Supporting Information

for

Concentration Effects and Ion Properties Controlling the Fractionation of Halides during Aerosol Formation

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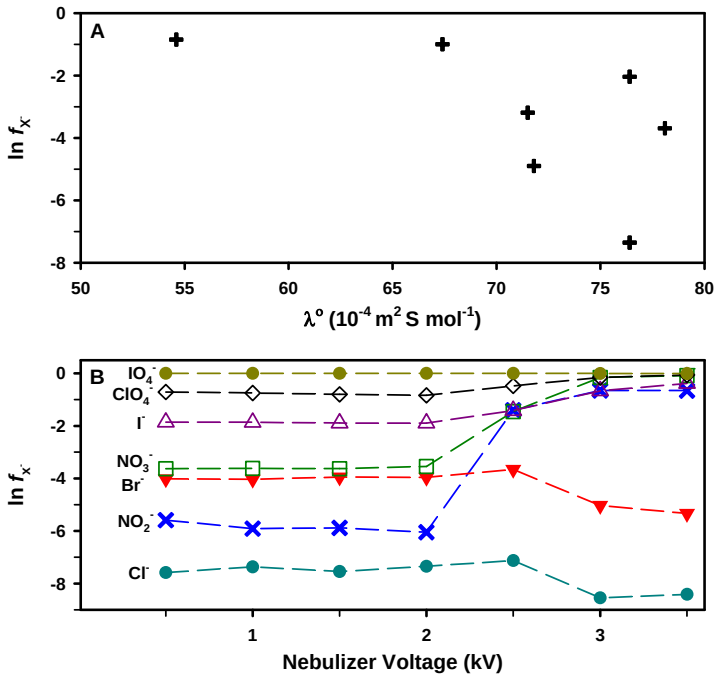

Figure S1. Anion fractionation, f_X^-, versus (**A**) the limiting equivalent ionic conductivity,[1] λ°, and (**B**) nebulizer voltage for 100 nM equimolar solution of sodium salts of corresponding anions. The experimental conditions are the same as indicated in the experimental section of the main text.

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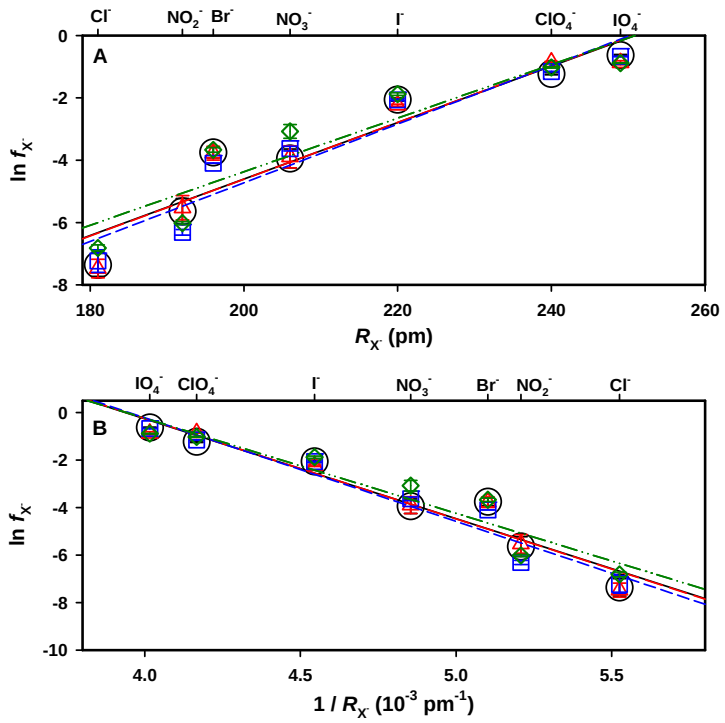

Figure S2. Anion fractionation, f_X^-, versus (**A**) anion radius,[1] R_X-, and (**B**) reciprocal anion radius, R_X^{-1}. Dashed lines represent the linear fit with correlation coefficients (r^2). The respective values of r^2 for R_X- and R_X^{-1}, are (○) 0.901 and 0.935 for H_2O, (Δ) 0.898 and 0.934 for D_2O, (◊) 0.908 and 0.907 for CH_3OH, and (□) 0.866 and 0.940 for CH_3CH_2OH. The experimental conditions are the same as indicated in the experimental section of the main text

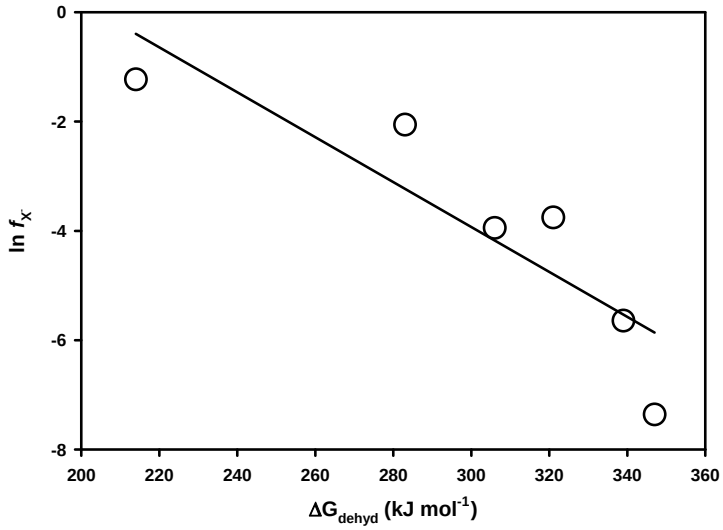

Figure S3. Anion fractionation, f_X^-, versus anion dehydration free energy change,[1] ΔG_{dehyd}, for a 100 nM equimolar solution. Solid line: linear fit with correlation coefficient $r^2 = 0.786$. The experimental conditions are the same as indicated in the experimental section of the main text.

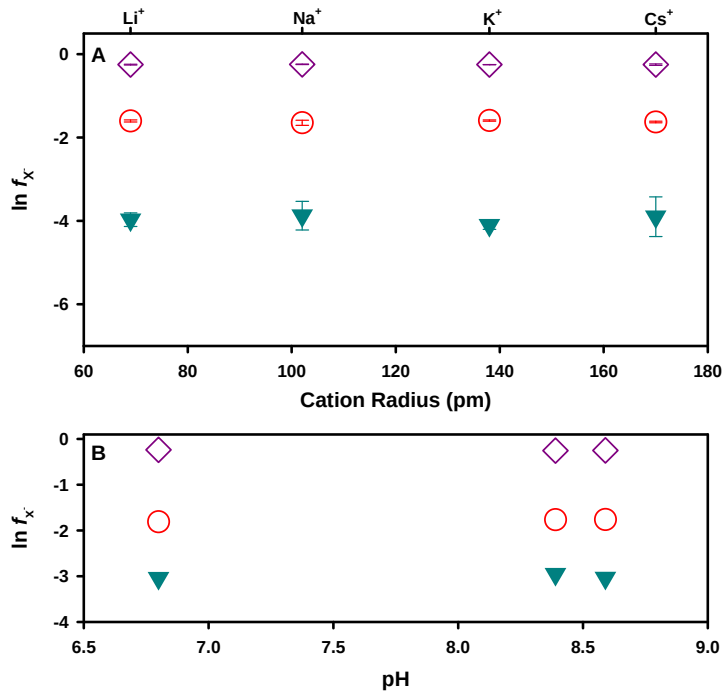

Figure S4. Anion fractionation, f_X^-, versus (**A**) cationic radius[1] for 100 nM equimolar solution of halide salts of corresponding cations, and (**B**) pH for sodium salt solutions of (◊) I^-, (○) Br^-, and (▼) Cl^-. Experimental conditions: Desolvation temperature 500 °C, cone voltage 80 V, needle voltage 1.5 kV, nitrogen nebulizing gas 70 psi.

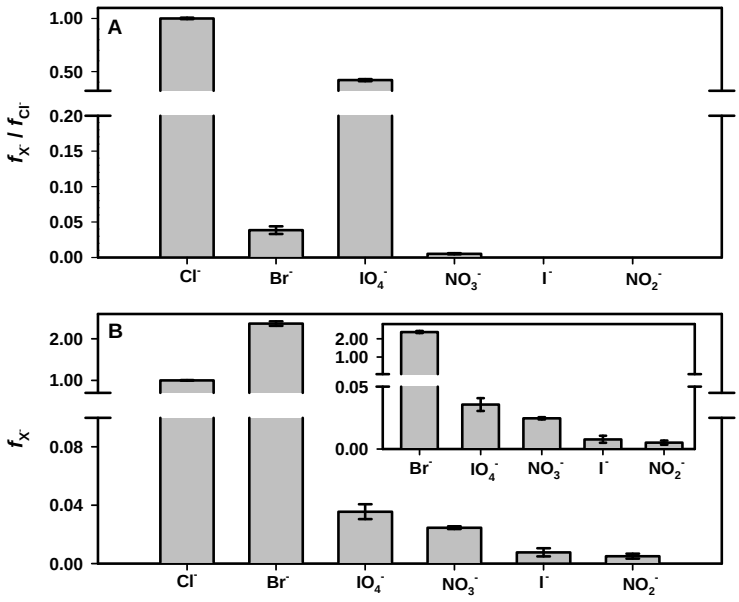

Figure S5. Anion fractionation ratio to f_{Cl^-} at the air water interface for samples of monovalent anions with molar ratios found in seawater.[2-6] (**A**) Fractionation factors are normalized to $f_{Cl^-} = 1$. Sodium salts concentration for Sample **I** are 100 uM Cl^-, 0.44 nM NO_2^-, 1.8 nM NO_3^-, 121 nM Br^-, 41 pM I^-, 0.31 pM ClO_4^-; and 100 nM IO_4^-. (**B**) Sodium salts concentration for sample **II** with the molar ratios for a 10-times dilution of anions in seawater, with the exception of Cl^- that is 1000 times diluted: 545 μM Cl^-, 239 nM NO_2^-, 957 nM NO_3^-, 66.24 μM Br^-, 22.2 nM I^-, 0.17 nM ClO_4^-, and 100 nM IO_4^-. All other experimental conditions are the same as indicated in the experimental section of the main text.

References

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