

**From Thin Films to Nanostructures:
The role of lattice strain and quantum effects**

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In the first part of my talk I present examples on the interplay between stress, structure, and magnetism in ultrathin films in the monolayer thickness regime. The emphasis is on magnetic anisotropy and how it is changed by variations of lattice strain. In the second part of my talk I focus on nanometer small bilayer thin islands of Co and Fe, which exhibit spatial variations on the nm scale of spin-dependent electronic properties. Here, quantum confinement effects and exchange interactions, which are impacted by the specific atomic structure on the nanoscale, are key aspects. Cantilever stress measurements and low temperature spin-polarized scanning tunneling microscopy in magnetic fields are presented in the talk.