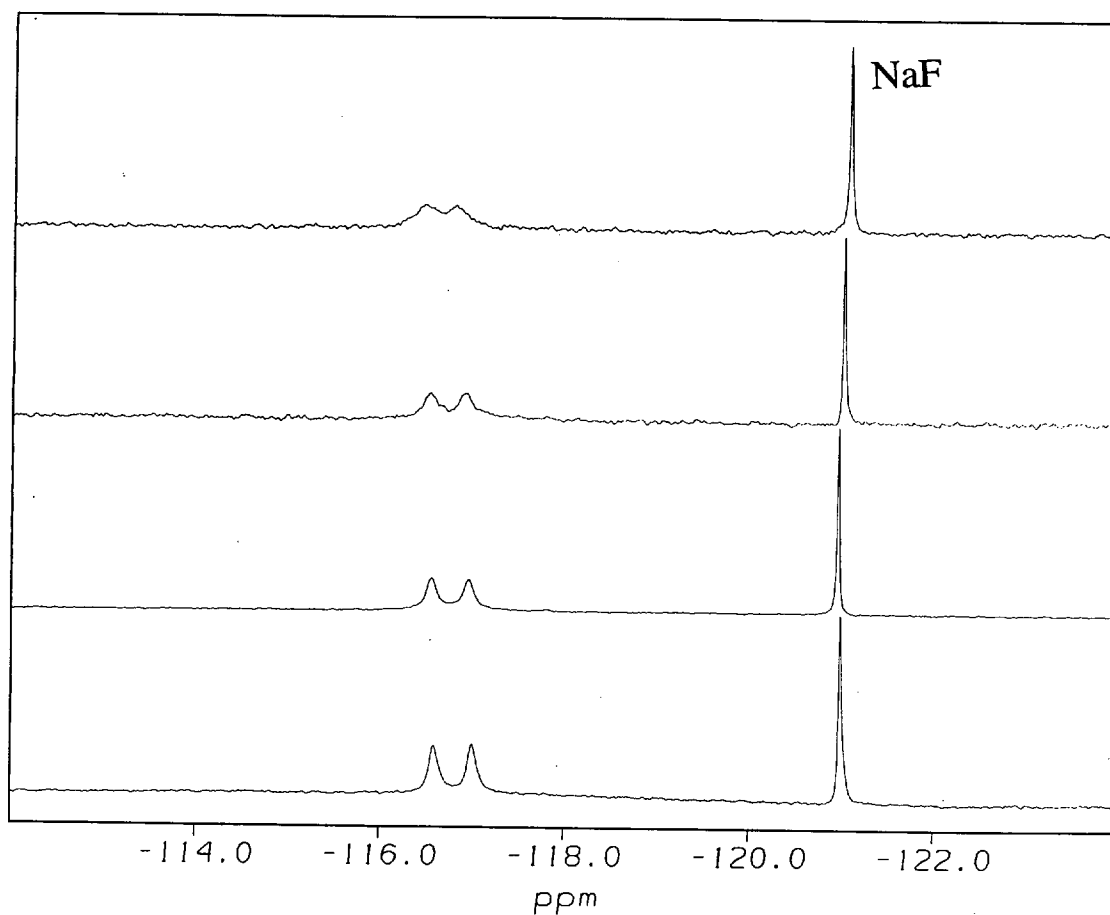


Table S1: Experimental Results from Curve-Fitting^a of the Data in Figures S4-S6

PSM	Number of Hydrogens ($t_{1/2}$; min)			
	Group A ^b	Group B	Group C	Group D
1	6.4 ± 0.4 (0.78 ± 0.01)	12.5 ± 0.4 (1.08 ± 0.02)		
2	6.1 ± 0.3 (1.03 ± 0.03)	6.3 ± 0.3 (1.74 ± 0.04)	5.8 ± 0.2 (3.54 ± 0.10)	4.2 ± 0.1 (12.07 ± 0.52)
3	5.2 ± 0.2 (1.64 ± 0.06)	4.8 ± 0.2 (3.25 ± 0.08)	7.3 ± 0.4 (5.57 ± 0.10)	8.2 ± 0.4 (11.29 ± 0.48)

a) $r^2 > 0.990$ for all curve fits

b) For group designation, see Figures S4-S6

**Figure S1** ¹H NMR spectra of **4** in 50 mM pH 7.0 potassium phosphate buffer at 1.79 mM (top spectrum), 1.19 mM, 0.714 mM, and 0.235 mM (bottom spectrum).

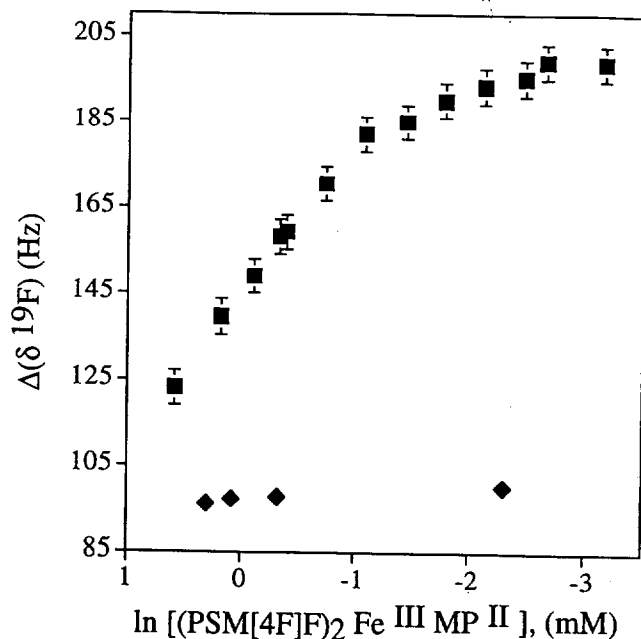


Figure S2 Difference in chemical shift of the two fluorine resonances in **4** plotted versus the natural log of concentration in aqueous solution (squares) and in 3:1 H₂O/CH₃OH (diamonds) at 23 °C. All samples were buffered to pH 7.0 with 50 mM potassium phosphate buffer and contained sodium fluoride as an internal standard.

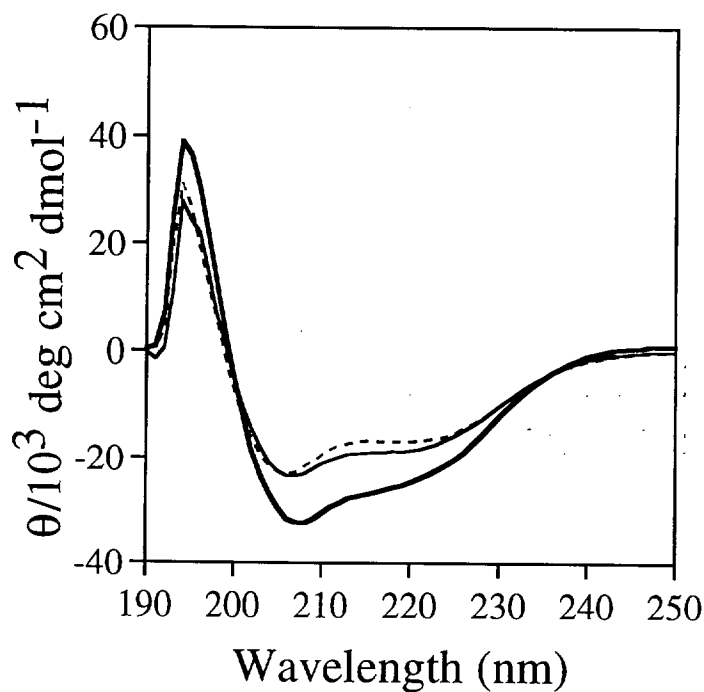


Figure S3 CD spectra of **1** (dashed line), **2** (thin solid line) and **3** (bold solid line) at 23 °C in 3:1 H₂O/CH₃OH buffered to pH 7.0 with 2 mM potassium phosphate.

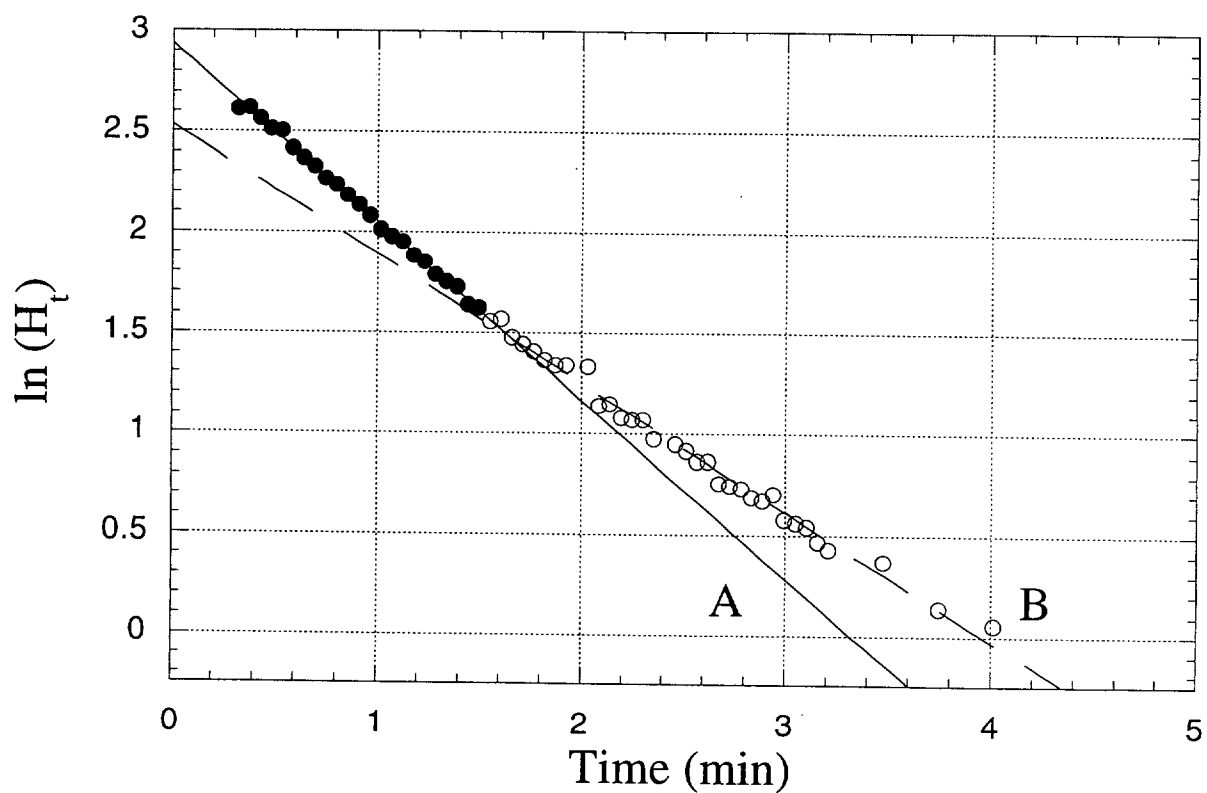


Figure S4 Linear fits to the data for H/D exchange experiments on **1** (see text for experimental details). The data were best fit to two exponentials.

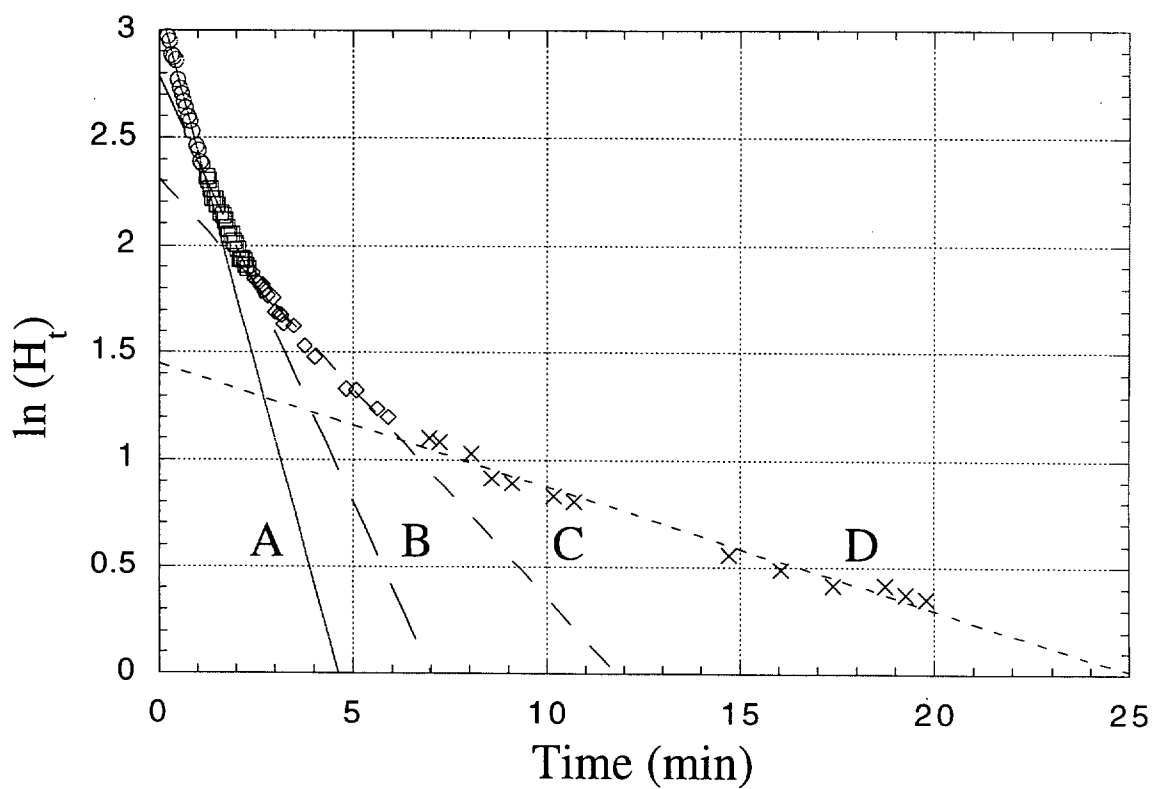


Figure S5 Linear fits to the data for H/D exchange experiments on **2** (see text for experimental details). The data were best fit to four exponentials.

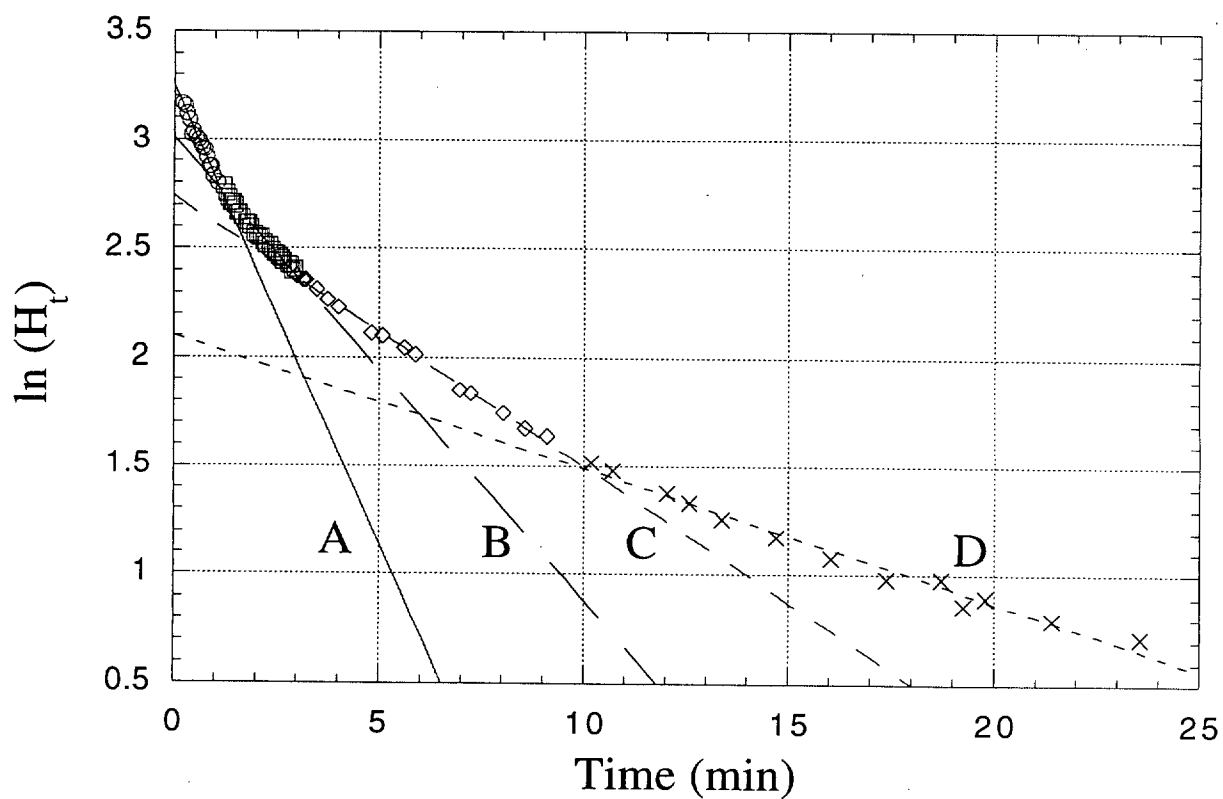


Figure S6 Linear fits to the data for H/D exchange experiments on **3** (see text for experimental details). The data were best fit to four exponentials.

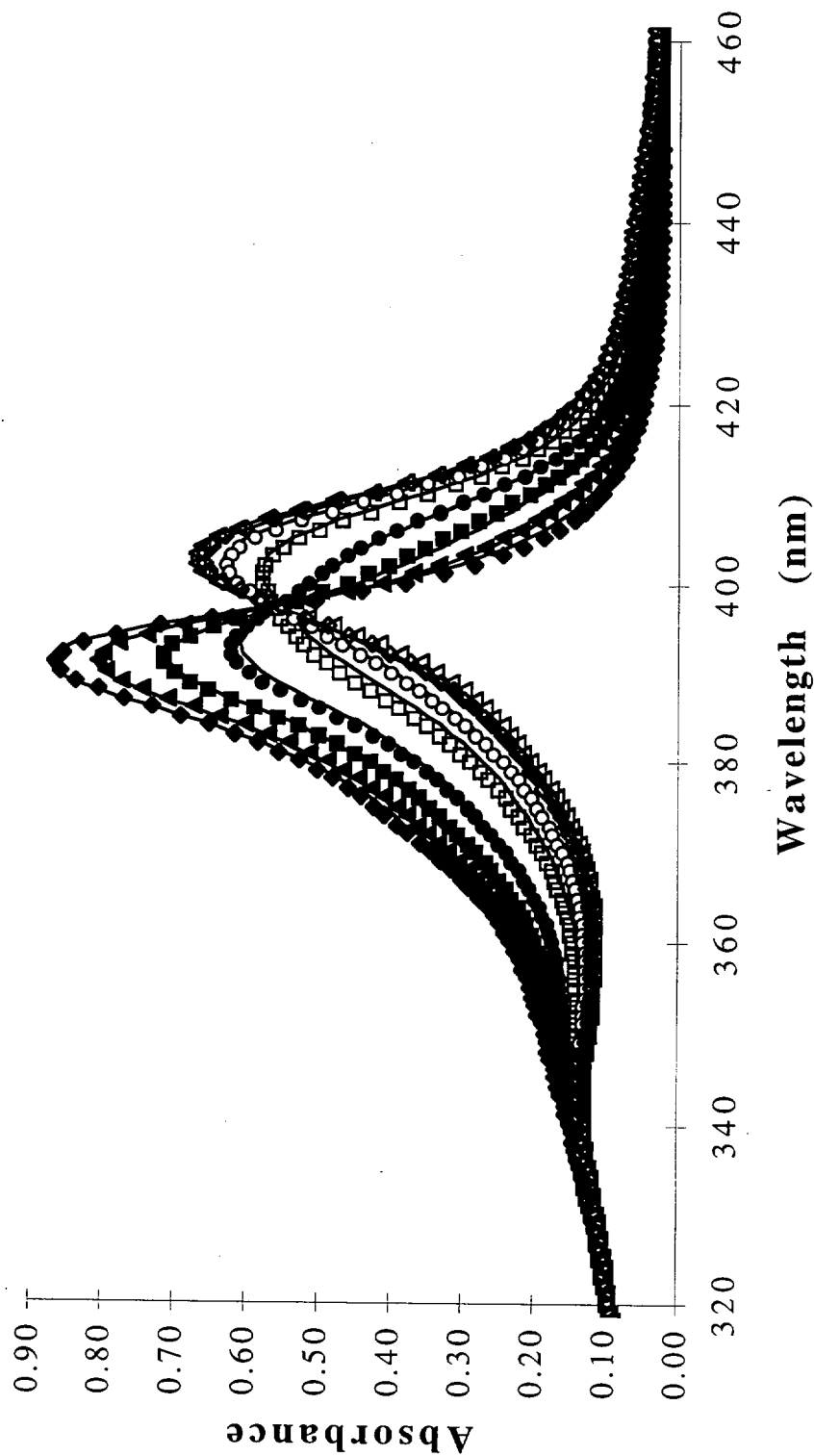


Figure S7. A representative spectrophotometric titration of **1** as a function of pH. A range of data taken from pH 2.65 to 5.51 (symbols) are shown along with the predicted spectra (solid lines). The predicted spectra were generated using SPECFIT (Spectrum Software Associates, Chapel Hill, NC.). Factor analysis by SVD showed the presence of only two principal data vectors, thus a simple, single protonation constant model was used. A Marquadt fit of the data to this model gave the midpoints of the titrations, reported in the manuscript, and presented the predicted spectra shown.

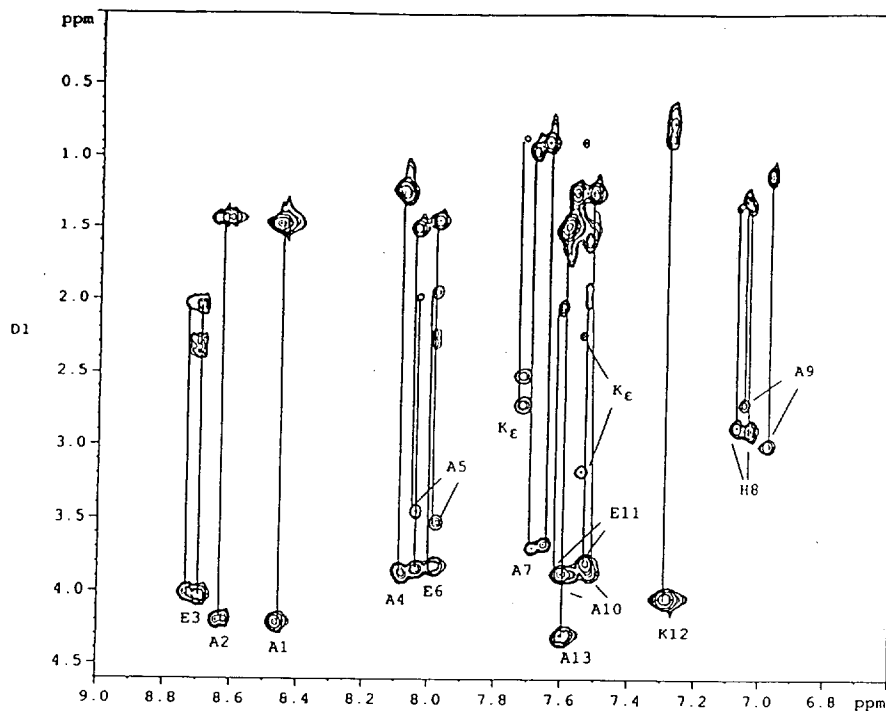


Figure S8 Fingerprint region of a HOHAHA spectrum of **1-Co** recorded in 1:1 CD₃OH/H₂O, buffered to pH 6 with potassium phosphate, 23 °C.

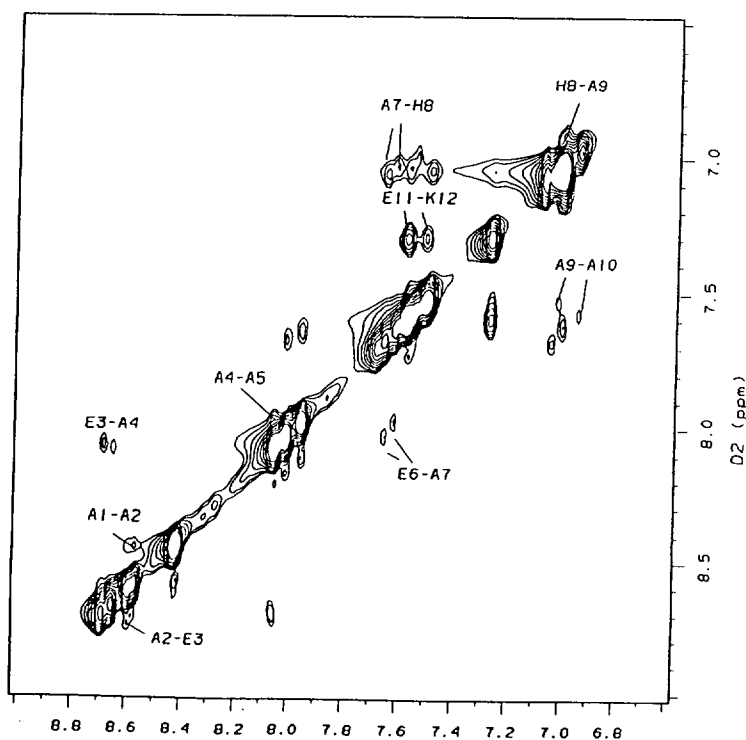


Figure S9 Amide-amide region of a 2D-NOESY spectrum of **1-Co** in 1:1 CD₃OH/H₂O, buffered to pH 6 with potassium phosphate, 23 °C.

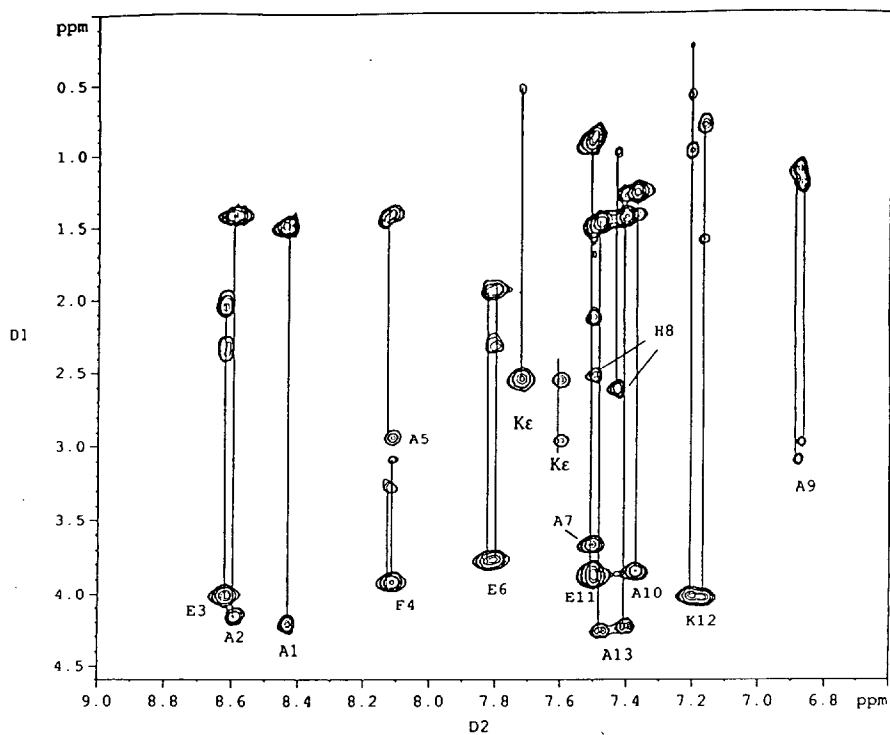


Figure S10 Fingerprint region of a HOHAHA spectrum of **2-Co** recorded in 1:1 CD₃OH/H₂O, buffered to pH 6 with potassium phosphate, 23 °C.

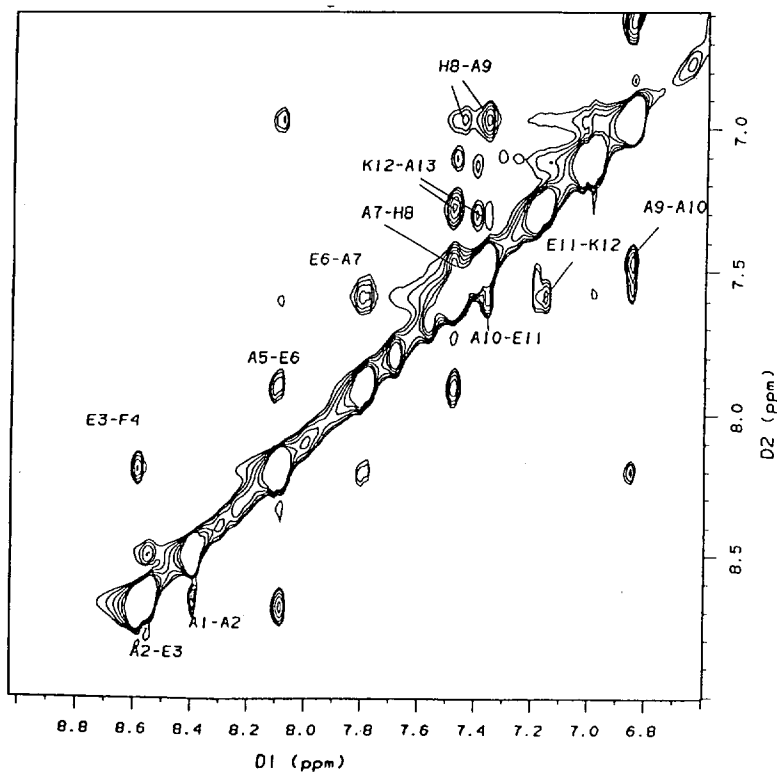


Figure S11 Amide-amide region of a 2D-NOESY spectrum of **2-Co** in 1:1 CD₃OH/H₂O, buffered to pH 6 with potassium phosphate, 23 °C.