Thesis summary

The thesis presents new findings concerning both the growth and characterisation of thin films of MnGe's concentrated magnetic semiconductors and a new numerical simulation method applied to the study of the thermal stability of Pt/Co/AlO trilayers.

In particular, with regard to growth, a new technique of cleaning substrates for the deposition of GeMn thin films for Molecular Beam Epitaxy (MBE) has been implemented. The films were later characterized morphologically and compositionally thanks to a Scanning Electron Microscope, crystallographically using X-Rays Diffraction (XRD) and X-Rays Reflectivity (XRR) and magnetically using alternating field gradient magnetometers (AGFM).

On the other hand, with regard to numerical simulations, the method presented allows to calculate the energy barriers for, in general, any type of transformation and/or mechanism that can change the magnetization configuration of a Pt/Co/AlO stack.

Both results will then be used for possible applications of such materials to memory and/or logic based on spintronic principles.