

**MASTER Recherche**  
**2<sup>ème</sup> année**  
**Proposition de stage 2008/2009**

**Laboratoire:** Unité Mixte CNRS/Saint-Gobain (Surface du verre et interfaces (SVI) - UMR125)

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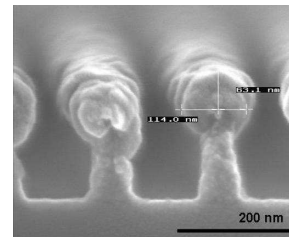
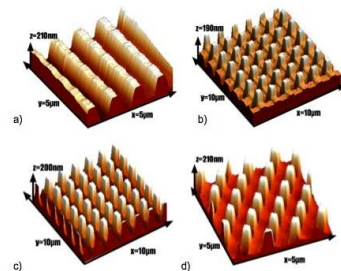
**Titre du sujet proposé : Polariser by NIL and magnetron sputtering.**

**Scientific plan:**

Patterning of surfaces at the sub-micrometer scale is a key factor for the emergence of a wide variety of applications from physics to biology. Nano Imprint Lithography (NIL) has emerged as a promising technique to replicate nanostructures in order to functionalise surfaces. NIL basically consists in the solidification of deformable surfaces or films in contact with a structured stamp. In the laboratory, we have developed a one-step, fast and potential low cost process to make silica like glass nanostructures by combining sol-gel chemistry and thermal nanoimprint.

Here we propose to combine the surface texture induced by NIL with the deposition of metals by sputtering at glancing incidence. This approach should allow the fabrication of nanometer scale metallic features which advanced optical properties. A typical application could be a large scale surface with polarizing properties in reflexion.

During his internship, the student will become familiar with NIL, sputtering deposition and the relevant nanostructure characterization techniques. The modelling will be carried out in collaboration with the Norwegian Technical University (Trondheim).



**The objectives of this training are:**

- fabrication the device combining NIL and sputtering, investigate and understand the impact of NIL and sputtering parameters on the structures,
- measurements of the optical properties of the device,
- collaboration with NTNU (Norway) for optical modeling.

**Techniques:** NIL, sputtering, MEB, AFM, reflectometry...

Possibilité de poursuivre en thèse ? **Oui.** Mode de financement éventuel de la thèse ? **Cifre**

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