

### Supplementary Information

- Figure S1.** Variation of  $\text{Log}_{10}$ (relative ion intensities) hydrogen-deuterium exchange of sodiated trialanine as a function of reaction times with  $\text{ND}_3$  at a pressure of  $2.8 \times 10^{-8}$  mbar.
- Figure S2.** Variation of relative ion intensities for the first hydrogen-deuterium exchange of sodiated diglycine and sodiated dialanine as a function of reaction times with  $\text{ND}_3$  at a pressure of  $2.8 \times 10^{-8}$  mbar.
- Figure S3.** Variation of relative ion intensities for sodiated trialanine as a function of reaction times with  $\text{ND}_3$  at a pressure of  $4.1 \times 10^{-8}$  mbar.
- Figure S4.** Variation of relative ion intensities for sodiated tetraglycine as a function of reaction times with  $\text{ND}_3$  at a pressure of  $1.6 \times 10^{-8}$  mbar.
- Figure S5.** Variation of relative ion intensities for sodiated pentaglycine as a function of reaction times with  $\text{ND}_3$  at a pressure of  $1.1 \times 10^{-8}$  mbar.
- Figure S6.** Variation of relative ion intensities for sodiated octaglycine as a function of reaction times with  $\text{ND}_3$  at a pressure of  $2.0 \times 10^{-8}$  mbar.

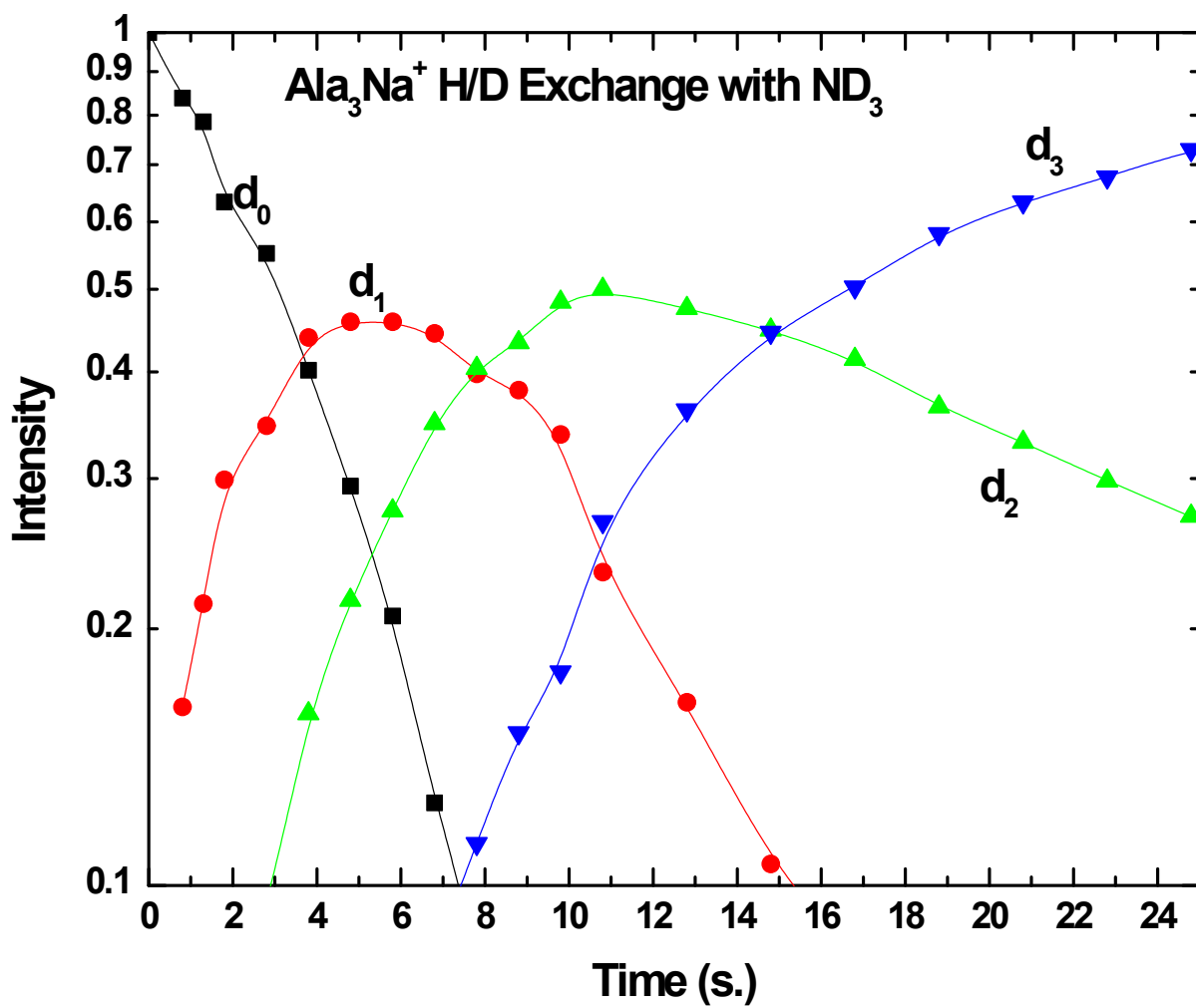


Figure S1

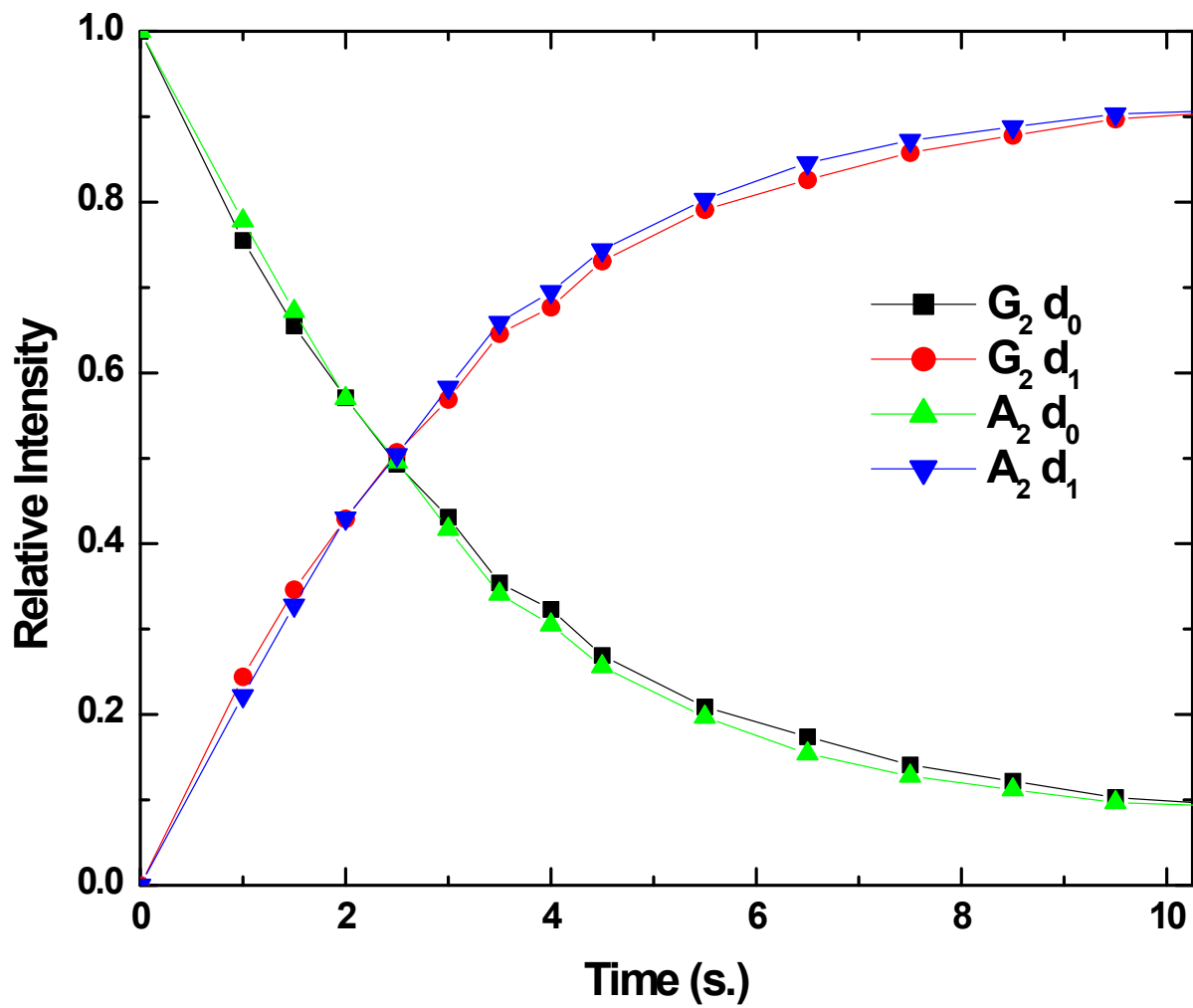


Figure S2

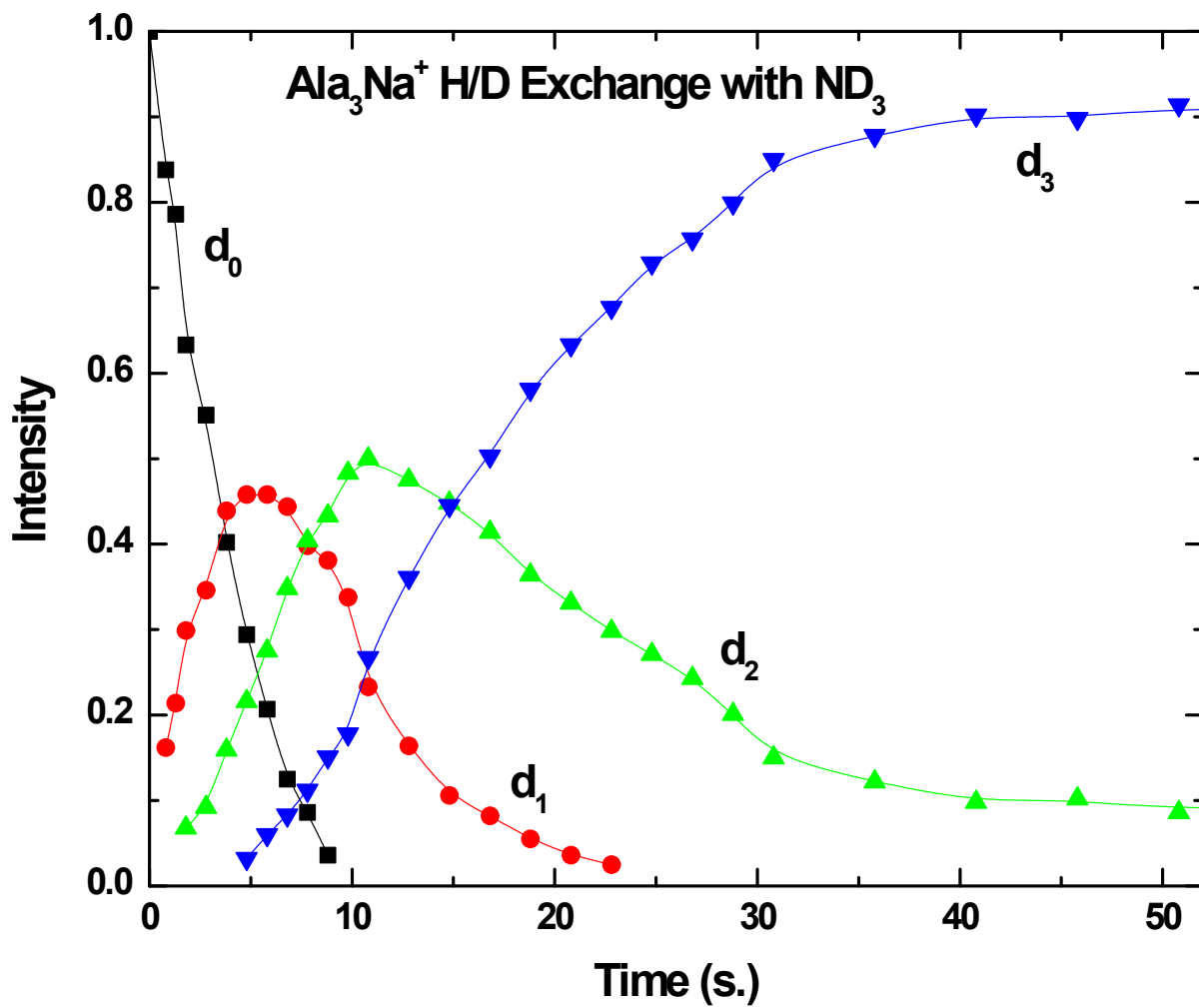


Figure S3

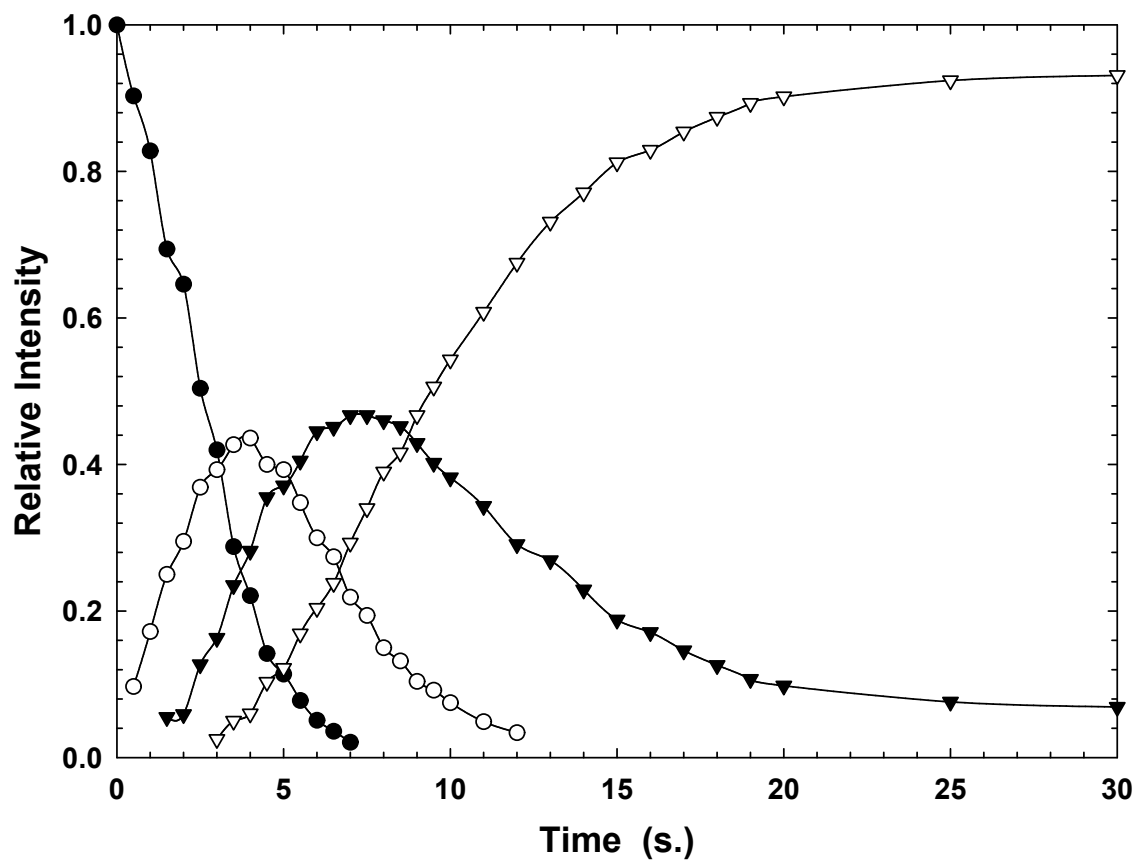


Figure S4

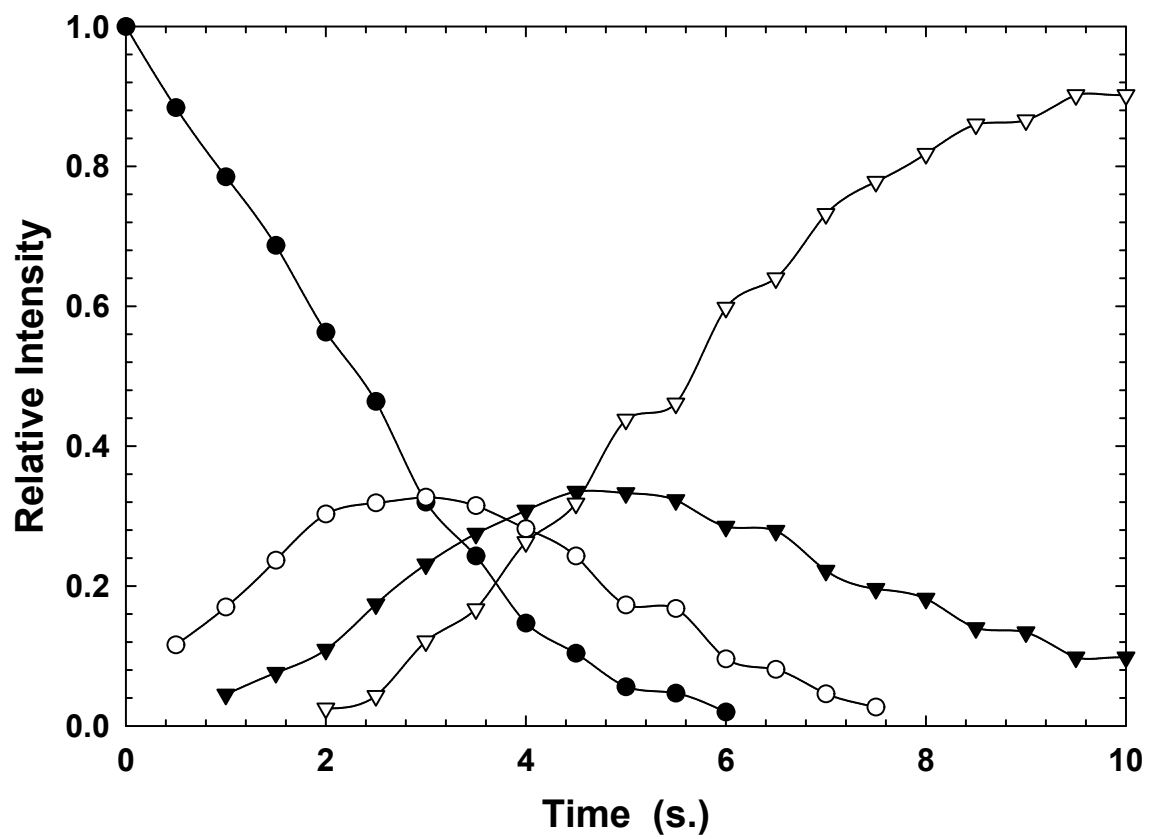


Figure S5

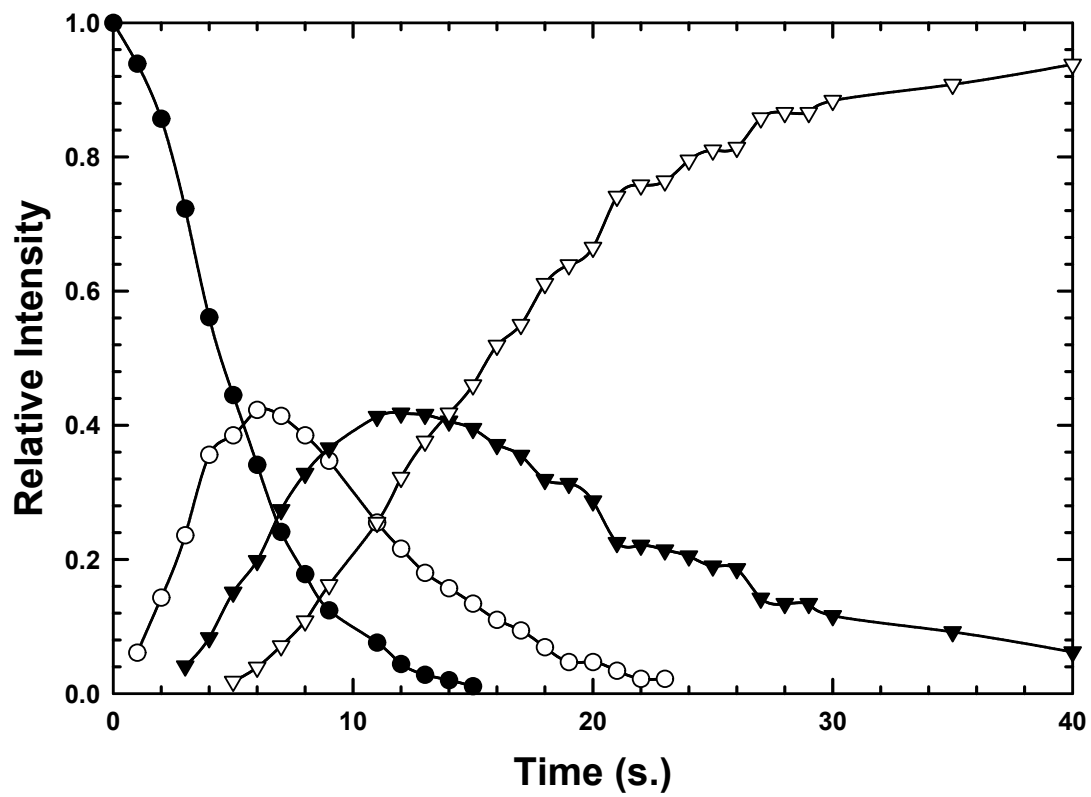


Figure S6