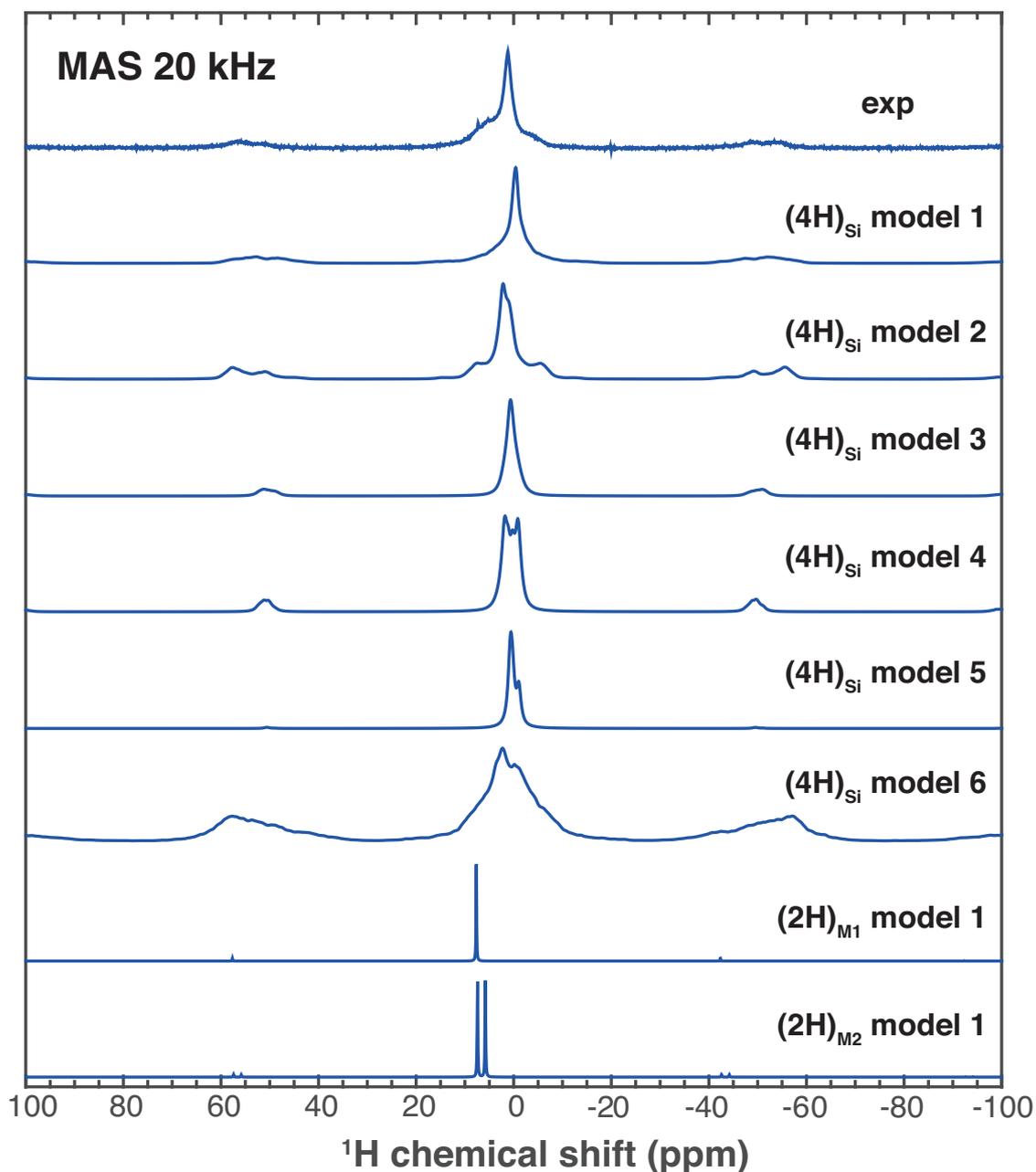


**Supplementary Figure 1.** Comparison of experimental  $^1\text{H}$  static NMR spectrum for hydrous forsterite as in Figure 2, with simulated  $^1\text{H}$  static NMR powder spectra for all the forsterite 2x1x2 supercell models, as labelled, using the SIMPSON program (Bak et al. 2000).



**Supplementary Figure 2.** Comparison of experimental  $^1\text{H}$  MAS NMR spectrum for hydrous forsterite as in Figure 2, with simulated  $^1\text{H}$  MAS NMR powder spectra for all the forsterite  $2\times 1\times 2$  supercell models, as labelled, using the SIMPSON program (Bak et al. 2000), all at a spinning rate of 20 kHz.

#### Reference Cited

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