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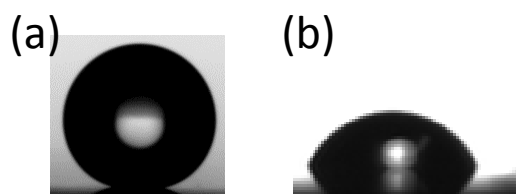
## **Polymer nanocomposite thin films processed by the Layer by layer deposition technique**

For many years, the academic and industrial researches have a growing interest in the processing of **polymer/fillers nanocomposites** to provide mixed properties to the resulting material. In particular, a steadily increasing attention has been paid to the preparation of **thin films** with tunable and tailored properties. These coatings are very relevant for fundamental interest, in order to identify the critical parameters and the mechanisms inducing a given functionality.

Among the different possible strategies to prepare polymer thin films, the Layer by Layer (LbL) approach is among the most versatile and powerful one. In this way, films with precise control over total thickness (from a few angstroms up to the micron level) and over the architecture can be obtained. Our group has recently demonstrated that fine macromolecular design could impart specific surface morphology and thus surface properties to the film. By the way, we have also demonstrated that inorganic fillers could provide to the resulting nanocomposite film some peculiar properties.

Thus, in this project, we want to combine the two last cited approaches (LbL and nanocomposite films) to control the properties of the films. In particular, we will focus on using various particles used as fillers to prepare functional nanocomposites.

This multidisciplinary project mixes polymer synthesis (living/controlled radical polymerization), click chemistry, modification of nanofillers, preparation of nanocomposites, the building-up and fine characterization of multilayered films.



Polymer thin films with liquid repelling (a) and adhering features (b)