2024-2025 Biophysics Seminar Series

Dr. Achille Giacometti

Guest Speaker

Professor
Universita' Ca' Foscari Venezia
Venice, Italy

In-Person | WCH 205 | March 5, 2025 | 11AM

Phase behavior and self-assembly properties of semiflexible polymers in solution

This presentation explores the phase behaviour and self-assembly properties of semiflexible polymers in solution, focusing on temperature dependence and bending constraints. The talk is structured in two parts. In the first part, I will examine the phase behaviour of a single semiflexible polymer, comparing two types of bending constraints. The first is the traditional elastic penalty used in the worm-like chain model, while the second is an entropic constraint arising from steric effects introduced by a side sphere. I will demonstrate that these constraints lead to markedly different phase behaviours at low temperatures.

In the second part, I will extend the analysis to multiple polymer chains in solution, investigating their self-assembly properties under each bending constraint. Although the detailed low-temperature behaviour differs between the two constraints, the general self-assembly mechanism appears to exhibit universal characteristics.