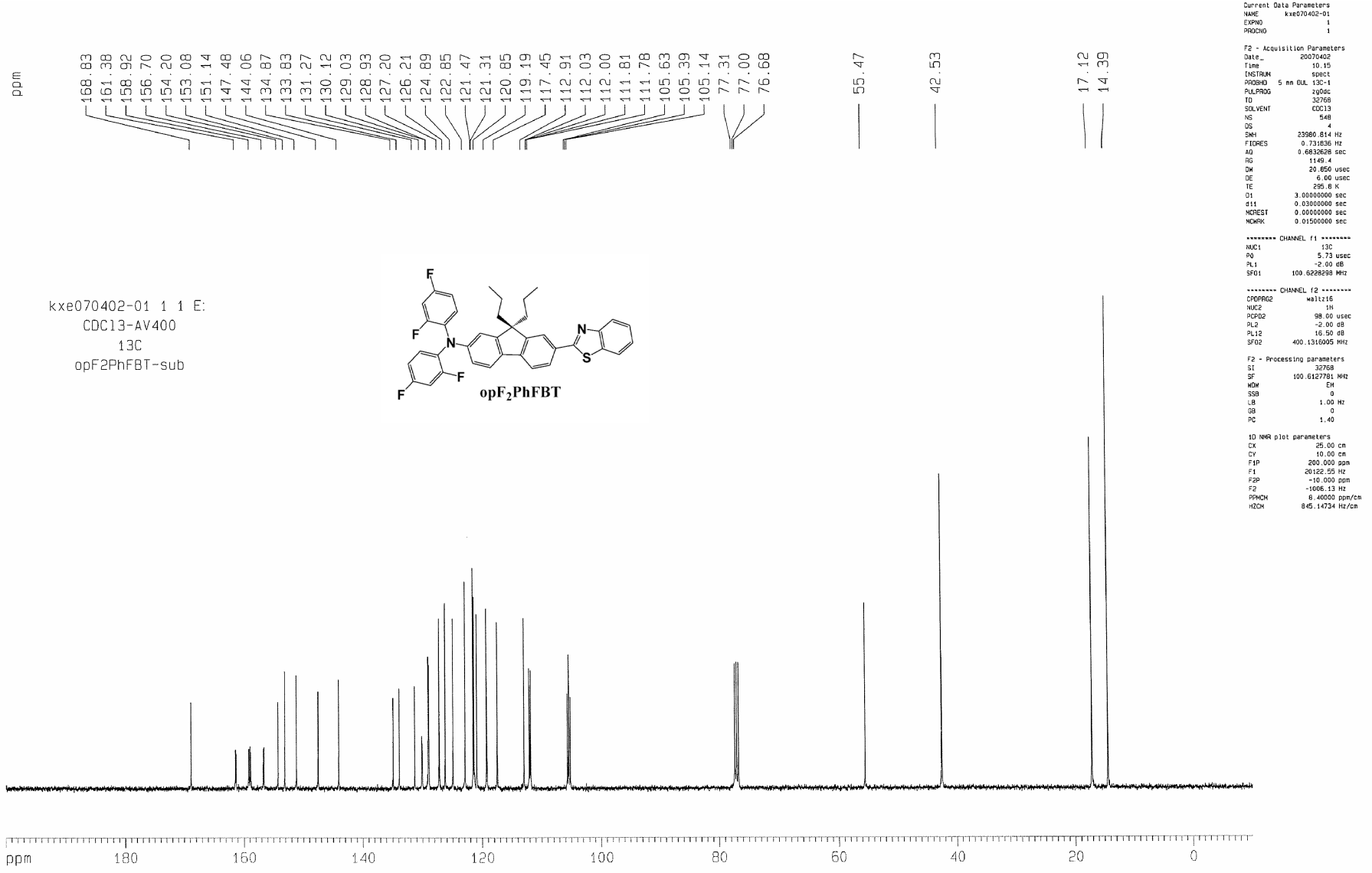

Figure S72. ^{13}C-NMR spectrum of (7-benzothiazol-2-yl-9,9'-dipropyl-9*H*-fluoren-2-yl)-bis-(2,4-difluorophenyl)amine (opF2PhFBT)

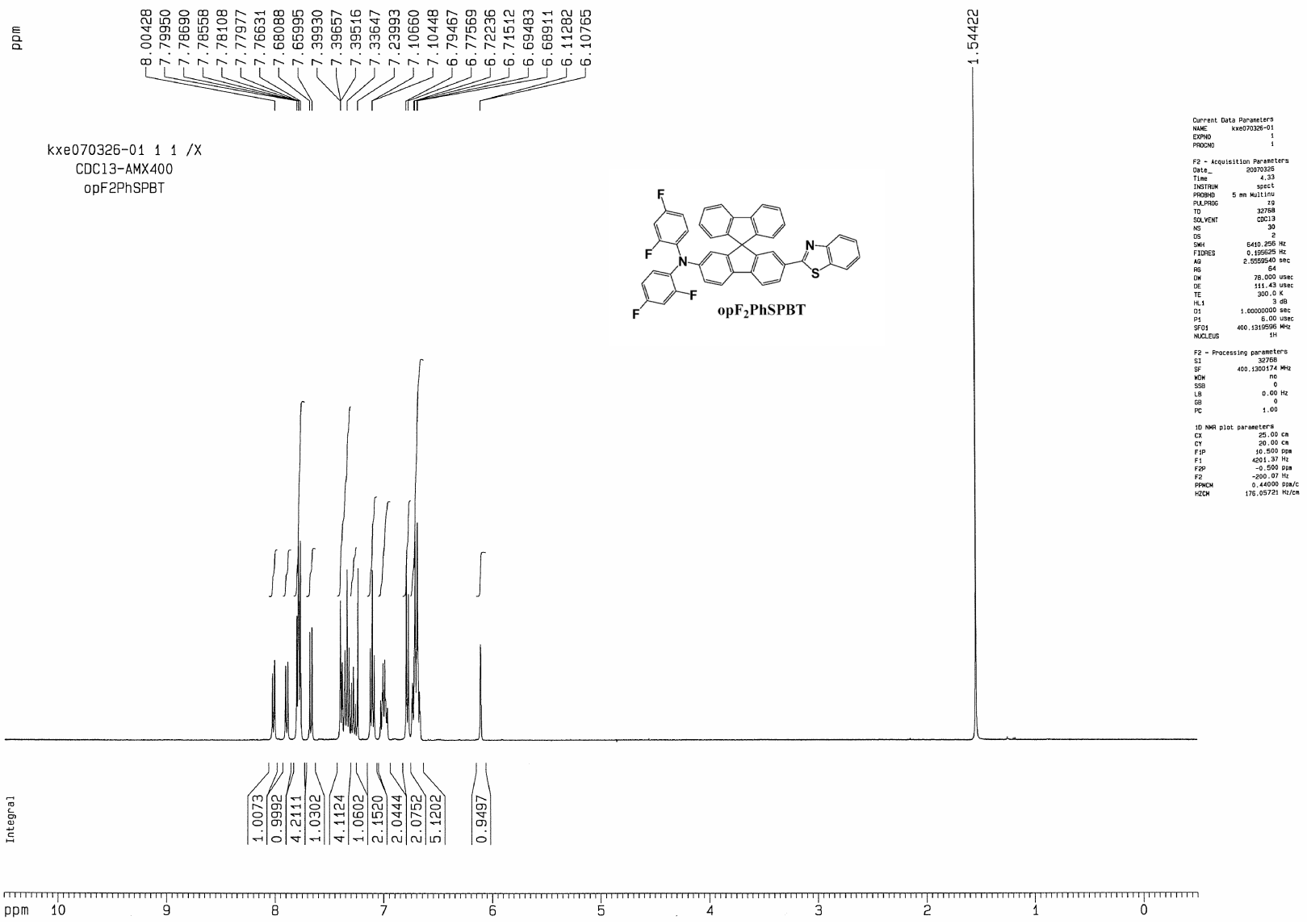

Figure S73. ^{1}H-NMR spectrum of (7-benzothiazol-2-yl-9,9'-spirobifluorene)-bis-(2,4-difluorophenyl)amine (opF2PhSPBT)

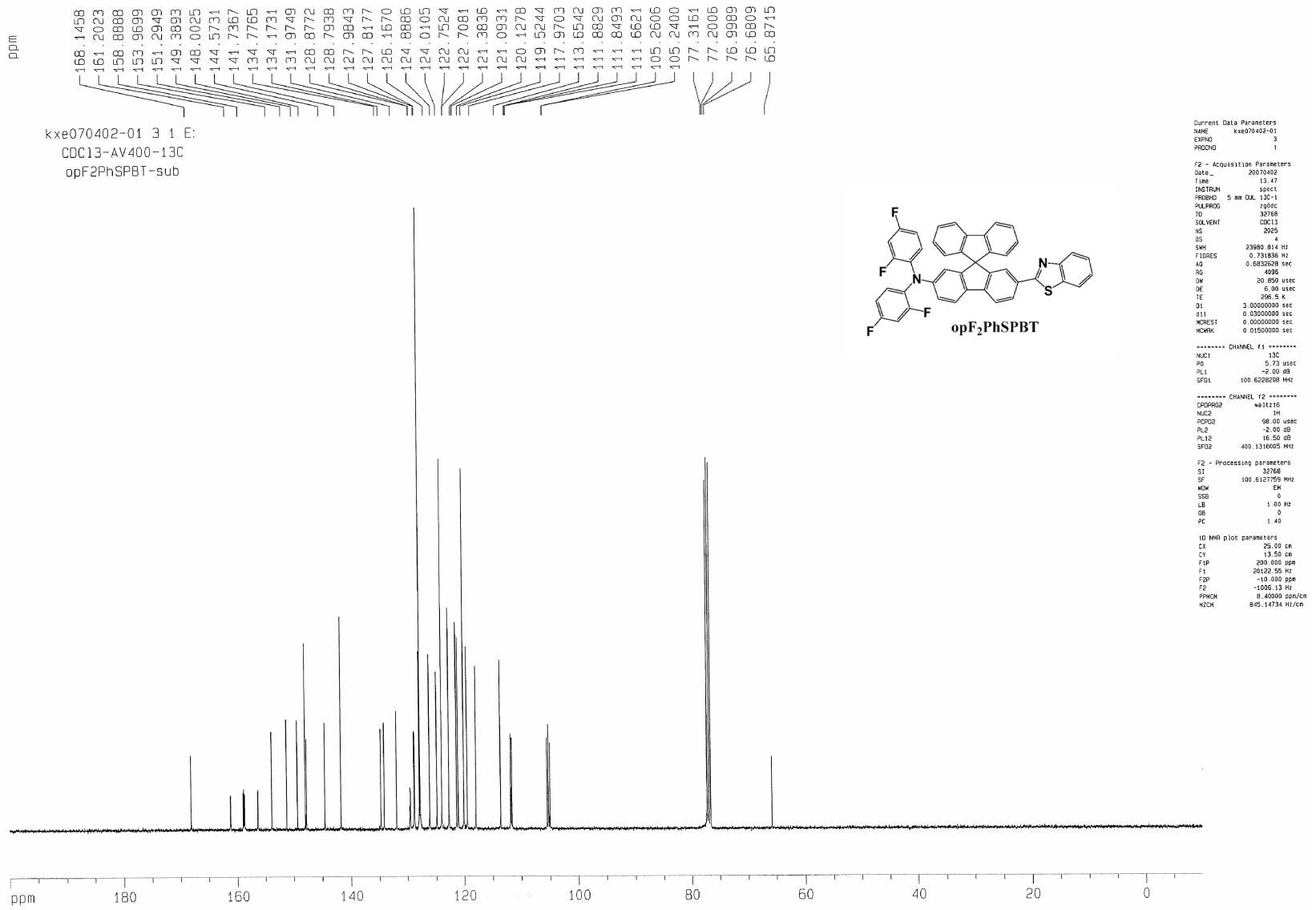

Figure S74. ^{13}C-NMR spectrum of (7-benzothiazol-2-yl-9,9'-spirobifluorene)-bis-(2,4-difluorophenyl)amine (opF2PhSPBT)