**The influence of ionic liquids on micellization of sodium dodecyl sulfate in aqueous solutions**

Bojan Šarac and Marija Bešter-Rogač

University of Ljubljana, Faculty of Chemistry and Chemical Technology, Večna pot 113, SI-1000 Ljubljana

**Supporting Information:**

****

**Figure S1.** (a) Raw ITC signal for titration od SDS in water at 308.15 K. Inset is showing the raw signal on a larger scale in order to see the shape of the peaks. (b) Integrated raw signal – enthalpogram – *H* as a function of surfactant concentration. and in the equation (5) were obtained from the intersection of linear fit through the initial plateu.



**Figure S2.** Enthalpograms for titrations of SDS in water at different temperatures. Blank squares present the titration at 278.15 K where the precipitation of SDS is observed after the cmc (Krafft point of SDS is at around 287 K).





**Figure S3.** Enthalpograms for titration of SDS in (a) 0.1 M NaCl, (b) 0.01 M [C1mim]Cl, (c) [C2mim]Cl and (d) [C4mim]Cl from 288.15 K to 328.15 K in step of 10 K. Symbols present experimental data, curves present the fits of the model function.

**Table S1.** Standard thermodynamic parameters for micellization process of SDS in investigated system as obtained by the fitting of model equation (5 in main paper) at all studied temperatures: Gibbs free energy (M*G*o), the enthalpy (M*H*o), the entropy contribution (*T*M*S*o) and values of critical micelle concentration (cmc).a

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| *T* / K |  | **water** | **0.1 M NaCl** | **0.01 M [C1mim]Cl** | **0.01 M [C2mim]Cl** | **0.01 M [C4mim]Cl** |
| 288.15 | M*G*o | –17.38 ± 0.03 | –16.39 ± 0.06 | –18.43 ± 0.01 | –18.64 ± 0.01 | –20.91 ± 0.05 |
|  | M*H*o | 3.79 ± 0.07 | 2.21 ± 0.06 | 0.24 ± 0.07 | 0.38 ± 0.05 | 0.67 ± 0.09 |
|  | *T*M*S*o | 21.17 ± 0.08 | 18.60 ± 0.08 | 15.25 ± 0.06 | 19.02 ± 0.05 | 21.6 ± 0.1 |
|  | cmc | 8.40 | 1.53 | 2.54 | 2.02 | 0.758 |
| 298.15 | M*G*o | –18.04 ± 0.03 | –16.97 ± 0.06 | –19.00 ± 0.01 | –19.23 ± 0.01 | –21.57 ± 0.05 |
|  | M*H*o | –0.40 ± 0.06 | –1.78 ± 0.04 | –3.77 ± 0.06 | –3.78 ± 0.05 | –4.24 ± 0.08 |
|  | *T*M*S*o | 17.64 ± 0.07 | 15.19 ± 0.08 | 15.24 ± 0.07 | 15.45 ± 0.05 | 17.33 ± 0.09 |
|  | cmc | 8.47 | 1.52 | 2.70 | 2.05 | 0.786 |
| 308.15 | M*G*o | –18.56 ± 0.03 | –17.41 ± 0.07 | –19.45 ± 0.01 | –19.67 ± 0.01 | –22.07 ± 0.06 |
|  | M*H*o | –4.59 ± 0.07 | –5.77 ±0.06 | –7.78 ± 0.06 | –7.95 ± 0.05 | –9.15 ± 0.09 |
|  | *T*M*S*o | 13.97 ± 0.08 | 11.64 ± 0.09 | 11.67 ± 0.07 | 11.73 ± 0.05 | 12.9 ± 0.1 |
|  | cmc | 8.53 | 1.59 | 2.91 | 2.18 | 0.862 |
| 318.15 | M*G*o | –18.95 ± 0.03 | –17.72 ± 0.07 | 19.76 ± 0.01 | –19.99 ± 0.01 | –22.41 ± 0.06 |
|  | M*H*o | –8.79 ± 0.09 | –9.76 ± 0.09 | –11.8 ± 0.1 | –12.12 ± 0.06 | –14.1 ± 0.01 |
|  | *T*M*S*o | 10.2 ± 0.1 | 8.0 ± 0.1 | 8.0 ± 0.1 | 7.88 ± 0.06 | 8.4 ± 0.1 |
|  | cmc | 8.94 | 1.75 | 3.26 | 2.49 | 1.02 |
| 328.15 | M*G*o | –19.20 ± 0.04 | –17.91 ± 0.07 | –19.95 ± 0.01 | –20.18 ± 0.01 | –22.60 ± 0.06 |
|  | M*H*o | –12.9 ± 0.1 | –13.8 ± 0.1 | –15.8 ± 0.1 | –16.28 ± 0.06 | –19.0 ± 0.02 |
|  | *T*M*S*o | 6.2 ± 0.1 | 4.2 ± 0.1 | 4.2 ± 0.1 | 3.98 ± 0.06 | 3.6 ± 0.1 |
|  | cmc | 9.66 | 2.01 | 3.73 | 2.87 | 1.20 |

aUnits: M*G*o, M*H*o, *T*M*S*o, kJ⋅mol–1; cmc, mM