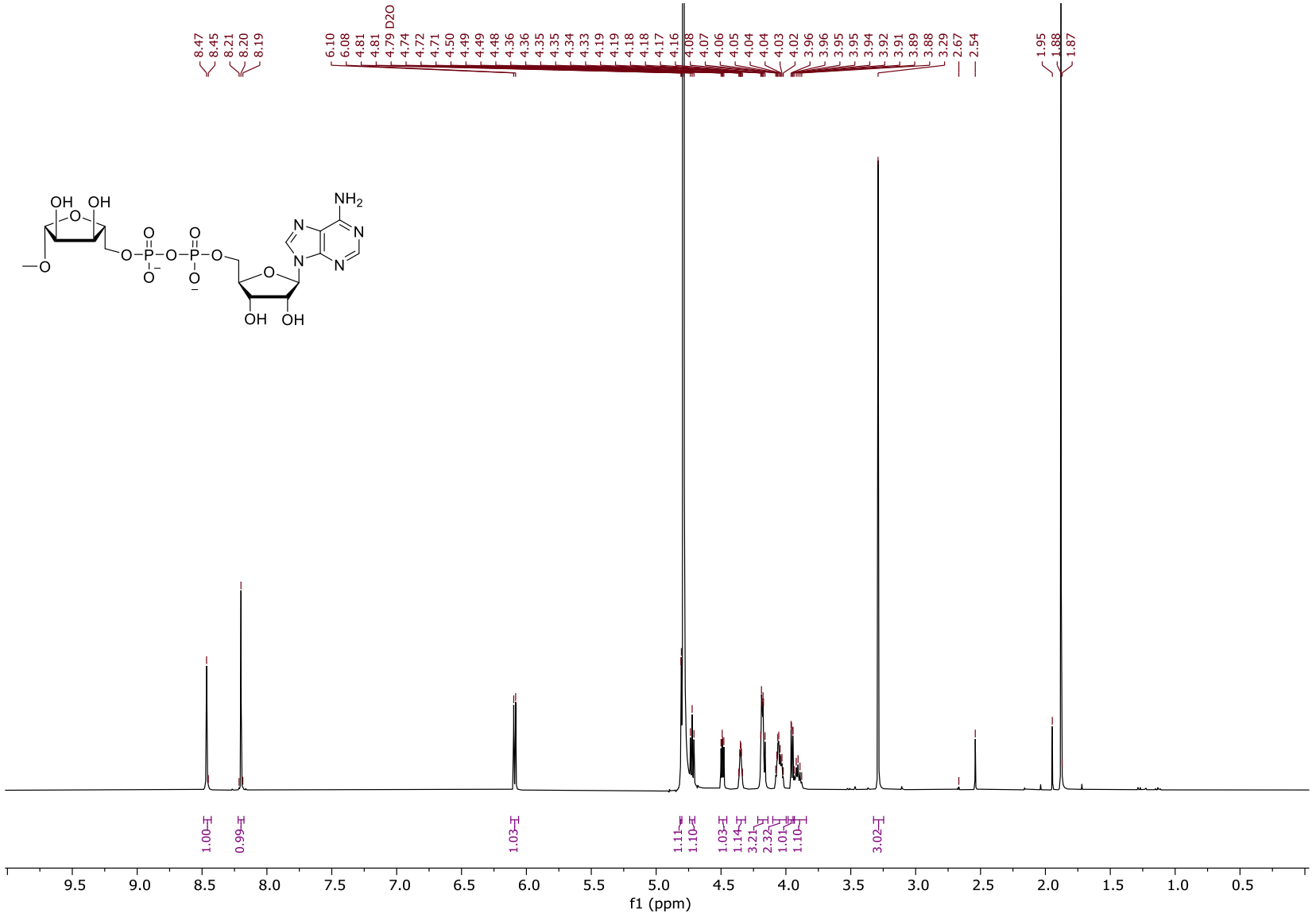
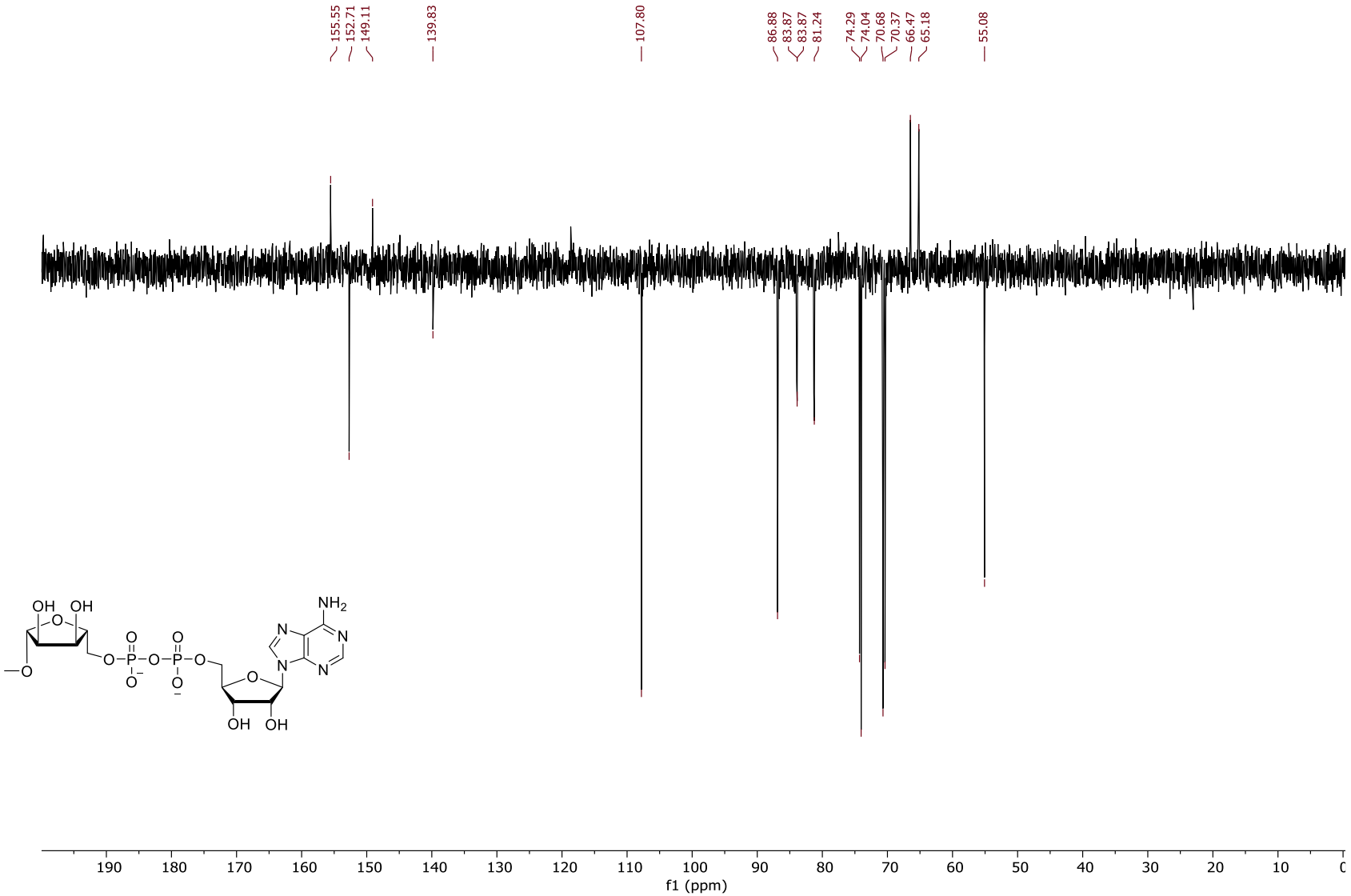
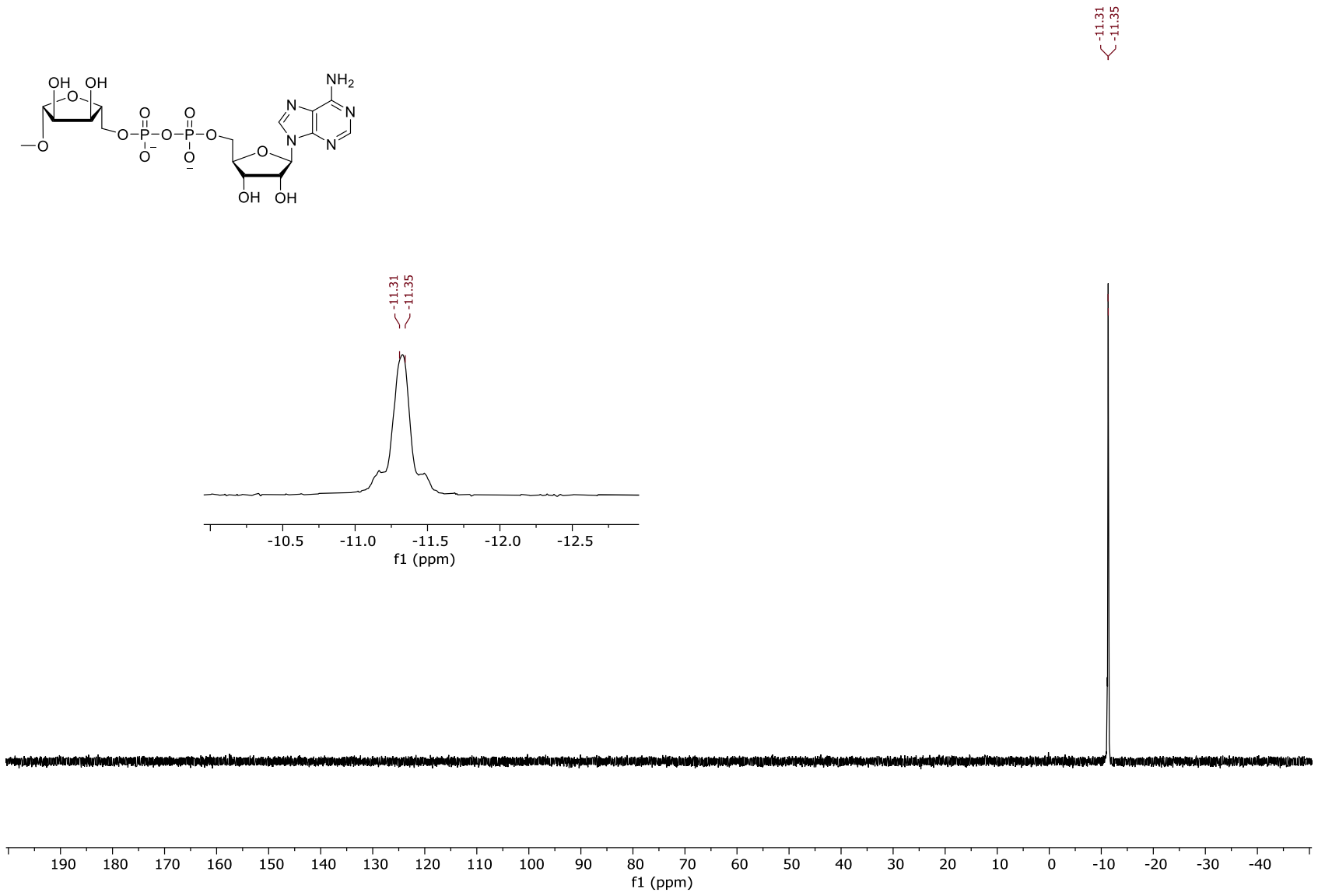


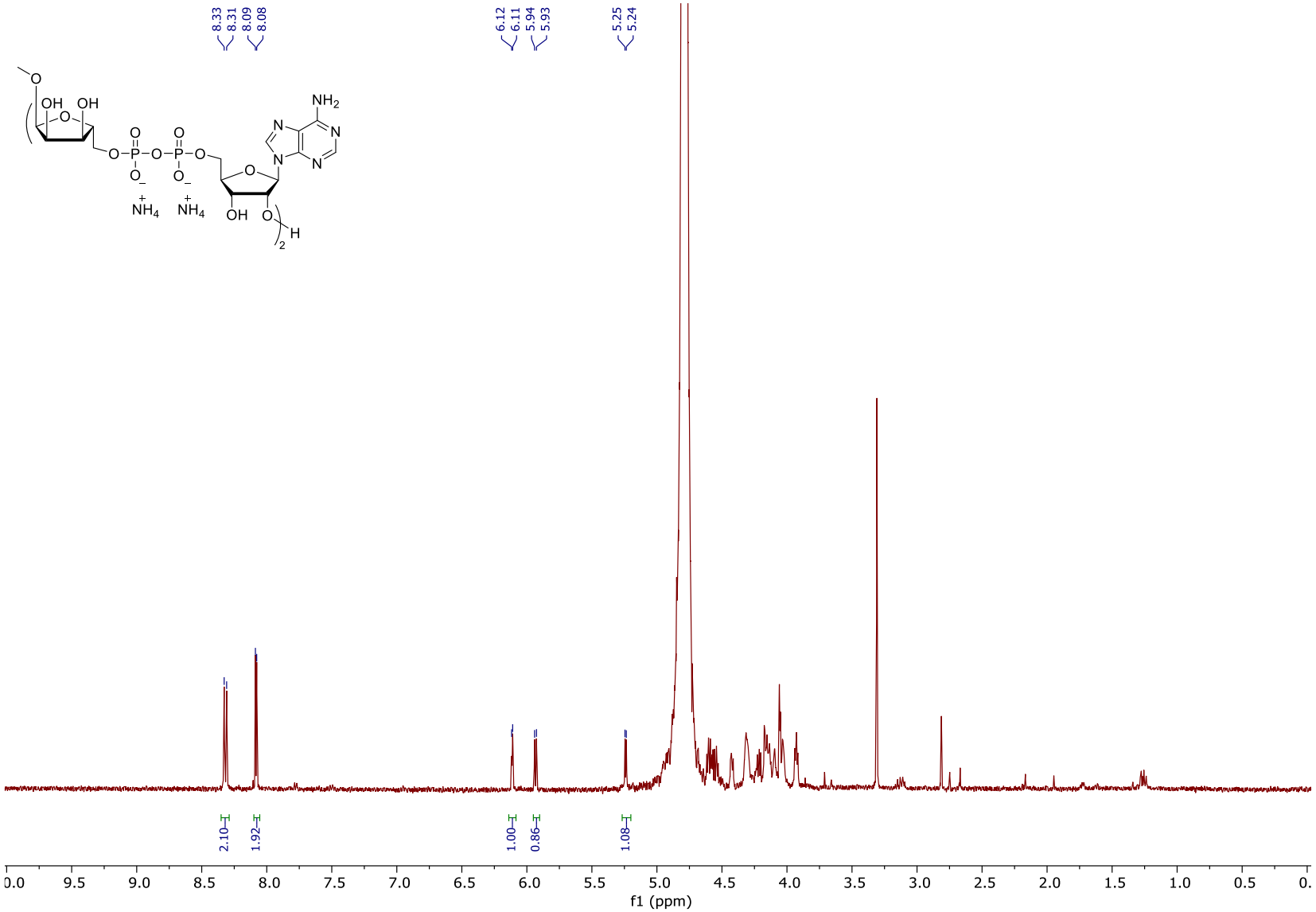
^{1}H-NMR (400 MHz, D_2O) of compound **66**. Solvent peak at 4.79 ppm.



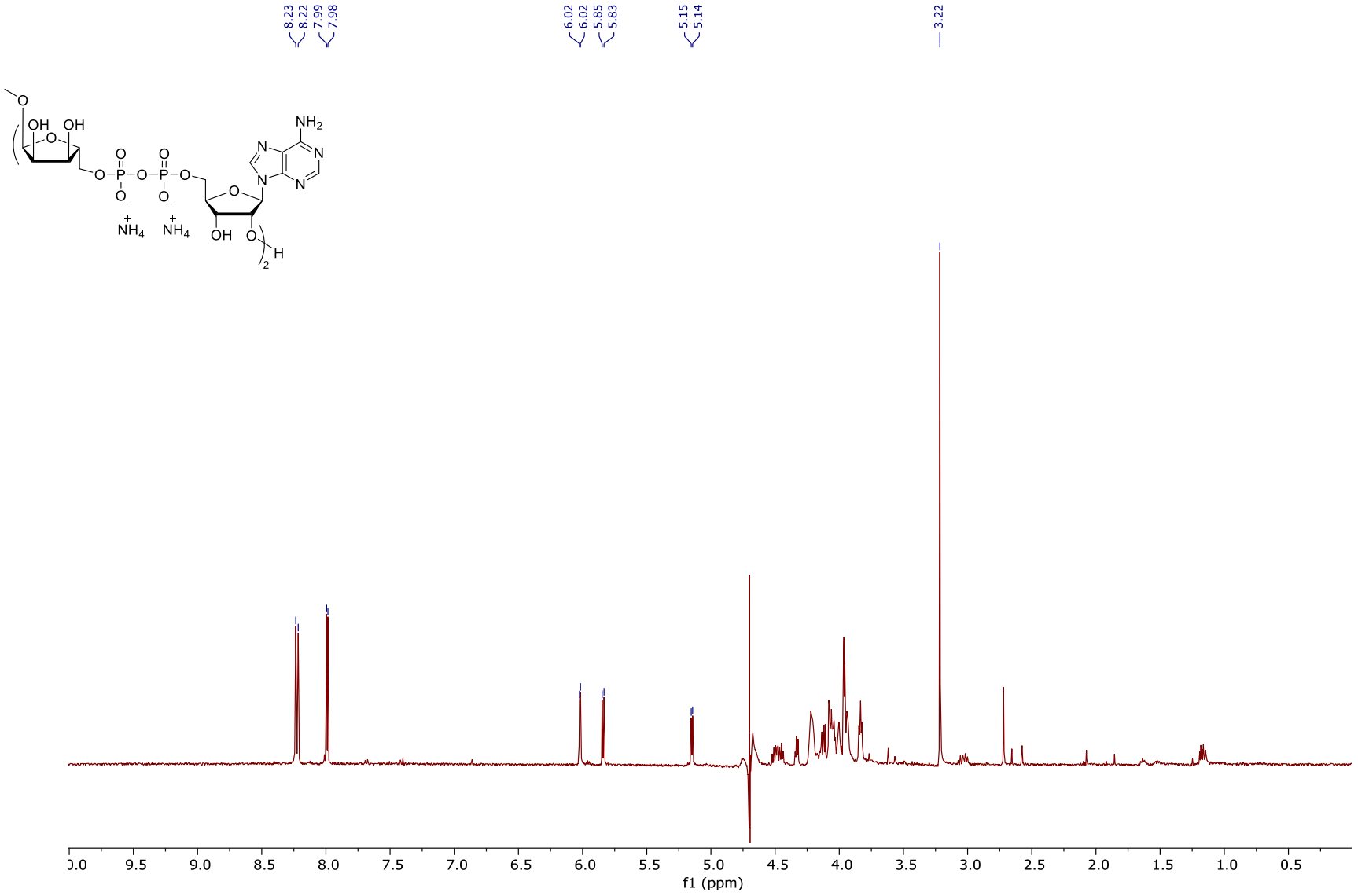
^{31}C-NMR (101 MHz, D_2O) of compound **66**.



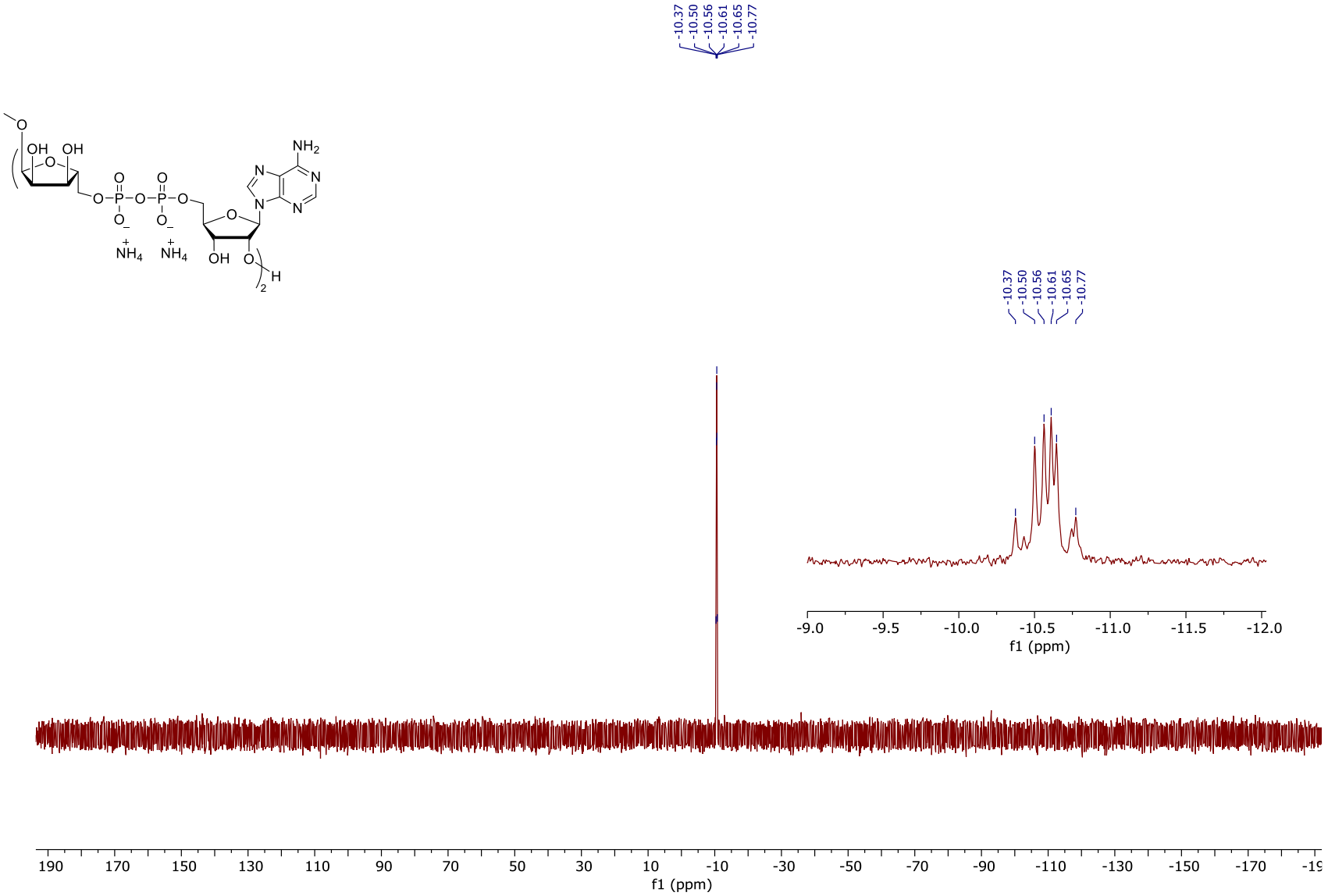
^{31}P-NMR (162 MHz, D_2O) of compound **66**.



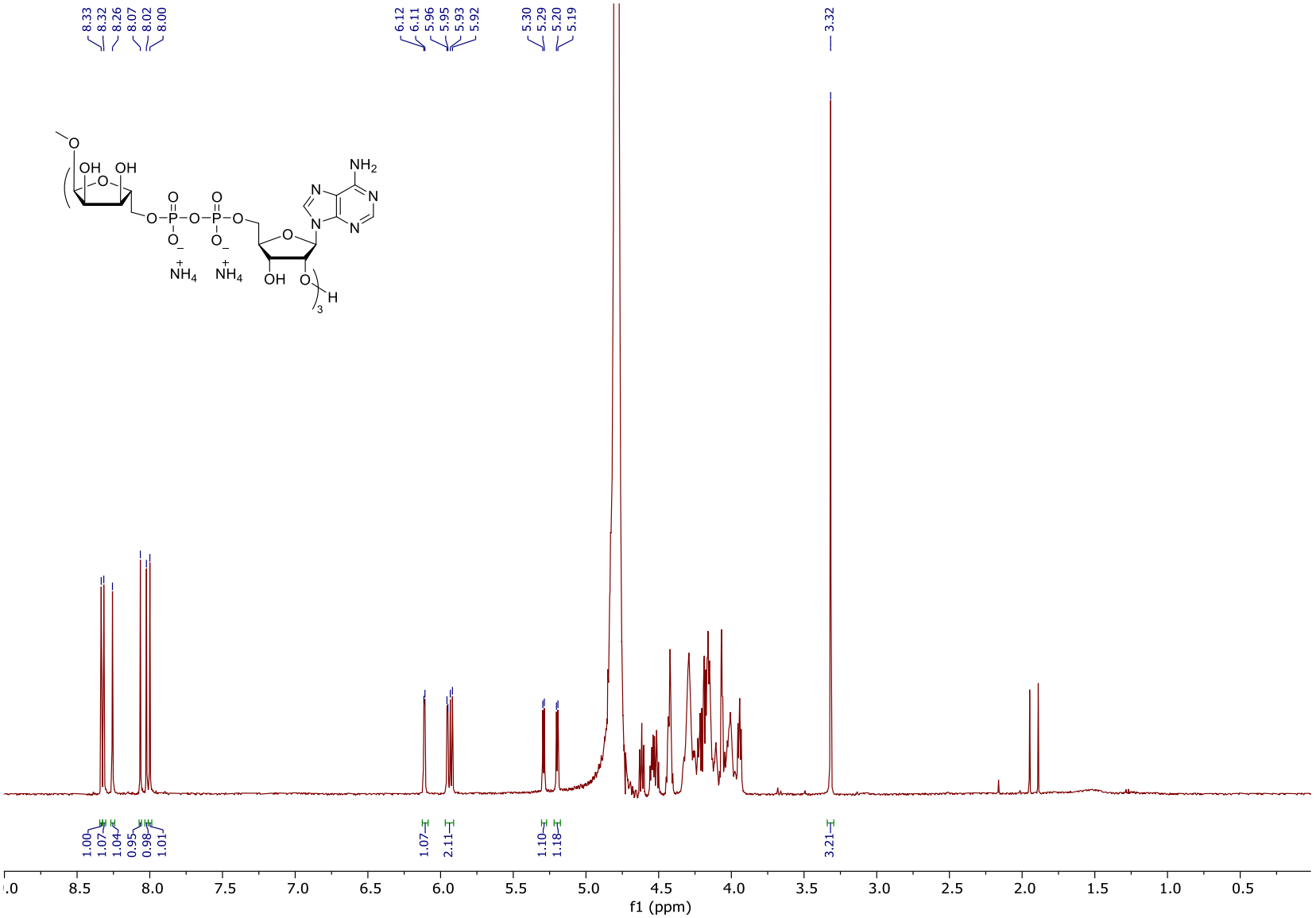
^{1}H-NMR (400 MHz, D_2O) of compound **42**. Solvent peak at 4.79 ppm.



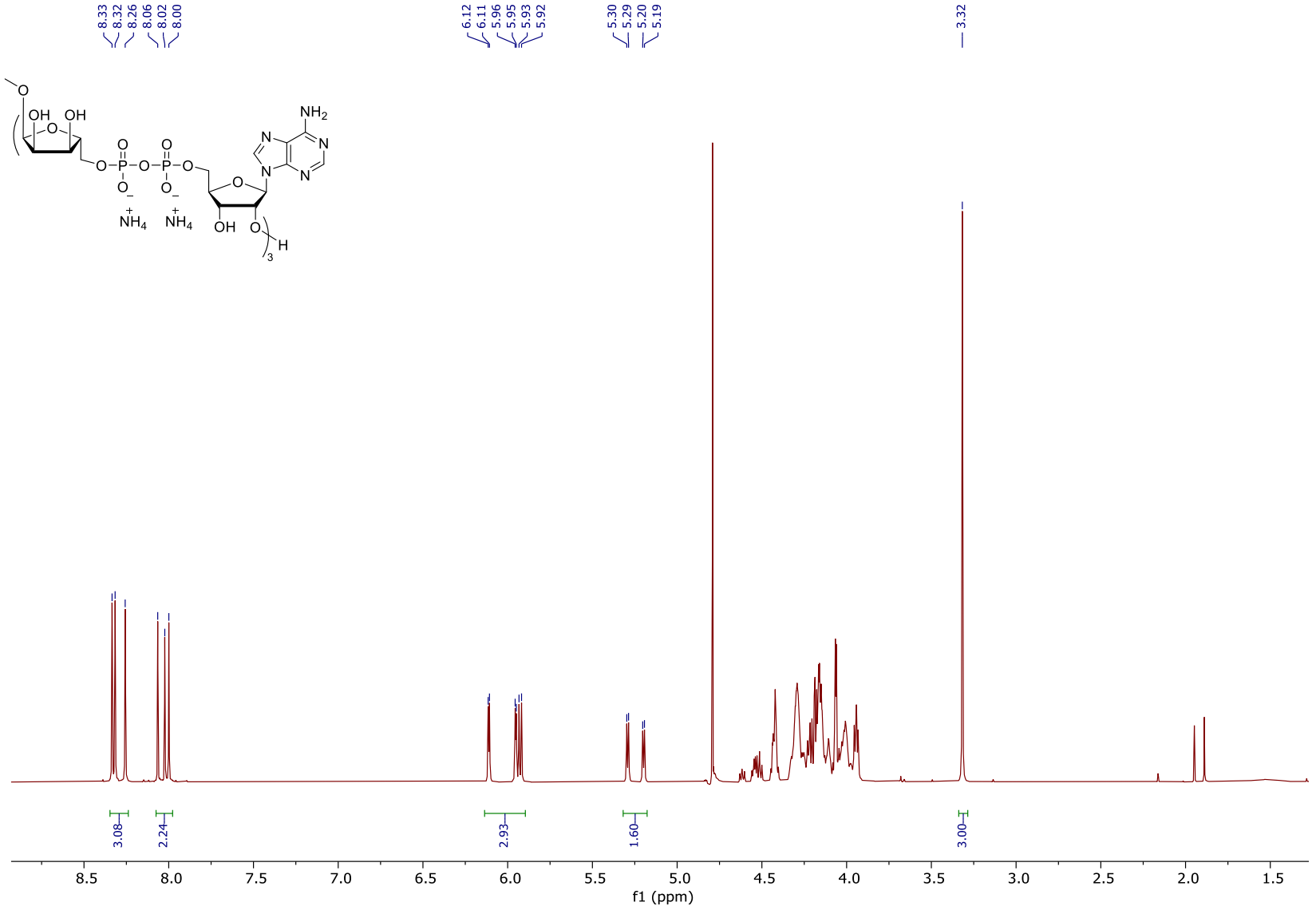
^{1}H-NMR (400 MHz, D_2O, pre-saturated) of compound **42**. Solvent peak at 4.79 ppm.



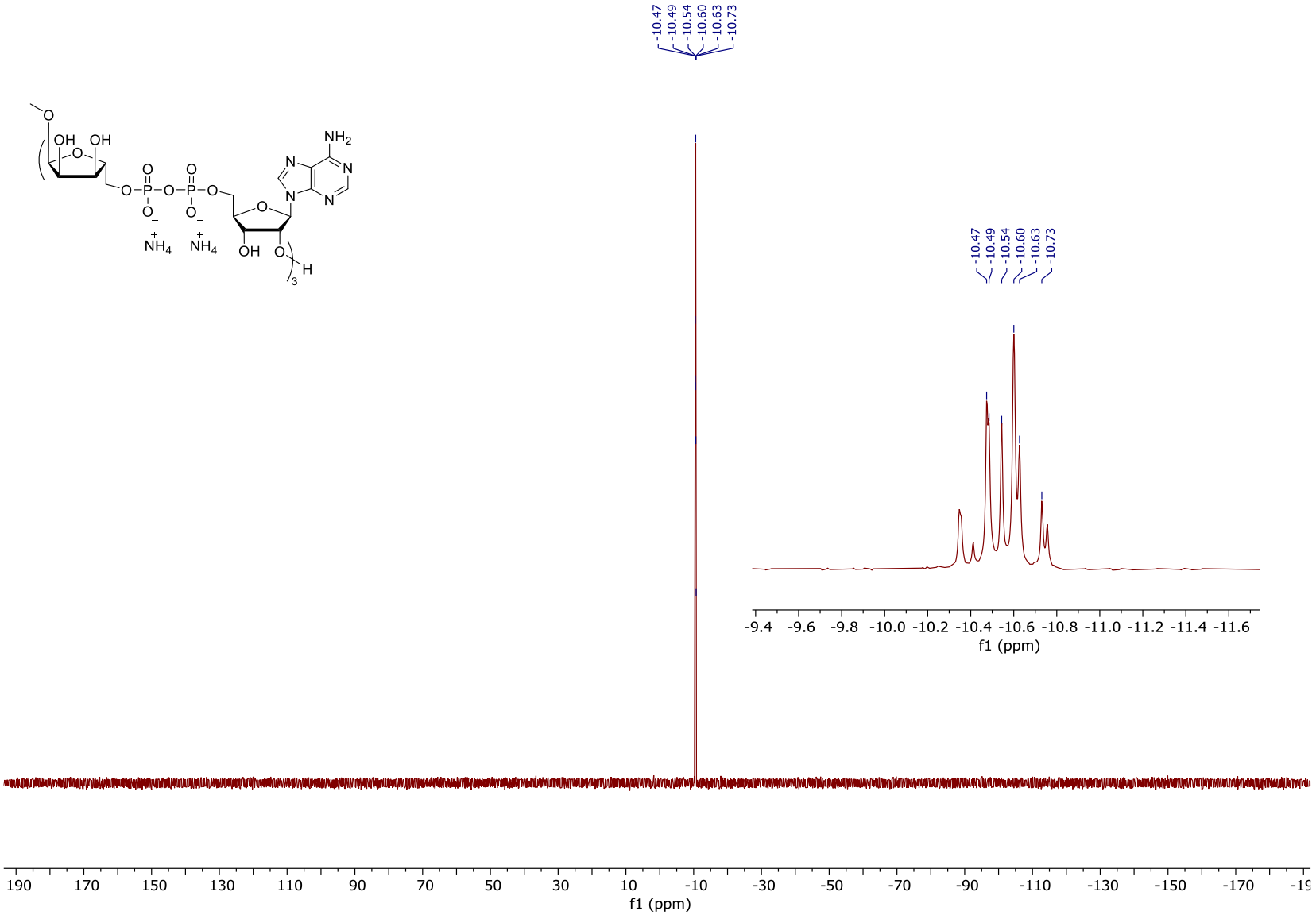
^{31}P-NMR (162 MHz, D_2O) of compound **42**.



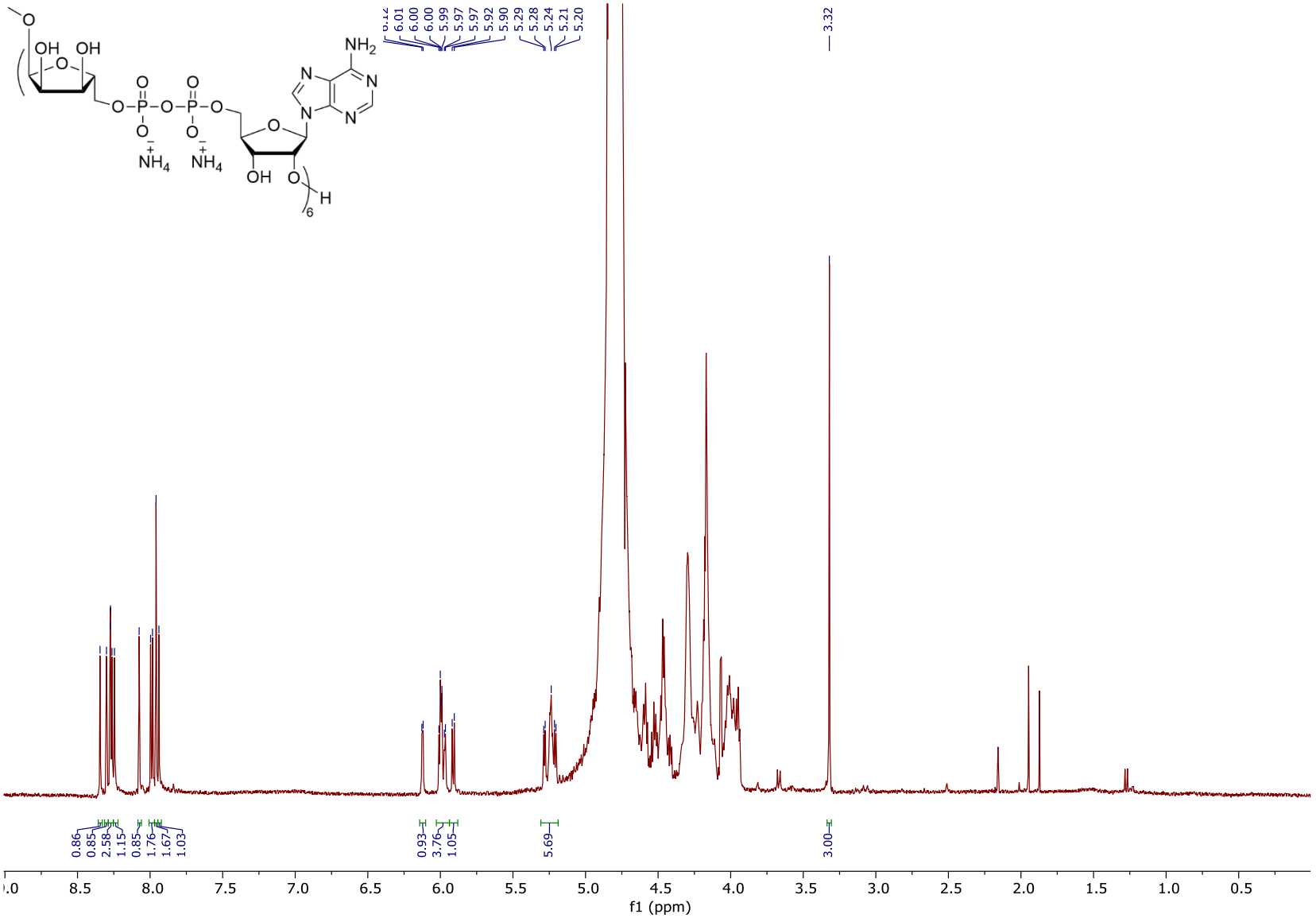
^{1}H-NMR (400 MHz, D_2O) of compound **43**. Solvent peak at 4.79 ppm.



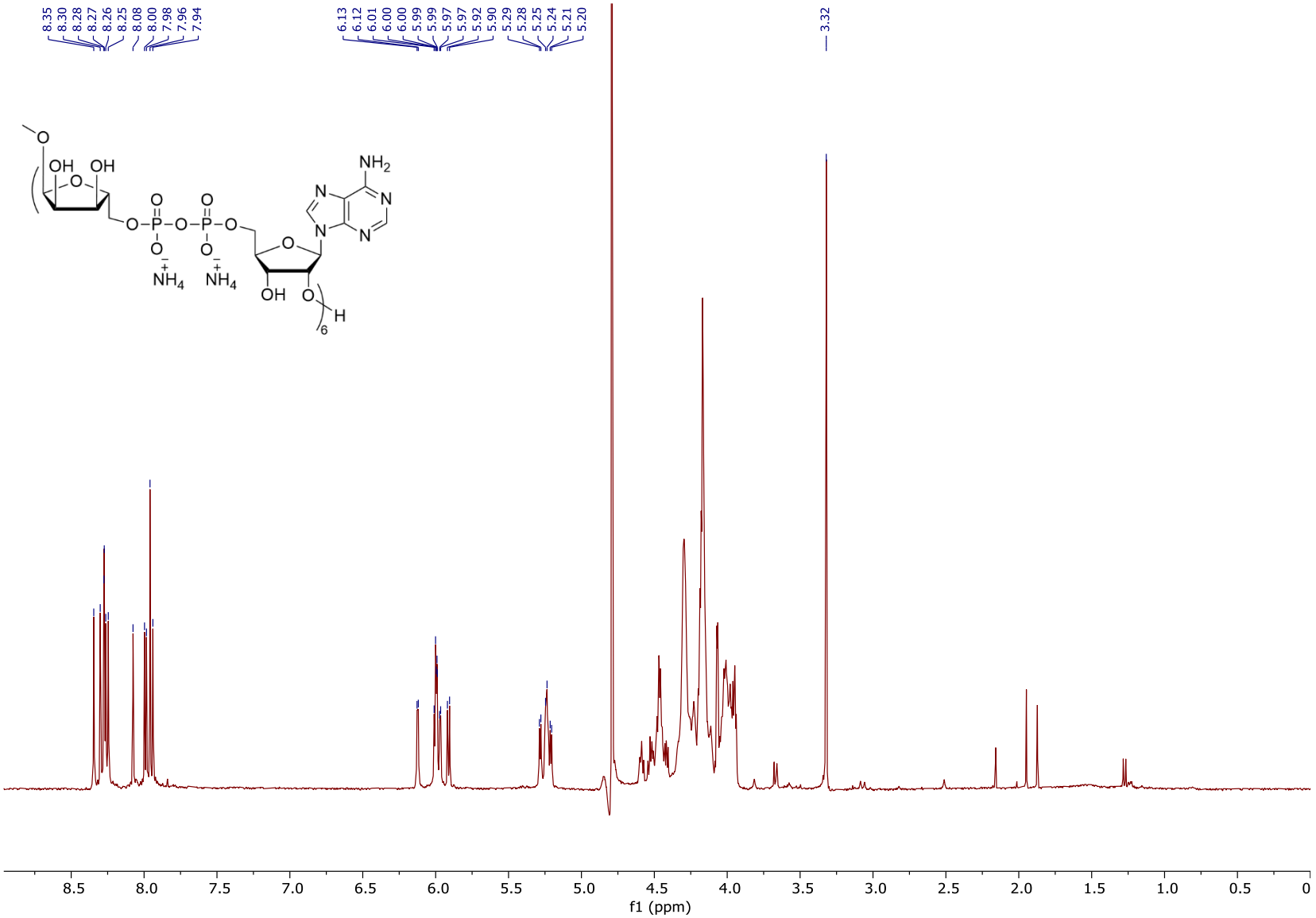
^{1}H-NMR (400 MHz, D_2O, pre-saturated) of compound **43**. Solvent peak at 4.79 ppm.



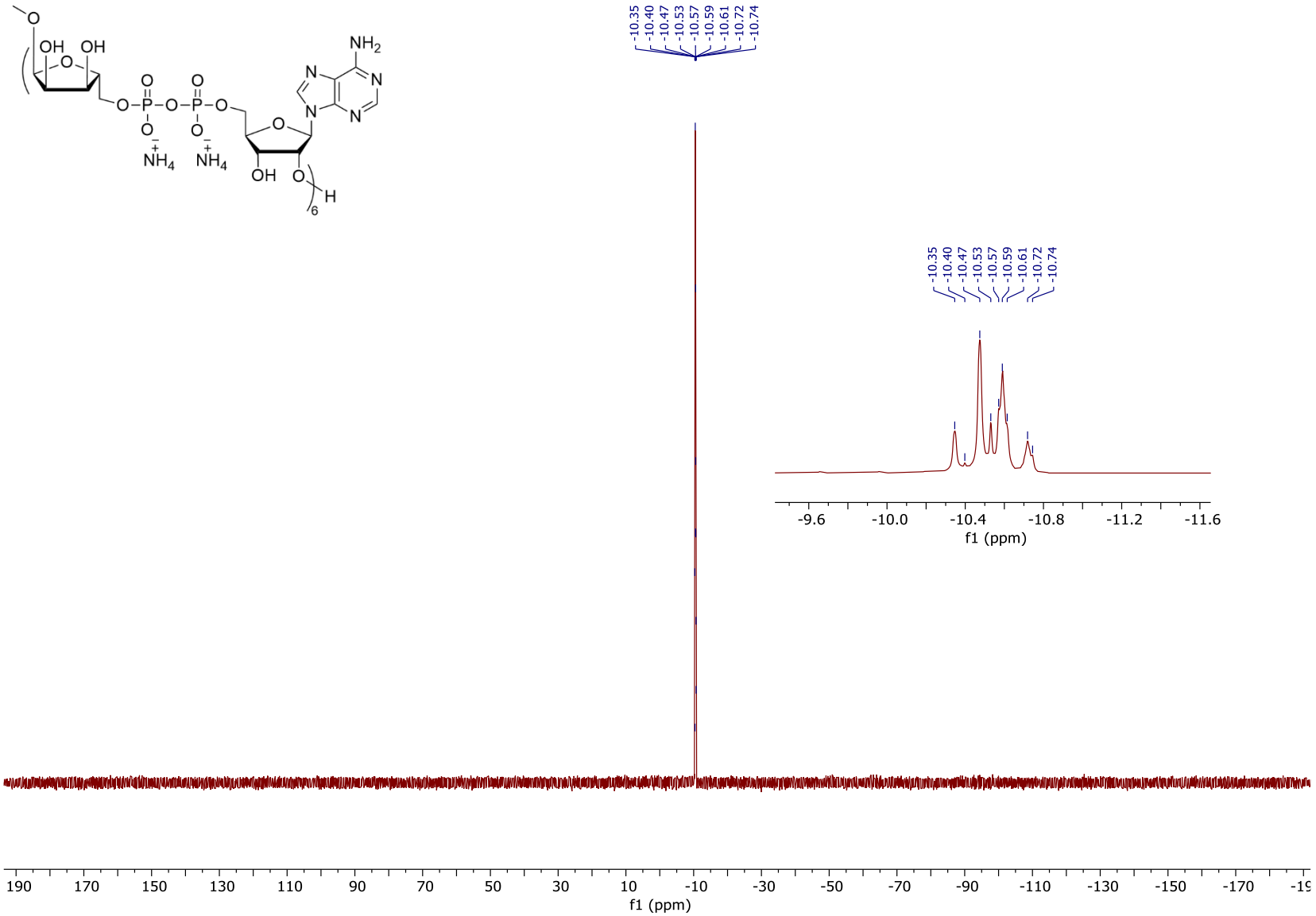
^{31}P-NMR (162 MHz, D_2O) of compound **43**.



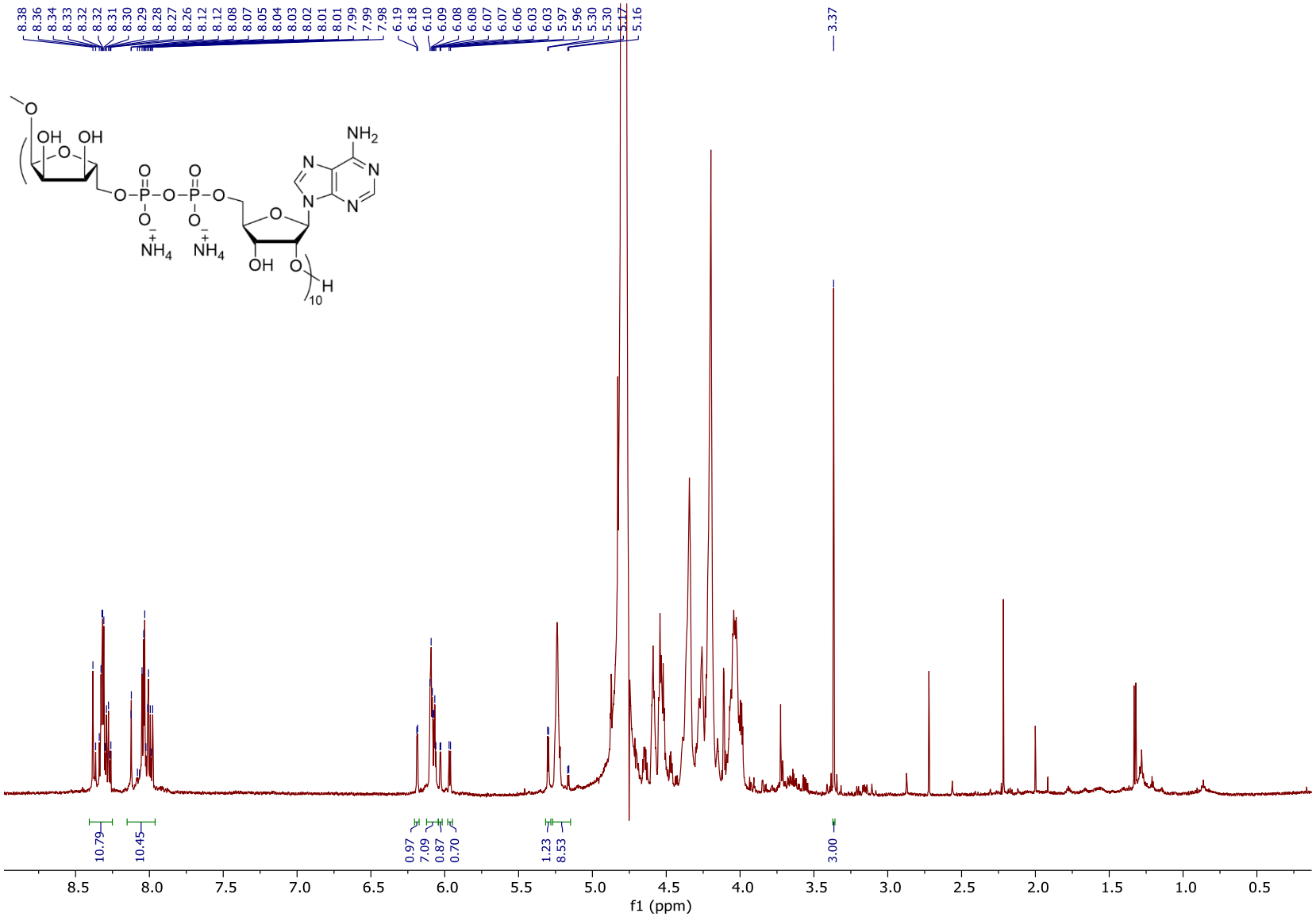
^{1}H-NMR (400 MHz, D_2O) of compound **44**. Solvent peak at 4.79 ppm.



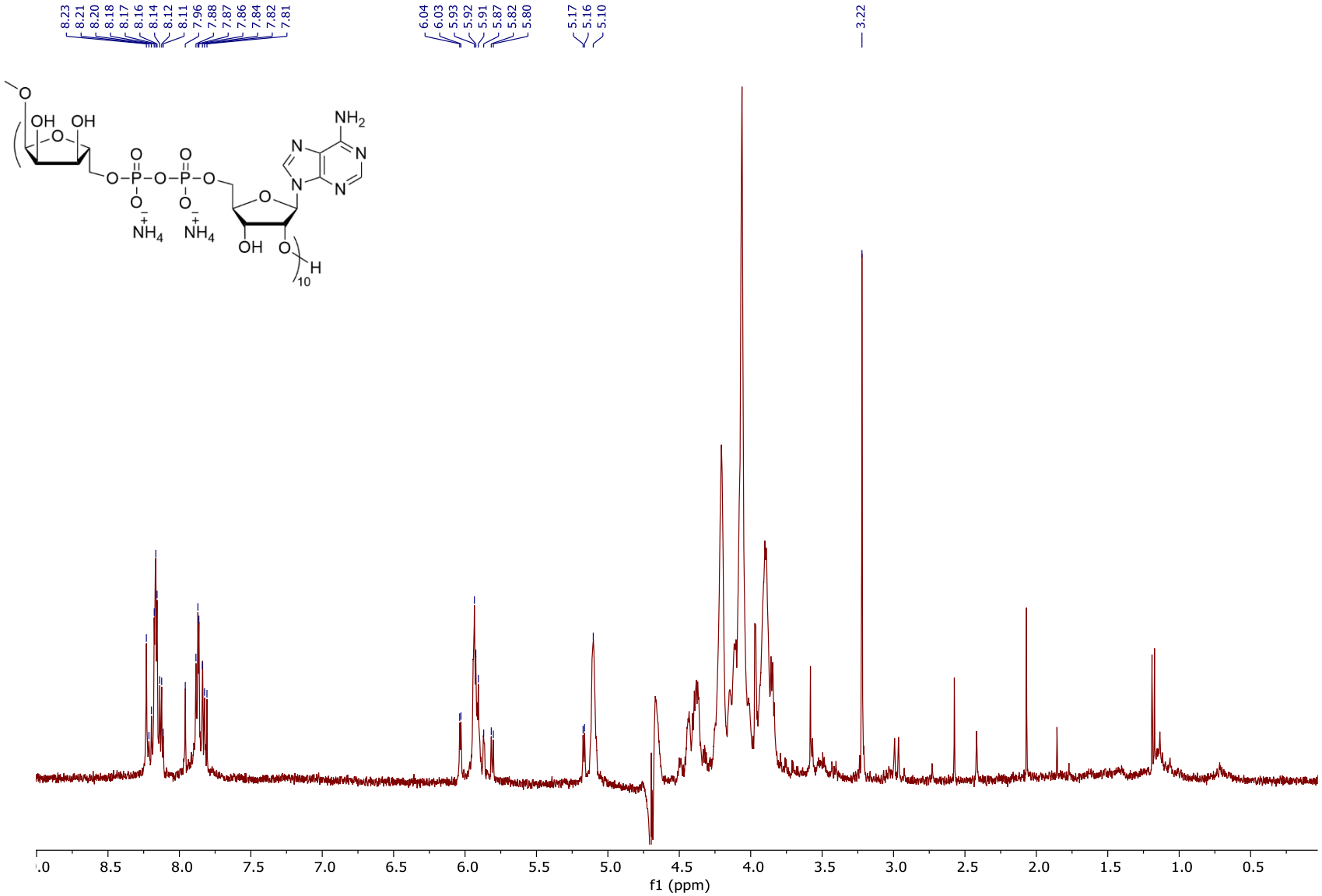
^{1}H-NMR (400 MHz, D_2O, pre-saturated) of compound **44**. Solvent peak at 4.79 ppm.



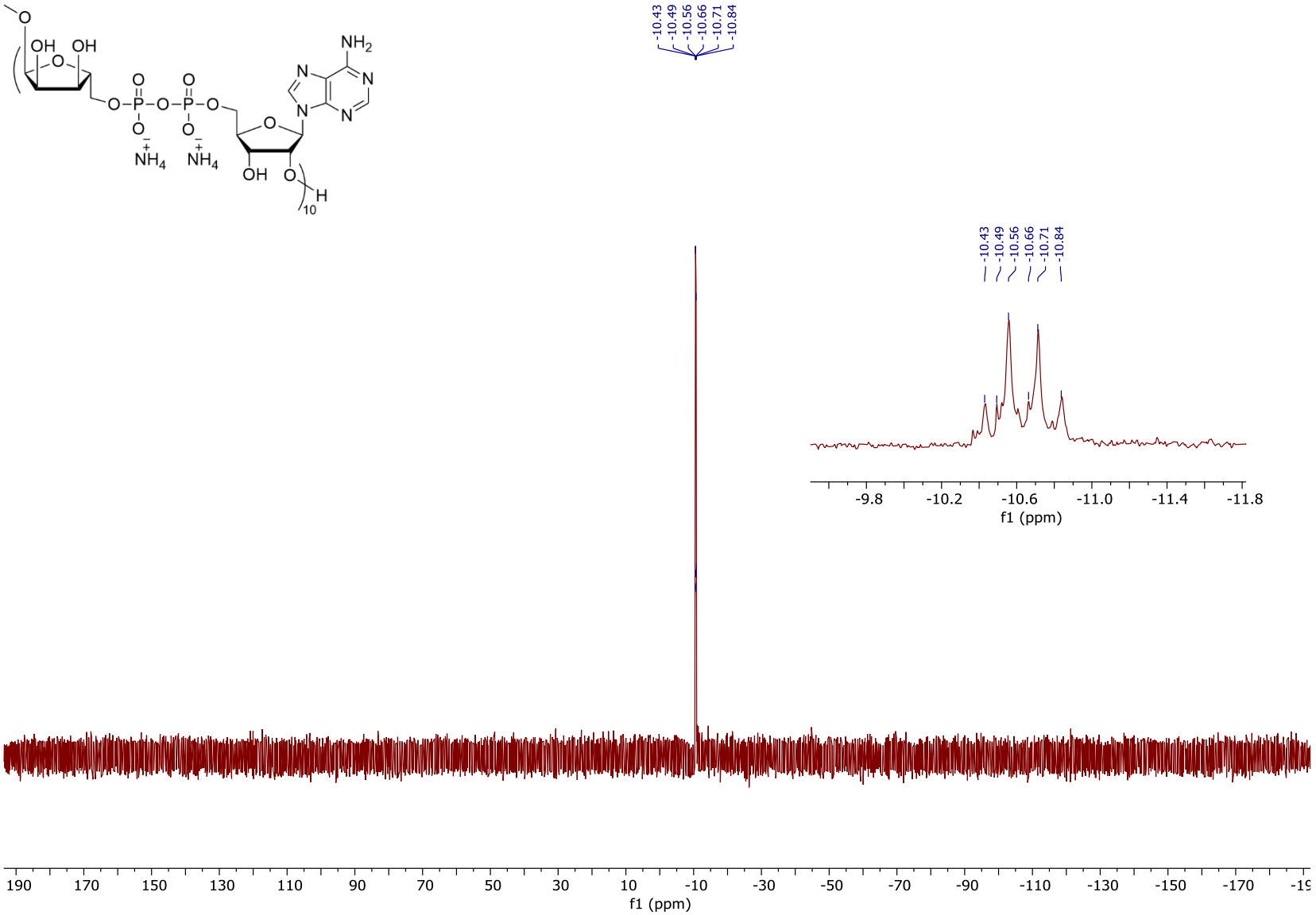
^{31}P-NMR (162 MHz, D_2O) of compound **44**.



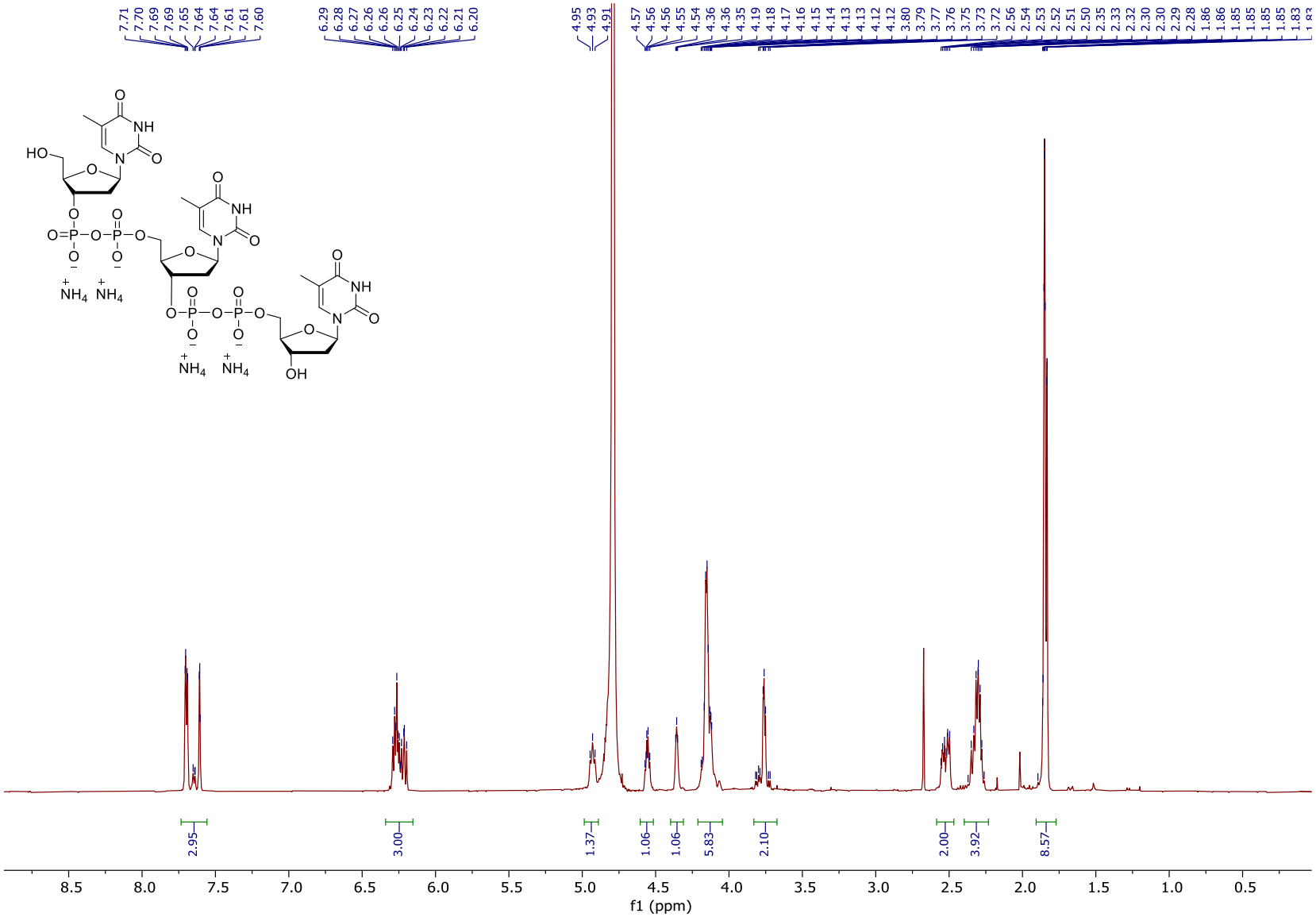
^{1}H-NMR (400 MHz, D_2O) of compound **45**. Solvent peak at 4.79 ppm.



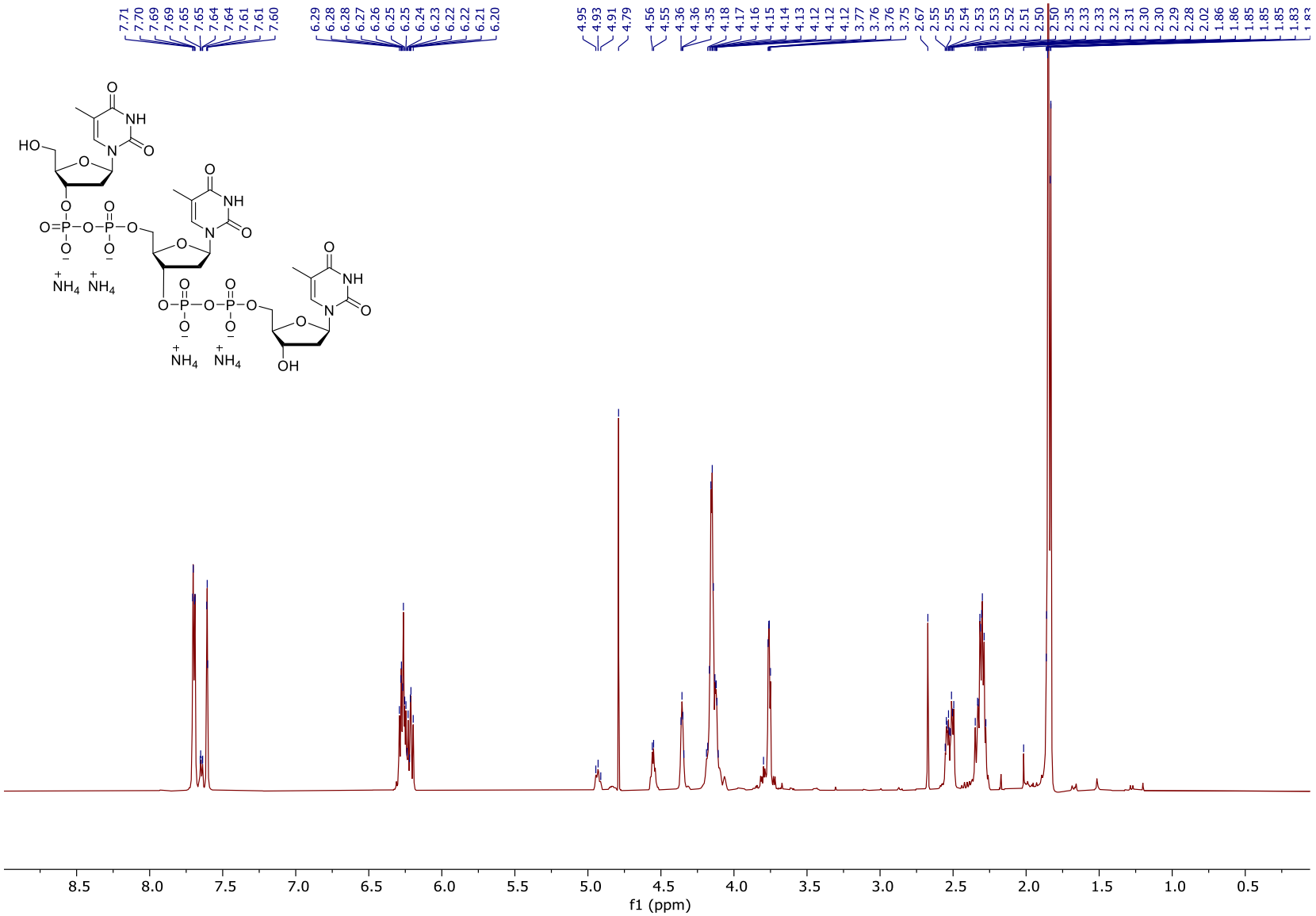
^{1}H-NMR (400 MHz, D_2O, pre-saturated) of compound **45**. Solvent peak at 4.79 ppm.



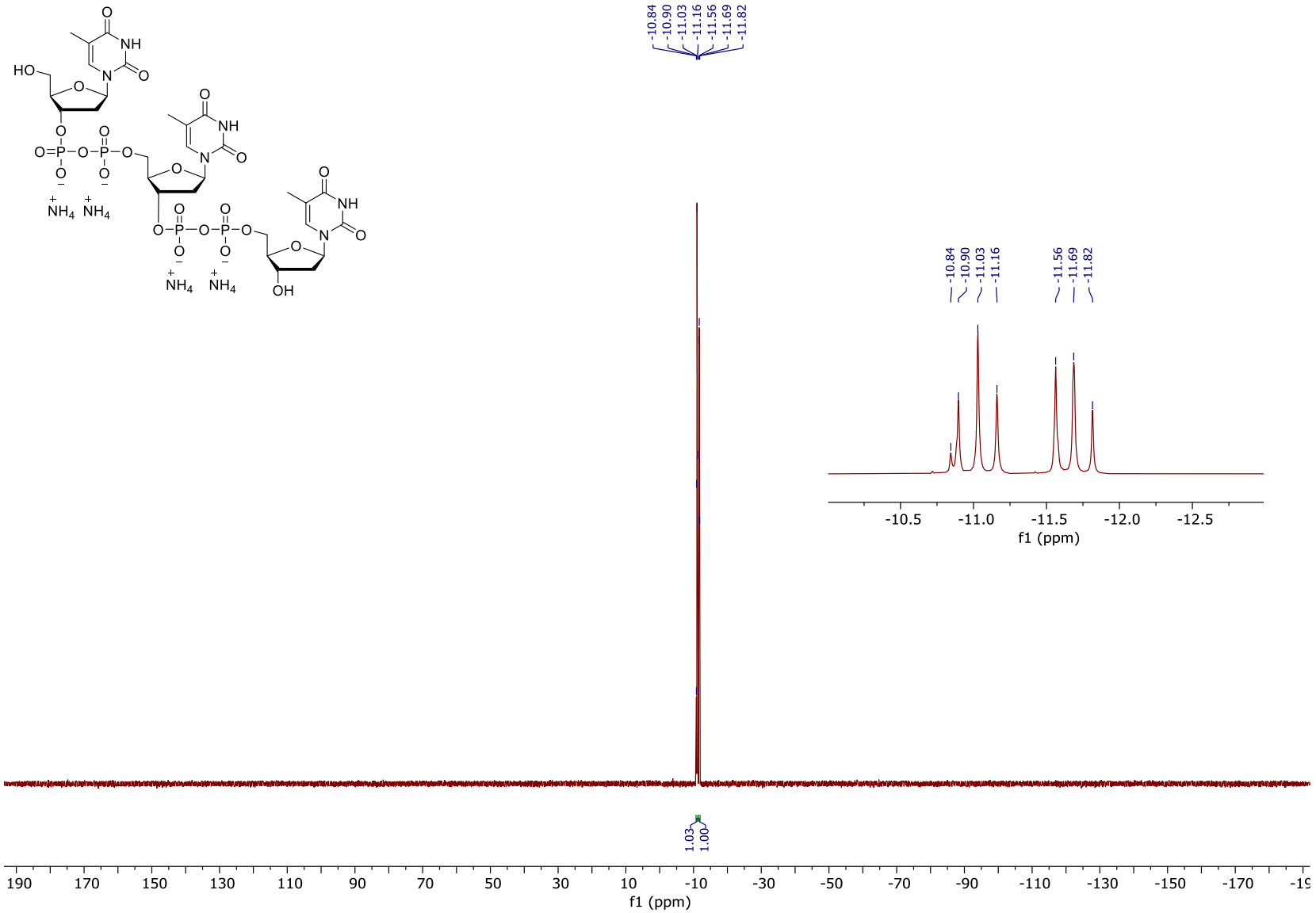
^{31}P-NMR (162 MHz, D_2O) of compound **45**.



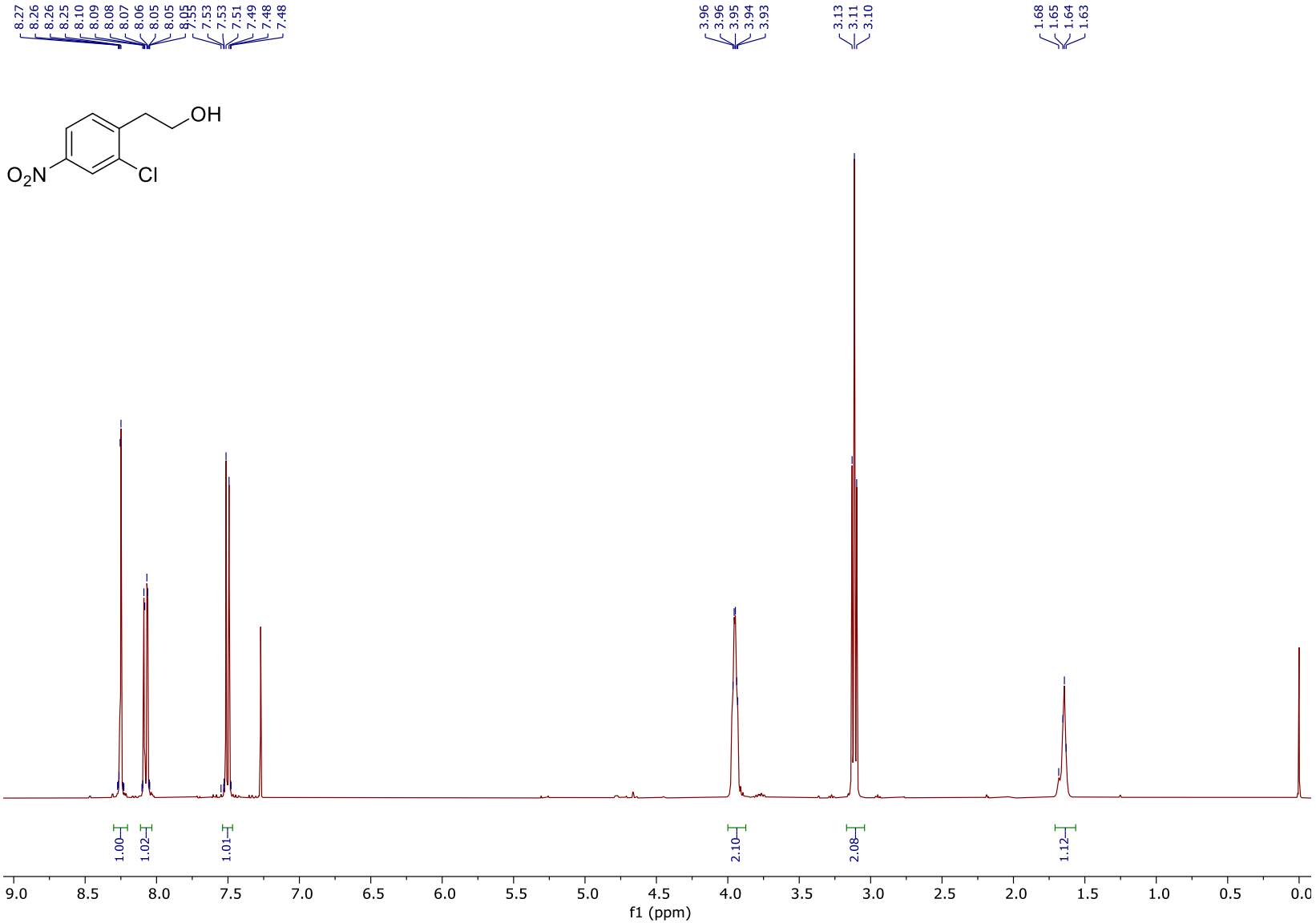
^{1}H-NMR (400 MHz, D_2O) of compound **26**. Solvent peak at 4.79 ppm.



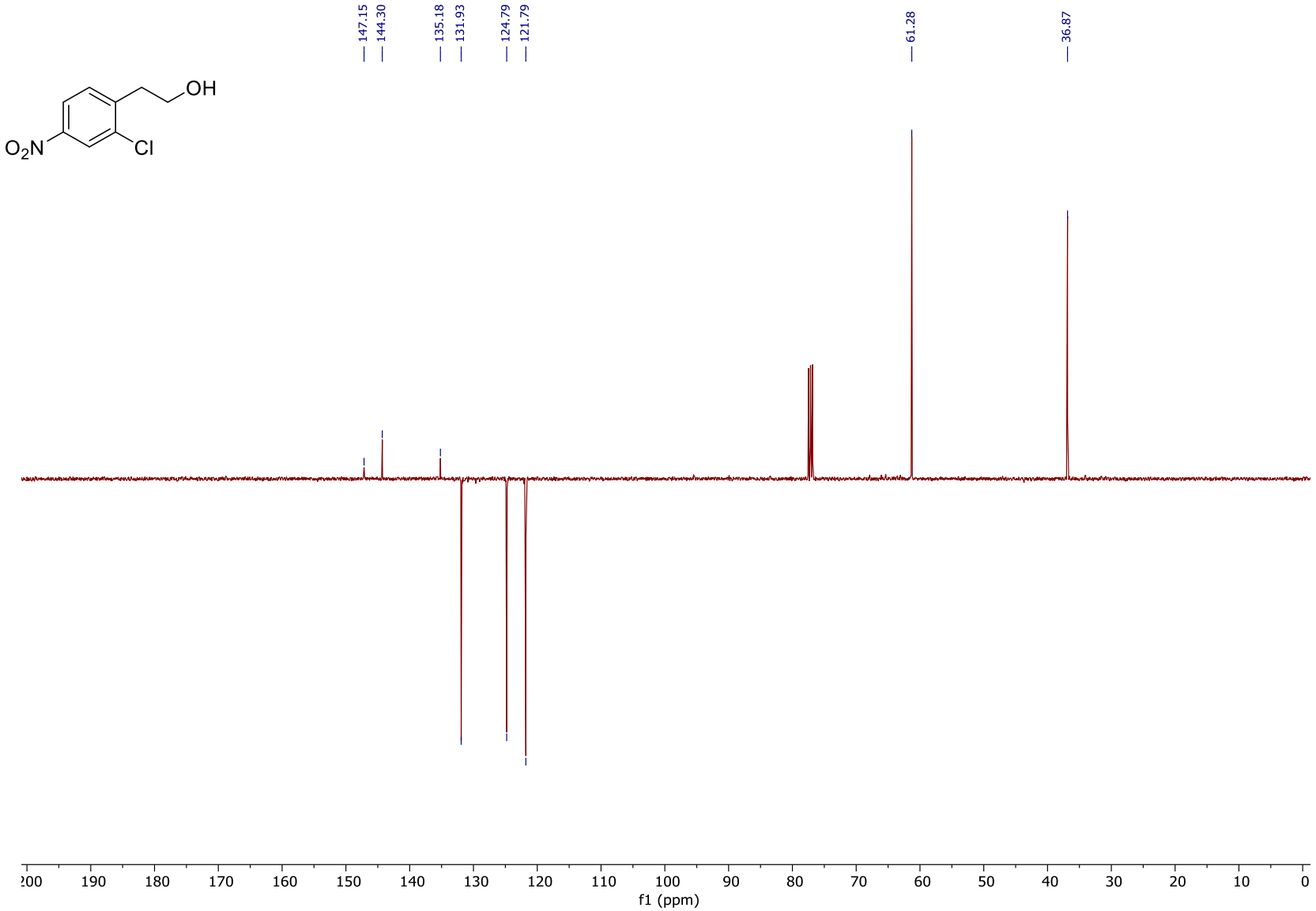
^{1}H-NMR (400 MHz, D_2O, pre-saturated) of compound **46**. Solvent peak at 4.79 ppm.



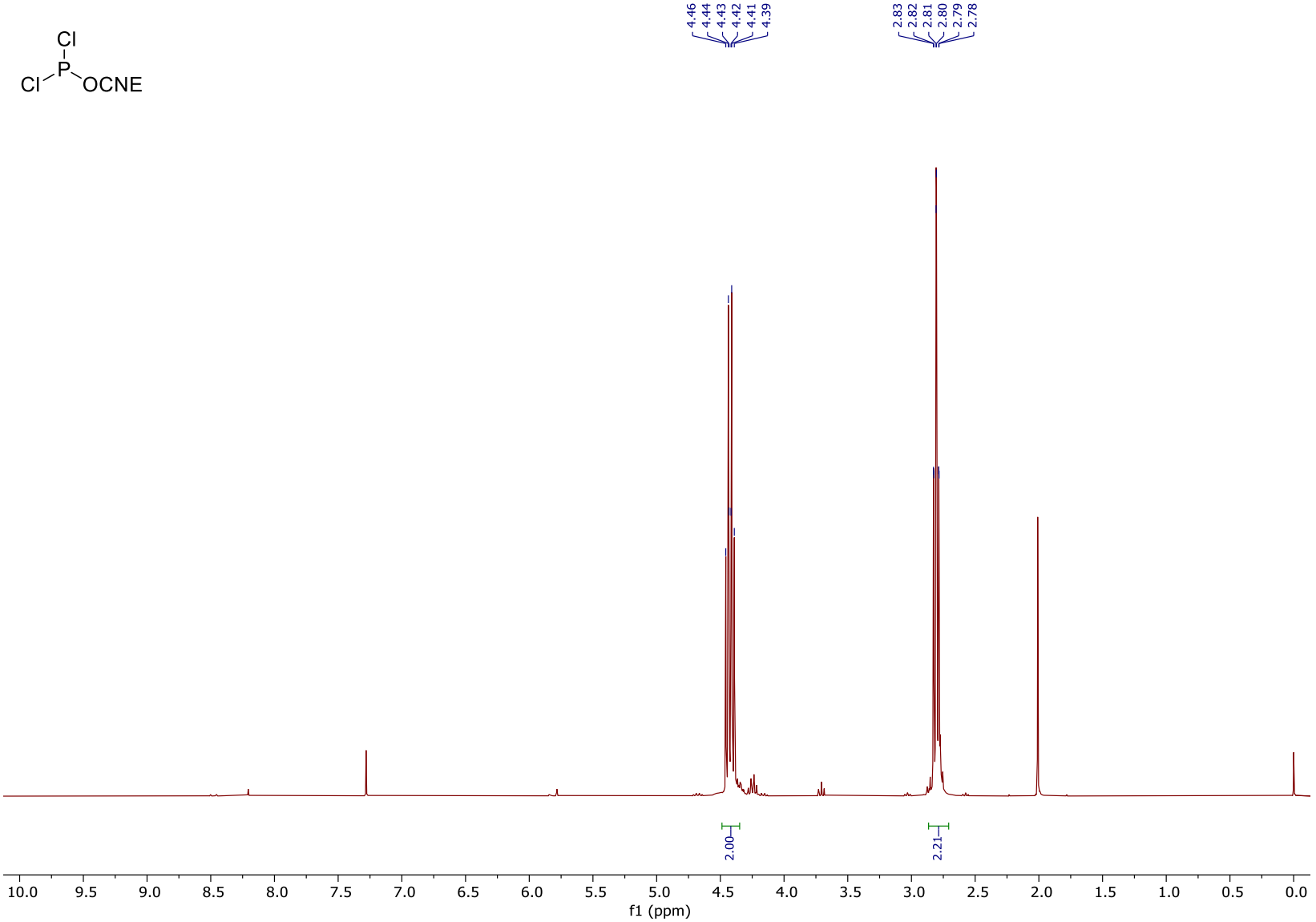
^{31}P-NMR (162 MHz, D_2O) of compound **45**.



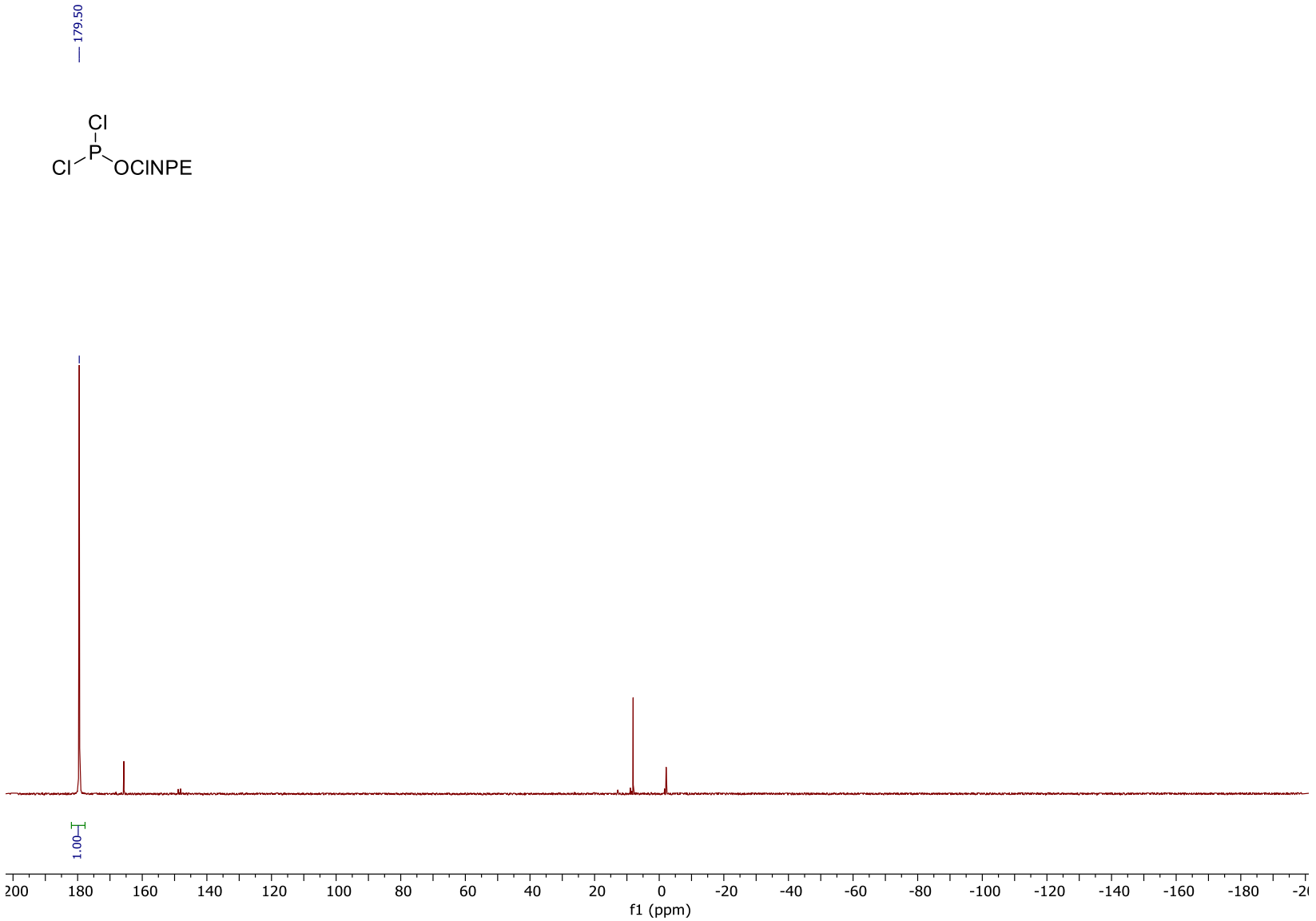
^{1}H-NMR (400 MHz, $CDCl_3$) of compound **50**. Solvent peak at 7.26 ppm.



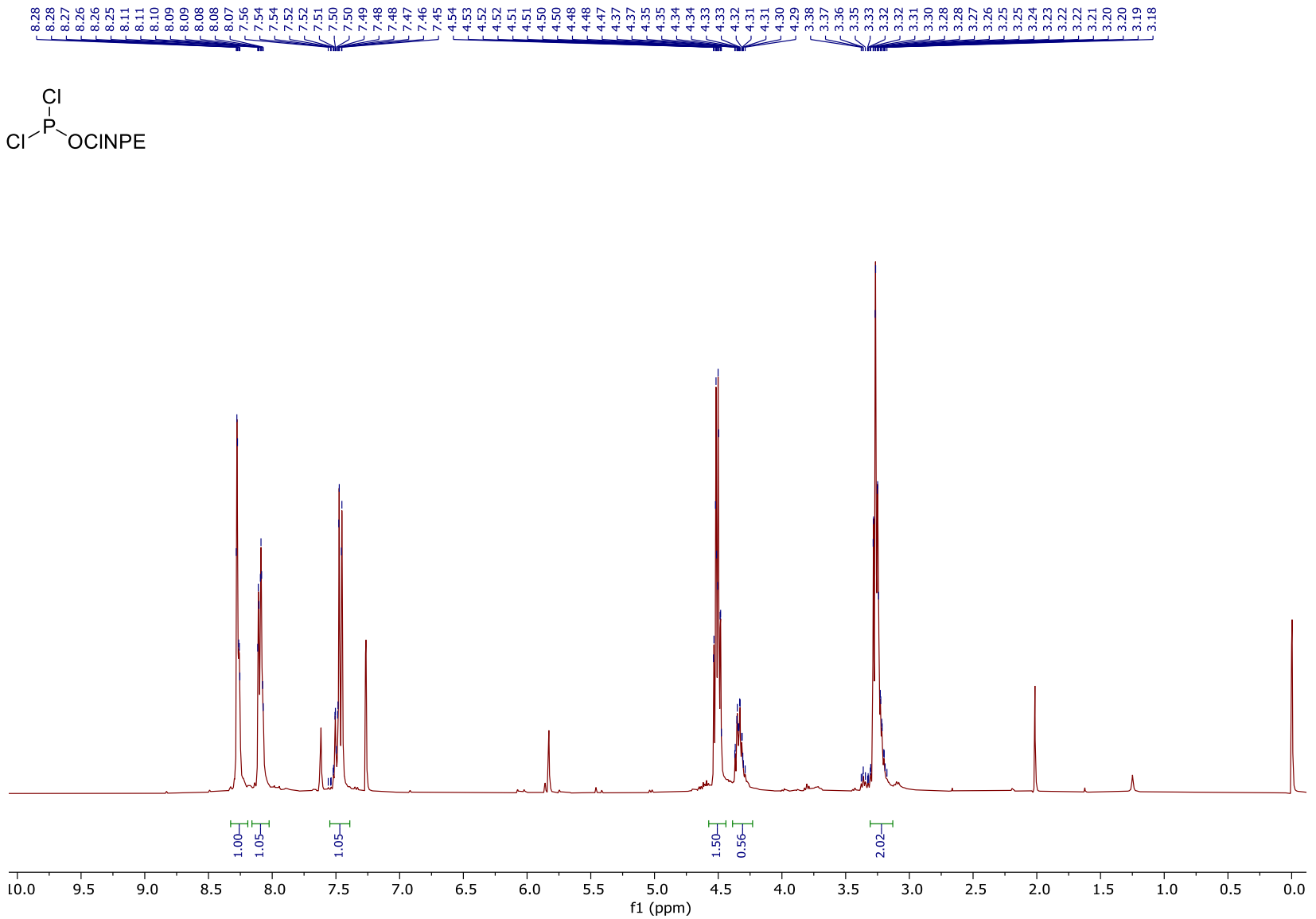
^{13}C-NMR (101 MHz, $CDCl_3$) of compound **50**. Solvent peak at 77.16 ppm.



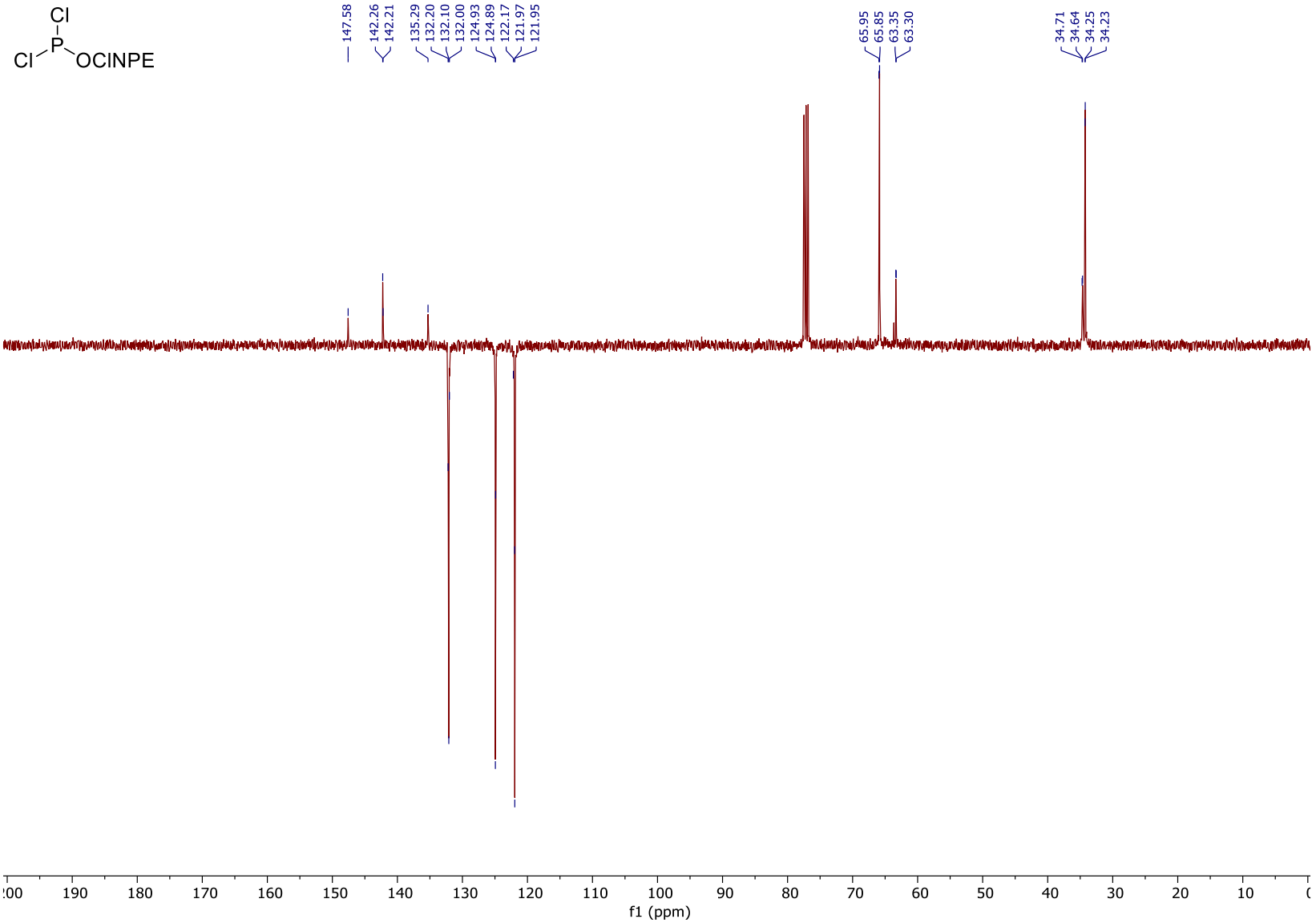
^{1}H-NMR (300 MHz, $CDCl_3$) of compound **51**. Solvent peak at 7.26 ppm.



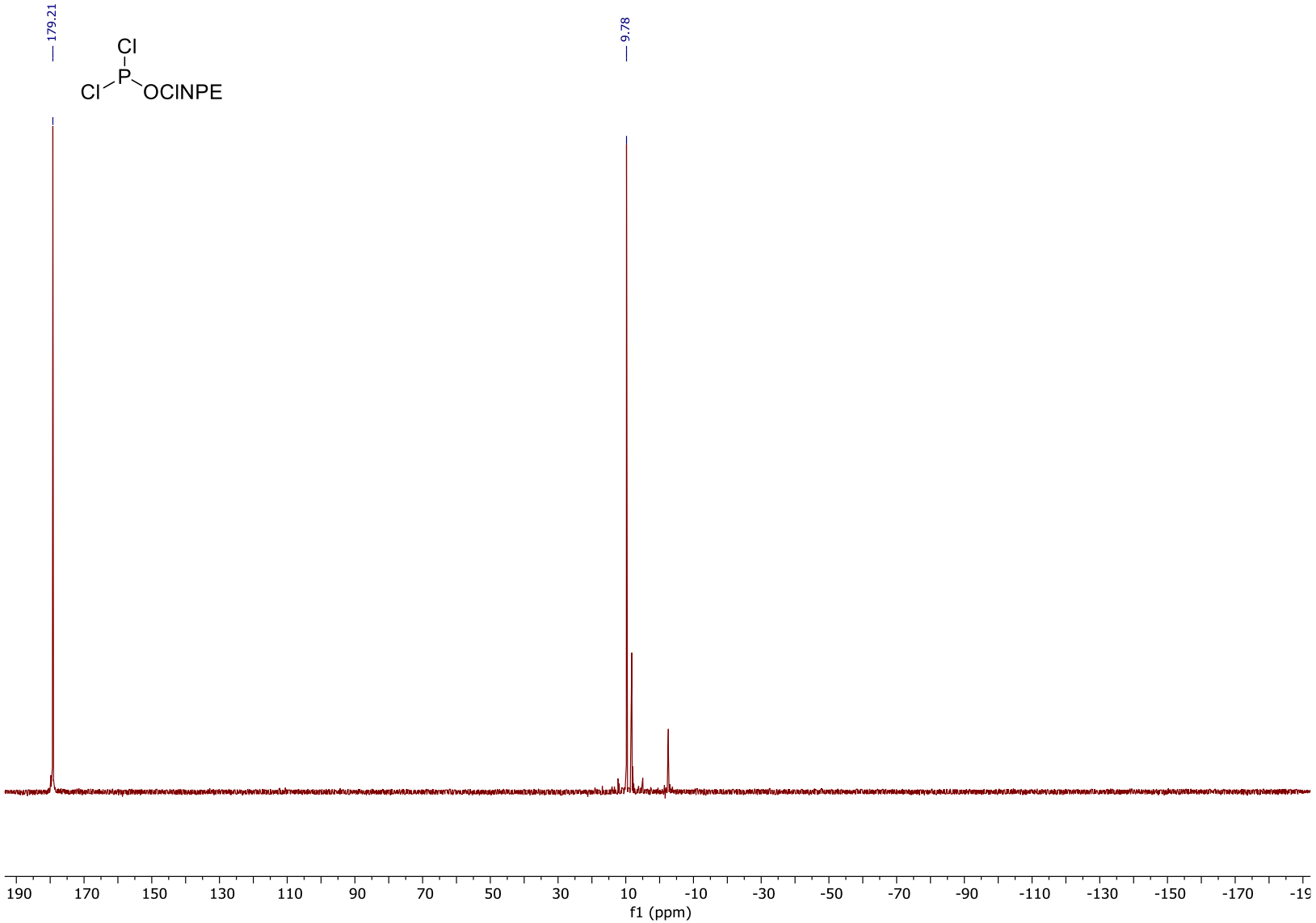
^{31}P-NMR (121 MHz, $CDCl_3$) of compound **51**.



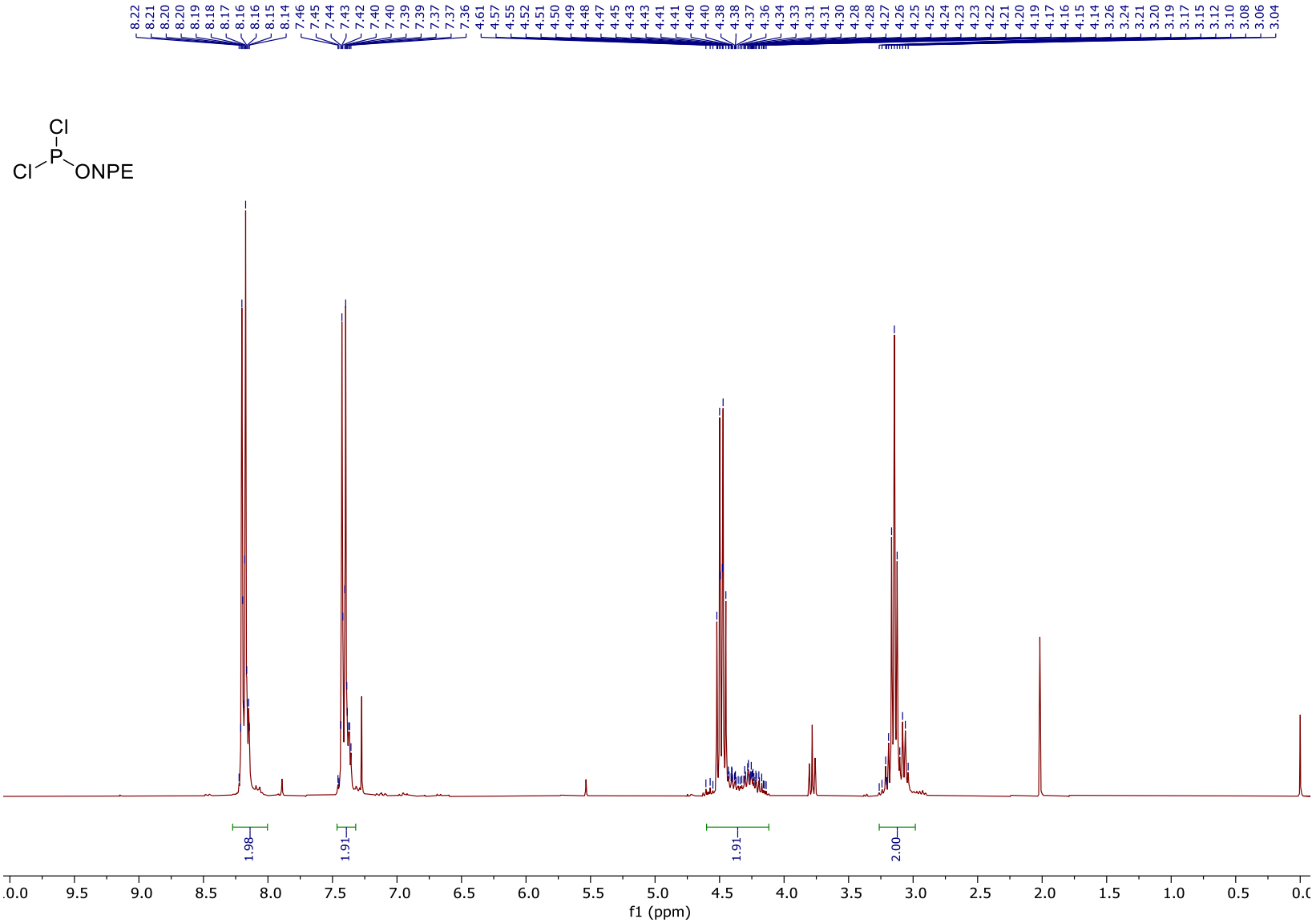
^{1}H-NMR (400 MHz, $CDCl_3$) of compound **52**. Solvent peak at 7.26 ppm.



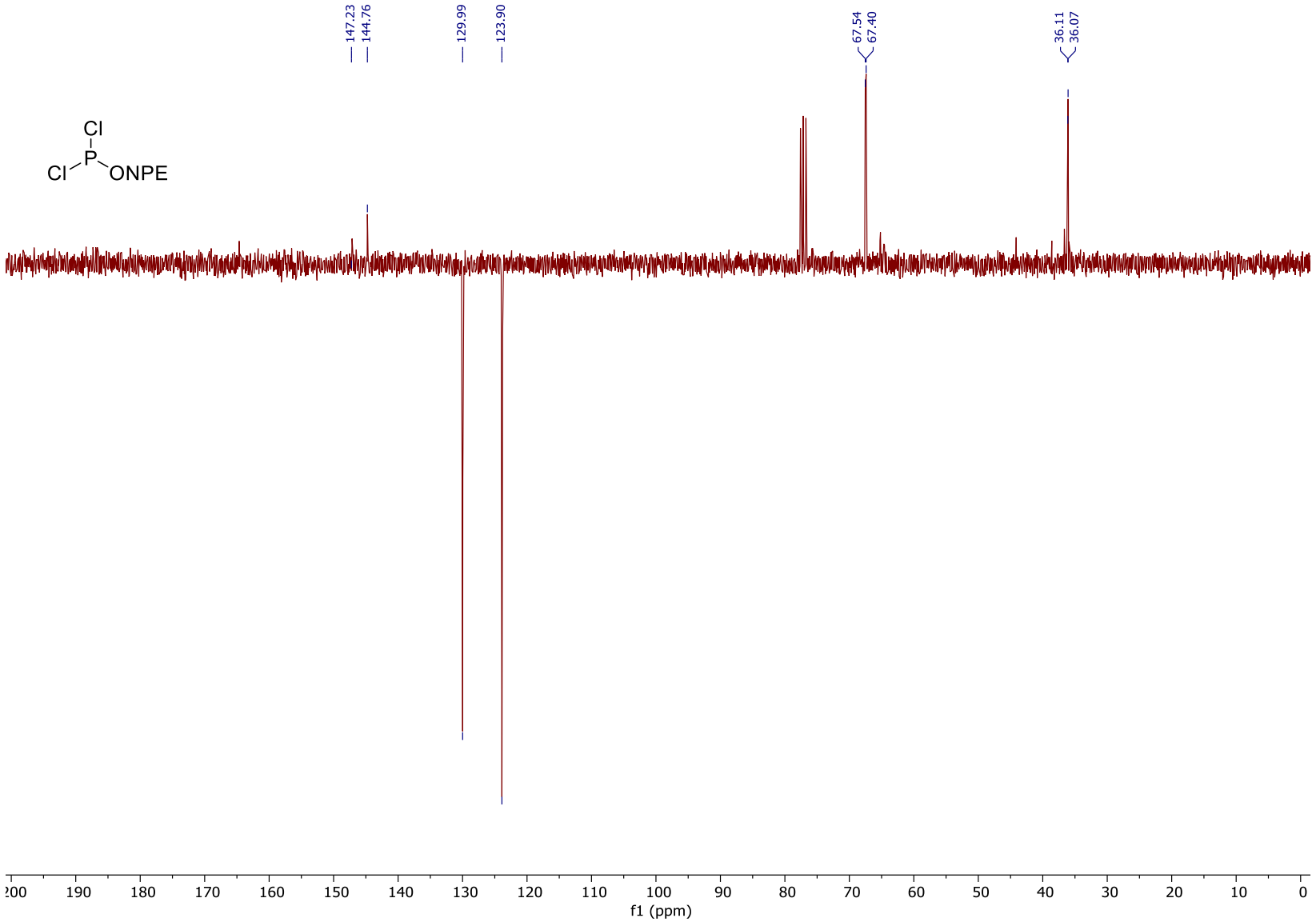
^{13}C-NMR (101 MHz, $CDCl_3$) of compound **52**. Solvent peak at 77.16 ppm.



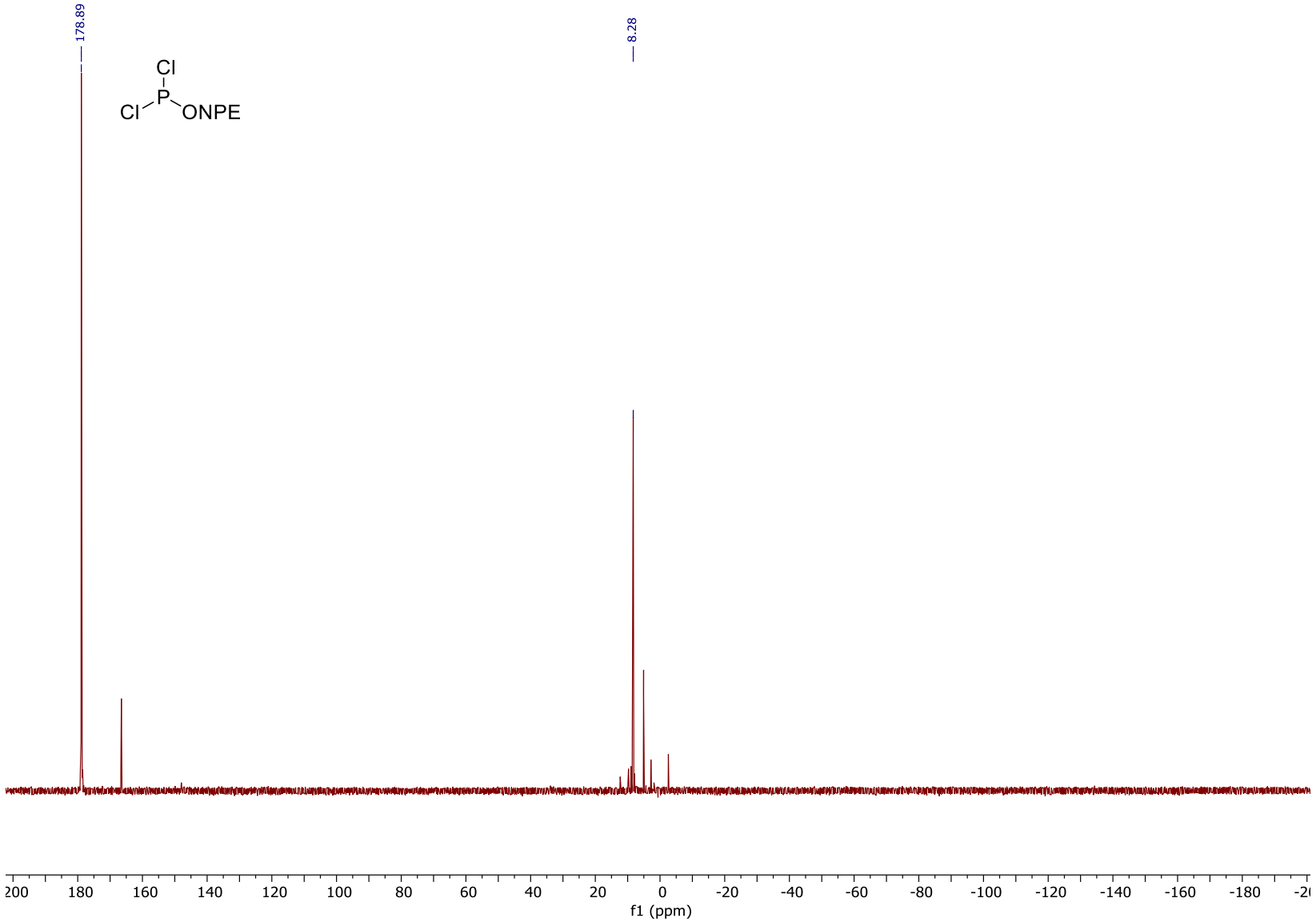
^{31}P-NMR (162 MHz, $CDCl_3$) of compound **52**.



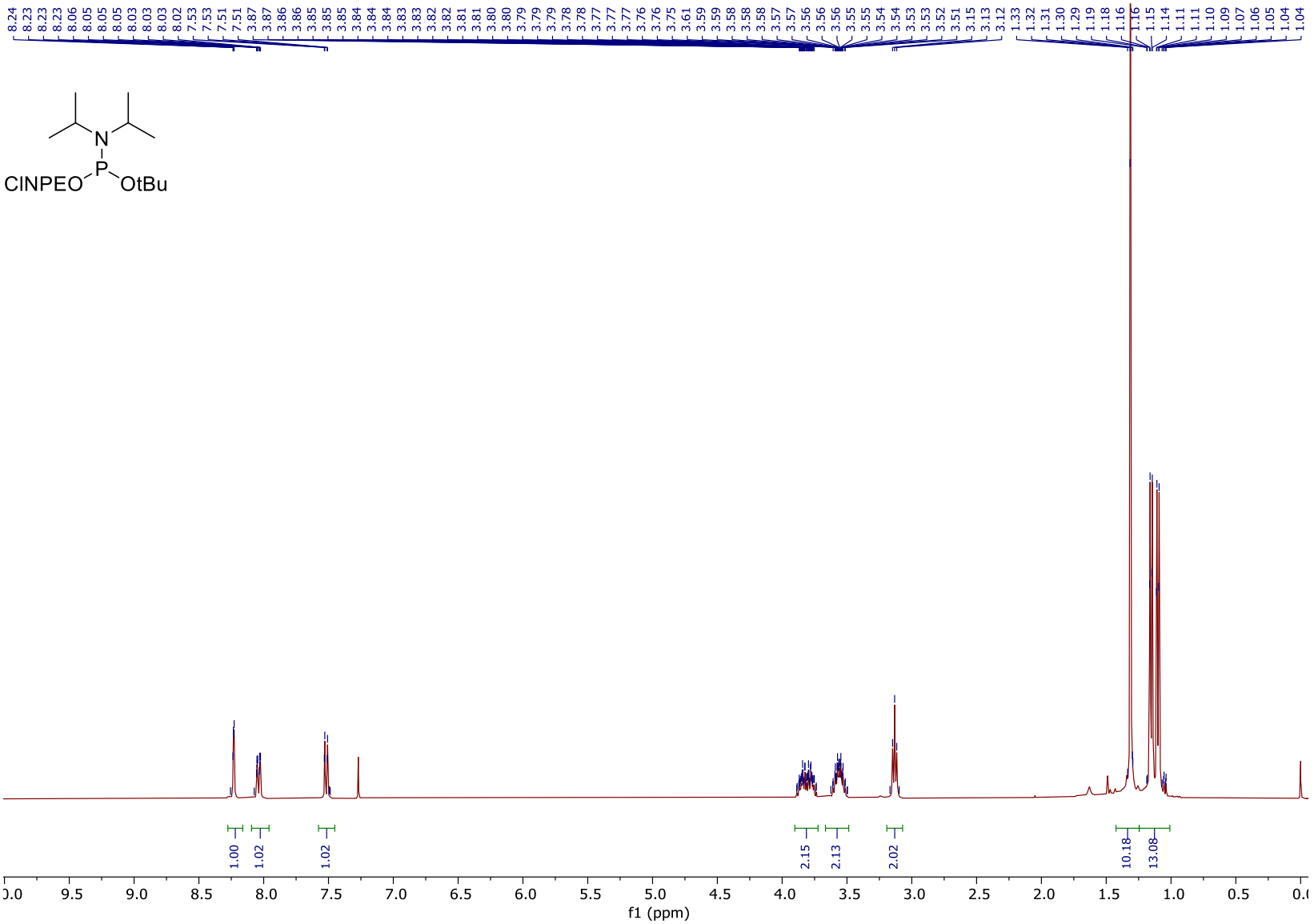
^{1}H-NMR (300 MHz, $CDCl_3$) of compound **53**. Solvent peak at 7.26 ppm.



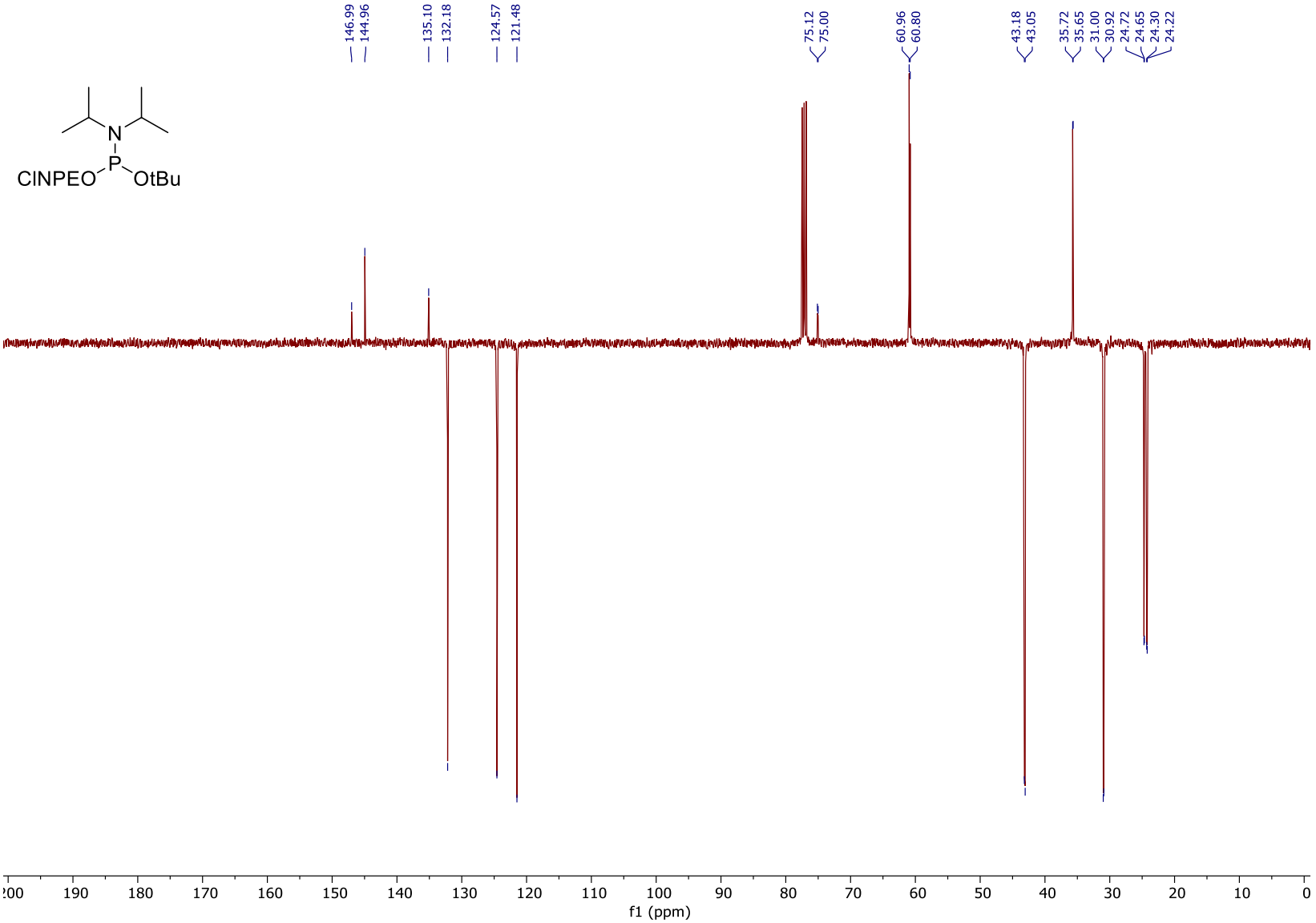
^{13}C-NMR (75 MHz, $CDCl_3$) of compound **53**. Solvent peak at 77.16 ppm.



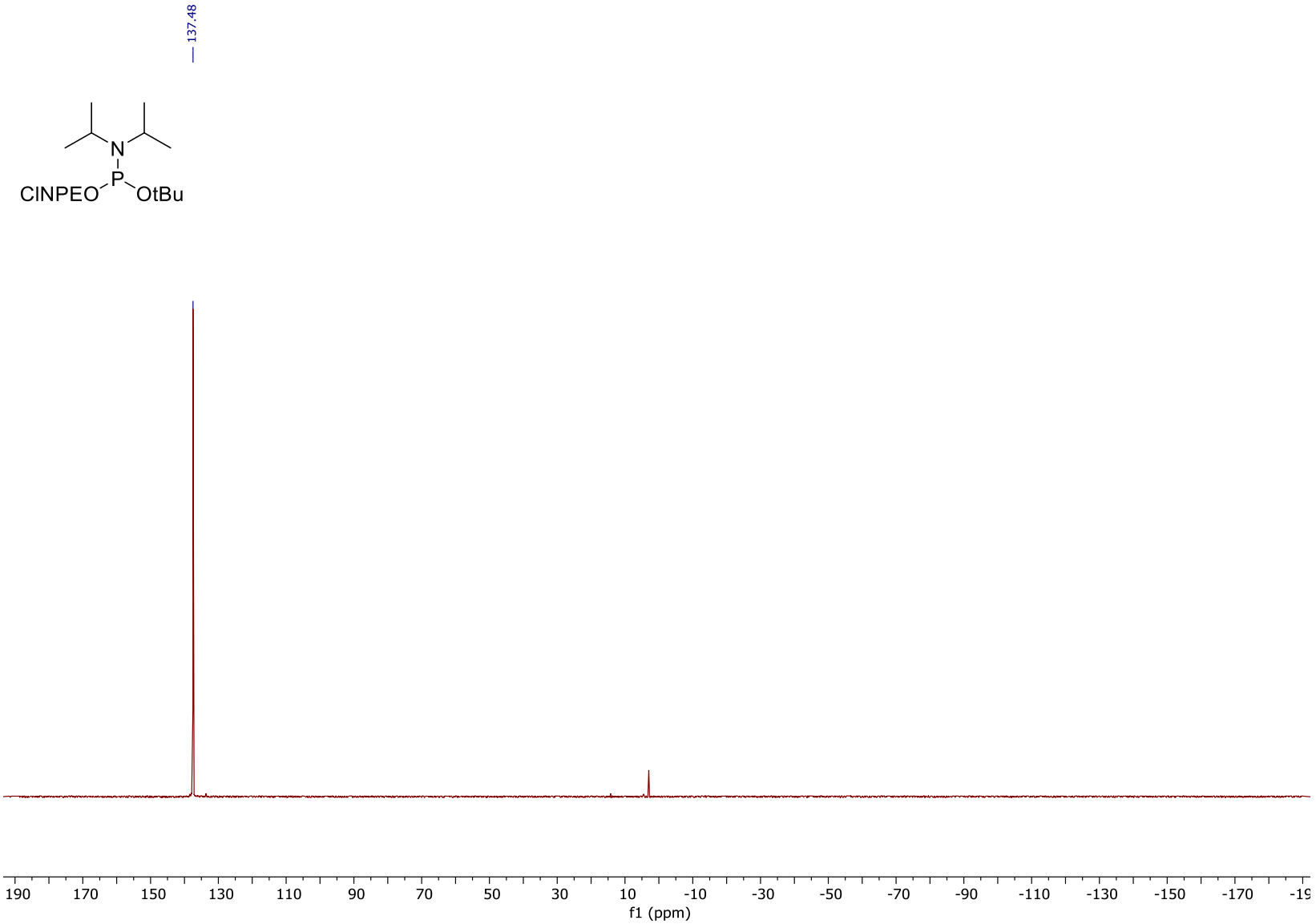
^{31}P-NMR (121 MHz, $CDCl_3$) of compound **53**.



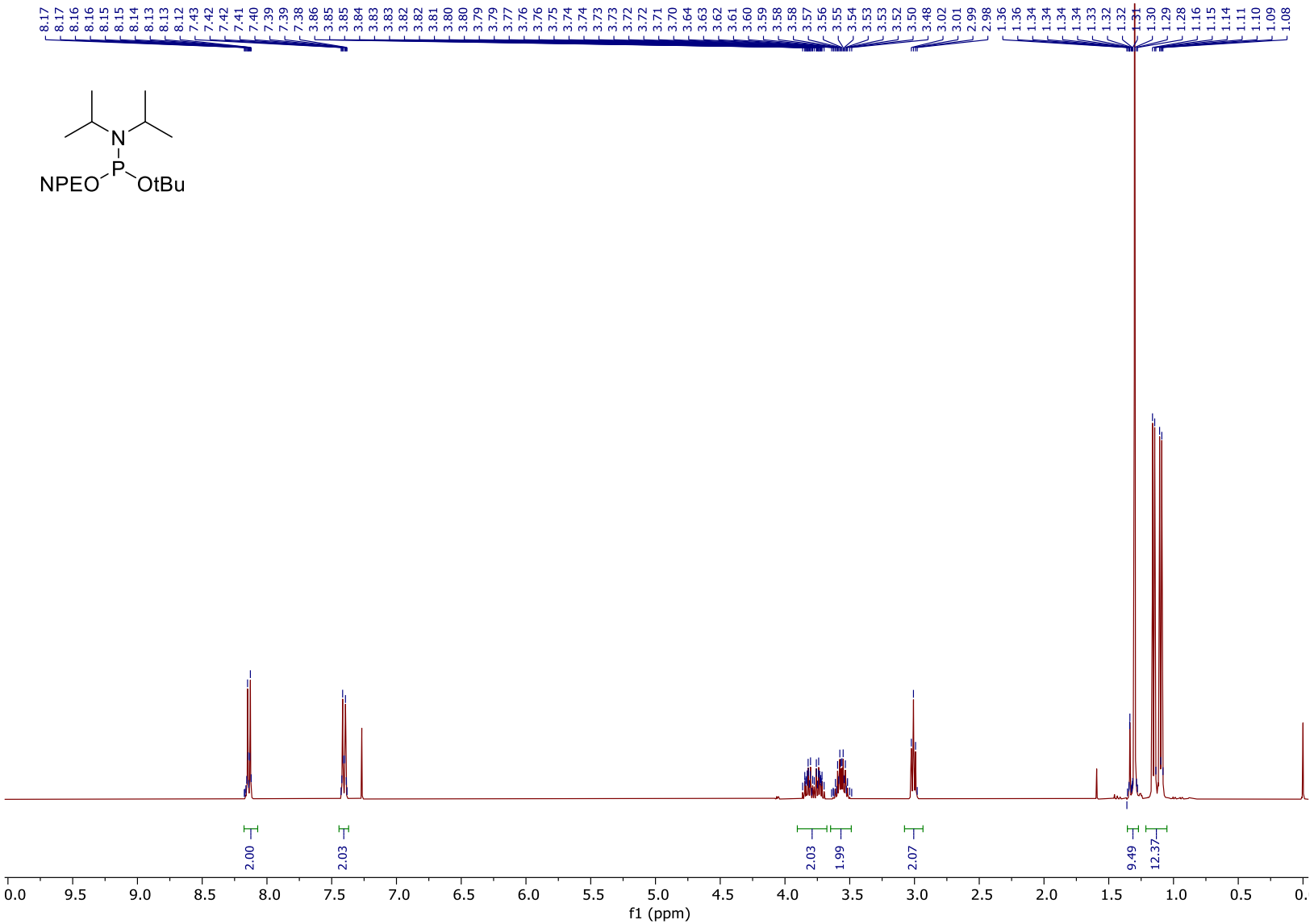
^{1}H-NMR (400 MHz, $CDCl_3$) of compound **34**. Solvent peak at 7.26 ppm.



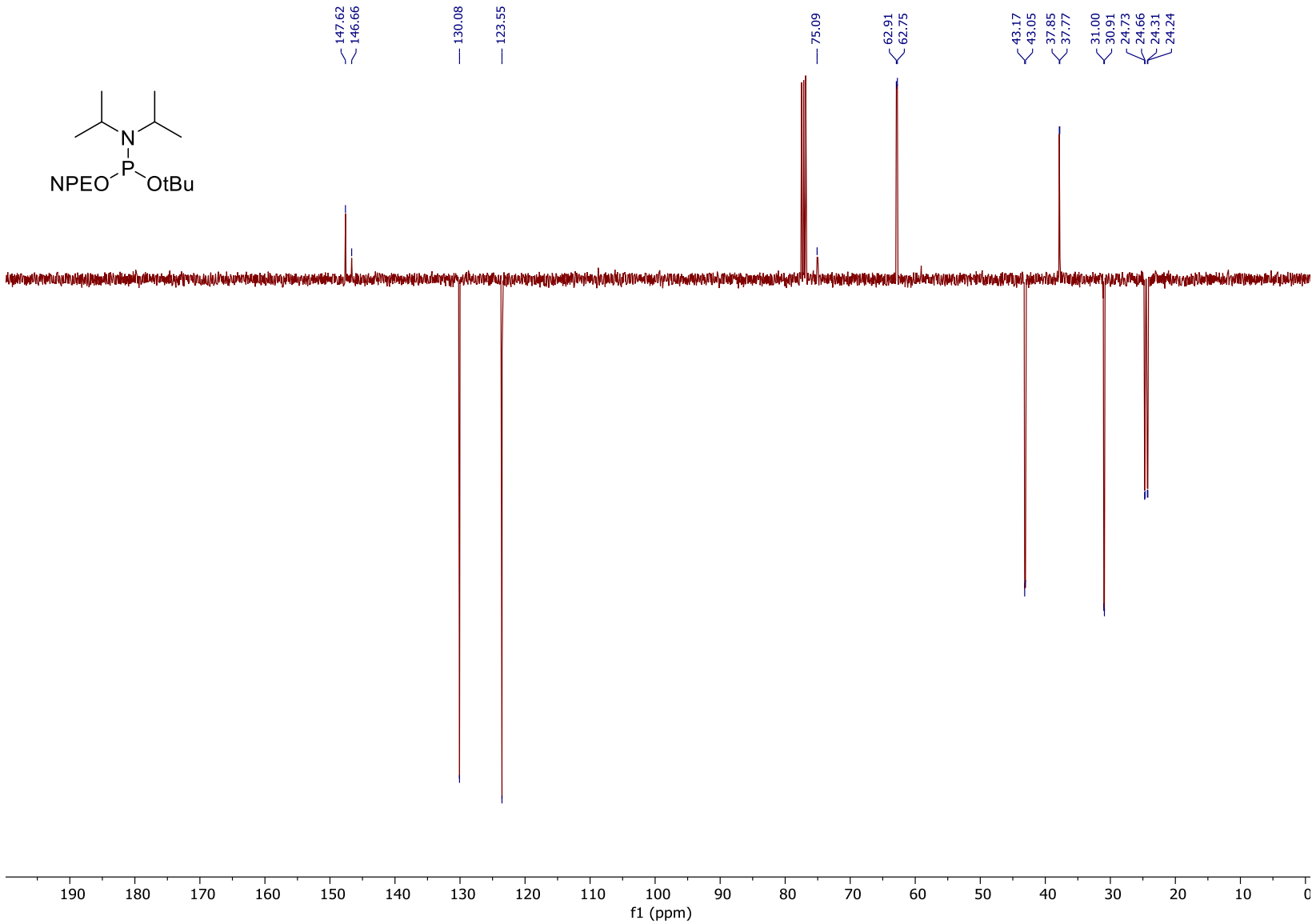
^{13}C-NMR (101 MHz, $CDCl_3$) of compound **34**. Solvent peak at 77.16 ppm.



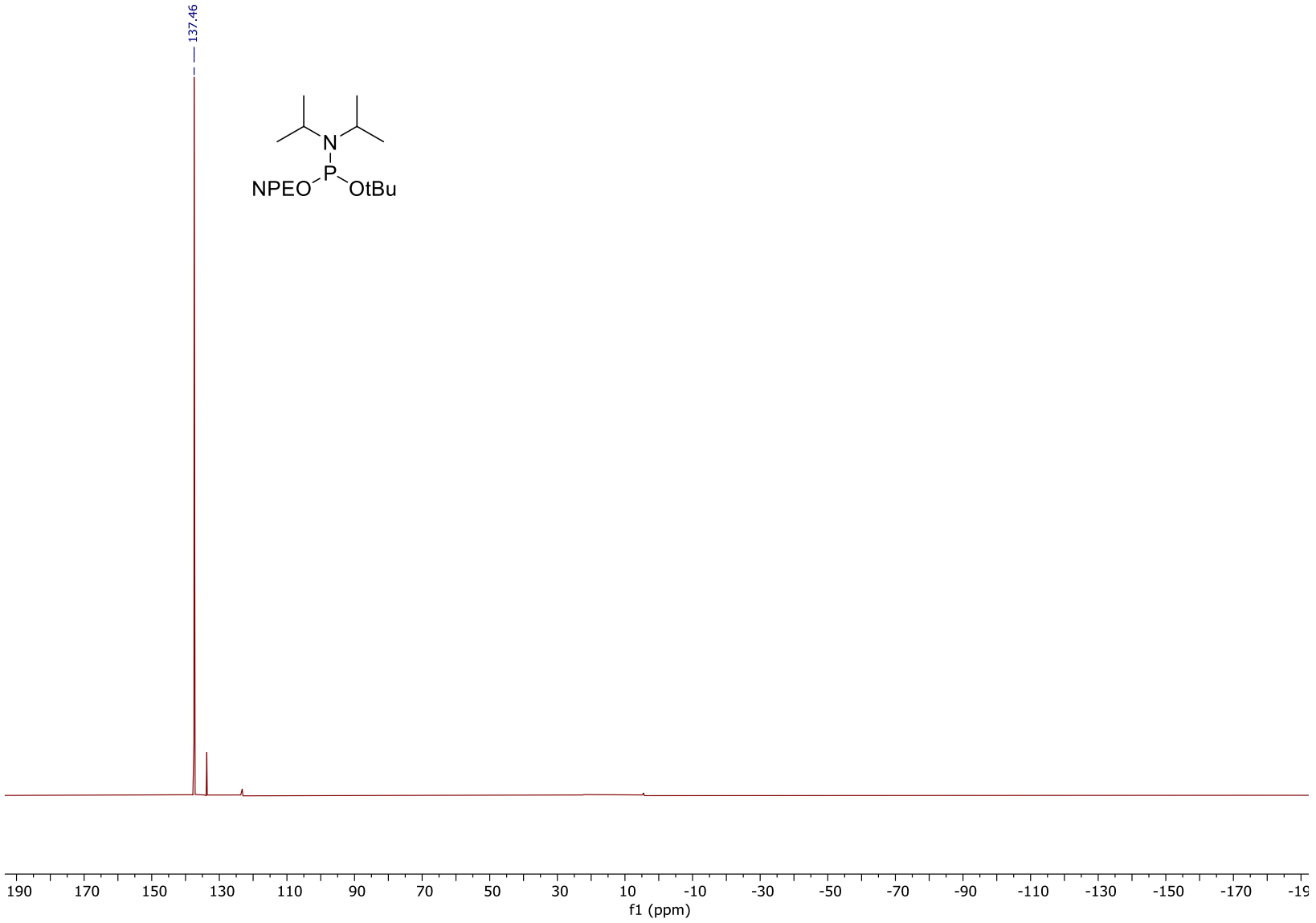
^{31}P-NMR (162 MHz, $CDCl_3$) of compound **34**.



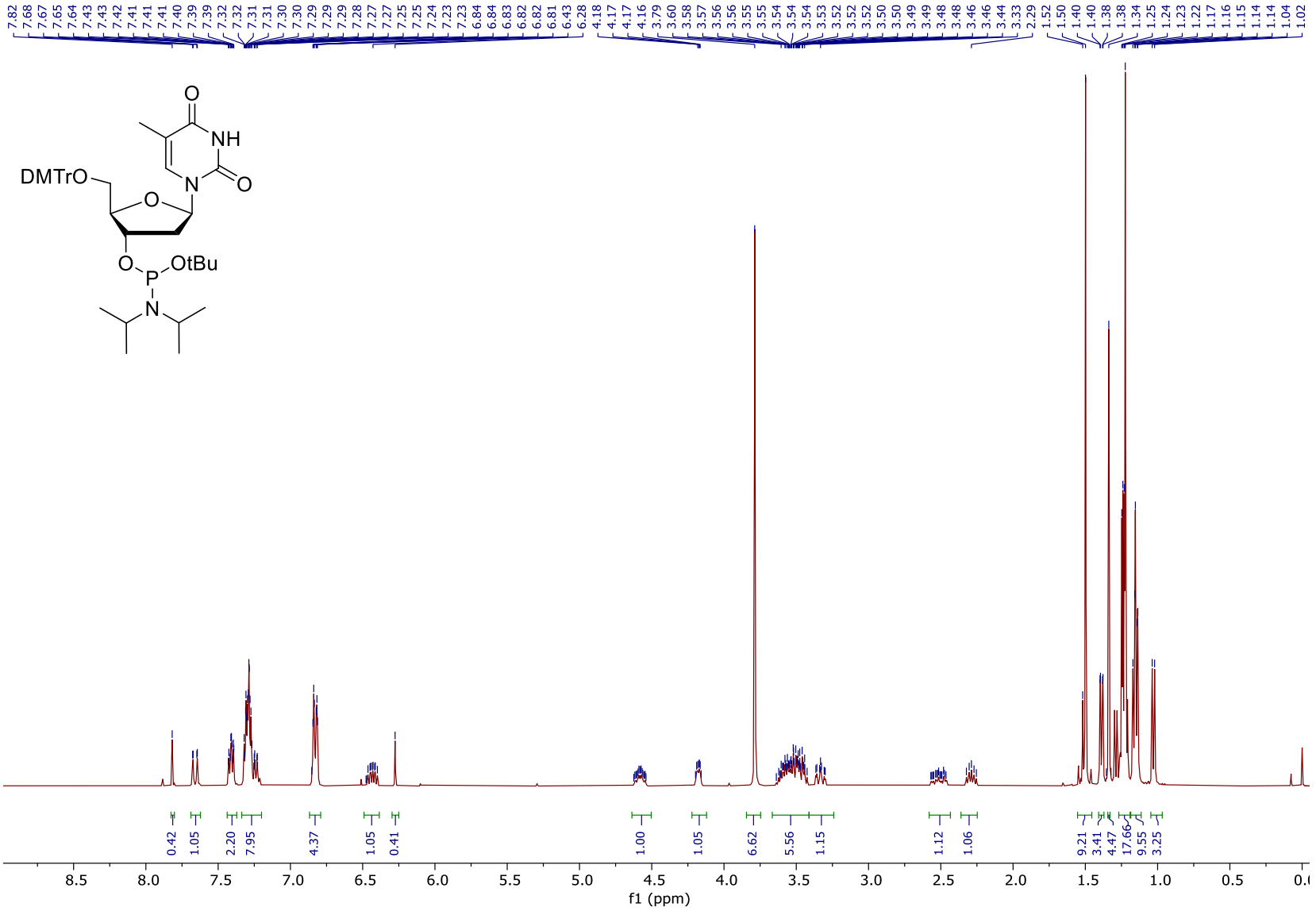
^{1}H-NMR (400 MHz, $CDCl_3$) of compound **55**. Solvent peak at 7.26 ppm.



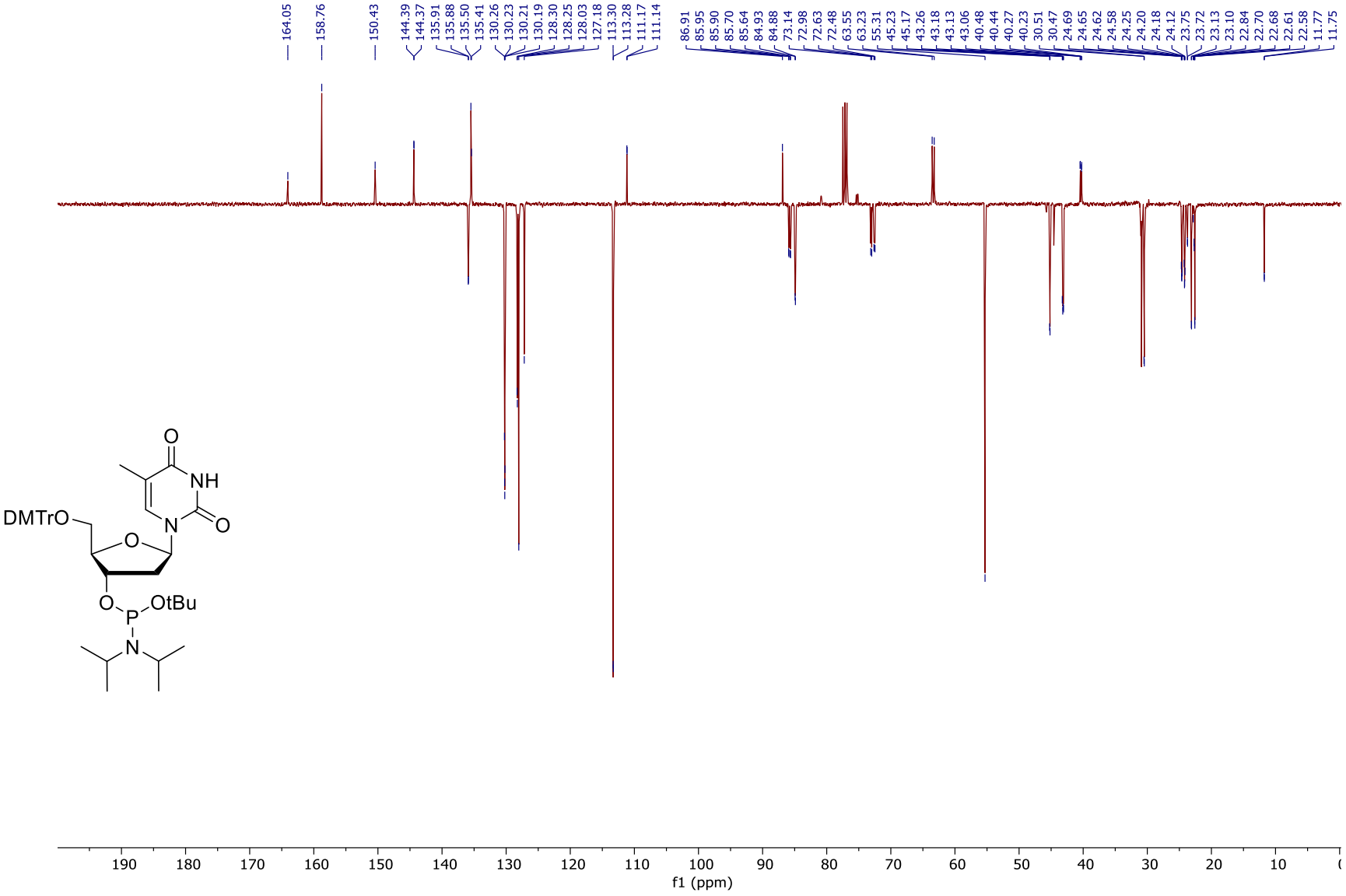
^{13}C-NMR (101 MHz, $CDCl_3$) of compound **55**. Solvent peak at 77.16 ppm.



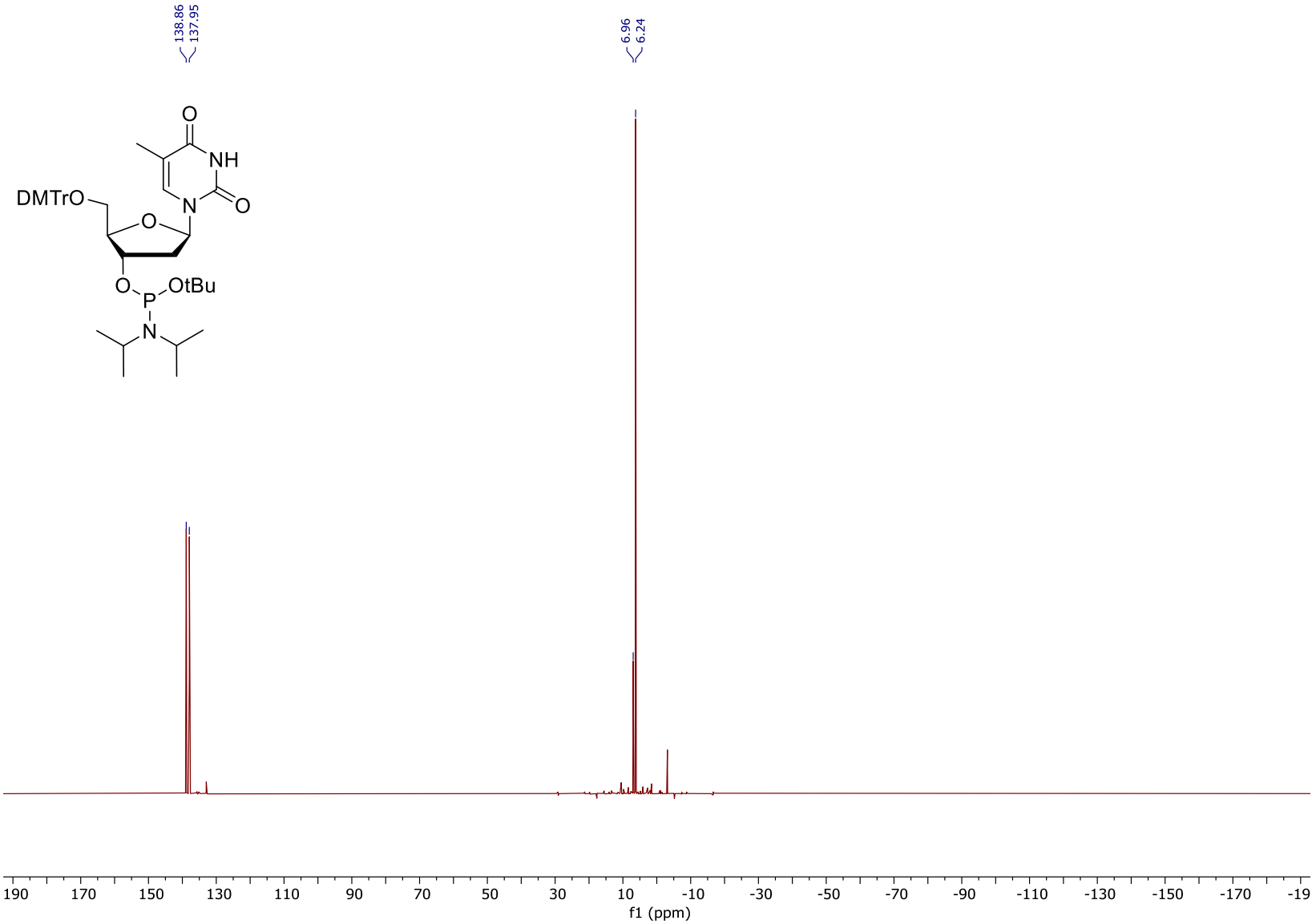
^{31}P-NMR (162 MHz, $CDCl_3$) of compound **55**.



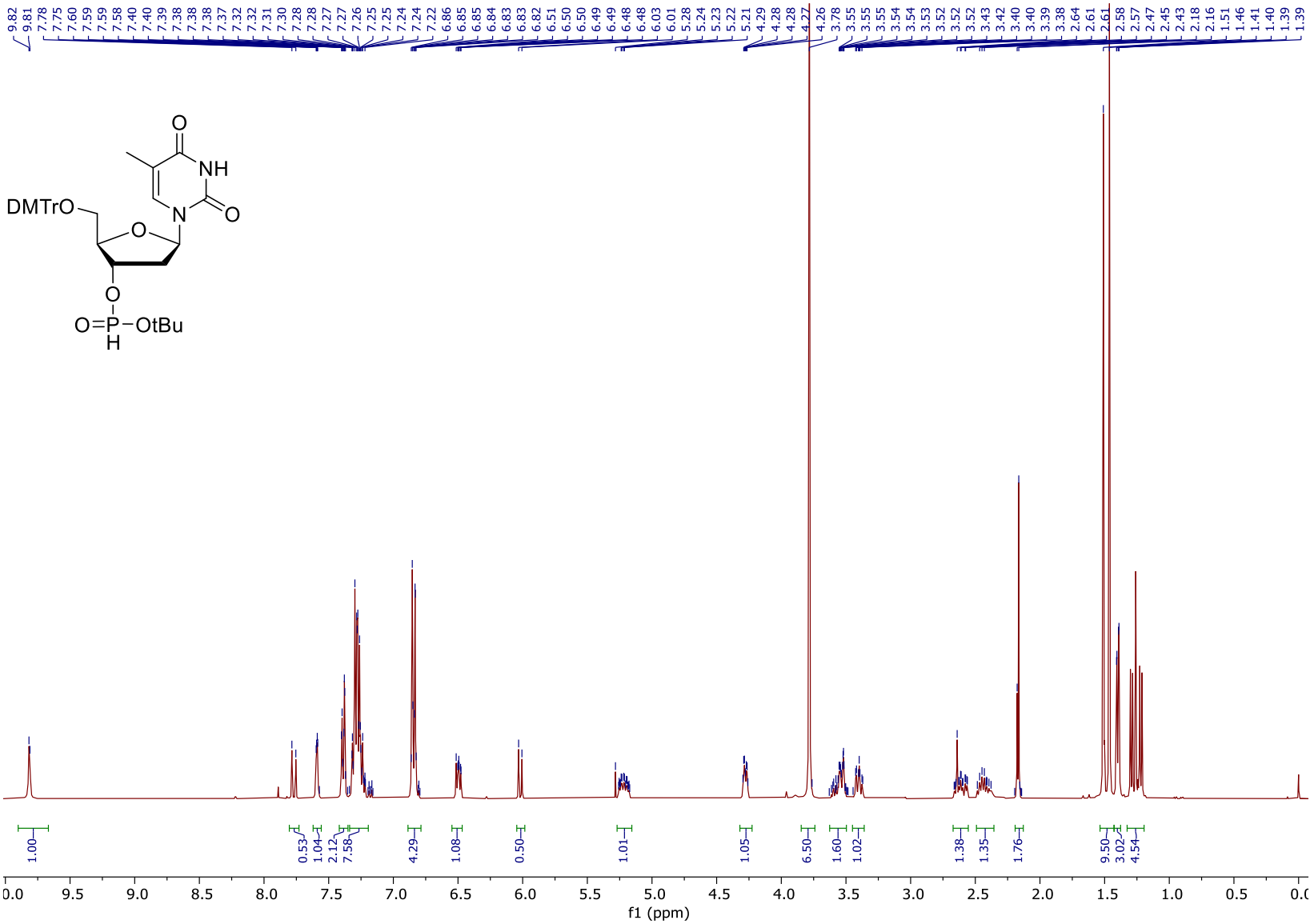
^{1}H-NMR (400 MHz, $CDCl_3$) of compound **57**. Solvent peak at 7.26 ppm.



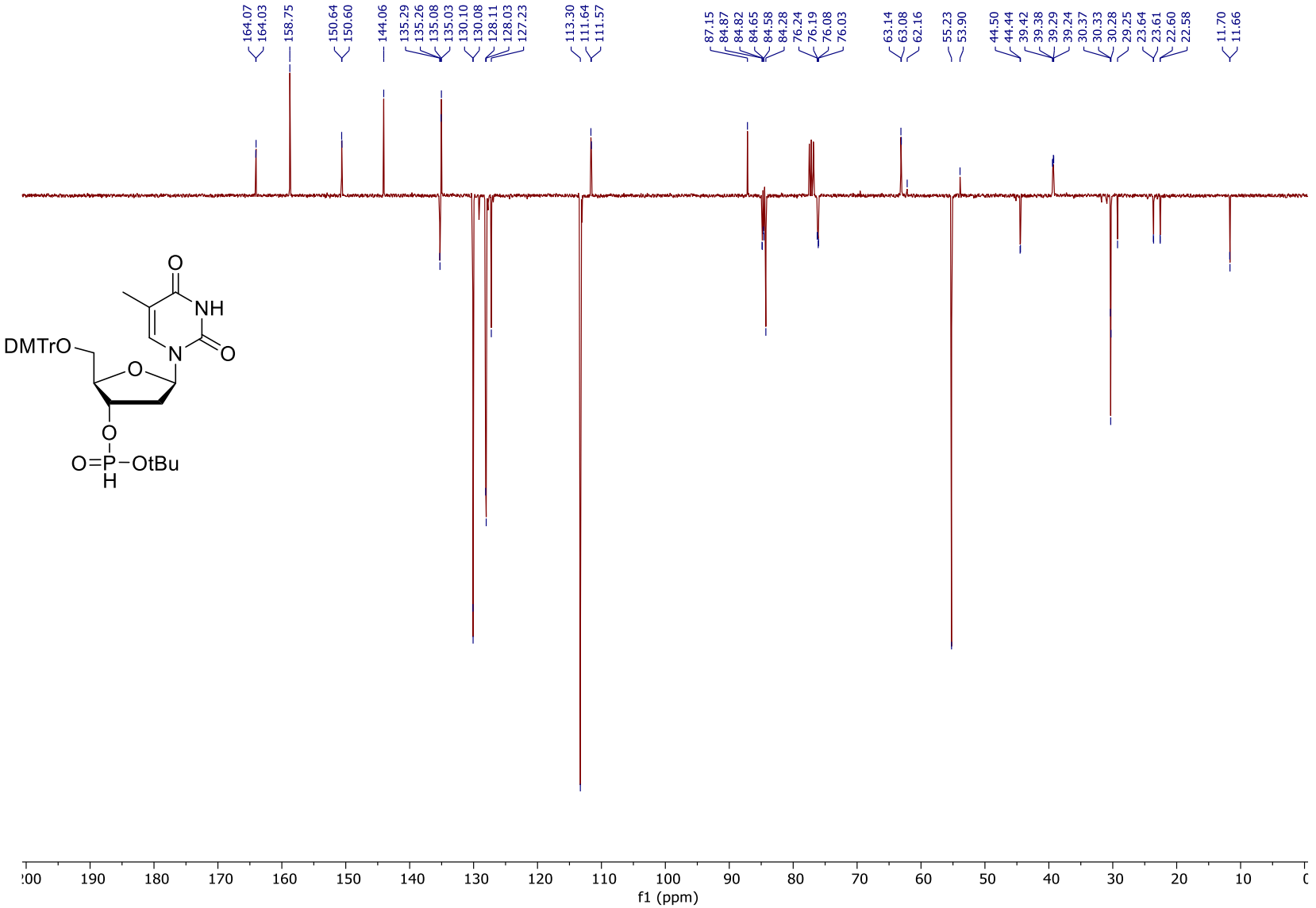
^{13}C-NMR (101 MHz, $CDCl_3$) of compound **57**. Solvent peak at 77.16 ppm.



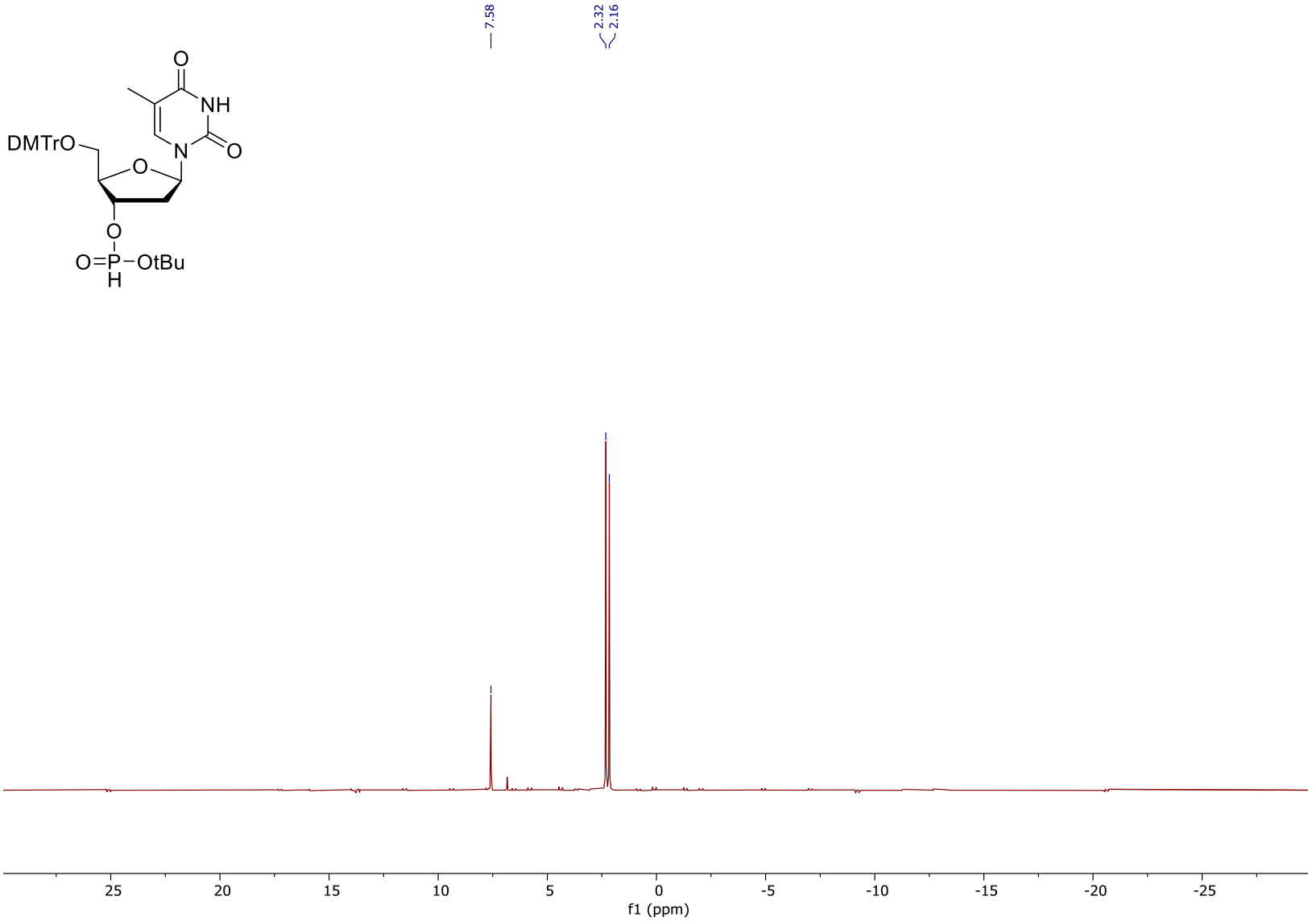
^{31}P-NMR (162 MHz, $CDCl_3$) of compound **57**.



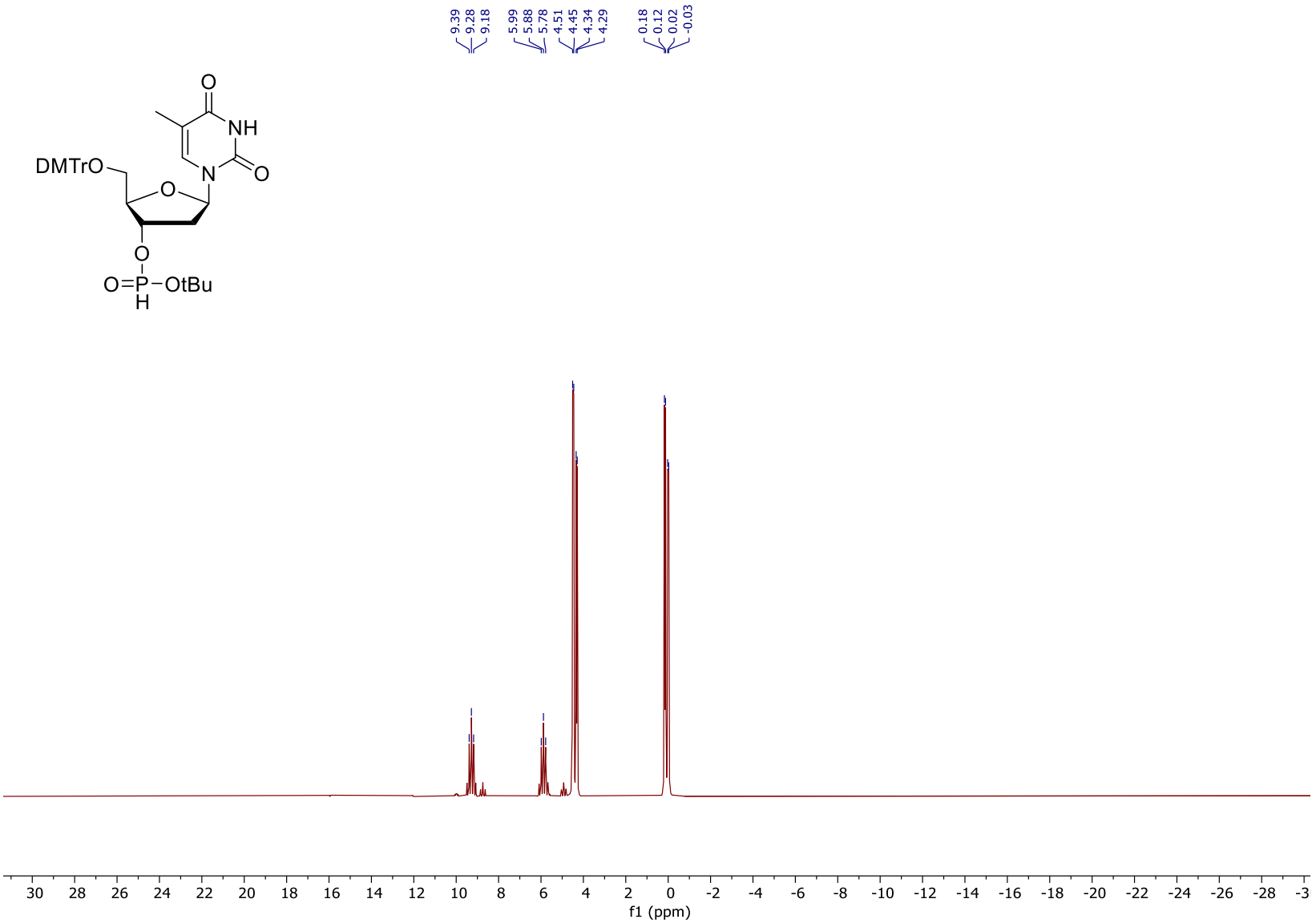
^{1}H-NMR (400 MHz, $CDCl_3$) of compound **1**. Solvent peak at 7.26 ppm.



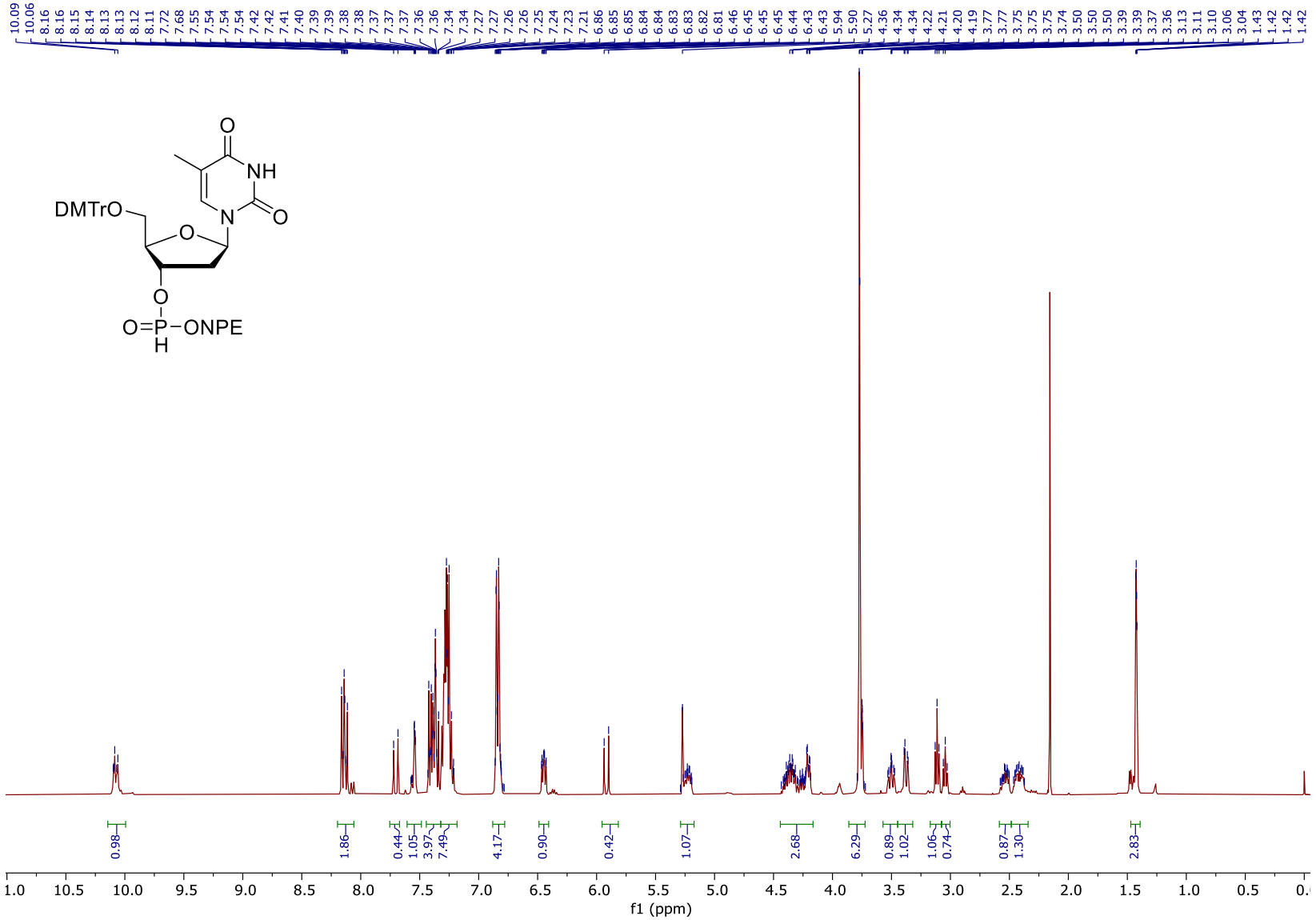
^{13}C-NMR (101 MHz, $CDCl_3$) of compound **1**. Solvent peak at 77.16 ppm.



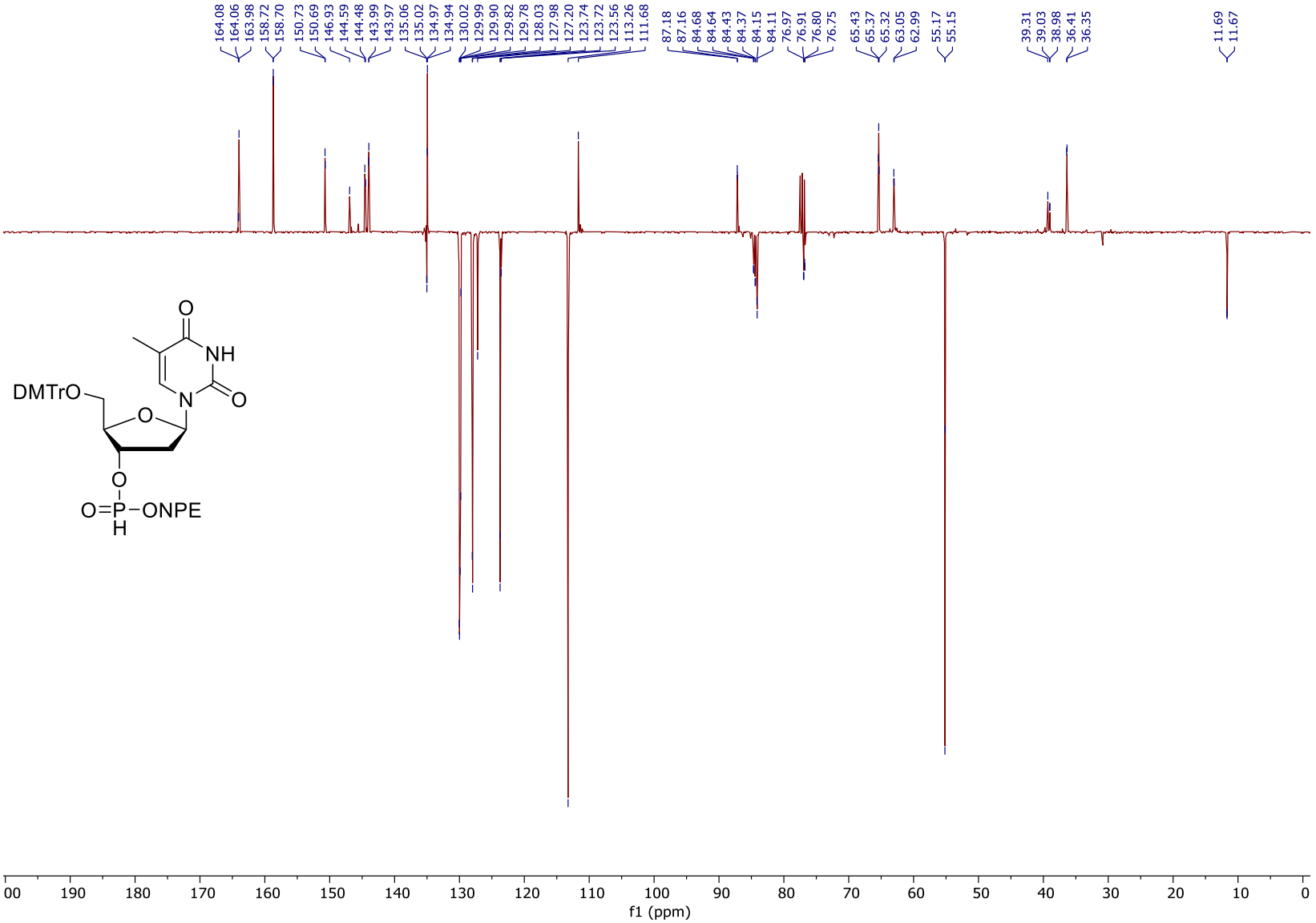
^{31}P-NMR (162 MHz, $CDCl_3$) of compound **1**.



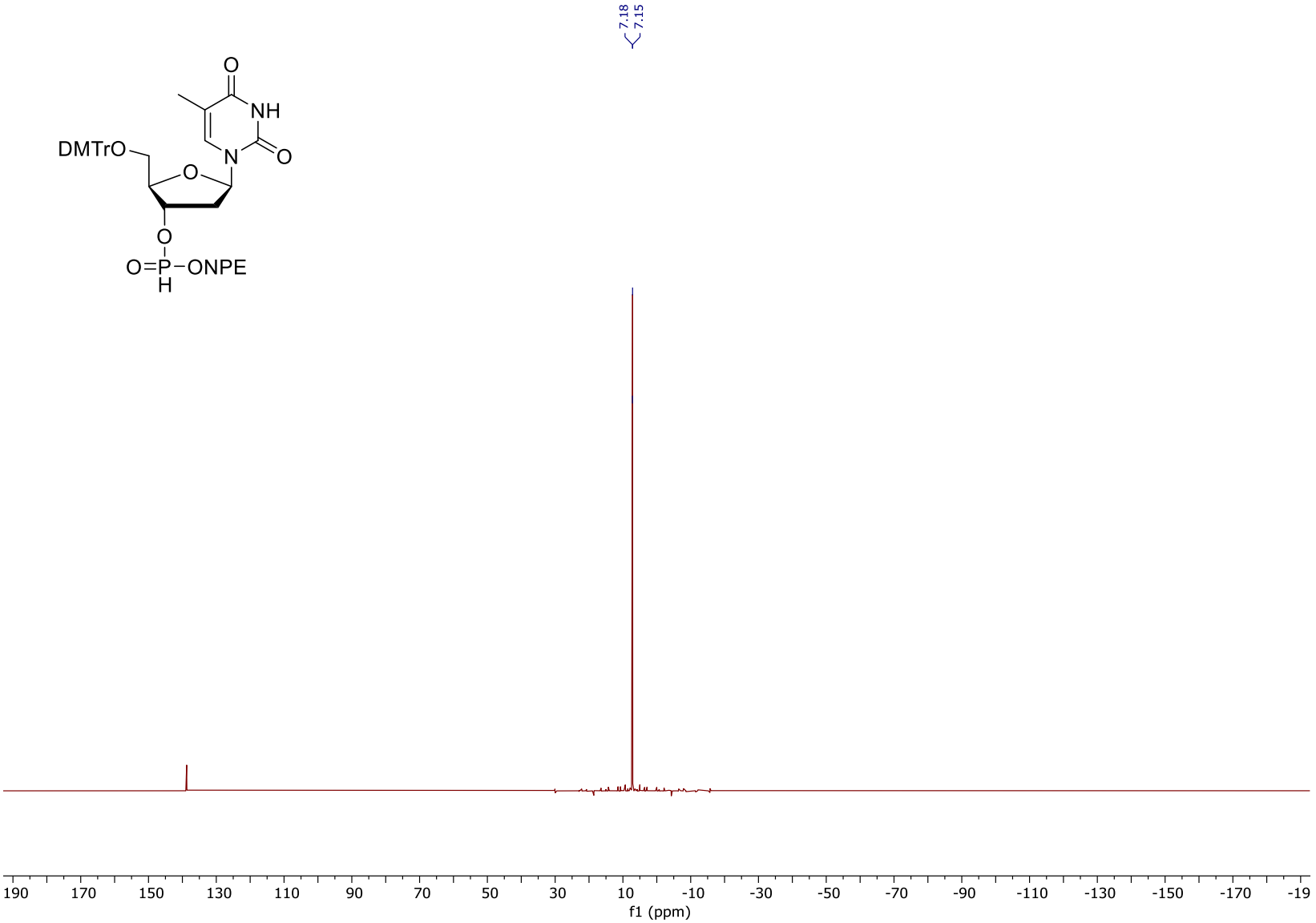
^{31}P-NMR (162 MHz, $CDCl_3$, proton coupled) of compound **1**.



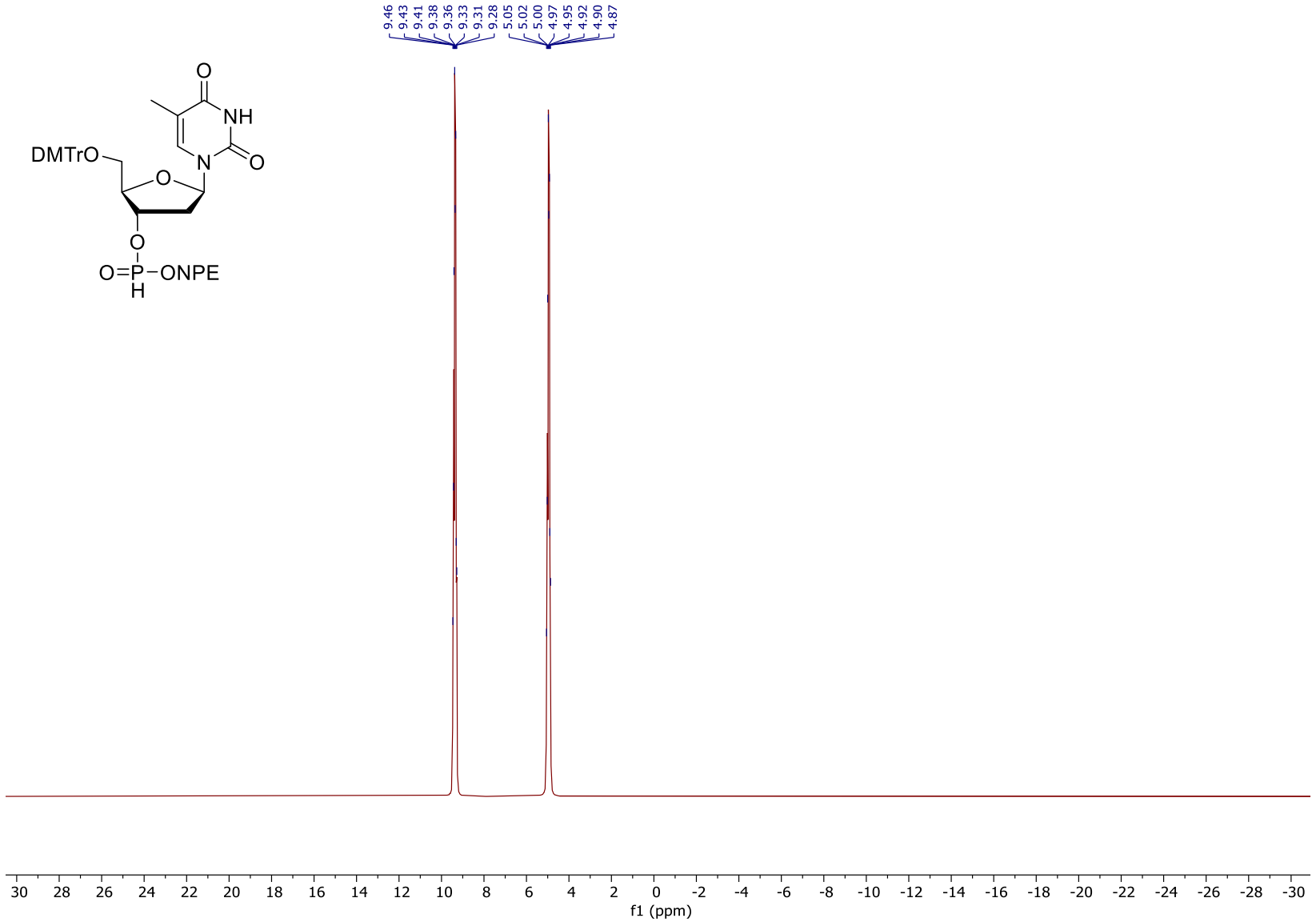
^{1}H-NMR (400 MHz, $CDCl_3$) of compound **2**. Solvent peak at 7.26 ppm.



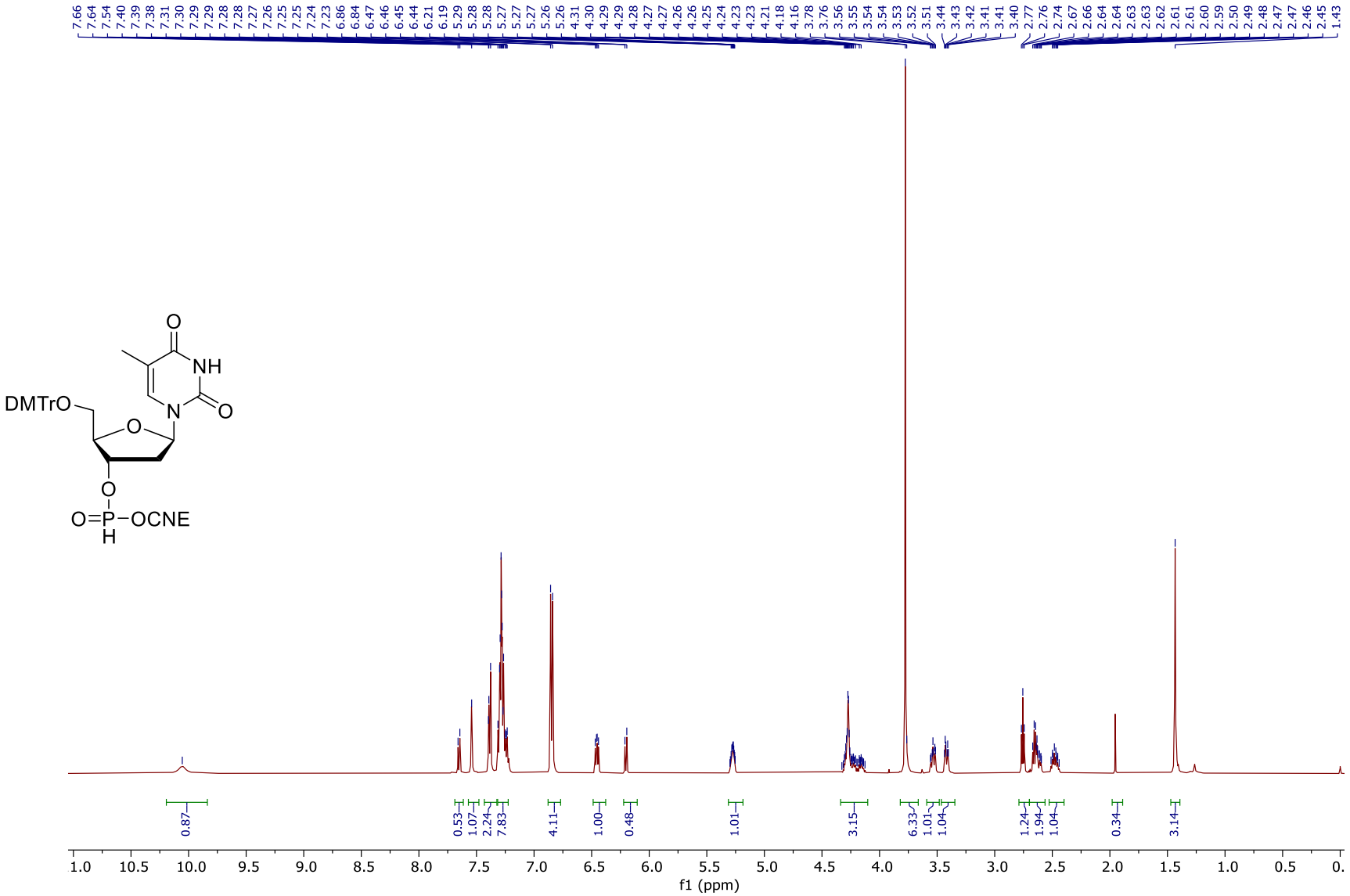
^{13}C-NMR (101 MHz, $CDCl_3$) of compound **2**. Solvent peak at 77.16 ppm.



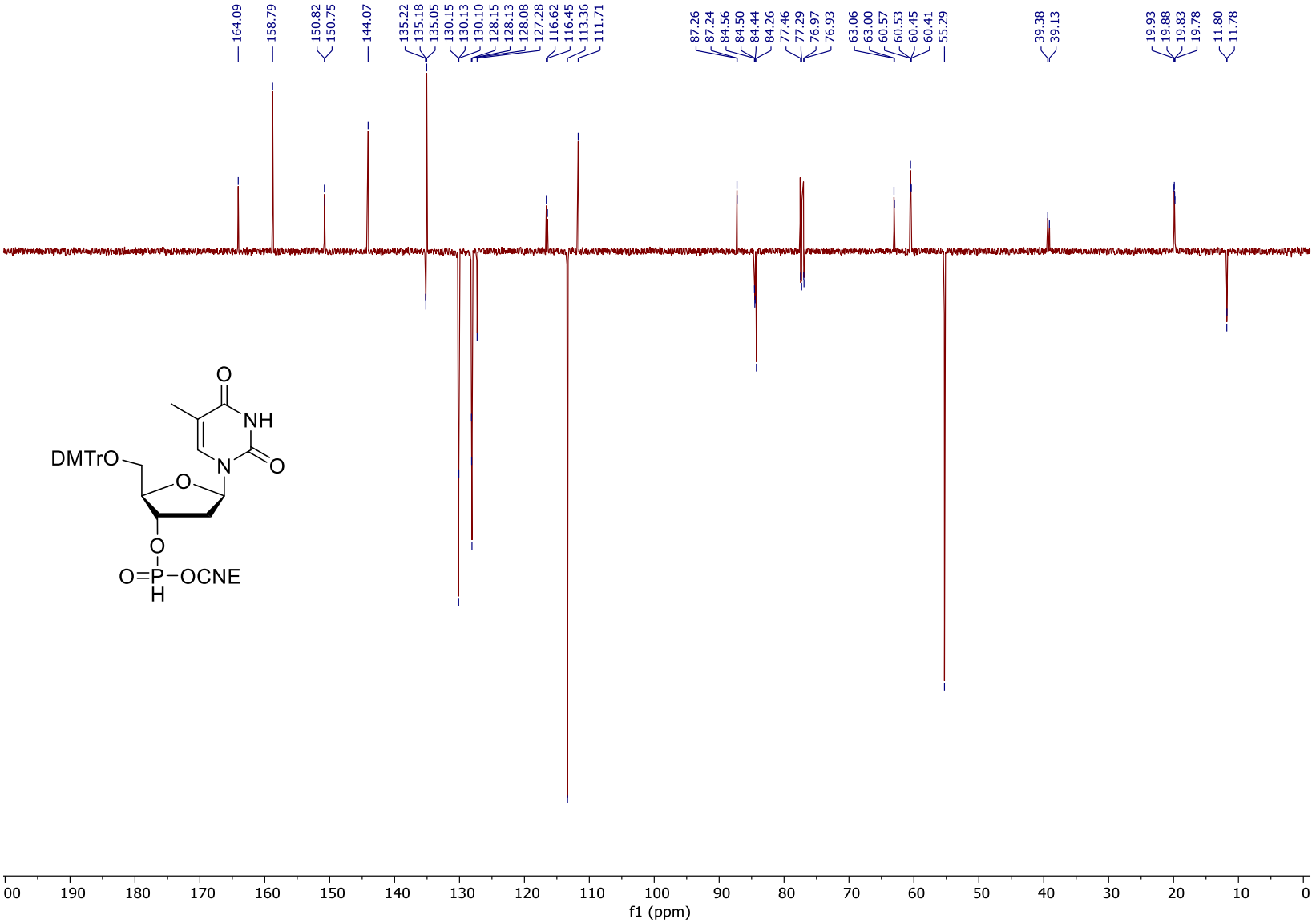
^{31}P-NMR (162 MHz, $CDCl_3$) of compound **2**.



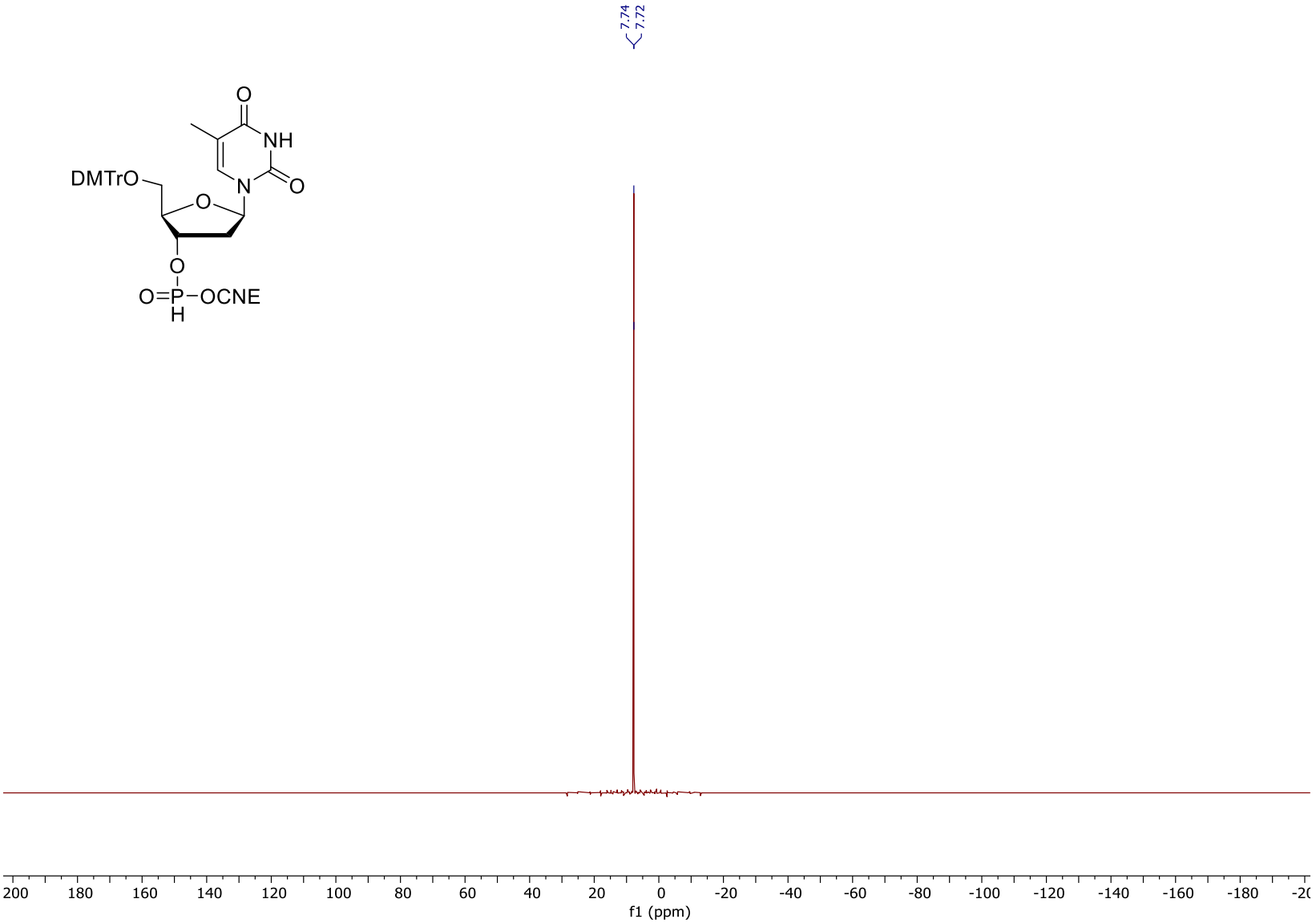
^{31}P-NMR (162 MHz, $CDCl_3$, proton coupled) of compound **2**.



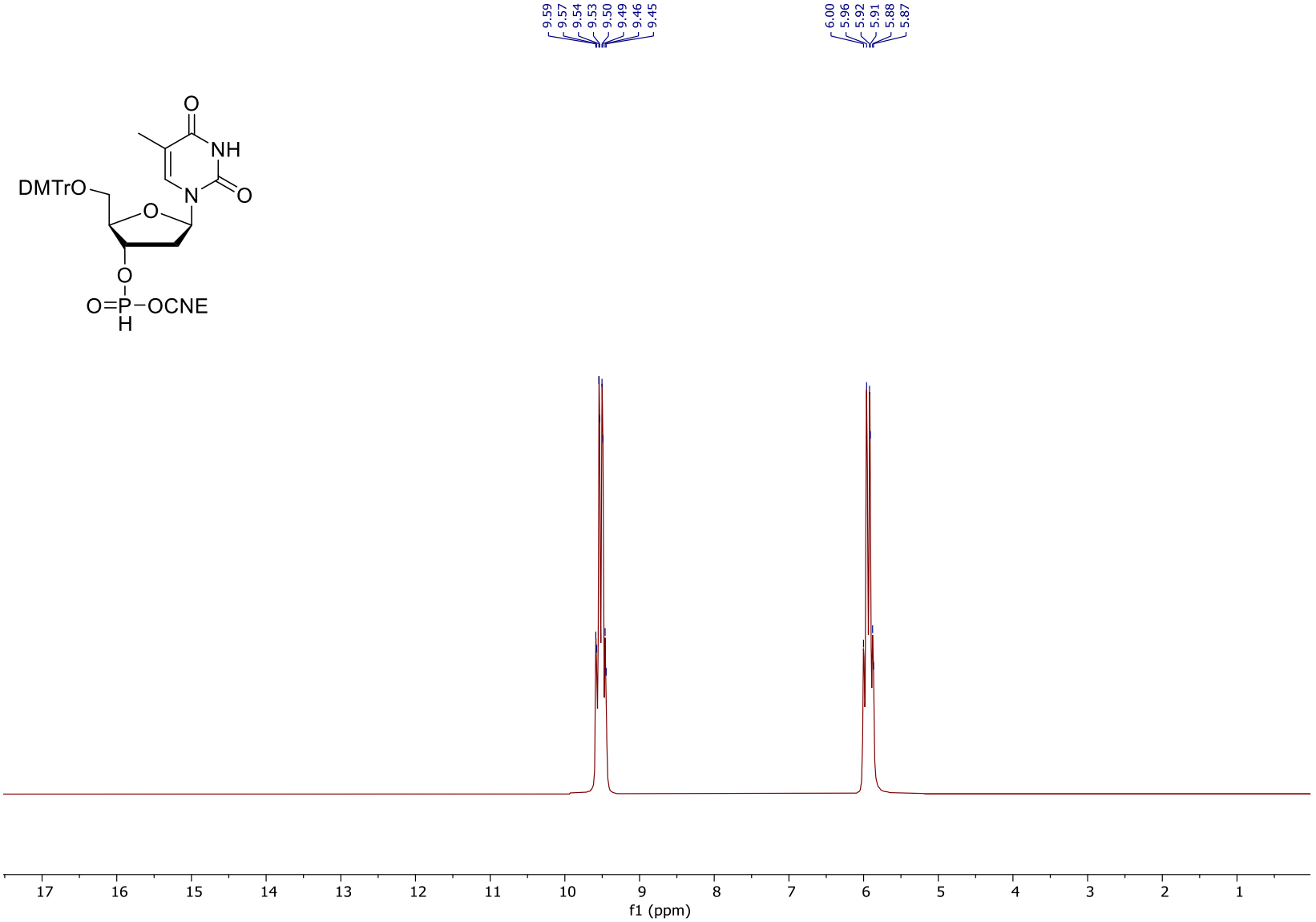
^{1}H-NMR (500 MHz, $CDCl_3$) of compound **3**. Solvent peak at 7.26 ppm.



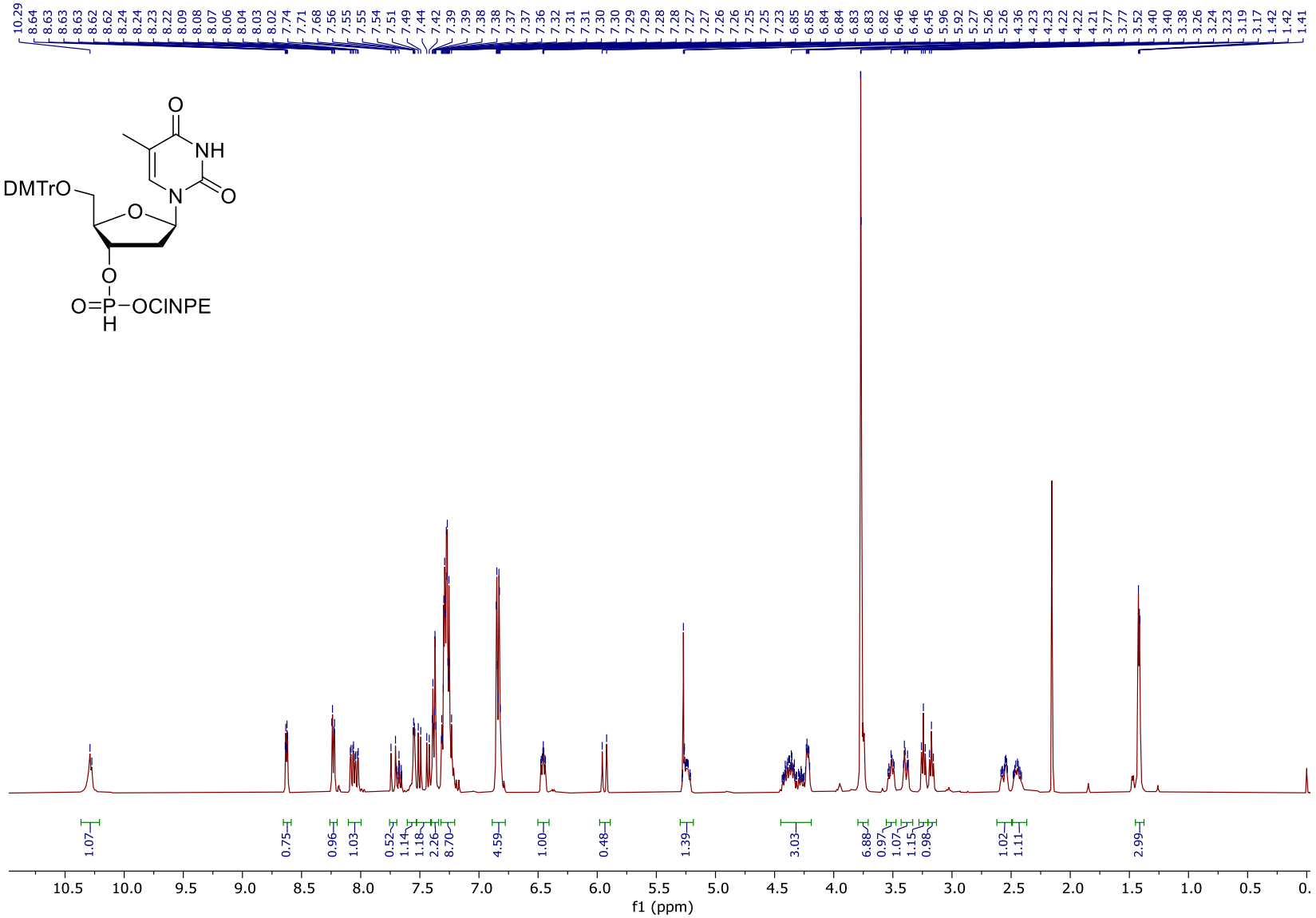
^{13}C-NMR (126 MHz, $CDCl_3$) of compound **3**. Solvent peak at 77.16 ppm.



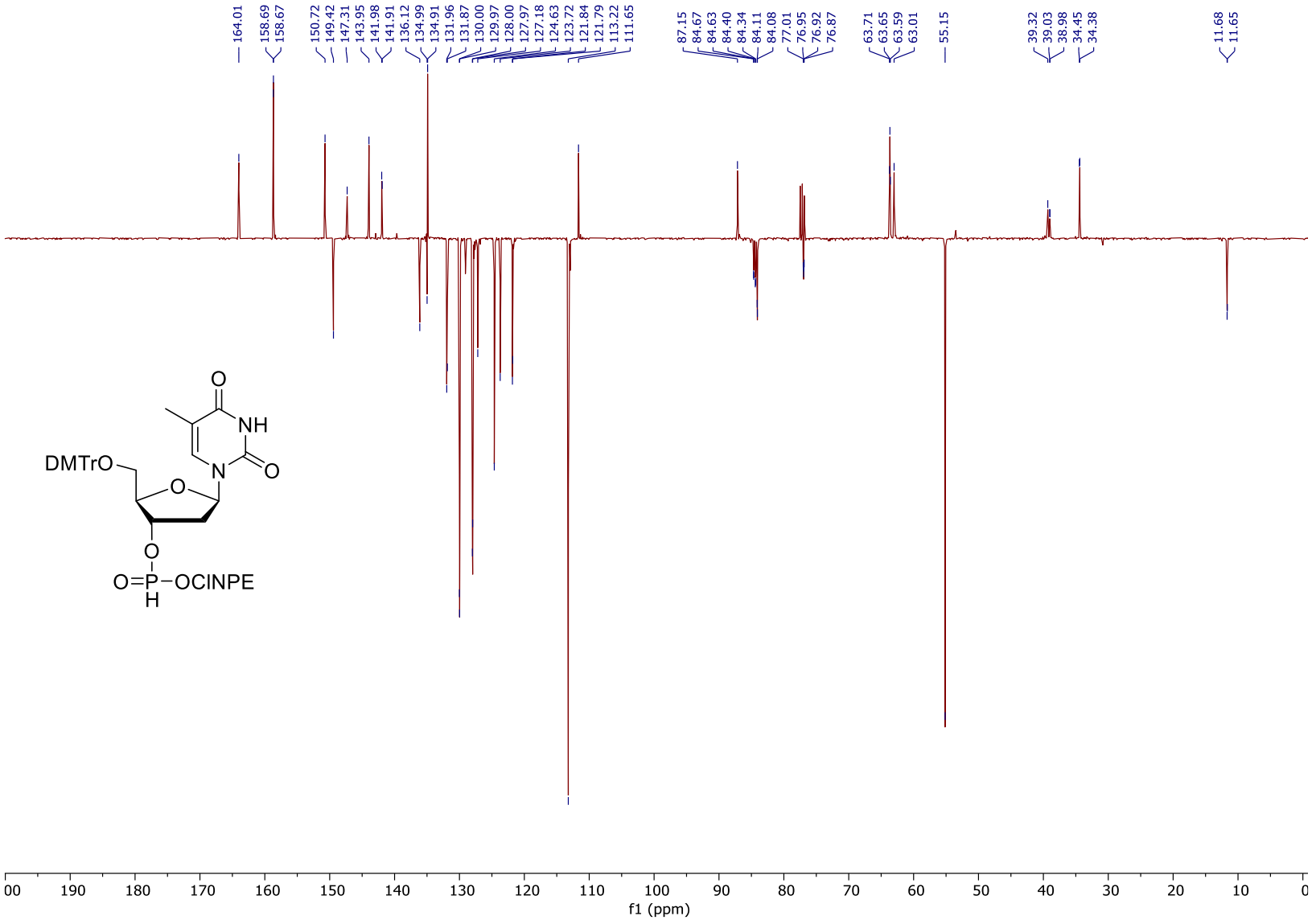
^{31}P-NMR (202 MHz, $CDCl_3$) of compound **3**.



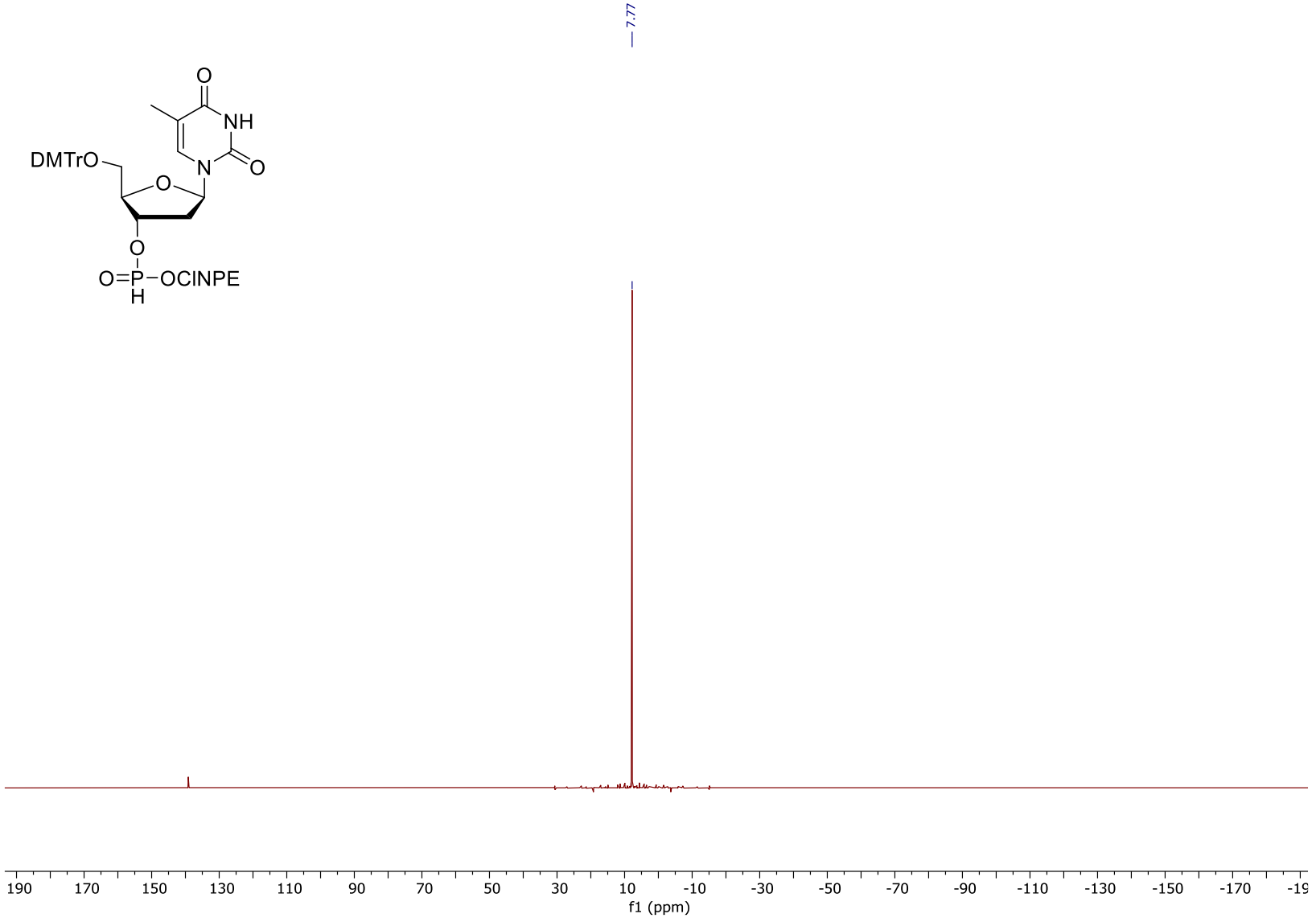
^{31}P-NMR (202 MHz, $CDCl_3$, proton coupled) of compound **3**.



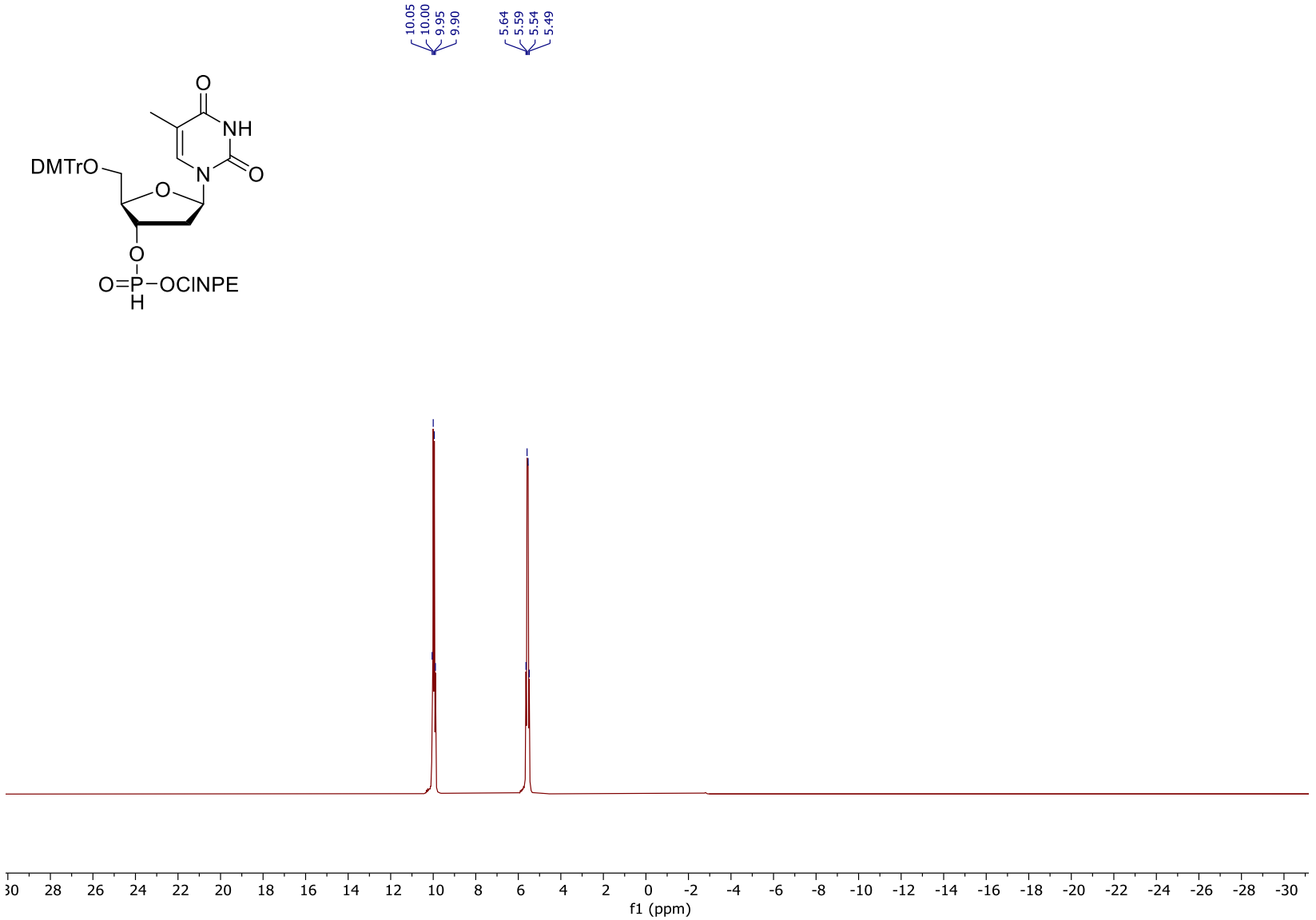
^{1}H-NMR (400 MHz, $CDCl_3$) of compound **4**. Solvent peak at 7.26 ppm.



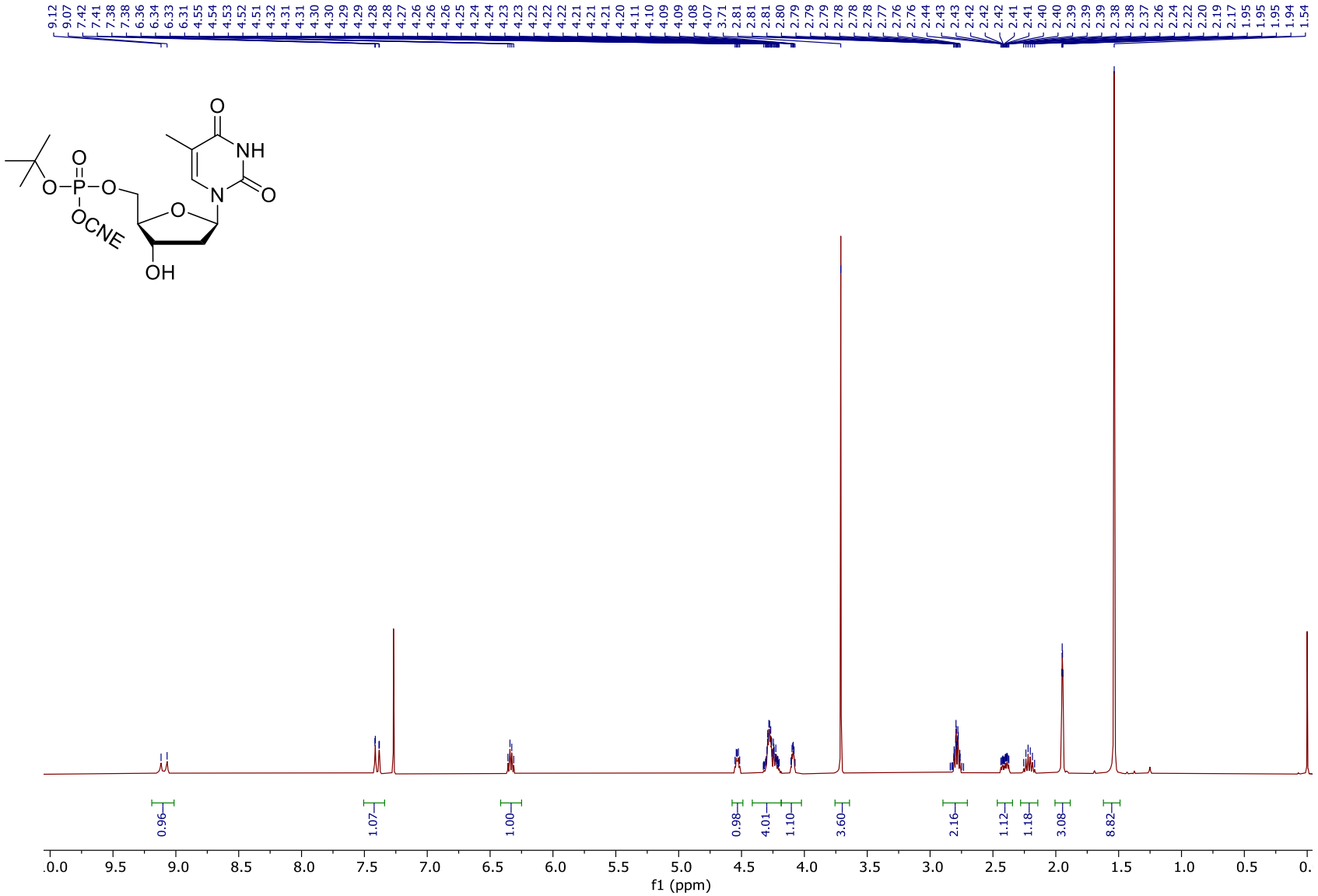
^{13}C-NMR (101 MHz, $CDCl_3$) of compound **4**. Solvent peak at 77.16 ppm.



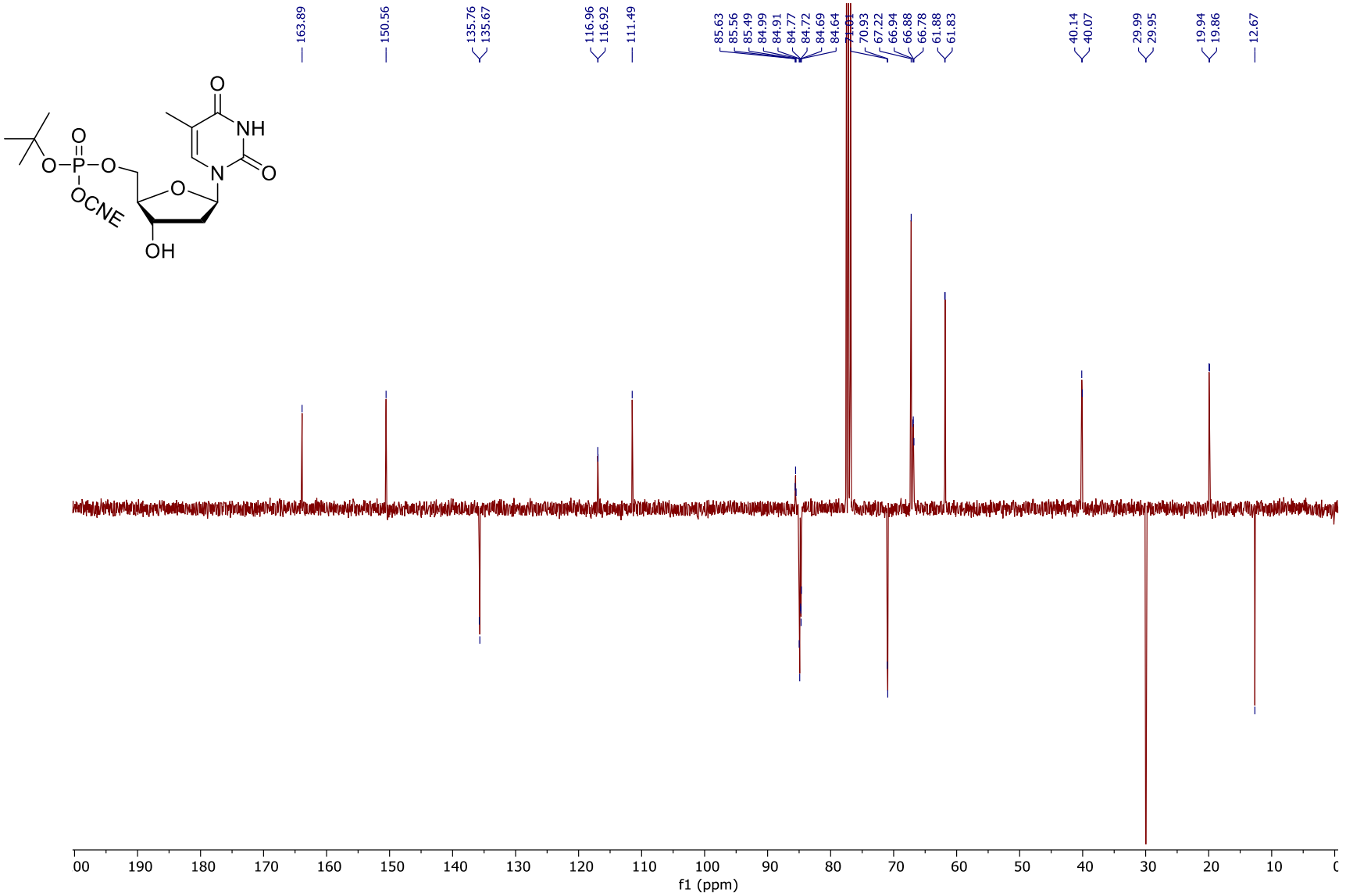
^{31}P-NMR (162 MHz, $CDCl_3$) of compound **4**.



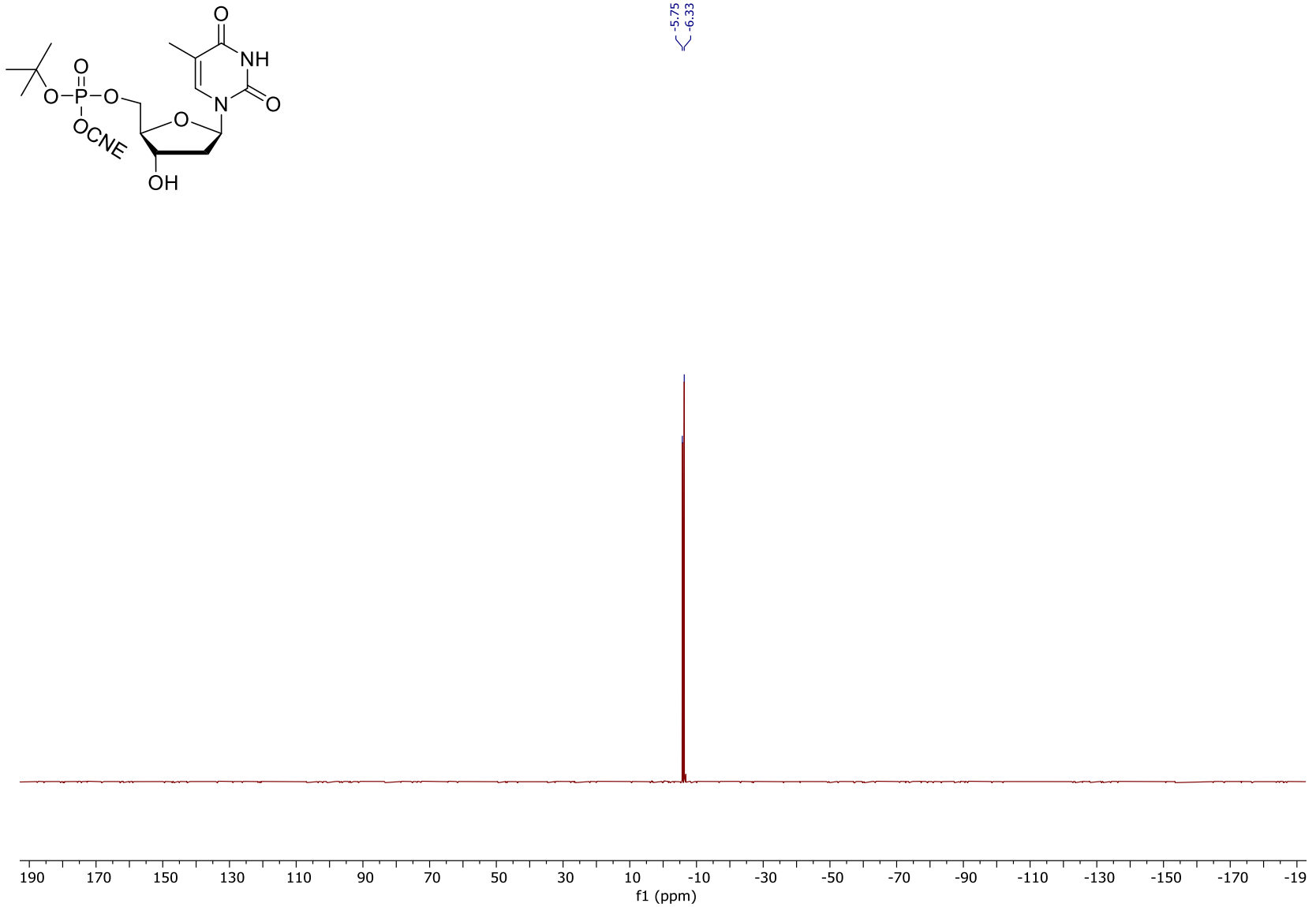
^{31}P-NMR (162 MHz, $CDCl_3$, proton coupled) of compound 4.



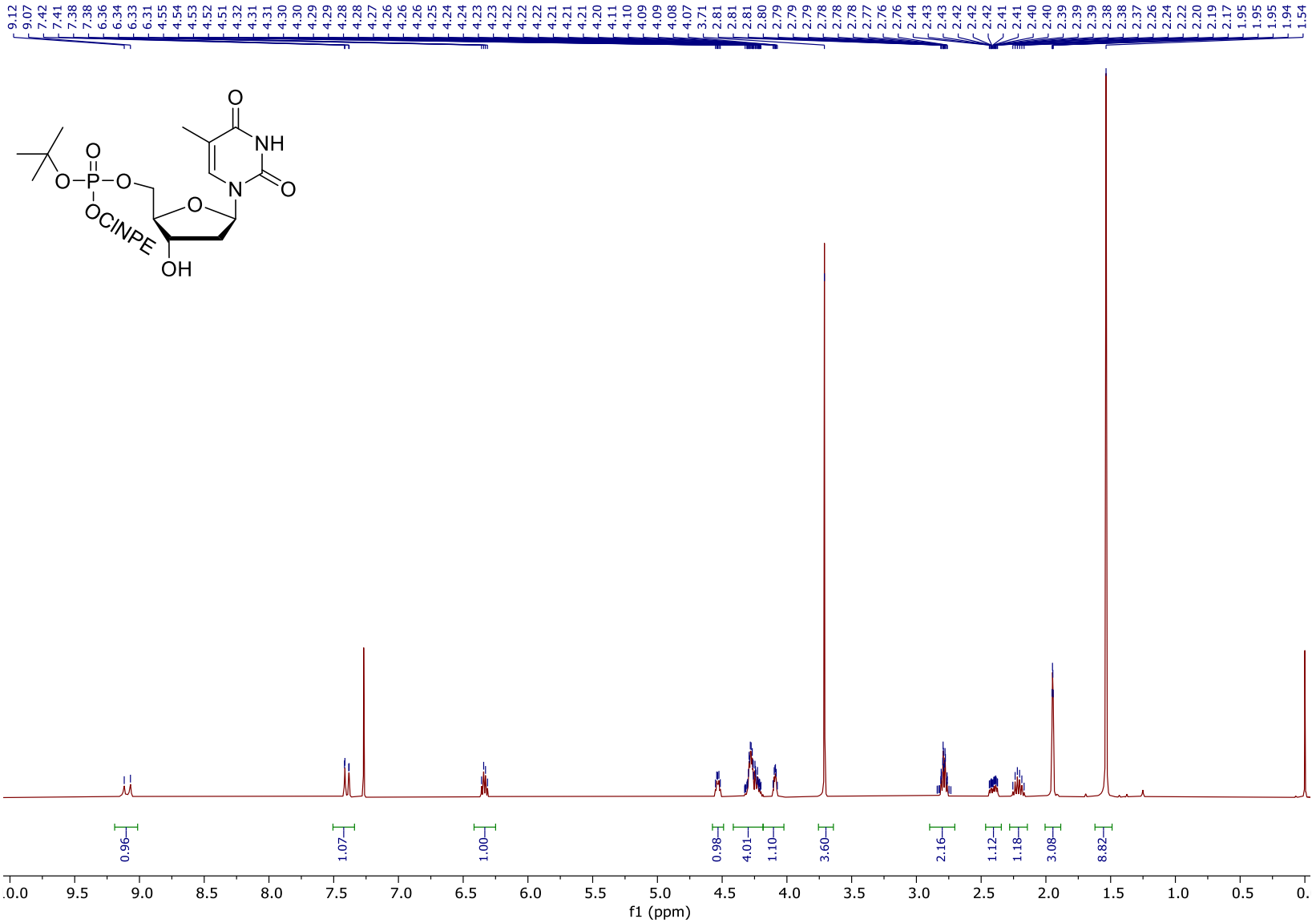
^{1}H-NMR (400 MHz, $CDCl_3$) of compound **60**. Solvent peak at 7.26 ppm.



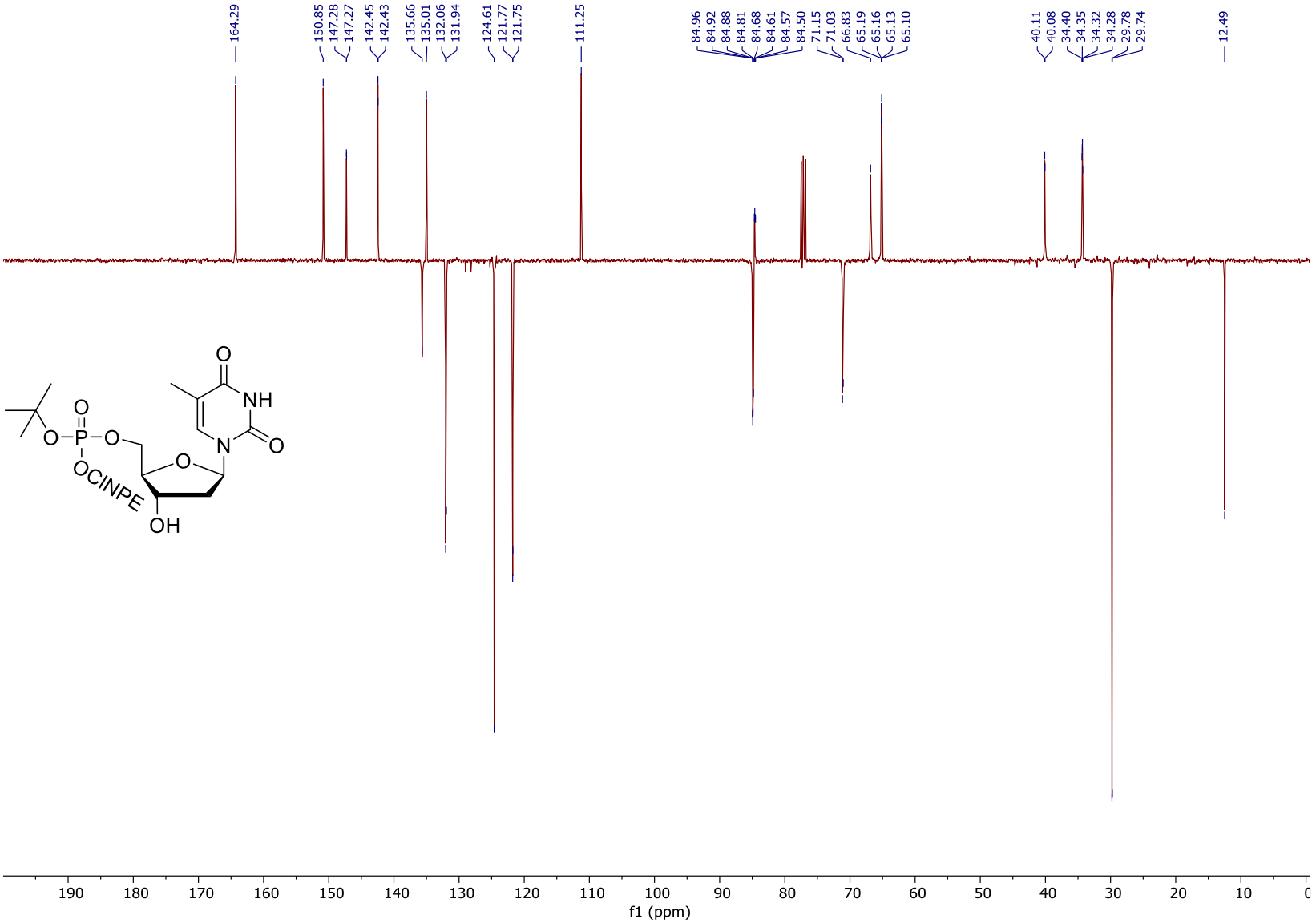
^{13}C-NMR (101 MHz, $CDCl_3$) of compound **60**. Solvent peak at 77.16 ppm.



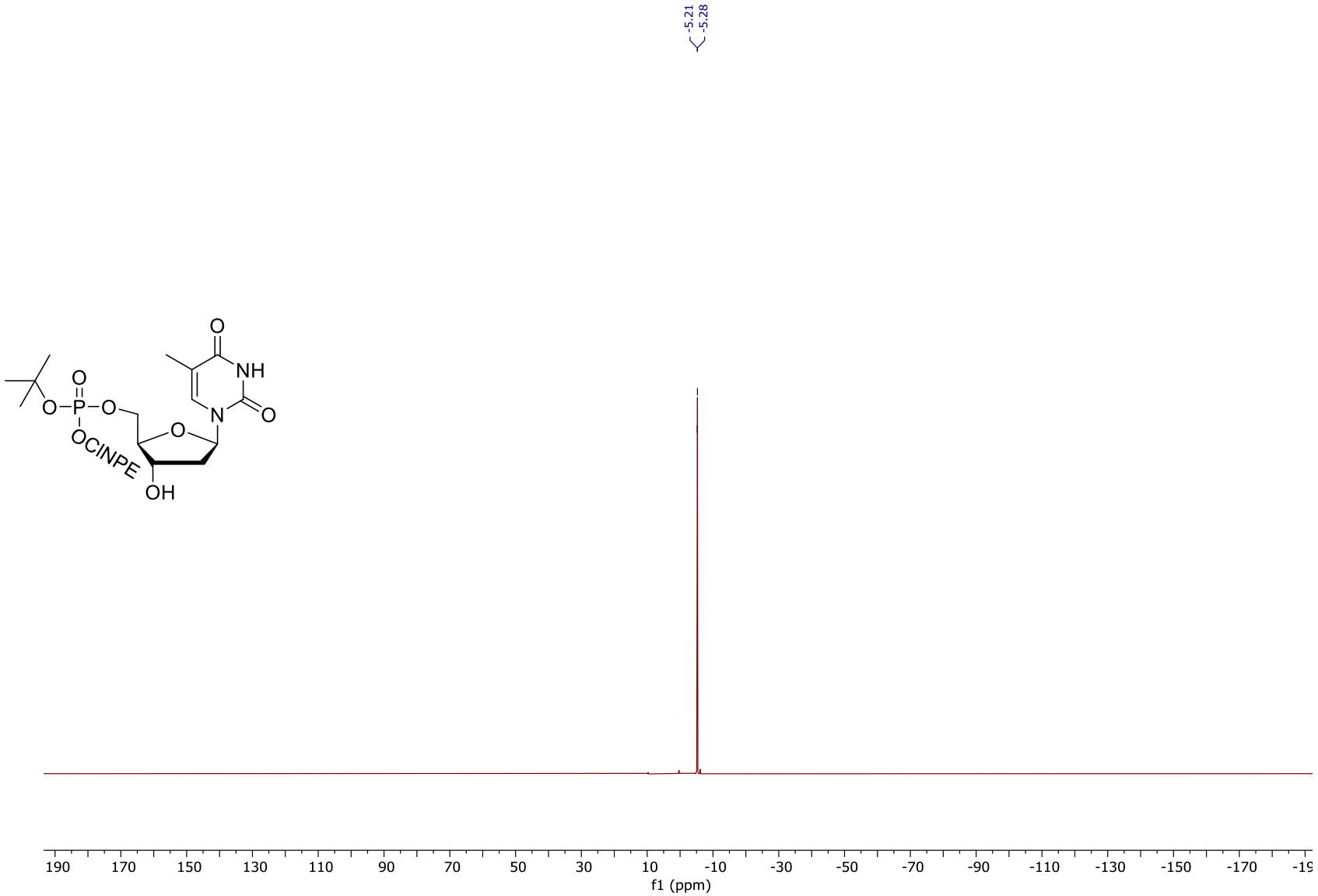
^{31}P-NMR (162 MHz, $CDCl_3$) of compound **60**.



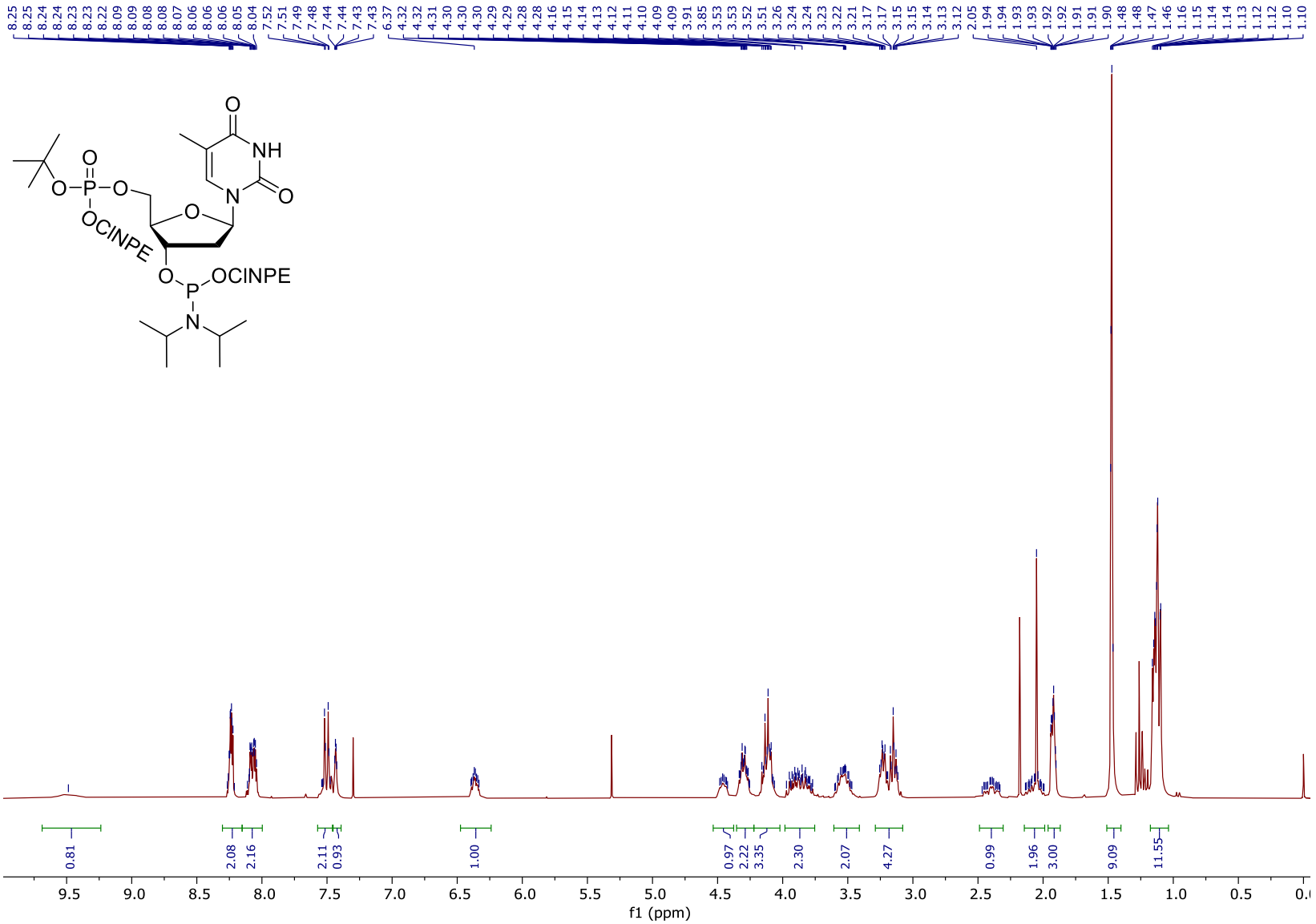
^{1}H-NMR (400 MHz, $CDCl_3$) of compound **61**. Solvent peak at 7.26 ppm.



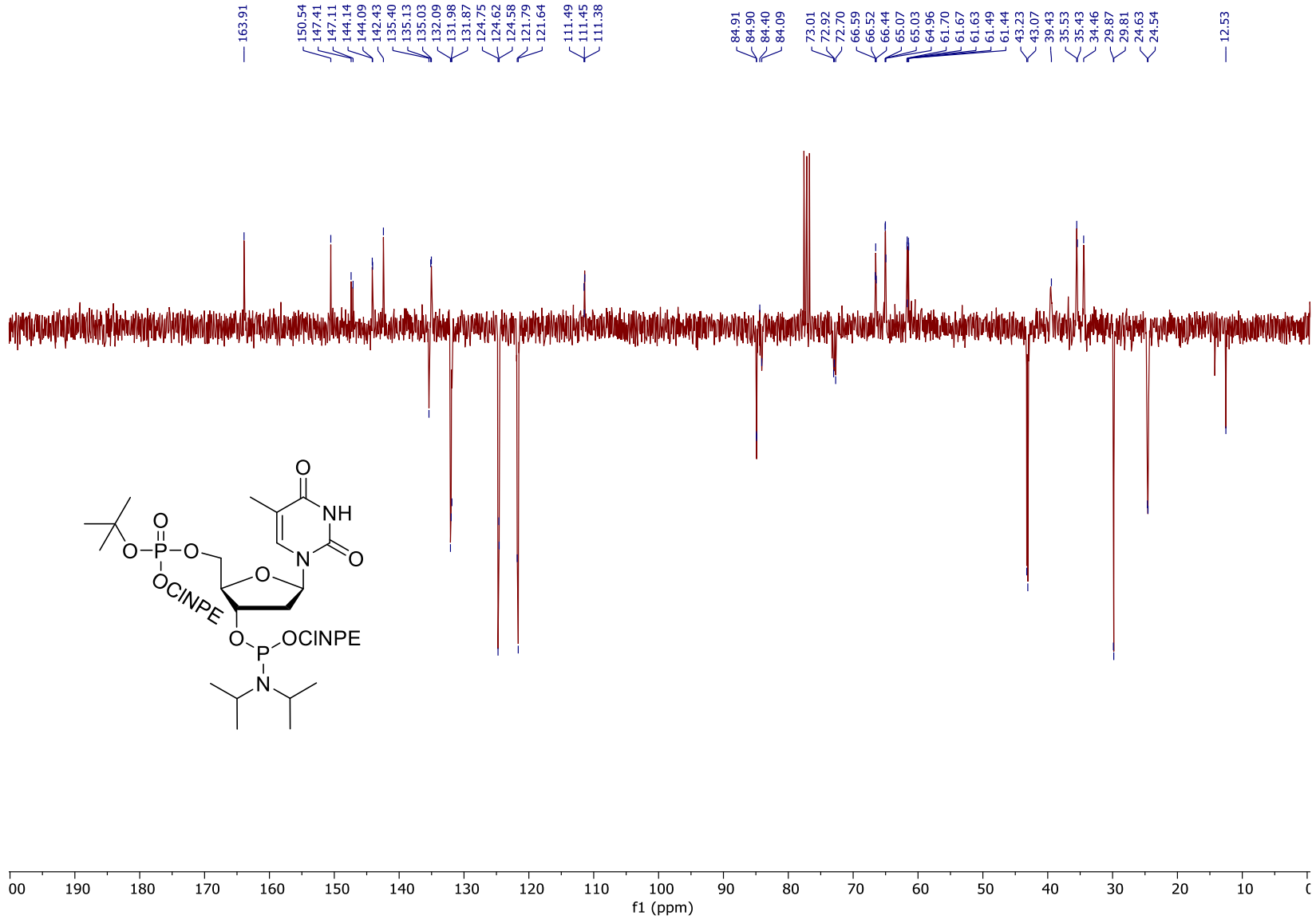
^{13}C-NMR (101 MHz, $CDCl_3$) of compound **61**. Solvent peak at 77.16 ppm.



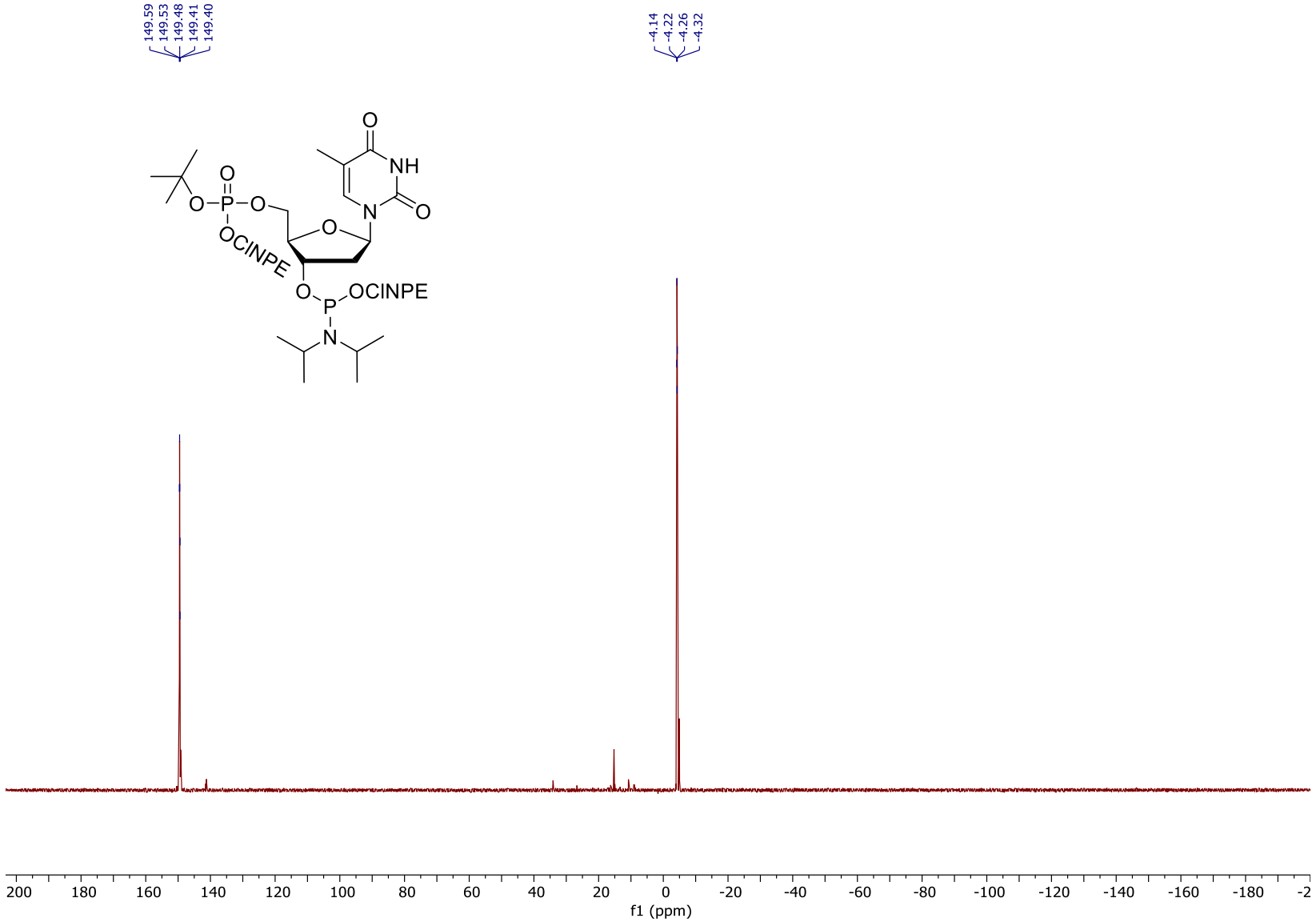
^{31}P-NMR (162 MHz, $CDCl_3$) of compound **61**.



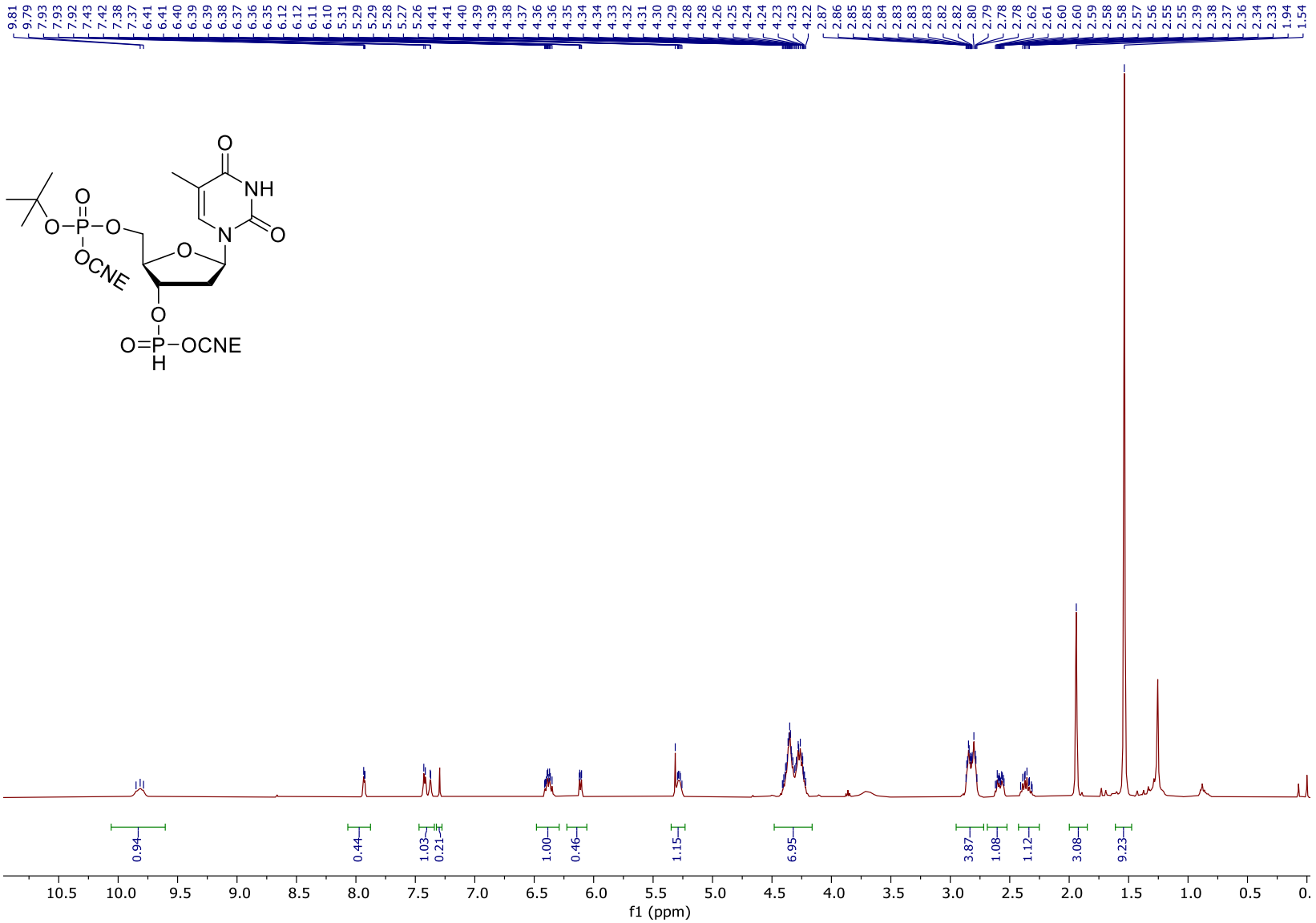
^{1}H-NMR (300 MHz, $CDCl_3$) of compound **62**. Solvent peak at 7.26 ppm.



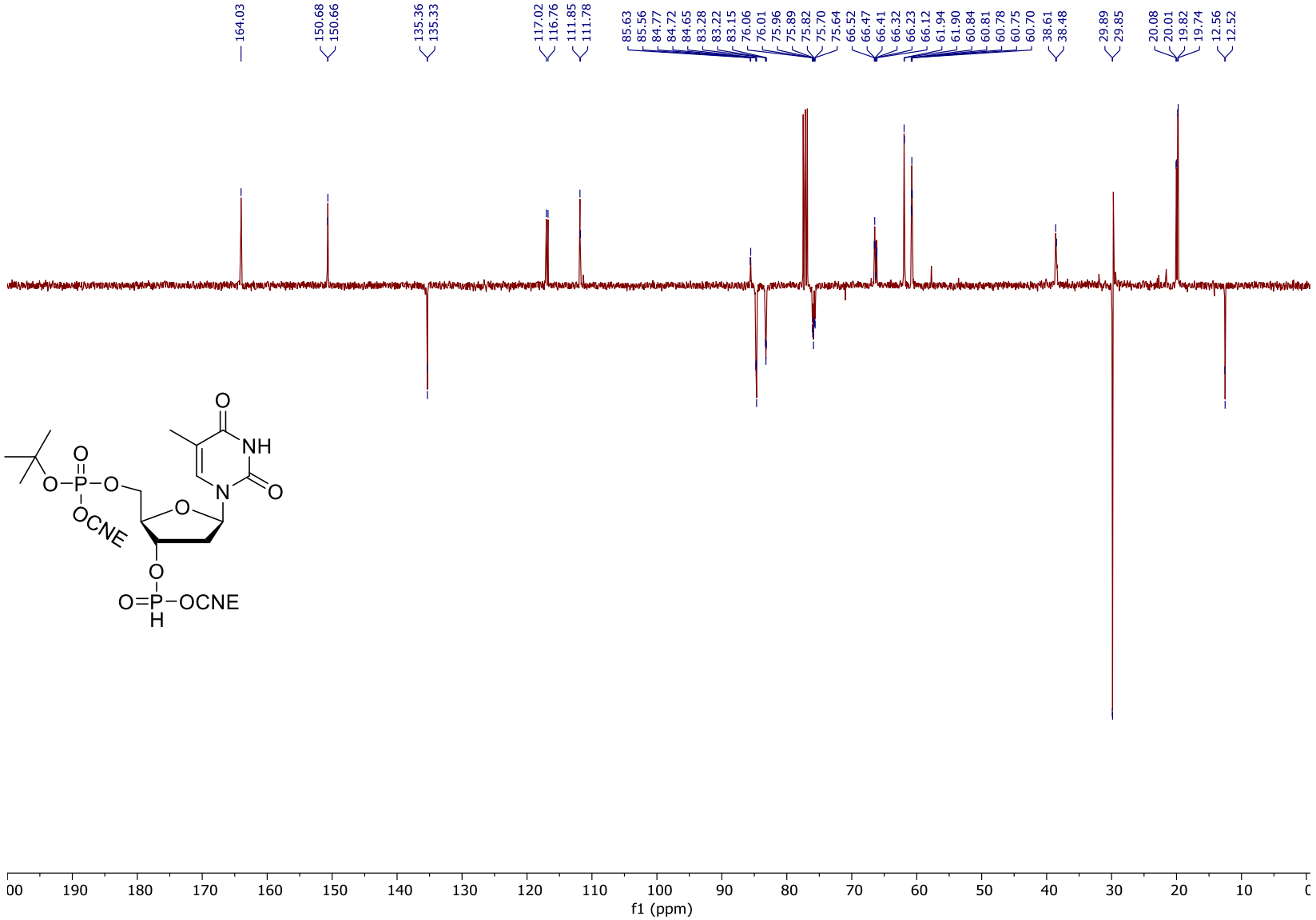
^{13}C-NMR (75 MHz, $CDCl_3$) of compound **62**. Solvent peak at 77.16 ppm.



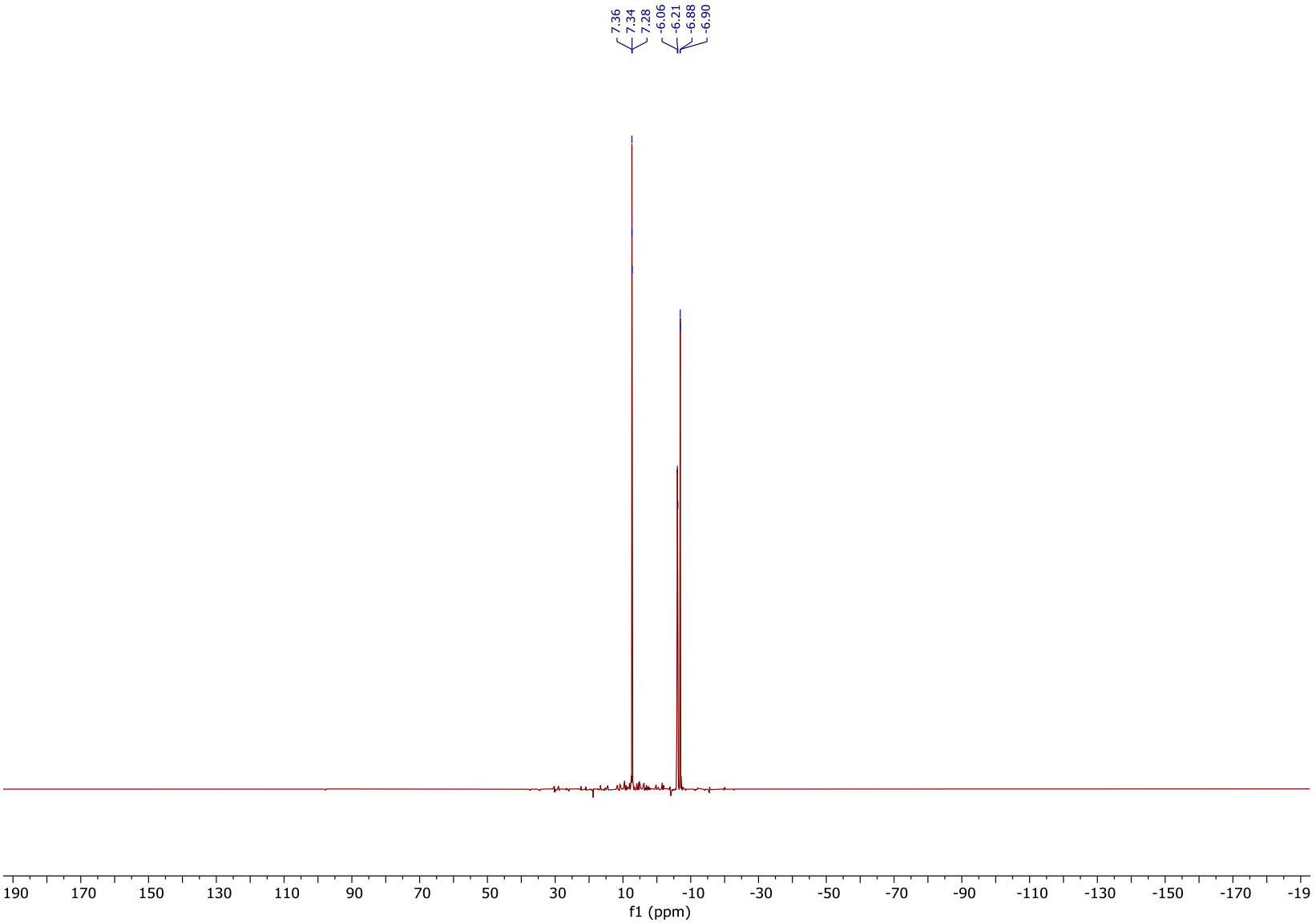
^{31}P-NMR (121 MHz, $CDCl_3$) of compound **62**.



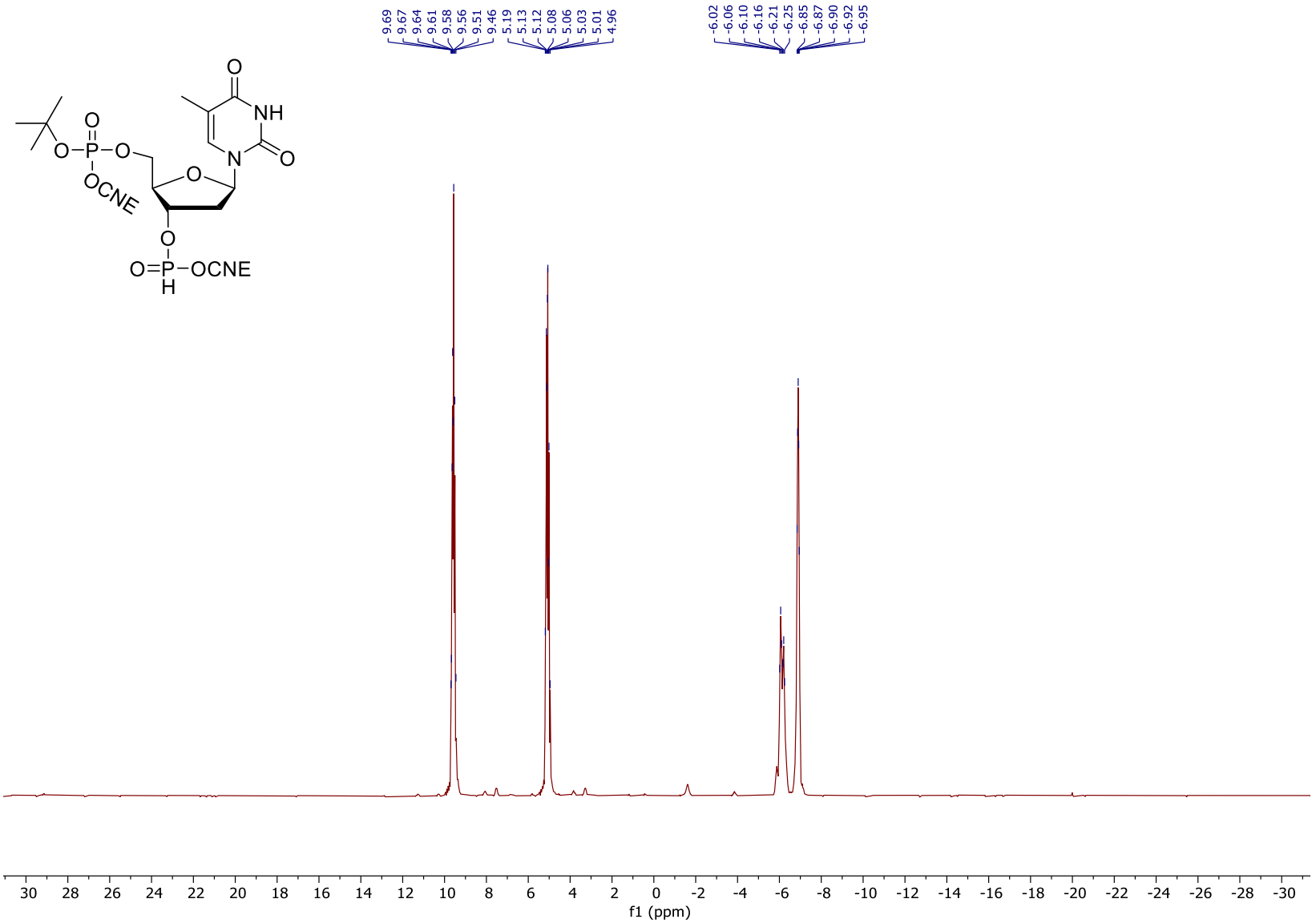
^{1}H-NMR (400 MHz, $CDCl_3$) of compound **9**. Solvent peak at 7.26 ppm.



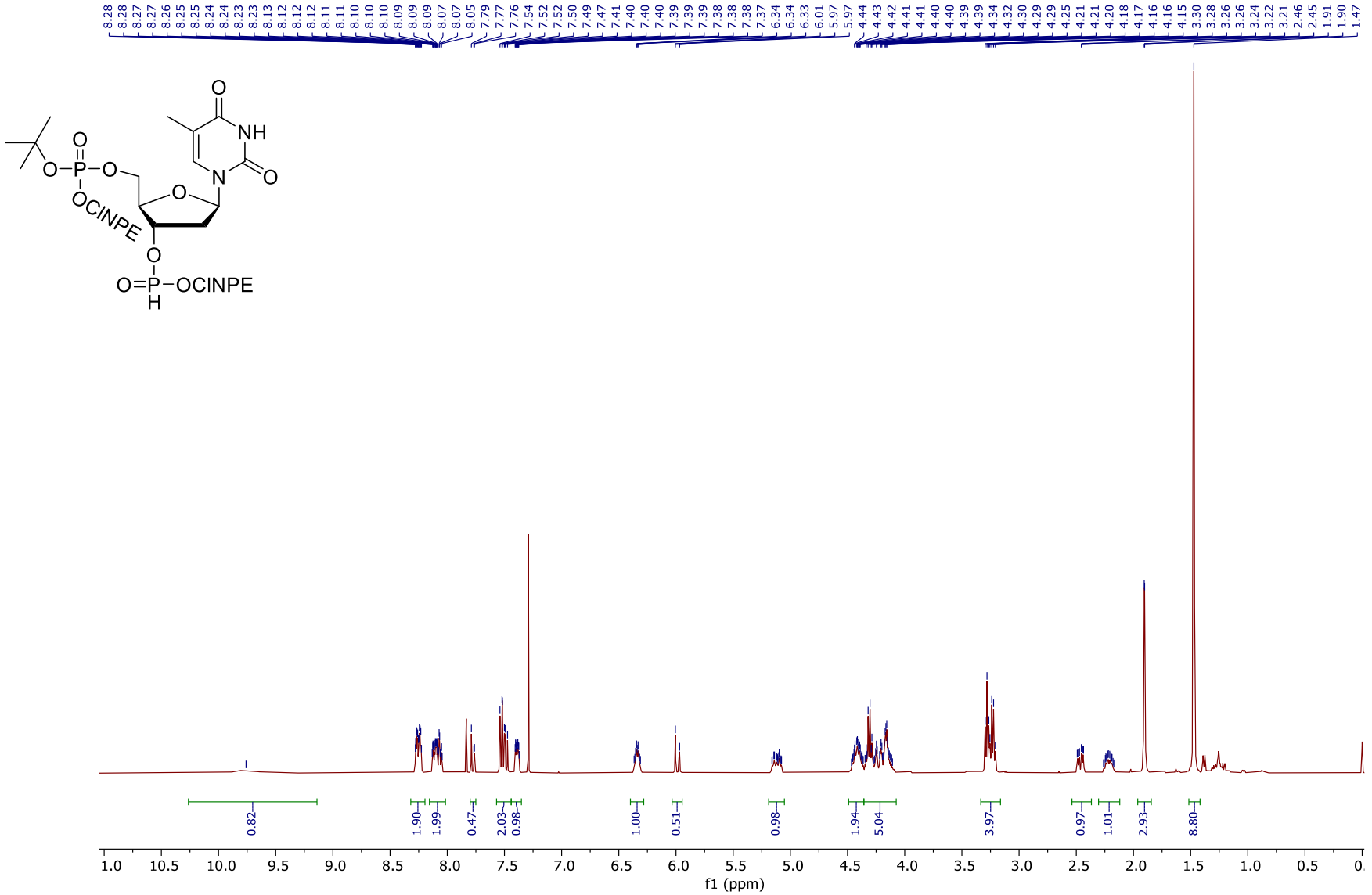
^{13}C-NMR (101 MHz, $CDCl_3$) of compound **9**. Solvent peak at 77.16 ppm.



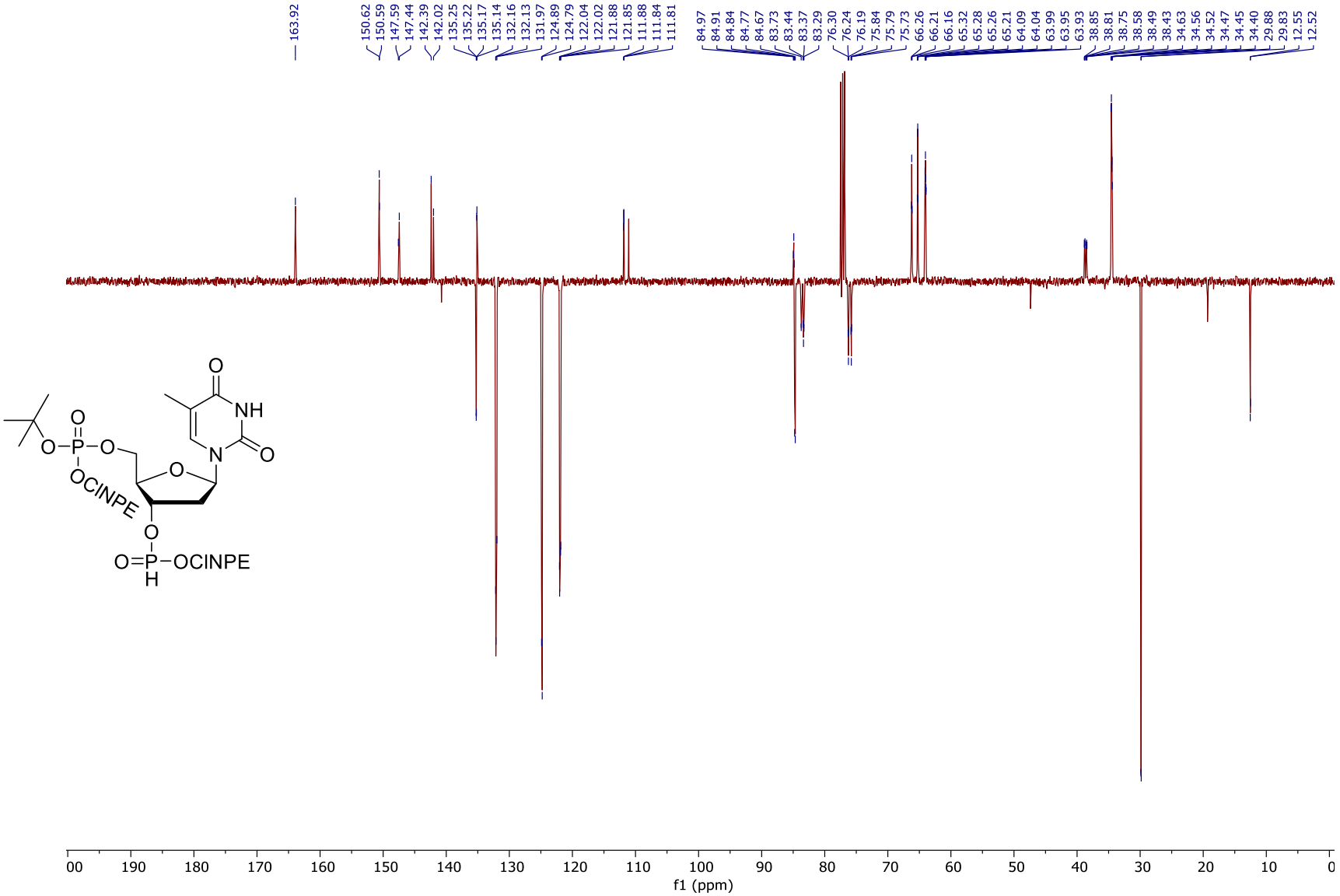
^{31}P-NMR (162 MHz, $CDCl_3$) of compound **9**.



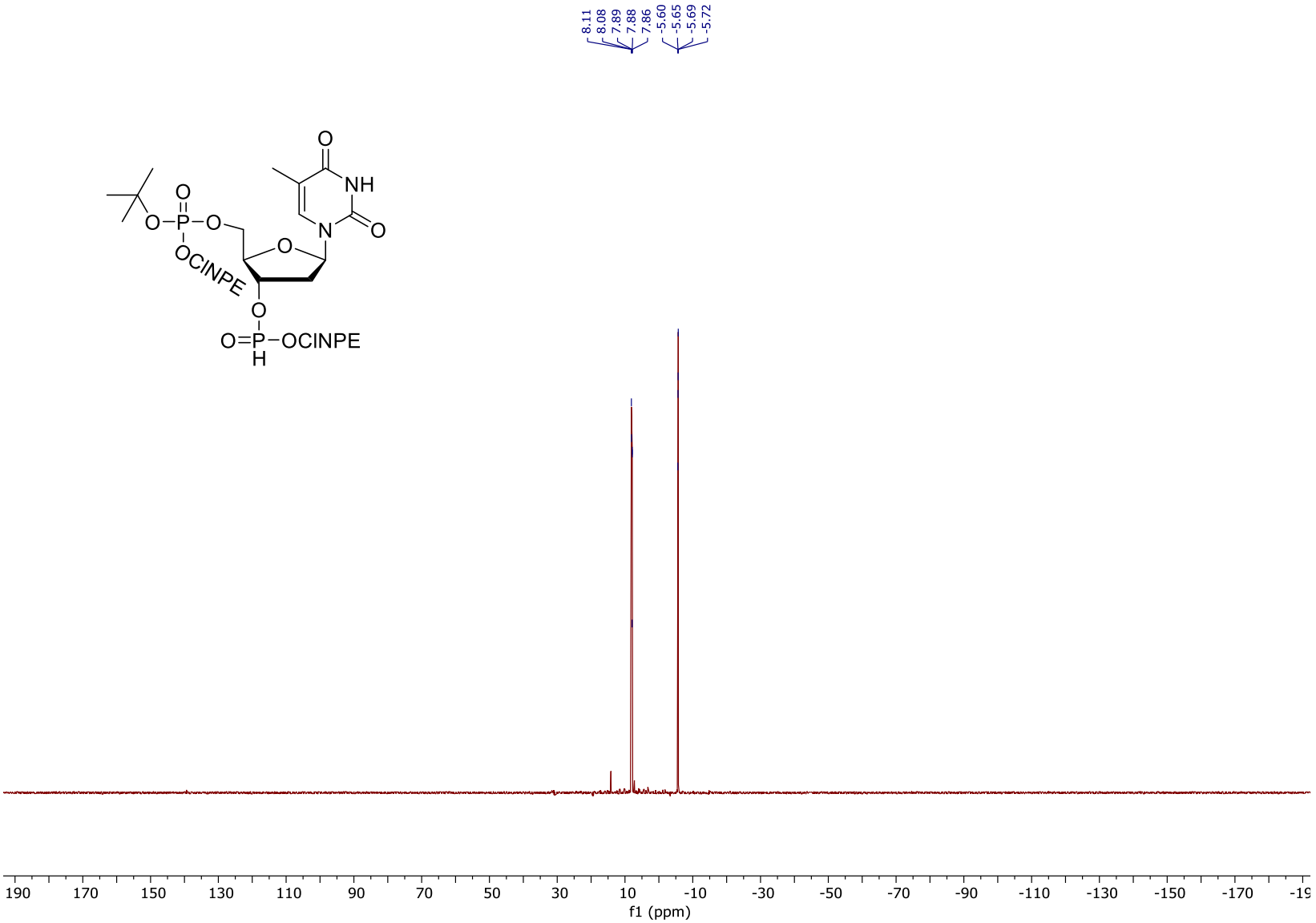
^{31}P-NMR (162 MHz, $CDCl_3$, proton coupled) of compound **9**.



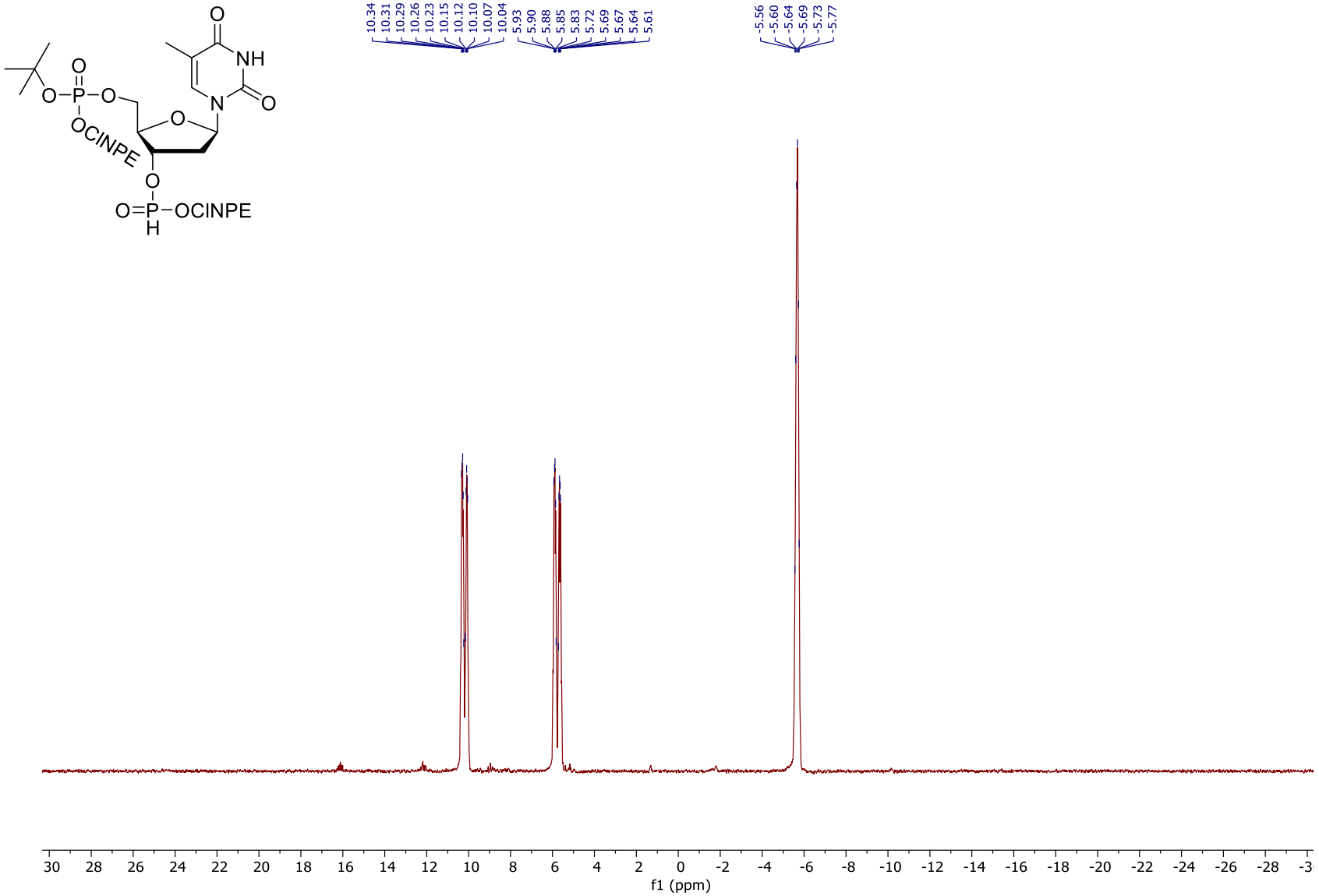
^{1}**H-NMR** (400 MHz, $CDCl_3$) of compound **10**. Solvent peak at 7.26 ppm.



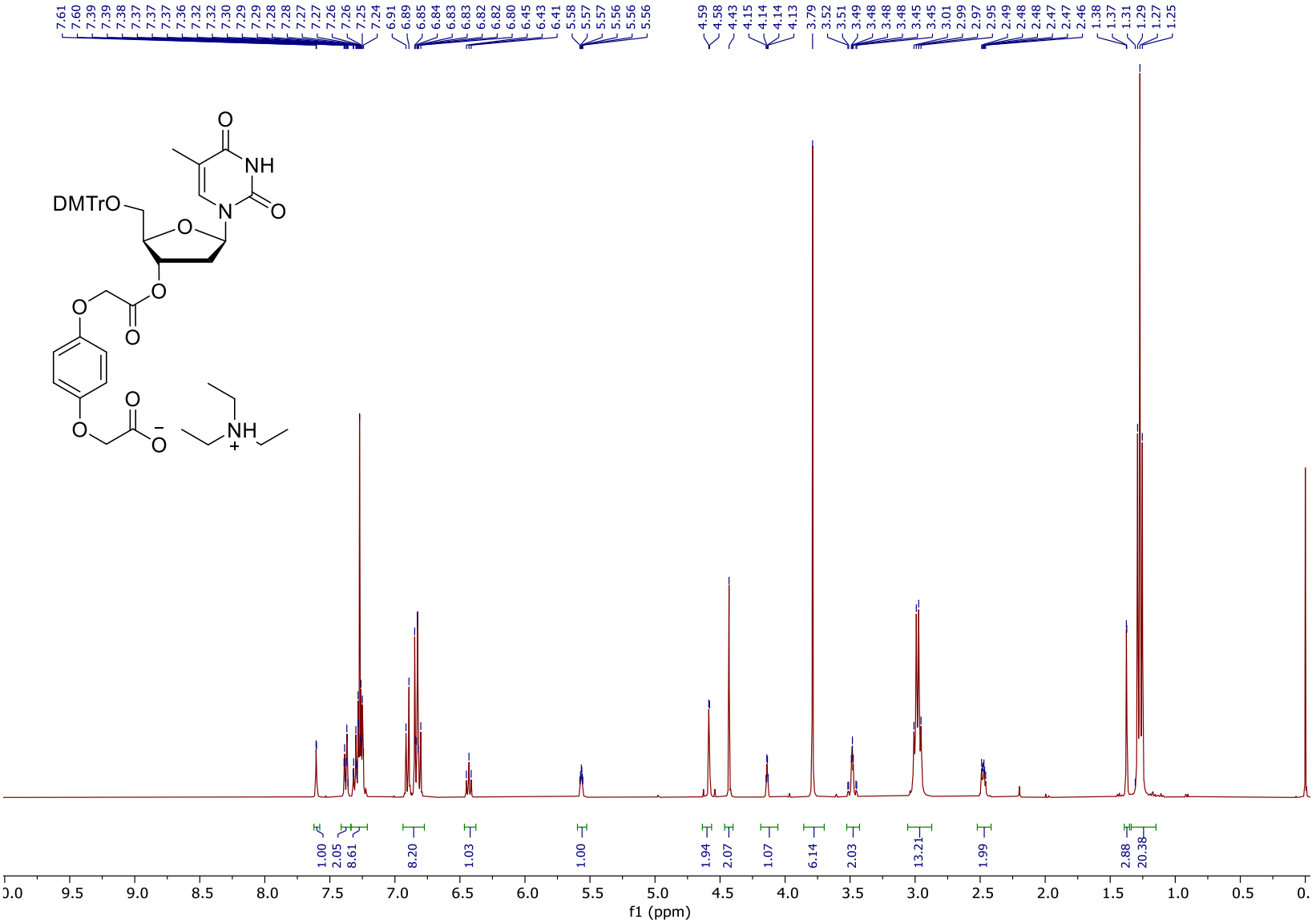
^{13}C-NMR (101 MHz, $CDCl_3$) of compound **10**. Solvent peak at 77.16 ppm.



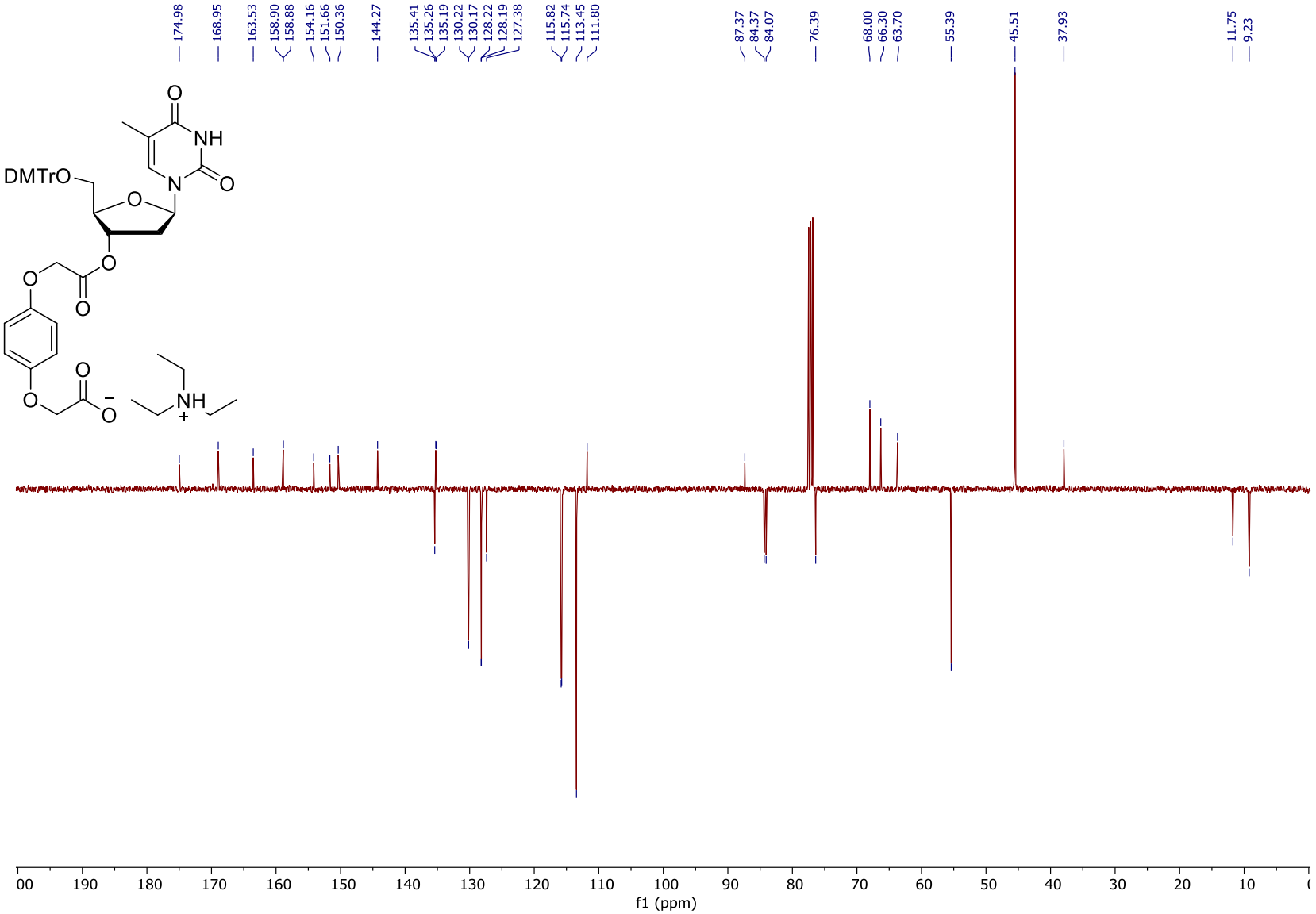
^{31}P-NMR (162 MHz, $CDCl_3$) of compound **10**.



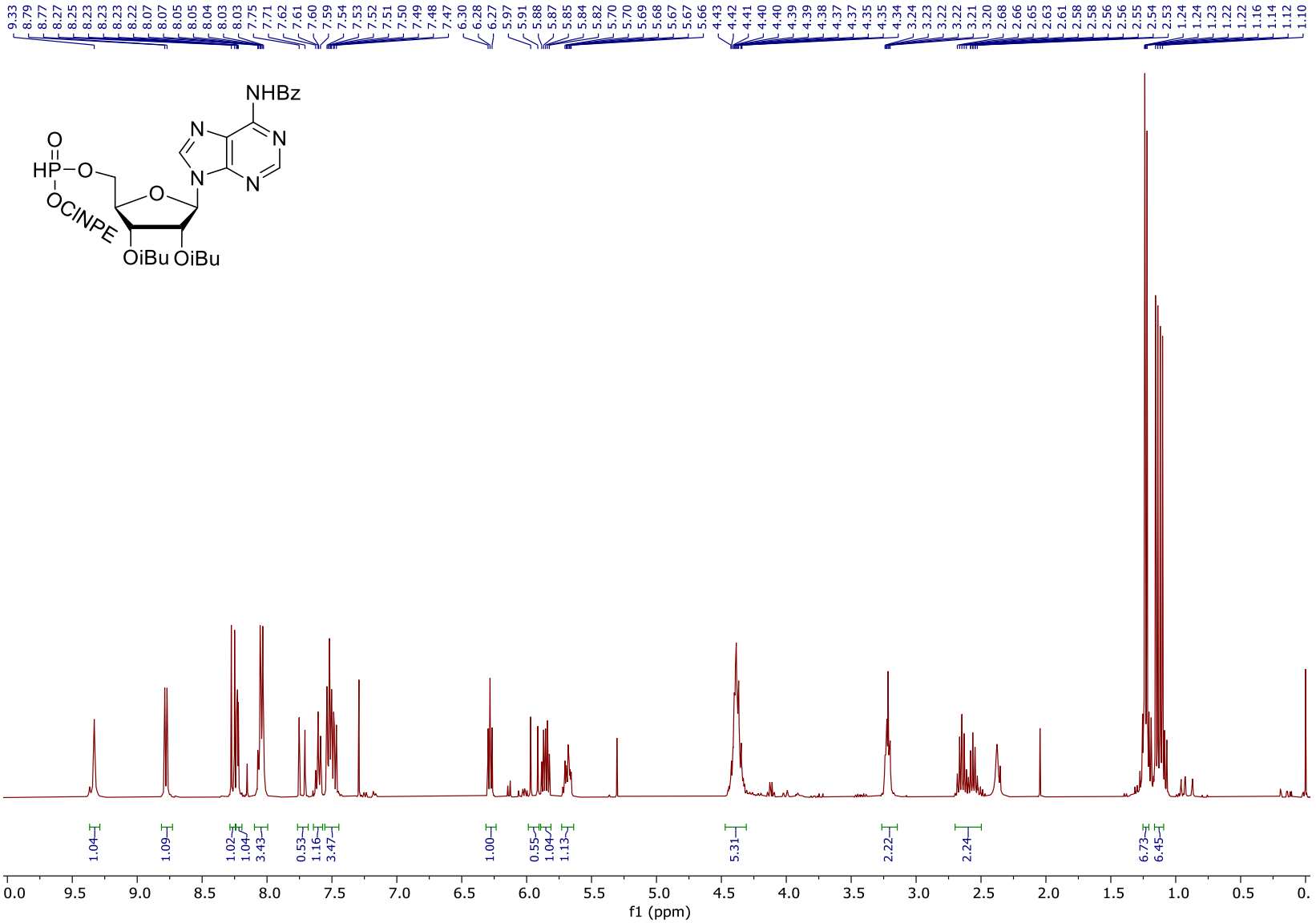
^{31}**P-NMR** (162 MHz, CDCl$_3$, proton coupled) of compound **10**.



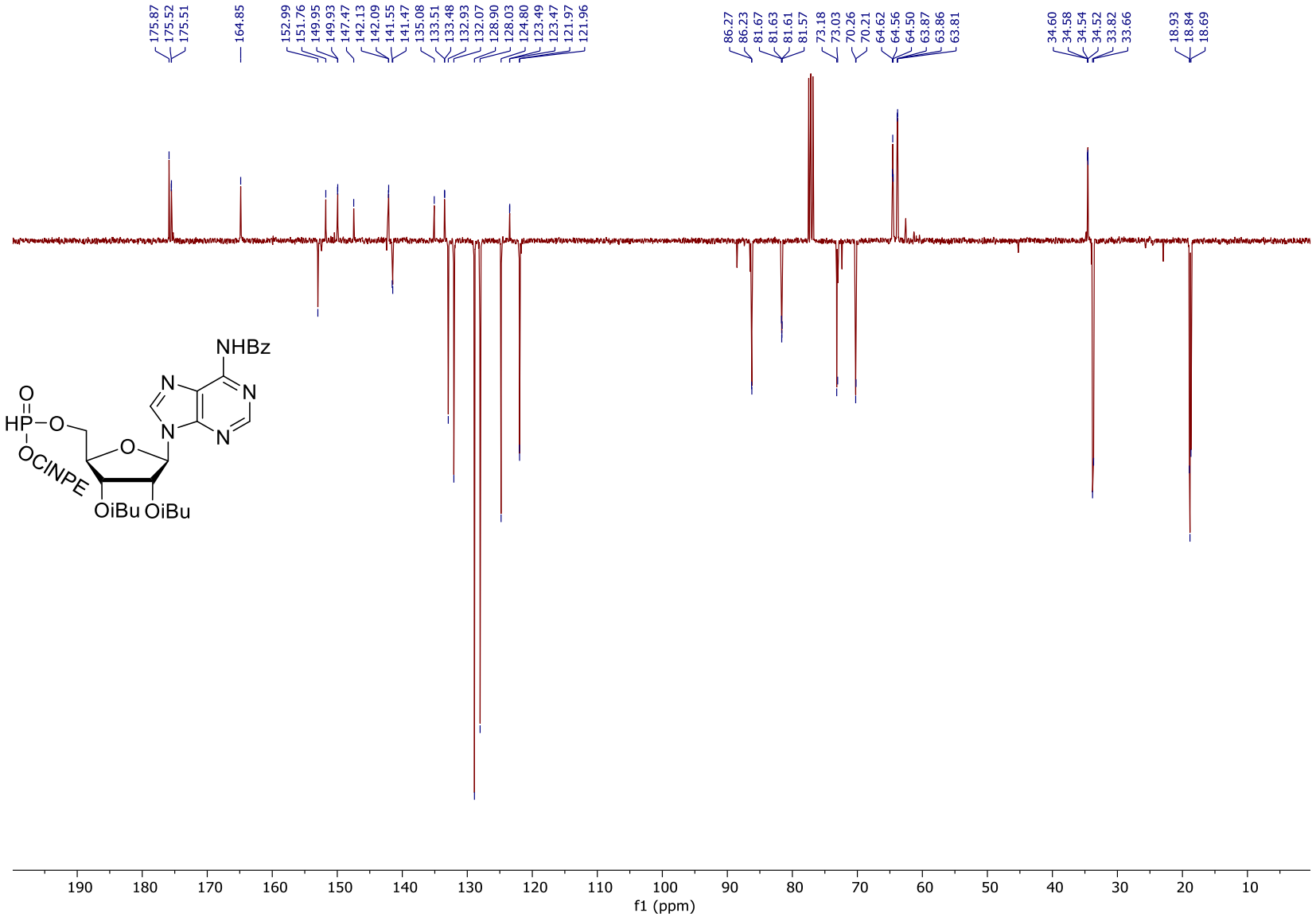
^{1}H-NMR (400 MHz, $CDCl_3$) of compound **65**. Solvent peak at 7.26 ppm.



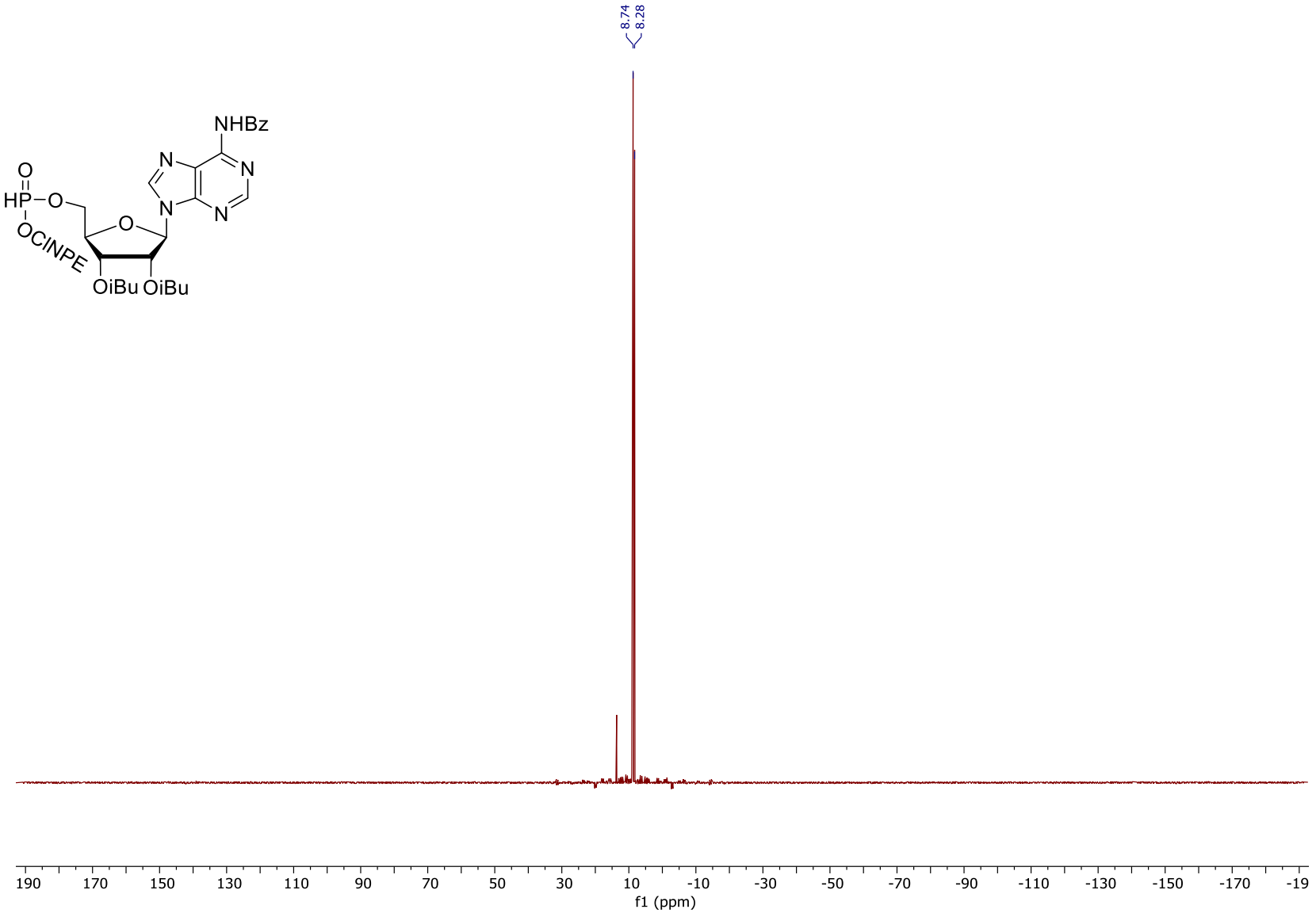
^{13}C-NMR (101 MHz, $CDCl_3$) of compound **65**. Solvent peak at 77.16 ppm.



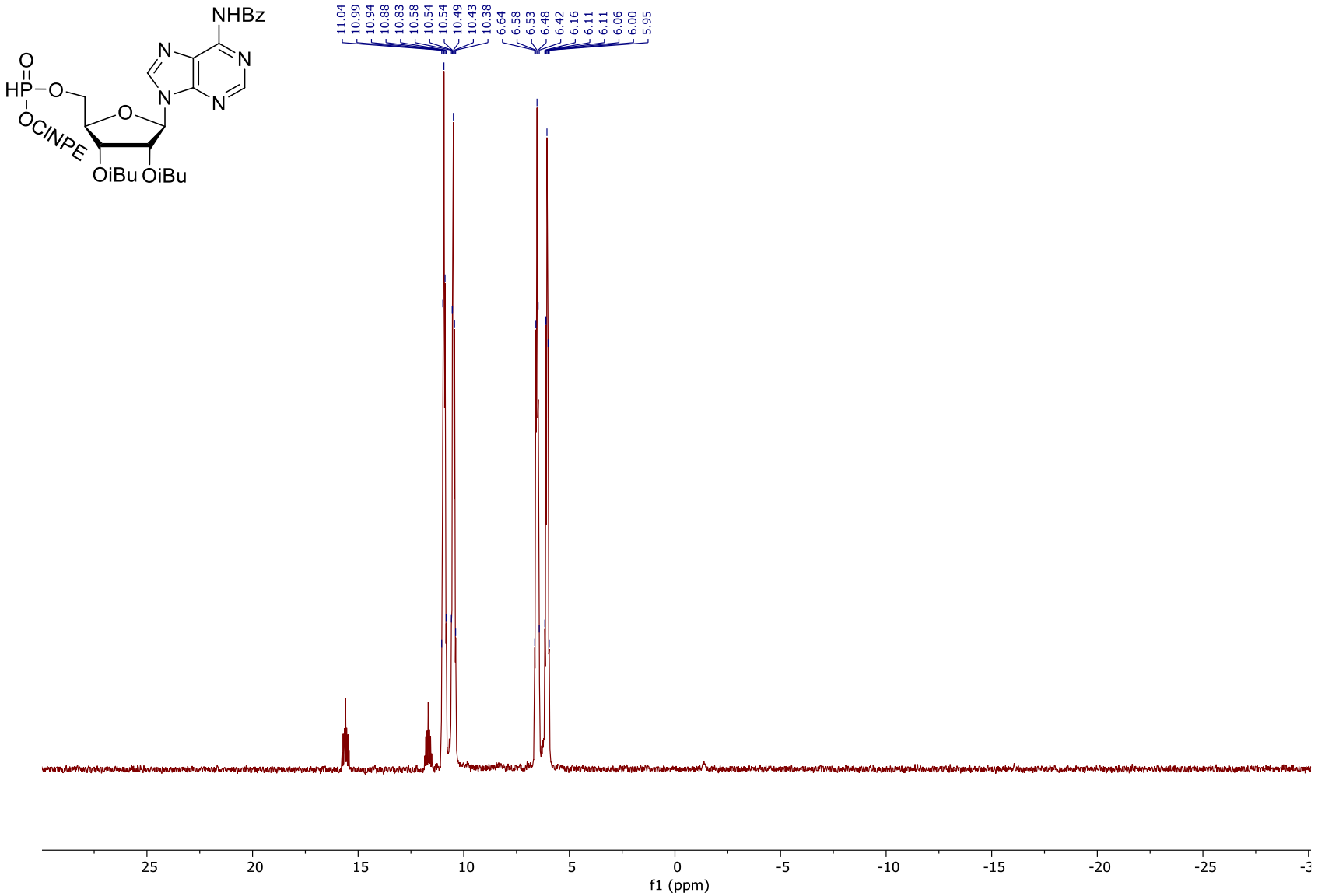
^{1}H-NMR (400 MHz, $CDCl_3$) of compound **27**. Solvent peak at 7.26 ppm.



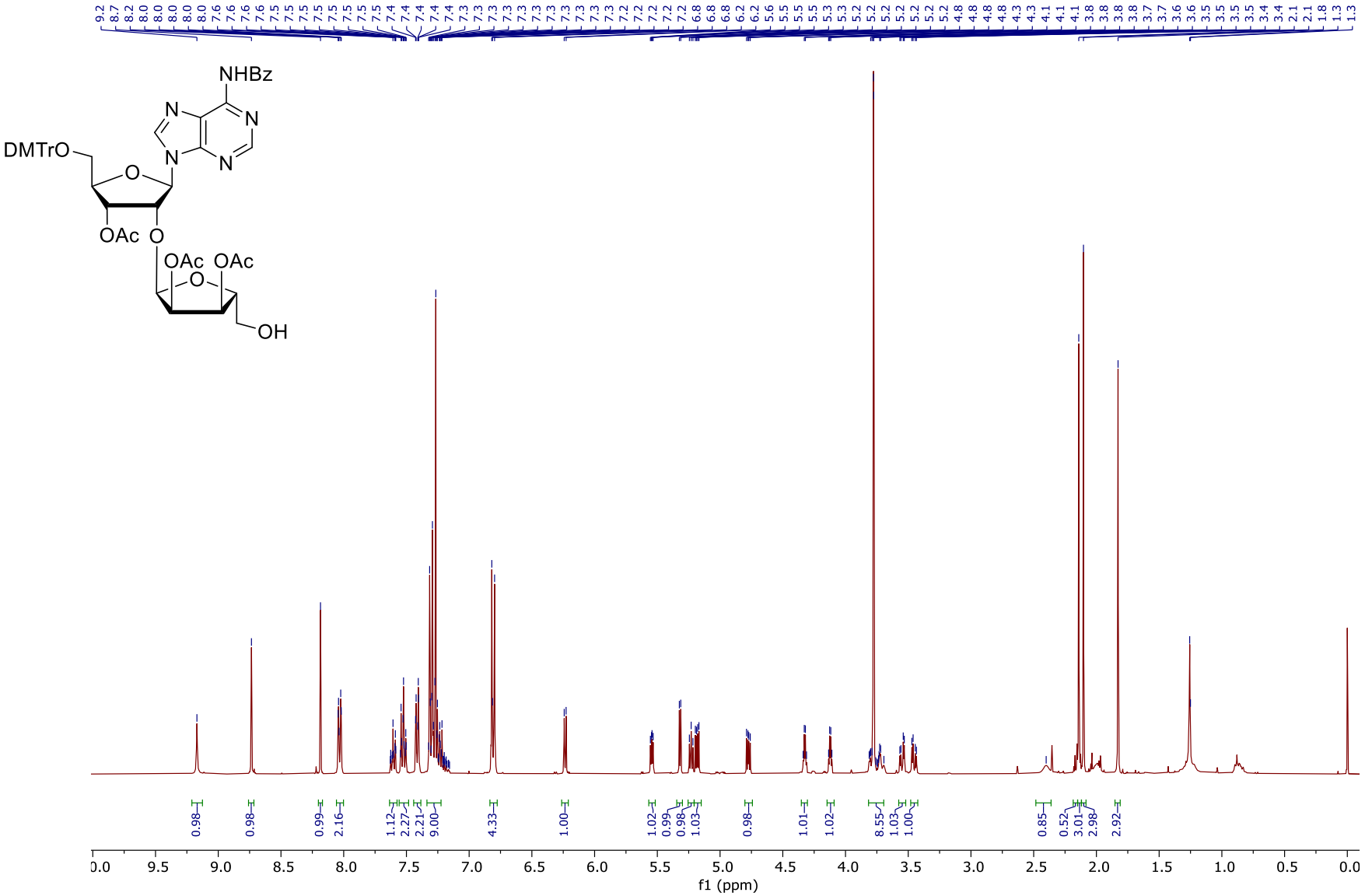
^{13}C-NMR (101 MHz, $CDCl_3$) of compound **27**. Solvent peak at 77.16 ppm.



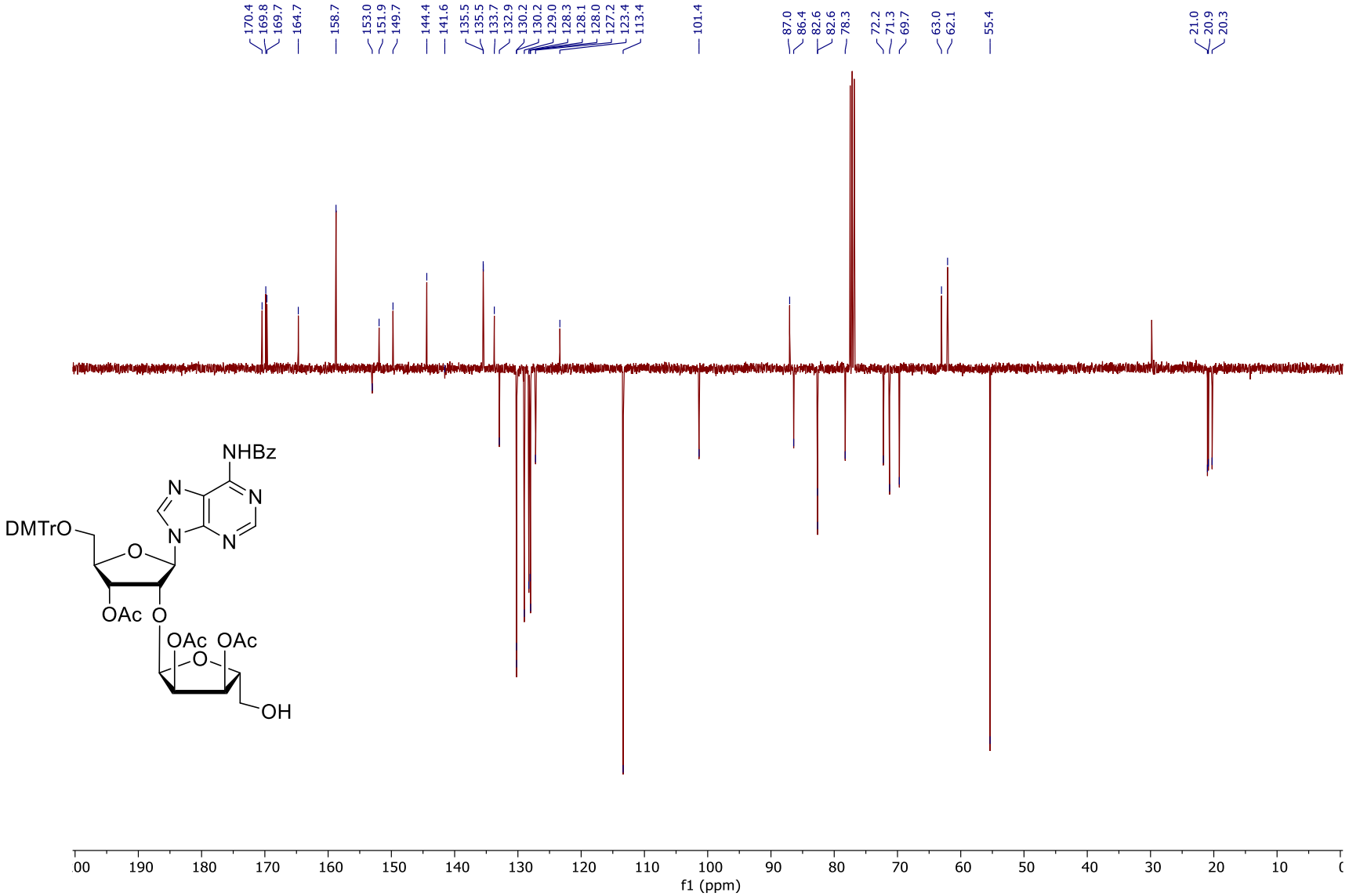
^{31}P-NMR (162 MHz, $CDCl_3$) of compound **27**.



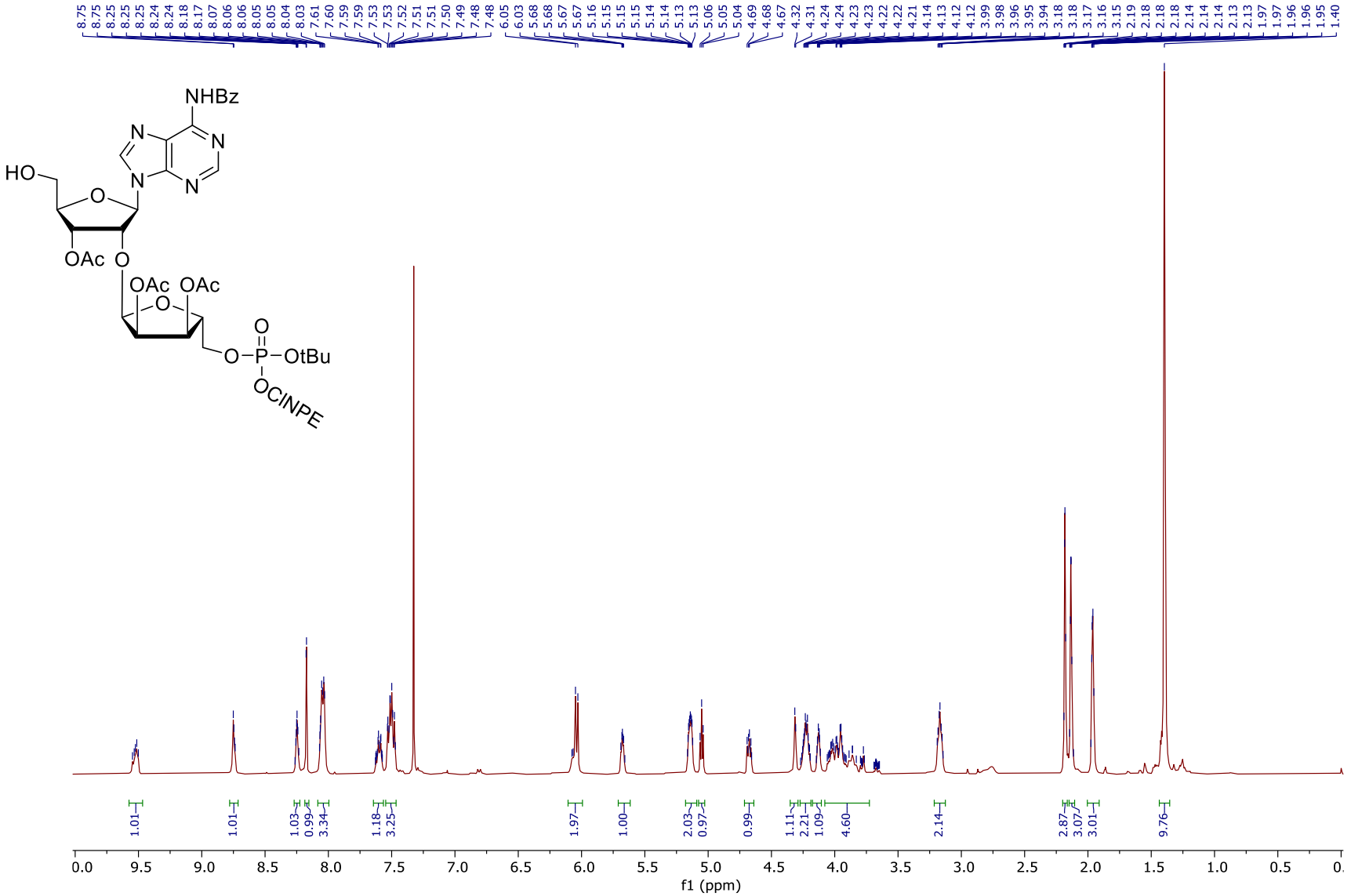
^{31}P-NMR (162 MHz, $CDCl_3$, proton coupled) of compound **27**.



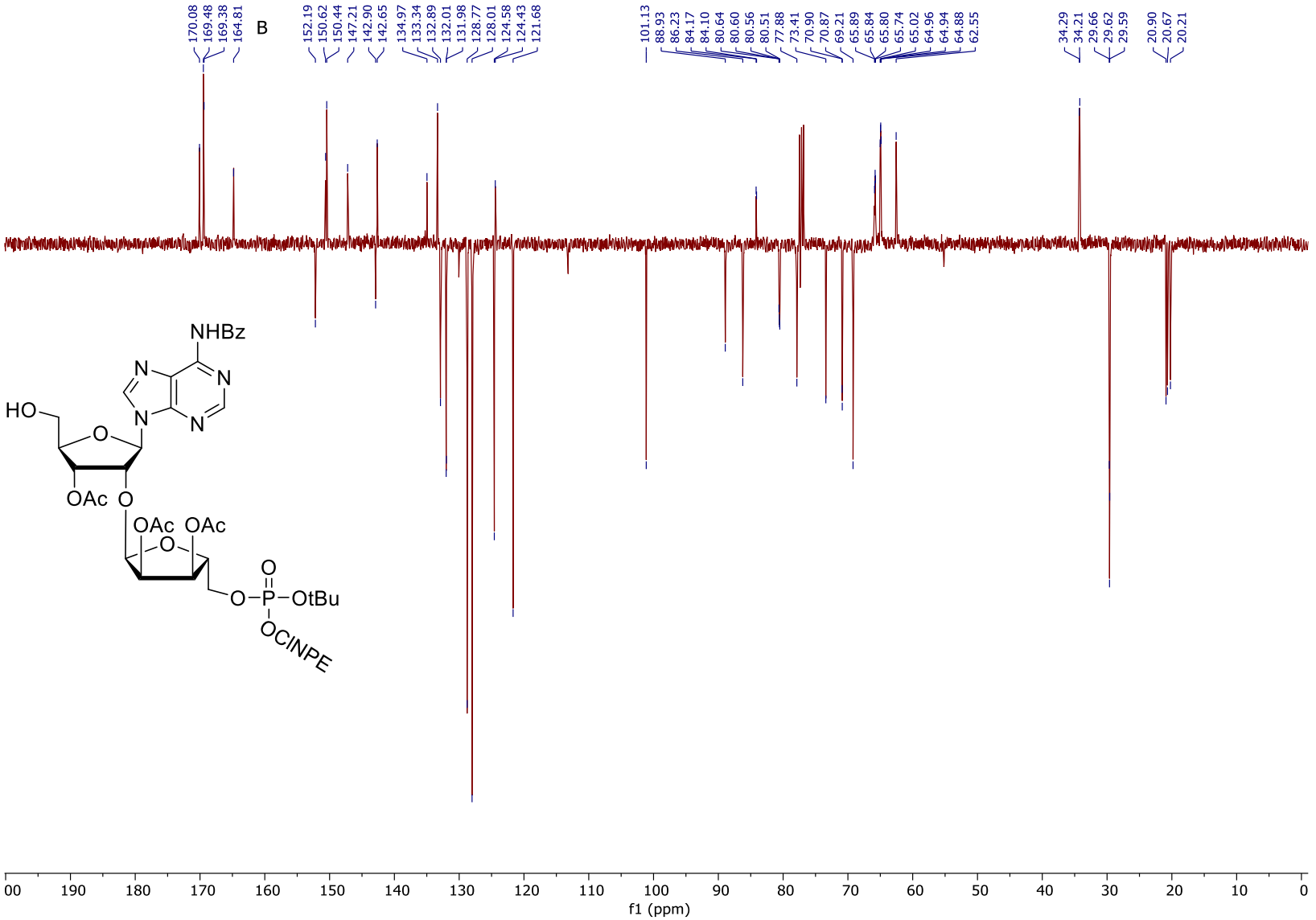
^{1}H-NMR (400 MHz, $CDCl_3$) of compound **32**. Solvent peak at 7.26 ppm.



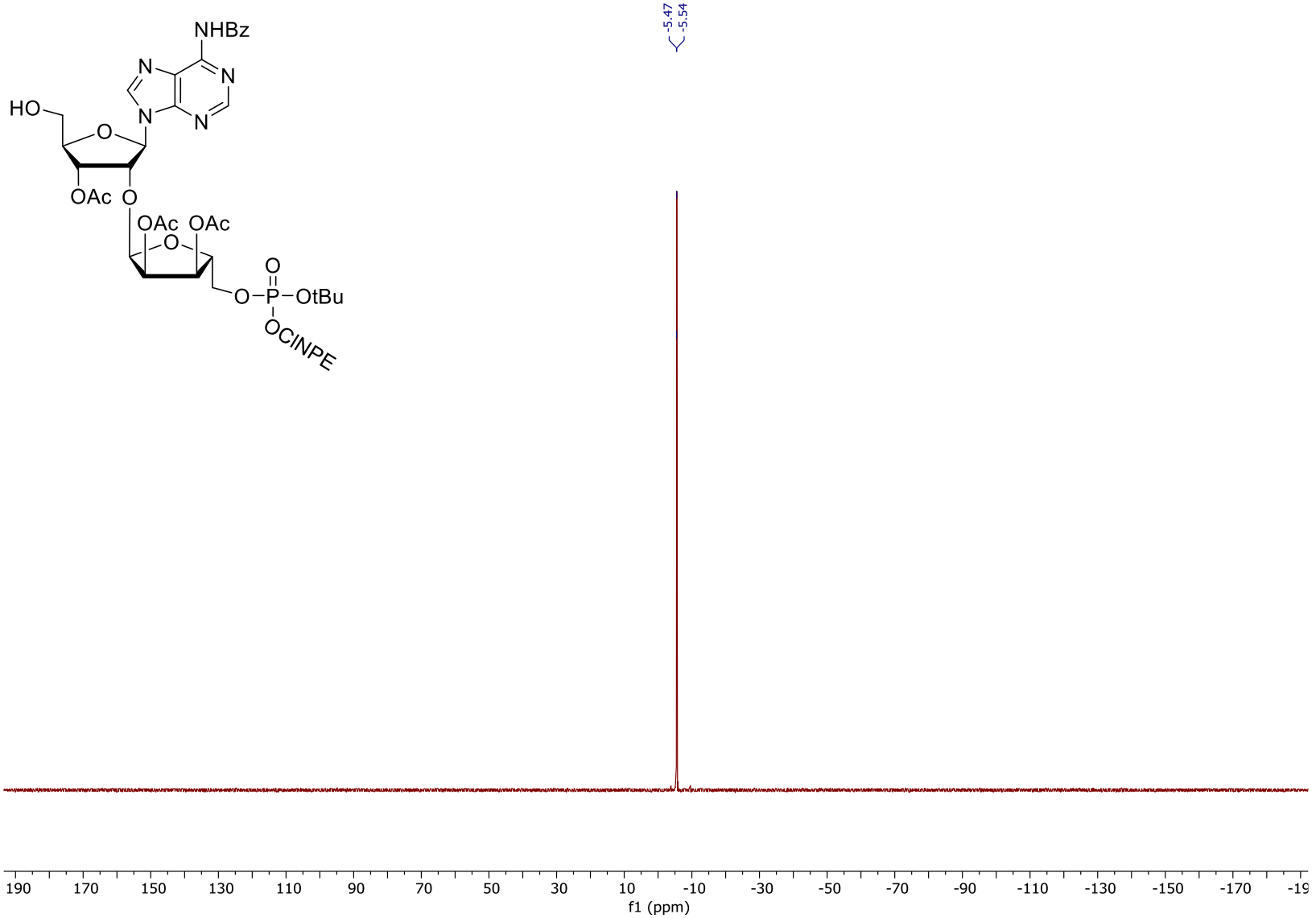
^{13}C-NMR (101 MHz, $CDCl_3$) of compound **32**. Solvent peak at 77.16 ppm.



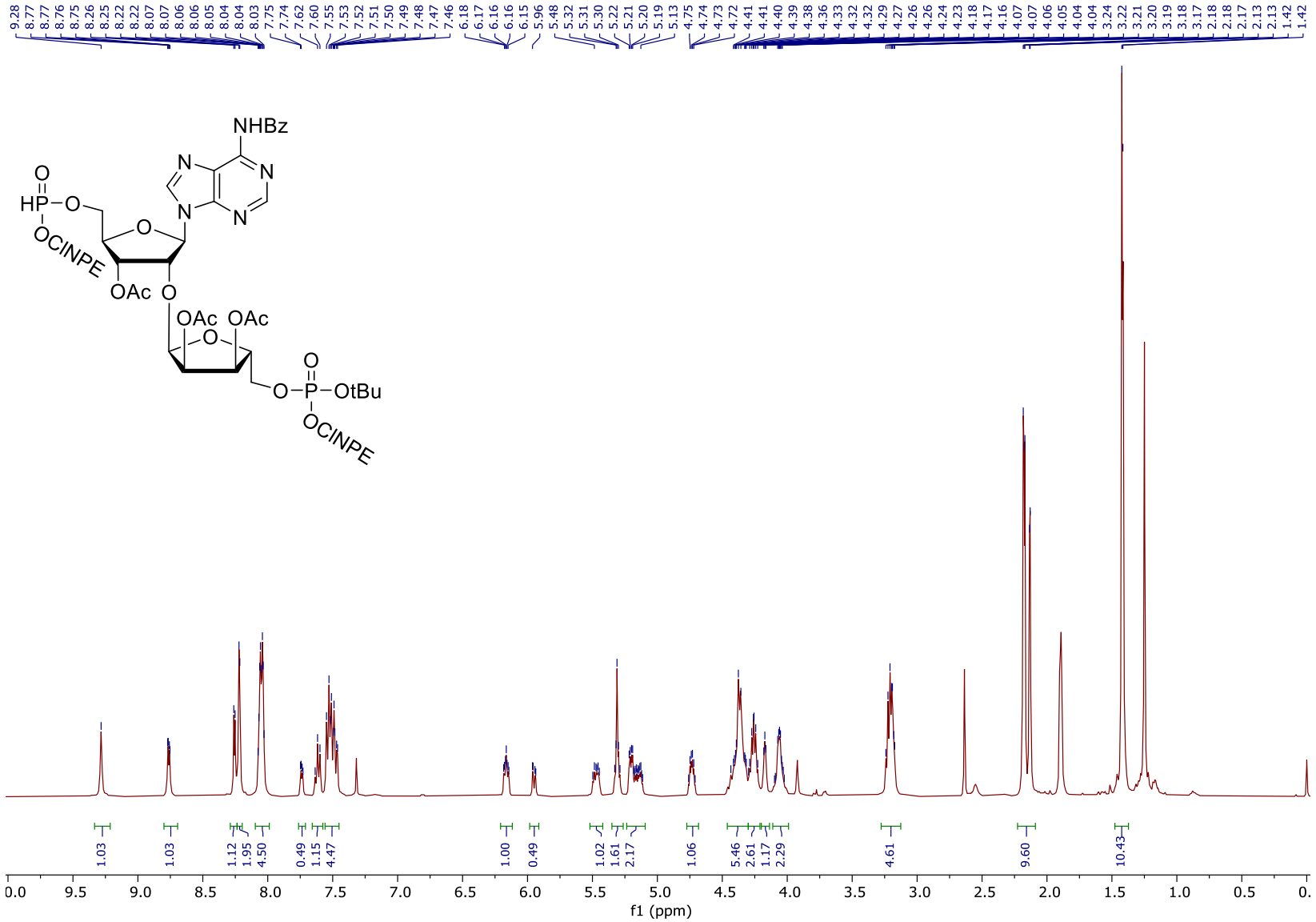
^{1}H-NMR (400 MHz, $CDCl_3$) of compound **33**. Solvent peak at 7.26 ppm.



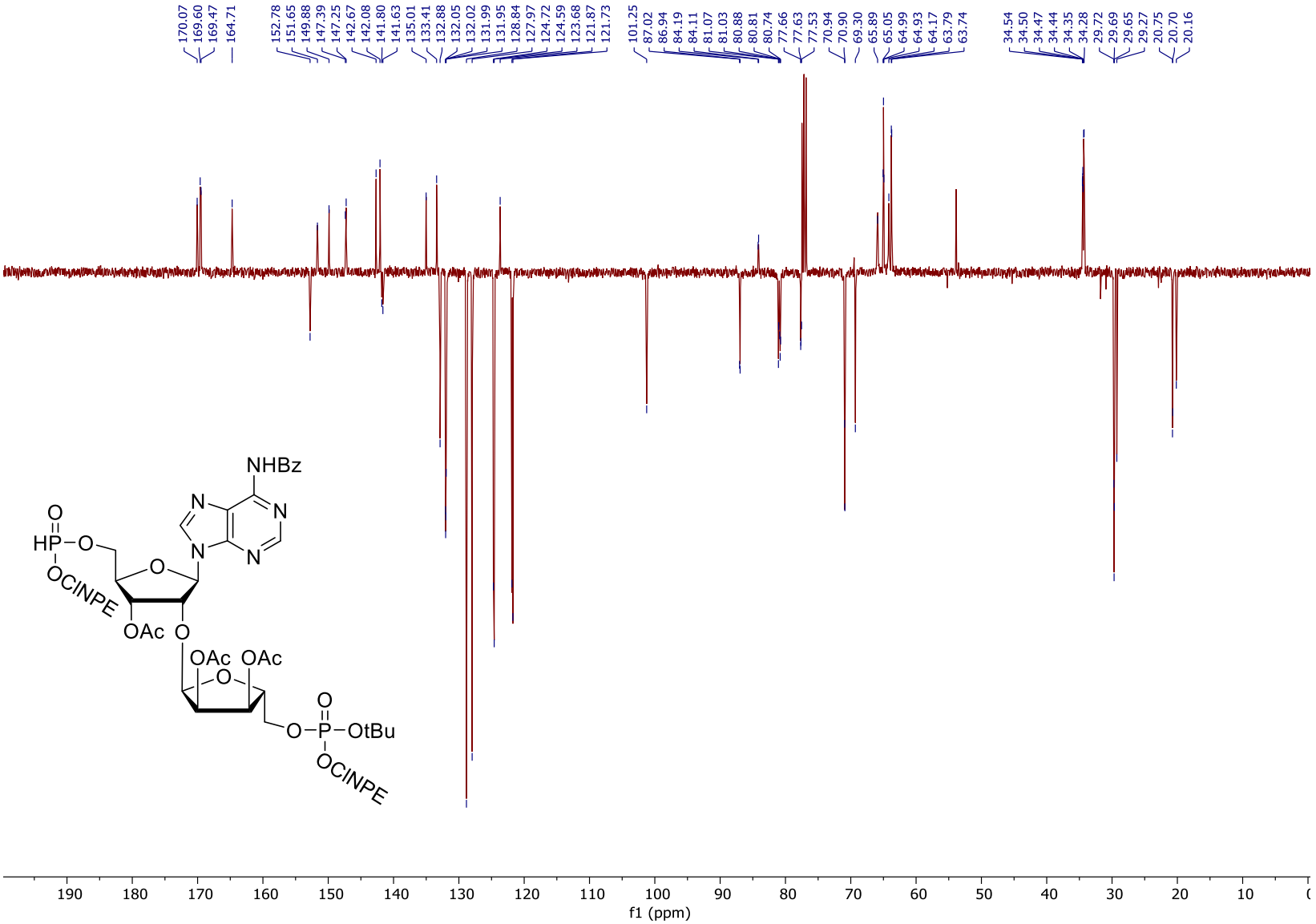
^{13}C-NMR (101 MHz, $CDCl_3$) of compound **33**. Solvent peak at 77.16 ppm.



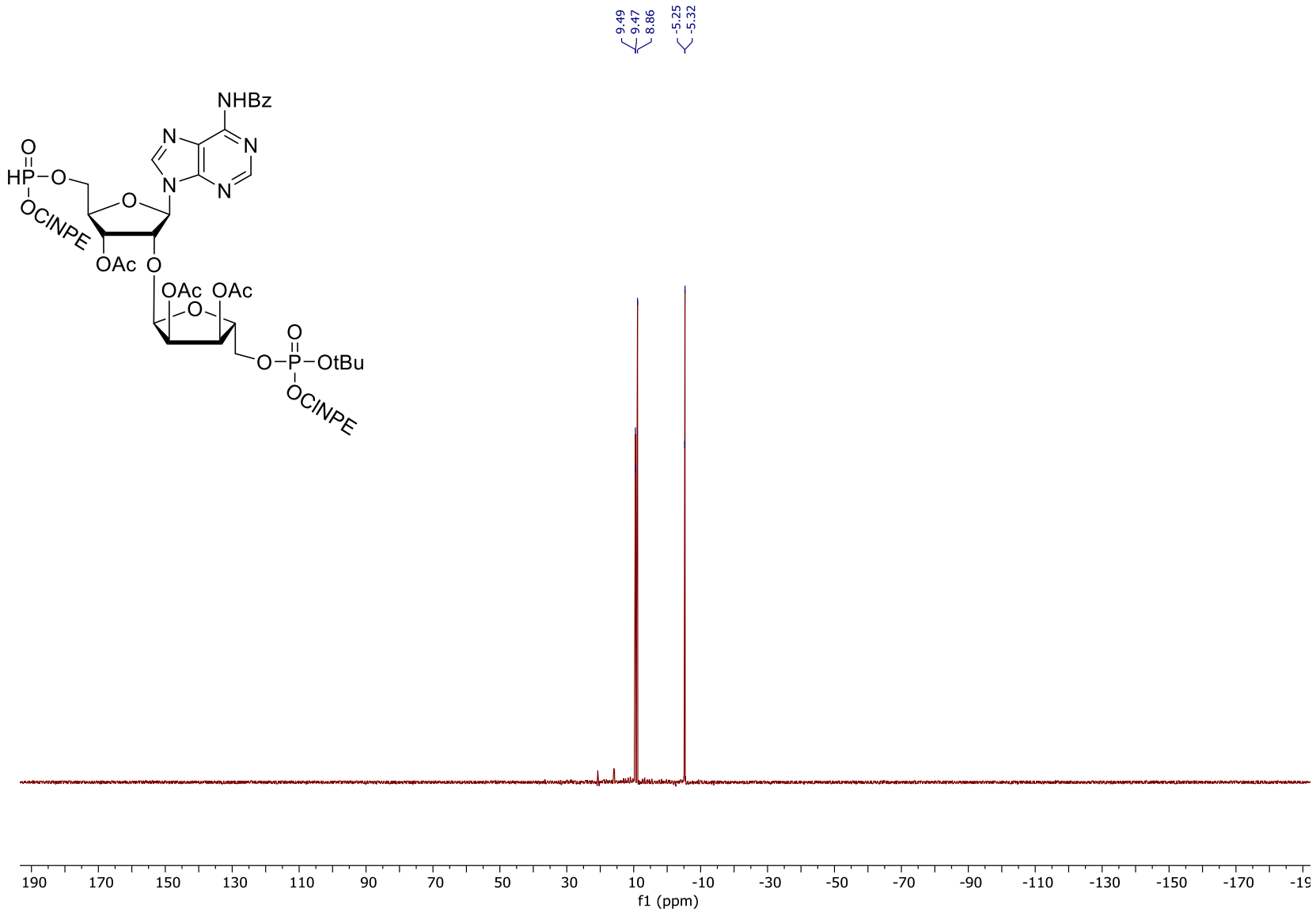
^{31}P-NMR (162 MHz, $CDCl_3$) of compound **33**.



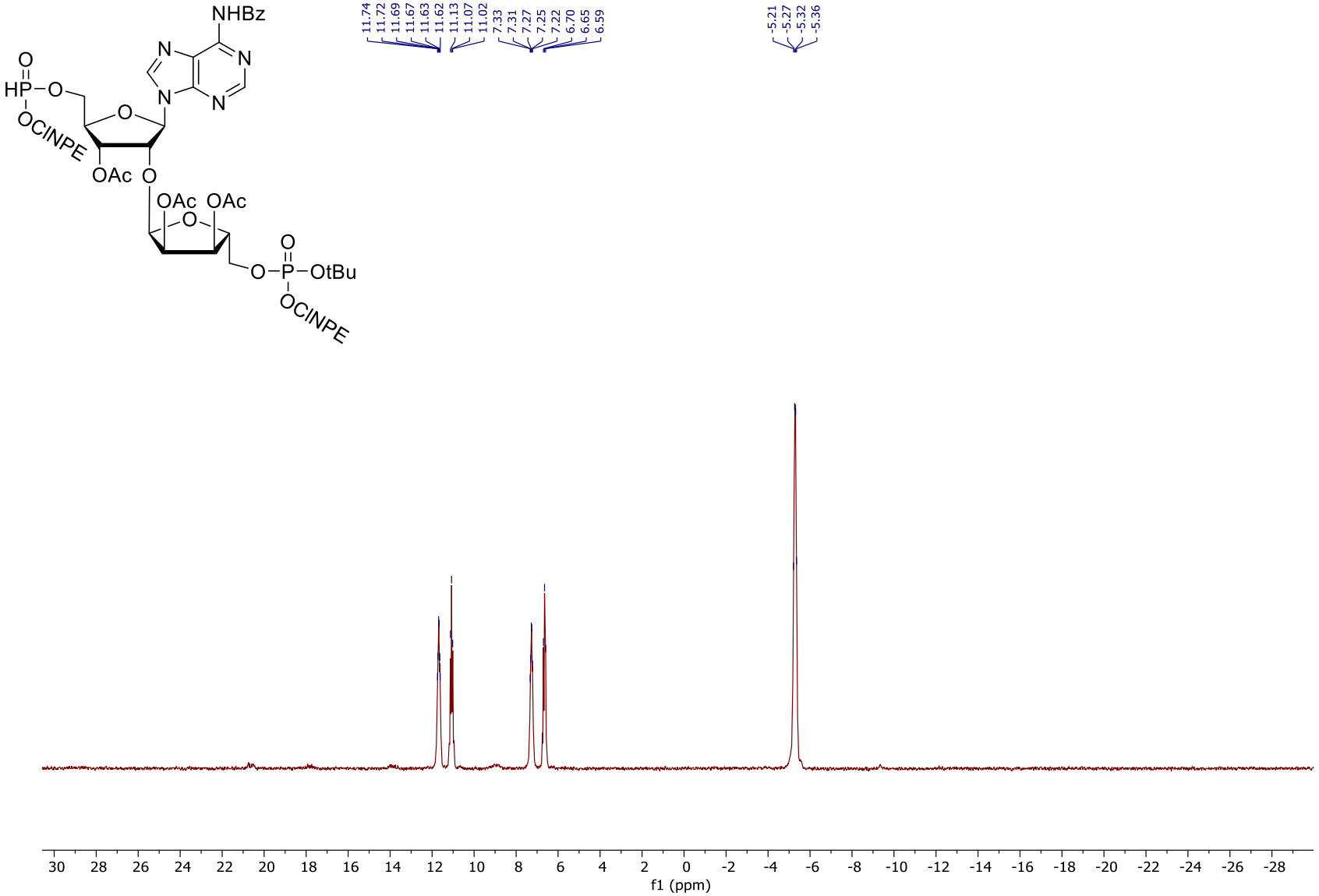
^{1}H-NMR (400 MHz, $CDCl_3$) of compound **29**. Solvent peak at 7.26 ppm.



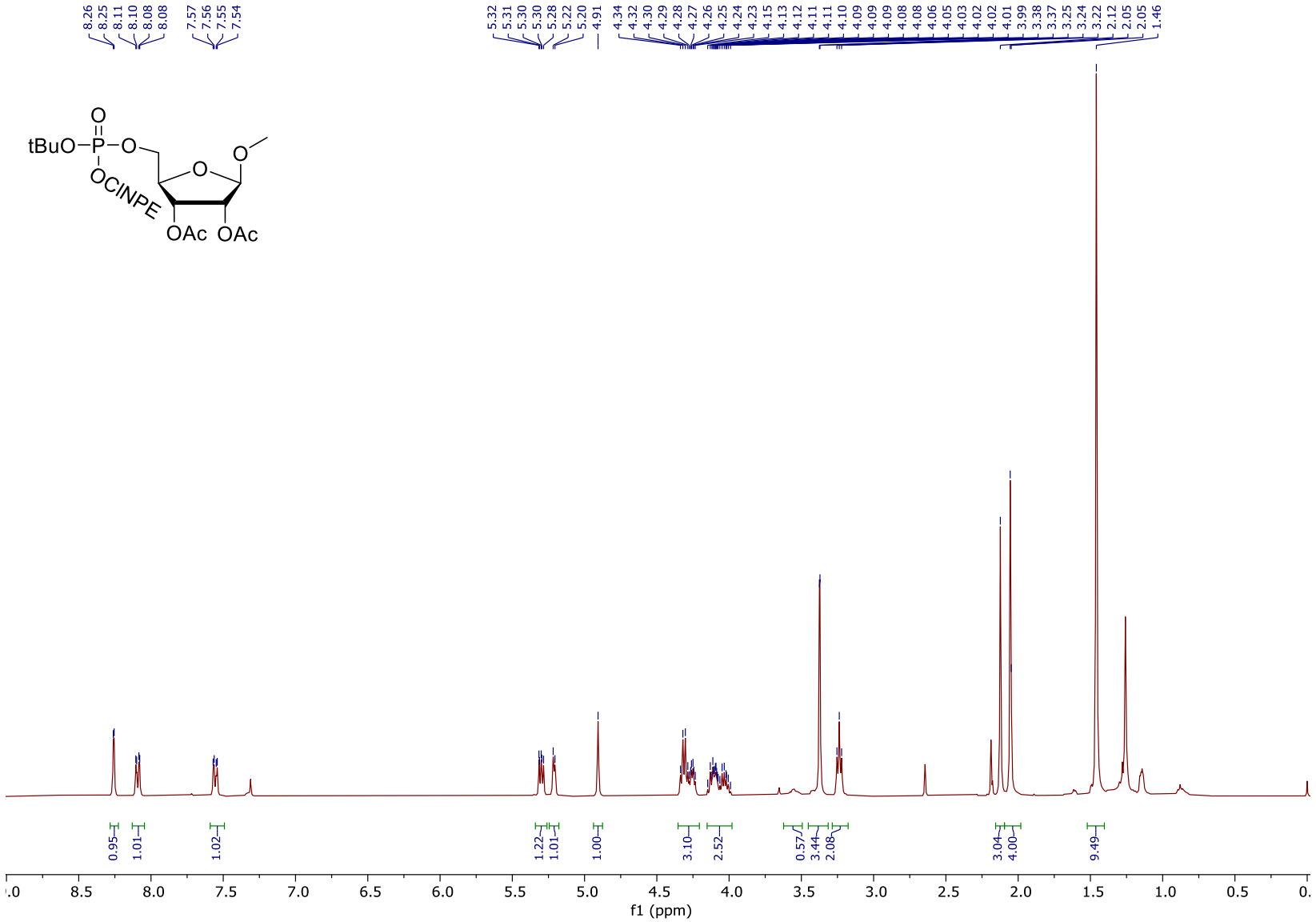
^{13}C-NMR (101 MHz, $CDCl_3$) of compound **29**. Solvent peak at 77.16 ppm.



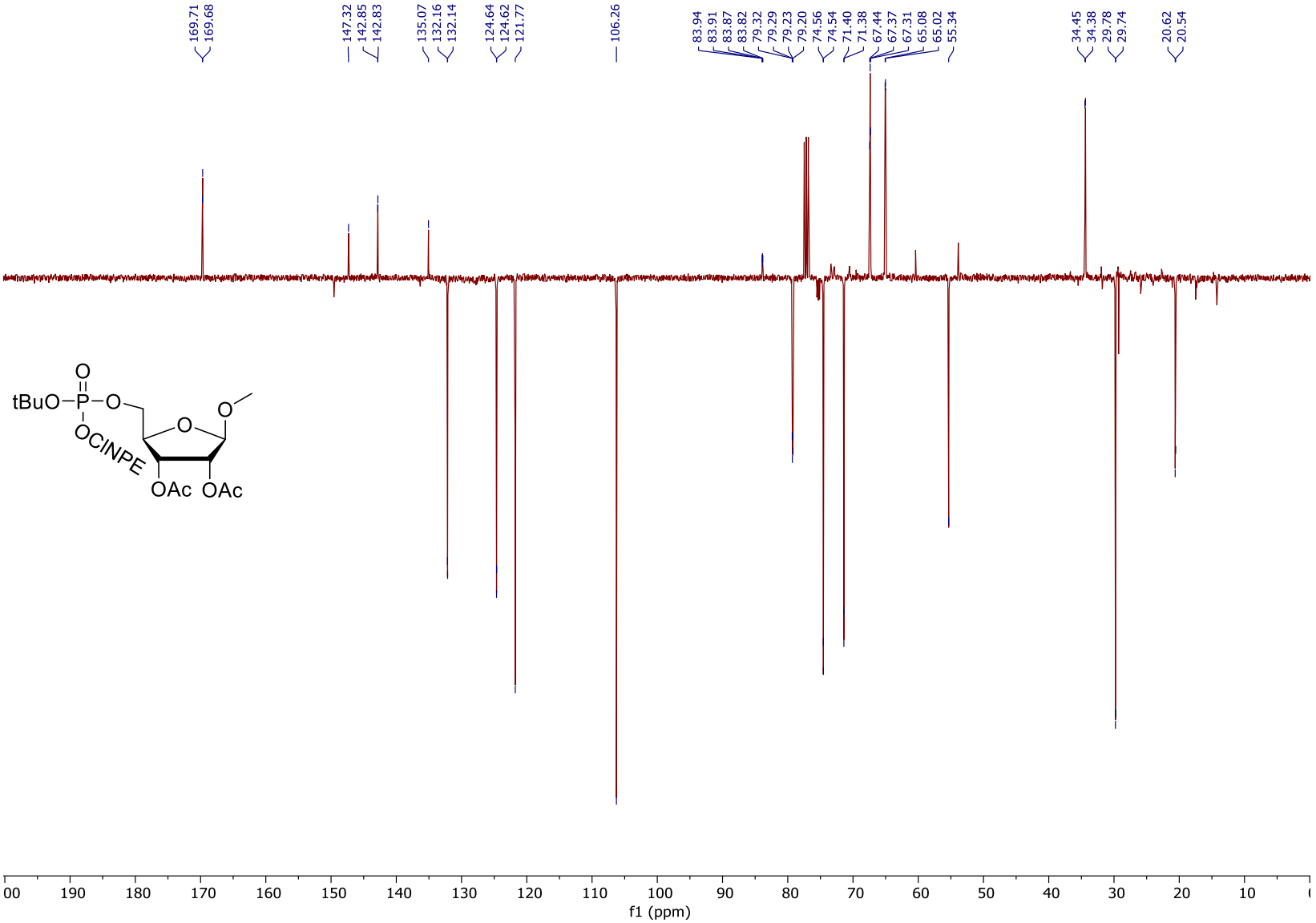
^{31}P-NMR (162 MHz, $CDCl_3$) of compound **27**.



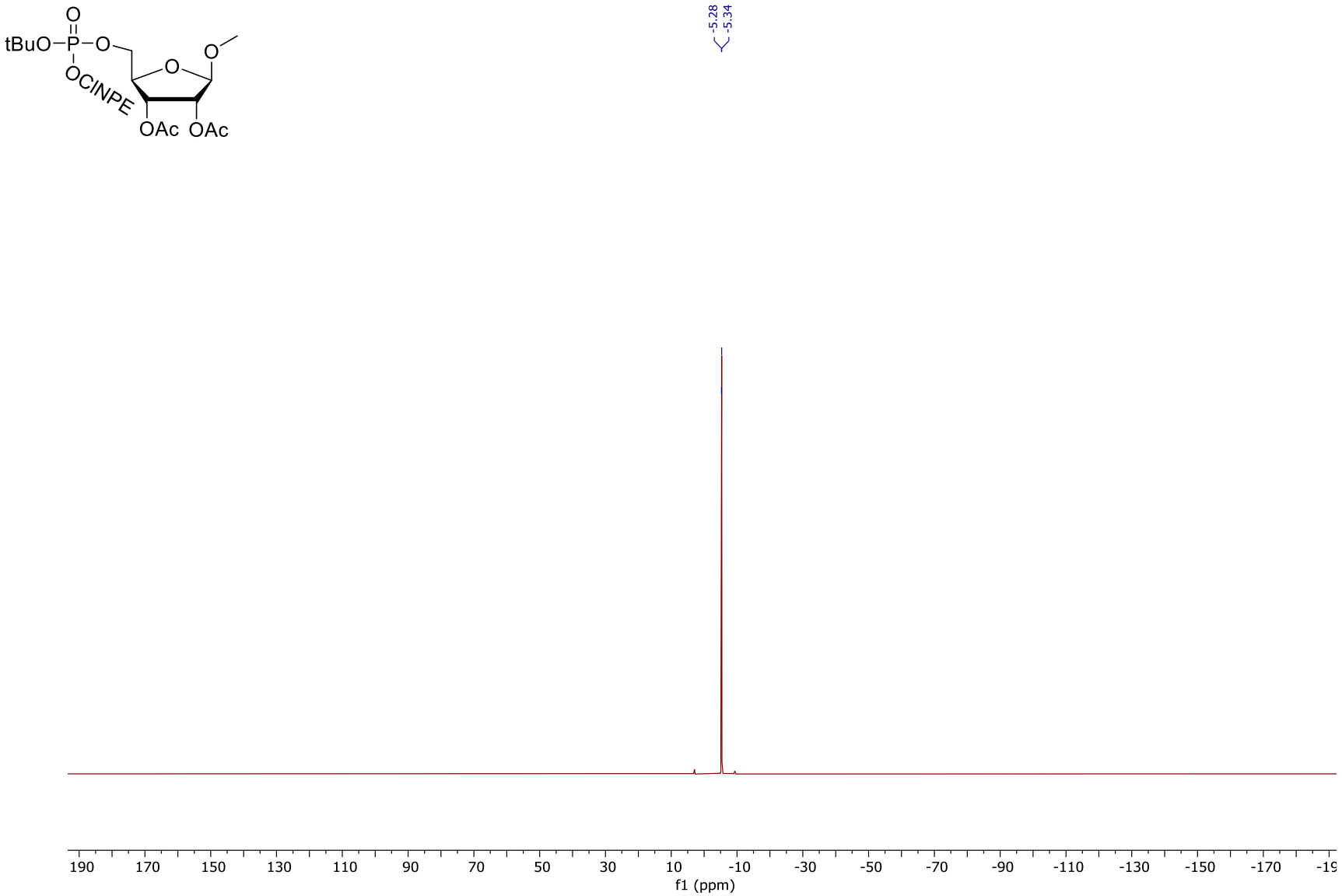
^{31}P-NMR (162 MHz, $CDCl_3$, proton coupled) of compound **29**.



^{1}H-NMR (400 MHz, $CDCl_3$) of compound **46**. Solvent peak at 7.26 ppm.



^{13}C-NMR (101 MHz, $CDCl_3$) of compound **46**. Solvent peak at 77.16 ppm.



^{31}P-NMR (162 MHz, $CDCl_3$) of compound **46**.