Supporting Information

Enthalpy and Entropy of Scission in Wormlike Micelles

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Including 1 table, 4 figures

Table S1. Micellar size parameters obtained through fitting for 0.2 wt % of mixed surfactant (MS) under various salt conditions in D_2O at different temperatures. Values with errors were fit.[a]

% Total Surfactant	% NaCl	T °C	R_1 Å	σ_{R1}	L_1 Å	G_2 cm^{-1}	$R_{g,2}$ Å	$d_{f,2}$	$\phi\Delta\rho^2$ 10^{19} cm^{-4}	z	L_2 Å
0.20	3.01	15	19.6±0.1	0.174±0.006	660±20	61±8	1800±200	1.67	0.767±0.003	11±2	7400±900
0.20	3.56	15	20.1±0.1	0.170±0.005	550±20	160±40	2700±400	1.67	0.870±0.003	26±6	14000±3000
0.20	4.01	15	19.9±0.1	0.193±0.005	480±20	210±40	1900±300	1.94±0.06	0.849±0.003	40±8	19000±4000
0.20	5	15	20.0±0.1	0.197±0.005	500±30	500±100	2400±400	2.06±0.05	0.883±0.003	80±20	40000±10000
0.20	3.01	25	18.9±0.1	0.184±0.006	610±30	38±6	1400±200	1.67	0.763±0.003	8±1	4800±700
0.20	3.56	25	19.5±0.1	0.166±0.005	630±30	90±20	2000±200	1.67	0.889±0.003	14±2	9000±1000
0.20	4.01	25	19.3±0.1	0.185±0.005	660±40	120±20	1900±600	1.8±0.2	0.846±0.003	18±3	12000±2000
0.20	5	25	19.3±0.1	0.193±0.005	620±40	300±100	2000±700	2.1±0.1	0.893±0.003	50±20	30000±10000
0.20	3.01	35	18.6±0.1	0.174±0.006	590±30	20±4	1000±100	1.67	0.774±0.003	5±1	2800±400
0.20	3.56	35	18.8±0.1	0.175±0.005	620±30	56±9	1600±200	1.67	0.894±0.003	10±1	6000±900
0.20	4.01	35	18.7±0.1	0.180±0.006	660±30	74±7	1800±100	1.67	0.831±0.003	13±1	8000±900
0.20	5	35	19.1±0.1	0.179±0.005	530±30	210±80	1700±600	2.0±0.1	0.897±0.003	40±10	20000±7000

[a] R_1, cross-sectional radius of the cylindrical subunits. $\sigma_{R,1}$, dimensionless geometric standard deviation of R_1. L_1, length of the cylindrical subunits. G_2, prefactor of Guinier law. $R_{g,2}$, radius of gyration of large scale structure. $d_{f,2}$, fractal dimension of large scale structure. $\phi_{MS}\Delta\rho^2$, volume fraction of mixed surfactant multiplied with the scattering contrast. z, number of cylindrical subunit contained in a micelle. L_2, average contour length of micelles.

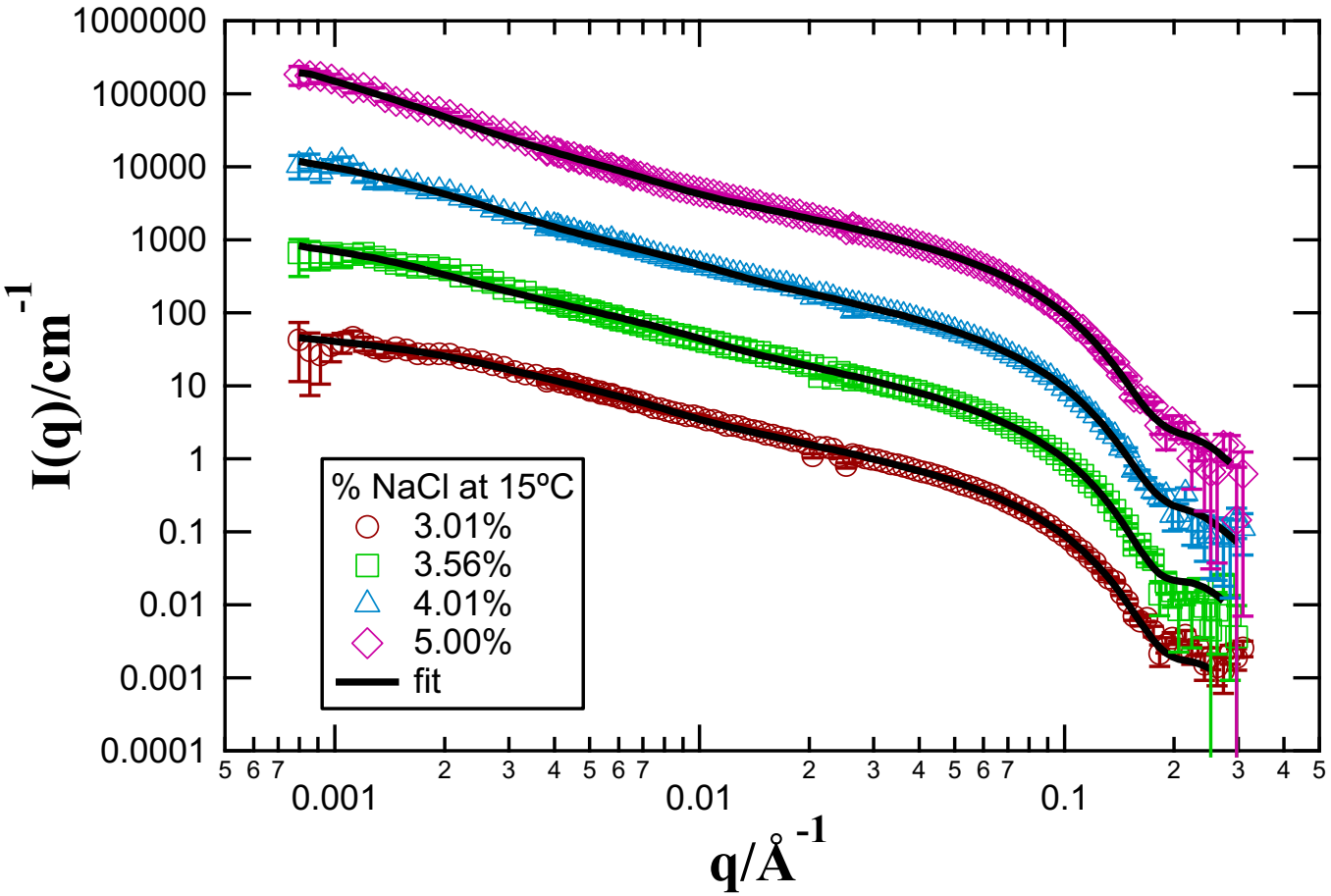

Figure S1. The scattering intensity $I(q)$ of 0.2% mixed surfactants samples at 15ºC plotted against q. Solid lines are fits performed based on hybrid fitting function. The curves are multiplied by the factors 10^0 (○), 10^1 (□), 10^2 (Δ), 10^3 (◊).

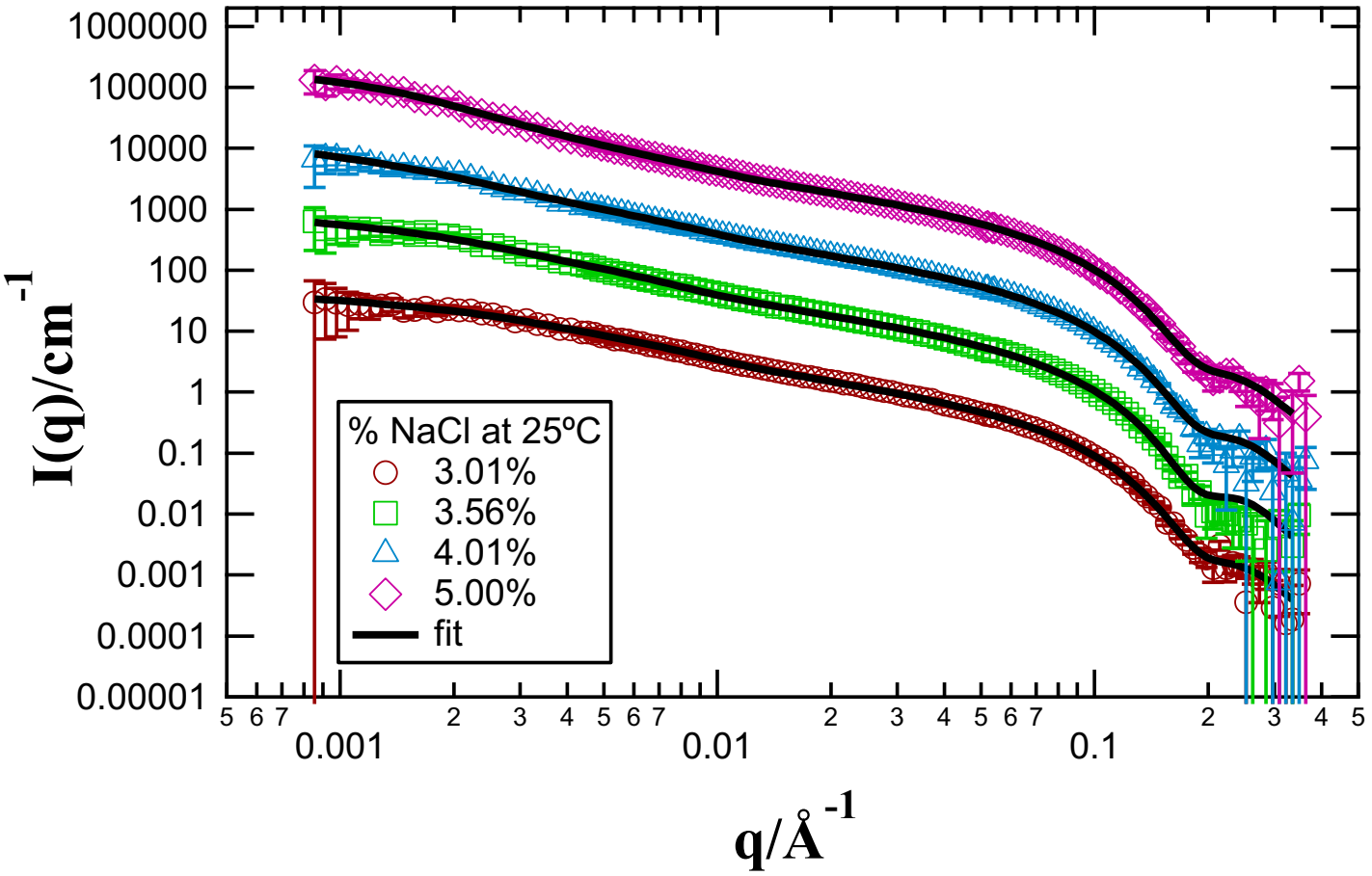

Figure S2. The scattering intensity $I(q)$ of 0.2% mixed surfactants samples at 25ºC plotted against q. Solid lines are fits performed based on hybrid fitting function. The curves are multiplied by the factors 10^0 (○), 10^1 (□), 10^2 (Δ), 10^3 (◊).

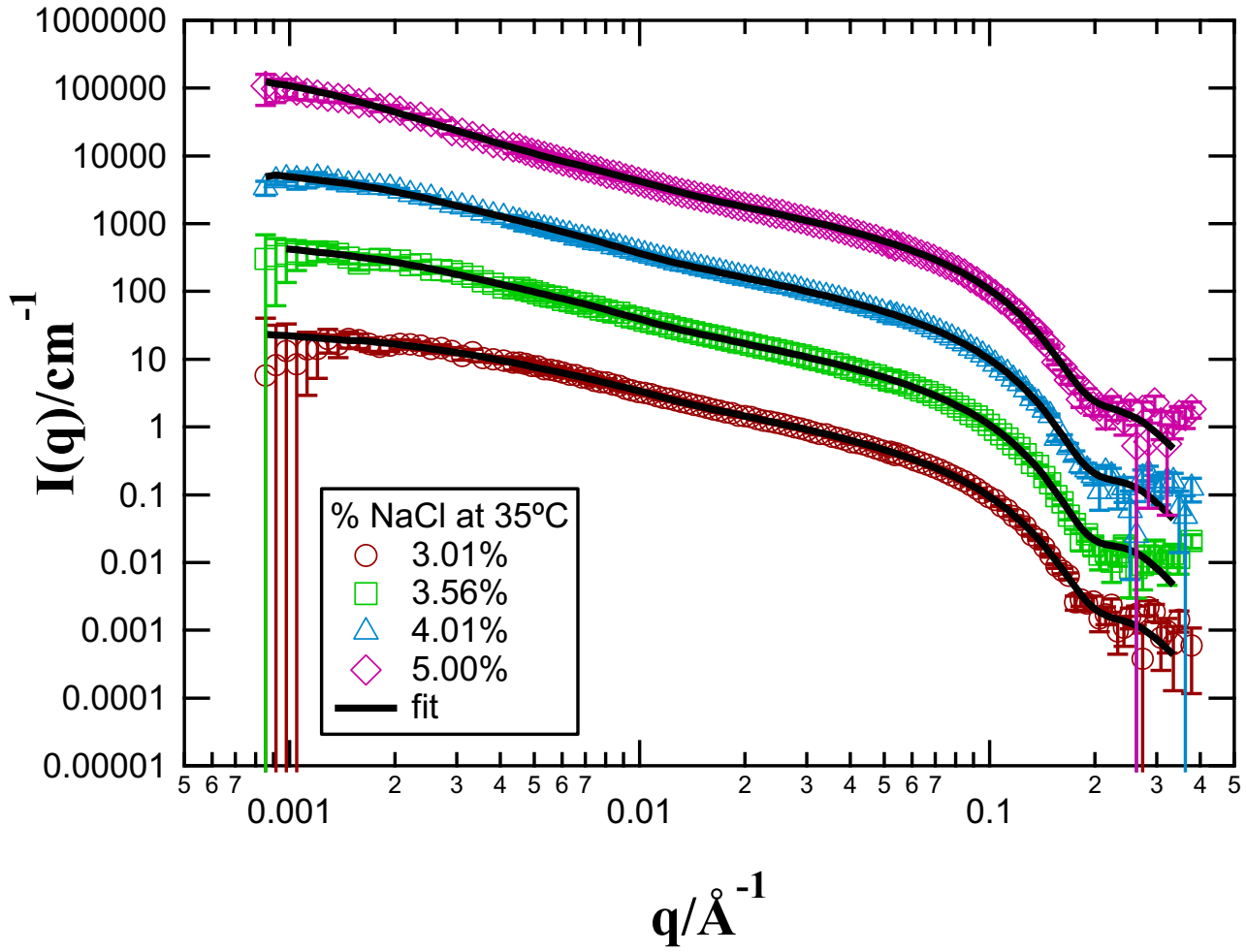

Figure S3. The scattering intensity $I(q)$ of 0.2% mixed surfactants samples at 35ºC plotted against q. Solid lines are fits performed based on hybrid fitting function. The curves are multiplied by the factors 10^0 (○), 10^1 (□), 10^2 (Δ), 10^3 (◊).

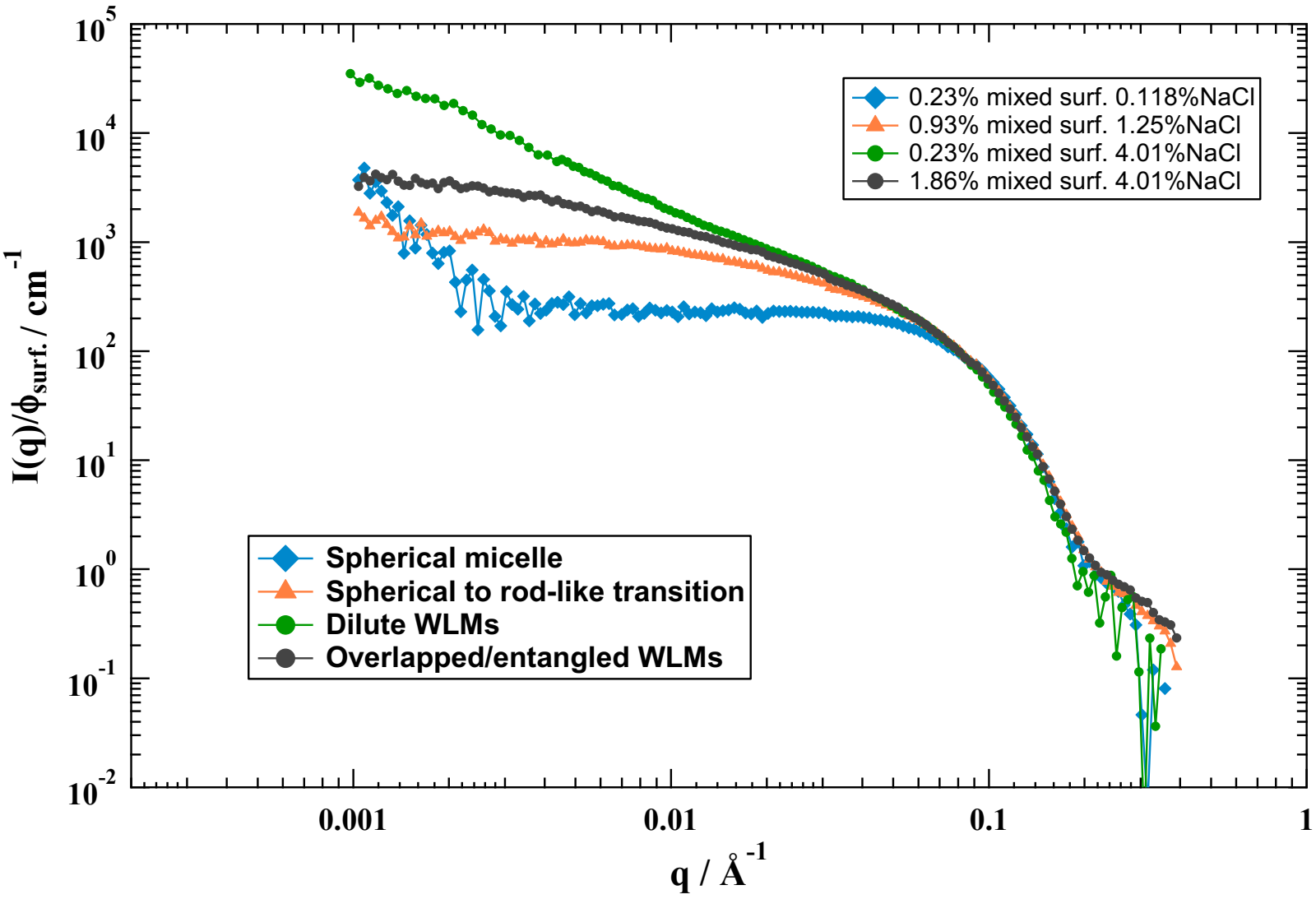

Figure S4. The scattering intensity $I(q)$ of selected mixed surfactant samples representing different micelle morphology.