ANALYSIS ESAE Nano Lao

Dual Beam Focused Ion Beam (FIB)



Schematic overview

3.



- Liquid Gallium source from which 1. the ions are extracted
- Condensor lens sytem creating a 2. parallel beam of ions
 - Aperture
- Quadrupole deflector 4.
- 5. Electron lens for focusing and scanning the ion beam

Focused ion beam, also known as FIB, is a technique used particularly in the semiconductor industry, materials science, and increasingly in the biological field for site-specific analysis, deposition, and ablation of materials. An FIB setup is a scientific instrument that resembles a scanning electron microscope (SEM). However, while the SEM uses a focused beam of electrons to image the sample in the chamber, an FIB setup uses a focused beam of ions instead (Fig. 1). FIB can also be incorporated in a system with both electron and ion beam columns, allowing the same feature to be investigated using either of the beams (Fig. 2).

Application: Cross-sectioning and TEM sample preparation of only a small part of the device is our most important application. The NOVA 600 Dual Beam is capable of ionmilling and SEM imaging at almost the same time. This is a huge advantage of the FIB at MESA+ NanoLab.





Figure 1

20 µm TEM sample preparation

Photonic Crystal made by 3D patterning

3 μm

milling.

