

## **Nanolithographic techniques for the fabrication of 2D and 3D magnetic nanostructures**

Paola TIBERTO, Federica CELEGATO - *INRiM*

In the last decades, nanolithography has emerged as a versatile tool for precisely manipulating magnetic systems at the nanoscale to obtain 2D structures through both top-down and bottom-up approaches. However, the recent evolution towards enabling the controlled growth of three-dimensional (3D) materials has expanded the capabilities of nanolithography, resulting in unique magnetic behaviors and functionalities unknown in traditional two-dimensional systems.

As a consequence, 3D magnetic materials fabricated by nanolithography have a great potential for novel applications across a wide range of fields, including magnetic data storage, spintronics and biomedical devices. In this talk, examples of both top-down and bottom-up approaches in nanolithography for fabricating magnetic materials will be highlighted together with the associated magnetization behavior that will confirm the versatility in tailoring magnetic properties at the nanoscale.