Supporting Information for:

"Bisulfate (HSO_4^-) Dehydration at Air/Solution Interfaces Probed by Vibrational Sum Frequency Generation Spectroscopy"

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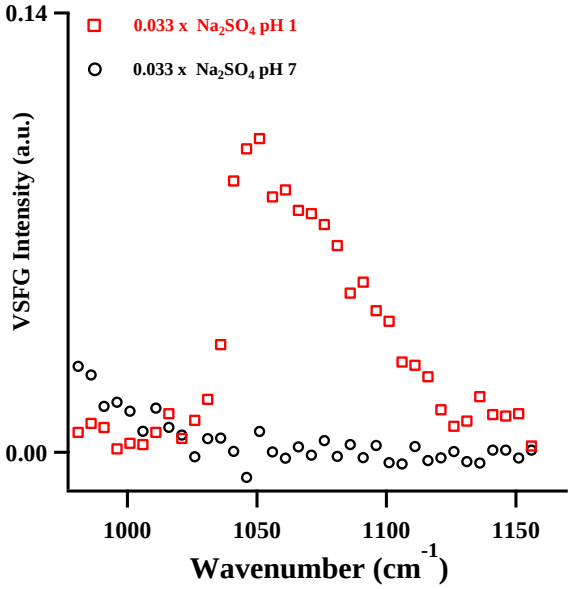

Figure S1. SSP VSFG spectra of pH 1 (*red squares*) and pH 7 (*black cirlces*) 0.033 x Na_2SO_4 solutions.

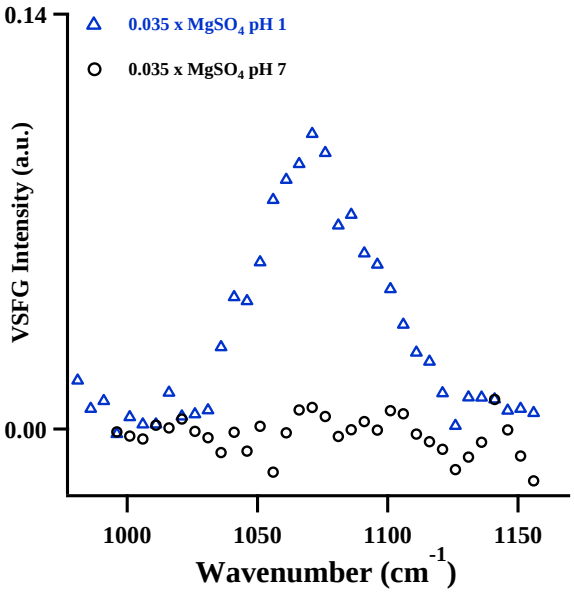

Figure S2. SSP VSFG spectra of pH 1 (*blue triangles*) and pH 7 (*black circles*) 0.035 x $MgSO_4$ solutions.

$$I_{VSFG} = \left| B_{NR} e^{i\phi} + \left(\sum_{\nu} \frac{A_{\nu}}{\omega_{\nu} - \omega_{IR} + i\Gamma_{\nu}} \right) \right|^2$$

Equation S1. Modified Lorentzian profile used to fit the VSFG spectra.

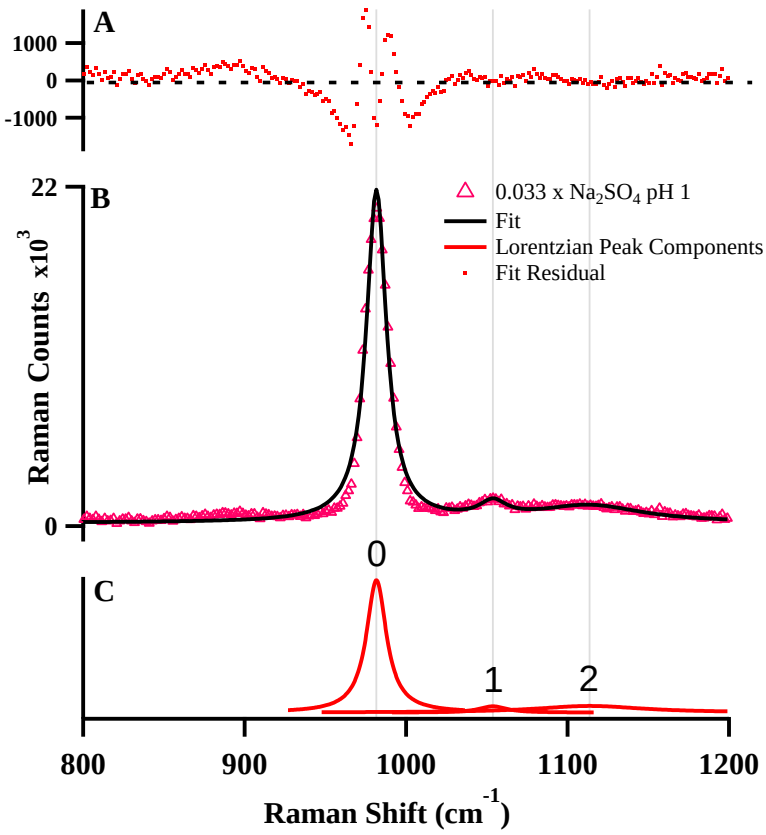

Figure S3. Fit of representative Raman spectra (B) with fit residuals (A) and Lorentzian peak components (C). Data (*pink triangles*) from 0.0033 x Na_2SO_4 solution, fit (*black line*), fit residuals (*red dots)*, and Lorentzian peak components (*red lines)* labeled 0-2 shown.

Table S1. Raman Spectra Fitting Results for ν_{SS}-SO_3 Peak ± 1 Standard Deviation

Solution	Concentration (x)	ω (cm^{-1})	I (counts)	FWHM (cm^{-1})	Area
H_2SO_4	0.4	1036 ± 0	3.7 (± 0.05) x 10^5	51 ± 1	3.0 (± 0.07) x 10^7
Na_2SO_4	0.009	1053 ± 1	711 ± 47	27 ± 3	29906 ± 2643
	0.017	1053 ± 2	880 ± 137	19 ± 5	26152 ± 6697
	0.033	1054 ± 2	1020 ± 215	20 ± 8	32705 ± 11947
$MgSO_4$	0.009	1052 ± 2	475 ± 79	18 ± 5	13181 ± 3741
	0.017	1055 ± 3	427 ± 127	19 ± 10	12806 ± 6307
	0.035	1059 ± 6	402 ± 250	19 ± 22	12175 ± 12768