# Supplementary Materials: Practical and Efficient Synthesis of $\alpha$-Aminophosphonic Acids Containing 1,2,3,4-Tetrahydroquinoline or 1,2,3,4-Tetrahydroisoquinoline Heterocycles

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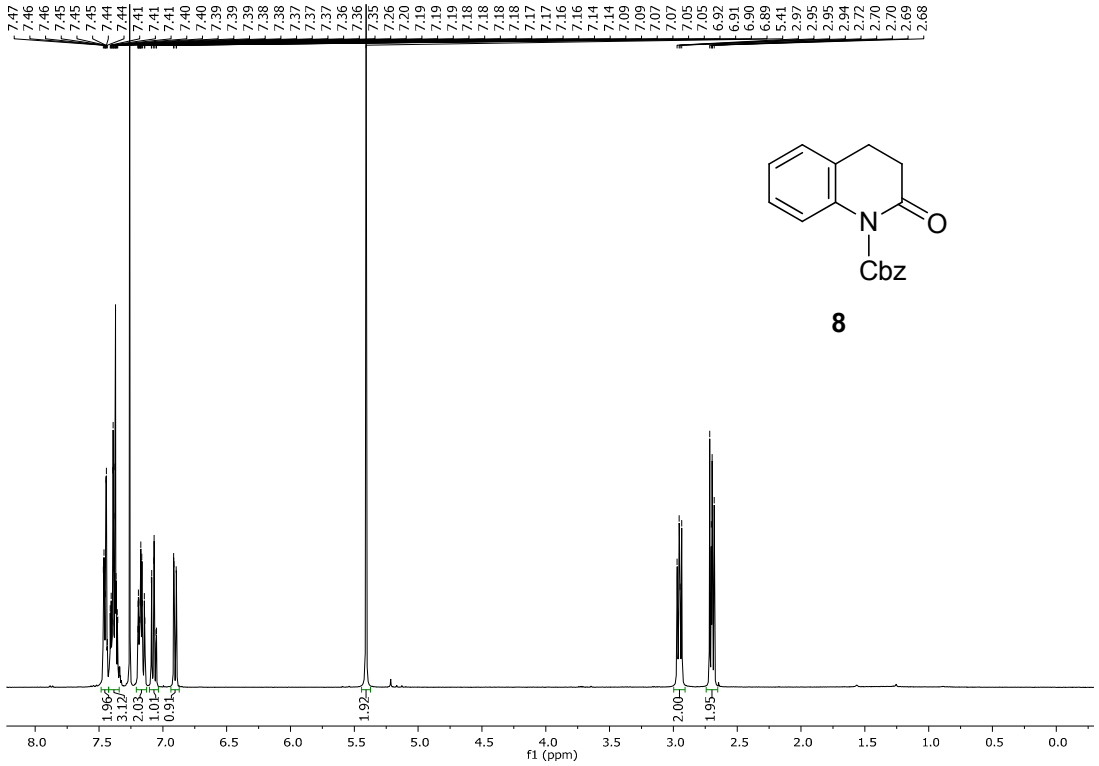


**Figure S1.** $^{1}$H-NMR of **8** (400 MHz, $CDCl_3$).

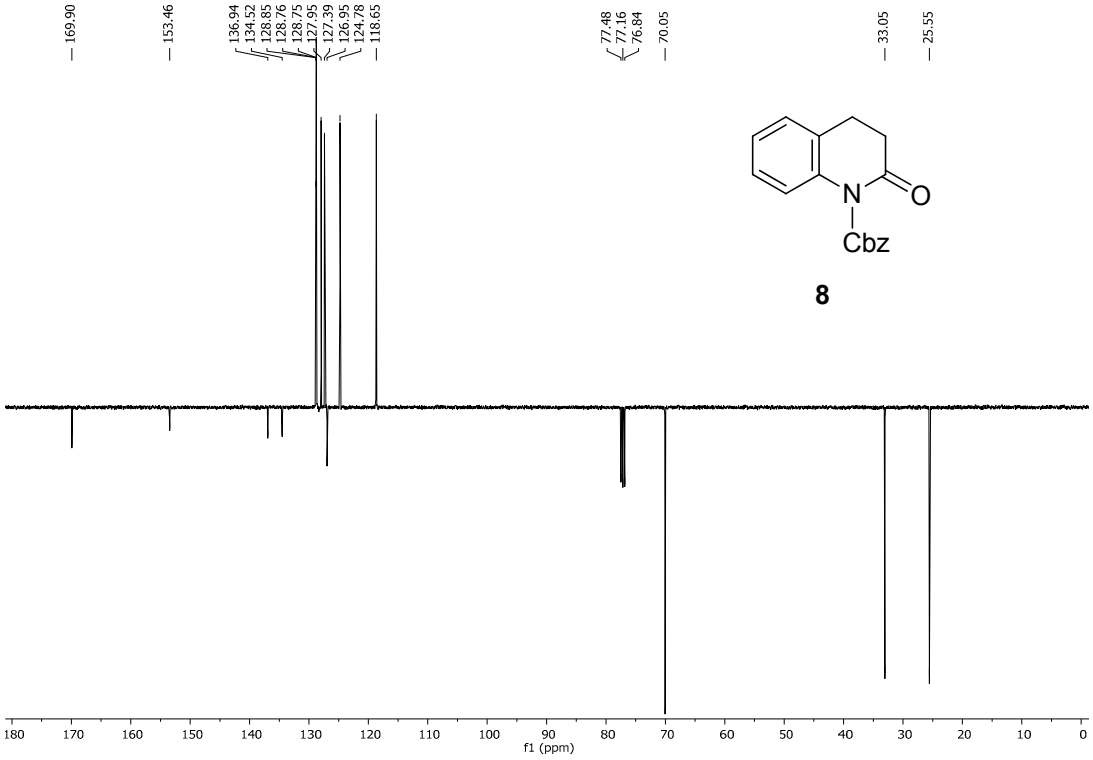


**Figure S2.** $^{13}$C-NMR of **8** (100 MHz, $CDCl_3$).

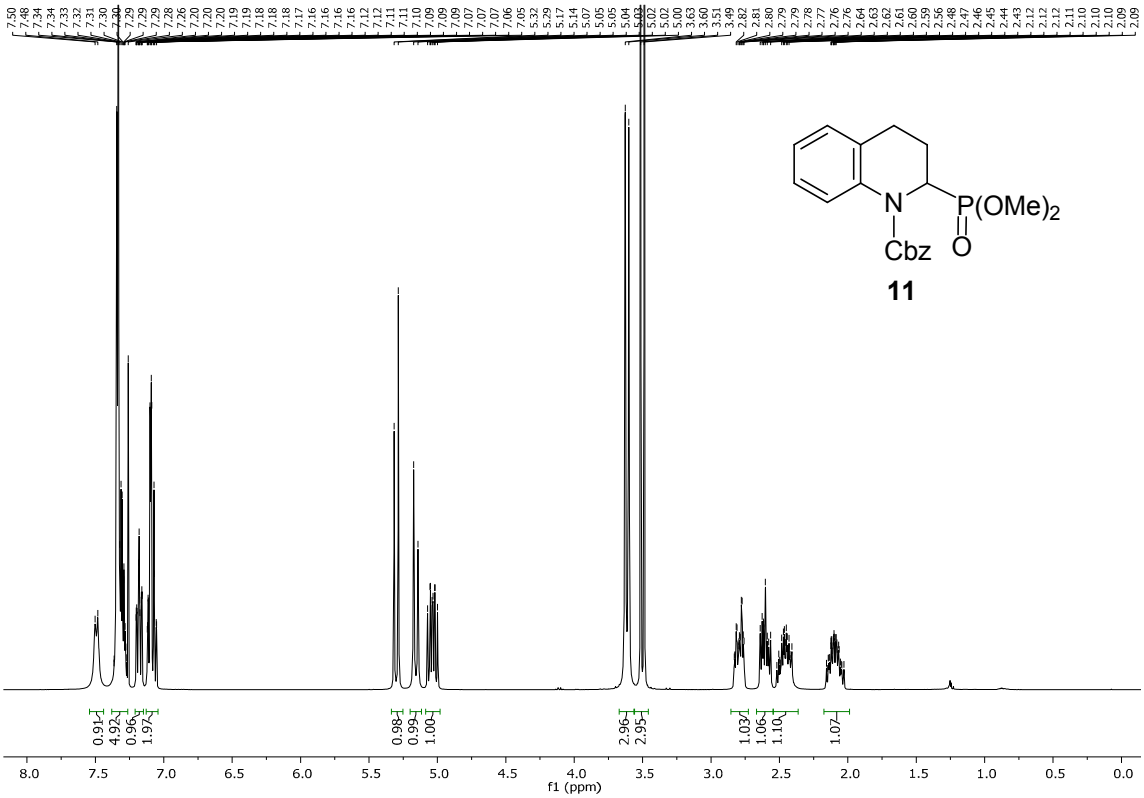


**Figure S3.** $^{1}$H-NMR of **11** (400 MHz, $CDCl_3$).

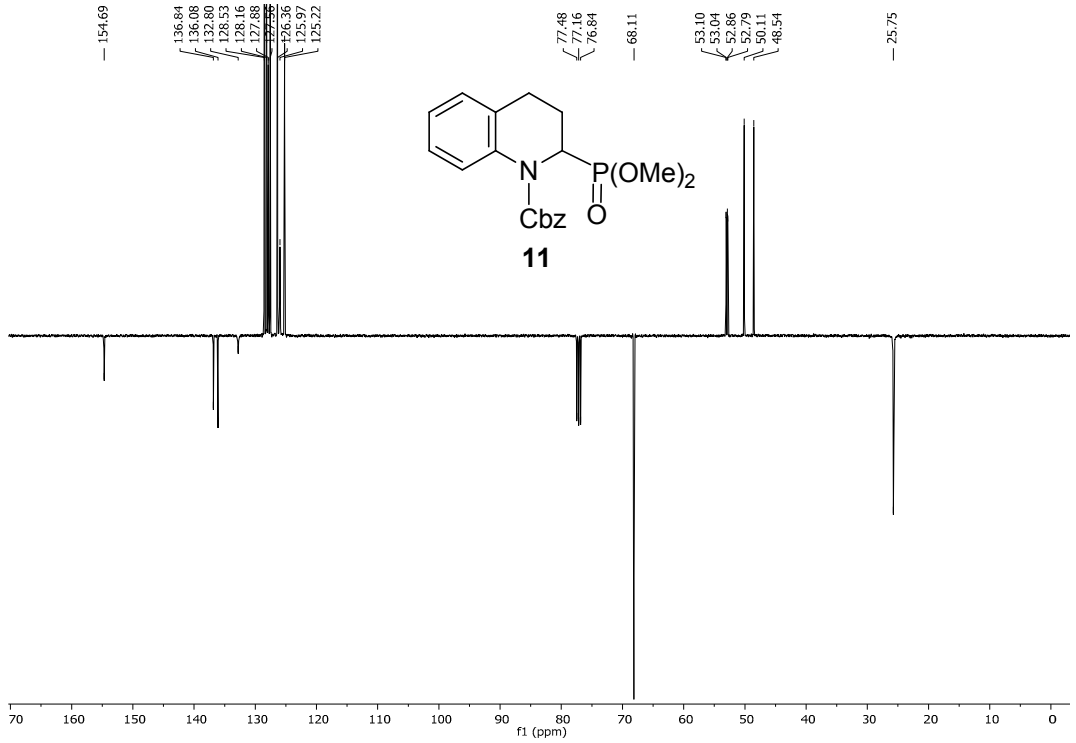


**Figure S4.** $^{13}$C-NMR of **11** (100 MHz, $CDCl_3$).

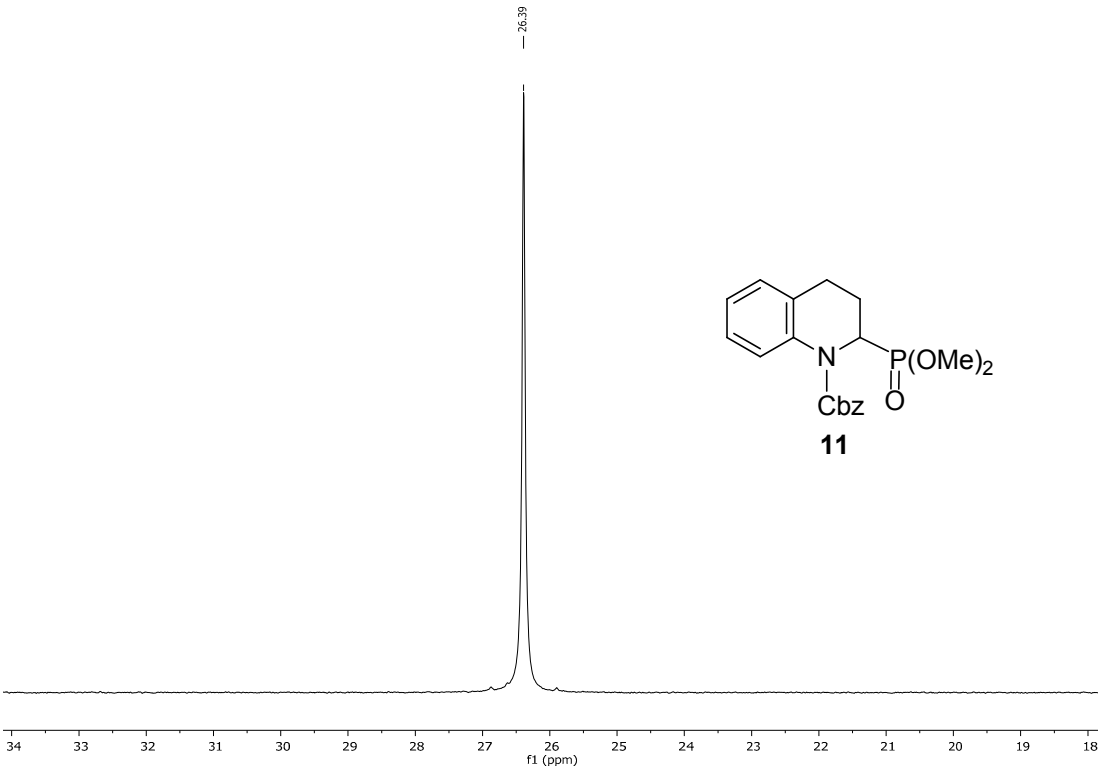


**Figure S5.** $^{31}$P-NMR of **11** (162 MHz, $CDCl_3$).

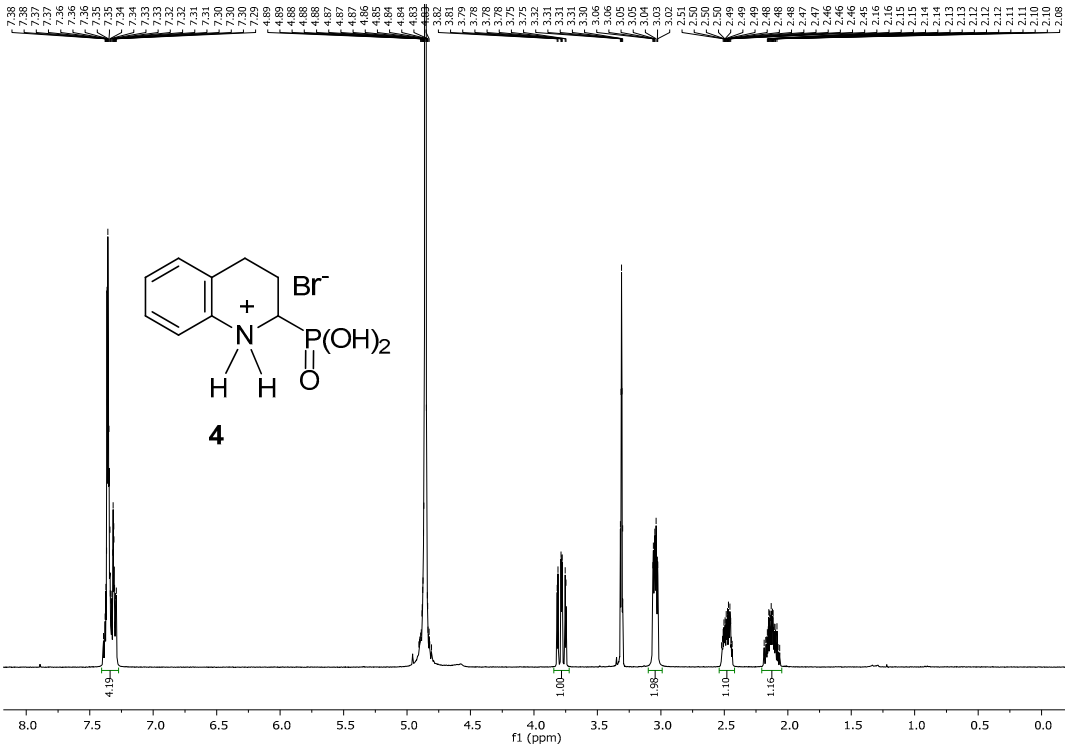


**Figure S6.** $^{1}$H-NMR of **4** (400 MHz, $CD_3OD$).

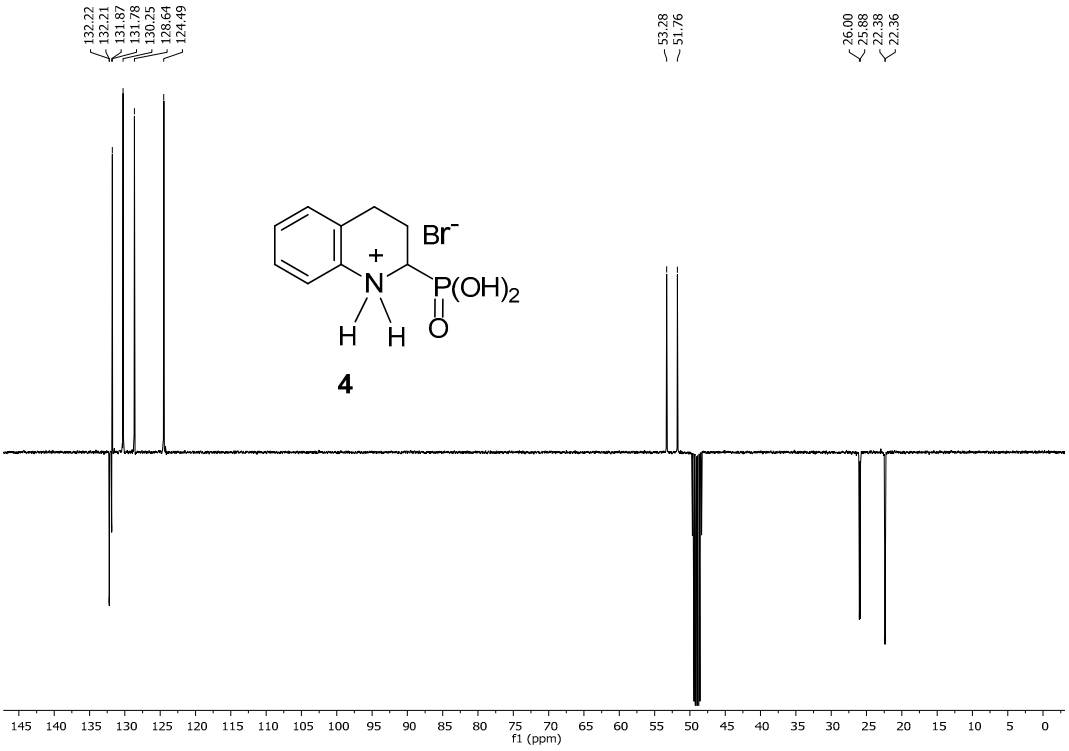


**Figure S7.** $^{13}$C-NMR of **4** (100 MHz, $CD_3OD$).

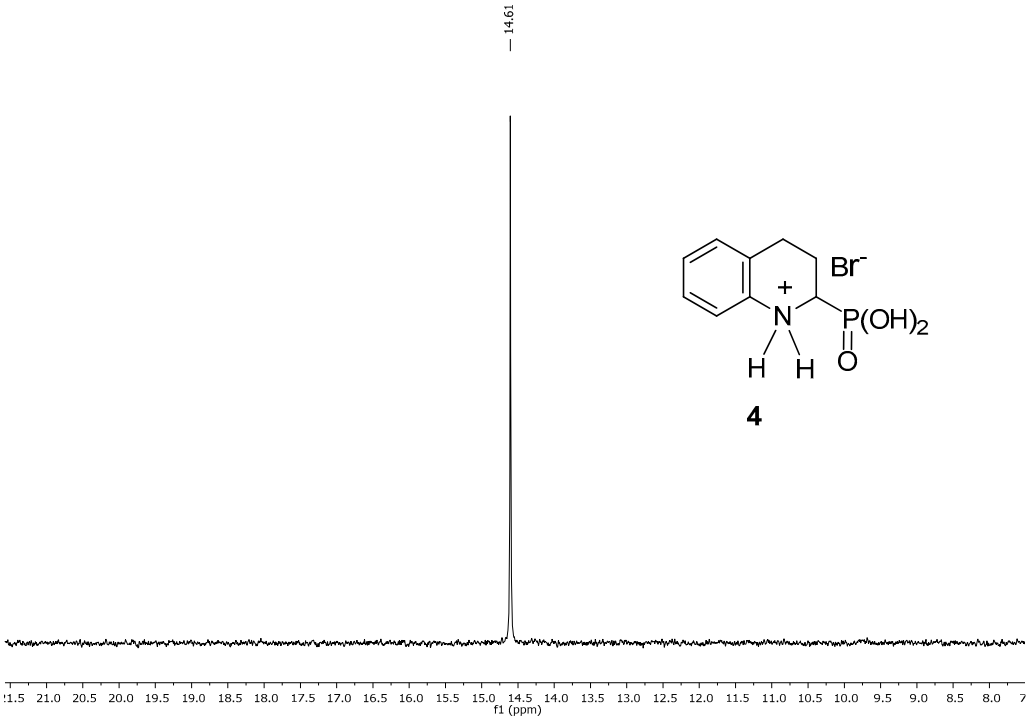


**Figure S8.** $^{31}$P-NMR of **4** (162 MHz, $CD_3OD$).

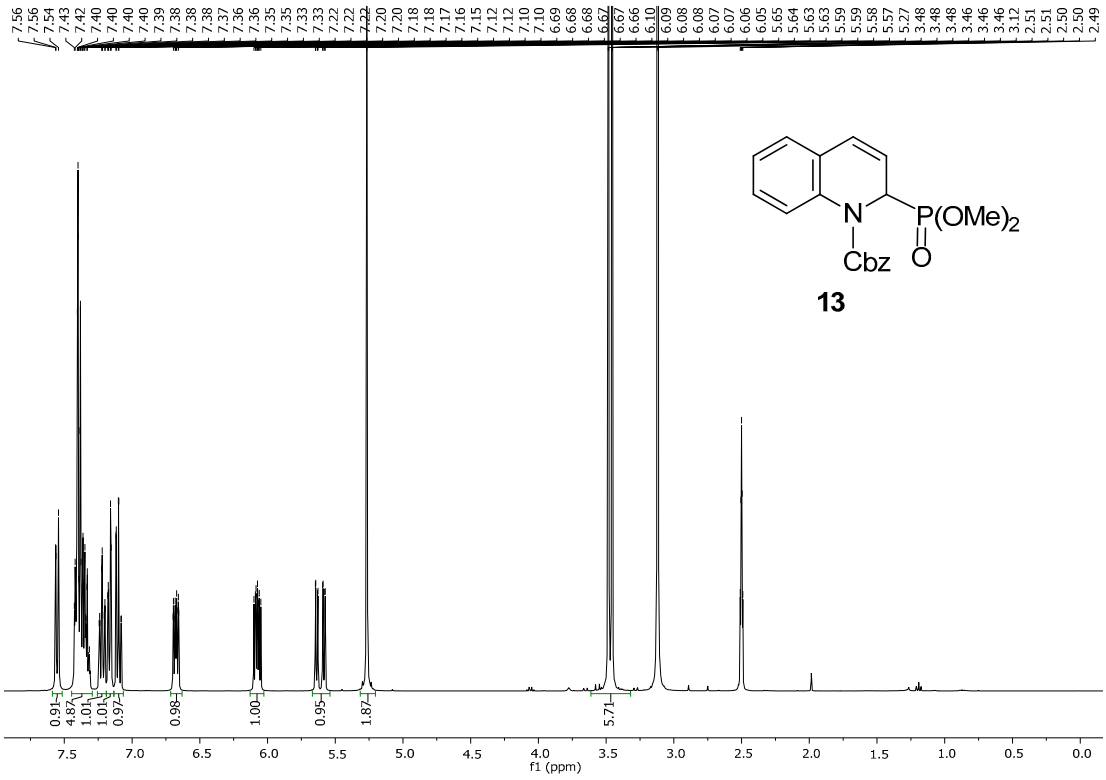


**Figure S9.** $^{1}$H-NMR of **13** (400 MHz, DMSO-$d_6$, 80 °C).

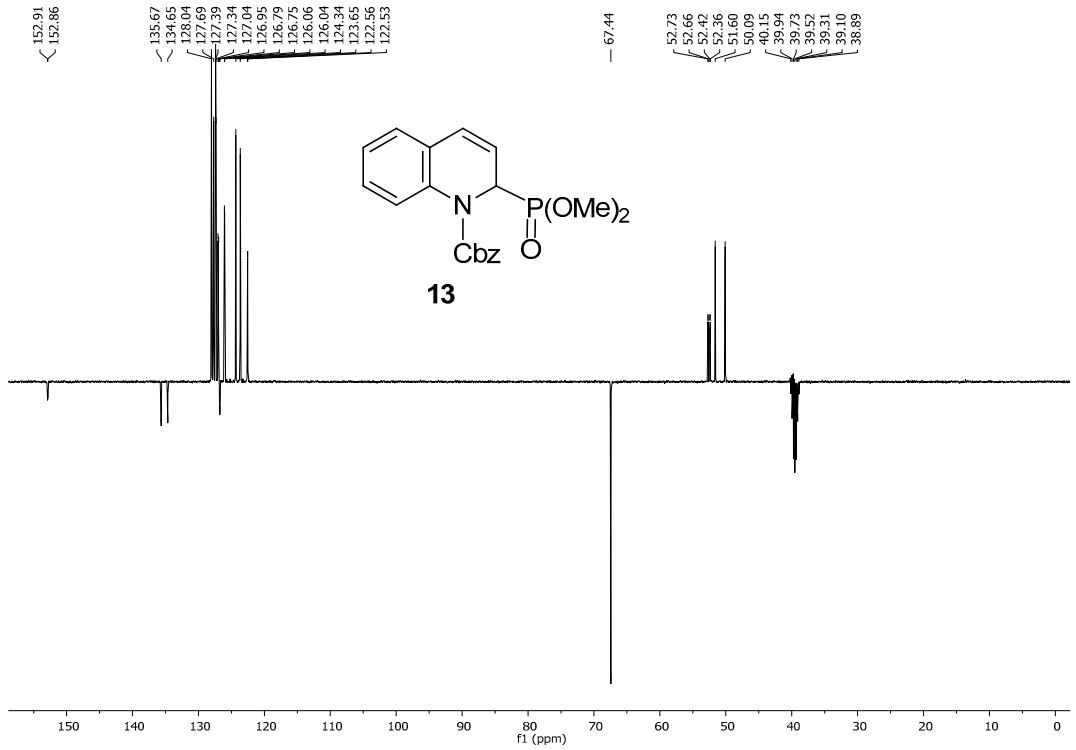


**Figure S10.** $^{13}$C-NMR of **13** (100 MHz, DMSO-$d_6$, 80 °C).

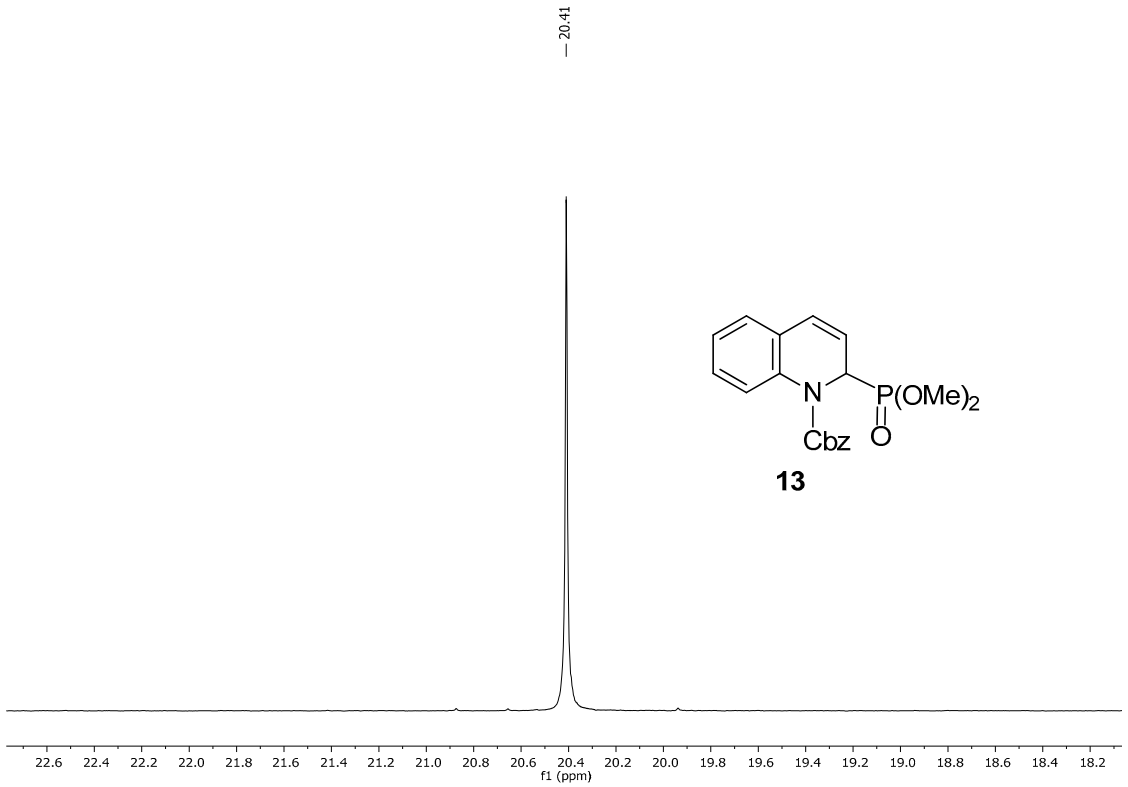


**Figure S11.** $^{31}$P-NMR of **13** (162 MHz, DMSO-$d_6$, 80 °C).

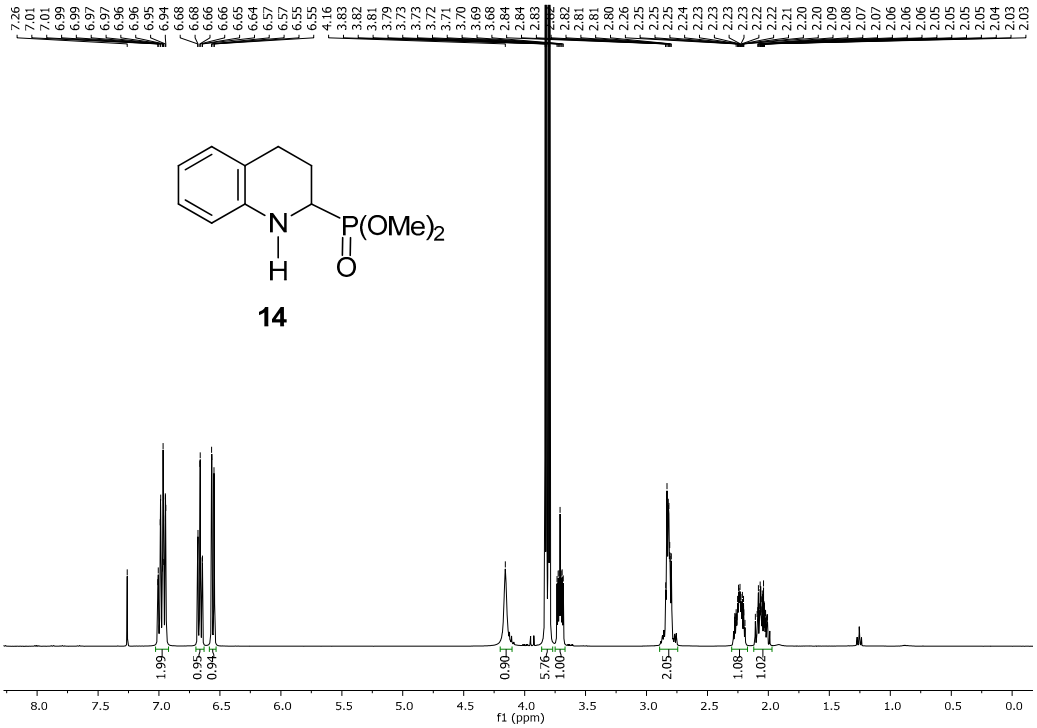


**Figure S12.** $^{1}$H-NMR of **14** (400 MHz, $CDCl_3$).

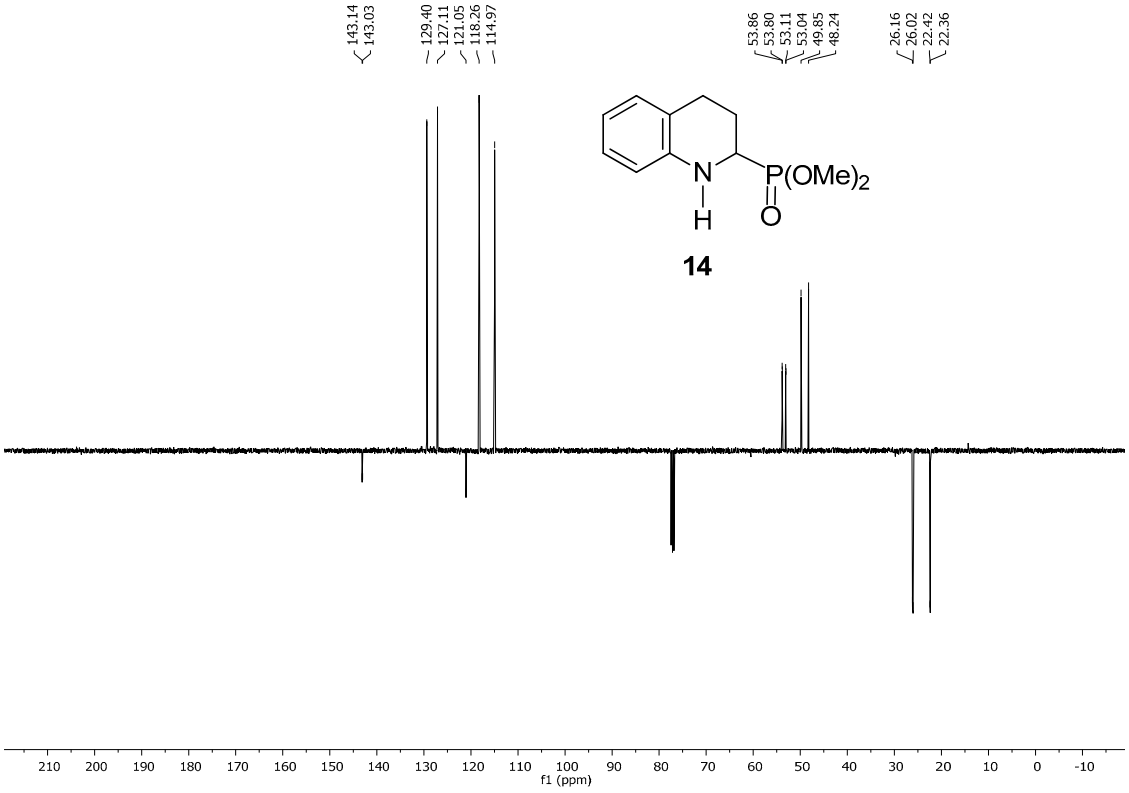


**Figure S13.** $^{13}$C-NMR of **14** (100 MHz, $CDCl_3$).

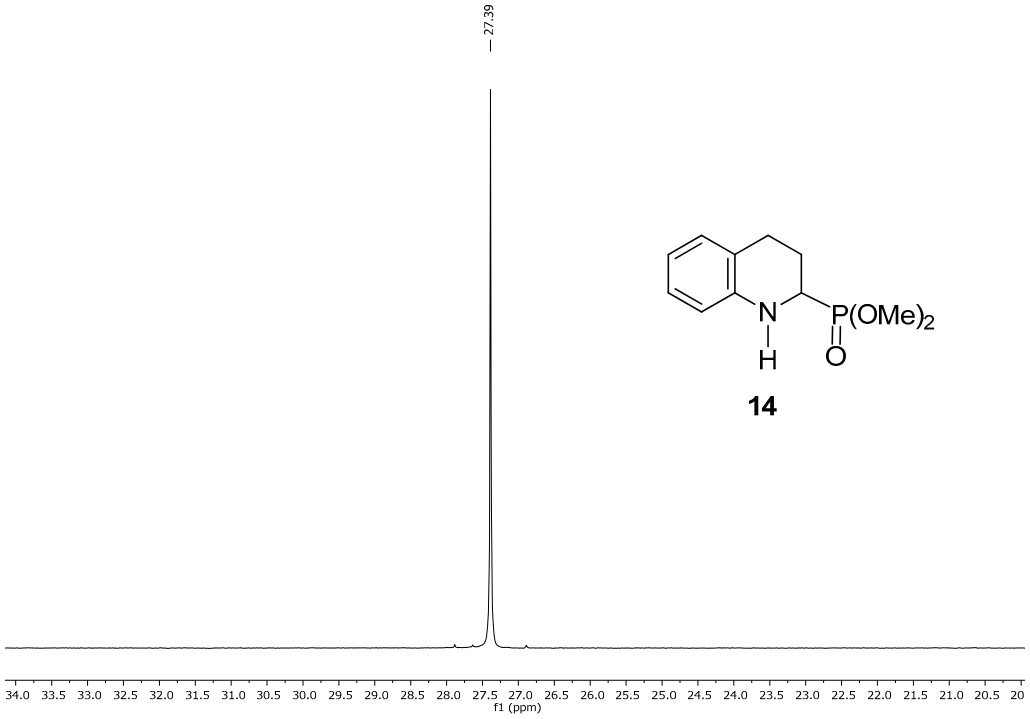


**Figure S14.** $^{31}$P-NMR of **14** (162 MHz, $CDCl_3$).

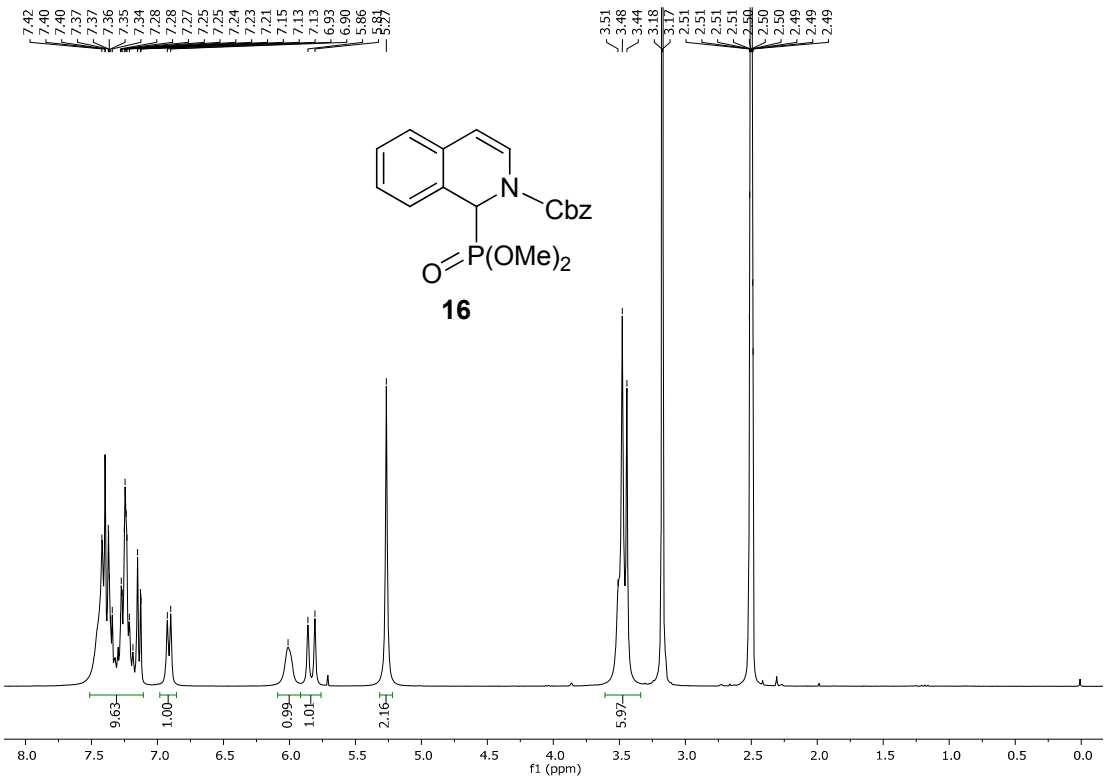


**Figure S15.** $^{1}$H-NMR of **16** (300 MHz, DMSO-$d_6$, 50 °C).

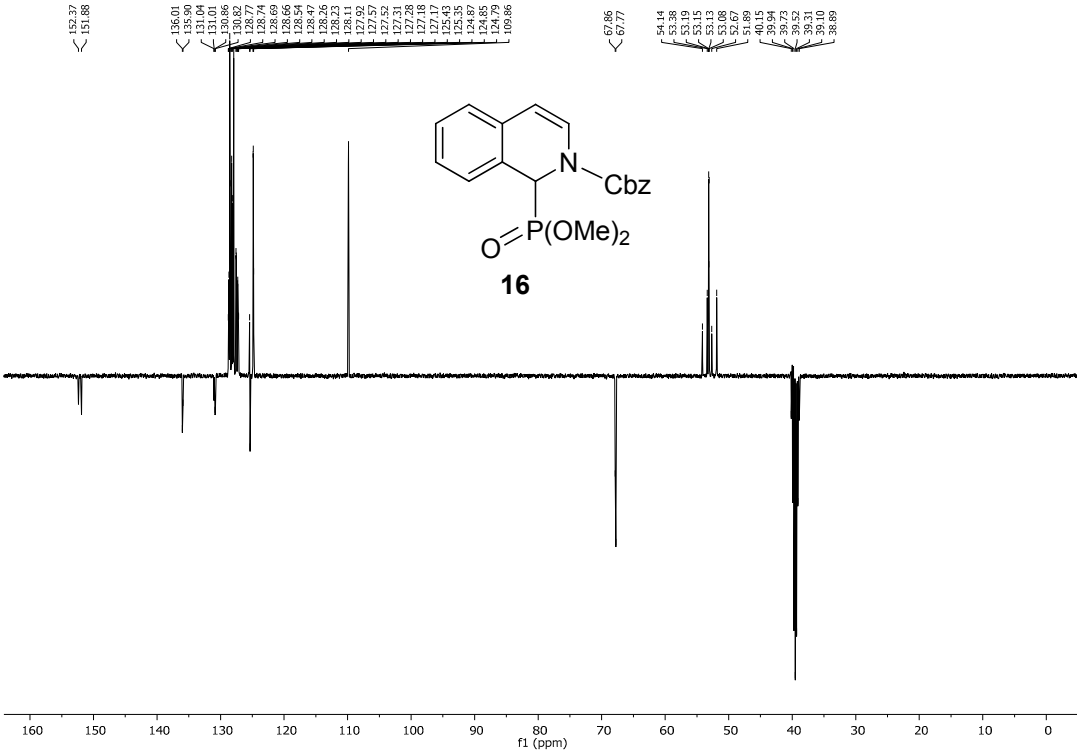


**Figure S16.** $^{13}$C-NMR of **16** (100 MHz, DMSO-$d_6$).

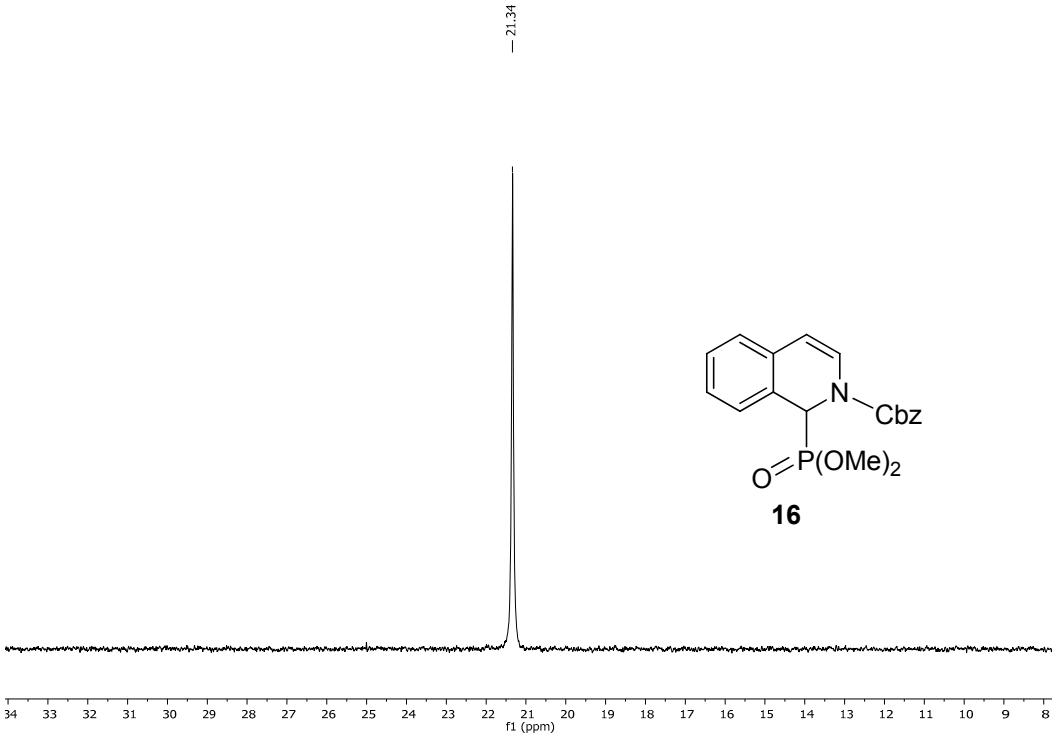


**Figure S17.** $^{31}$P-NMR of **16** (122 MHz, DMSO-$d_6$, 50 °C).

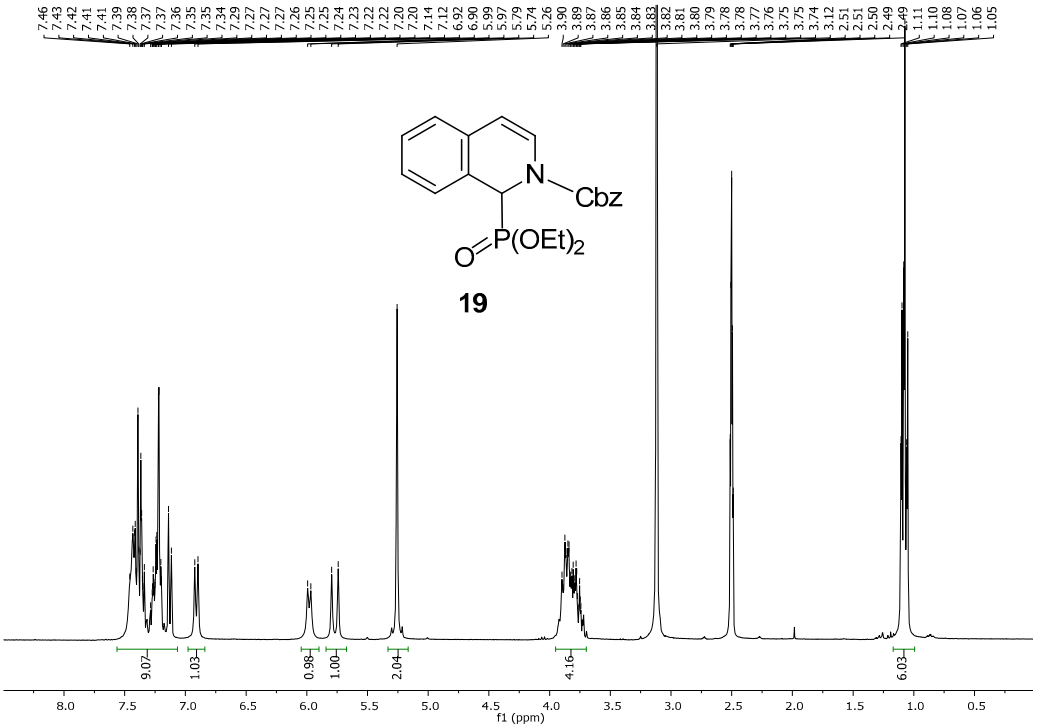


**Figure S18.** [1]H-NMR of **19** (300 MHz, DMSO-$d_6$, 70 °C).

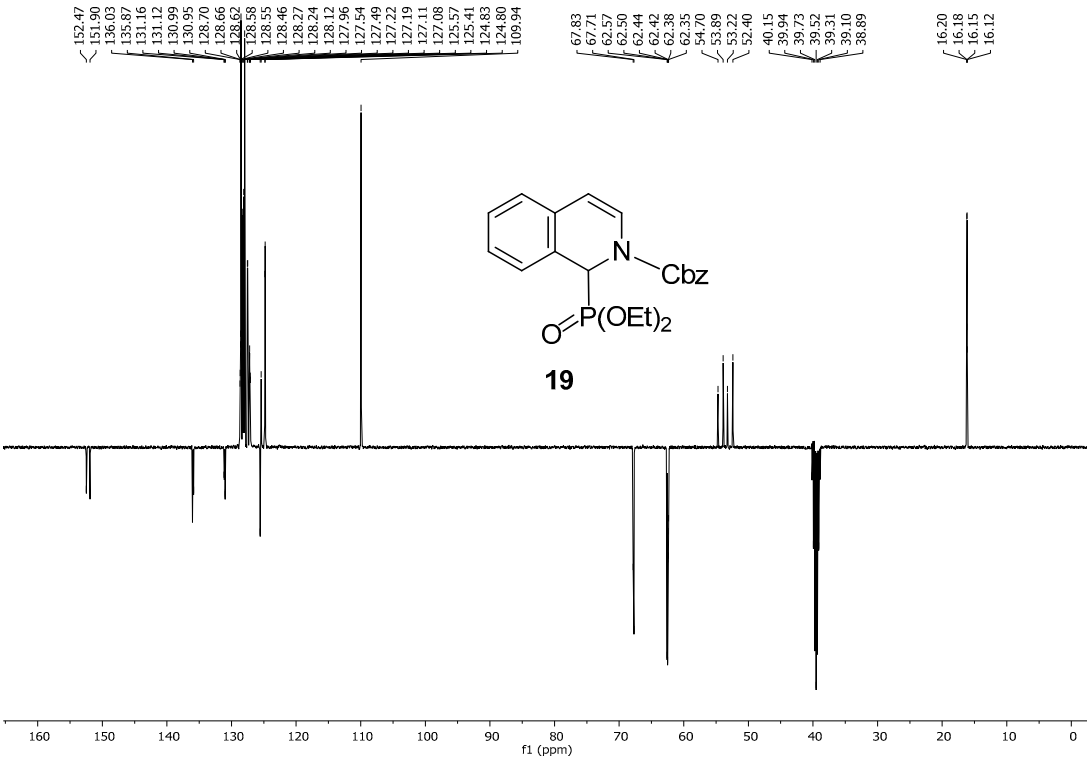


**Figure S19.** [13]C-NMR of **19** (100 MHz, DMSO-$d_6$).

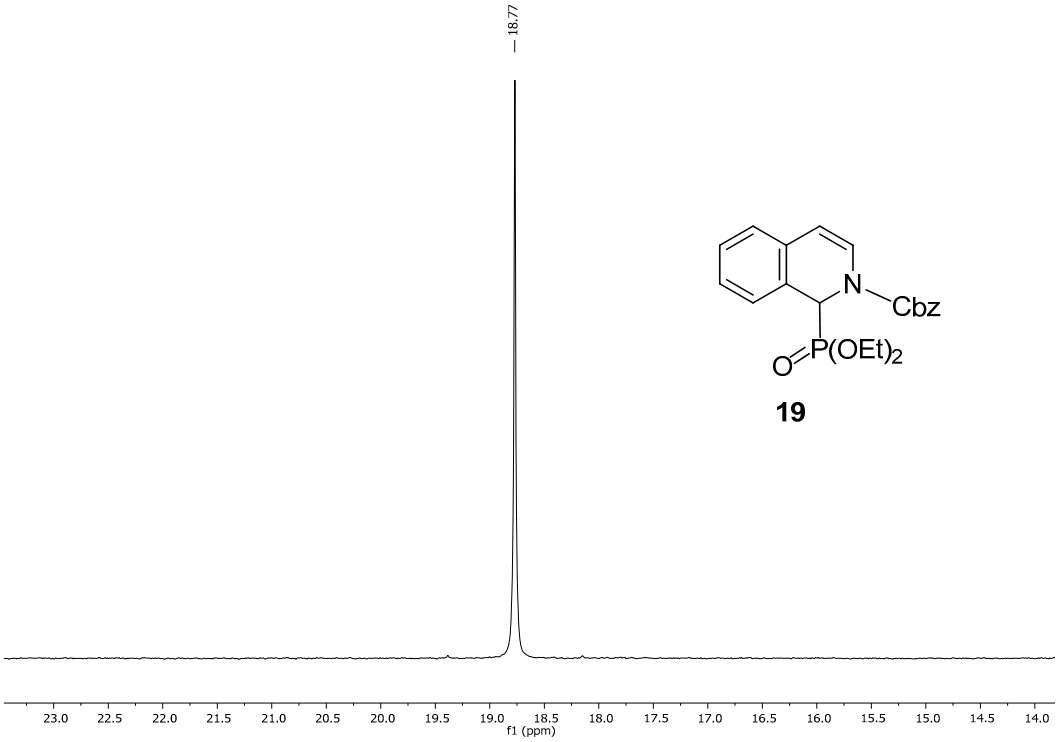


**Figure S20.** $^{31}$P-NMR of **19** (122 MHz, DMSO-$d_6$, 70 °C).

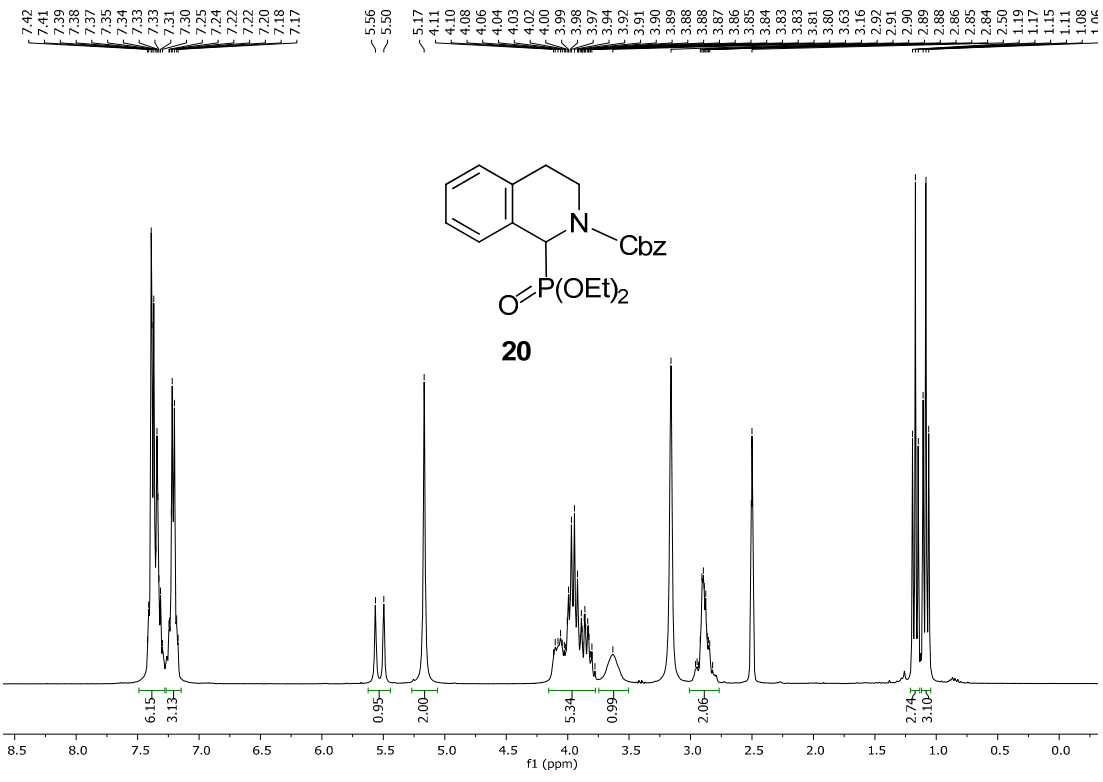


**Figure S21.** $^{1}$H-NMR of **20** (300 MHz, DMSO-$d_6$, 70 °C).

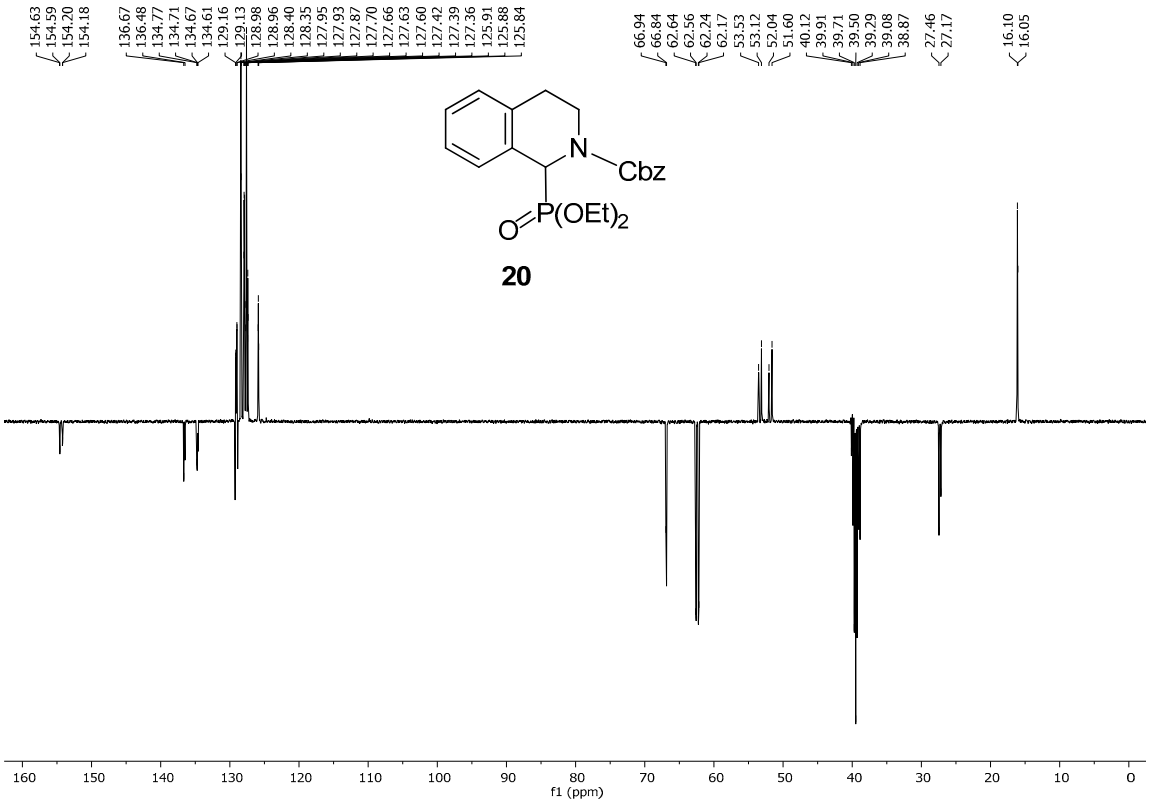


**Figure S22.** $^{13}$C-NMR of **20** (100 MHz, DMSO-$d_6$).

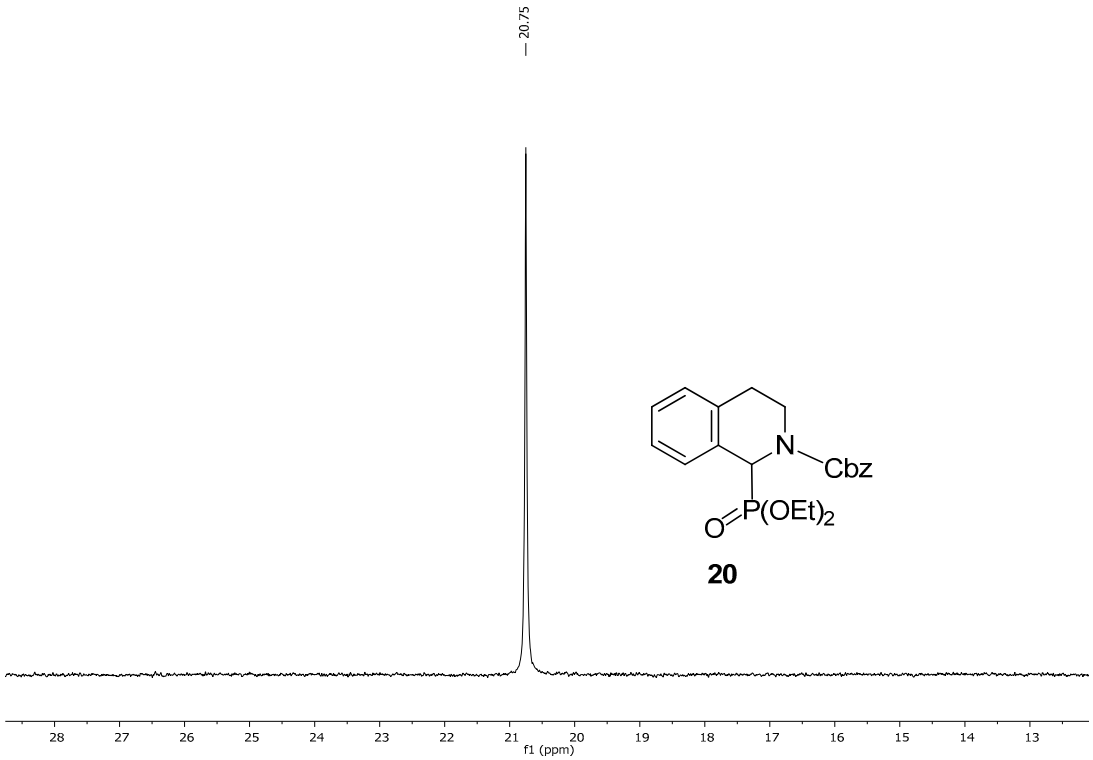


**Figure S23.** $^{31}$P-NMR of **20** (122 MHz, DMSO-$d_6$, 70 °C).

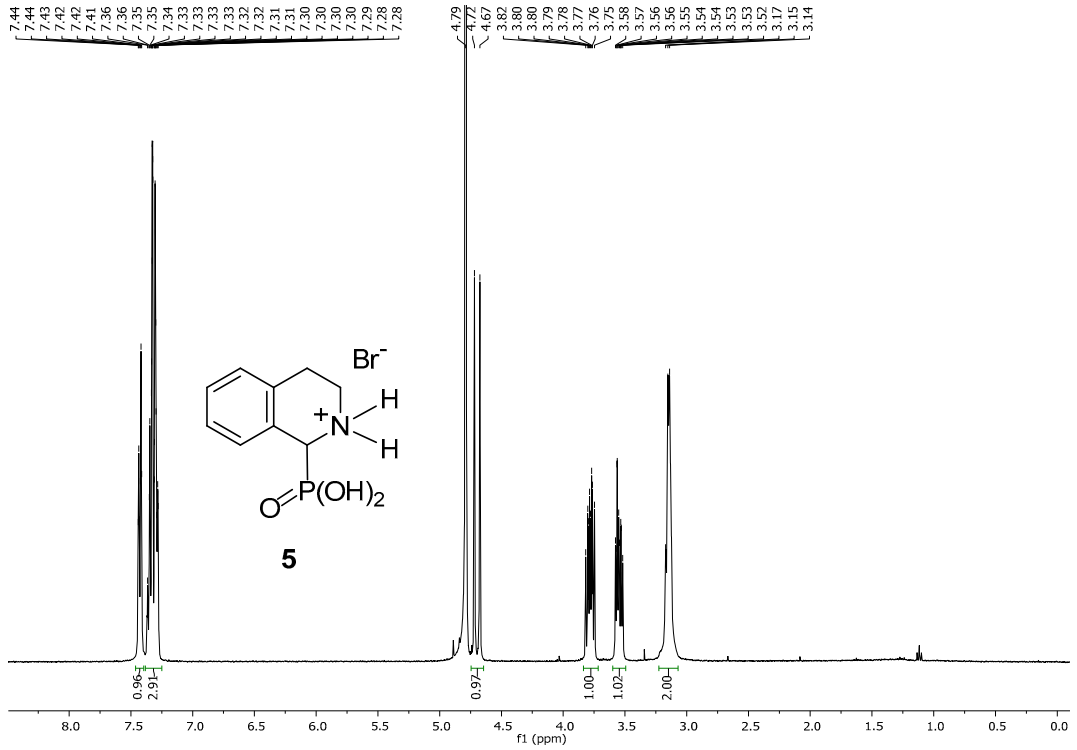


**Figure S24.** $^{1}$H-NMR of **5** (400 MHz, $D_2O$).

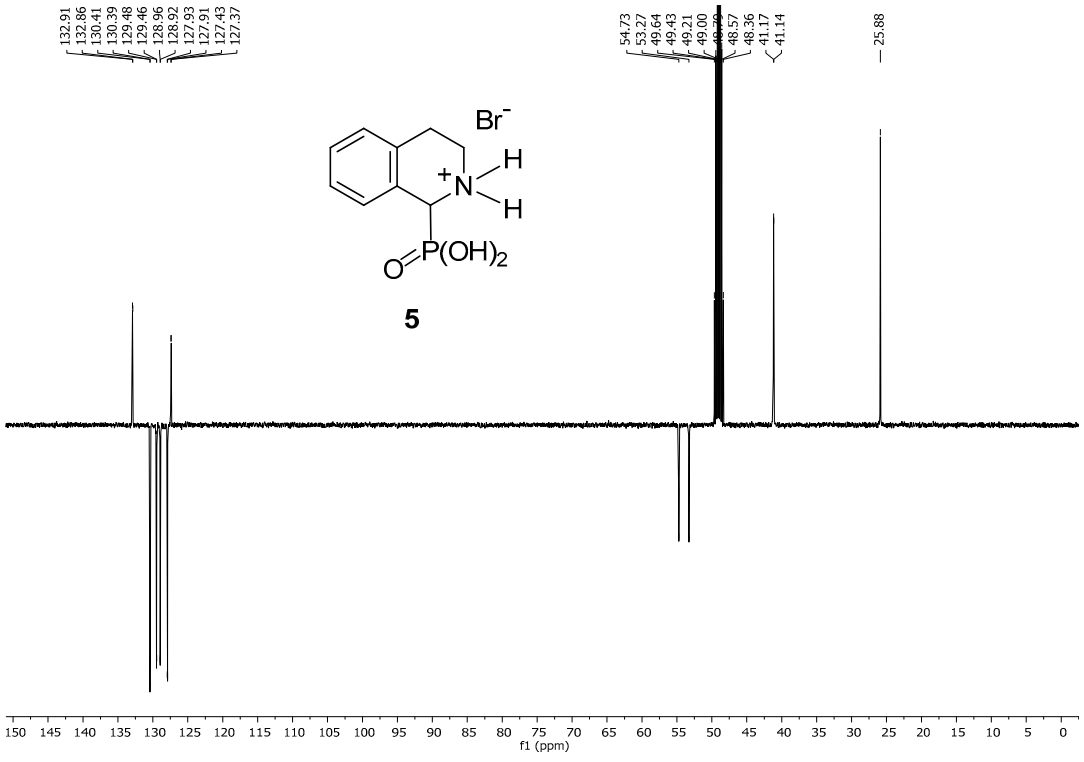


**Figure S25.** $^{13}$C-NMR of **5** (100 MHz, $CD_3OD$).

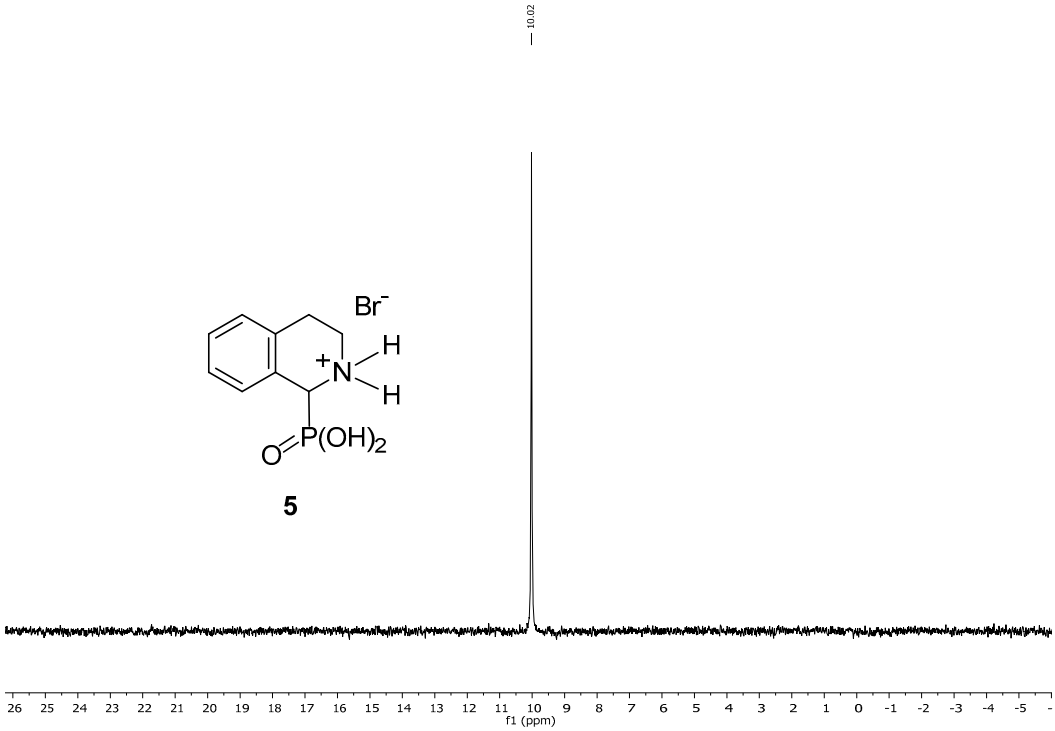


**Figure S26.** $^{31}$P-NMR of **5** (162 MHz, $D_2O$).

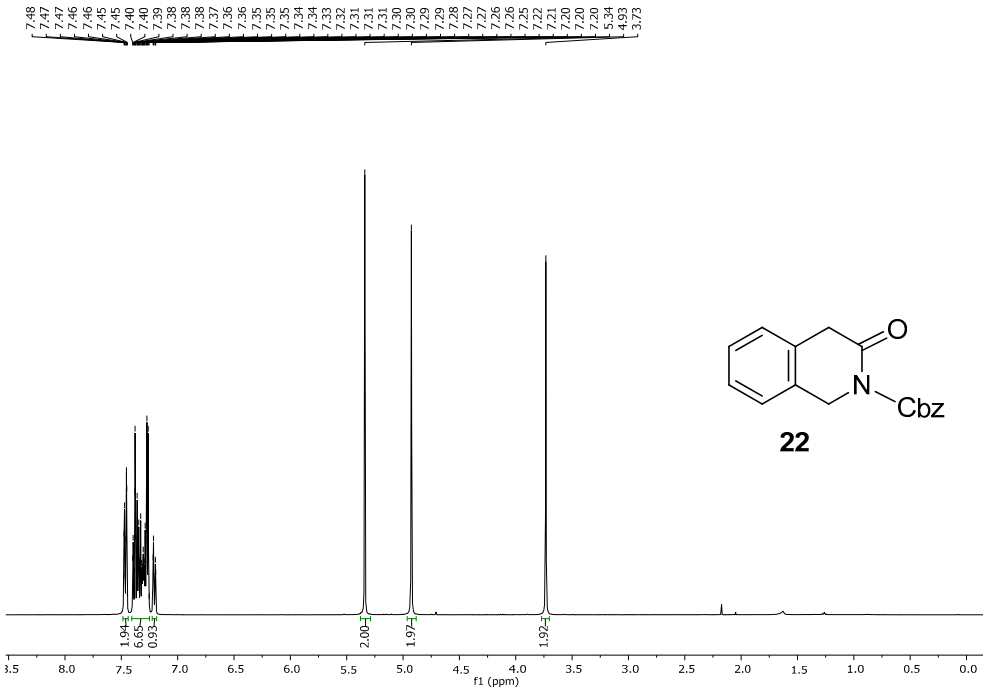


**Figure S27.** $^{1}$H-NMR of **22** (400 MHz, $CDCl_3$).


**Figure S28.** $^{13}$C-NMR of **22** (100 MHz, C

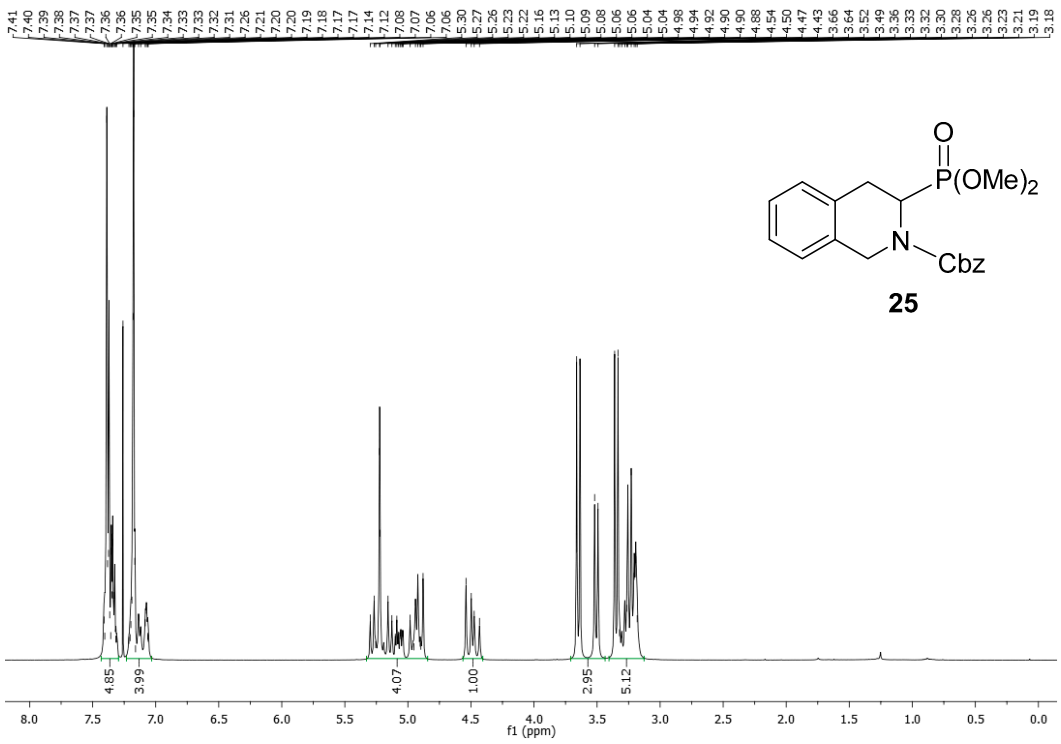


**Figure S29.** $^{1}$H-NMR of **25** (400 MHz, $CDCl_3$).

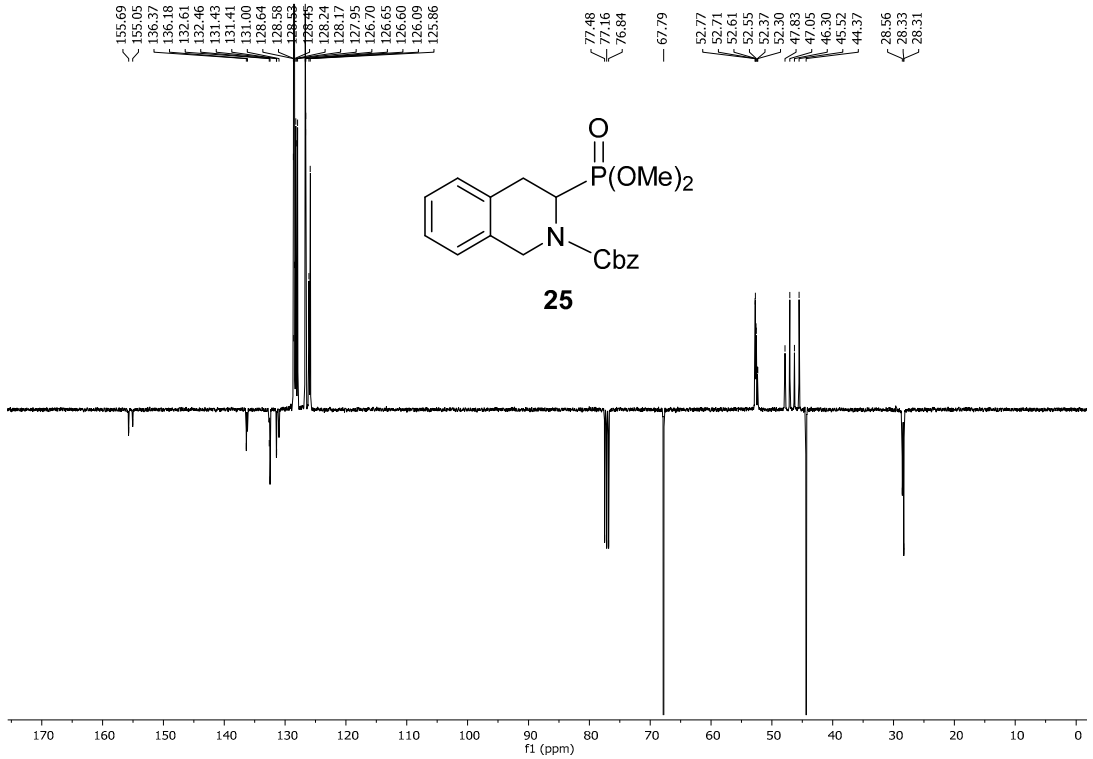


**Figure S30.** $^{13}$C-NMR of **25** (100 MHz, $CDCl_3$).

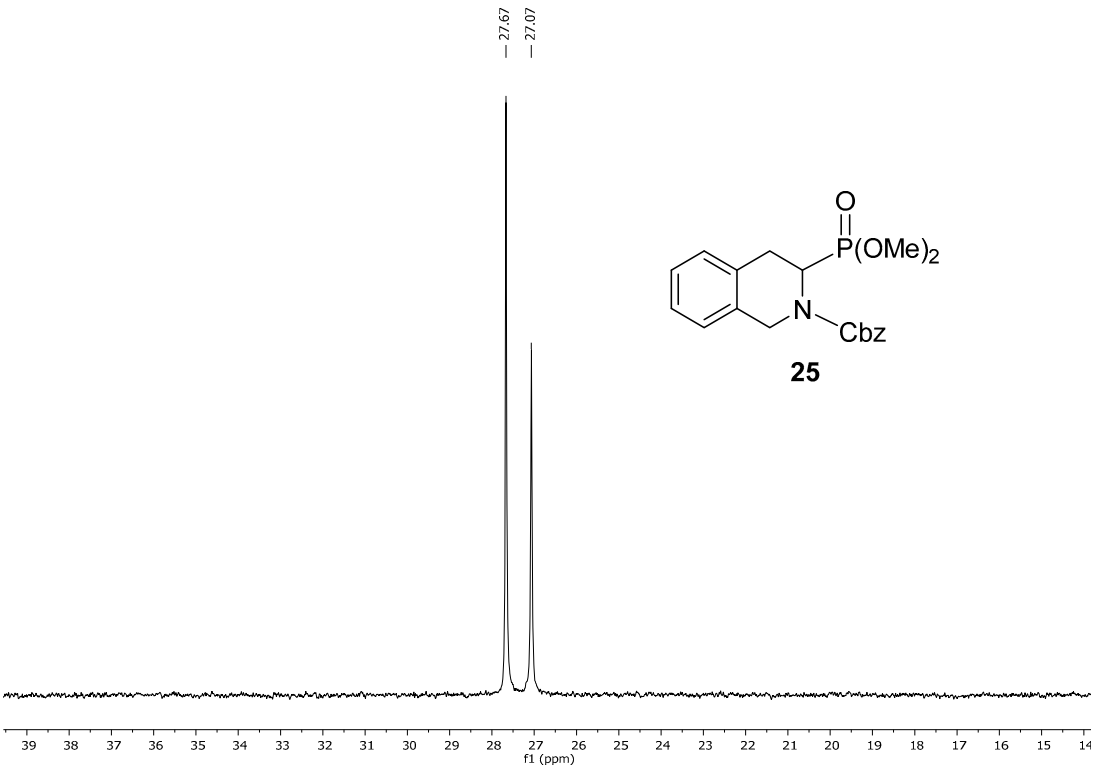


**Figure S31.** $^{31}$P-NMR of **25** (162 MHz, $CDCl_3$).

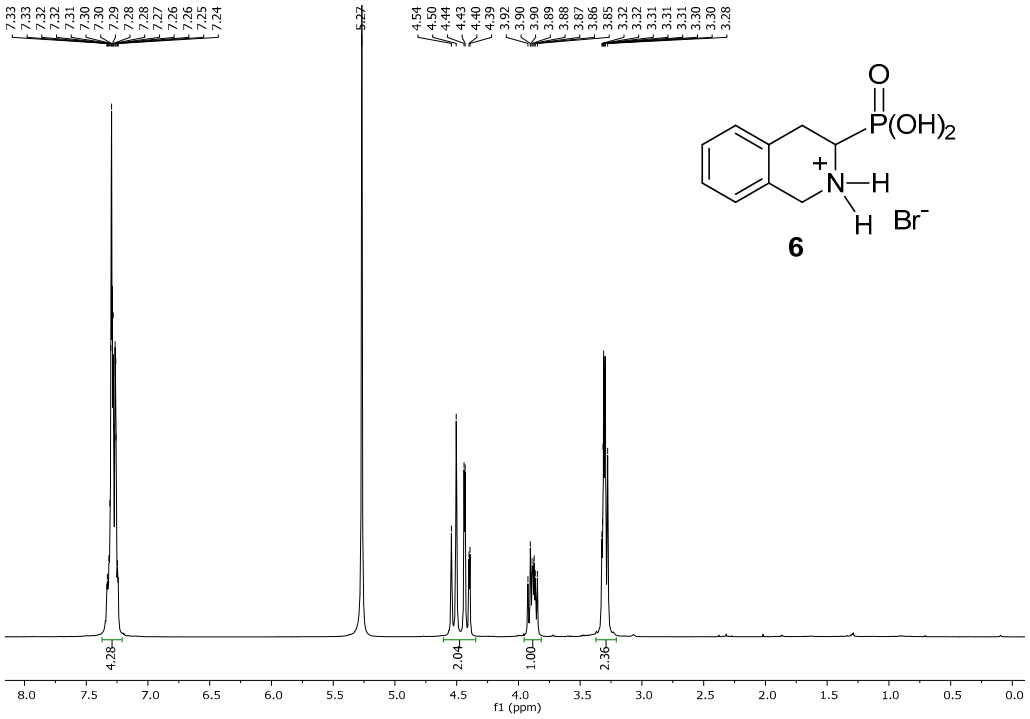


**Figure S32.** $^{1}$H-NMR of **6** (400 MHz, $CD_3OD$).

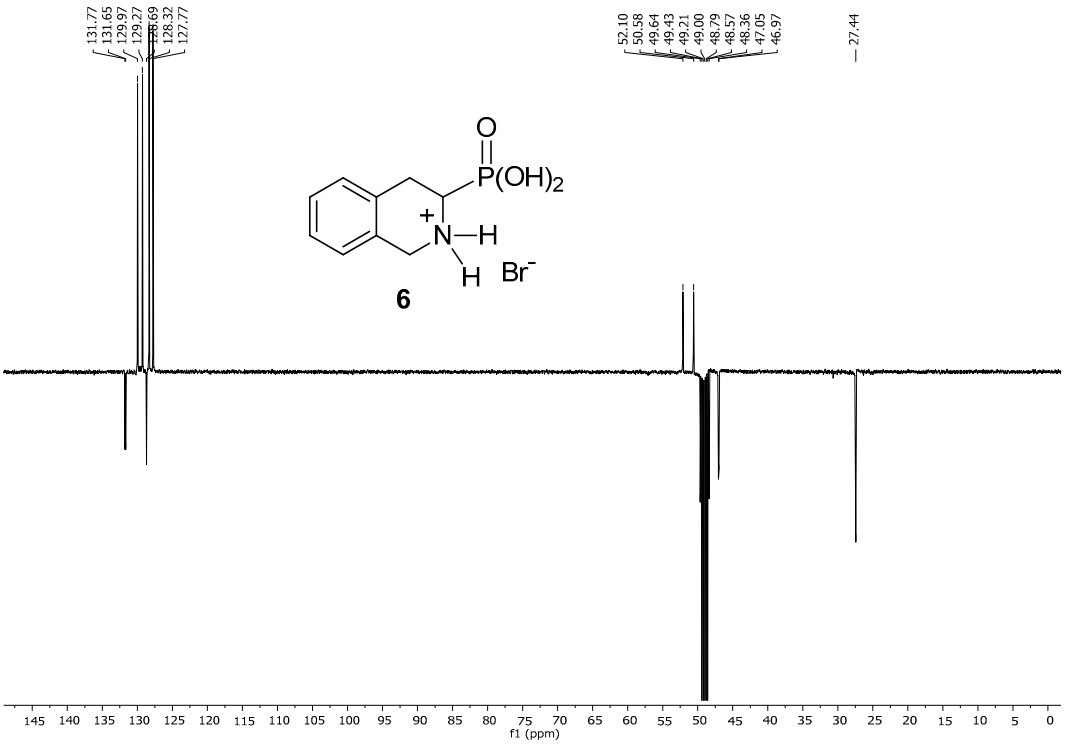


**Figure S33.** $^{13}$C-NMR of **6** (100 MHz, $CD_3OD$).

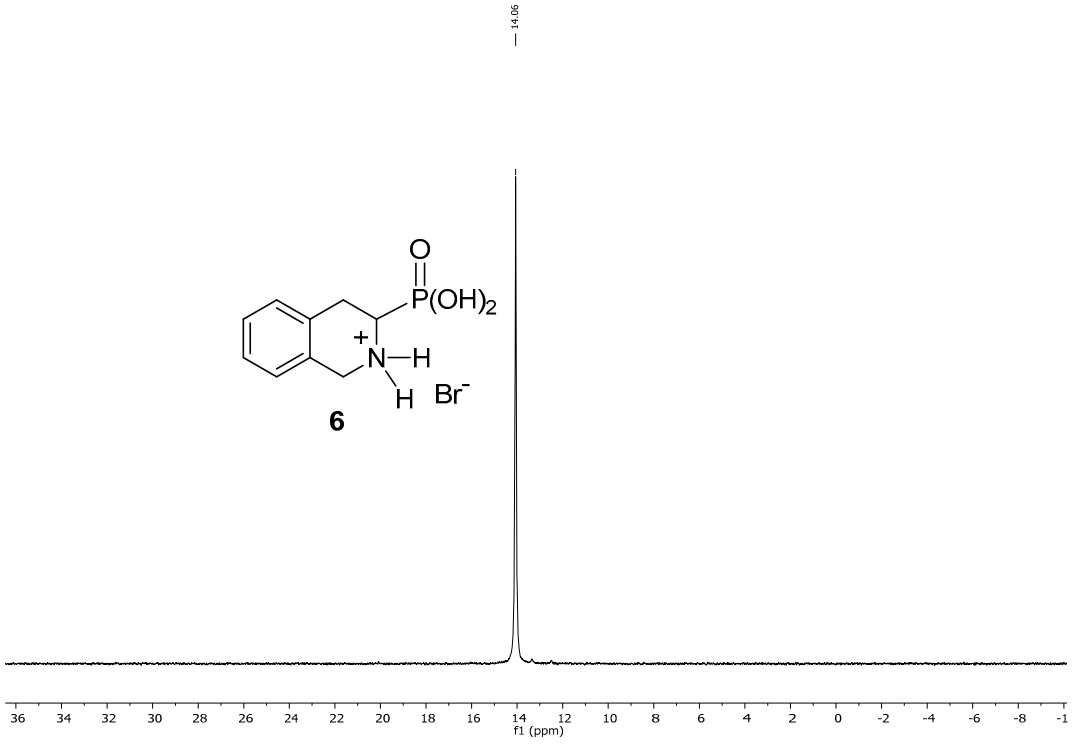


**Figure S34.** $^{31}$P-NMR of **6** (162 MHz, $CD_3OD$).