

NanoScope Services Application Note:

Following are the preparation guidelines for **TEM Sample Preparation** of any material

For all Samples

- Optical images of the site for foil production should be provided with a single line representing the position of the TEM foil to be produced. If the sample is complex then a series of images from low to high magnification may be required. The target area of the sample may be indicated with a marker pen to make identification easier.
- If the TEM foil to be produced is in any way different from the standard foil specification, it should be noted and the specification agreed with your operator beforehand.
- The top 300 Angstroms of the material from which the TEM foil is to be produced is likely to be amorphised during the initial stages of the foil production process unless protected. If this material is important to the subsequent TEM analysis, the sample should be sputter coated with a protective material to a thickness of at least 100nm. E.g. Gold. If you are not able to do this we can do this for you (Carbon only).
- The standard TEM grid to which foils are extracted is a Copper grid with a holey carbon support film. If you wish to use a different grid specification please ensure that this is pre-agreed with your operator. Different types of grids may not offer the same proven levels of sample stability during subsequent handling and imaging.
- Please list the materials within the sample and the substrate and if there are any special handling requirements or handling precautions necessary. Samples must be confirmed as being neither radioactive, toxic or a biohazard.
- Loose samples should be mounted on a conductive holder using conductive tape or pads.

Semiconductor Samples and Data Storage

- The devices themselves, if packaged, should be de-capsulated or have their lids removed. De-caped devices should be clean and free from debris or packaging material residues.
- Encapsulating layers like polyimide should be removed.
- If supplying a complete wafer (up to 4inch), ensure the location for FIB work is clearly marked with a permanent marker or similar.

Materials Science Samples

- Samples should be clean and free from grease and oil.

Returning samples

Unless otherwise stated the TEM foils produced will be shipped back in a sealed grid box, with directions as to where each sample is located and also its location on the TEM grid. NanoScope may retain the original sample until all work has been confirmed as having been completed by the customer.