Drops on Superliquid repellent Surfaces and Crystallization in Nanopores

This presentation consists of two parts:
(1) In the last years superliquid repellent surfaces have been developed to such a degree that drops of non-polar liquids form contact angles above 150°. Their contact area with the substrate is extremely small, leading to almost levitated drops. This can be used to produce spherical polymer particles or supraparticles. Examples will be given, opportunities but also limits will be discussed.
(2) The crystallization of various polymers, one liquid crystal and water confined in self-ordered nanoporous alumina (AAO) was studied as a function of pore size, pore surface functionality, molecular weight and cooling/heating rate by differential scanning calorimetry (DSC), wide-angle X-ray diffraction and dielectric spectroscopy. As polymers we analyzed: polyethylene oxide (PEO), highly isotactic polypropylene, poly(ε-caprolactone) (PCL) and a series of poly(ethylene oxide)-*b*-poly(*ε*-caprolactone) (PEO-*b*-PCL) diblock copolymers. While in bulk and in large pores heterogeneous nucleation dominates, for small pores a transformation to predominantly homogeneous nucleation takes place. The different crystallization scenarios will be discussed.