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New benzophenone phosphonate derivatives

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The reactions were performed with the use of commercial reagents (Acros, Aldrich, and Fluka); anhydrous solvents were purified according to the standard procedures. Column chromatography was performed on Silica Gel 60 0.040–0.063 mm (Merck, Germany) columns, DEAE Toyopearl cellulose and Dowex-50 (H^+). Preparative liquid chromatography (PLC) was performed on Silica Gel 60 F_{254} with concentrating zone glass plates (Merck, Germany). Thin layer chromatography (TLC) was performed on Silica Gel 60 F_{254} aluminium-backed plates (Merck, Germany).

NMR spectra were registered on a Bruker Avance 400 spectrometer («Bruker», Newark, DE) with the working frequency of 400 MHz for ^1H (Me_4Si as internal standard) and 121 MHz for ^{31}P (with phosphorus-proton interaction decoupling, 85% phosphoric acid as an external standard) in $CDCl_3$ or DMSO-d_6.

High resolution mass spectra (HRMS) were registered on a Bruker Daltonics micrOTOF-Q II instrument using electrospray ionization. The measurements were acquired in a negative ion mode with the following parameters: interface capillary voltage – 3700 V; mass range from *m*/*z* 50 to 3000; external calibration (Electrospray Calibrant Solution, Fluka); nebulizer pressure – 0.3 Bar; flow rate – 3 μL/min; dry gas nitrogen (4.0 L/min); interface temperature was set at 180 or 190°C. A syringe injection was used.

12.21

7.58
7.55
7.53
7.51
7.49
7.48
7.25
7.22
7.22
7.17
7.16
7.15
7.14
7.12

2.26

1H NMR spectrum of 1
in CDCl3

8.12

31P NMR spectrum of 1
in CDCl3

30 20 10 0 -10
31P (ppm)

1.66

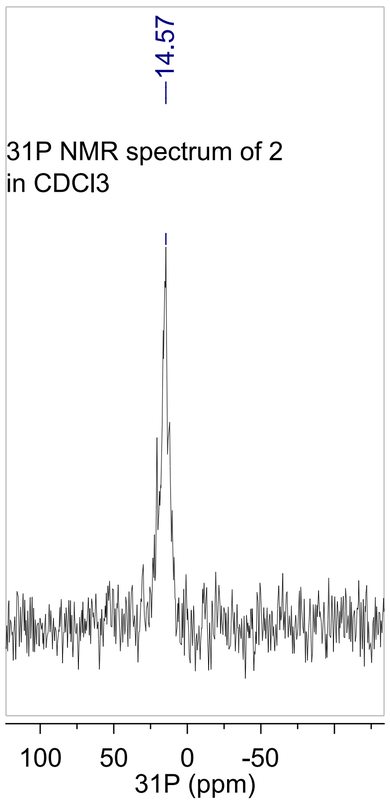
1.00
2.02
5.17
4.08

6.08

12.5 12.0 11.5 11.0 10.5 10.0 9.5 9.0 8.5 8.0 7.5 7.0 6.5 6.0 5.5 5.0 4.5 4.0 3.5 3.0 2.5 2.0
1H (ppm)

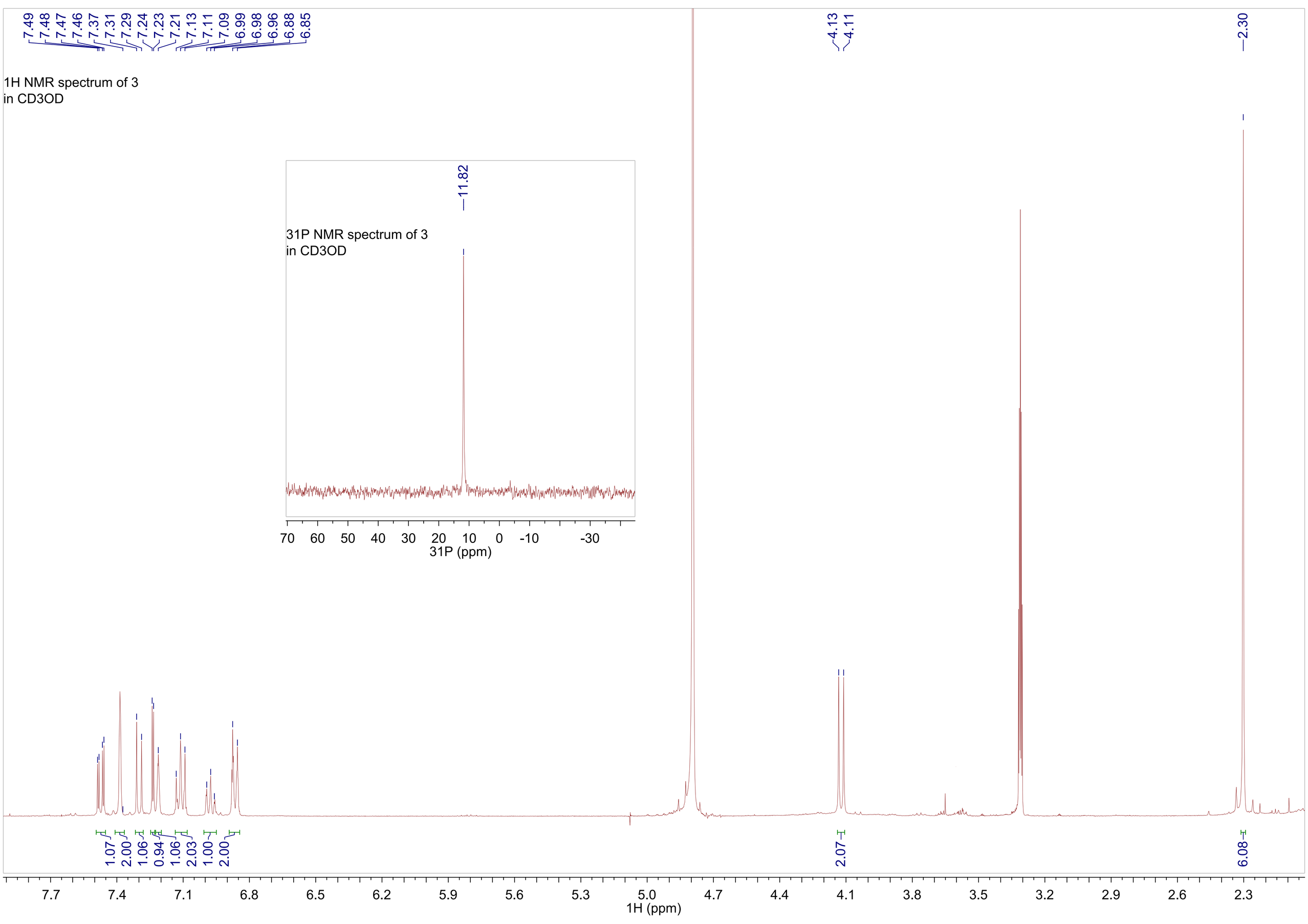
1H NMR spectrum of 2
in CDCl3

31P NMR spectrum of 2
in CDCl3



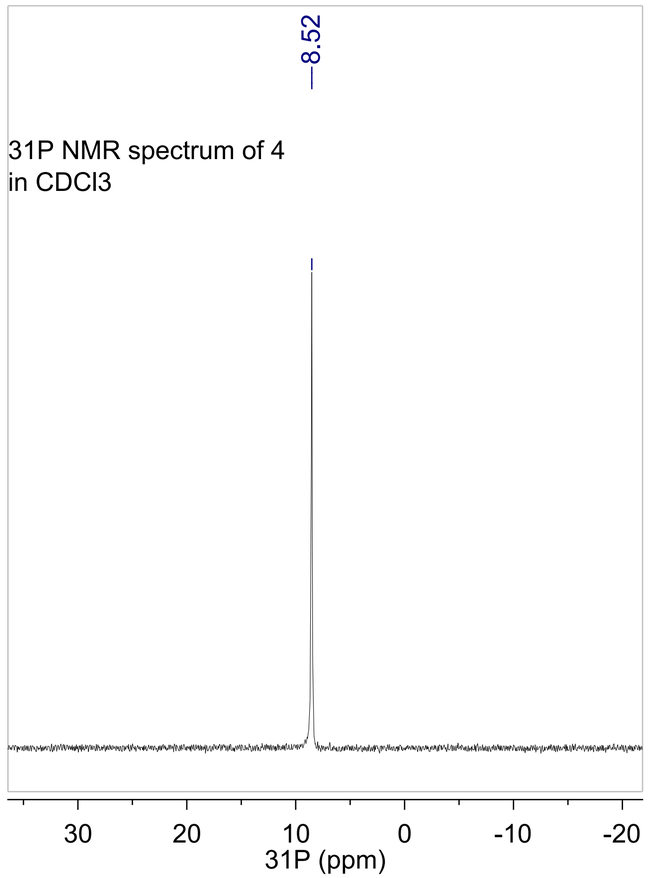
1H NMR spectrum of 3
in CD3OD

31P NMR spectrum of 3
in CD3OD



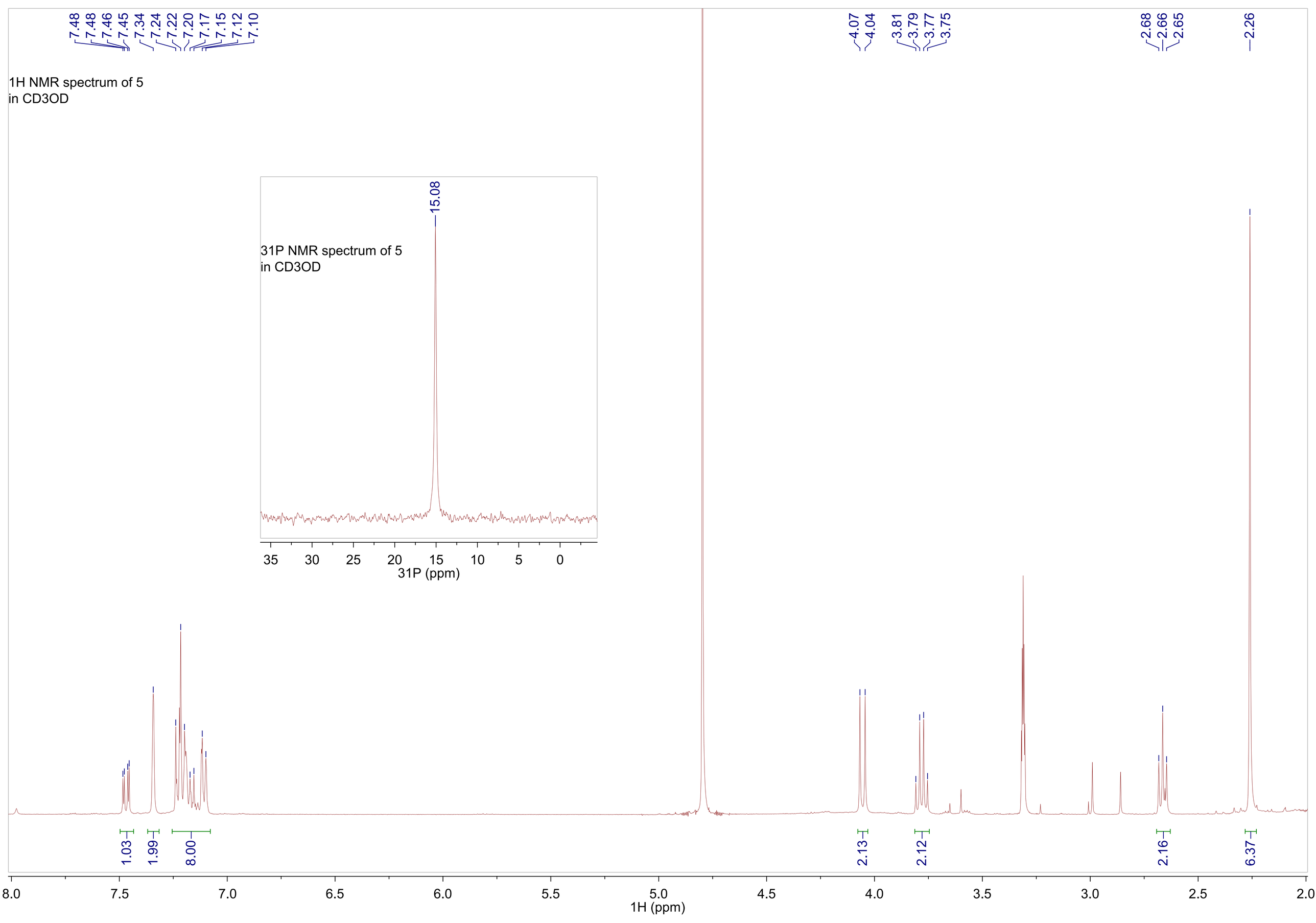
1H NMR spectrum of 4
in CDCl3

31P NMR spectrum of 4
in CDCl3



1H NMR spectrum of 5
in CD3OD

31P NMR spectrum of 5
in CD3OD



1H NMR spectrum of 6
in DMSO-d6