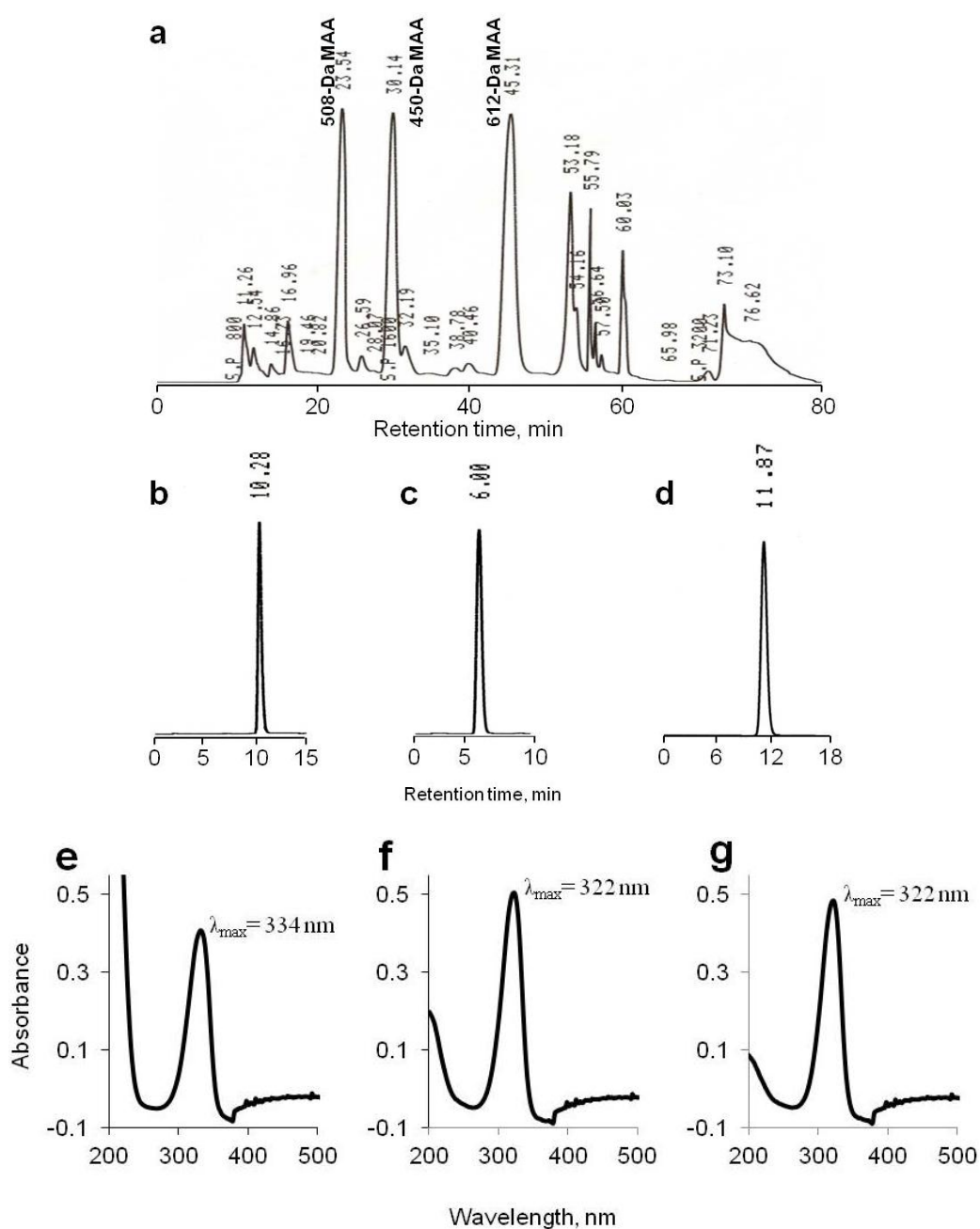


## Supporting Information

**Figure S1.** HPLC chromatograms and absorption spectra of the purified MAAs. (a) The crude water-soluble extract of *N. commune* (genotype D) was separated by an HPLC system equipped with a preparative column (IRICA C18, 20 × 250 mm) as shown in Figure 1. The mobile phase changed in a stepwise fashion from distilled water for the initial 40 min, to 0.1% acetic acid 10% methanol for the next 20 min and to 100% methanol for the final 20 min. The flow rate was constant at 4 mL min<sup>-1</sup>, and the A<sub>330</sub> was monitored. The purified 508-Da MAA (b), 450-Da MAA (c) and 612-Da MAA (d) were analyzed by HPLC with an analytical reverse-phase column (Inertsil ODS-3, 4.6 mm × 250 mm; GL Sciences Inc., Tokyo, Japan) using 0.2% acetic acid at a flow rate of 1 mL min<sup>-1</sup> as the mobile phase and were detected by the A<sub>330</sub>. The purified 508-Da MAA (e), 450-Da MAA (f) and 612-Da MAA (g) showed absorption maximum at 334 nm, 322 nm and 322 nm, respectively.



# 1. NMR Spectra for the Determination of Chemical Structures of the 508-Da MAA (Figures S2–S7) and the 612-Da MAA (Figures S8–S15)

## 1.1. NMR Data for the 508-Da MAA

Figure S2.  $^1\text{H}$  NMR spectra of the 508-Da MAA in  $\text{D}_2\text{O}$ .

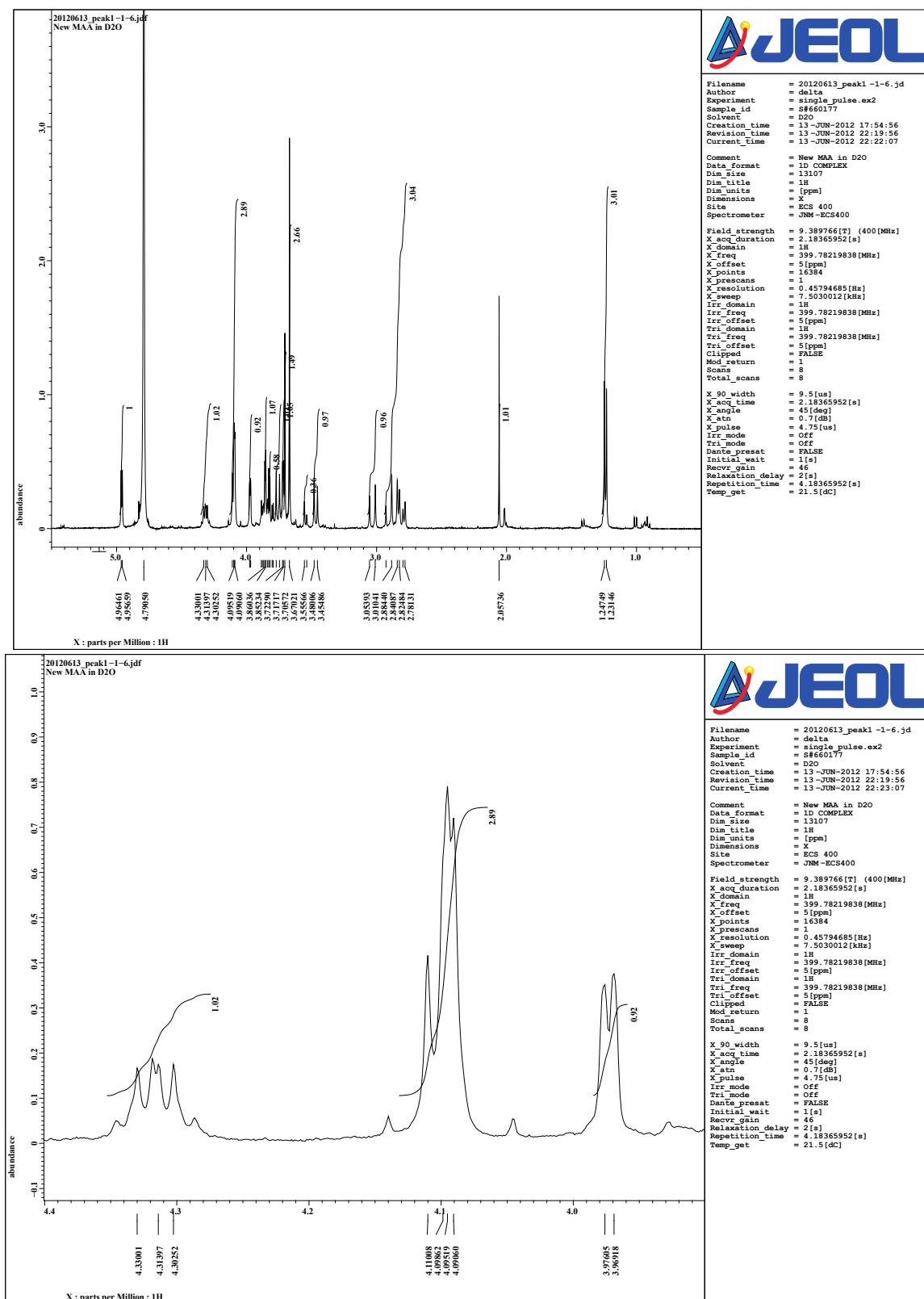
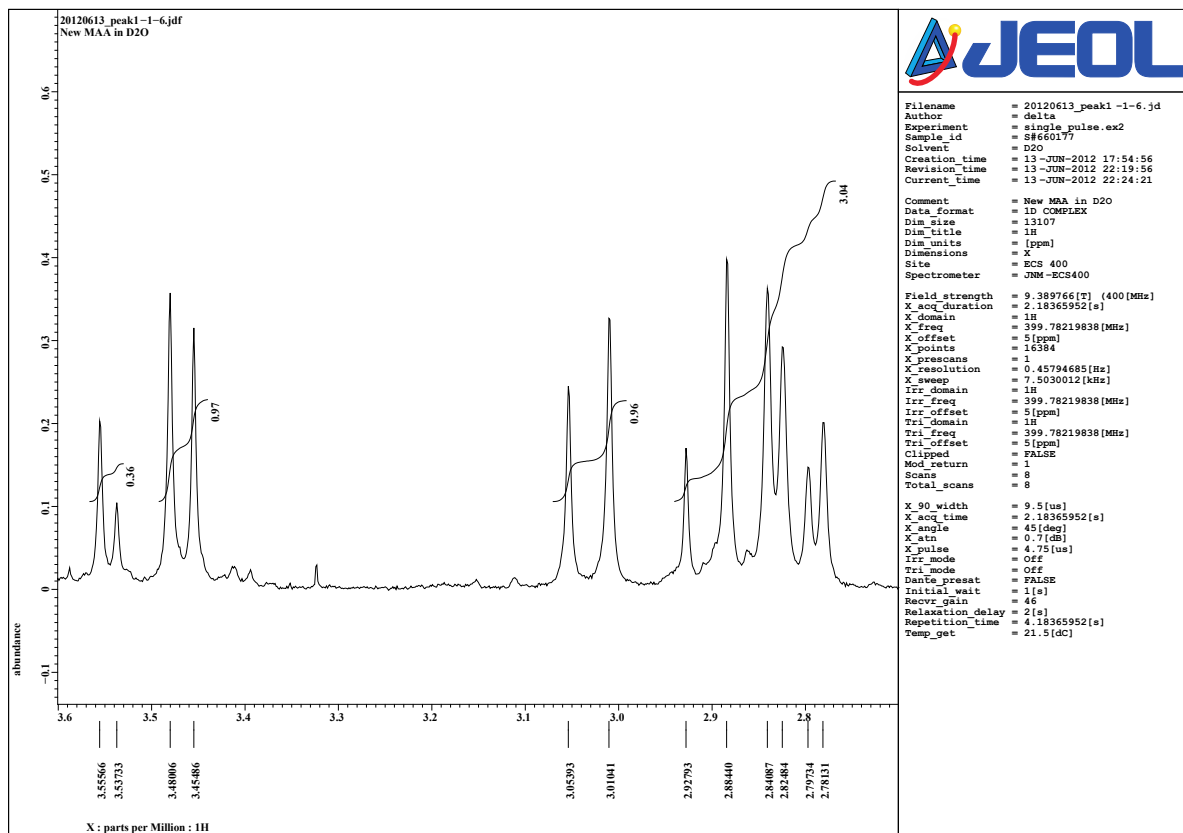
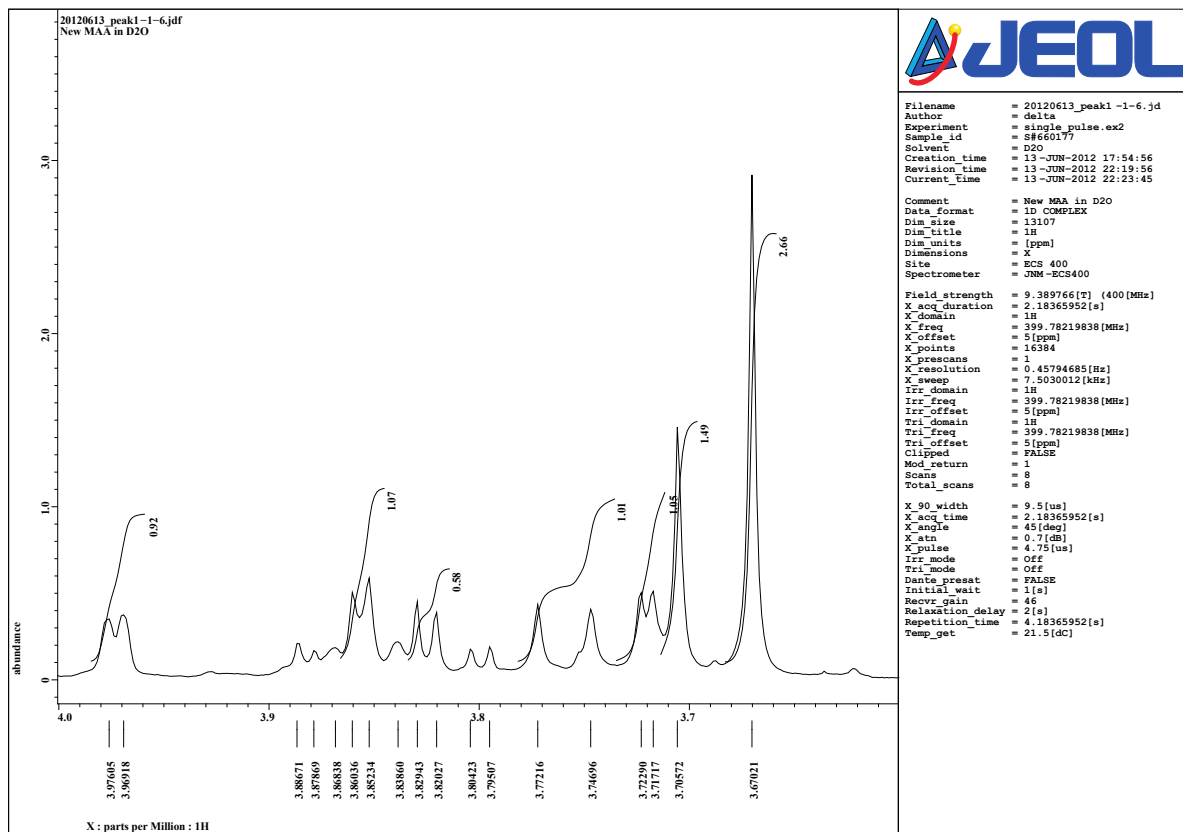


Figure S2. Cont.



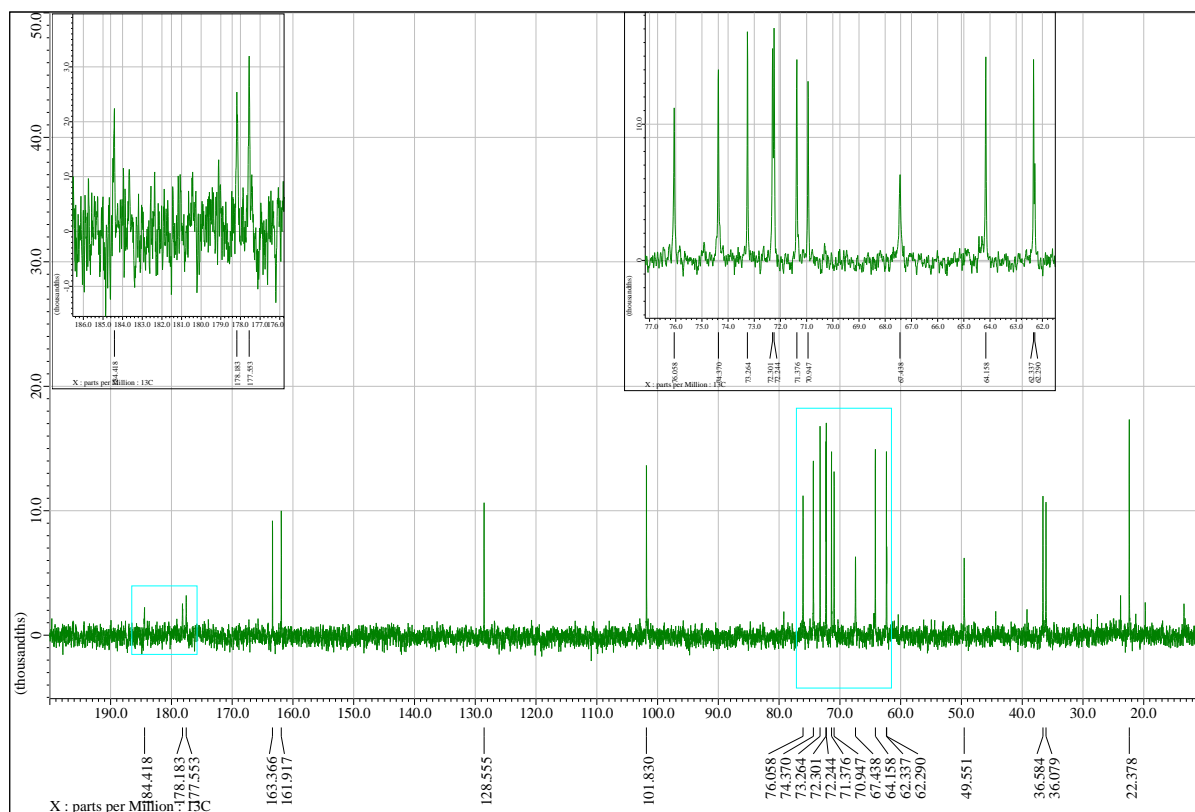
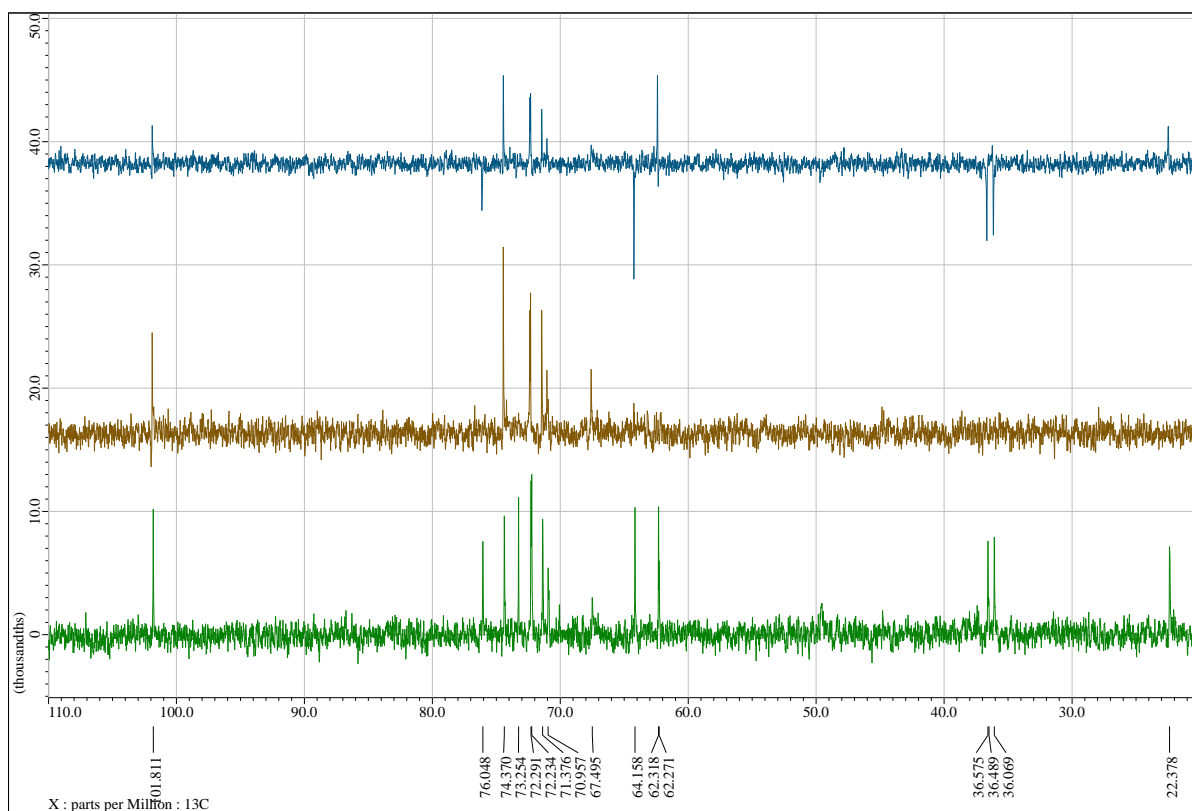
**Figure S3.**  $^{13}\text{C}$  NMR spectrum of the 508-Da MAA in  $\text{D}_2\text{O}$ .**Figure S4.** DEPT spectra of the 508-Da MAA in  $\text{D}_2\text{O}$  (DEPT135: upper, DEPT90: middle,  $^{13}\text{C}$  lower).

Figure S4. Cont.

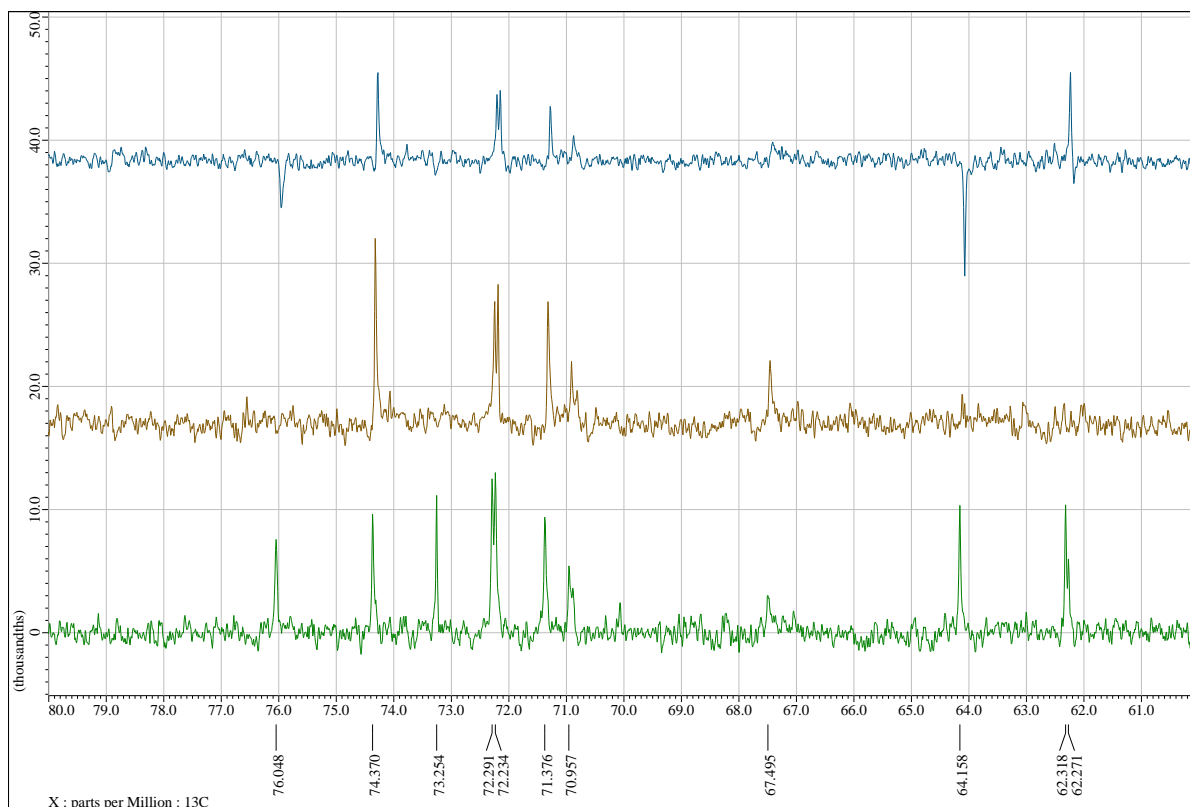
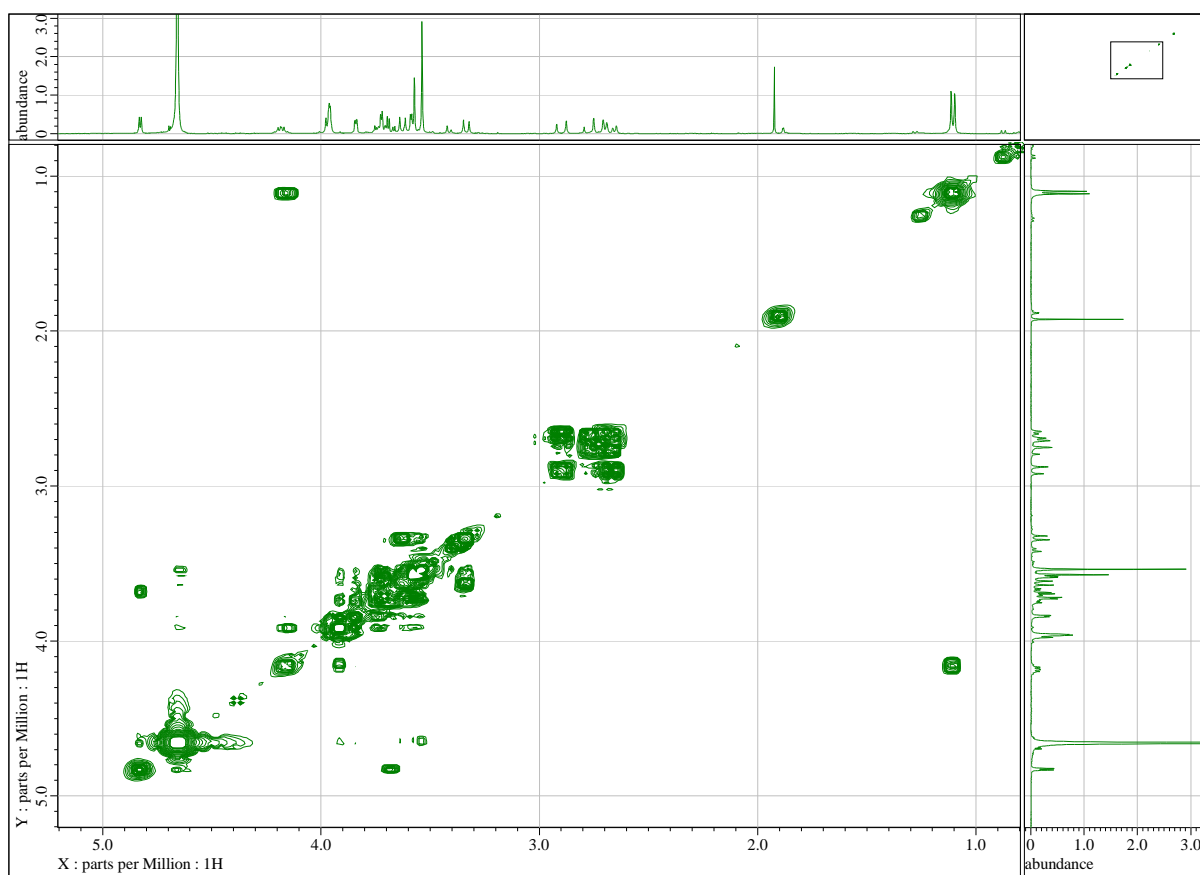
Figure S5. COSY spectra of the 508-Da MAA in  $\text{D}_2\text{O}$ .

Figure S5. Cont.

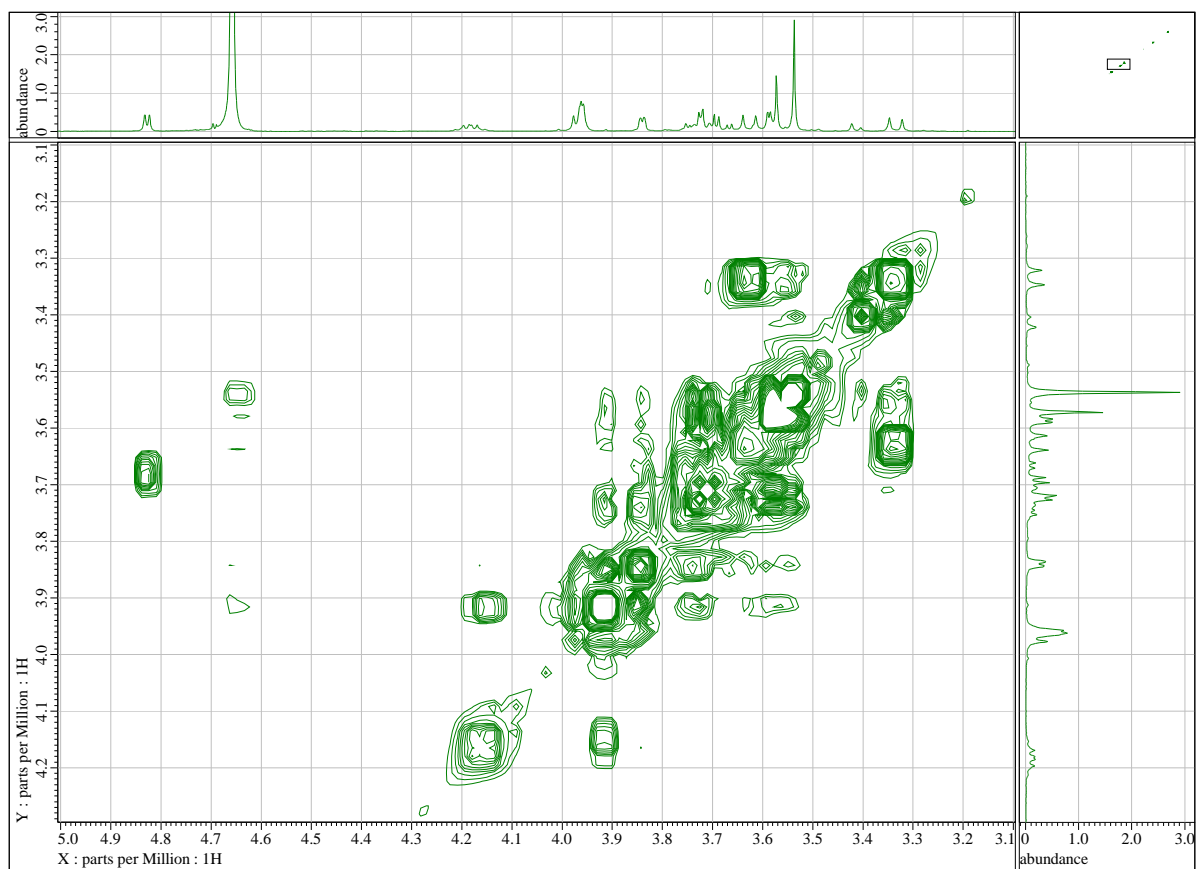


Figure S6. HMQC spectra of the 508-Da MAA in D<sub>2</sub>O.

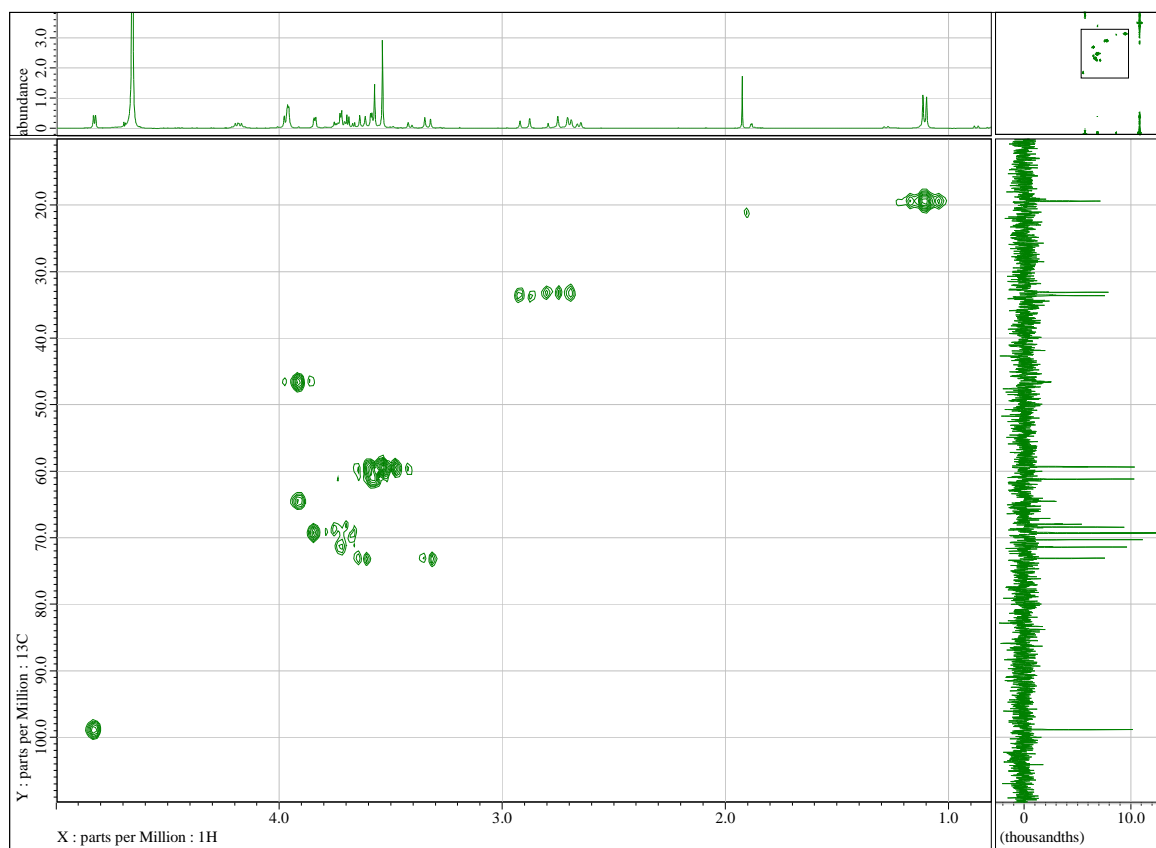


Figure S6. Cont.

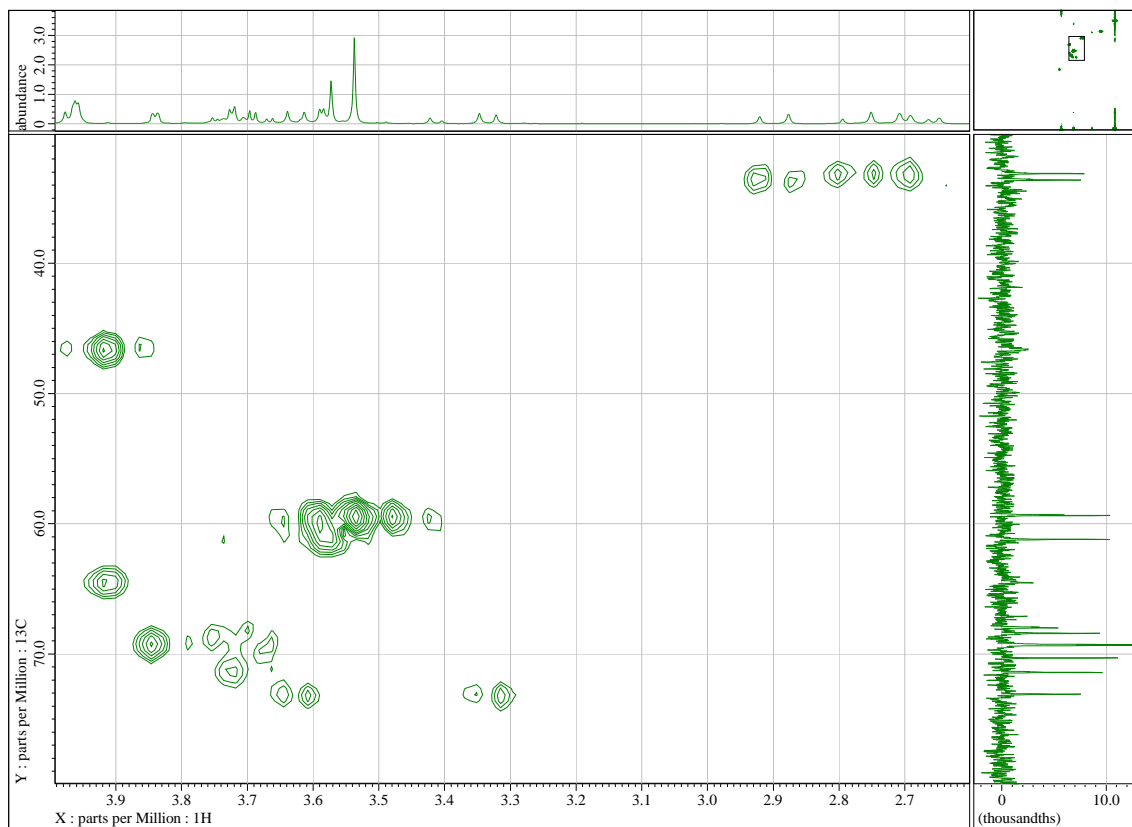


Figure S7. HMBC spectra of the 508-Da MAA in D<sub>2</sub>O.

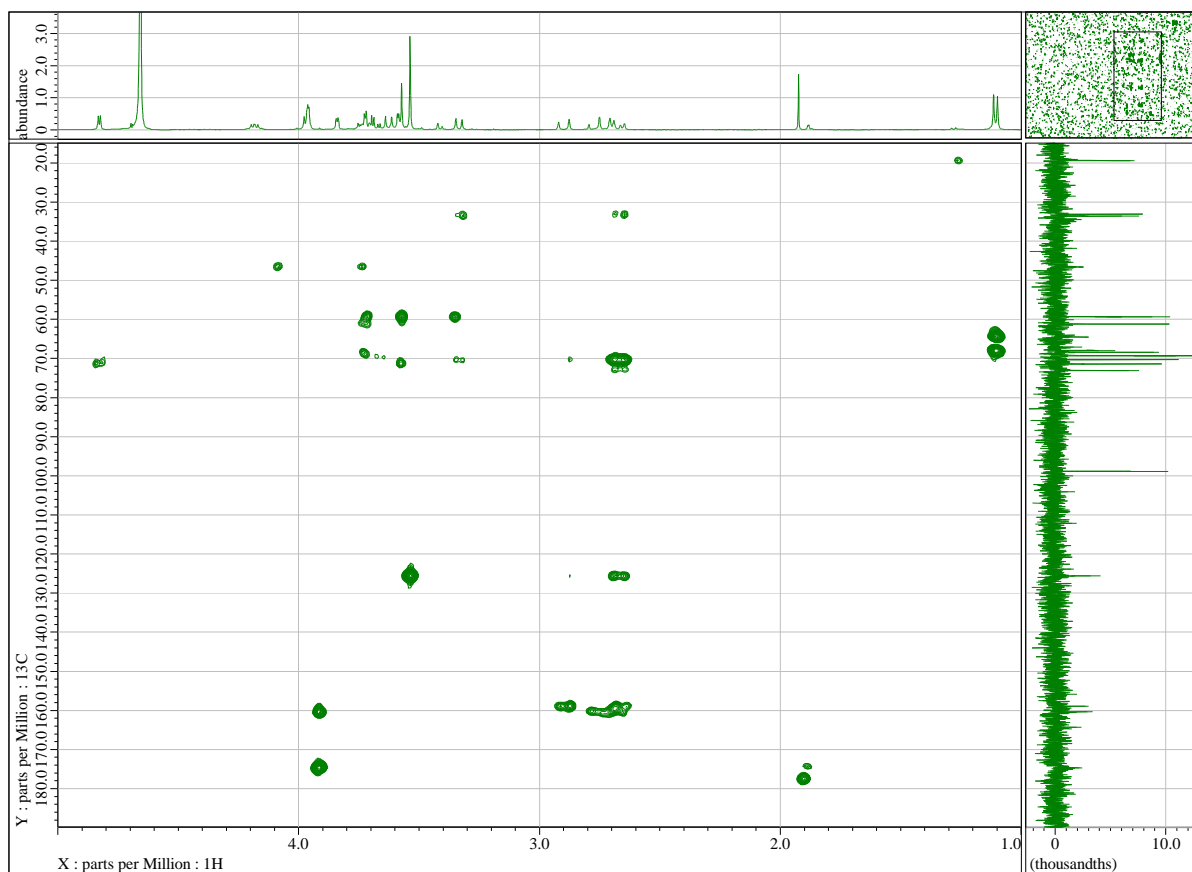
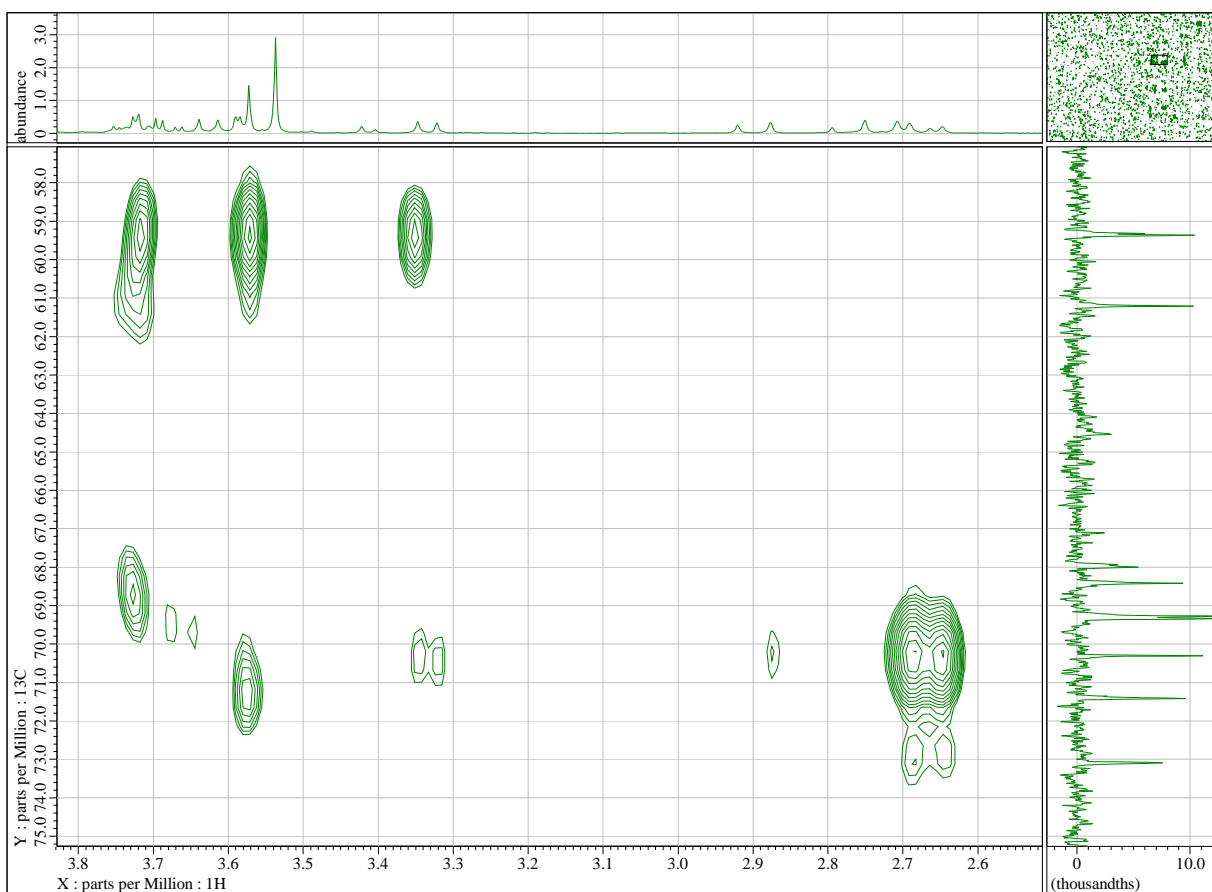
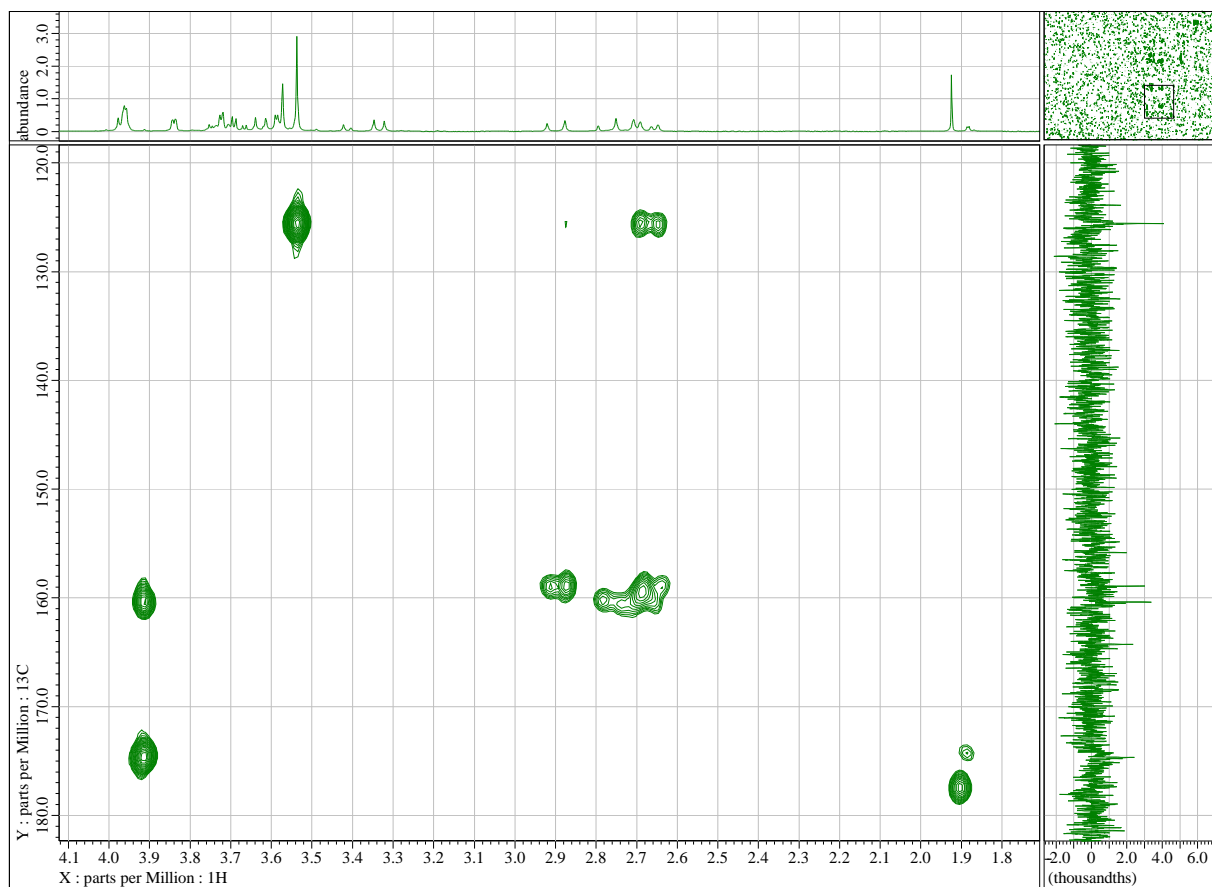


Figure S7. Cont.





2.2. NMR Data for the 612-Da MAA

Figure S8. <sup>1</sup>H NMR spectra of the 612-Da MAA in D<sub>2</sub>O.

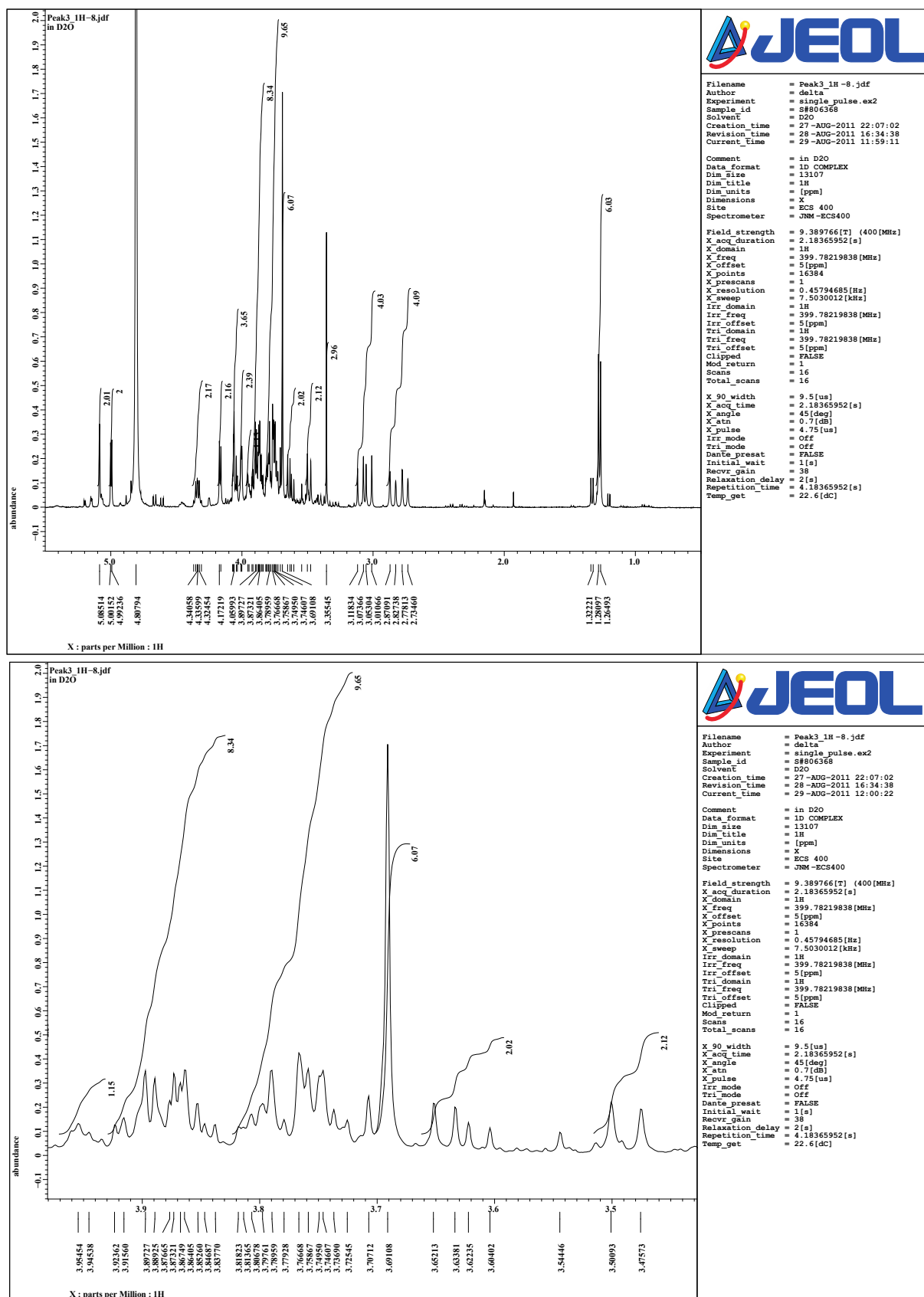


Figure S8. Cont.

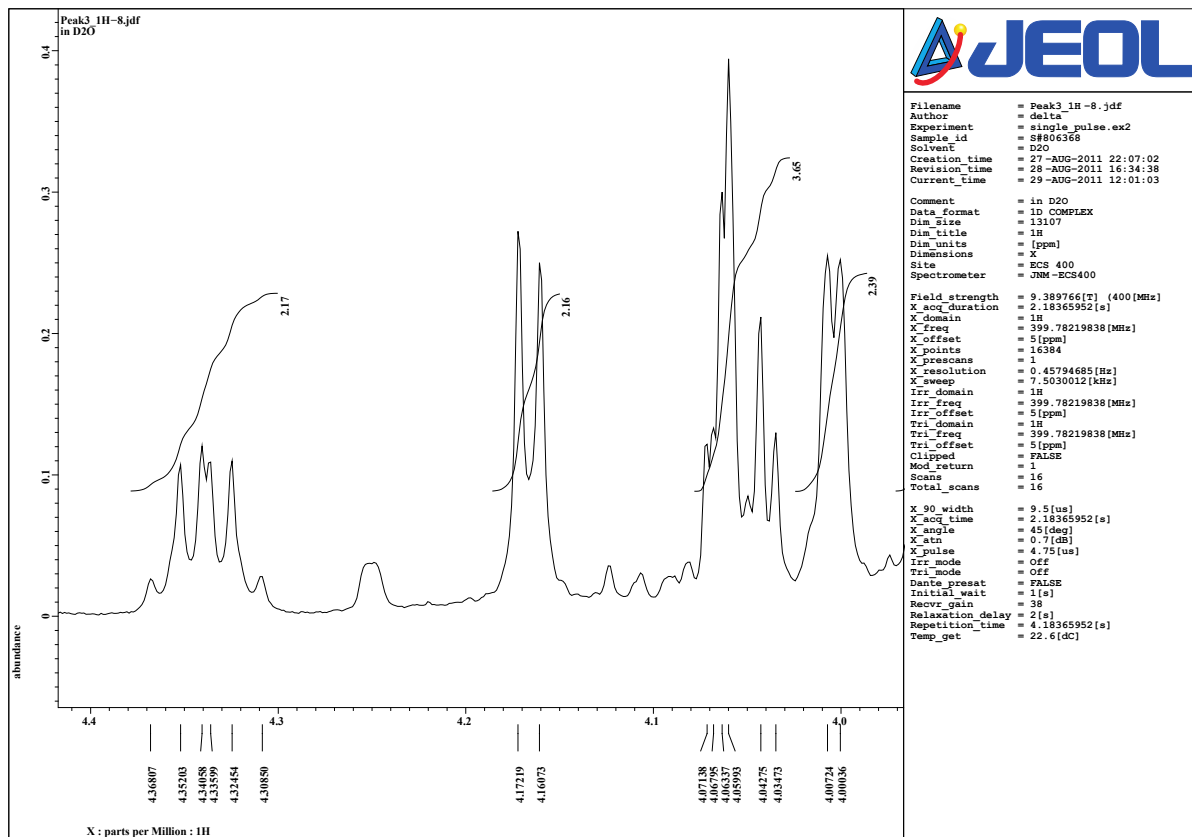


Figure S9. <sup>13</sup>C NMR spectra of the 612-Da MAA in D<sub>2</sub>O.

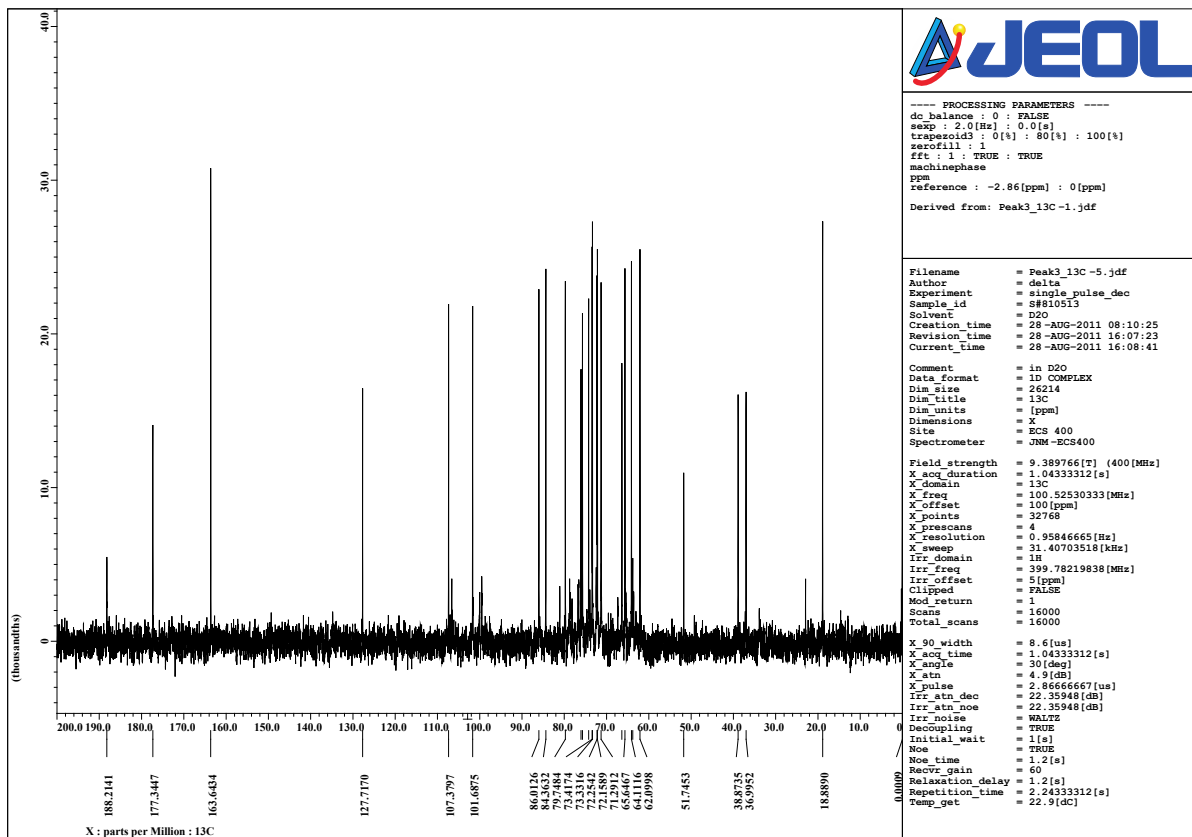
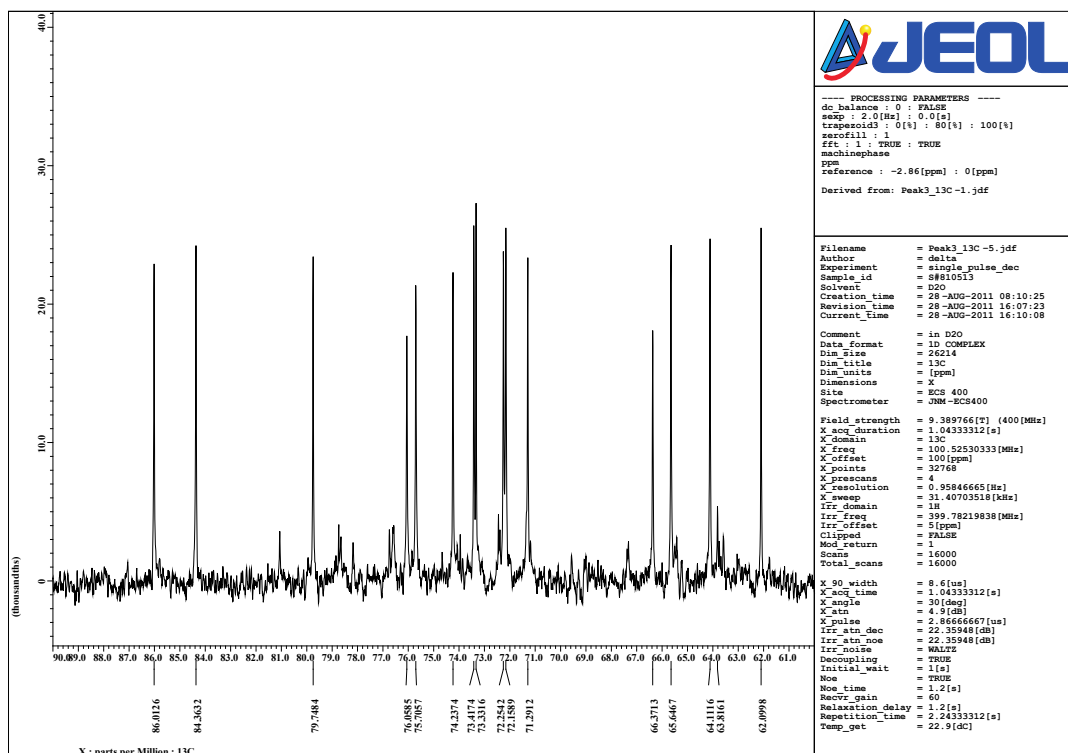


Figure S9. Cont.



**Figure S10.** High resolution  $^{13}\text{C}$  NMR spectrum of the 612-Da MAA in  $\text{D}_2\text{O}$  at around 160 ppm. Focusing on the narrow X-range at around 160 ppm,  $^{13}\text{C}$  NMR spectrum was recorded with a high resolution to separate the two signals from C1 and C3. Because these chemical shift values were not adjusted by referring internal standard at 0 ppm, the chemical shift values recorded here were different from those in the  $^{13}\text{C}$  NMR spectrum shown in Figure S9.

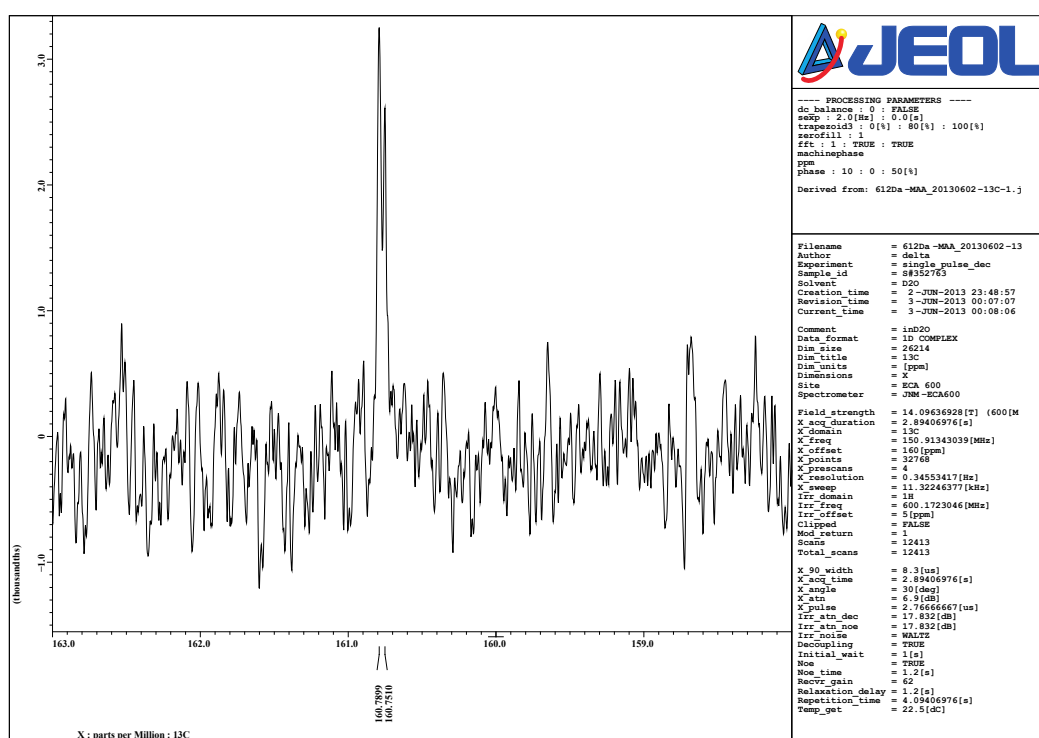


Figure S11. DEPT90 (upper) and <sup>13</sup>C (lower) NMR spectra of the 612-Da MAA in D<sub>2</sub>O.

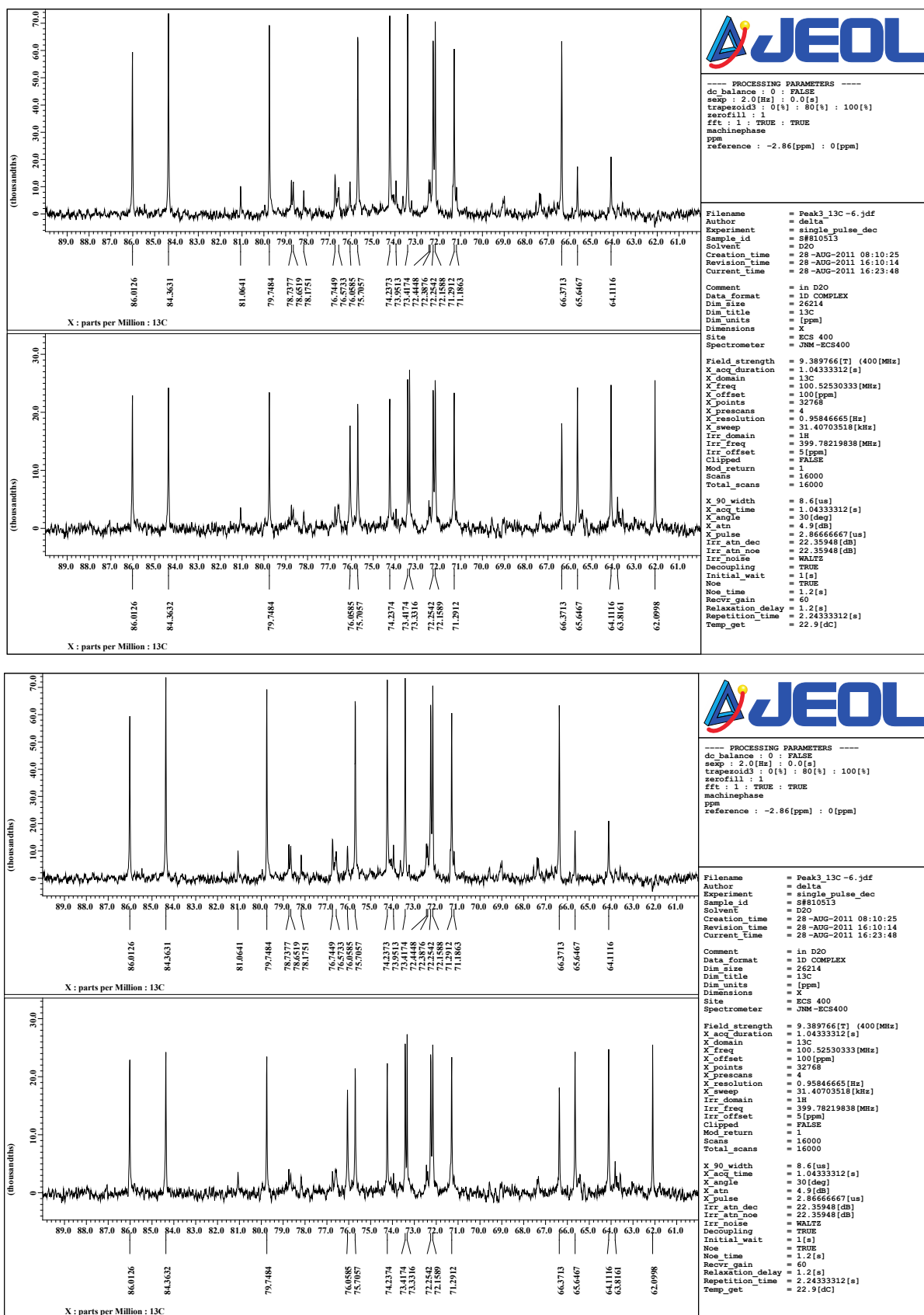


Figure S12. DEPT135 (upper) and <sup>13</sup>C (lower) NMR spectra of the 612-Da MAA in D<sub>2</sub>O.

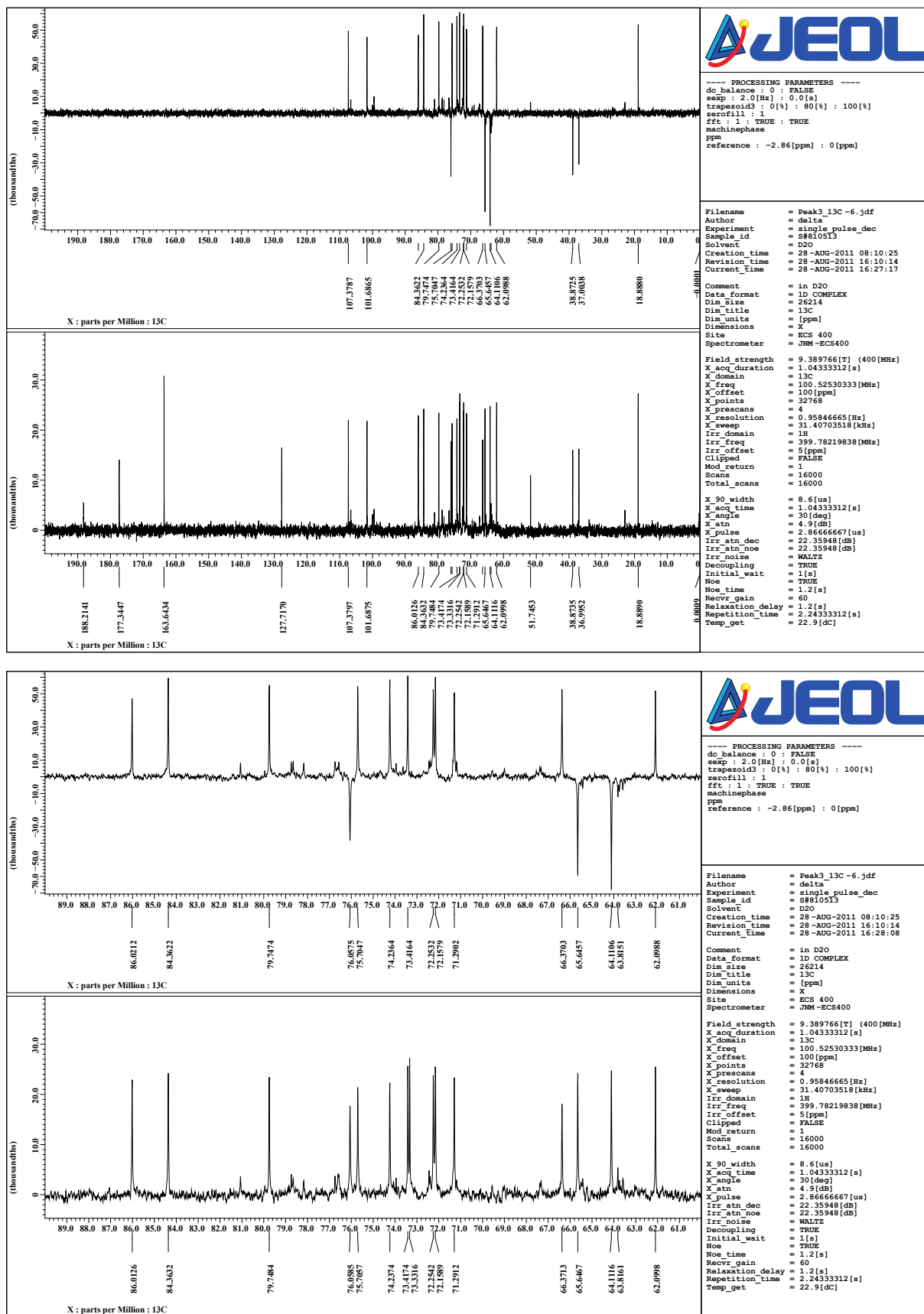


Figure S13. COSY spectra of the 612-Da MAA in D<sub>2</sub>O.

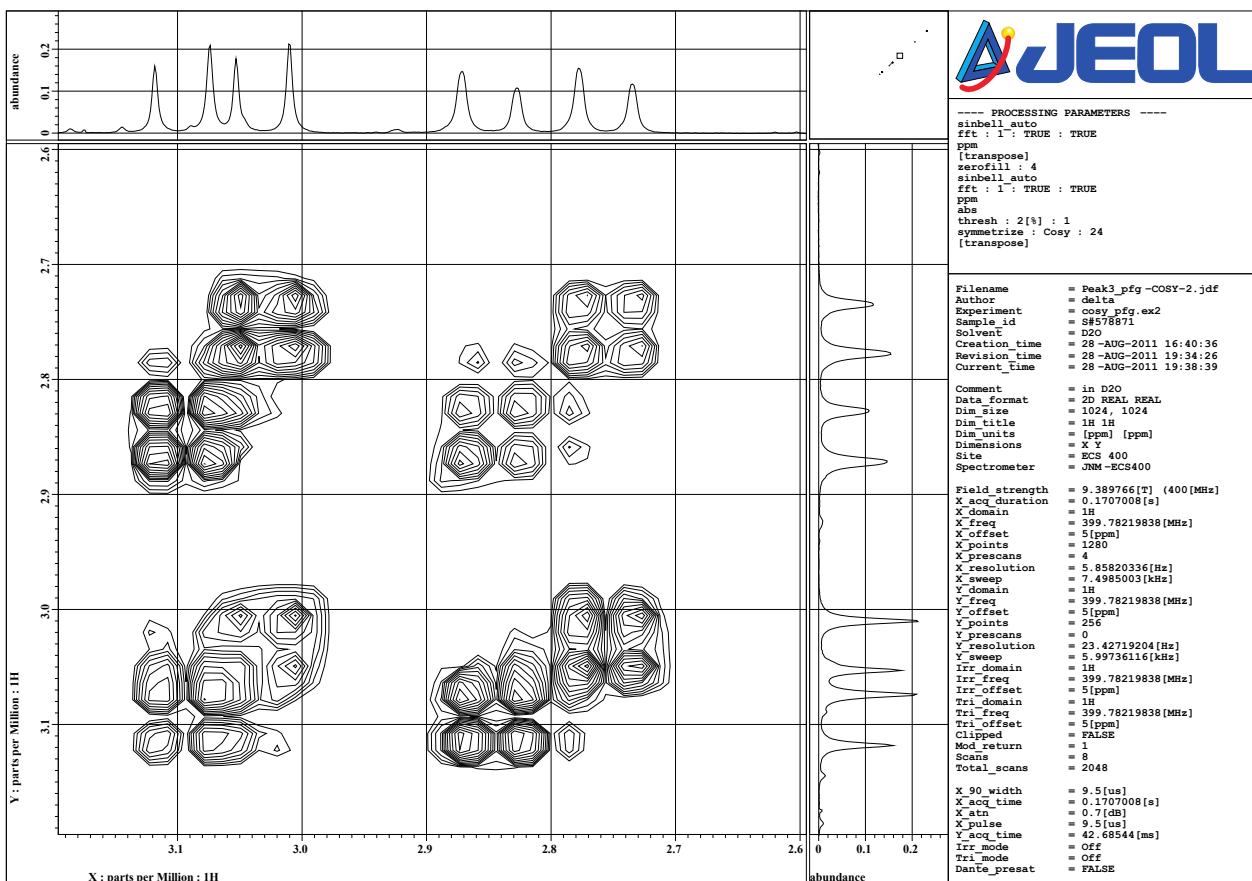
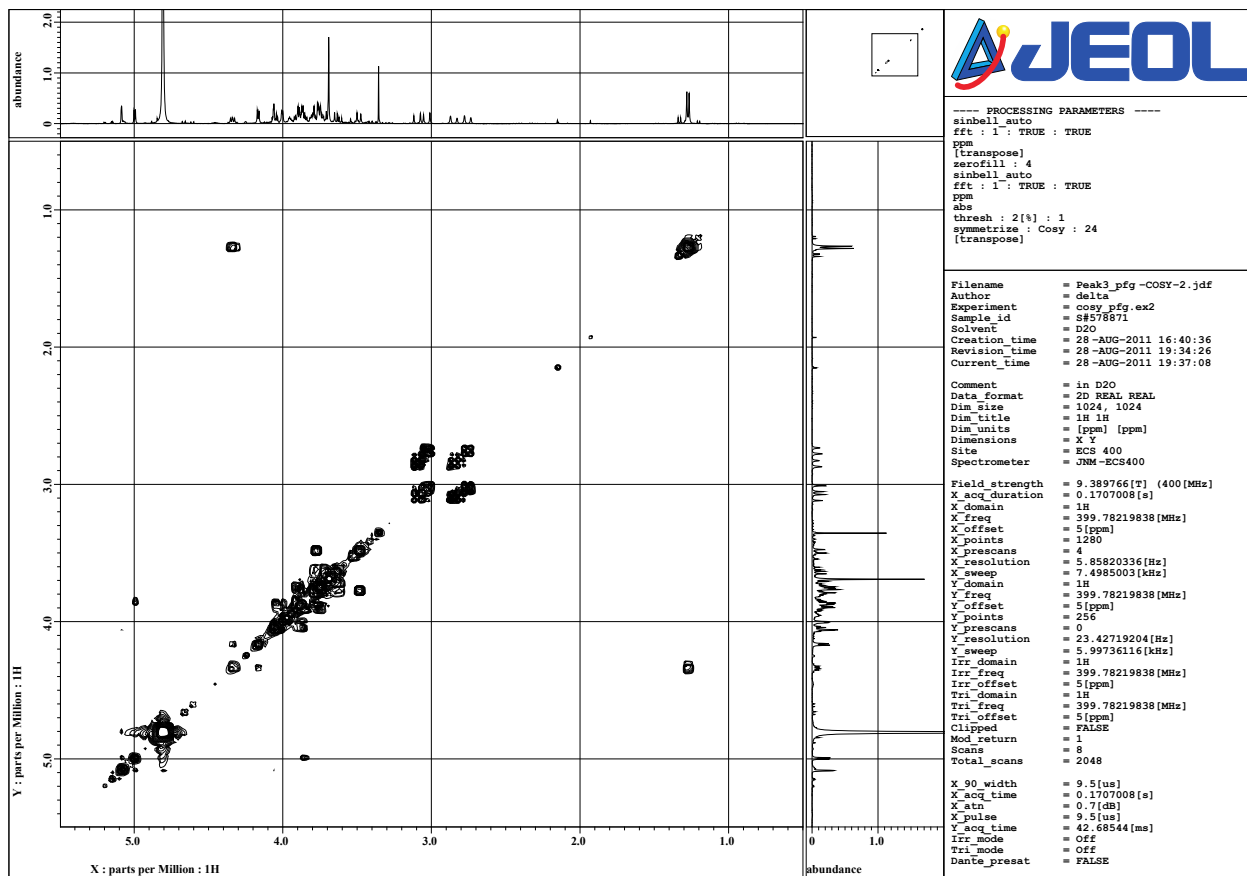


Figure S13. Cont.

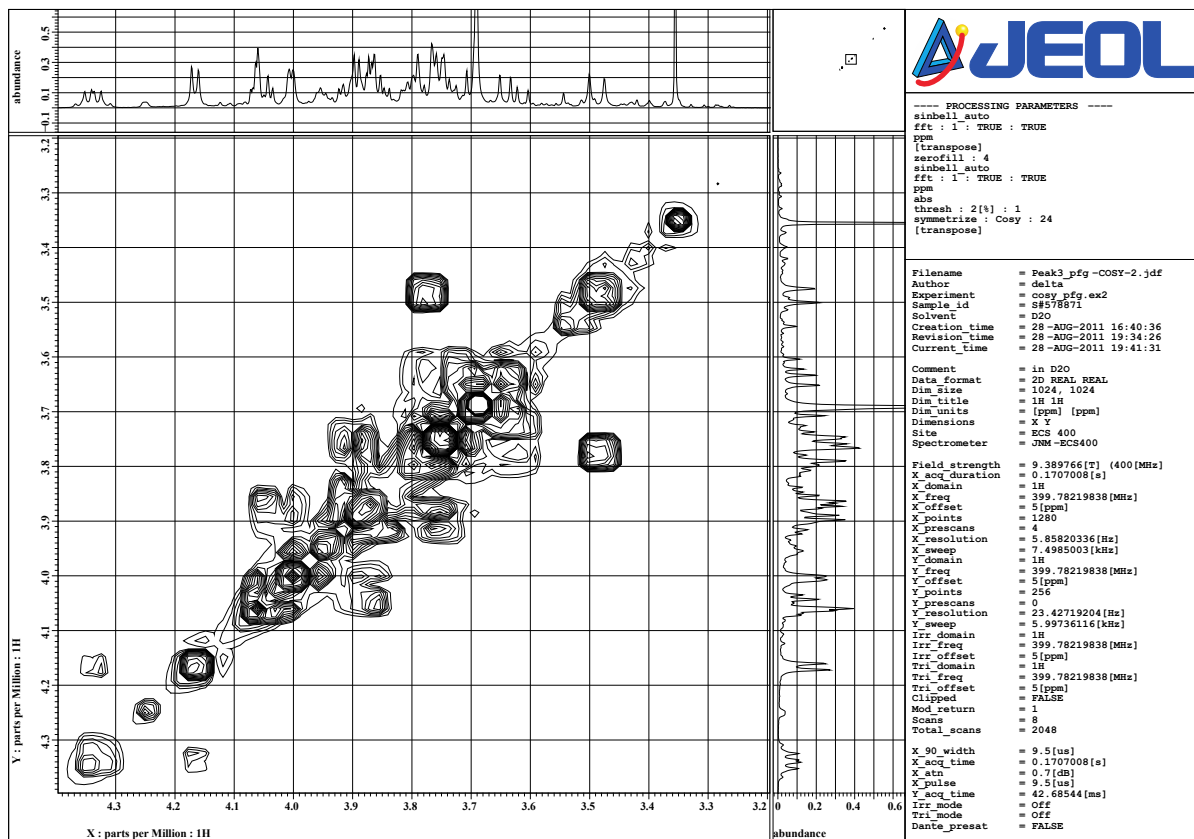


Figure S14. HMQC spectra of the 612-Da MAA in D<sub>2</sub>O.

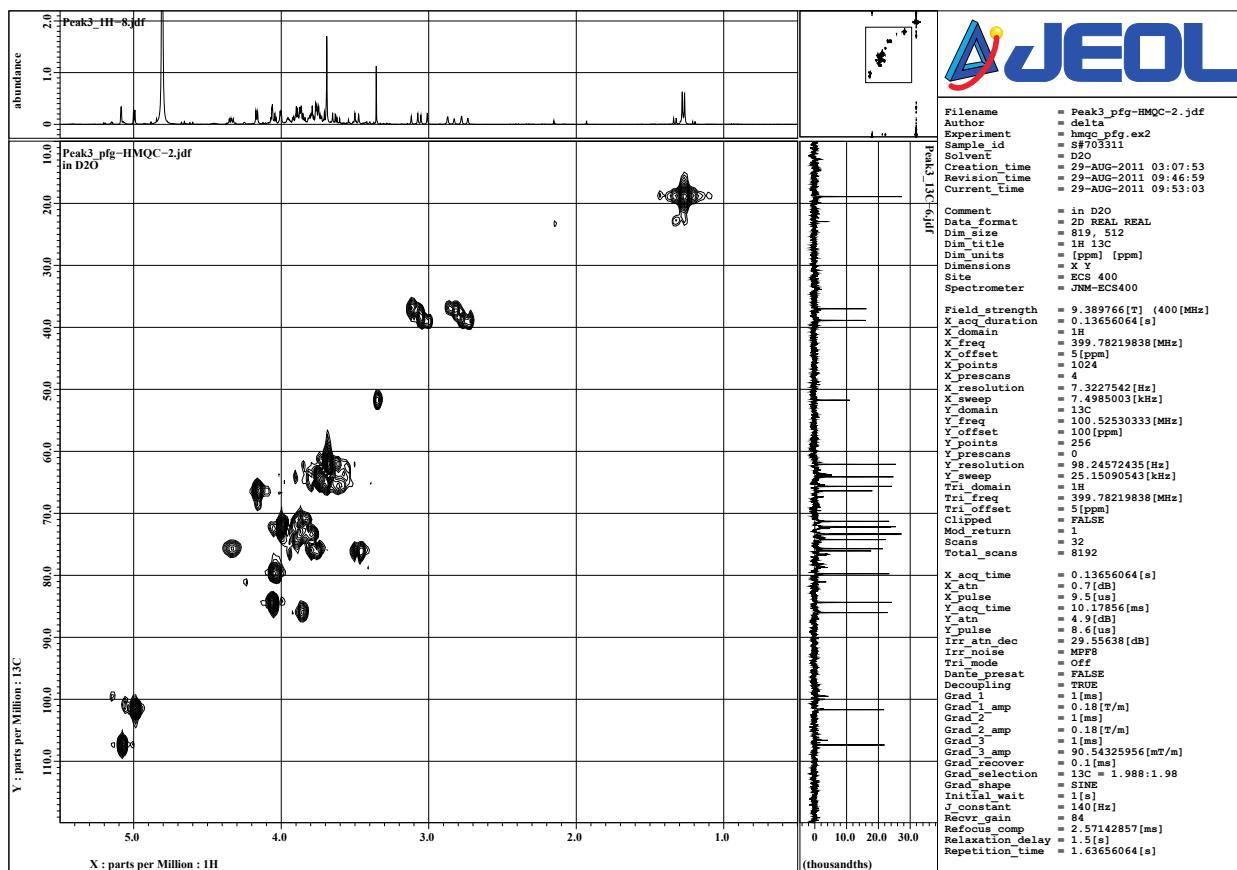




Figure S14. Cont.

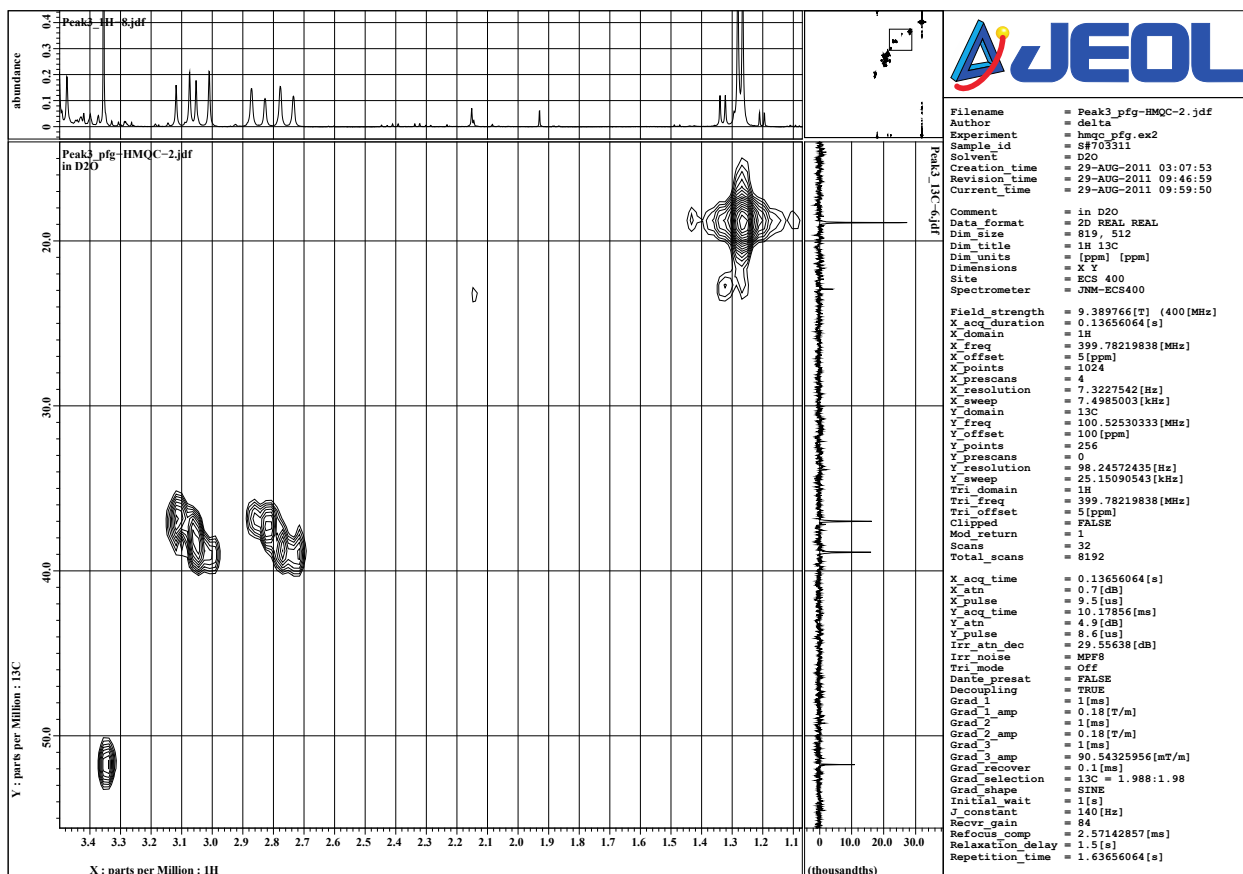
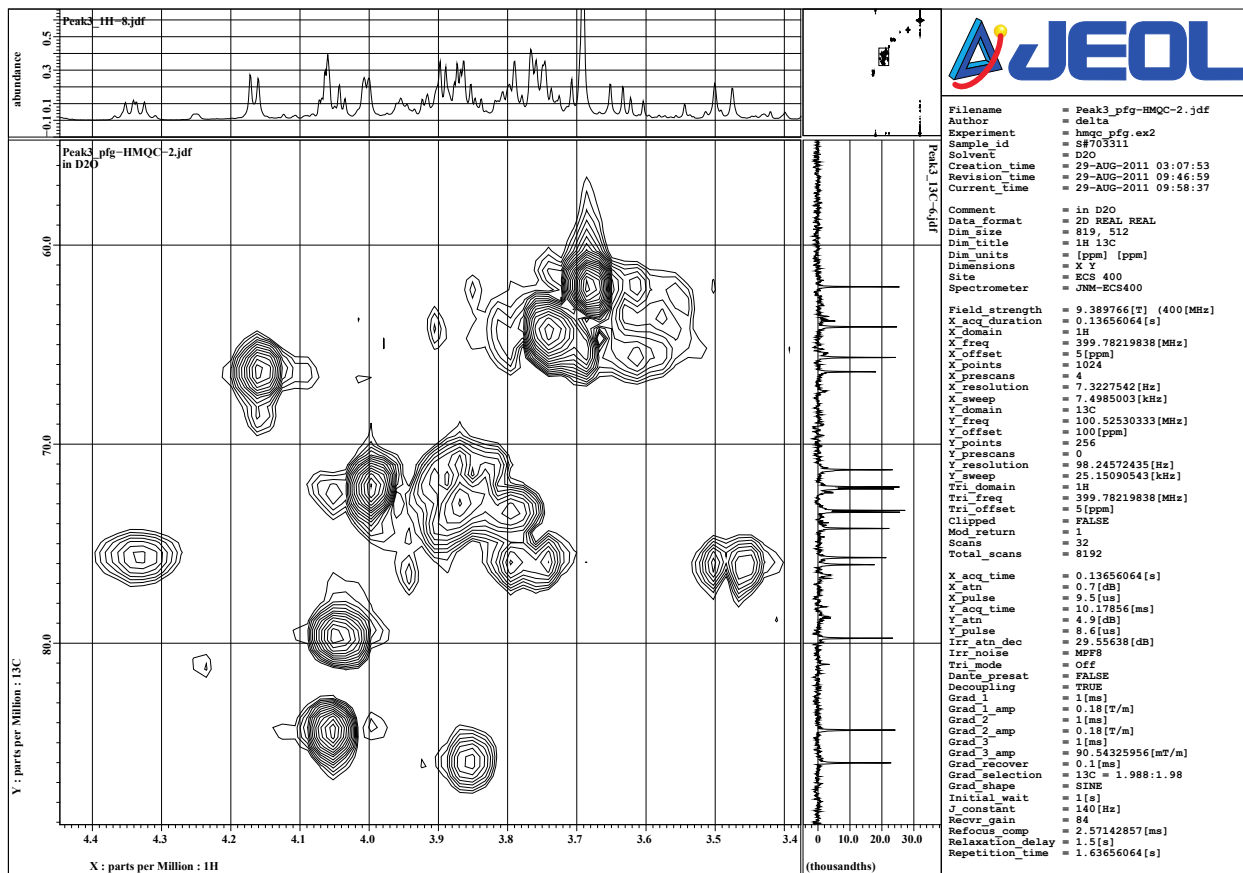
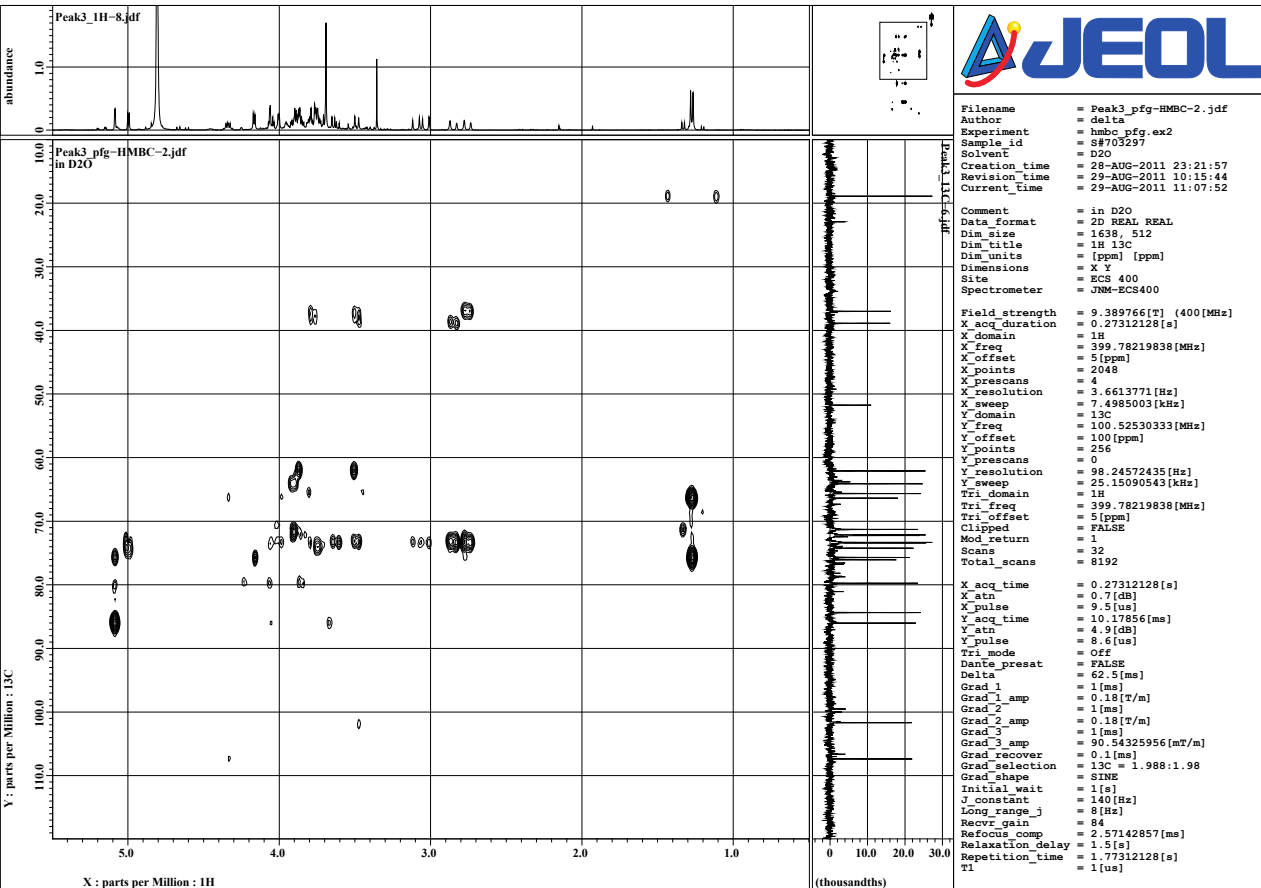
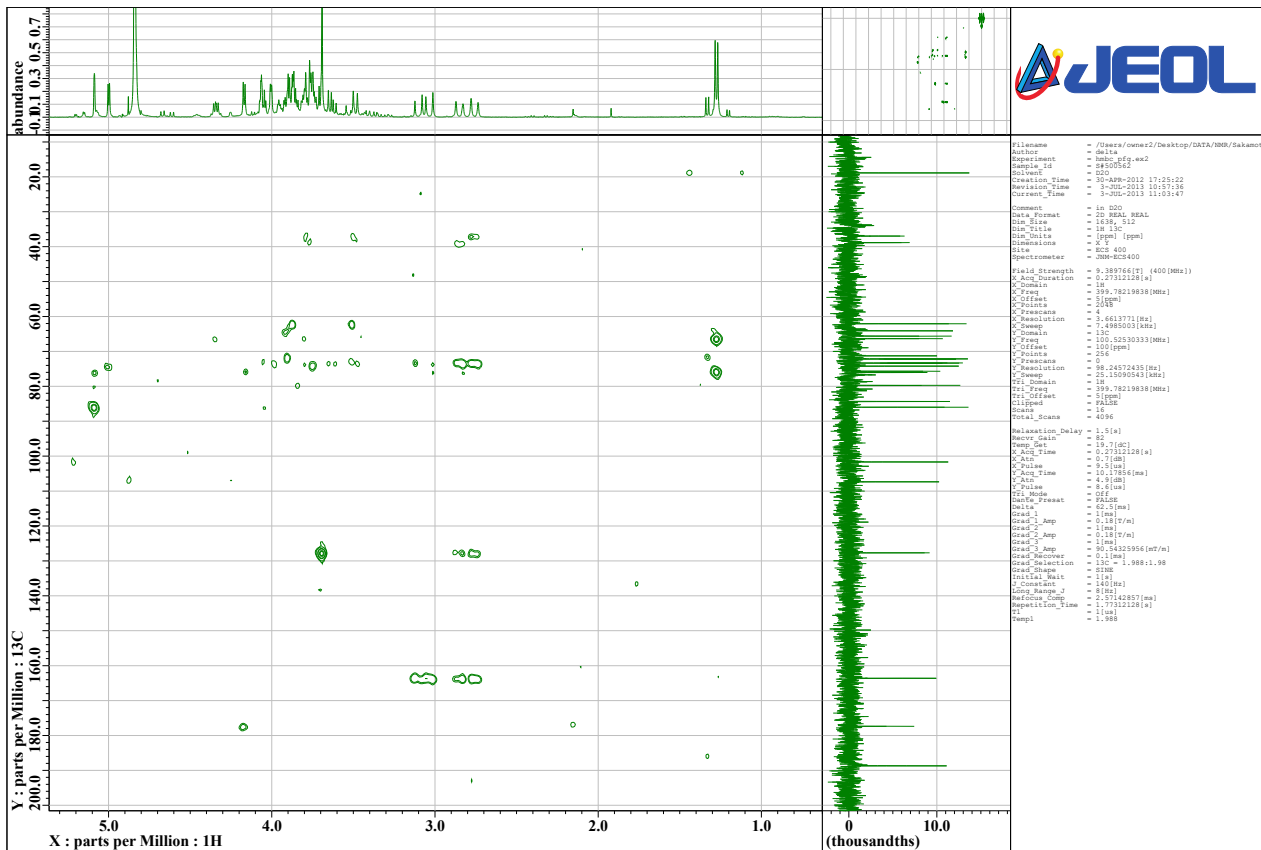




Figure S15. HMBC spectra of the 612-Da MAA in D<sub>2</sub>O.



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Figure S15. Cont.

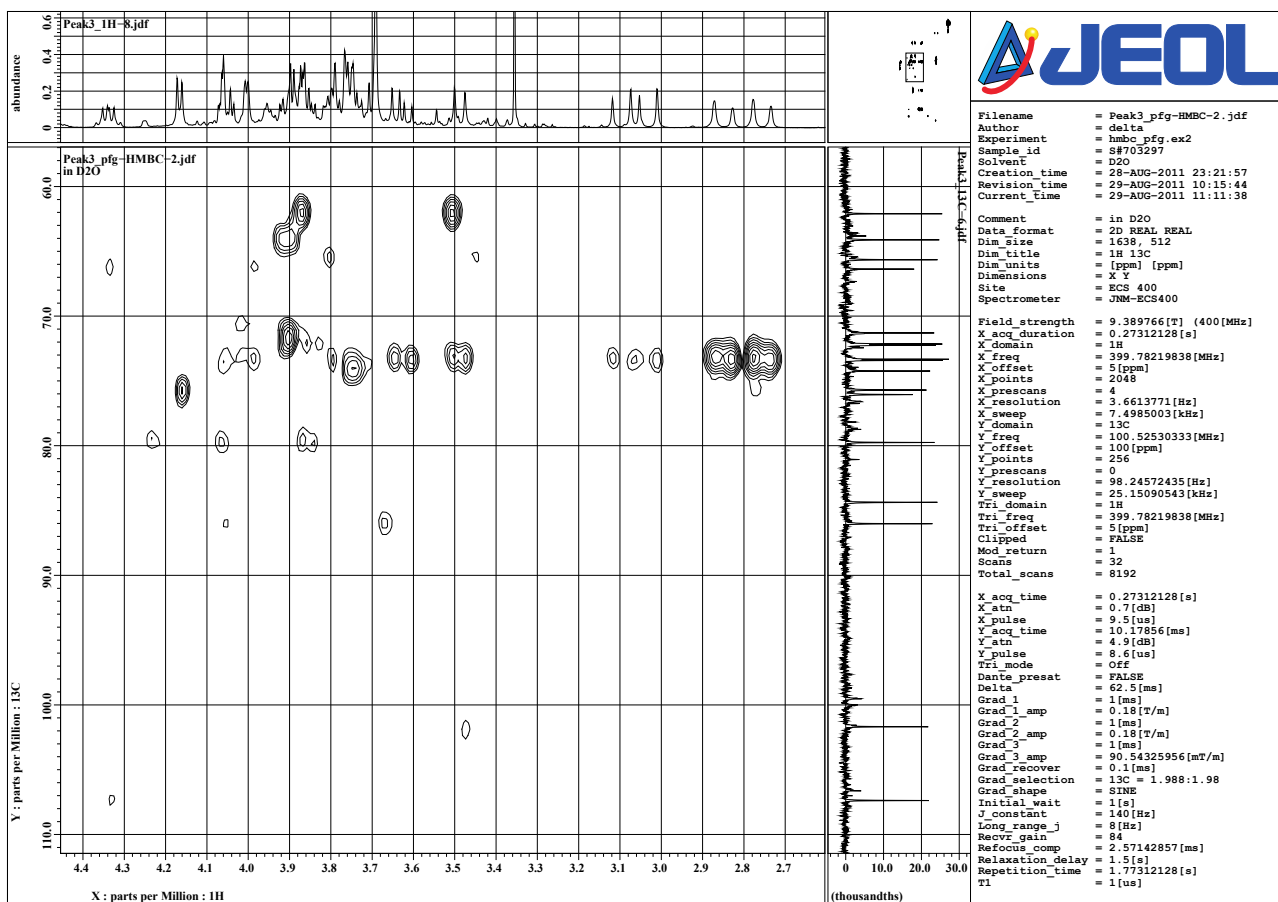
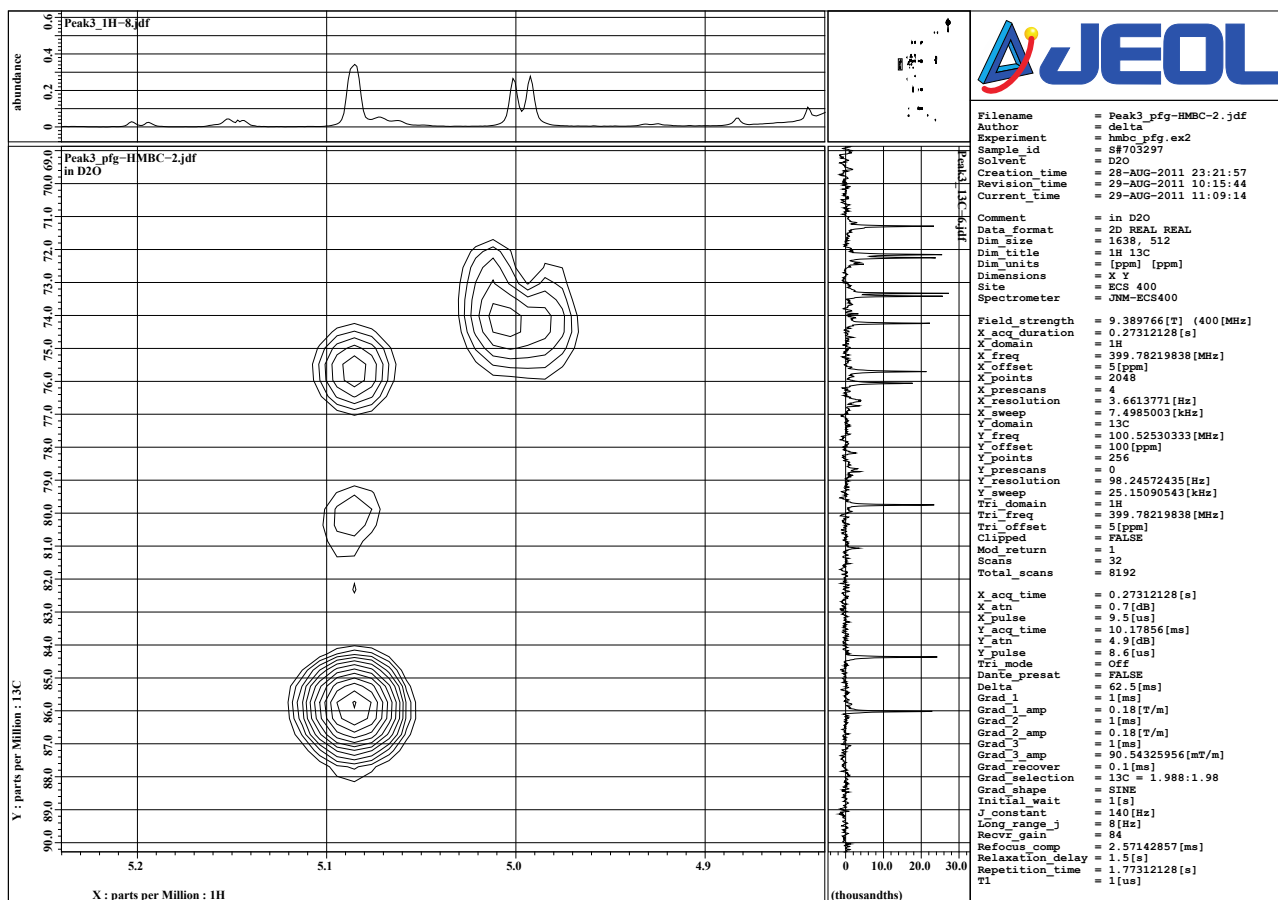


Figure S15. Cont.

