

## Supporting Online Material

The supporting on-line material contains the rovibronic spectra of the vibronic bands at 480, 539, 718, 720, 737, 909, 910 and 968  $\text{cm}^{-1}$  above the electronic origin at 35231.4  $\text{cm}^{-1}$ .

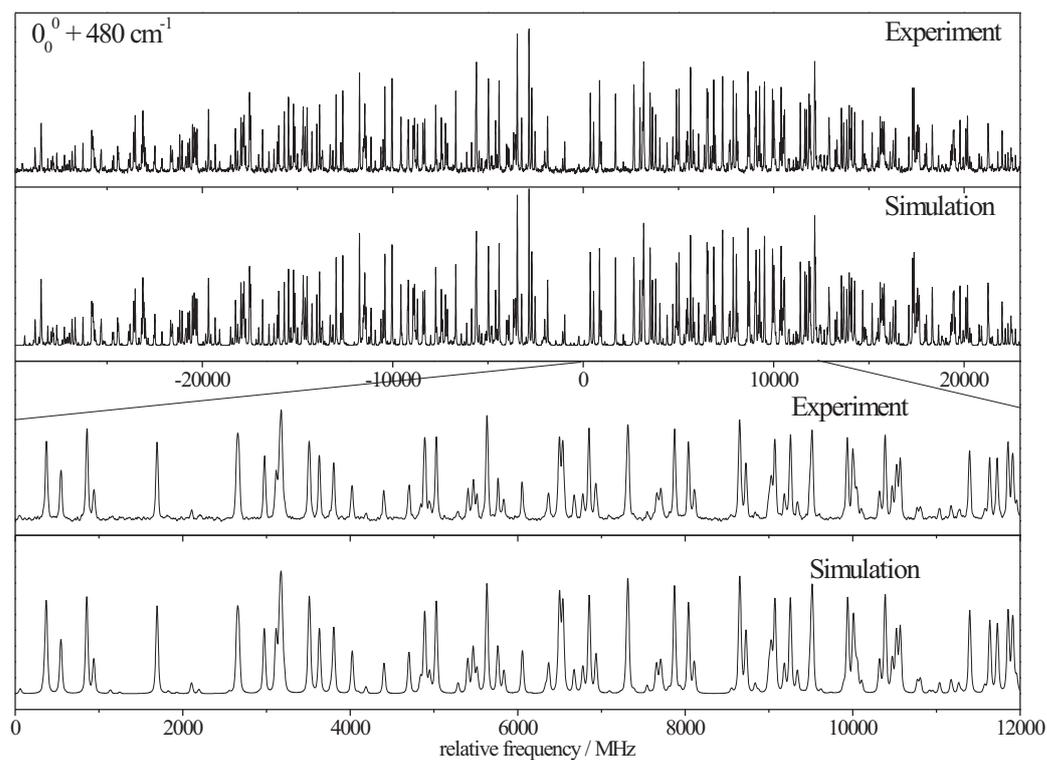


Figure S1: Rotationally resolved spectrum of the 480  $\text{cm}^{-1}$  band, along with a simulation of the spectrum using the best-fit parameters from an ES fit, given in Table 1 of the paper.

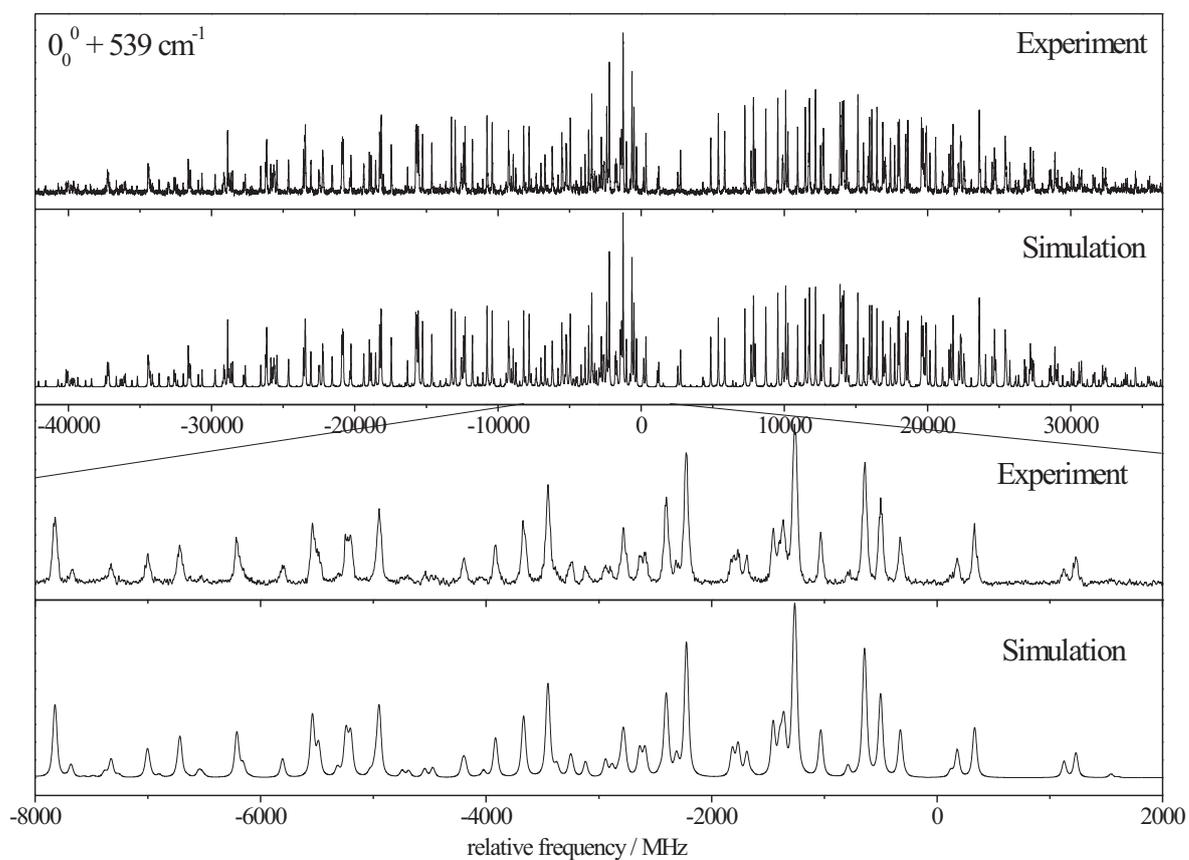


Figure S2: Rotationally resolved spectrum of the  $539 \text{ cm}^{-1}$  band, along with a simulation of the spectrum using the best-fit parameters from an ES fit, given in Table 1 of the paper.

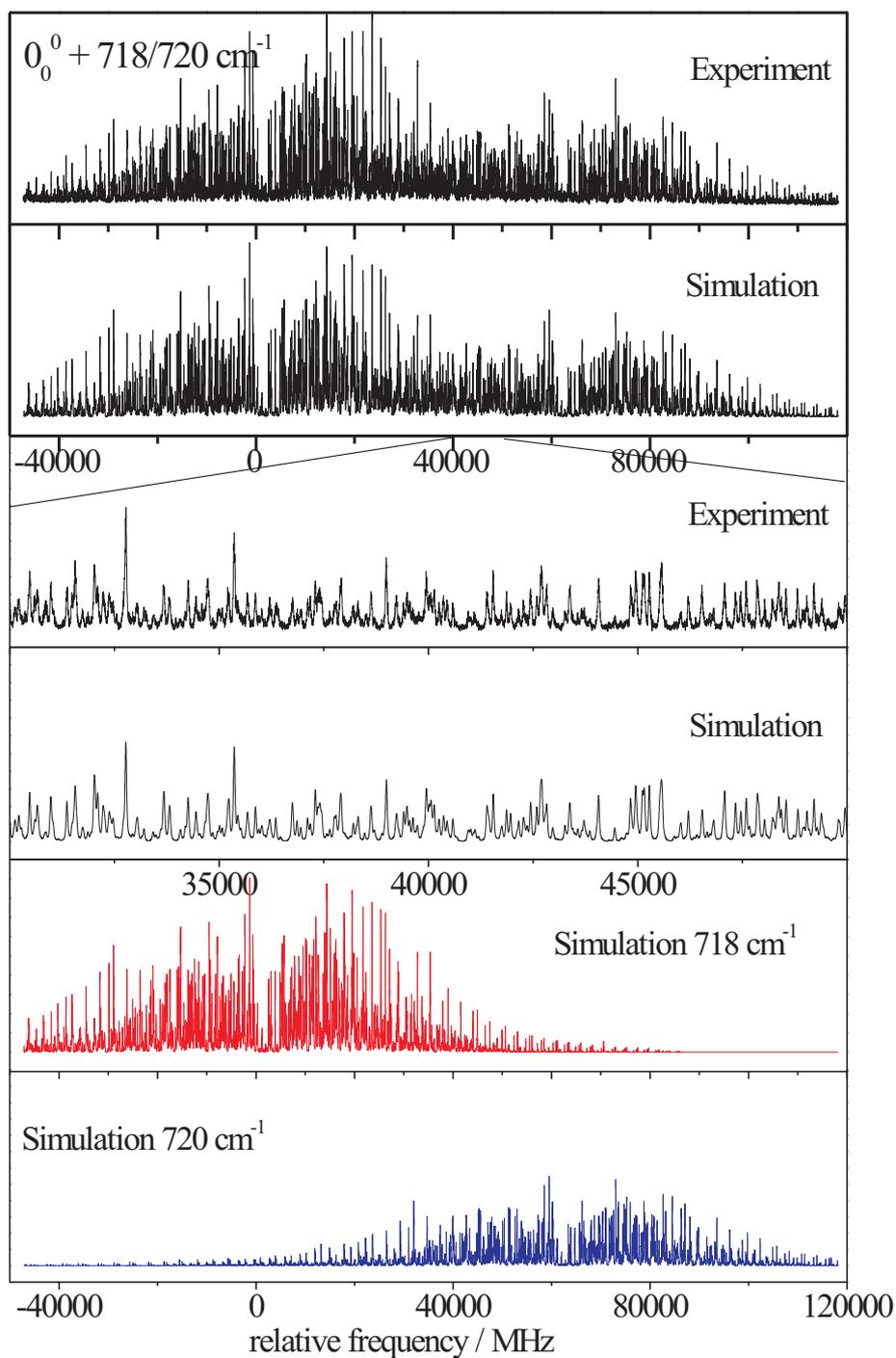


Figure S3: Rotationally resolved spectrum of the two bands at  $718 \text{ cm}^{-1}$  and  $720 \text{ cm}^{-1}$ , along with a simulation of the spectra using the best-fit parameters from an ES fit, given in Table 1 of the paper. In the two bottommost traces the individual simulations of the two vibronic bands that constitute the overall simulation in the second row are shown.

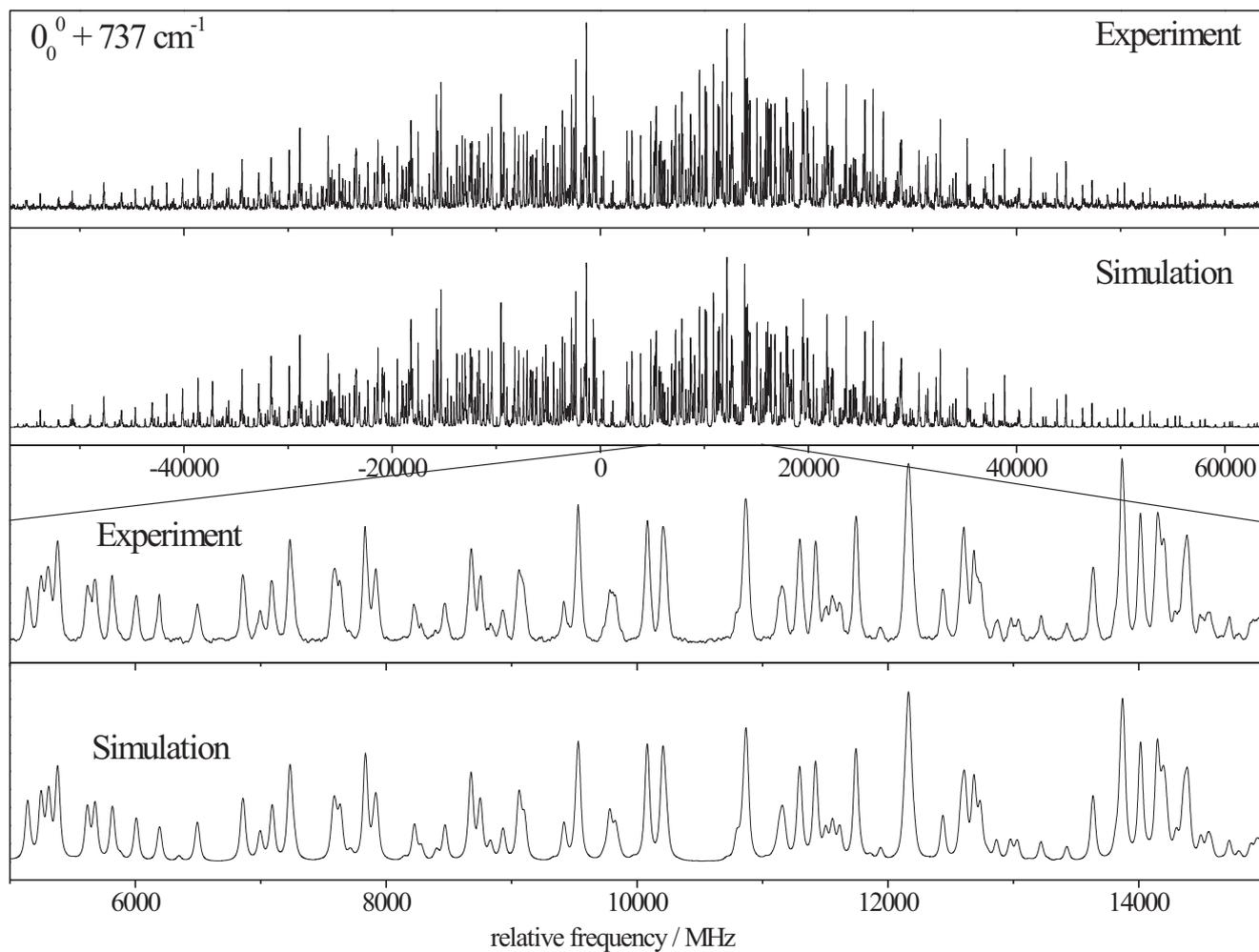


Figure S4: Rotationally resolved spectrum of the  $737 \text{ cm}^{-1}$  band, along with a simulation of the spectrum using the best-fit parameters from an ES fit, given in Table 1 of the paper.

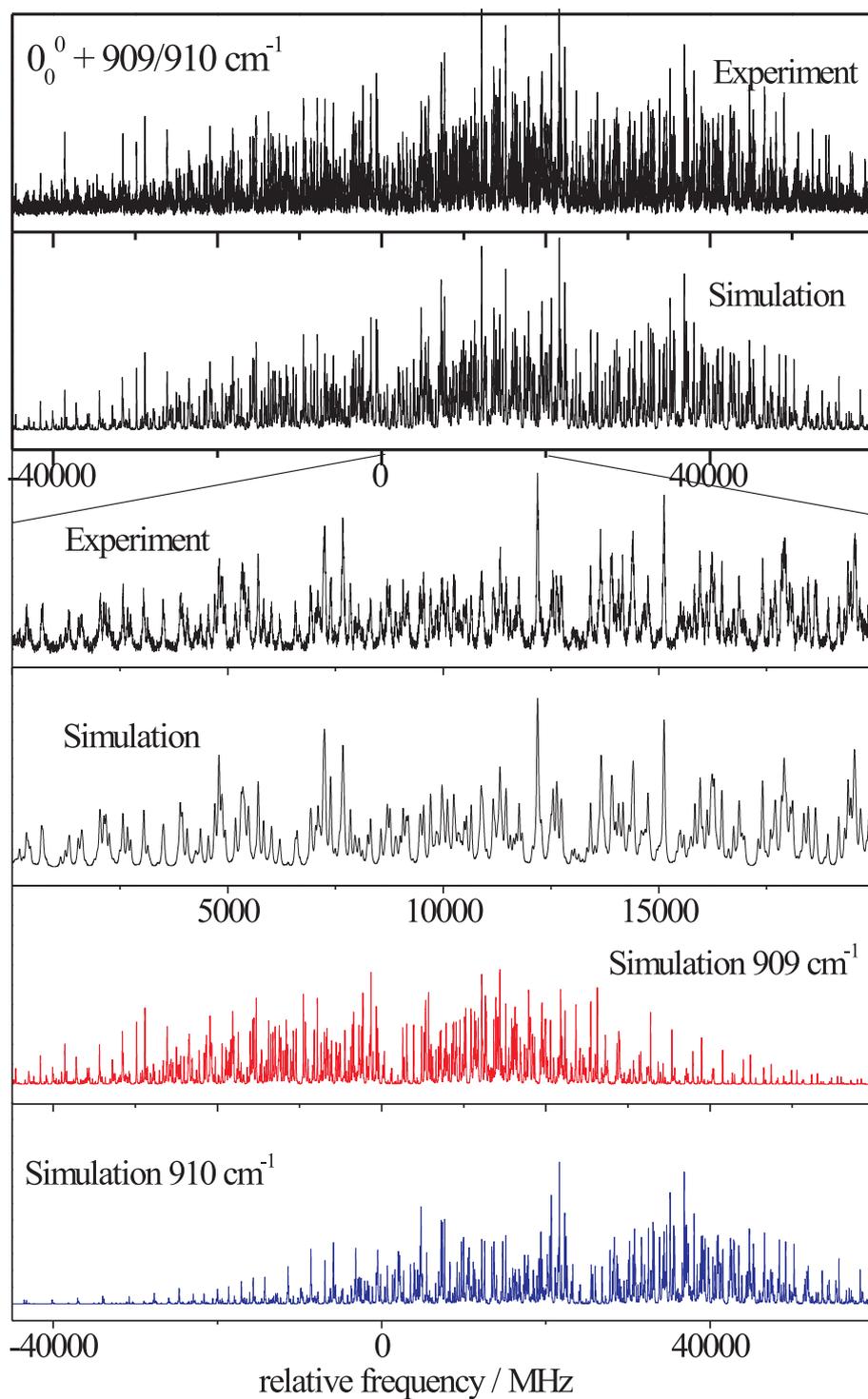


Figure S5: Rotationally resolved spectrum of the two bands at 907 cm<sup>-1</sup> and 908 cm<sup>-1</sup>, along with a simulation of the spectra using the best-fit parameters from an ES fit, given in Table 1 of the paper. In the two bottommost traces the individual simulations of the two vibronic bands that constitute the overall simulation in the second row are shown.

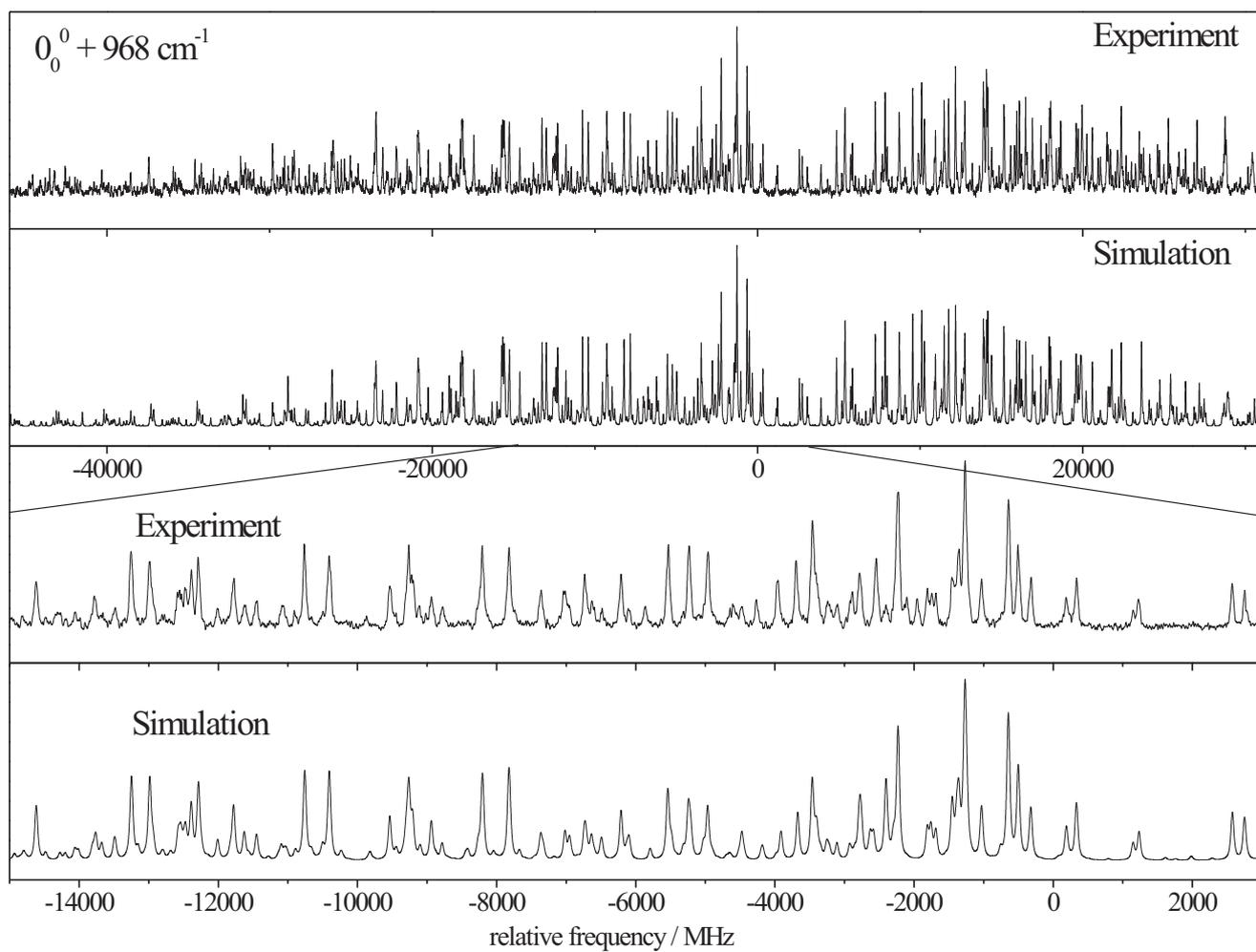


Figure S6: Rotationally resolved spectrum of the  $968 \text{ cm}^{-1}$  band, along with a simulation of the spectrum using the best-fit parameters from an ES fit, given in Table 1 of the paper.