

Two positions for PhD candidates and one for a postdoctoral assistant in polymer physical chemistry opened at the University of Geneva (Department of Inorganic, Analytical and Applied Chemistry, Switzerland) to study model bioactive

self-assemblies

Nowadays, there is a major interest in the design of bioactive polymeric materials. Some of the prominent examples are the developments of platforms for tissue engineering and the design of medical devices as well as carriers for drug or gene therapy. In this context, soft templates build on self-assembled nucleotide-based amphiphilic copolymers present a new class of very promising biologically active materials. The resulting structures are expected to reflect the functionality of the DNA fragments. However, inter-molecular interactions between the self-assembled nucleotide-based copolymers, which are set by the characteristics of the self-assembly such as size and morphology, might hamper the potential biological activity of the nanostructures. The opened positions thus aim at exploring the functional self-assembly of DNA-based copolymer in-depth. The primary aspect of DNA copolymer assembly is the mechanism of nanostructure formation and the modes of interaction involved thereof. To address this, extant experimental and theoretical knowledge on the self-assembly of amphiphilic macromolecules and ligand-receptor interactions will be combined. Detailed studies on the mechanism of the self-assembly of these novel macromolecules, the functionality of the polymer-modified DNA fragment in respect with macromolecular crowding and electrostatic interactions as well as functionality of the overall ensemble will be investigated. The investigations will enable to demonstrate that the polymer modification of nucleotide sequences drives the self-assembly of biologically active nanostructures through surface and solution characterization techniques as well as investigations of the biological response to these model bioactive self-assemblies.

A position to perform the synthesis and characterization of the self-assembled nanostructures on surfaces to study the functionality of the polymer-modified nucleotide sequences through surface characterization techniques is opened to a PhD candidate for four years duration from beginning of January 2011. A two years postdoctoral assistant position is opened as well to assist with the surface characterization of the system.

A position to perform the synthesis and characterization of the

self-assembled nanostructures in solution to study the functionality of the polymer-modified nucleotide sequences through solution characterization techniques is opened to a PhD candidate for four years duration from beginning of January 2011.

If you have interest in polymer, peptide and nucleotide physical chemistry as well as in the use of current characterization techniques (light scattering, electron microscopy, spectroscopy, Langmuir Blodgetty, ellipsometry, atomic force and light microscopy), please do not hesitate to contact me at the following email address: [corinne.vebert@unibas.ch](mailto:corinne.vebert@unibas.ch).