

## Supporting Information

### Figure S1

Normalized FAIMS spectra for the K27(Me)<sub>2</sub> and K36(Me)<sub>2</sub> variants of H3 tail (color-coded on the top) with  $z = 4 - 6$ , measured using He/N<sub>2</sub> with 0%, 20%, 30%, or 40% He (v/v), as labeled. Peaks for different conformers are marked by letters.

### Figure S2

Same as Fig. S1, except measured using H<sub>2</sub>/N<sub>2</sub> with 50%, 60%, or 70% H<sub>2</sub>.

### Figure S3

Normalized FAIMS spectra for the K4Me and K9Me variants of H3 tail (color-coded on the top) with  $z = 5$  and 6, measured using He/N<sub>2</sub> with 0%, 20%, 30%, 40%, or 47% He (v/v), as labeled. Peaks for different conformers are marked by letters.

### Figure S4

Same as Fig. S3, except measured using H<sub>2</sub>/N<sub>2</sub> with 50%, 60%, or 70% H<sub>2</sub>.

### Figure S5

FAIMS spectra for the K4Me/K9Me mixture, measured using He/N<sub>2</sub> with 20 - 47% He, as labeled. Segments with low signal are scaled as marked. Vertically scaled spectra for the components are overlaid.

Figure S1

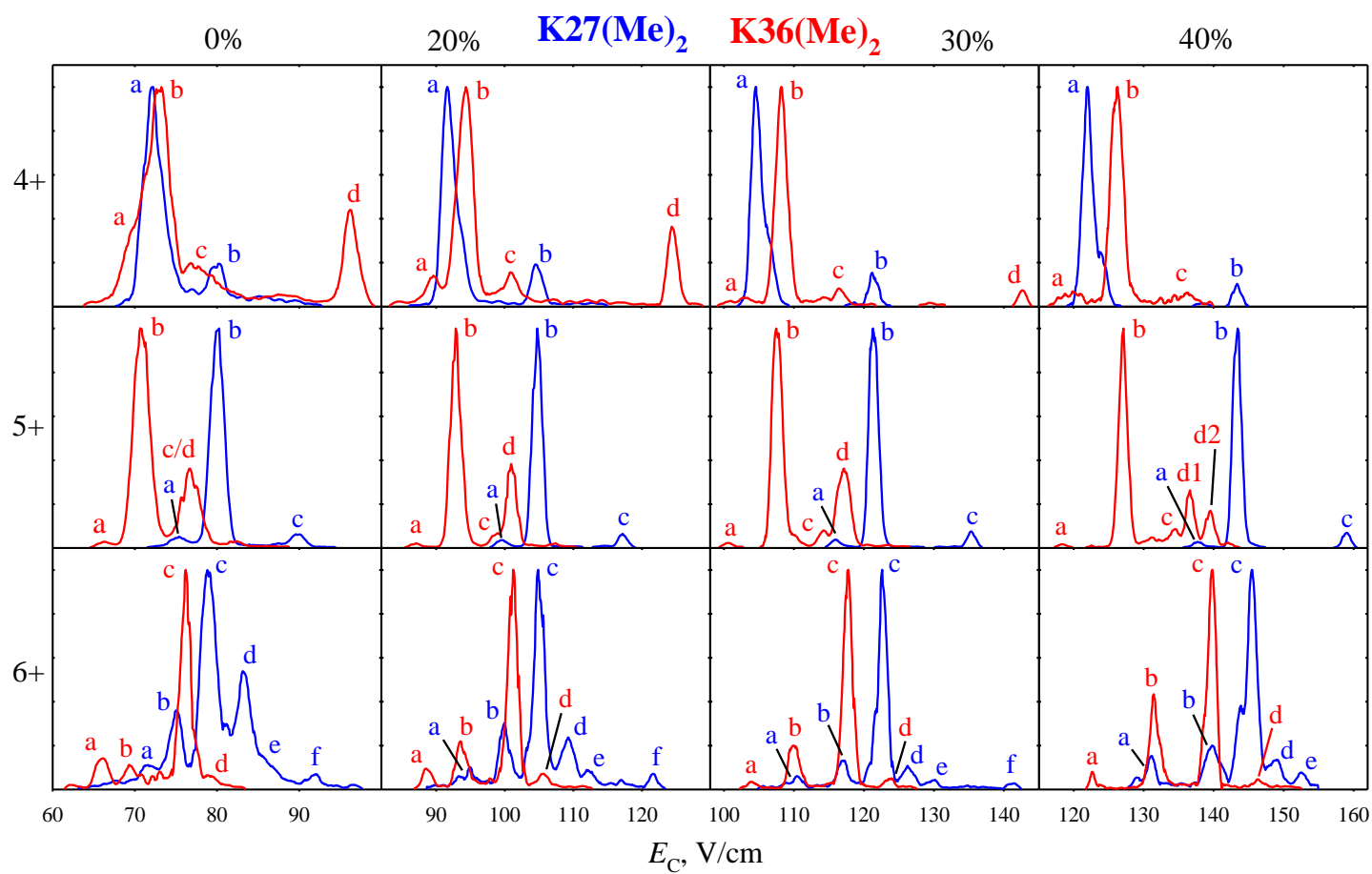


Figure S2

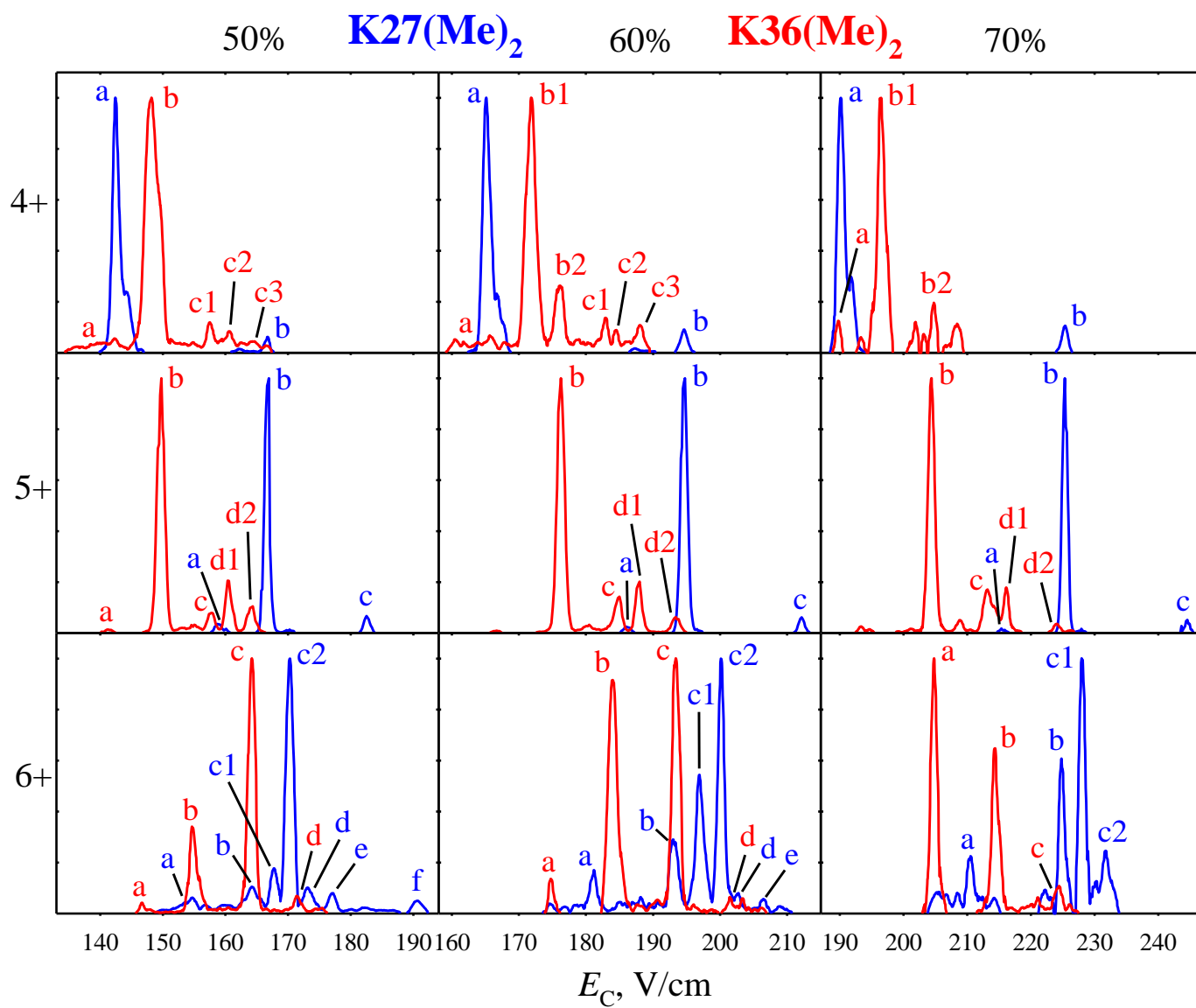


Figure S3

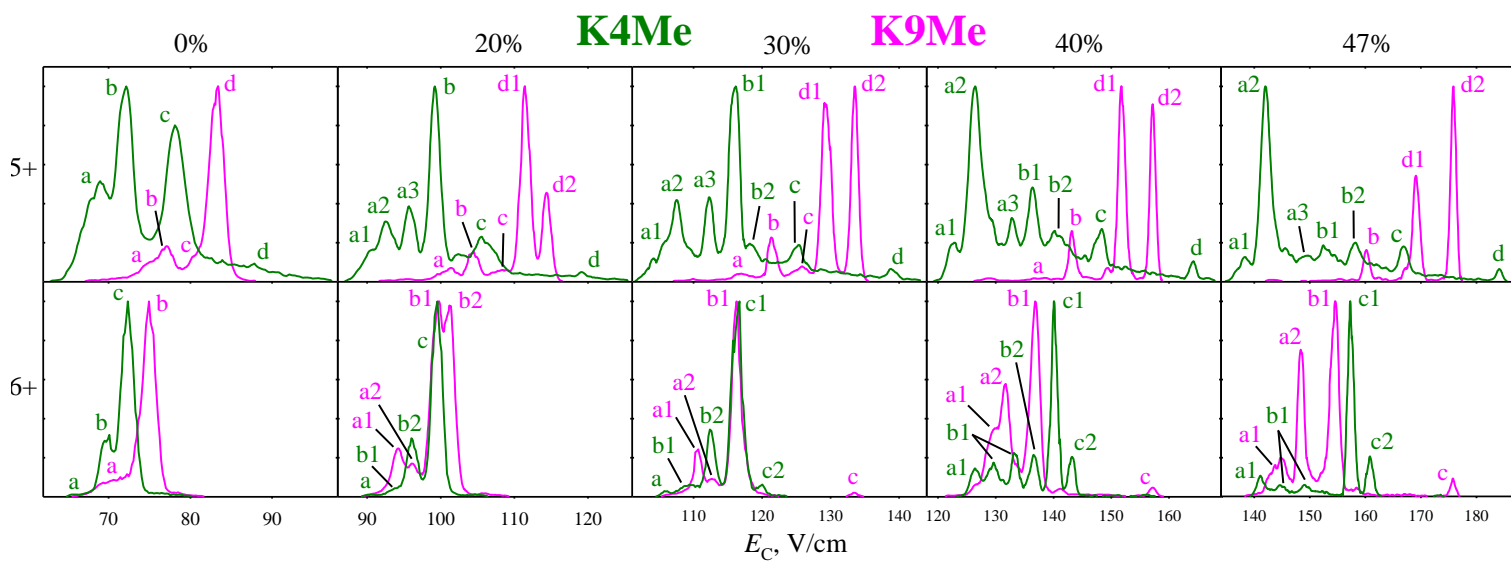


Figure S4

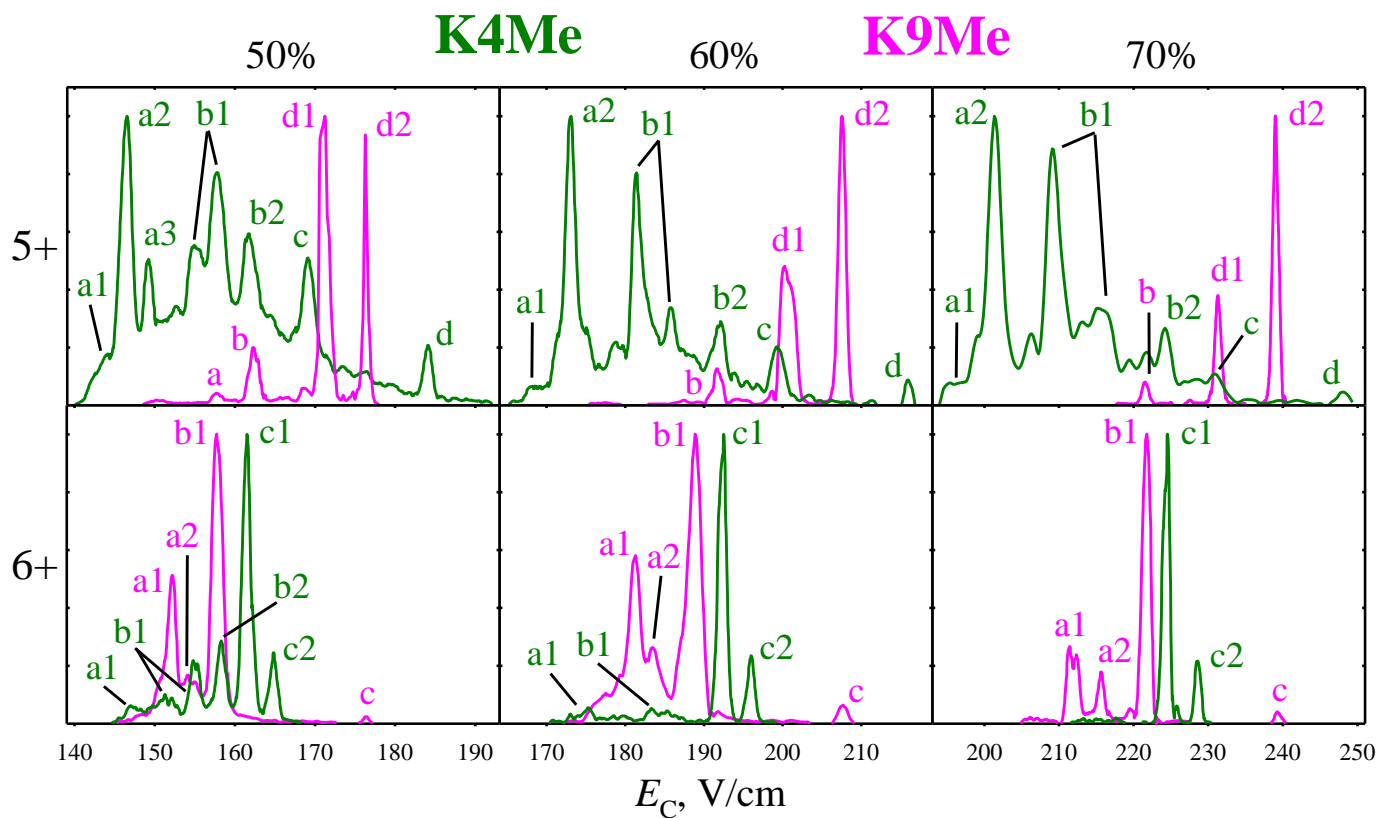


Figure S5

