

Dear Delegates,

On behalf of the Organizing Committee, it is our pleasure to welcome each of you to the historic and beautiful city of Madrid for the Fourth International Colloids Conference, "Surface Design and Engineering." Previous conferences were held in Amsterdam, and last year's conference in Xiamen, China. The Colloids Conferences are associated with the *Journal of Colloid and Interface Science [JCIS]*, the oldest and most respected journal in colloid science.

This year's conference features an interesting program of plenary, keynote, invited and contributed presentations and posters at the frontiers of designed and characterized surfaces having important present and future applications. Allow us to express our appreciation to all of the speakers and poster presenters for their vital contributions to this conference. We are pleased by the quality and quantity of abstracts received. The topics of the presentations include:

- Emulsions
- Interfaces in biology and food
- Patterned surfaces
- Photonics at interfaces
- Polymer surfaces and interfaces
- Self-assembled structures
- Sensors
- Structured particles and nanoparticles

Let us take this opportunity to thank the Editors of *JCIS*, Professors Teresa Bandoz, , Martin Malmsten, Gao-Qing (Max) Lu, Darsh Wasan, and Dongyuan Zhao for their strong support in sustaining the reputation of *JCIS* and in organizing this conference series. Our thanks likewise to the staff of Elsevier, Rob van Daalen, Laura Copeland, Neha Aggarwal, and Irene Cyrilraj for their guidance and hard work. To the local organizing committee, Professors Begoña Ferrari, Elena Junquera, and Enrique López-Cabarcos, we express our gratitude for their tireless effort and dedication in planning and organizing this conference.

Our thanks to the sponsors of this conference for their interest and generous support.

Again, welcome! We wish you a very enjoyable stay in Madrid and a stimulating and illuminating conference.

Professors Manuel Arturo López-Quintela, Julian Eastoe and Arthur Hubbard

[P3.51]

Self-organized polymeric composition of alkyl ammonium salts and their bactericidal properties

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The unique properties of polymer-surfactant compositions: high hydrophobicity, easy separation of the solution allows them to be considered as promising materials with desired properties. They are widely used in the preparation of mortars, flocculants coarse dispersions, etc. However, the wider use of polymer complexes is necessary to adjust their hydrophilic-lipophilic properties. In this context, we studied the interaction of polyacrylic acid (PAA) with alkyl ammonium salts having two long chain hydrocarbon radicals: $(C_{12}H_{25})_2(CH_3)_2NBr$ (DLDMAV), $(C_{18}H_{37})_2(CH_3)_2NBr$ (DODDMAV) and $[C_{10}H_{21}-O-CO-CH_2-N^+(CH_3)_2-CH_2]_2 \cdot 2Cl^-$ (etonium).

Methods of potentiometry, viscometry and spectrophotometry revealed that the formation of complexes of PAA with cationic surfactant is accompanied by compression of the polymer chain and the precipitate of the complex in a separate phase. With increasing temperature, the region of maximum compression of the polymer chain is shifted to lower relative concentrations of surfactants. Formation of complexes of PAA-surfactant due to the electrostatic interaction of ions SAS with carboxyl groups of the polymer stabilized by hydrophobic interactions between their non-polar areas. The particle size of the complex is 0.5-1 μm . It is shown that the stability of the complex increases with increasing pH. The formed complexes can be destroyed by acidification of the medium.

Were studied the bactericidal properties of the complexes, for which were used for this bacterium *Pasteurella multocida*. It is shown that for complexes of PAA - DLDMAV and PAA - DODDMAV bactericidal increases with the hydrophobicity of the surfactant. However, a strong detrimental effect on the components of the bacteria shows a PAA complex etonium, the molecule of which contains two quaternary nitrogen atoms. Based on these results it is concluded that the bactericidal action of components PAA-surfactant is influenced by both the presence of quaternary nitrogen atoms, and the length of the hydrocarbon radical. It appears that the nitrogen atoms provide attachment components to the surface of negatively charged cells and hydrocarbon portions of the complex hydrophobe facilitate solubilization of cell wall components.

Keywords: Surfactant, Polyacrylic acid, Etonium, Bactericidal properties