Surfs: New generation of microscope slides for nanometric characterization with an optical microscope
Rémi CORSO
NANOLANE, Parc des Sittelles, F-72450 Montfort-le-Gesnois
e-mail : remi.corso@eolane.com; http://www.nano-lane.com

Since a few years, a new generation of microscope slides (called Surf) has been developed to allow the visualisation of nanometric samples. These supports, made of a stack of optical layers deposited on an opaque (for upright microscope) or transparent (for inverted microscope) substrate, do not modify the polarization of the light after reflection. This particular property is modified when a sample is on the surface of the Surf; a non-null component is detected after passing through the analyzer which therefore makes the nanometric sample visible. In addition to a huge increase of the micrometer sample visualization, this high enhance in contrast enables the visualization of films with nanometric thickness (down to 0.3nm), as well as nano-objects (down to 2nm in diameter) with a standard optical microscope without any labelling.

The applications cover topics such as Thin Films and surface treatment (polymer/organic/liquid crystal films, chemical/physical treatments...), Life Science (biofilms, polyelectrolyte films, surfactants, bio-objects...) and also Nano-objects (nanotubes, nanowires, nanoparticles...).

A 3D reconstitution software makes possible to measure optical thickness, roughness… of the samples. The technique can be also designed for integration in existing equipment (AFM, RAMAN…) for nano-structures structures pre-localisation. The efficiency of the method is proven experimentally on well-characterized samples.