

Supplement material to

Adsorption of equimolar mixtures of cationic and anionic surfactants at the water/hexane interface

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In this supplement, the fitting results of the experimental data by the reorientation model are presented. For the examples given here, we did not find any remarkable differences in the fitting quality of the two used adsorption models, i.e. the quality of reflecting the result with the Frumkin adsorption model is similar to the reorientation model, as shown in Figures S1, S2 and S3. The values of the best fit parameters are summarised in the Tables S1, S2 and S3, respectively.

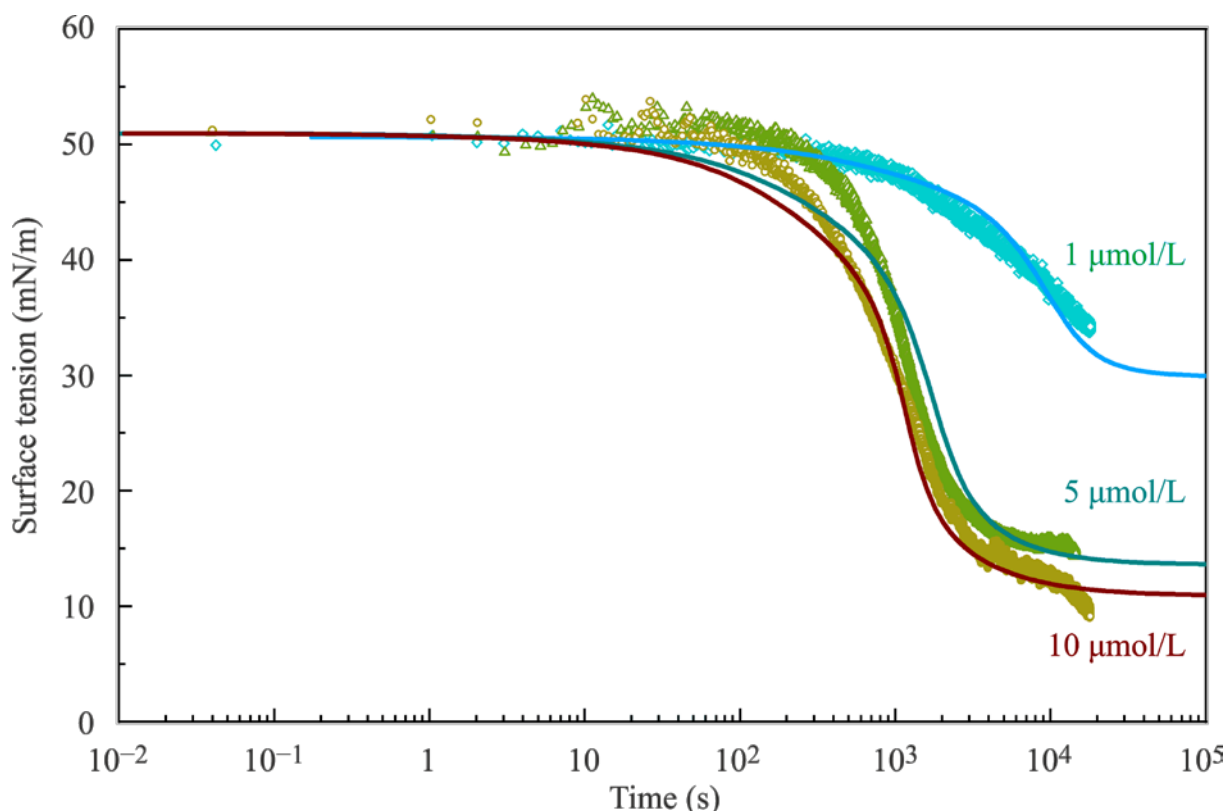


Figure S1. Dynamic interfacial tension of mixed aqueous solutions of $\text{NaC}_{16}\text{SO}_4 + \text{C}_{12}\text{TAB}$ mixtures at the water/hexane interface measured by PAT-1; (♦) 1 $\mu\text{mol/L}$, (▲) 5 $\mu\text{mol/L}$, 10 $\mu\text{mol/L}$; solid lines are calculated from the reorientation model.

Table S1. Parameter values obtained by fitting the reorientation adsorption model Eqs. (4) – (5) and the diffusion equation Eq. (6) to the experimental data of Figure S1 as measured for solutions of $\text{NaC}_{16}\text{SO}_4 + \text{C}_{12}\text{TAB}$

c [mol/L]	b [m ³ /mol]	ω_{10} [m ² /mol]	ω_2 [m ² /mol]	α	a	D ₁ [m ² /s]	D ₂ [m ² /s]
1.00×10^{-6}	5.07×10^3	2.20×10^5	1.60×10^6	0	0	1.00×10^{-10}	3.00×10^{-10}
5.00×10^{-6}	5.07×10^3	2.30×10^5	1.00×10^6	0	0	1.00×10^{-10}	2.00×10^{-10}
1.00×10^{-5}	5.07×10^3	2.70×10^5	1.00×10^6	0	0.20	1.00×10^{-10}	8.00×10^{-11}

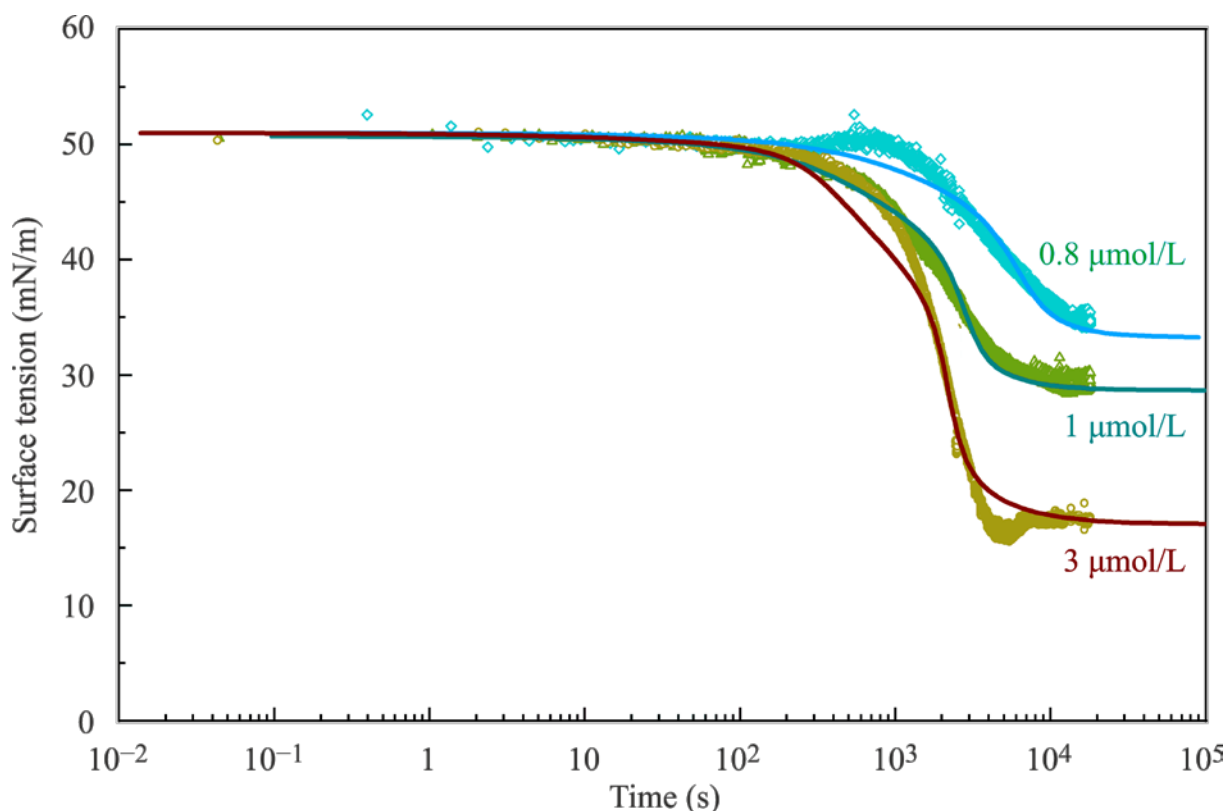


Figure S2. Dynamic interfacial tension of mixed aqueous solutions of $\text{NaC}_{12}\text{SO}_4 + \text{C}_{16}\text{TAB}$ at the water/hexane interface measured by PAT-1; (♦) 0.8 $\mu\text{mol/L}$, (▲) 1 $\mu\text{mol/L}$, (●) 3 $\mu\text{mol/L}$; solid lines are calculated from the reorientation model.

Table S2: Parameter values obtained by fitting the reorientation adsorption model Equations (4) – (5) and the diffusion equation Eq. (6) to the experimental data of Figure S2 as measured for solutions of $\text{NaC}_{12}\text{SO}_4 + \text{C}_{16}\text{TAB}$

c [mol/L]	b [m ³ /mol]	ω_{10} [m ² /mol]	ω_2 [m ² /mol]	α	a	D ₁ [m ² /s]	D ₂ [m ² /s]
8.00×10^{-7}	1.31×10^4	3.50×10^5	1.60×10^6	0	0	1.00×10^{-10}	3.80×10^{-10}
1.00×10^{-6}	1.31×10^4	3.50×10^5	1.60×10^6	0	0.45	1.00×10^{-10}	7.00×10^{-10}
3.00×10^{-6}	1.31×10^4	3.40×10^5	1.20×10^6	0	0.80	1.00×10^{-10}	2.10×10^{-10}

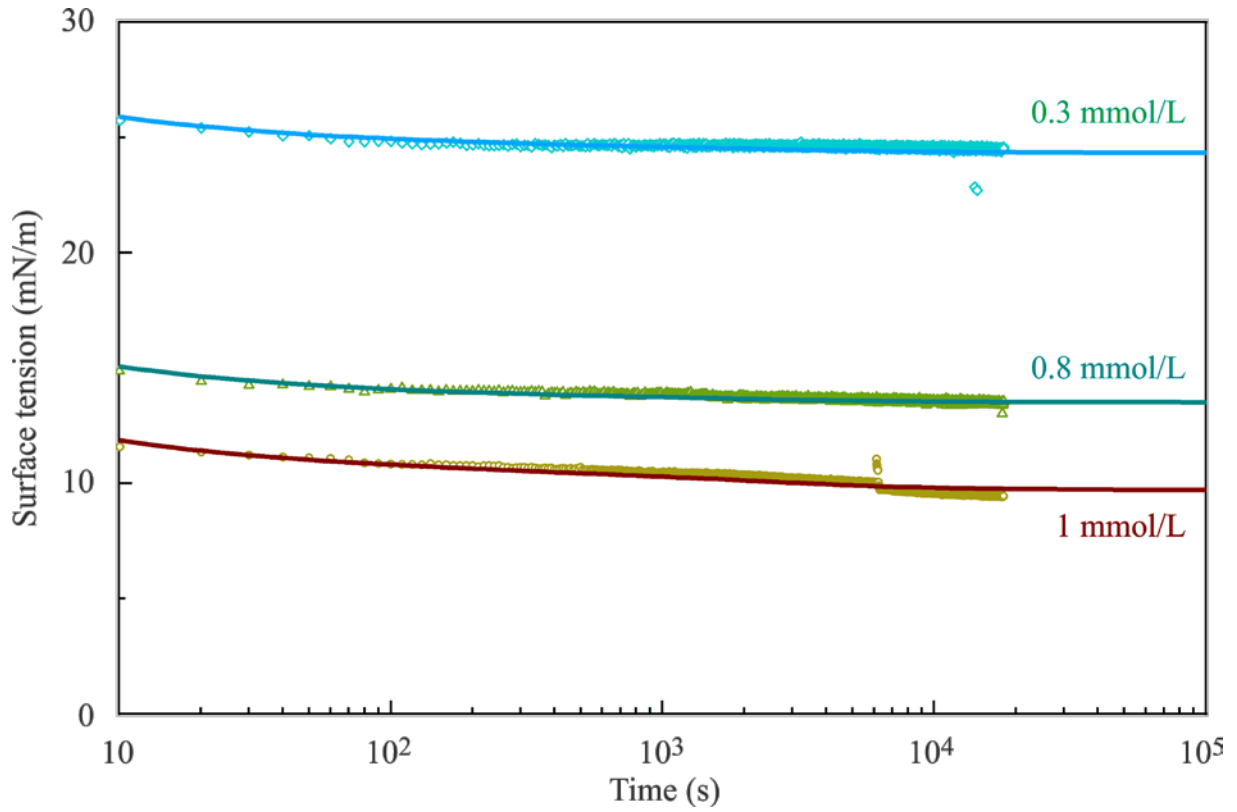


Figure S3. Dynamic interfacial tension of mixed aqueous solutions of $\text{NaC}_{12}\text{SO}_4 + \text{C}_6\text{TAB}$ mixtures at the water/hexane interface measured by PAT-1; ($\blacklozenge$) 0.3 mmol/L, ($\blacktriangle$) 0.8 mmol/L, ($\bullet$) 1 mmol/L; solid lines are calculated from the reorientation adsorption model.

Table S3: Parameter values obtained by fitting the reorientation adsorption model Equations (4) – (5) and the diffusion Equation (6) to the experimental data of Figure S3 as measured for solutions of $\text{NaC}_{12}\text{SO}_4 + \text{C}_6\text{TAB}$

c [mol/L]	b [m^3/mol]	ω_{10} [m^2/mol]	ω_2 [m^2/mol]	α	a	D_1 [m^2/s]	D_2 [m^2/s]
3.00×10^{-4}	4.02×10^1	2.50×10^5	1.00×10^6	0.7	0	1.00×10^{-10}	1.00×10^{-11}
8.00×10^{-4}	4.02×10^1	2.50×10^5	1.00×10^6	0.5	0.08	1.00×10^{-10}	7.00×10^{-11}
1.00×10^{-3}	4.02×10^1	2.50×10^5	1.00×10^6	0.7	0.22	1.00×10^{-10}	5.00×10^{-11}