

1 Supporting Material

2 Table S1. Parameters for cylinder form factor fit to laponite in D₂O. Scale, equivalent to volume
3 fraction in this model, was determined by conversion of w/w concentration to v/v using the density
4 of laponite (2.53 g/mL)³ and D₂O (1.11 g/mL). SLD of laponite is sourced from the literature.³⁷

Temperature	20 °C		35 °C		45 °C	
	Value	Error	Value	Error	Value	Error
scale	0.0118	-	0.0118	-	0.0118	-
background	0.01	-	0.01	-	0.01	-
SLD (x 10 ⁻⁶ Å ⁻²)	4.2	-	4.2	-	4.2	-
SLD_solvent (x 10 ⁻⁶ Å ⁻²)	6.37	-	6.37	-	6.37	-
Radius (Å)	119.9	3.6167	125.24	3.6343	126.4	3.8558
Length (Å)	6.5386	0.17793	6.8335	0.17656	6.4404	0.17311

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7 Table S2. Parameters for cylinder form factor fit to laponite in 17 % v/v D₂O in H₂O. Scale, equivalent
8 to volume fraction in this model, was determined by conversion of w/w concentration to v/v using the
9 density of laponite (2.53 g/mL)³ and D₂O (1.11 g/mL). SLD of laponite is sourced from the literature.³⁷

Temperature	20 °C		35 °C		45 °C	
	Value	Error	Value	Error	Value	Error
scale	0.012	-	0.012	-	0.012	-
background	0.02	-	0.02	-	0.02	-
SLD (x 10 ⁻⁶ Å ⁻²)	4.22	-	4.22	-	4.22	-
SLD_solvent (x 10 ⁻⁶ Å ⁻²)	0.62	-	0.62	-	0.62	-

Radius (Å)	128.03	3.6268	131.41	3.8012	124.27	3.599
Length (Å)	5.2828	0.14603	5.1155	0.14272	5.2238	0.14922
Chi Sq	0.906		0.79835		0.94124	

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2 Table S3. Parameters for ellipsoid x sticky hard sphere plus power law form factor fit to 10 wt% 8.2
3 kg/mol BCS 1/3 wt% laponite in 69 % v/v D2O at 20, 35, and 45 °C

	Value			Fit error		
	Temperature (C)			Temperature (C)		
	20	35	45	20	35	45
background	0.05	0.05	0.05			
A_scale	7.64E-10			1.308E-10		
A_power	4					
B_scale	1	1	1			
B_sld	1.4	0.8175	0.88557		0.17188	0.12972
B_sld_solvent	4.22	4.22	4.22			
B_radius_polar	26.409	67.571	85.727	0.40491	0.24137	0.24944
B_radius_equatorial	96.287	271.07	387.58	1.4781	3.457	4.2995
B_volfraction	0.04801	0.03446	0.03696	0.000555	0.0035856	0.0029649
	7	8		8		
B_perturb	0.05	0.05	0.05			
B_stickiness	2095.7	3002100	3002100	1195600	10000000	10000000
			0		0	0
Chi Sq	5.2704	19.495	46.626			

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5 Table S4. Parameters for ellipsoid x sticky hard sphere plus power law form factor fit to 10 wt% 10.8
6 kg/mol BCS 2/3 wt% laponite in 69 % v/v D2O at 20, 35, and 45 °C

	Value			Fit error		
	Temperature (C)			Temperature (C)		
	20	35	45	20	35	45

background	0.05	0.05	0.05			
A_scale	8.62E-10	8.62E-10				
A_power	4	4				
B_scale	1	1	1			
B_sld	1.8727	2.1264	1.223		0.066233	0.11158
B_sld_solvent	4.22	4.22	4.22			
B_radius_polar	21.373	54.831	77.14		0.21337	0.20736
B_radius_equatorial	81.053	203.32	309.95		3.5018	3.8566
B_volfraction	0.10111	0.14016	0.065367		0.009539	0.005034
B_perturb	0.05	0.05	0.05			
B_stickiness	79.739	10033	0.53934		226.31	0.020904
Chi Sq	6.4397	12.951	51.084			

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3 Table S5. Parameters for ellipsoid x sticky hard sphere plus power law form factor fit to 10 wt% 14.1
4 kg/mol BCS 3 /3 wt% laponite in 69 % v/v D2O at 20, 35, and 45 °C

	Value			Fit error		
	Temperature (C)			Temperature (C)		
	20	35	45	20	35	45
background	0.05	0.05	0.05			
A_scale	8.62E-10	8.62E-10	8.62E-10			
A_power	4	4	4			
B_scale	1	1	1			
B_sld	2.9986	1.3153	2.5422	0.075957	0.44579	
B_sld_solvent	4.22	4.22	4.22			
B_radius_polar	24.737	56.387	62.424	0.53771	0.34616	0.2739
B_radius_equatorial	171.23	197.31	287.98	5.9639	3.7559	1.1207
B_volfraction	0.15425	0.029465	0.098709	0.019131	0.009203	0.00035
B_perturb	0.05	0.05	0.05			
B_stickiness	1.6952	10145	10079	0.7568	63040000	5933800
Chi Sq	2.5506	7.4947	25.296			

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2 Table S6. Parameters for ellipsoid x sticky hard sphere plus power law form factor fit to 10 wt% 21.3
 3 kg/mol BCS 4/3 wt% laponite in 69 % v/v D2O at 20, 35, and 45 °C

	Value			Fit error		
	Temperature (° C)			Temperature (° C)		
	20	35	45	20	35	45
background	0.05	0.05	0.05			
A_scale	1.08E-08	3.29E-09	3.05E-09	2.3E-10	1.9E-10	
A_power	4	4	4			
B_scale	1	1	1			
B_sld	1.3681	1.9878	1.6423	0.64435	0.005887	0.067064
B_sld_solvent	4.22	4.22	4.22			
B_radius_polar	15.253	47.544	58.992	0.60052	0.17655	0.19474
B_radius_equatorial	65.043	134.73	205.28	5.934	0.41238	3.2552
B_volfraction	0.095764	0.19108	0.15022	0.0445	0.001061	0.008488
B_perturb	0.05	0.05	0.05			
B_stickiness	3.4918	966540	2.4884	10.025	1E+08	0.7574
Chi Sq	2.5506	7.4947	25.296			

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5 Table S7. Parameters for fit to 10 wt% 8.2 kg/mol BCS 1 /3 wt% laponite in 17 % v/v D2O at 20, 35,
 6 and 45 °C, fit to a cylinder form factor with a square well structure factor for the 35 and 45 °C samples.

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	Value			Fit error		
	Temperature (° C)			Temperature (° C)		
	20	35	45	20	35	45
Scale	0.012	1	1			
background	0.02	0.06	0.06			
sld	4.22	4.22	4.22			
sld_solvent	0.62	0.62	0.62			
radius	102.48	137.41	137.41	2.643	17.597	
length	6.7496	4.1056	4.1056	0.18257	0.29453	
radius_effective		15.34	19		818.49	31.45

volfraction		0.0118	0.0118			
welldepth		0.13465	0.15653		22.145	0.79375
wellwidth		4.0829	4.1535		220.3	6.9072
Chi Sq	0.885	1.1022	1.4043			

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2 Table S8. Parameters for fit to 10 wt% 10.8 kg/mol BCS **2** /3 wt% laponite in 17 % v/v D2O at 20, 35,
3 and 45 °C, fit to a cylinder form factor with a square well structure factor for the 35 and 45 °C samples.

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	Value			Fit error		
	Temperature (° C)			Temperature (° C)		
	20	35	45	20	35	45
scale	0.012	1	1			
background	0.05	0.06	0.06		0.013053	
sld	4.22	4.22	4.22			
sld_solvent	0.62	0.62	0.62			
radius	113.19	199.5	316.81	2.9535	12.82	17.095
length	6.3444	7.8493	7.4012	0.16938	0.17829	0.13855
radius_effective			422.21			329.44
volfraction		0.0118	0.0118			
welldepth		1.347	0.66761		1E+08	1.6714
wellwidth		1	3.5507		0.44026	2.8866
Chi Sq	0.99645	2.1717	5.2994			

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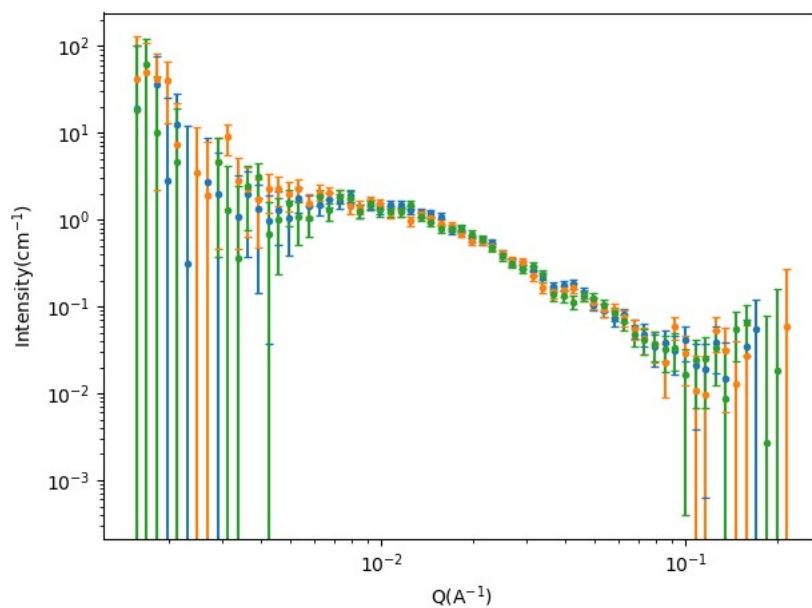
6 Table S9. Parameters for fit to 10 wt% 10.8 kg/mol BCS **3** /3 wt% laponite in 17 % v/v D2O at 20, 35,
7 and 45 °C, fit to a cylinder form factor with a square well structure factor for the 35 and 45 °C samples.

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	Value			Fit error		
	Temperature (°C)			Temperature (°C)		
	20	35	45	20	35	45
scale	0.0118	1	1			
background	0.042965	0.07	0.07			
sld	4.22	4.22	4.22			
sld_solvent	0.62	0.62	0.62			
radius	95.529	145.89	190.34	0.71173	2.3312	4.9661
length	8.3225	8.6004	5.4944	0.067415	0.051408	0.09074
radius_effective		189.1	7.5656		56.681	2543.8
volfraction		0.0118	0.0118			
welldepth		0.74002	1.5		1E+0.8	2142.5
wellwidth		1	1.7755		0.18181	693.78

Chi Sq	4.8333	18.4	4.5519			
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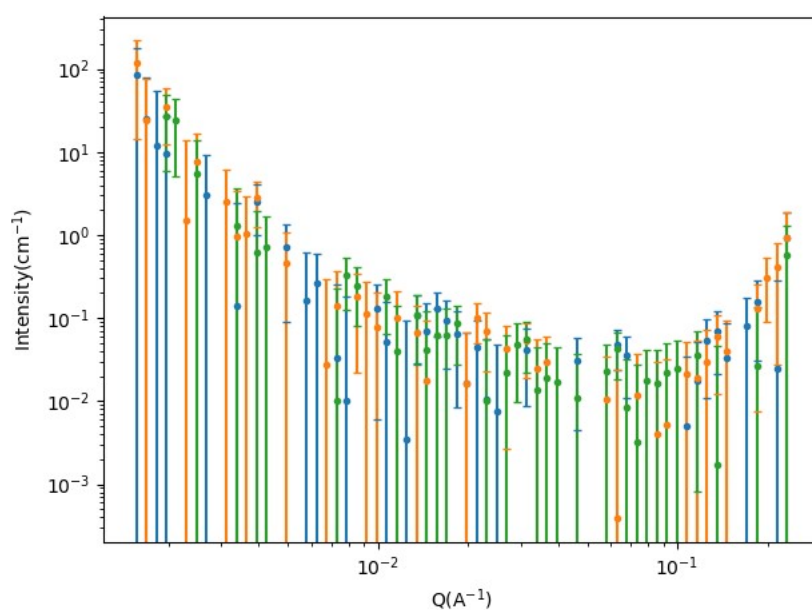


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3 Figure S1. SANS data, including error, of 3 wt% laponite in D₂O at 20, 35, and 45 °C, shown in green,
4 blue, and orange, respectively.

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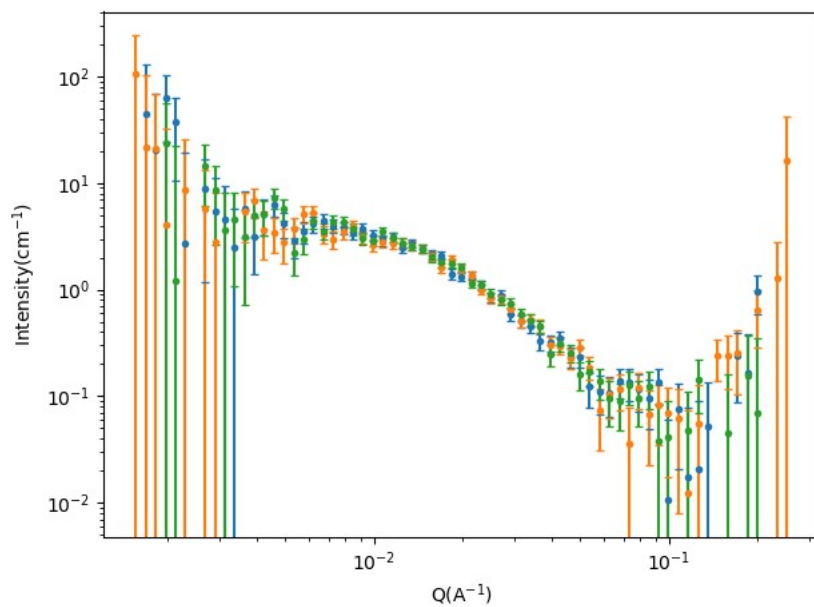
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8 Figure S2. SANS data, including error, of 3 wt% laponite in 69 % v/v D₂O at 20, 35, and 45 °C, shown in
9 green, blue, and orange, respectively.

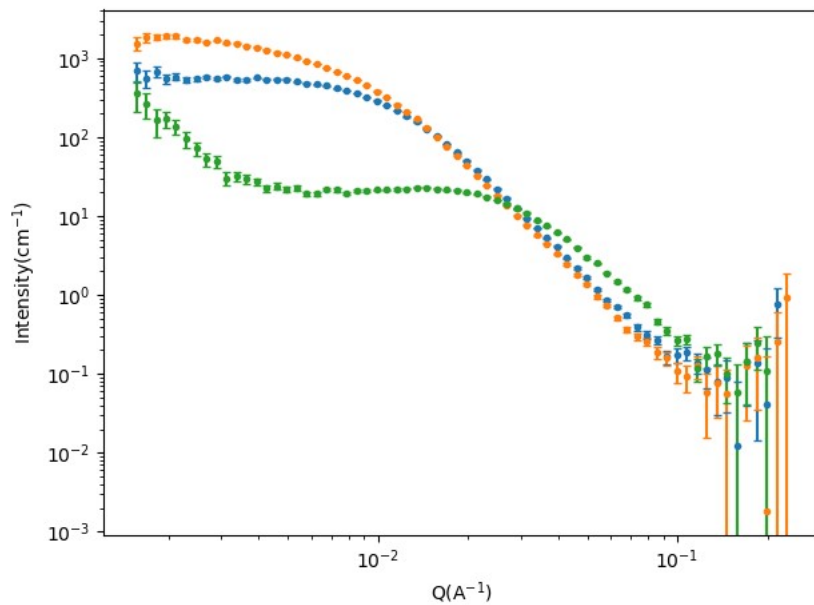
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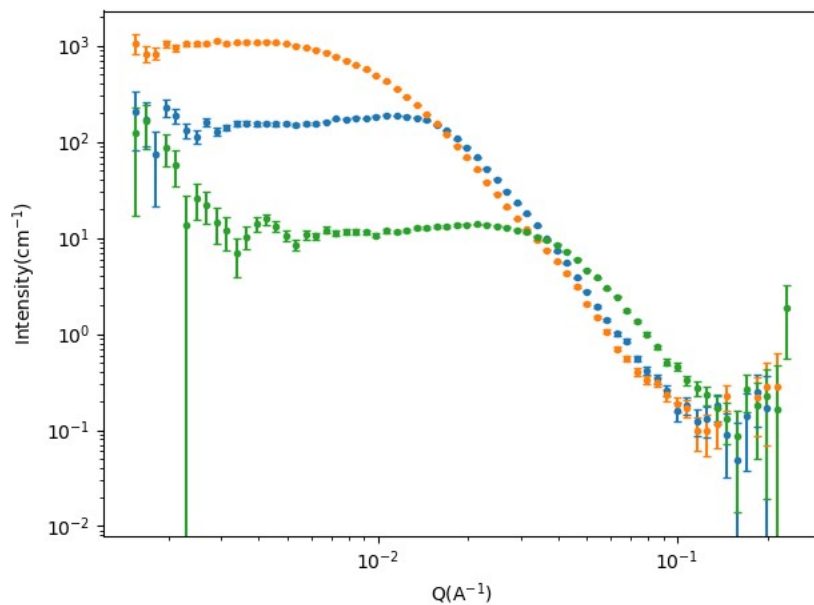
3 Figure S3. SANS data, including error, of 3 wt% laponite in 17 % v/v D₂O at 20, 35, and 45 °C, shown in
 4 green, blue, and orange, respectively.

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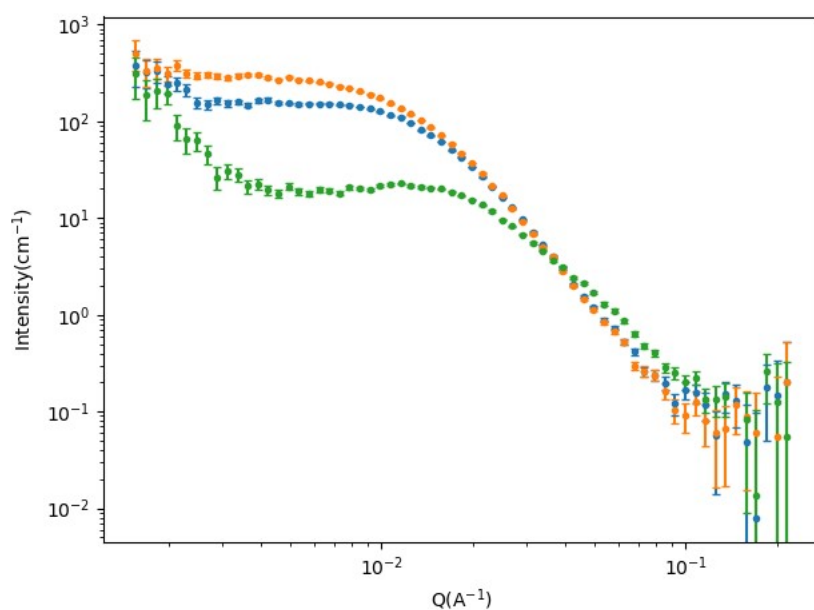
7 Figure S4. SANS data, including error, of 10 wt% 8.2 kg/mol / 3 wt% laponite in 69 % v/v D₂O at 20, 35,
 8 and 45 °C, shown in green, blue and orange, respectively.



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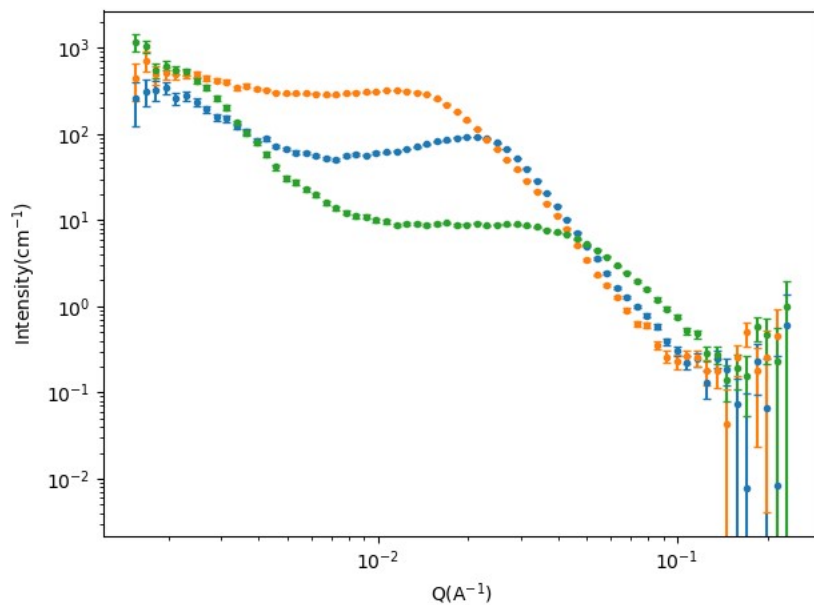
2 Figure S5. SANS data, including error, of 10 wt% 10.8 kg/mol / 3 wt% laponite in 69 % v/v D₂O at 20,
 3 35, and 45 °C, shown in green, blue and orange, respectively.

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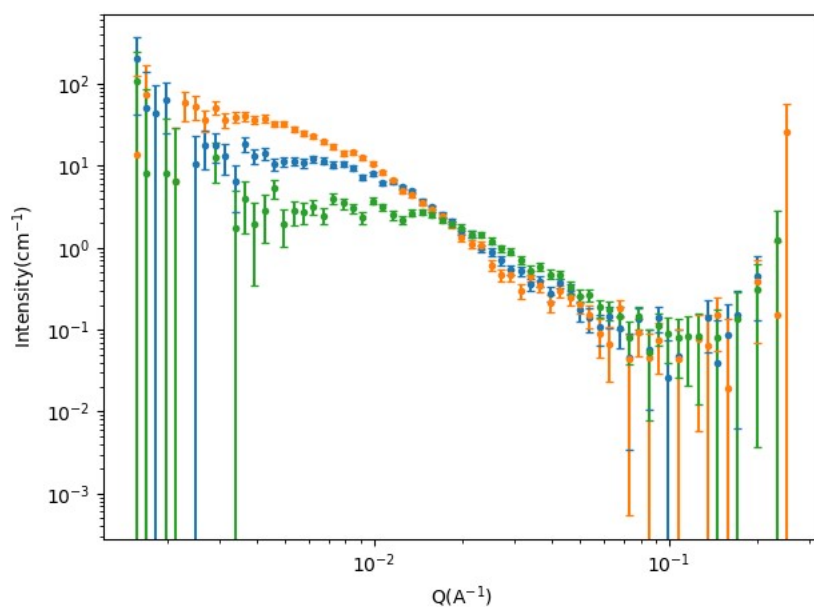
6 Figure S6. SANS data, including error, of 10 wt% 14.1 kg/mol / 3 wt% laponite in 69 % v/v D₂O at 20,
 7 35, and 45 °C, shown in green, blue and orange, respectively.



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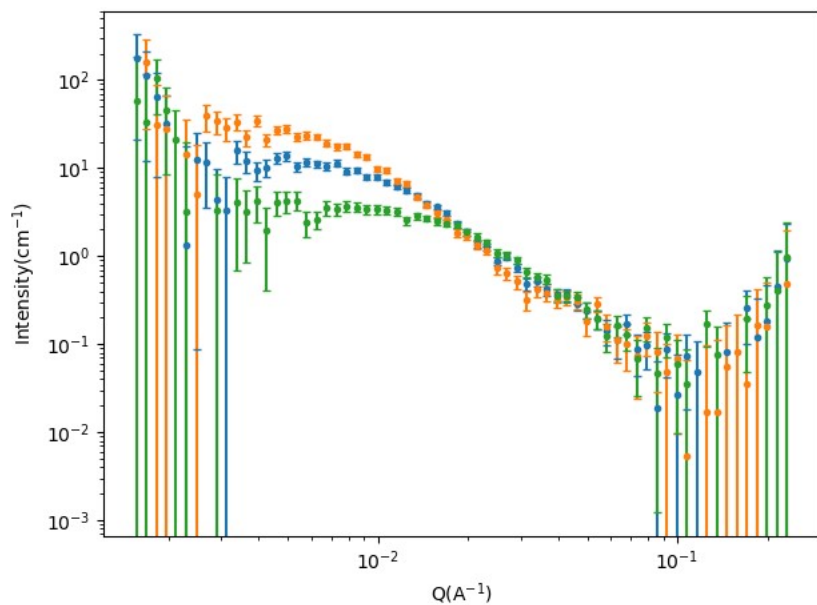
2 Figure S7. SANS data, including error, of 10 wt% 21.3 kg/mol /3 wt% laponite in 69 % v/v D₂O at 20,
3 35, and 45 °C, shown in green, blue and orange, respectively.

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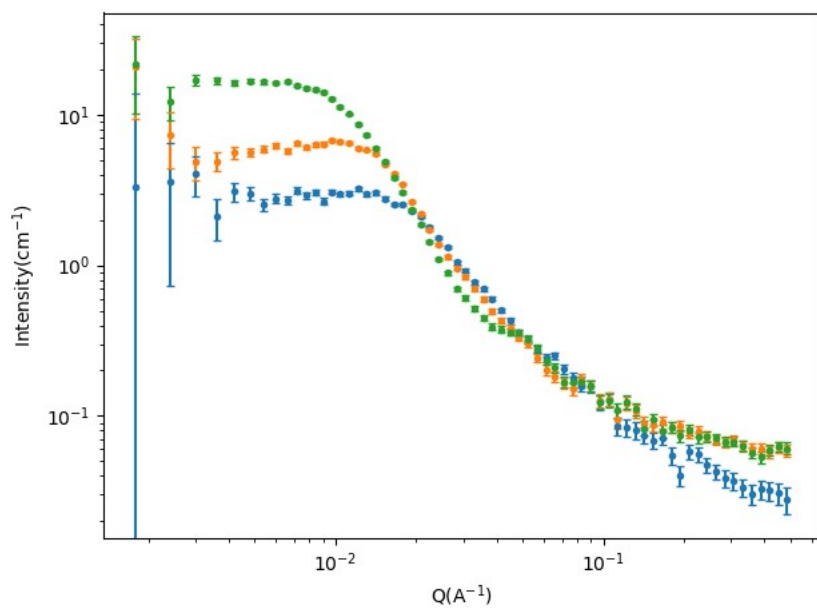
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6 Figure S8. SANS data, including error, of 3 wt% laponite with 10 % 8.2.1 kg/mol BCS in 17 % v/v D₂O at
7 20, 35, and 45 °C, shown in green, blue and orange, respectively.



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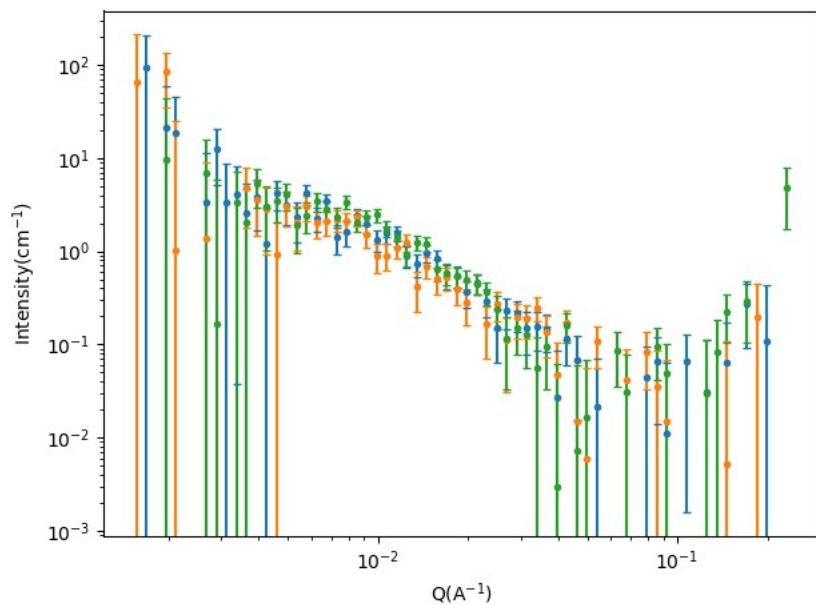
2 Figure S9. SANS data, including error, of 3 wt% laponite with 10 % 10.8 kg/mol BCS in 17 % v/v D₂O at
 3 20, 35, and 45 °C, shown in green, red and blue, respectively.



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5 Figure S10. SANS data, including error, of 3 wt% laponite with 10 % 14.1 kg/mol BCS in 17 % v/v D₂O
 6 at 20, 35, and 45 °C, shown in green, red and blue, respectively.

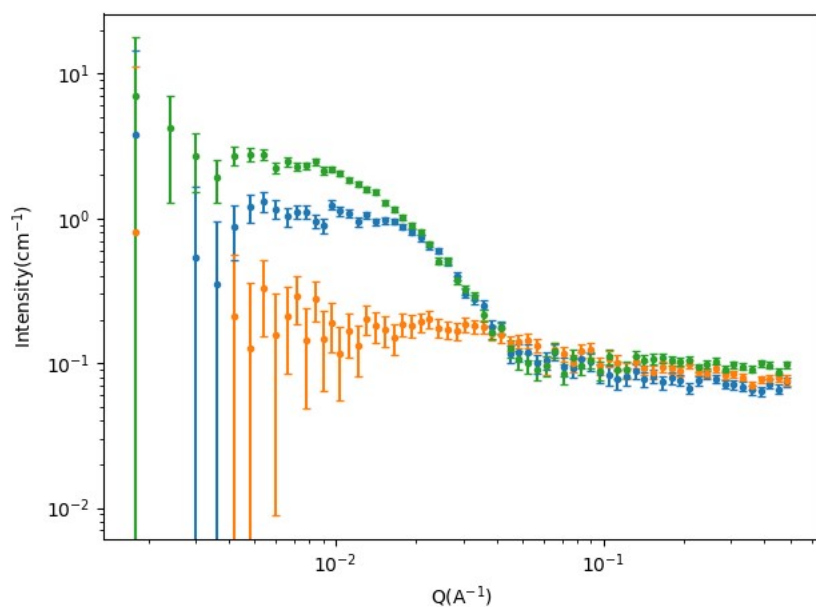
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2 Figure S11. SANS data, including error, of 3 wt% laponite with 10 % 21.3 kg/mol BCS in 17 % v/v D₂O
 3 at 20, 35, and 45 °C, shown in green, red and blue, respectively.

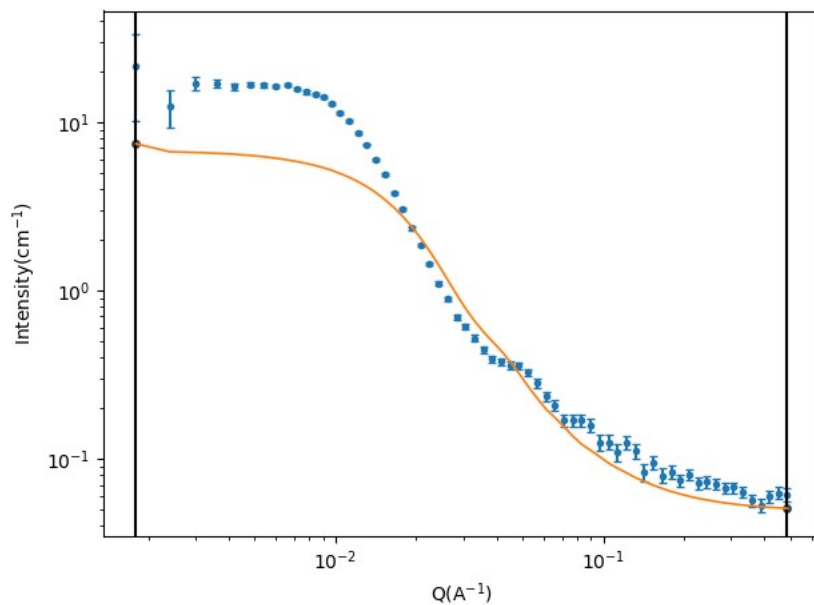
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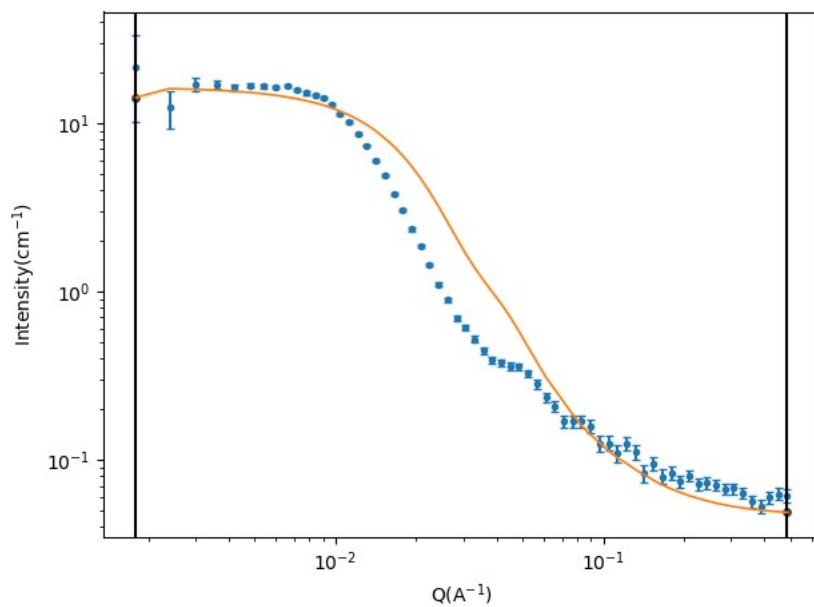
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6 Figure S12. 14.1 kg/mol BCS in 17 % v/v D₂O contrast at 20, 35, and 45 °C, shown in orange, green, and
 7 blue, respectively.

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3 Figure S13. BC15 sample fit with the sum contributions from BCS and clay fit form factors (top), and
 4 when allowing the BCS volume fraction to increase (bottom).

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