**Supporting Information**

# Complexation Between Sodium Poly(styrene sulfonate) and Alkyltrimethylammonium Bromides in the Presence of Dodecyl Maltoside

Edit Fegyver[§] and Róbert Mészáros*[§,#]

[§]*Laboratory of Interfaces and Nanosized Systems, Institute of Chemistry, Eötvös Loránd University, 1117 Budapest, Pázmány Péter sétány 1/A, Hungary*

[#]*Department of Chemistry, University J. Selyeho, 945 01 Komárno, Slovakia*

**Phone: +36-1-372-2500/1906, e-mail:* meszaros@chem.elte.hu

This document contains additional experimental details and graphs as discussed in the manuscript text.

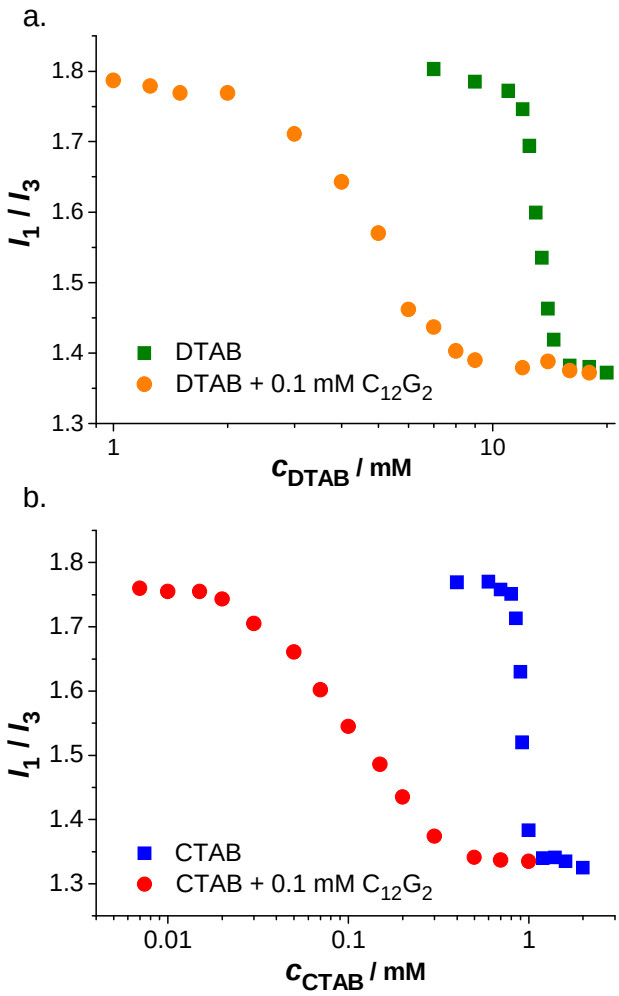


**Figure S1.** Fluorescent $I_1/I_3$ ratio against a) the DTAB concentration without (green ■) and with 0.1 mM $C_{12}G_2$ (orange ●), b) the CTAB concentration in the absence (blue ■) and presence of 0.1 mM $C_{12}G_2$ (red ●). The mixtures were prepared by the stopped-flow mixing protocols.

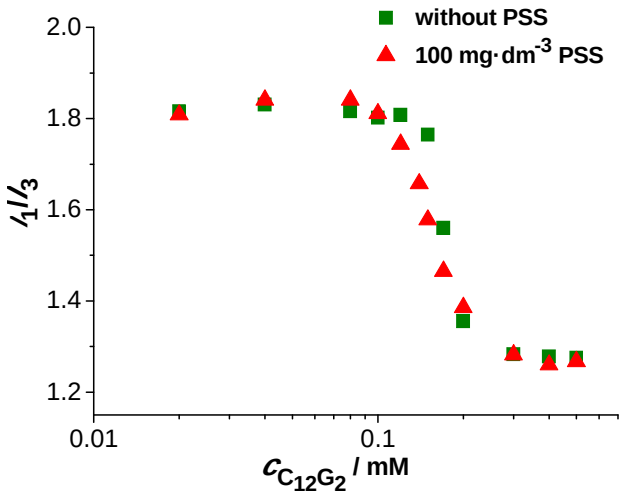


**Figure S2.** Fluorescence $I_1/I_3$ ratio versus the $C_{12}G_2$ concentration without (green ■) and with 100 mg·dm$^{-3}$ PSS (red ▲). The mixtures were prepared by the stopped-flow mixing protocols.

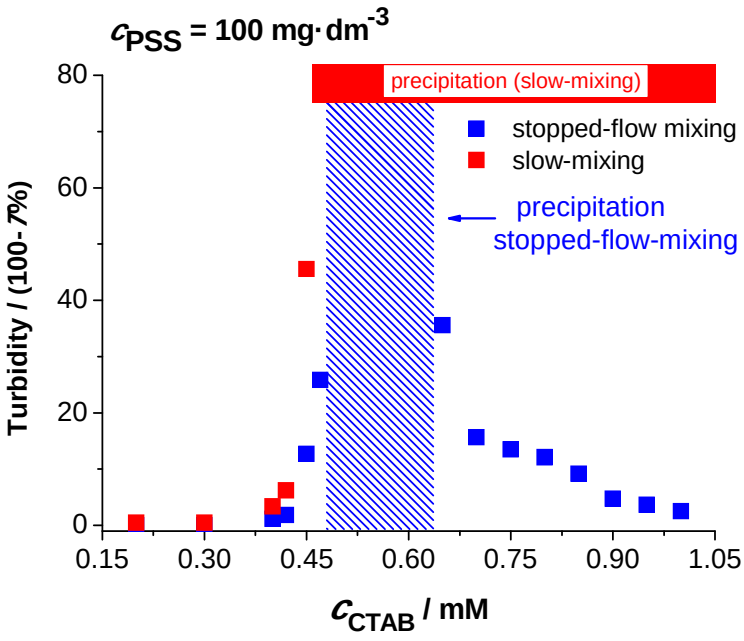


**Figure S3.** Turbidity of the PSS/CTAB systems against the CTAB concentration at constant 100 mg·dm$^{-3}$ PSS obtained via application of the stopped-flow mixing (blue ■) and slow-mixing (red ■) protocols.

Slow-mixing

**Immediately** after mixing

**1 week** after mixing

Stopped-flow mixing

**Immediately** after mixing

**1 week** after mixing

**Figure S4.** Photos of PSS/CTAB/$C_{12}G_2$ mixtures taken immediately and 1 week after mixing. The mixtures were prepared by slow-mixing (top row) and stopped-flow mixing (bottom row). The systems contain 100 mg·dm$^{-3}$ PSS and 0.3 mM $C_{12}G_2$, the CTAB concentration varies from left to right as follows: 0.6, 0.8, 1.0, 1.2 mM. The visual appearance and the turbidity of the mixtures prepared by stopped-flow mixing have not been changed for months.

**Binding isotherm measurements**

The binding isotherms of DTAB and CTAB on PSS were determined by means of a novel method using electrophoretic mobility measurements. The method is based on the simple assumption that if the electrophoretic mobility is measured at two different polyelectrolyte concentrations ($c_{p,1}$ and $c_{p,2}$), then the mobility values ($u_\zeta$) will be equal at the same amount of bound surfactant but at two different total surfactant concentration values ($c_{s,1}$ and $c_{s,2}$):

$$\left(u_\zeta\right)_{c_{p,1}}^{c_{S,1}} = \left(u_\zeta\right)_{c_{p,2}}^{c_{S,2}} \tag{1}$$

Therefore, the bound amount of surfactant ($B$) can be determined from the following equations:

$$B = \frac{c_{s,1} - c_{e,s}}{c_{p,1}} = \frac{c_{s,2} - c_{e,s}}{c_{p,2}} \tag{2}$$

where $c_{e,s}$ is the equilibrium concentration of the free surfactant molecules in a polymer-free reference system. Practically $c_{p,1}$ = 0.01 wt% and $c_{p,2}$ = 0.05 wt% PSS concentrations were used. (Further details about the theoretical assumptions and the limitations of this method can be found in ref. 42 of the manuscript.)

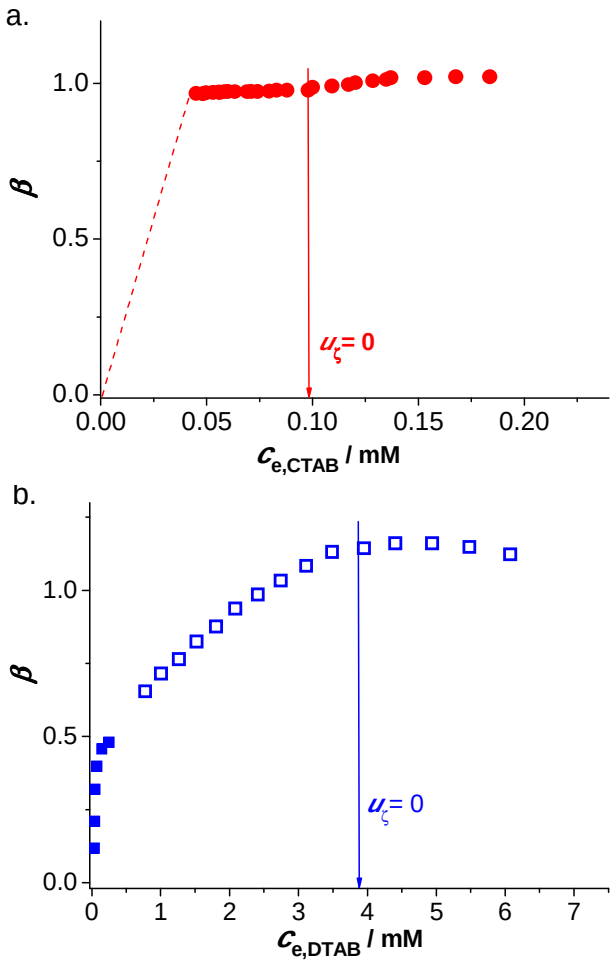


**Figure S5.** a) The bound amount of CTAB (normalized to the amount of PSS monomers, $\beta$) as a function of the equilibrium concentration of the free surfactant molecules ($c_{e,CTAB}$) determined by the electrophoretic method (ref. 42 of the MS) (red ●). b) The bound amount of DTAB (normalized to the amount of PSS monomers, $\beta$) as a function of the equilibrium concentration of the free surfactant molecules ($c_{e,DTAB}$) determined by the electrophoretic method (ref. 42 of the MS) (blue □). The data at low DTAB concentrations were taken from ref. 19 of the manuscript (the potentiometric method by Almgren et al., blue ■).

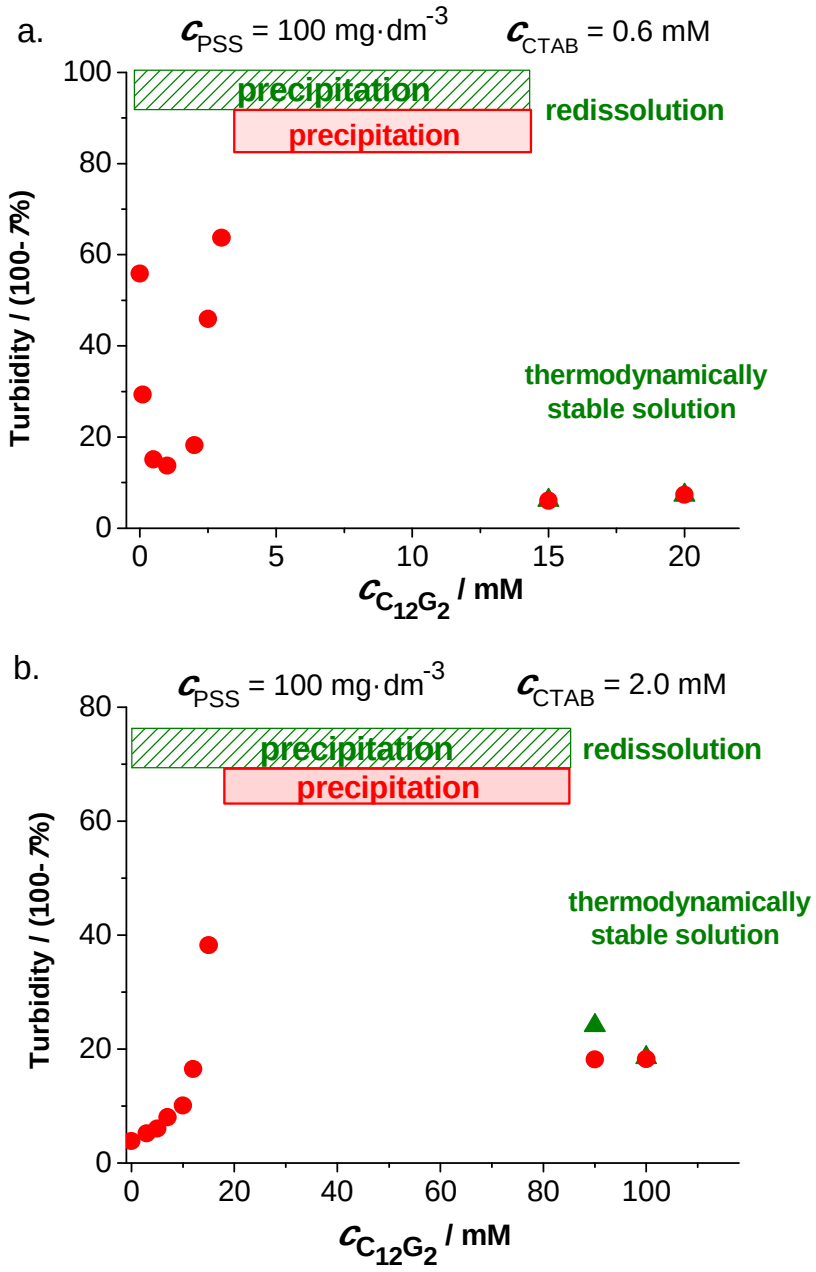


**Figure S6.** Turbidity (100-*T*%) of the systems made by slow-mixing (green ▲) against the concentration of dodecyl maltoside at $c_{PSS}$ = 100 mg·dm$^{-3}$ and at a) 0.6 mM and b) 2.0 mM CTAB. The turbidity data of the stopped-flow mixed systems (red ●) are replotted from Fig. 7 of the manuscript. The red and green striped boxes indicate the concentration range of precipitated systems for stopped-flow mixing and slow-mixing, respectively.