



Seminar/Talk

Elastic Microphase Separation Produces Bicontinuous Materials

Dr. Carla Fernandez Rico

ETH Zürich

Host: Maria Ibáñez

Phase separation is a fascinating physical process that is not only responsible for the internal organization of living cells but also a promising tool for structuring materials. The central challenge in making meso-structured materials via phase separation is the lack of structural control at length scales beyond the macromolecular scale. In this talk, I will introduce Elastic MicroPhase Separation (EMPS) as a route to create highly correlated and bi-continuous structures in the scale of hundreds of nanometers. The essential idea of our approach is simple; we counter the thermodynamic forces that drive phase separation with elastic stresses in the host matrix. In this way, we can tune the size and morphology of the structures by changing the mechanical properties of the matrix. Analysis of the microstructure, phase equilibria, and kinetics suggests that these systems emerge through a unique thermodynamic pathway, featuring aspects of both nucleation and growth and spinodal decomposition. We demonstrate the potential our approach by toughening polymeric materials, and making bi-continuous structures with controlled structural and anisotropic gradients.

Monday, September 4, 2023 01:45pm - 02:45pm

Sunstone Building - Big Seminar Room B



This invitation is valid as a ticket for the ISTA Shuttle from and to Heiligenstadt Station. Please find a schedule of the ISTA Shuttle on our webpage: <https://ista.ac.at/en/campus/how-to-get-here/> The ISTA Shuttle bus is marked ISTA Shuttle (#142) and has the Institute Logo printed on the side.