Departamento de Física de Materiales

RAITH NANOFABRICATION VELION

A Versatile FIB-SEM Nanofabrication Instrument and its Applications in Nanoscale Science and Engineering

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SALA DE GRADOS, FACULTAD DE CIENCIAS FÍSICAS, UCM

Raith has advanced FIB instrumentation over the last fifteen years with the vision that special FIB-nanofabrication requirements should drive the development of FIB technology.
With a FIB-centric setup where the ion beam is always perpendicular to the sample plane the VELION takes advantage of stability, large and fully corrected write fields at lowest beam tails. The use of a laser interferometer-controlled sample stage at nm accuracy enables more sophisticated applications that involve overlay and write field stitching. These components, associated workflows and high level of automatization are mandatory for plasmonics and nano-photonics, which require high resolution nanolithography with tight dimensional control over areas much larger than a single field-of-view.
Here, we present updates about latest applications such as plasmonic arrays, zero mode waveguides, sensing biological molecules, solar absorber arrays, maskless ion implantation or large area photonic structures, as well as the combination of EBL and FIB.
With the appreciation that the ion's properties can have dramatic consequences on the physical and chemical nature of the resulting nanostructures, we also discuss the motivations behind applications employing universal ion sources such as Gold-Germanium-Silicon (AuGeSi) or Gallium-Bismuth-Lithium (GaBiLi).