

Supporting material

Convective mass transport dominates surfactant adsorption in a microfluidic Y-junction

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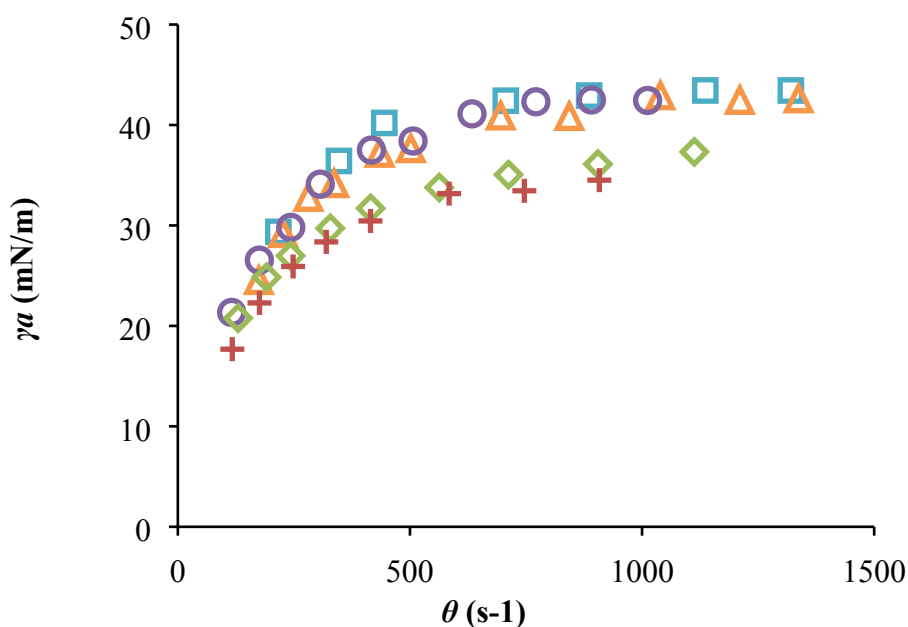


Figure S1. Acting interfacial tension at the aqueous phase-hexadecane interface for 0.1 wt. % SDS solutions in water (□), 10 wt. % sucrose (Δ), 20 wt. % sucrose (○), 20 wt. % glycerol (◇), and 30 wt. % glycerol (+), as a function of the expansion rate.

Table S1. Flow rates, expansion rate and acting interfacial tension of data used for Figure 1 and Figure S1.

Continuous phase	φ_c ($\mu\text{L/h}$)	v_c (m/s)	φ_d ($\mu\text{L/h}$)	θ (s^{-1})	γ_a (mN/m)	γ_n (-)
0.1 % SDS in water	91	0.2	0.9	217	29	0.5
0.1 % SDS in water	91	0.3	1.4	347	36	0.8
0.1 % SDS in water	91	0.3	2.0	445	40	0.9
0.1 % SDS in water	91	0.3	2.8	706	42	1.0
0.1 % SDS in water	89	0.2	3.8	886	43	1.0
0.1 % SDS in water	88	0.2	4.7	1136	43	1.0
0.1 % SDS in water	90	0.2	5.4	1321	43	1.0
0.1 % SDS in 10% sucrose	135	0.4	0.5	174	25	0.4
0.1 % SDS in 10% sucrose	131	0.4	1.0	281	33	0.7
0.1 % SDS in 10% sucrose	134	0.4	1.6	435	37	0.8
0.1 % SDS in 10% sucrose	135	0.4	2.6	695	41	0.9
0.1 % SDS in 10% sucrose	131	0.4	4.1	1039	43	1.0
0.1 % SDS in 10% sucrose	134	0.4	5.6	1337	43	1.0
0.1 % SDS in 20% sucrose	113	0.3	0.3	116	21	0.3
0.1 % SDS in 20% sucrose	111	0.3	0.7	243	30	0.6
0.1 % SDS in 20% sucrose	110	0.3	1.5	417	38	0.8
0.1 % SDS in 20% sucrose	107	0.3	2.5	634	41	1.0
0.1 % SDS in 20% sucrose	103	0.3	3.7	891	42	1.0
0.1 % SDS in 20% glycerol	128	0.4	0.4	130	21	0.3
0.1 % SDS in 20% glycerol	128	0.4	0.8	243	27	0.6
0.1 % SDS in 20% glycerol	133	0.4	1.5	415	32	0.8
0.1 % SDS in 20% glycerol	138	0.4	2.6	712	35	0.9
0.1 % SDS in 20% glycerol	134	0.4	4.4	1113	37	1.0
0.1 % SDS in 20% glycerol	139	0.4	6.1	1507	38	1.0
0.1 % SDS in 30% glycerol	113	0.3	0.3	117	18	0.2
0.1 % SDS in 30% glycerol	111	0.3	0.7	248	26	0.6
0.1 % SDS in 30% glycerol	110	0.3	1.4	415	30	0.8
0.1 % SDS in 30% glycerol	110	0.3	2.2	584	33	0.0
0.1 % SDS in 30% glycerol	109	0.3	3.5	908	35	0.9

Table S2. Flow rates, expansion rate and acting interfacial tension of data used for Figure 2.

Continuous phase	Dispersed phase	φ_c ($\mu\text{L}/\text{h}$)	v_c (m/s)	φ_d ($\mu\text{L}/\text{h}$)	θ (s^{-1})	γ_a (mN/m)
0.05% SDS in water	Hexadecane	116	0.3	6.6	1711	35
0.05% SDS in water	Hexadecane	180	0.3	5.5	1913	27
0.05% SDS in water	Hexadecane	228	0.3	4.5	1781	21
0.05% SDS in water	Hexadecane	268	0.0	3.4	1396	15
0.1% SDS in water	Hexadecane	115	0.3	5.7	1638	42
0.1% SDS in water	Hexadecane	154	0.3	5.3	1440	43
0.1% SDS in water	Hexadecane	200	0.3	4.3	1372	39
0.1% SDS in water	Hexadecane	256	0.3	3.1	1002	32
0.5% SDS in water	Hexadecane	114	0.3	6.1	1493	46
0.5% SDS in water	Hexadecane	160	0.4	5.1	1395	45
0.5% SDS in water	Hexadecane	231	0.6	3.7	1514	40
0.5% SDS in water	Hexadecane	309	0.9	2.0	1048	28

Table S3. Flow rates, expansion rate and acting interfacial tension of data used for Figure 3.

Continuous phase	Dispersed phase	φ_c ($\mu\text{L}/\text{h}$)	v_c (m/s)	φ_d ($\mu\text{L}/\text{h}$)	θ (s^{-1})	γ_a (mN/m)
Water	0.3% Span 20 in hexadecane	116	0.3	0.8	287	24
Water	0.3% Span 20 in hexadecane	116	0.3	1.3	386	27
Water	0.3% Span 20 in hexadecane	119	0.3	1.9	560	29
Water	0.3% Span 20 in hexadecane	118	0.3	2.4	692	31
Water	0.3% Span 20 in hexadecane	112	0.3	2.9	809	33
Water	0.3% Span 20 in hexadecane	116	0.3	3.4	842	34
Water	0.3% Span 20 in hexadecane	117	0.3	4.0	1044	36
Water	0.3% Span 20 in hexadecane	224	0.6	2.2	806	25
Water	0.3% Span 20 in hexadecane	241	0.7	2.5	968	26
Water	0.3% Span 20 in hexadecane	235	0.6	3.2	1165	28
Water	0.3% Span 20 in hexadecane	244	0.7	3.7	1500	28
Water	0.3% Span 20 in hexadecane	245	0.7	4.9	1896	31
Water	0.3% Span 20 in hexadecane	241	0.7	6.1	2095	34
Water	0.3% Span 20 in hexadecane	239	0.7	7.1	2231	35
Water	0.5% Span 20 in hexadecane	139	0.4	0.5	328	10
Water	0.5% Span 20 in hexadecane	112	0.3	1.5	608	14
Water	0.5% Span 20 in hexadecane	106	0.3	2.2	824	17
Water	0.5% Span 20 in hexadecane	107	0.3	2.8	967	20
Water	0.5% Span 20 in hexadecane	202	0.4	1.0	558	8
Water	0.5% Span 20 in hexadecane	208	0.5	1.5	787	10
Water	0.5% Span 20 in hexadecane	204	0.5	2.1	1041	12
Water	0.5% Span 20 in hexadecane	210	0.5	2.7	1301	13
Water	0.5% Span 20 in hexadecane	211	0.6	3.3	1449	15
Water	0.5% Span 20 in hexadecane	213	0.6	4.0	1803	17