Synthesis and physicochemical characterization of alkanedyil-α-ω-bis(dodecyltrimethylammonium)bromide 12-s-12,2Br⁻ surfactants (s=7,9,11)

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Dimeric surfactants contain two hydrophobic tails and two hydrophilic groups connected at the level of the head groups by a spacer that may be hydrophilic, hydrophobic, flexible or rigid [1]. These surfactants may be cationic, anionic, non ionic and zwitterionic and they have been shown to be superior to the corresponding conventional (monomeric) surfactants in many respects: lower cmc, stronger efficiency in reducing the surface tension of water, better wetting power, better solubilization power, better foaming, etc. [2]. Didodecyl dicationic dibromide 12-s-12,2Br⁻ surfactants, where s is the number of methylene groups, with s=2,3,4,5,6,8,10,12,14, and 16 were prepared and characterized. However, no information about these surfactants with s=7, 9 and 11 could be found in the literature. In this work didodecyl dicationic dibromide surfactants with 7, 9 and 11 methylene groups in the spacer were synthesized. The physicochemical characterization of these surfactants was done by using conductivity, surface tension, fluorescence and NMR measurements. Micellar growth of these surfactants was also investigated.

SPQ fluorescence quenching in aqueous 12-11-12,2Br⁻ micellar solutions at high surfactant concentrations. T=303 K. The inflection point C⁺ can be assigned to the sphere-to-rod transition

Acknowledgments. This work was financed by the DGCYT (grant CTQ2009-07478) and Consejería de Innovación, Ciencia y Empresa de la Junta de Andalucía (FQM-274 and P07-FQM-03056).