

## LVEM Samples Requirements

To present the functions and abilities of the Delong Instruments Low Voltage Electron Microscopes, we organise sample testing and live demonstrations of the customers' samples.

**The standard TEM grid dia 3,05 mm** shall be used for all types of samples. The other technical requirements for such samples are as follows:

### Sections of polymers, tissues etc. and films

The **maximum thickness** of the sample is up to 120 nm for low Z samples, ca 20 nm for metals. Up to 200 nm for the STEM mode for low Z samples.

If possible, please deposit the sections directly on a grid without a film.

As a rule, the thinner the sample, the better the image we get.

**Note:** As even the carbon film contributes to the total thickness of the sample, **we strongly recommend using ultra-thin carbon films** for both LVEMs. If possible, **please do not use formvar films**, which increase the total sample thickness and decrease the final image quality. If the sample cannot be placed on a grid directly (as most sections), we recommend using an ultra-thin carbon film (3-5 nm thick, lacey or holey carbon) instead.

### Particles

The preferred form of delivering nanoparticle samples is **powder or solution** (instead of a ready sample on a grid). In the case of the powder sample, we also need information on the preferred dissolvent.

If you want to deliver samples on a grid yet, please see the note on ultrathin films above.

### Staining

As we do not have any equipment for staining in our labs, we ask you kindly to deliver stained samples in cases you need to use staining for your applications. Generally, the post-staining of samples for LVEM microscopes is unnecessary when staining was already used for the sample fixation.

For stained nanoparticles (viruses, proteins, etc.), please use lower concentrations of stain and generally smaller amounts of stain to keep the layer of heavy materials as thin as possible.

## SEM samples

The maximal observable sample area by LVEM 25E's SEM mode has a diameter of 2 mm. The total sample size has to be comparable with the TEM grid (3,05 mm) because LVEM 25E uses the same sample holder for TEM and SEM modes. The sample thickness shall not exceed 1mm.

## EDS samples

For EDS samples, please note that the support grid shall be made from a different material than the sample to avoid affecting the results.

## Comparison

If you want to compare images of LVEM 25 with current images from other devices, we ask you kindly **to deliver samples in the same form** (dissolvent, fixing, staining...) as used for the reference appliance excepting the sample thickness limitations mentioned above.

**General recommendation:** If you already have images from another device, please send them together with the samples. It helps us to find out what is crucial for you and make the best possible images. In case there are no such images, we ask you kindly to describe what purpose shall the LVEM 25 serve and what is the most interesting information the images shall provide.

We are looking forward to your samples!

Delong Instruments team