

SUPPORTING INFORMATION

Enhancing the Spreading Behavior on Pulmonary Mucus Mimicking Subphase via Catanionic Surfactant Solutions: Toward Effective Drug Delivery through the Lungs

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Table S1. CMC Values and Equilibrium Surface Tension Data for Selected Surfactants*

	Surfactant	CMC (mM)	Equilibrium Surface Tension (mN/m)
Anionic	SDS	1.40	30.0±1.2
	SDBS	1.02	27.8±0.9
	PFOS	0.06	23.6±1.0
	AOT	2.56	26.0±0.9
Cationic	DTAB	11.0	37.1±0.5
	CTAB	0.20	35.1±0.7
Non-ionic	PLURONIC F127	0.09	40.3±0.4
	TWEEN 20	0.04	36.5±0.6
	TRITON X100	0.21	35.4±0.7

* The results are reported for the measurements which are conducted at 23°C and surfactant solutions were prepared in PBS.

$$\frac{1}{c_{12}} = \frac{\alpha_1}{c_1} + \frac{(1-\alpha_1)}{c_2} \quad \text{Equation (S1)}$$

where, $\alpha_{1,2}$ is the molar fraction of the components in the mixtures and $C_{1,2}$ are the CMCs of the individual components.

$$\frac{(X_1)^2 \ln[(\alpha_1 c_{12}/X_1 c_1)]}{(1-X_1)^2 \ln[(1-\alpha_1) c_{12}/(1-X_1) c_2]} = 1 \quad \text{Equation (S2)}$$

$$\beta = \frac{[\ln[(\alpha_1 c_{12}/X_1 c_1)]]}{(1-X_1)^2} \quad \text{Equation (S3)}$$

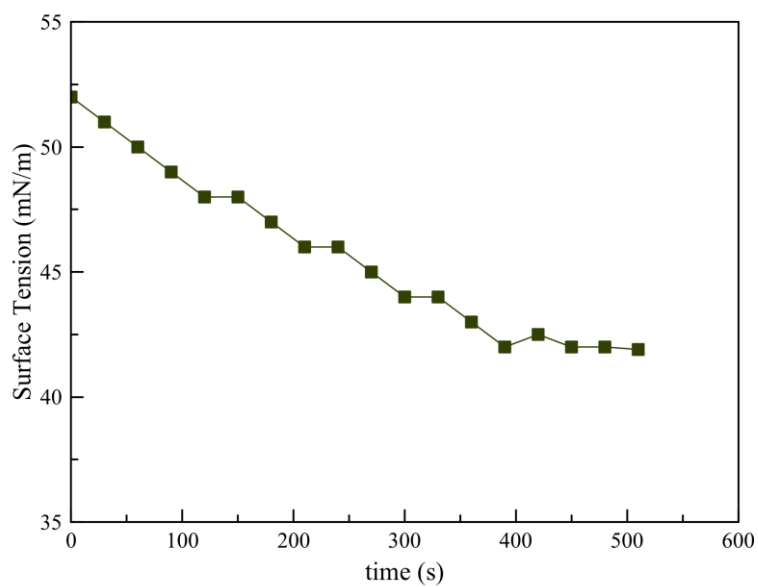


Figure S1. Representative surface tension (mN/m) – time (s) isotherm of 5 wt% mucin solution at the air/water interface (SD <2 mN/m).

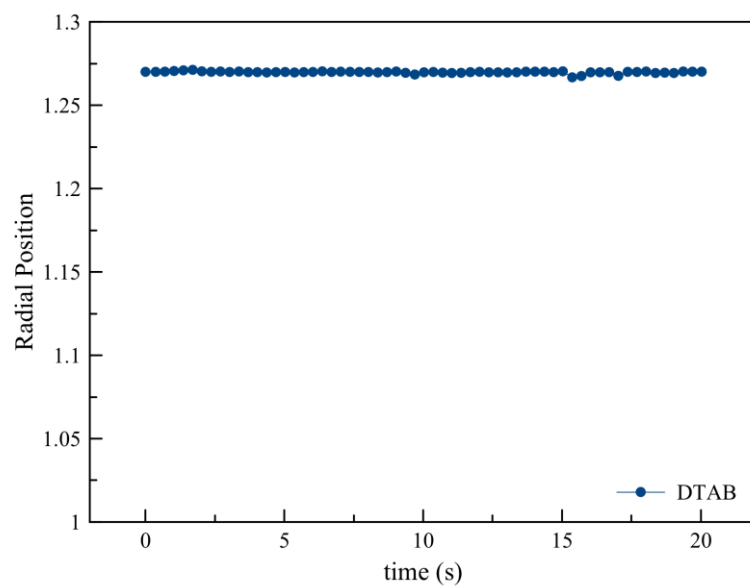


Figure S2. Representative plot of radial positions of the innermost particle vs time for drop of DTAB solution on mucin subphase.

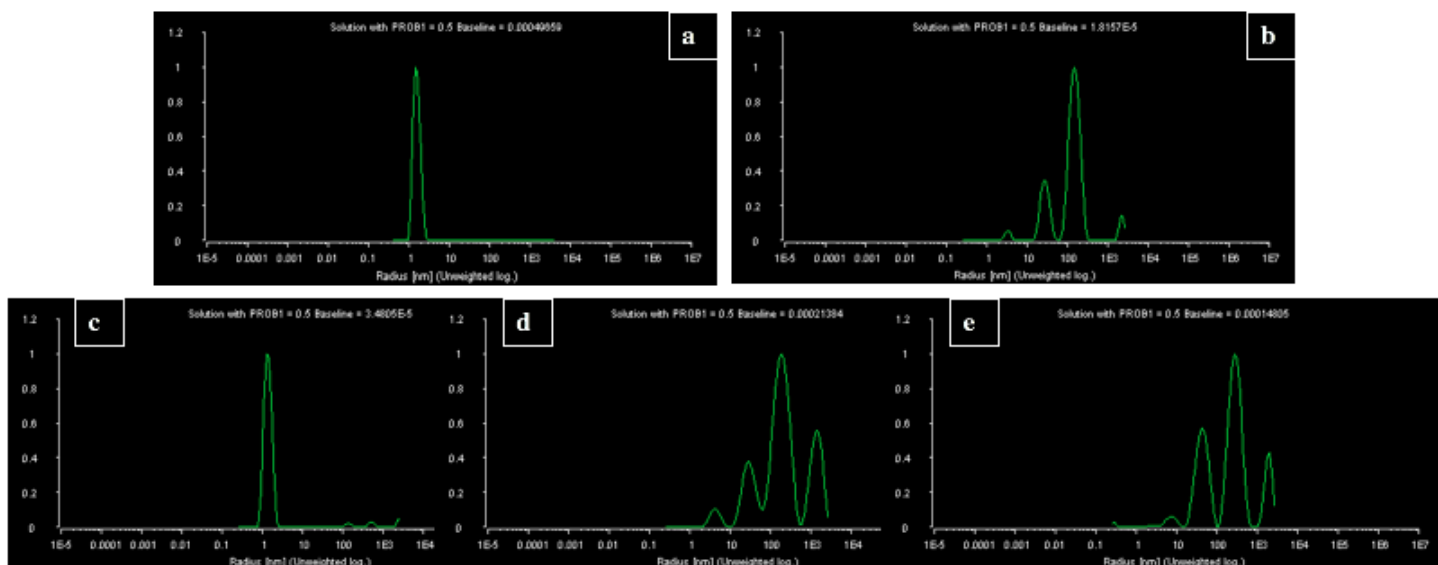


Figure S3. Static light scattering measurement results displaying the increase at the asymmetry of the aggregates with increasing AOT amount a) DTAB, b) AOT, c) $x_{DTAB} = 0.9$, d) $x_{DTAB} = 0.8$ and e) $x_{DTAB} = 0.7$.