

Supplementary Material for: Temperature Dependence of the Viscoelastic Properties of a Natural Gastropod Mucus by Brillouin Light Scattering Spectroscopy

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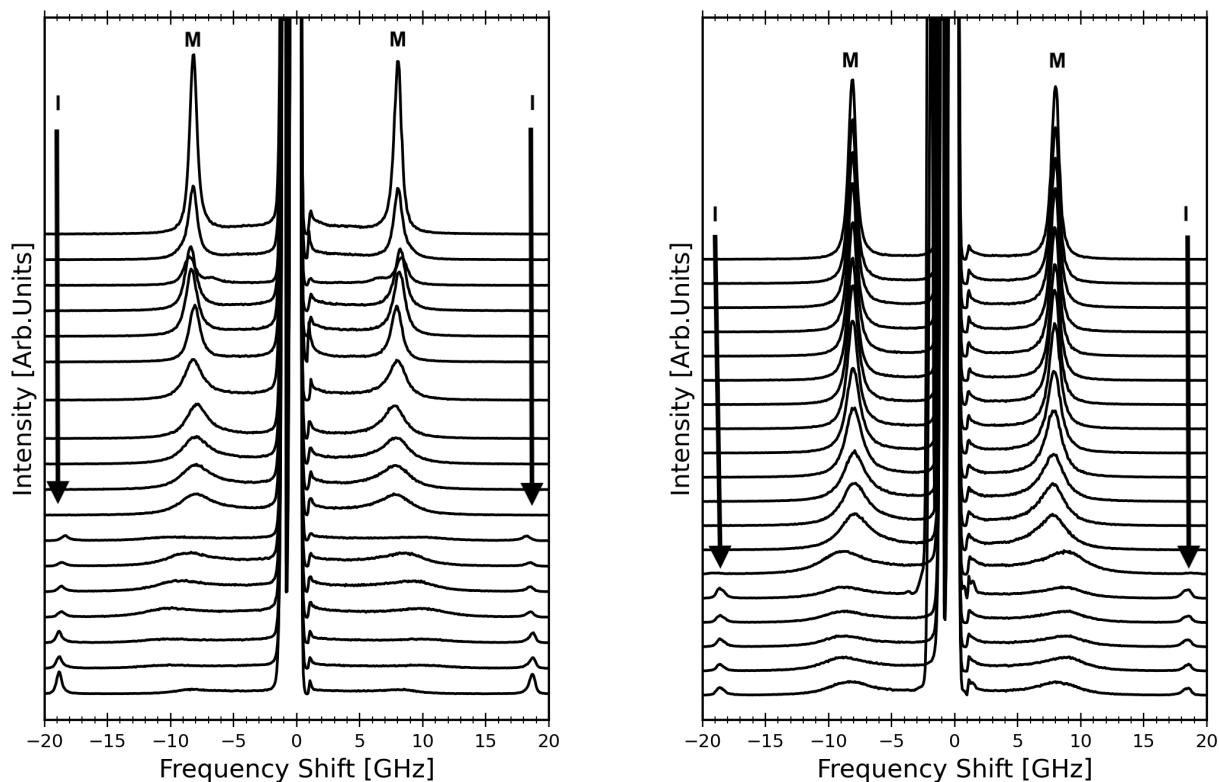


FIG. S1. Brillouin spectra of a natural snail mucus collected at the indicated temperatures. Left - Sample #1; Right - Sample #3.

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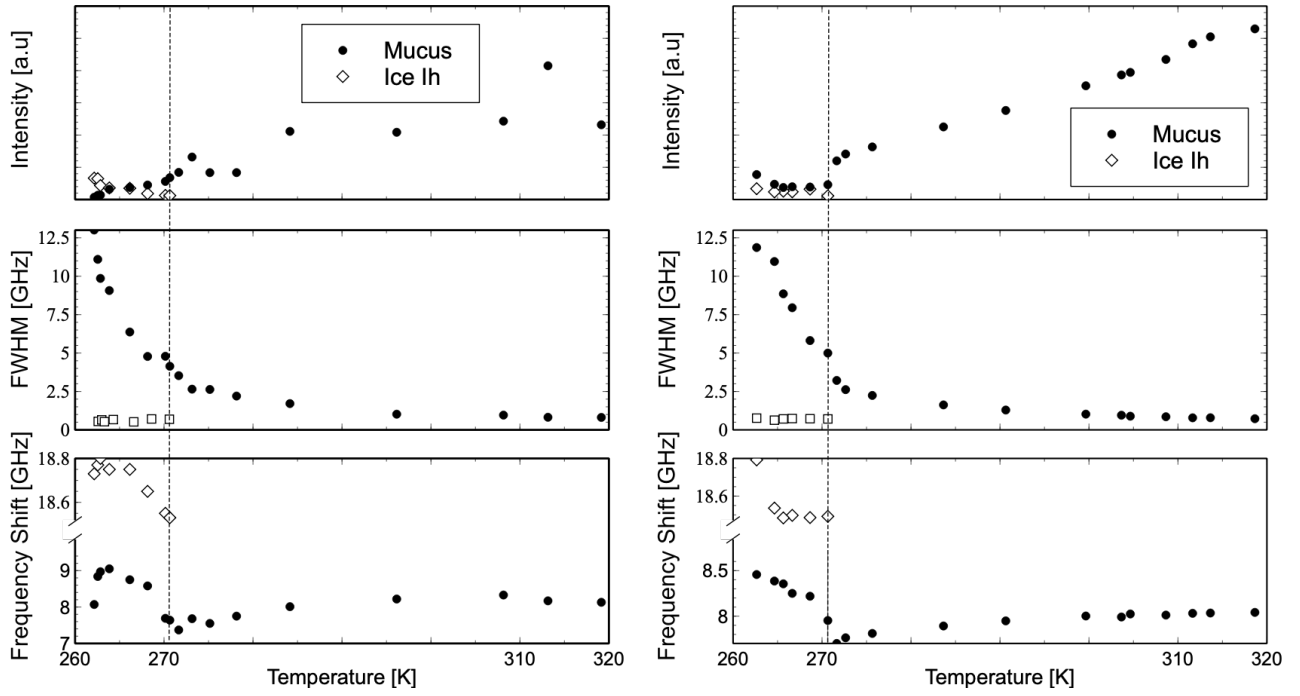


FIG. S2. Temperature dependence of integrated intensity, linewidth (FWHM), and frequency shift of Brillouin peaks for a natural snail mucus. Left - Sample #1; Right - Sample #3. The dashed vertical line indicates the phase transition at -2.5°C .

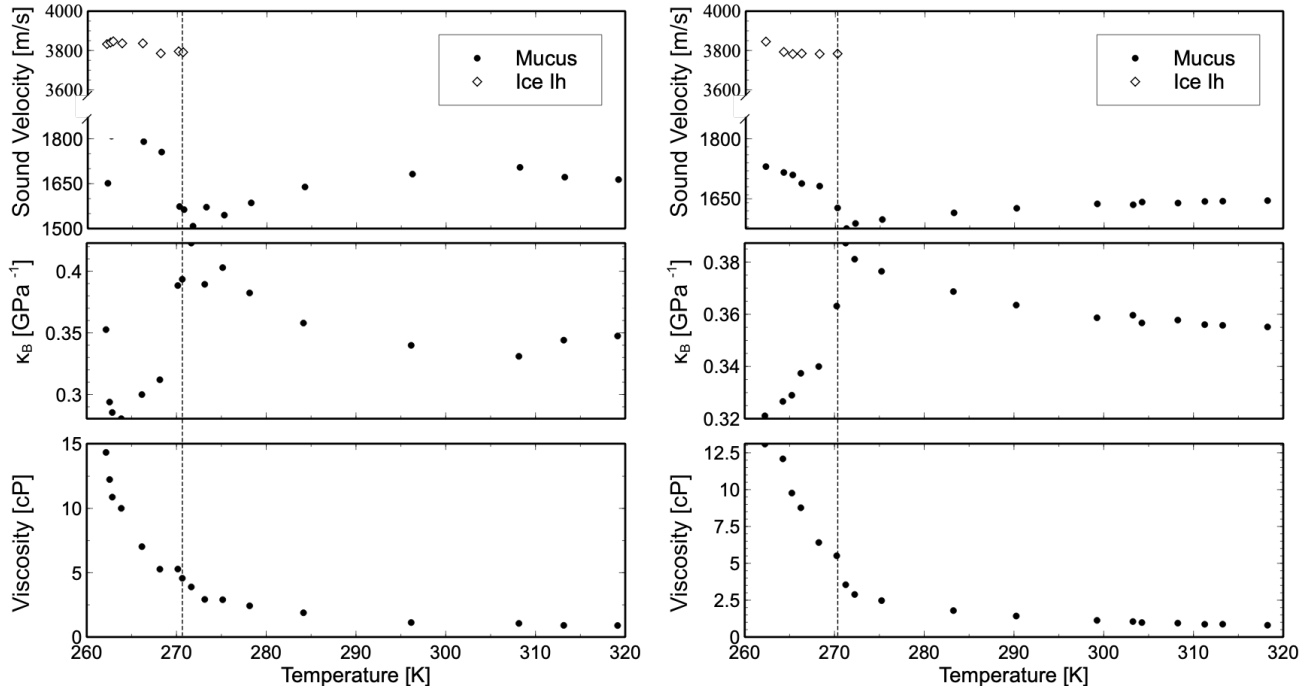


FIG. S3. Temperature dependence of hypersound velocity, adiabatic compressibility, and apparent viscosity of a natural snail mucus. Left - Sample #1; Right - Sample #3. The dashed vertical line indicates the phase transition at -2.5°C .

TABLE S1. Brillouin peak frequency shift (f_M , f_I), full width at half-maximum (Δf_M , Δf_I), and intensity (I_M , I_I) for Sample #1 at the indicated temperatures. M - liquid mucus phase; and I - ice-like solid phase.

T [± 0.5 K]	T [$\pm 0.5^\circ\text{C}$]	f_M [± 0.3 GHz]	f_I [± 0.1 GHz]	Δf_M [GHz]	Δf_I [± 0.3 GHz]	I_M [Arb. Units]	I_I [Arb. Units]
324.0	51.0	8.1	—	0.7(3)	—	13080(10)	—
319.0	46.0	8.1	—	0.8(3)	—	5800(10)	—
313.0	40.0	8.2	—	0.8(3)	—	10374(10)	—
308.0	35.0	8.3	—	1.0(3)	—	6080(10)	—
296.0	23.0	8.2	—	1.0(3)	—	5220(10)	—
284.0	11.0	8.0	—	1.7(3)	—	5280(10)	—
278.0	5.0	7.8	—	2.2(3)	—	2090(10)	—
275.0	2.0	7.6	—	2.6(3)	—	2090(10)	—
273.0	0.0	7.7	—	2.7(4)	—	3200(20)	—
272.0	-1.5	7.4	—	3.5(5)	—	2110(20)	—
271.0	-2.5	7.6	18.5	4.1(5)	0.5	1700(20)	—
270.0	-3.0	7.7	18.6	4.8(3)	0.5	1410(20)	320(20)
268.0	-5.0	8.6	18.5	5(1)	0.5	1130(20)	460(20)
266.0	-7.0	8.8	18.8	6(2)	0.6	930(20)	870(20)
263.7	-9.3	9.1	18.8	9(2)	0.6	790(20)	900(20)
262.7	-10.3	9.0	18.8	10(2)	0.5	350(20)	1090(10)
262.4	-10.6	8.8	18.9	11(3)	0.5	230(30)	1620(10)
262.0	-11.0	8.1	18.7	13(4)	0.5	180(30)	1660(10)

TABLE S2. Brillouin peak frequency shift (f_M , f_I), full width at half-maximum (Δf_M , Δf_I), and intensity (I_M , I_I) for Sample #2 at the indicated temperatures. M - liquid mucus phase; and I - ice-like solid phase.

T [± 0.5 K]	T [$\pm 0.5^\circ\text{C}$]	f_M [± 0.3 GHz]	f_I [± 0.1 GHz]	Δf_M [GHz]	Δf_I [± 0.3 GHz]	I_M [Arb. Units]	I_I [Arb. Units]
322.0	49.0	8.1	—	0.6(2)	—	10070(10)	—
317.0	44.0	8.1	—	0.7(2)	—	9350(10)	—
316.0	43.0	8.0	—	0.7(2)	—	8720(10)	—
312.0	39.0	8.0	—	0.8(3)	—	7990(10)	—
310.0	37.0	8.0	—	0.8(2)	—	8150(10)	—
307.0	34.0	8.0	—	0.8(3)	—	6770(10)	—
306.0	33.0	8.0	—	0.9(3)	—	8130(10)	—
303.0	30.0	8.0	—	1.0(3)	—	6830(10)	—
301.0	28.0	8.0	—	0.9(3)	—	7800(10)	—
298.0	25.0	8.0	—	1.0(3)	—	6500(10)	—
296.0	23.0	8.0	—	0.9(3)	—	8330(20)	—
288.0	15.0	7.9	—	1.4 (3)	—	4770(10)	—
280.0	7.0	7.8	—	1.9(3)	—	3710(20)	—
274.0	1.0	7.7	—	2.6(3)	—	2910(20)	—
272.0	-1.0	7.7	—	2.9(4)	—	2710(30)	—
270.5	-2.5	7.6	—	3.6(4)	—	2220(30)	—
270.0	-3.0	7.9	18.6	5.8(5)	0.7	1080(30)	320(10)
267.0	-6.0	8.2	18.6	7.4(5)	0.7	1120(30)	350(10)
266.0	-7.0	8.6	18.7	9(2)	0.5	920(30)	370(10)
264.0	-9.0	8.4	18.7	10(2)	0.7	910(40)	380(10)
262.7	-10.3	8.6	18.8	11(2)	0.5	430(40)	890(10)
262.4	-10.6	8.6	18.7	12(3)	0.7	430(40)	750(10)
262.0	-11.0	8.4	18.8	13(3)	0.6	310(40)	1650(10)

TABLE S3. Brillouin peak frequency shift (f_M, f_I), full width at half-maximum ($\Delta f_M, \Delta f_I$), and intensity (I_M, I_I) for Sample #3 at the indicated temperatures. M - liquid mucus phase; and I - ice-like solid phase.

T [± 0.5 K]	T [$\pm 0.5^\circ\text{C}$]	f_M [± 0.3 GHz]	f_I [± 0.1 GHz]	Δf_M [GHz]	Δf_I [± 0.3 GHz]	I_M [Arb. Units]	I_I [Arb. Units]
323.0	50.0	8.1	—	0.7(3)	—	14570(20)	—
318.0	45.0	8.0	—	0.7(3)	—	13240(20)	—
313.0	40.0	8.0	—	0.8(3)	—	12620(20)	—
311.0	38.0	8.0	—	0.8(3)	—	12070(20)	—
308.0	35.0	8.0	—	0.9(6)	—	10860(20)	—
304.0	31.0	8.0	—	0.9(5)	—	9860(20)	—
303.0	30.0	8.0	—	1.0(5)	—	9660(20)	—
299.0	26.0	8.0	—	1.0(4)	—	8820(20)	—
290.0	17.0	7.9	—	1.3(5)	—	6910(20)	—
283.0	10.0	7.9	—	1.6(5)	—	5630(30)	—
275.0	2.0	7.8	—	2.2(6)	—	4080(30)	—
272.0	-1.0	7.8	—	2.6(5)	—	3530(30)	—
271.0	-2.5	7.7	—	3.2(6)	—	3000(20)	—
270.0	-3.0	8.0	18.5	5(1)	0.7	1150(30)	290(10)
268.0	-5.0	8.2	18.5	6(2)	0.7	970(30)	810(10)
266.0	-7.0	8.3	18.5	8(2)	0.7	990(30)	600(10)
265.0	-8.0	8.4	18.5	9(2)	0.7	930(30)	650(10)
264.0	-9.0	8.4	18.6	11(3)	0.6	1190(30)	590(10)
262.0	-11.0	8.5	18.8	12(4)	0.8	1940(30)	840(10)