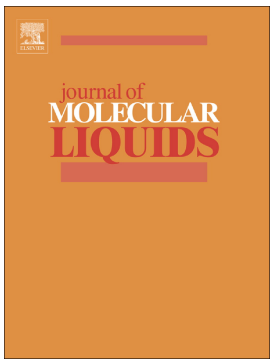

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PII: S0167-7322(17)34488-4
DOI: doi:10.1016/j.molliq.2017.11.175
Reference: MOLLIQ 8291

To appear in: *Journal of Molecular Liquids*

Received date: 28 September 2017
Revised date: 22 November 2017
Accepted date: 30 November 2017

Please cite this article as: Alla B. Mirgorodskaya, Farida G. Valeeva, Svetlana S. Lukashenko, Rushana A. Kushnazarova, Tatiana M. Prokop'eva, Tatiana M. Zubareva, Vasiliy A. Mikhailov, Lucia Ya. Zakharova , Dicationic hydroxylic surfactants: Aggregation behavior, guest-host interaction and catalytic effect. The address for the corresponding author was captured as affiliation for all authors. Please check if appropriate. Molliq(2017), doi:10.1016/j.molliq.2017.11.175

Dicationic hydroxylic surfactants: Aggregation behavior, guest-host interaction and catalytic effect

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Abstract

Herein, supramolecular systems with improved aggregation, solubilization and catalytic activity have been constructed by self-assembly of gemini surfactants with two cationic centers separated by the spacer chain of 10 atoms long and hydroxyl functionality in their head group or in the spacer. It was found that hydroxylic dicationic surfactants capable of forming hydrogen bonds exhibit the ability to micelle formation at a concentration substantially lower than that of their monocationic and non-functionalized dicationic counterparts. They are capable of initiating additional solubilization mechanisms, which are responsible for the enhanced solubilization capacity of the surfactants. The use of the dicationic hydroxylic surfactants in hydrolytic decomposition of esters gives rise to the high catalytic effect and substrate selectivity: the highest, 430-fold, acceleration was observed for *p*-nitrophenyl caprate.

Key words: Gemini surfactants; Aggregation; Solubilization; Hydrolysis; Micellar catalysis