



Mercoledì 6 marzo 2019
alle ore 15 presso l'aula H

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terrà il seminario dal titolo:

Chemical and Topological Evolution of Polymer Interfaces: "God Made the Bulk, the Surface was Invented by the Devil"

The application of cyclic polymers in surface functionalization enables an extremely broad modulation of interfacial physicochemical properties, surpassing the attractive characteristics provided by commonly applied, linear polymer "brushes". This is valid on macroscopic, inorganic surfaces, where cyclic polymer brushes provide an enhanced steric stabilization of the interface and a superlubricious behavior. Alternatively, when cyclic brushes form shells on inorganic nanoparticles (NPs), their highly compact and ultradense character make them impenetrable and long-lasting shields, which extend the stability of NP dispersions and hinder any interaction with serum proteins⁵. The translation of topology effects typically observed in solution on interfacial properties, can be further exploited to design highly branched, surface-reactive comb-like polymers (CLPs) including cyclic segments, which can assemble on inorganic and organic surfaces, protect them from the surrounding biological environment and significantly reduce friction. These unique characteristics can be exploited to formulate biocompatible surface modifiers for human cartilage, which are capable of binding to the tissue, and generating a bioinert and highly lubricious polymer layer that halt the progression of degenerative syndromes affecting articular joints. Polymer topology effects are amplified by adding an additional boundary such as a grafting surface. Their precise tuning translates into materials with unprecedented properties and extremely high applicability.

Il Direttore del Dipartimento
Michele Maggini