

- **Dehydration:** Removing the water from a specimen, for example, by replacing it with ethanol
- **Embedding:** Embedding in resin, ready to be sectioned
- **Sectioning:** Cutting the sample into thin strips that are semitransparent to electrons, for example with a diamond knife
- **Staining:** Using heavy metals to scatter electrons and produce contrast
- **Freeze Fracturing:** Freezing the sample rapidly, and then fracturing it, for example, when viewing cell membranes
- **Mounting:** Placing the sample on a copper grid
- It is advantageous to use an Electron Microscope in many situations because they offer a **much higher resolution** than Light Microscopes, so they can be used to image **very small objects in detail**, and also because of **the 3D images that SEMs offer**. However, samples **must be placed in a vacuum** as electrons are deflected by particles in the air, they are **very expensive** to buy and maintain, and preparing the samples requires **a lot of skill** to do.

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