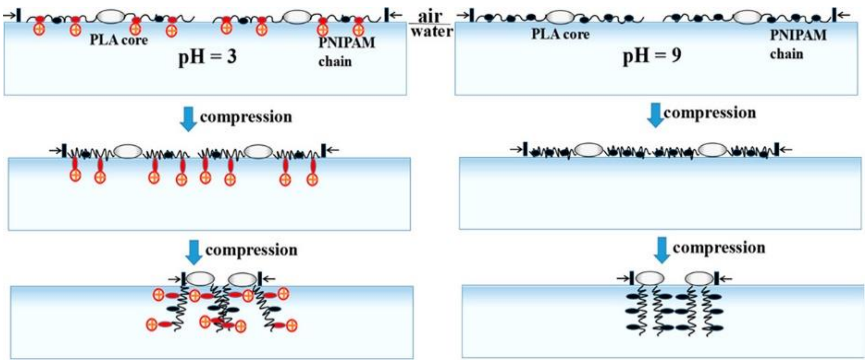
Thermosensitive amphiphilic block copolymers in interfaces



Amphiphilic block copolymers attract the scientific interest of the scientific community because of their ability to form self-assembling nanostructures in solutions and interfaces responsive to external stimuli. These nanostructures find applications, inter alia, in the transport / delivery of pharmaceuticals and in surface modification. The scientific team of **Dr. Asterios (Stergios) Pispas, Theoretical and Physical Chemistry Institute (TPCI/NHRF)**, synthesized novel amphiphilic PLA-b-PNIPAM block copolymers that respond to temperature changes. In collaboration with two research groups from the People's Republic of China, the properties of the formation of different micellar nanostructures on the interface of air-aqueous solutions were investigated, as a result of the amphiphilic nature and response of polymeric nanostructures to changes in temperature and pH of the environment. At the same time, the transfer of ultrafine nanostructured films onto solid surfaces was achieved by maintaining the already formed nanostructures. These studies, in addition to their basic knowledge of the physicochemical behavior of polymeric nanostructures at interfaces, are expected to contribute to the development of 'smart' and functional nanostructured films and surfaces with controlled wetting and interaction with biological systems, e.g. enzymes and cells, to develop innovative substrates of biotechnological interest, as well as efficient sensors for the detection of biochemical and physicochemical agents.

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