

# PC 33

## SELF-ASSEMBLED COLLOIDS FROM BLOCK COPOLYMERS AND VESICLE-FORMING SURFACTANT

S. Pispas

*Theoretical and Physical Chemistry Institute, National Hellenic Research Foundation, 48 Vass. Constantinou Av., 11635 Athens, Greece*  
*E-mail: pispas@eie.gr*

Aqueous systems containing block copolymers and low molecular weight surfactants attract current scientific interest of polymer and colloid chemists due to their ability to form mixed self-assembled nanostructures with tailored properties.<sup>1,2</sup> The academic interest in such complex systems stems from the possibilities for basic understanding of biological behavioral motifs, since nature is extensively using analogous systems (i.e. biomacromolecules and phospholipids) to create functional self-assembled nanostructures. Important technical applications, especially those related to interfacial and rheological properties of complex fluids and colloid formulations, nanomedicine and nanotemplating are also closely connected to behavioral characteristics of solutions of mixed amphiphiles.

In this work we investigate the self-assembly in two different bioinspired macromolecular/surfactant mixed colloidal systems: a) neutral amphiphilic block copolymers and vesicle forming cationic surfactant<sup>3</sup> and b) neutral-anionic double hydrophilic block copolymer<sup>4</sup> and vesicle forming cationic surfactant systems. Self-assembly is discussed by taking into account the amphiphilicity of the components, hydrophobic and electrostatic interactions between them, as well as redistribution and self-organization of the individual components. Results are contributing to a better understanding of principles governing the creation of functional nano-assemblies in solution, in synthetic and biological systems, and have relevance to bionanotechnological applications.

### References

1. B. Jonsson, B. Lindman, K. Holmberg, B. Kronberg "Surfactants and Polymers in Aqueous Solutions", J. Wiley & Sons, Chichester, UK 1998.
2. N. V. Sastry, H. Hoffmann Colloids Surf. A. 2004, 250, 247.
3. S. Pispas, E. Sarantopoulou Langmuir 2007, 23, 7484.
4. S. Pispas J. Polym. Sci. Part A: Polym. Chem. 2006, 44, 606.