

SUPPLEMENTARY MATERIAL FOR

"Micellization and Phase Separation for Triblock Copolymer 17R4 in H₂O and in D₂O"

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Table 1. Micellization line data for 17R4 in H₂O and in D₂O. Data taken at The College of Wooster ("lab A") are indicated as *, and data taken at the University of Maryland, College Park ("lab B") are indicated as **. **Uncertainties in temperature, T, are estimated to be at the 99% level.**

Mass fraction	Volume fraction	T (°C)	± (°C)
17R4/H₂O			
0.234*	0.226	32.34	0.01
0.255*	0.246	31.94	0.01
0.169*	0.163	35.85	0.05
0.130*	0.125	37.47	0.05
0.332*	0.322	29.69	0.01
0.105*	0.101	38.35	0.01
17R4/D₂O			
0.1400*	0.147	35.23	0.10
0.15814**	0.165	35.11	0.10
0.17286**	0.180	34.88	0.04
0.22708**	0.236	33.96	0.03
0.233*	0.243	33.03	0.05
0.26511**	0.275	32.03	0.04
0.29814**	0.308	30.63	0.13
0.33430**	0.345	27.94	0.15

0.38782**	0.399	21.81	0.17
0.3689*	0.382	23.97	0.07
0.43211**	0.444	13.0	1.2

Table 2. Cloud point/phase separation data for 17R4 in H₂O and in D₂O. Data taken at The College of Wooster are indicated as *, and data taken at the University of Maryland, College Park are indicated as **. **Uncertainties in temperature, T, are estimated to be at the 99% level.**

Mass fraction	Volume fraction	T (°C)	± (°C)
17R4/H₂O			
0.084*	0.080	40.9	0.8
0.169*	0.163	43.25	0.1
0.234*	0.226	44.838	0.012
0.255*	0.246	44.7	0.01
0.105*	0.101	40.57	0.5
0.130*	0.125	41.66	0.04
0.332*	0.322	46.53	0.01
17R4/D₂O			
0.1400*	0.147	41.01	0.12
0.22708**	0.236	43.19	0.04
0.233*	0.243	43.633	0.002
0.33477**	0.346	45.33	0.05
0.38782**	0.399	46.56	0.03
0.3689*	0.382	45.941	0.044
0.43211**	0.444	48.03	0.09
0.47778**	0.490	49.93	0.05
0.02819**	0.029	49.46	0.56
0.04777**	0.050	36.95	0.75
0.1197**	0.125	33.55	0.54

0.15814**	0.165	41.89	0.12
0.17286**	0.180	42.39	0.03
0.22708**	0.236	43.26	0.03
0.26511**	0.275	44.19	0.02
0.29935**	0.310	44.69	0.03

Table 3. Coexistence curve data for 17R4/H₂O and 17R4/D₂O. Here "*n*" is the refractive index, ϕ is the volume fraction, and ϕ_{prep} is the prepared volume fraction. Subscripts "u" and "l" refer to the upper and lower phases. For 17R4/H₂O, the upper phase is the copolymer-poor phase; for 17R4/D₂O, the upper phase is the copolymer-rich phase. The uncertainty in the refractive index is ± 0.0002 and ± 0.0025 in the volume fraction.

ϕ_{prep}	T(K)	n_u	n_l	ϕ_u	ϕ_l
17R4/H₂O					
0.246	321.662	1.3367	1.3887	0.064	0.449
0.246	320.662	1.3385	1.3860	0.076	0.426
0.246	319.682	1.3407	1.3825	0.091	0.398
0.246	319.1849	1.3419	1.3799	0.099	0.377
0.246	318.6892	1.3440	1.3769	0.114	0.354
0.246	318.1918	1.3473	1.3723	0.137	0.319
0.246	317.9978	1.3501	1.3689	0.157	0.294
0.246	317.8925	1.3530	1.3661	0.178	0.273
0.246	324.6070	1.3332	1.3949	0.041	0.504
0.246	328.0328	1.3306	1.4007	0.026	0.559
0.246	318.0885	1.3495	1.3708	0.153	0.308
0.246	317.9408	1.3516	1.3678	0.168	0.286
0.246	317.8667	1.3552	1.3644	0.194	0.261
0.246	318.3867	1.3460	1.3747	0.128	0.337
0.226	318.4773	1.3458	1.3735	0.126	0.329
0.226	318.5944	1.3454	1.3743	0.124	0.335

0.226	318.8951	1.3436	1.3762	0.111	0.349
0.226	319.8841	1.3404	1.3816	0.089	0.391
0.226	318.2973	1.3476	1.3712	0.139	0.311
0.226	318.1984	1.3493	1.3694	0.151	0.298
0.226	318.0998	1.3508	1.3672	0.162	0.282
0.226	318.0215	1.3536	1.3644	0.182	0.261
0.226	318.0006	1.3549	1.3627	0.192	0.249
0.226	321.1685	1.3374	1.3861	0.069	0.428
0.226	319.3867	1.3414	1.3792	0.096	0.373
0.226	318.0632	1.3516	1.3662	0.168	0.274
0.226	321.8507	1.3352	1.3899	0.053	0.458
0.163	317.0974	1.3457	1.3740	0.123	0.329
0.163	317.3956	1.3442	1.3758	0.113	0.343
0.163	317.8921	1.3423	1.3784	0.100	0.363
0.163	318.8826	1.3399	1.3823	0.084	0.394
0.163	320.3691	1.3372	1.3866	0.066	0.430
0.163	321.8507	1.3352	1.3899	0.053	0.458
0.163	317.0018	1.3460	1.3736	0.125	0.326
0.163	316.8037	1.3473	1.3720	0.135	0.314
0.163	316.5057	1.3502	1.3687	0.155	0.289
0.163	323.4270	1.3334	1.3929	0.042	0.485
0.163	325.3930	1.3310	1.3964	0.026	0.518
0.163	327.3451	1.3303	1.3993	0.023	0.546

0.125	315.7073	1.3443	1.3783	0.111	0.356
0.125	315.4598	1.3449	1.3777	0.115	0.351
0.125	316.2041	1.3429	1.3797	0.102	0.368
0.125	317.6920	1.3401	1.3833	0.084	0.398
0.125	318.6826	1.3385	1.3856	0.073	0.417
0.125	319.6742	1.3372	1.3877	0.065	0.436
0.125	320.6631	1.3358	1.3897	0.056	0.453
0.125	321.6498	1.3349	1.3913	0.051	0.468
0.125	322.6359	1.3339	1.3929	0.044	0.483
0.125	324.6017	1.3322	1.3959	0.034	0.511
0.125	325.5854	1.3315	1.3975	0.030	0.527
0.125	326.5656	1.3308	1.3991	0.026	0.542
0.125	327.5435	1.3303	1.4002	0.023	0.553
0.125	323.6225	1.3329	1.3946	0.038	0.499
0.125	316.7057	1.3421	1.3819	0.097	0.385
0.125	317.6905	1.3402	1.3838	0.084	0.401
0.101	315.7059	1.3412	1.3837	0.089	0.396
0.101	325.5798	1.3314	1.3984	0.029	0.534
0.101	315.7078	1.3411	1.3834	0.088	0.393
0.101	317.6909	1.3386	1.3866	0.072	0.422
0.101	318.6835	1.3374	1.3881	0.065	0.436
0.101	316.7002	1.3398	1.3844	0.080	0.403
0.101	319.6726	1.3363	1.3899	0.058	0.452

0.322	319.696	1.3437	1.3759	0.113	0.349
0.322	320.691	1.3399	1.3819	0.086	0.396
0.322	322.666	1.3360	1.3885	0.060	0.450
0.322	325.615	1.3322	1.3950	0.035	0.508
0.322	330.466	1.3288	1.4026	0.014	0.581

0.080	316.704	1.3382	1.3890	0.069	0.436
0.080	317.200	1.3378	1.3902	0.066	0.447
0.080	318.190	1.3371	1.3911	0.062	0.456
0.080	319.179	1.3358	1.3921	0.054	0.466
0.080	316.710	1.3382	1.3891	0.069	0.437
0.080	316.108	1.3388	1.3896	0.072	0.439
0.080	315.651	1.3390	1.3902	0.073	0.442
0.080	315.255	1.3394	1.3903	0.075	0.442

17R4/D₂O

0.243	318.690	1.3805	1.3354	0.408	0.079
0.243	320.669	1.3870	1.3317	0.460	0.054
0.243	322.643	1.3916	1.3291	0.499	0.036
0.243	317.700	1.3751	1.3389	0.366	0.103
0.243	317.204	1.3707	1.3420	0.333	0.125
0.243	318.125	1.3780	1.3379	0.388	0.097
0.243	317.5307	1.3741	1.3403	0.358	0.113
0.243	317.1346	1.3699	1.3434	0.327	0.135

0.243	317.0369	1.3683	1.3449	0.315	0.146
0.243	316.9377	1.3664	1.3462	0.301	0.155
0.382	321.9906	1.3882	1.3314	0.473	0.053
0.382	320.0166	1.3810	1.3347	0.415	0.075
0.382	319.2438	1.3782	1.3381	0.392	0.099
0.382	320.6097	1.3838	1.3339	0.437	0.070
0.147	315.0315	1.3737	1.3415	0.350	0.119
0.147	316.0236	1.3781	1.3379	0.384	0.094
0.147	317.0162	1.3813	1.3359	0.409	0.081
0.147	318.0083	1.3842	1.3341	0.433	0.069
0.147	318.0096	1.3842	1.3337	0.433	0.066
0.147	318.9969	1.3866	1.3324	0.453	0.058
0.147	319.9840	1.3889	1.3312	0.472	0.050
0.147	320.9719	1.3907	1.3300	0.488	0.042
0.147	321.9610	1.3926	1.3290	0.505	0.035
0.147	322.9438	1.3943	1.3282	0.520	0.030
0.147	317.5075	1.3830	1.3347	0.423	0.073
0.147	316.5149	1.3802	1.3368	0.400	0.087
0.147	315.7251	1.3772	1.3385	0.377	0.098
0.147	315.3766	1.3756	1.3396	0.364	0.106

Table 4. Parameter values using Eqn. 4 to describe the shape of the coexistence curves for different prepared compositions ϕ_{prep} . Coexistence curves were measured in volume fraction of 17R4 in H₂O or D₂O. The uncertainties are one standard deviation estimates from the fits. The critical exponents were held fixed at their theoretical values of $\beta = 0.326$ and $\beta = 0.52$; parameter values in parentheses were held constant. χ^2/N is the reduced chi-square measure for the goodness of these weighted fits.

ϕ_{prep}	T_c (°C)	B	B_1	χ^2/N
17R4/H₂O				
0.226	44.840	1.64 ±0.01	(0)	1.86
0.226	44.840	1.59 ±0.02	0.42 ±0.20	1.62
0.246	44.696	1.64 ±0.01	(0)	0.48
0.246	44.696	1.66 ±0.02	-0.11 ±0.08	0.37
17R4/D₂O				
0.243	43.633	1.72 ±0.01	(0)	1.46
0.243	43.633	1.78 ±0.02	-0.41 ±0.10	0.41