

Functional surfaces and nanostructures

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Thin films and nanostructured surfaces are currently finding application in areas beyond the traditional domain of optics and electronics. An interesting example is their integration in new building materials to make more comfortable and energy efficient habitations. In this sector there is a considerable potential for materials with original properties which cannot be obtained in the bulk phase. The following presentation will give an overview and provide examples on how functional surfaces based on micro or nanostructures can be used in housings. Those applications often set requirements to more than one material property and some of the specific mechanical, thermal and optical challenges will be emphasized.

Despite the fast development in the field of micro-electronics and optics, the introduction of patterning technologies still represents a major challenge in housing applications. The costs as well as the large scale fabrication are important bottlenecks. The last part of the presentation will focus on the fundamental research on thin films and nanostructures in the UMR CNRS/Saint-Gobain laboratory addressing this issue. Two original routes to large scale patterning of hybrid materials will be presented: Nano-imprint lithography on oxides and dry self-organisation using sputter induced surface instabilities.

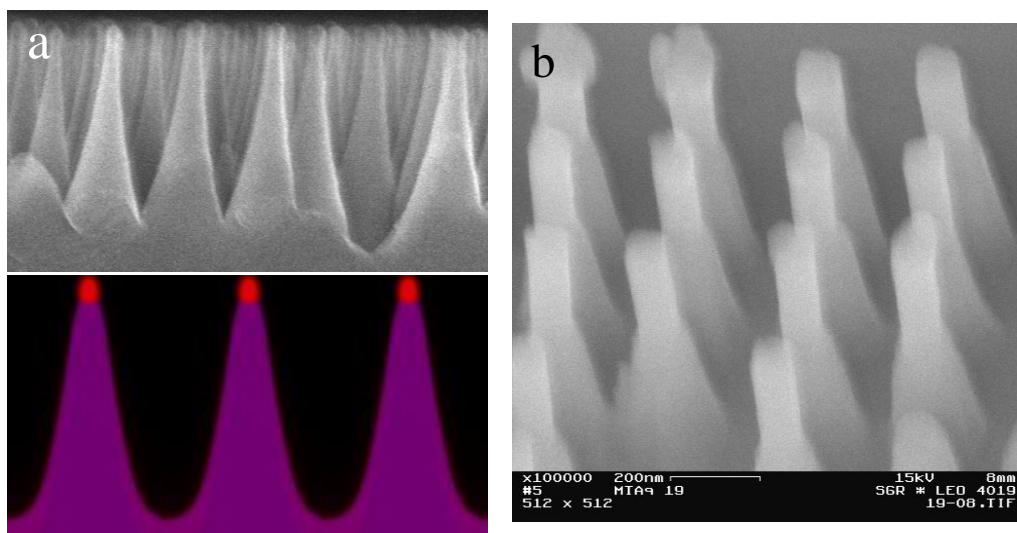


Figure 1: **a)** *top* self-organised nanostructure of 100 nm period obtained sputtering. *bottom* simulation **b)** nano imprinted oxide

