Aggregation onset and adsorption layer properties of T2-C8: pH dependency

Stefan Stoyanov*, Dimitrinka Arabadzhieva, Anna Gyurova, Neri Pamukchieva

Rostislaw Kaischew Institute of Physical Chemistry, Bulgarian Academy of Sciences, Sofia 1113, Bulgaria

*StStoyanov@ipc.bas.bg

The structure of the two-antennary oligoglycine \( C_8H_{16}(\text{CH}_2\text{-NH-Gly}_5)_2\text{*HCl} \) (tectomer-2) molecule consists of several oligoglycine units linked to a hydrocarbon chain. This implies amphiphilic properties, including the onset of bulk and interfacial self-assemblies. The interfacial properties of aqueous solutions of \( C_8H_{16}(\text{CH}_2\text{-NH-Gly}_5)_2\text{*2HCl} \) (T2 with \( C_8H_{16} \) spacer chain (T2-C8)) have been investigated after two and twenty four hours after preparation of the solutions. Dynamic, equilibrium and rheological properties of adsorption layers are studied by Profile Analysis Tensiometer. The investigated concentration interval is \( 1\times10^{-5} \text{M} \) to \( 1\times10^{-3} \text{M} \) T2-C8. Film drainage and stability of foam films from aqueous solutions of T2-C8 are studied by the microinterferometric method of Scheludko and Exerowa [1]. The onset of bulk assemblies is largely dependent on the charge of the amino groups, located at the ends of the oligoglycine chains, thus presence of electrolyte and pH dependency are crucial to the understanding of the properties of the system. Investigation is conducted via DLS. The initial results add new knowledge about the nature of the tectomer and outline the specific characteristics of this substance in view of possible applications in complex fluid preparations, including drug delivery or extraction of various impurities from water media.

Acknowledgements: The studies are performed under the umbrella of COST Action MP1106 “Smart and green interfaces – from single bubbles and drops to industrial, environmental and biomedical applications” (SGI). The financial support of project 15 A-1 supported by BAS is gracefully acknowledged.