Supplementary Material

Designing highly efficient solvents for the Knoevenagel condensation: two novel dicationic dimethyl phosphate ionic liquids

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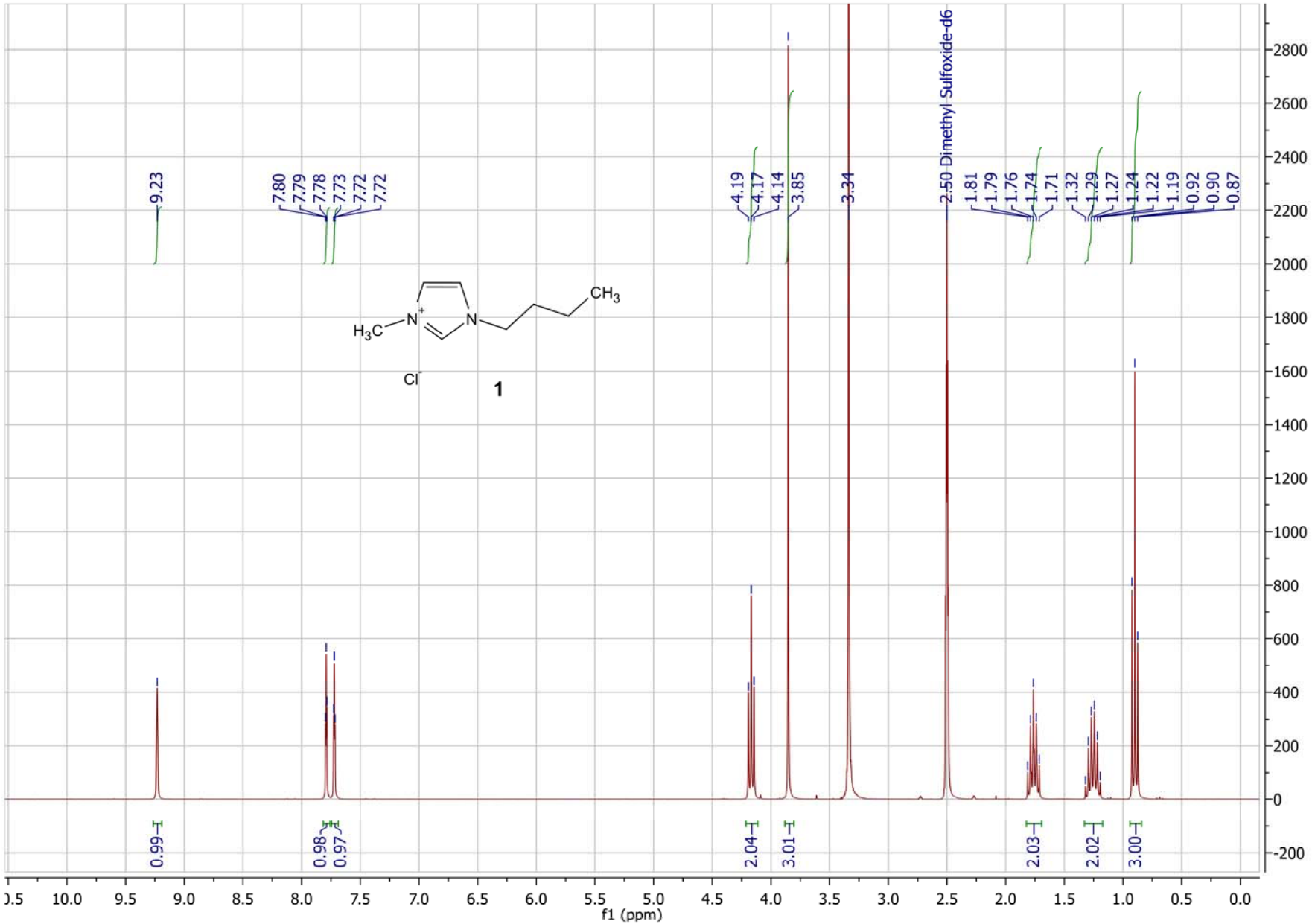

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Figure S1. The ^{1}H NMR (400 MHz, DMSO-d_6) spectrum of 1-butyl-3-methylimidazolium chloride (**1**).

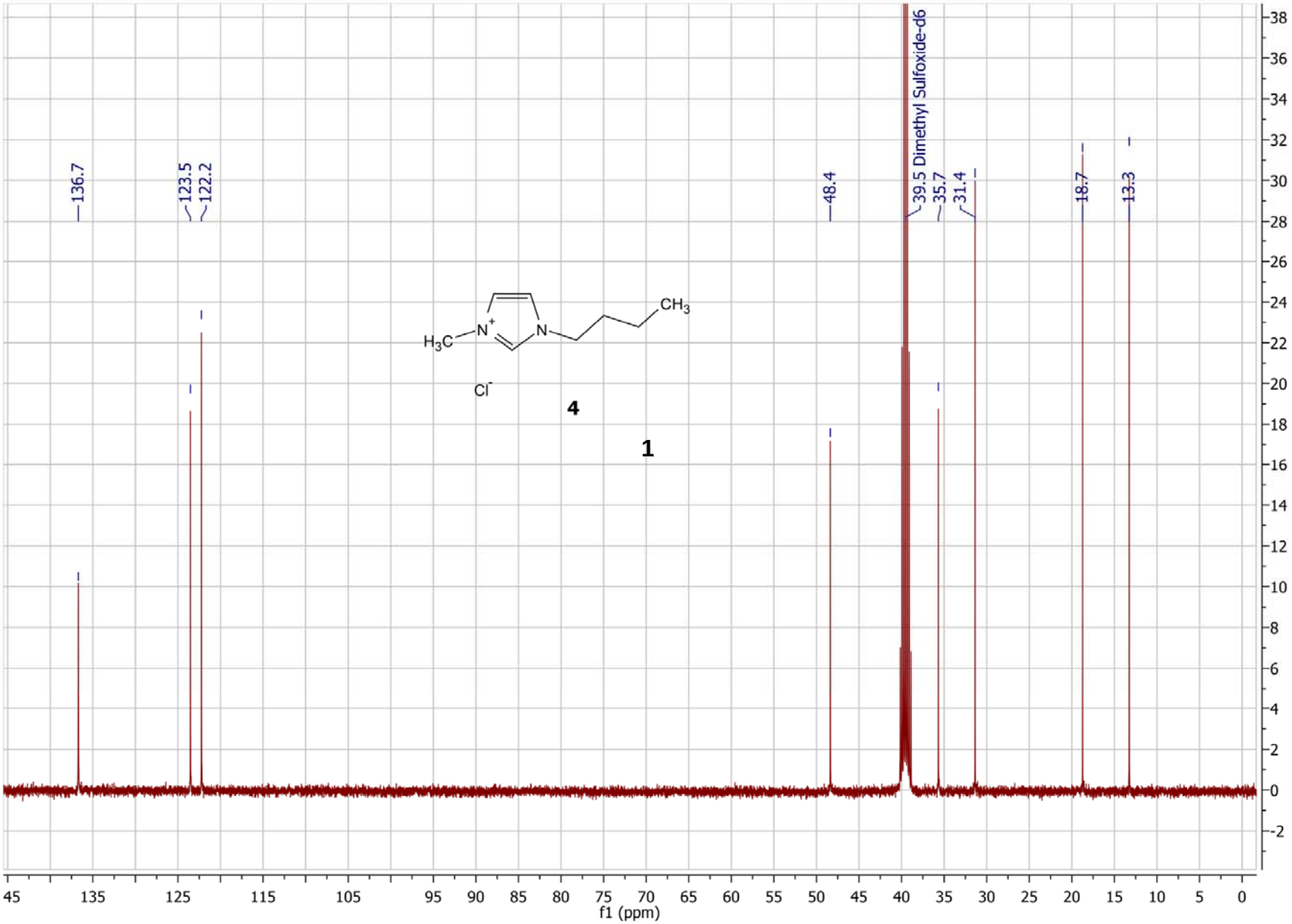

Figure S2. The ^{13}C NMR (100 MHz, DMSO-d_6) spectrum of 1-butyl-3-methylimidazolium chloride (**1**).

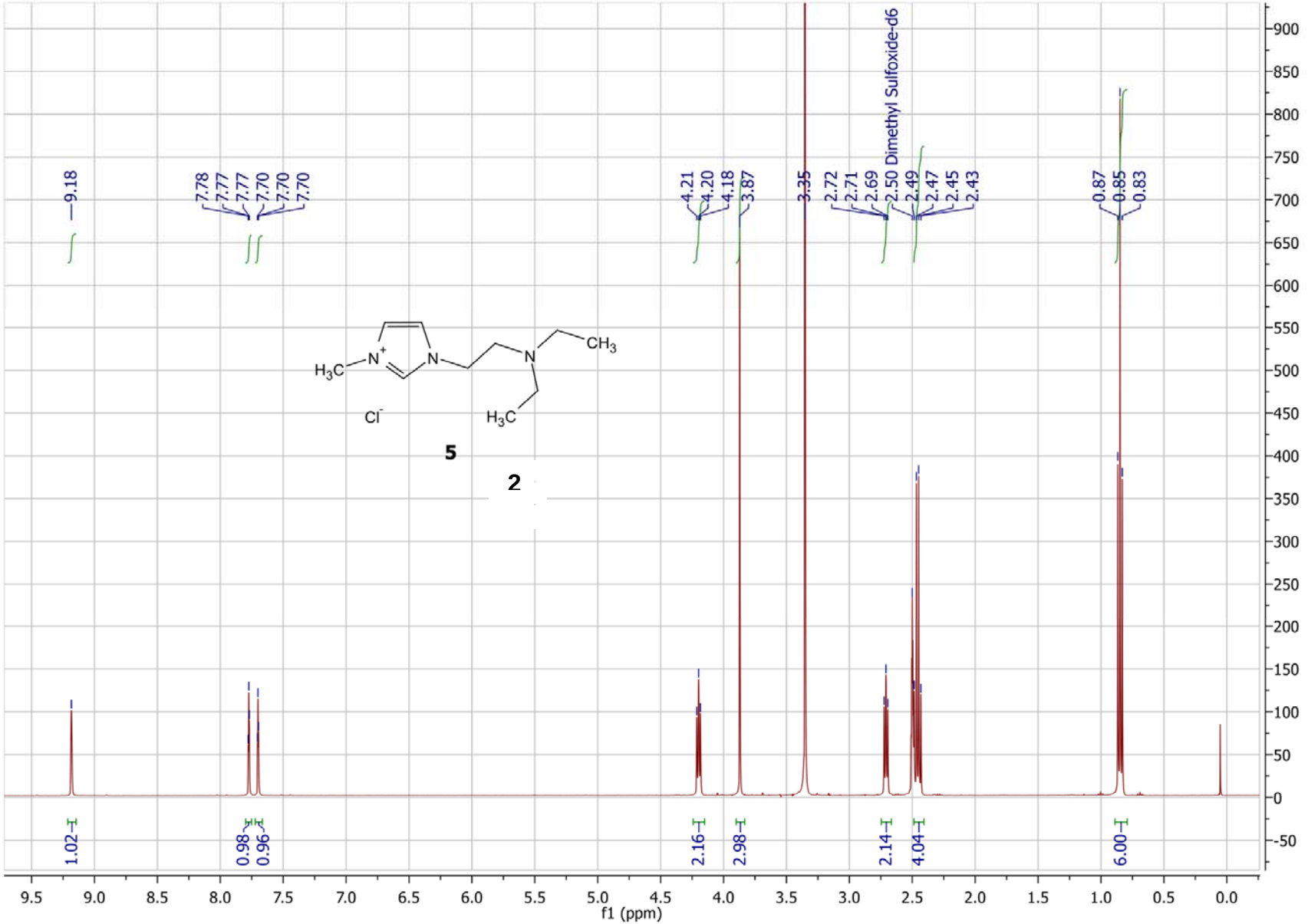

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Figure S3. The ^{1}H NMR (400 MHz, DMSO-d_6) spectrum of 1-[2-(diethylamino)ethyl]-3-methylimidazolium chloride (**2**).

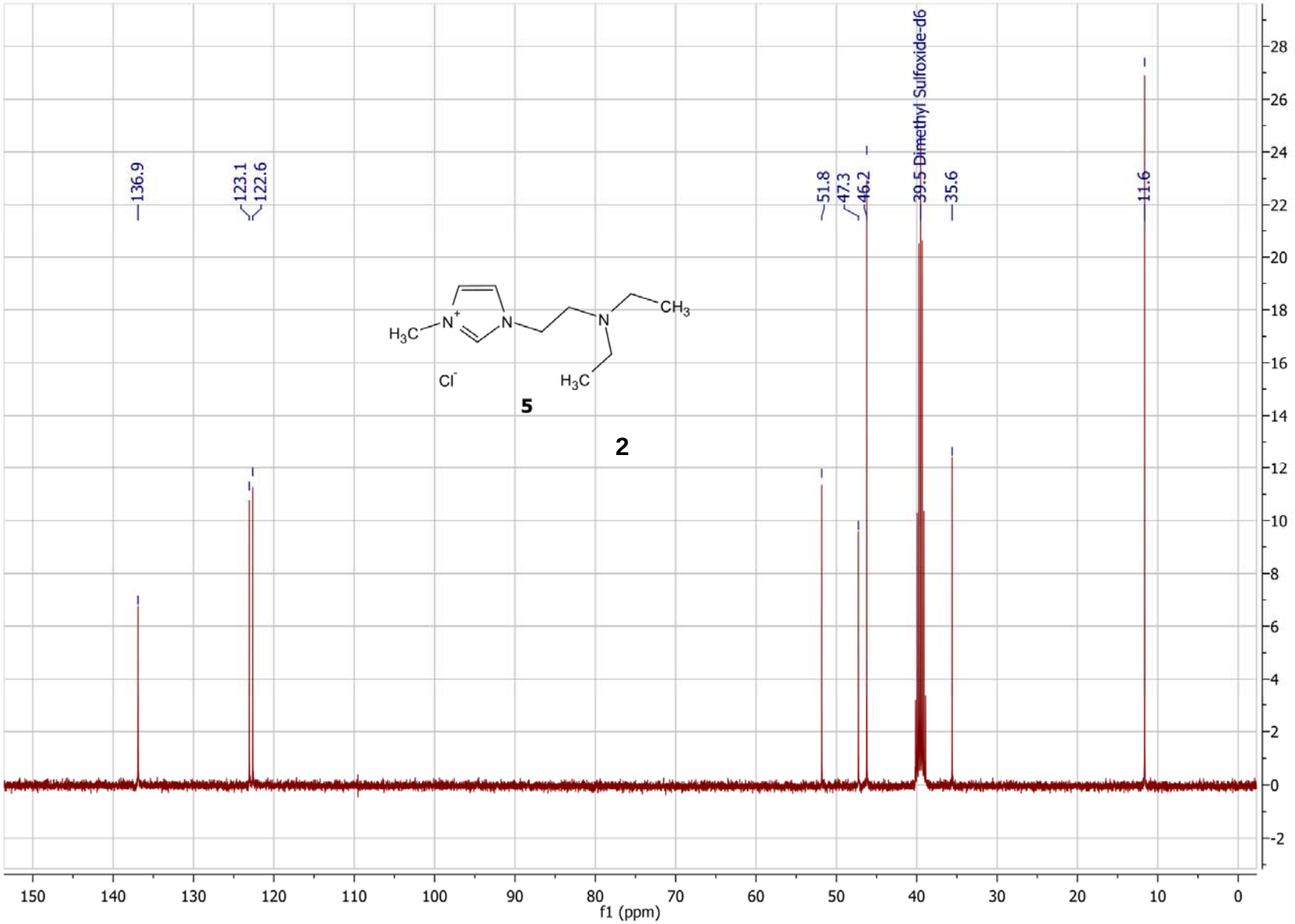

Figure S4. The ^{13}C NMR (100 MHz, DMSO-d_6) spectrum of 1-[2-(diethylamino)ethyl]-3-methylimidazolium chloride (**2**).

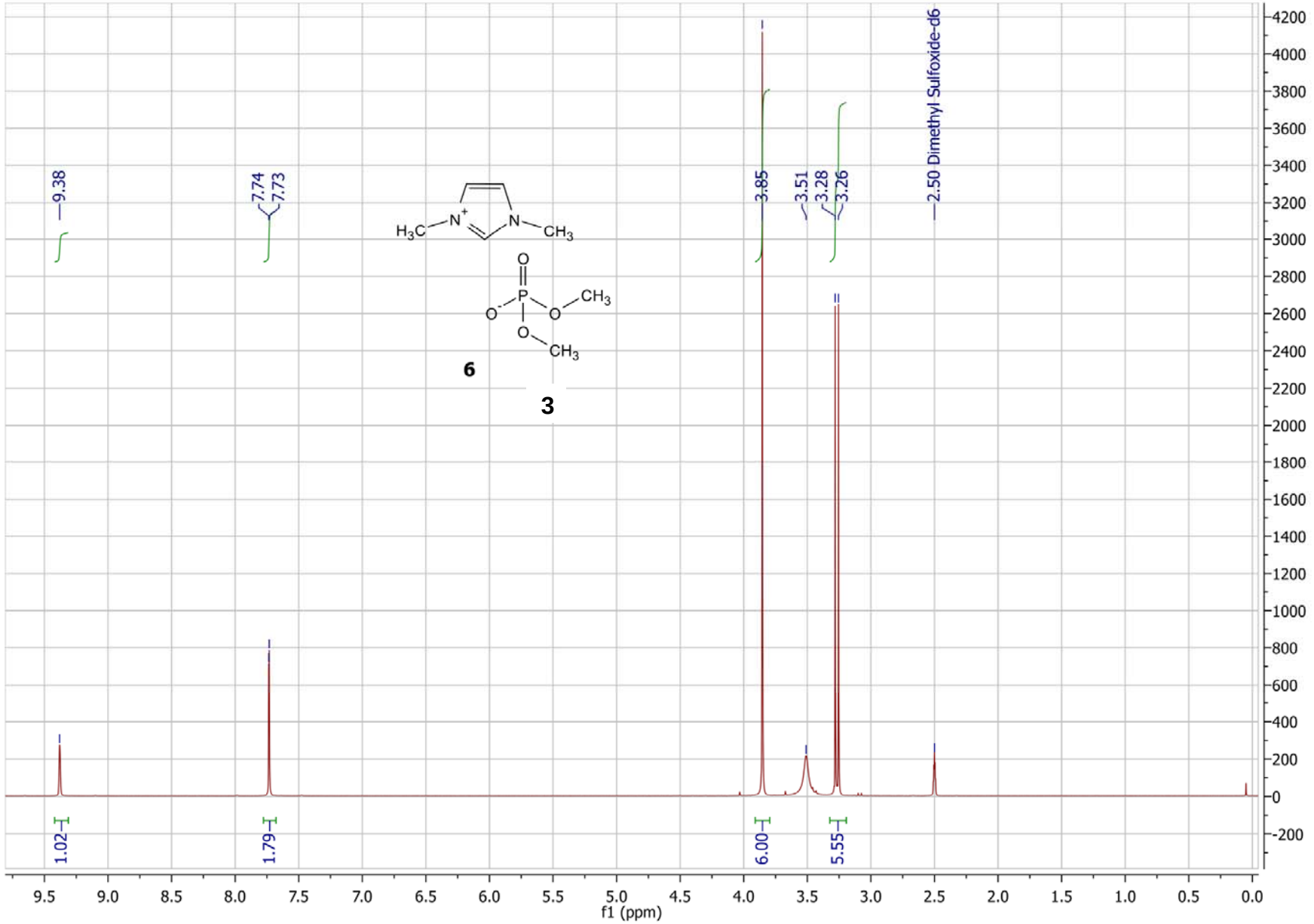

Figure S5. The ^{1}H NMR (400 MHz, DMSO-d_6) spectrum of 1,3-dimethylimidazolium dimethyl phosphate (**3**).

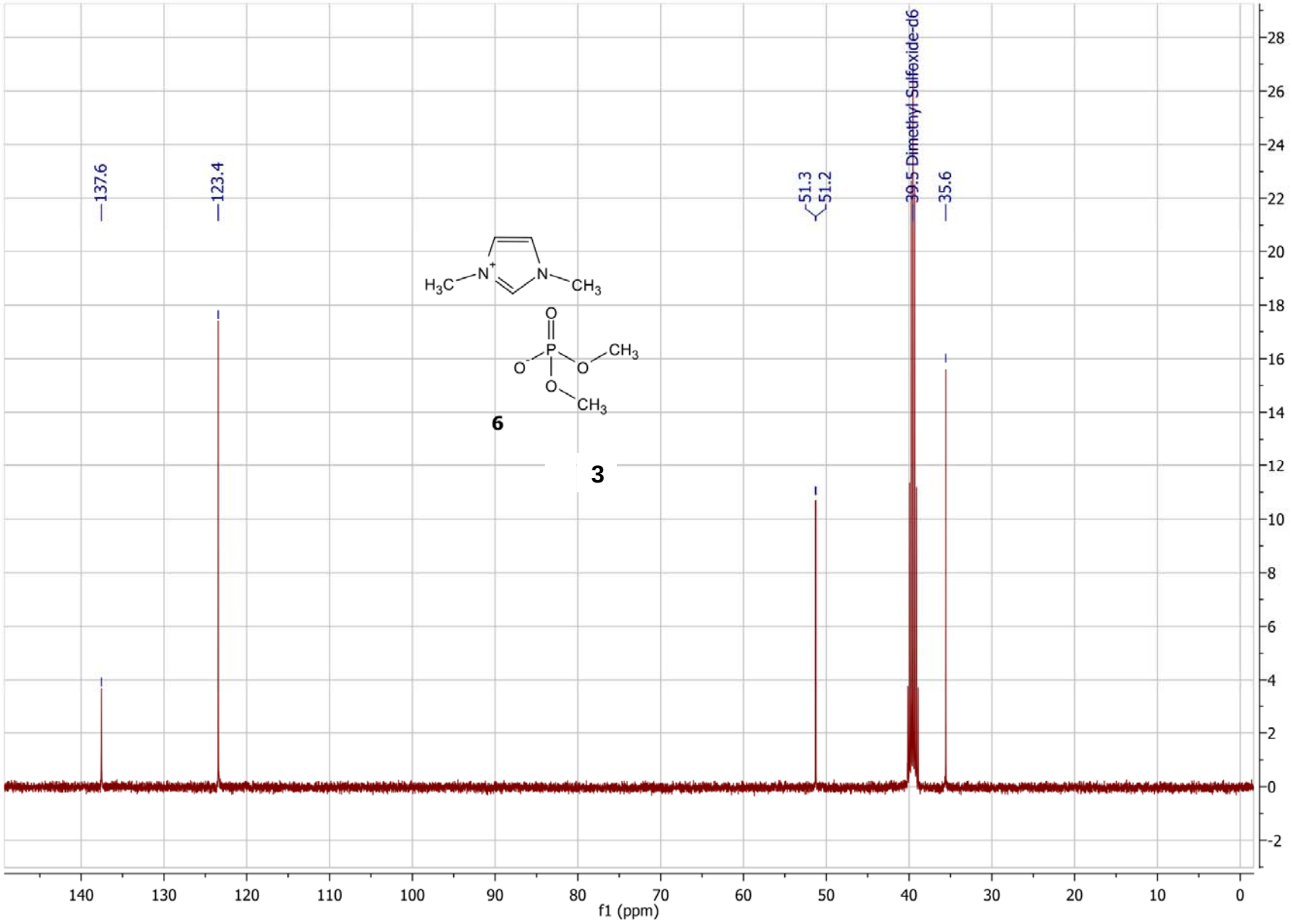

Figure S6. The ^{13}C NMR (100 MHz, DMSO-d_6) spectrum of 1,3-dimethylimidazolium dimethyl phosphate (**3**).

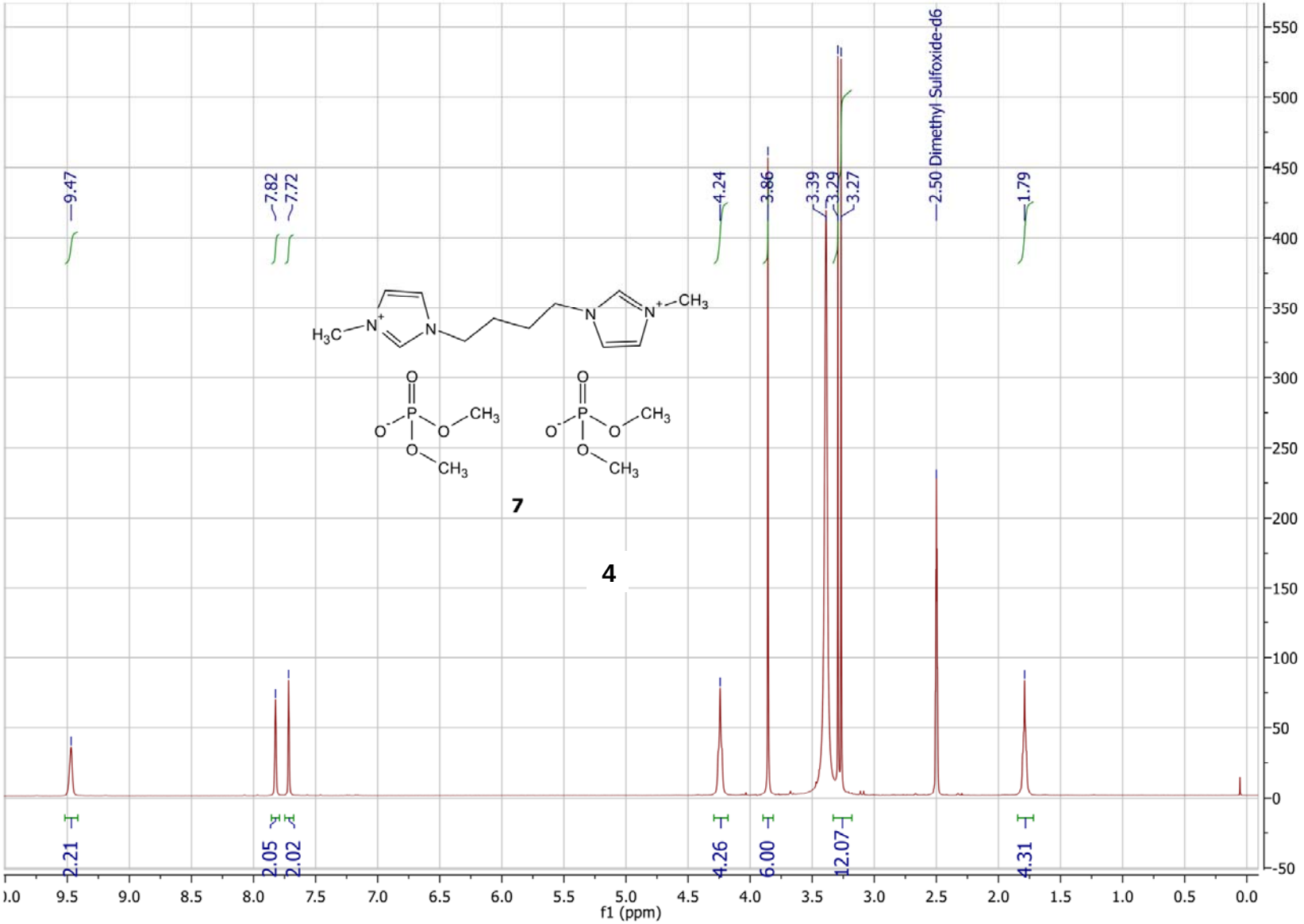

Figure S7. The ^{1}H NMR (400 MHz, DMSO-d_6) spectrum of 1,4-bis-(3-methylimidazolium-1-yl)butane bis(dimethyl phosphate) (**4**).

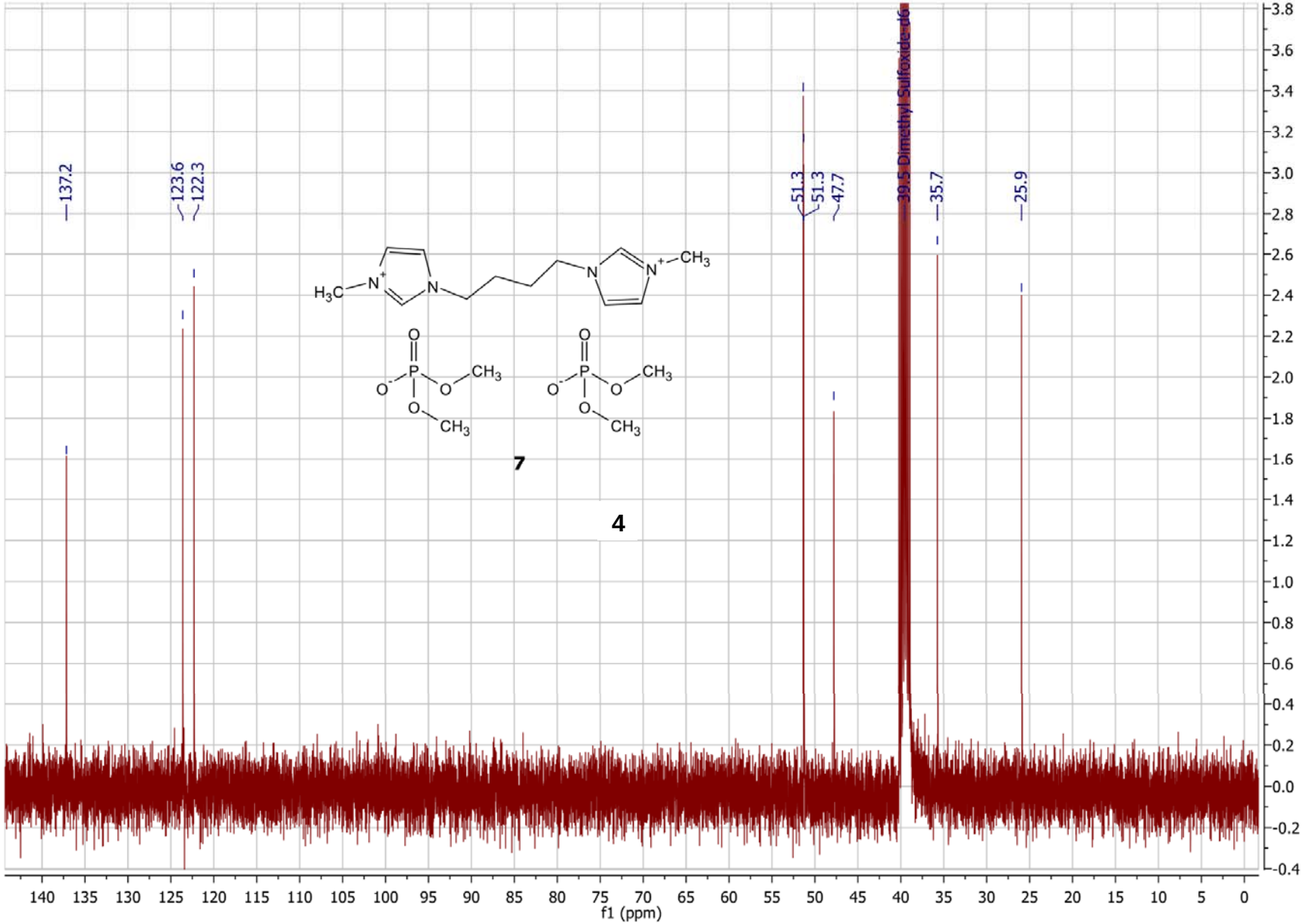

Figure S8. The ^{13}C NMR (100 MHz, DMSO-d_6) spectrum of 1,4-bis-(3-methylimidazolium-1-yl)butane bis(dimethyl phosphate) (**4**).

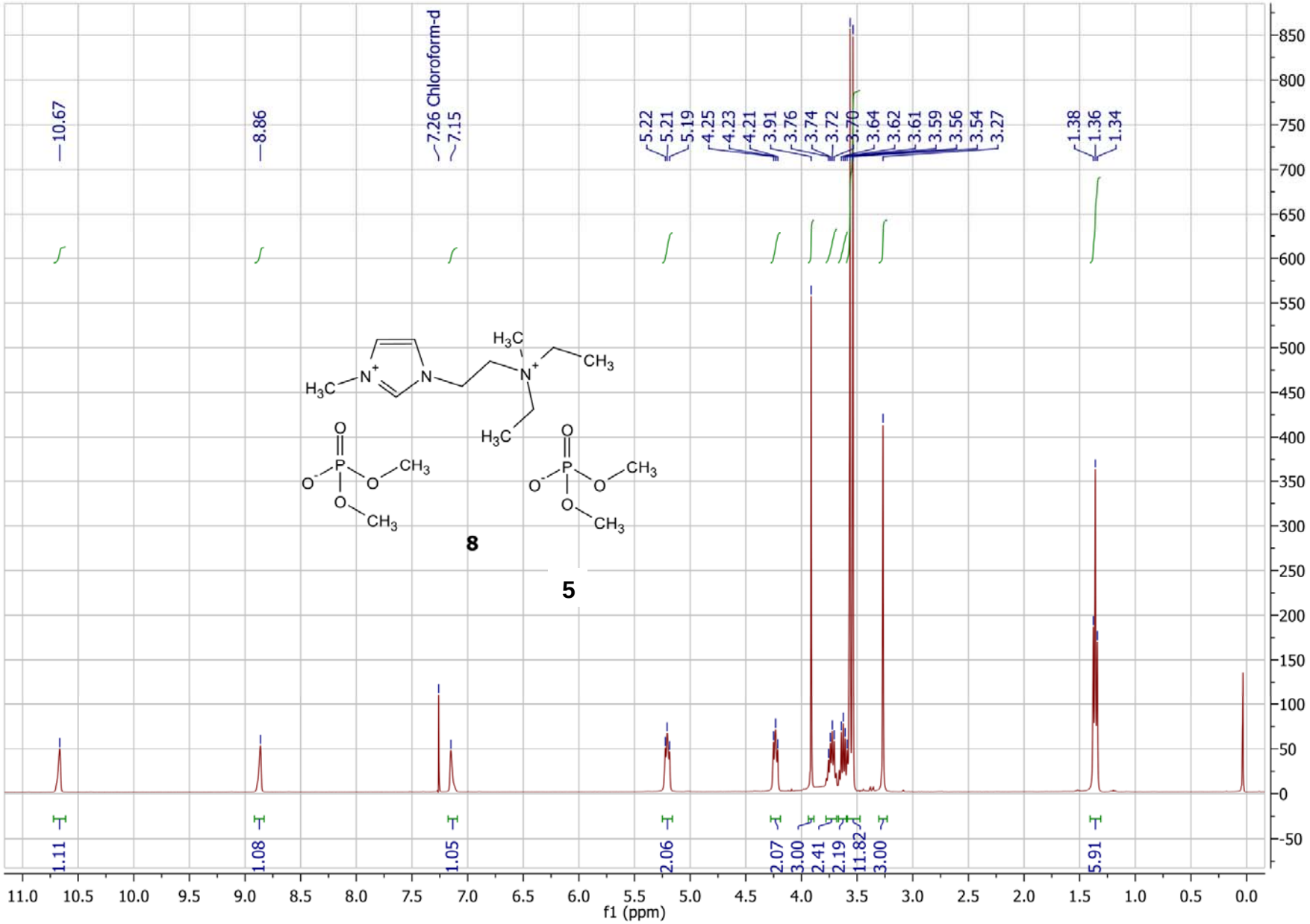

Figure S9. The ^{1}H NMR (400 MHz, $CDCl_3$) spectrum of 1-[2-(diethylmethylammonium)ethyl]-3-methylimidazolium bis(dimethyl phosphate) (**5**).

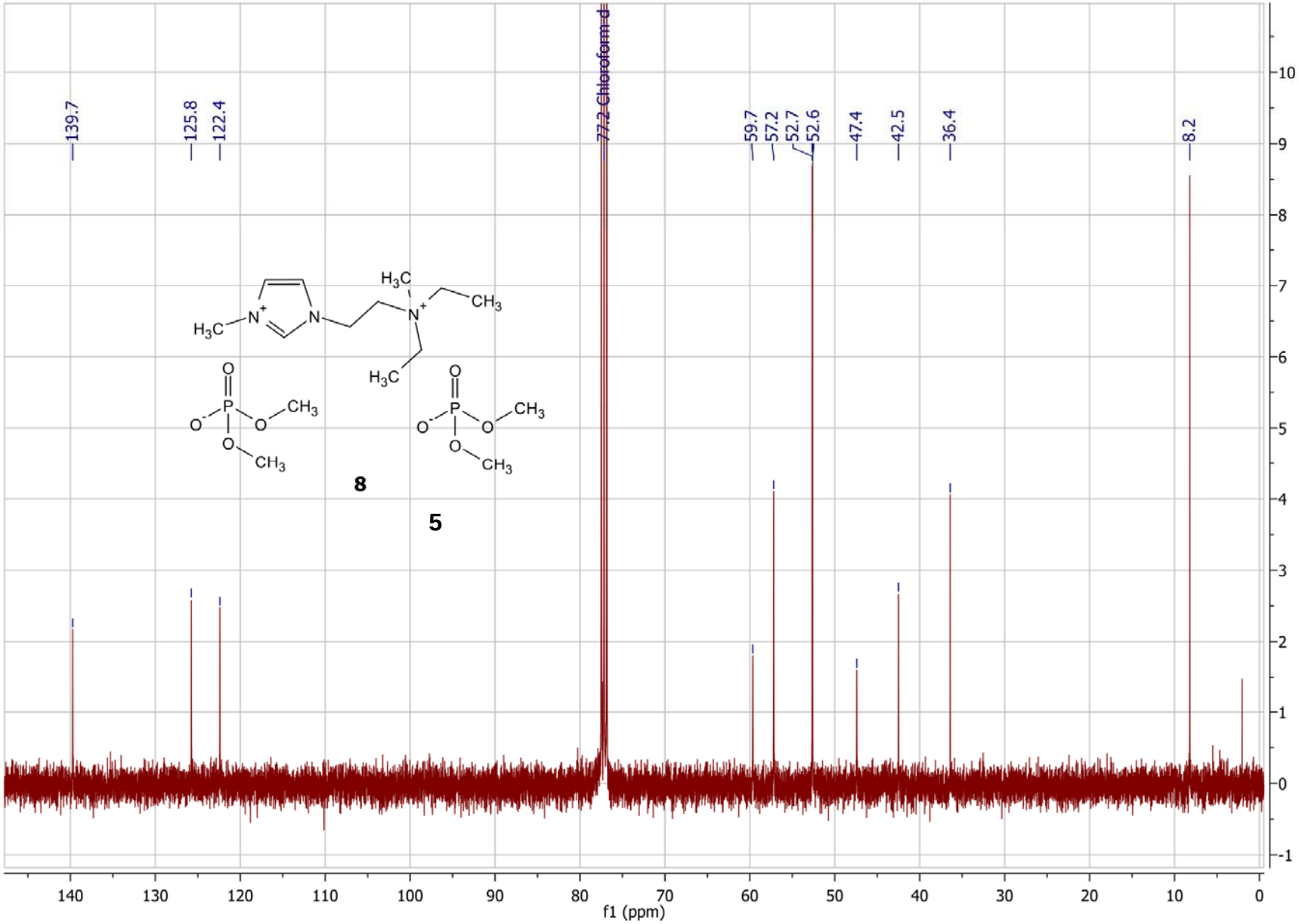

Figure S10. The ^{13}C NMR (100 MHz, $CDCl_3$) spectrum of 1-[2-(diethylmethylammonium)ethyl]-3-methylimidazolium bis(dimethyl phosphate) (**5**).

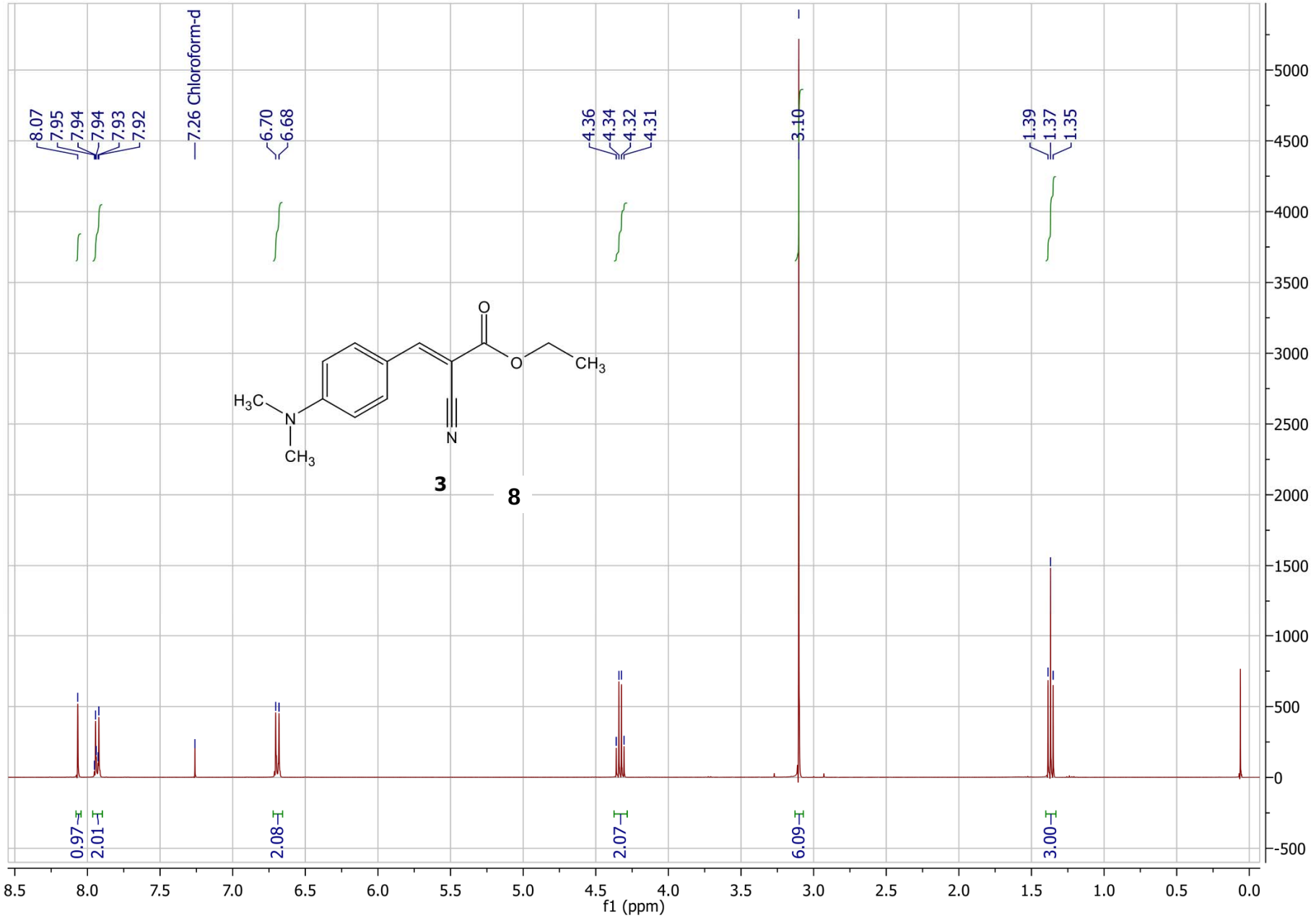

Figure S11. The ^{1}H NMR (400 MHz, $CDCl_3$) spectrum of ethyl (*E*)-2-cyano-3-[4-(dimethylamino)phenyl]prop-2-enoate (**8**).

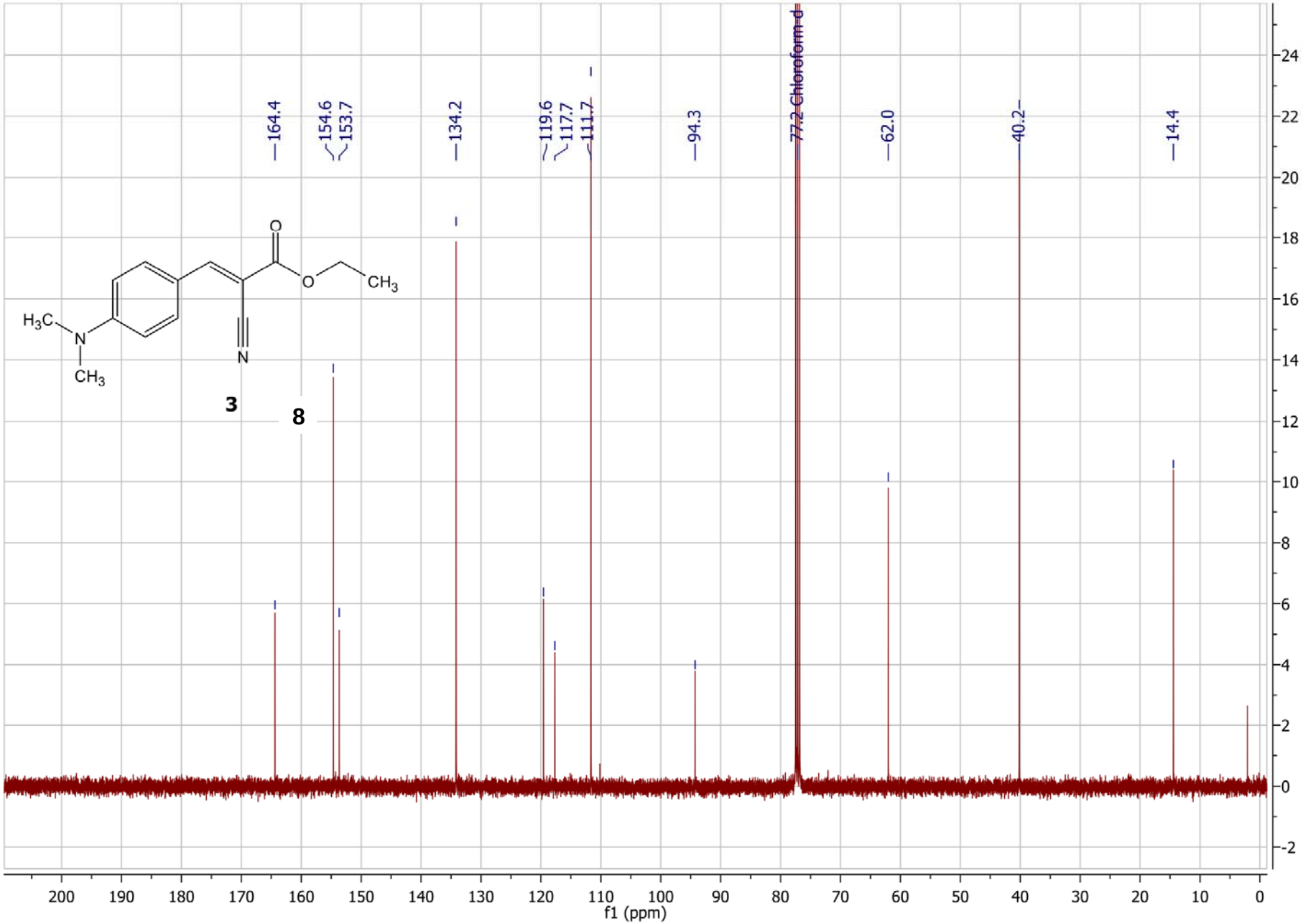

Figure S12. The ^{13}C NMR (100 MHz, $CDCl_3$) spectrum of ethyl (*E*)-2-cyano-3-[4-(dimethylamino)phenyl]prop-2-enoate (**8**).

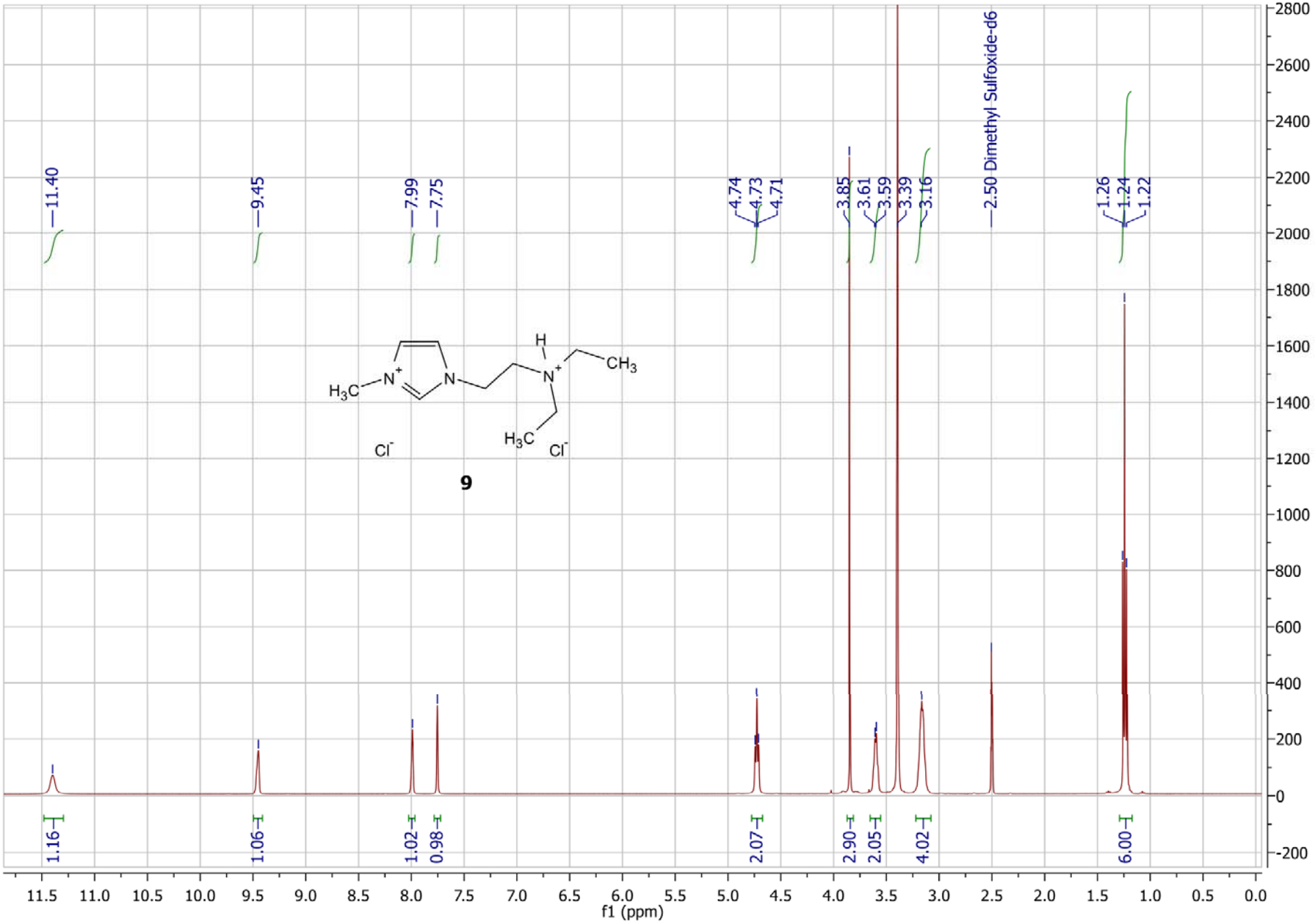

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Figure S13. The ^{1}H NMR (400 MHz, DMSO-d_6) spectrum of 1-[2-(diethylamino)ethyl]-3-methylimidazolium chloride hydrochloride (**9**).

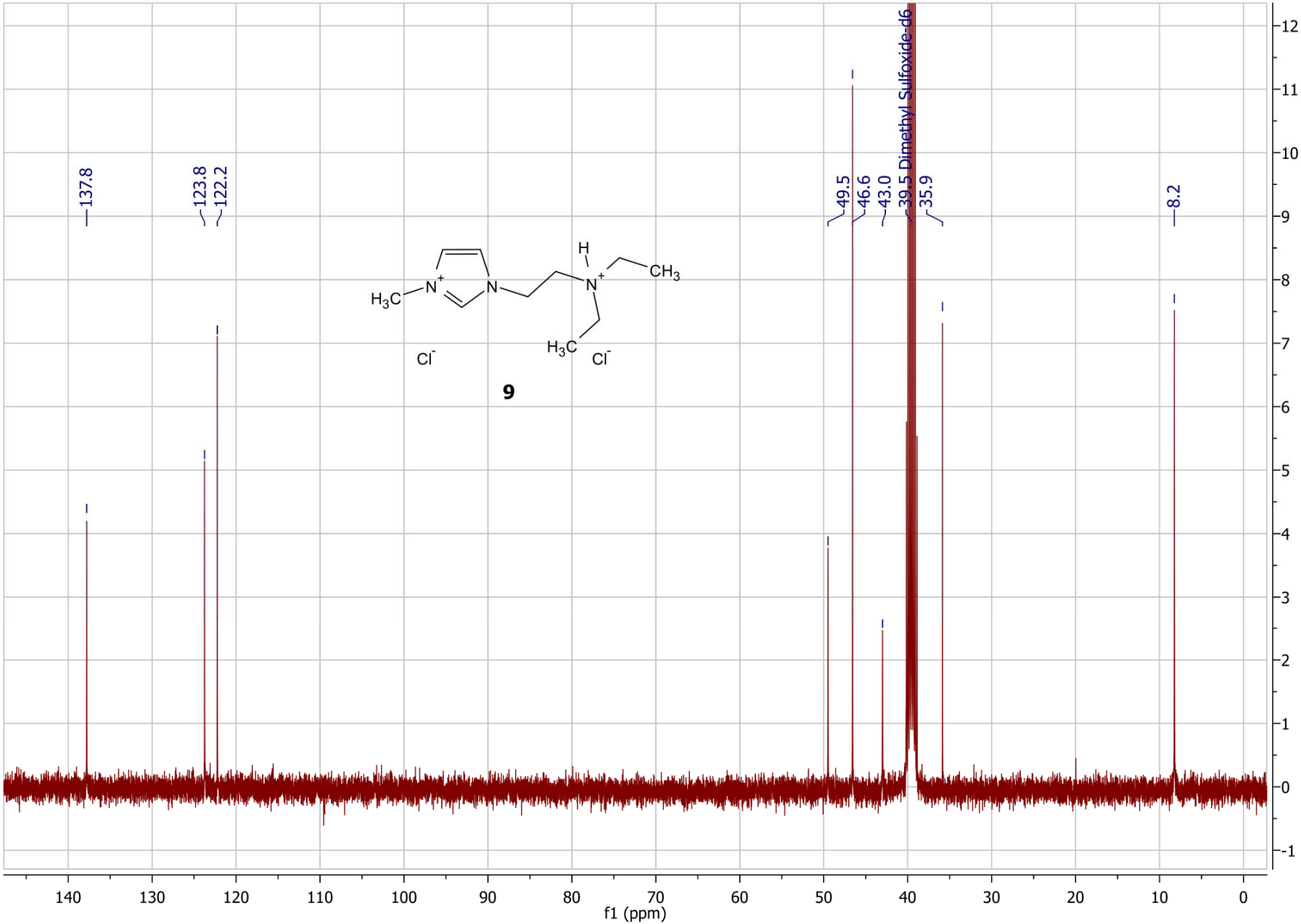

Figure S14. The ^{13}C NMR (100 MHz, DMSO-d_6) spectrum of 1-[2-(diethylamino)ethyl]-3-methylimidazolium chloride hydrochloride (**9**).