Thesis Project (2015) Institute of Micro and Nanomaterials:

“Mechanical properties of thin film metallic glasses”

Description:
Most of the metals possess at room temperature a crystalline microstructure with the presence of grains and grain boundaries. However, metallic glasses are defined as metals with a non-crystalline microstructure. It results for them very specific properties such as a high hardness and a high toughness compared to crystalline metals with the same composition. However applications are until now relatively limited due to the lack of ductility of this material. The very specific microstructure that could be achieved through thin film deposition of metallic glasses is potentially a way to overcome this limitation.

Goal of the thesis:
This thesis project focuses on the deposition of thin film metallic glasses through magnetron sputtering. Particularly, the influence of the different parameters during the deposition on the final microstructure will be studied. Moreover, the different microstructures obtained will be afterwards connected to the mechanical properties of the thin film. Finally, the possibility to use this thin film as a coating to improve mechanical properties of a sample will be envisaged.

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