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APPLICATION BRIEF

SMI no.6

TEM sample preparation using angled processing

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1. Introduction

Material quality causes marked etching rate differences in FIB cross-section processing and TEM sample preparation. For example, when there is Al or Cu wiring on a silicon layer, the etching rate for the wiring portion drops. The differences of thickness on the processed cross-section cause striations to appear as a "window blind effect". The thickness differences caused by this uneven processing are a major impediment for TEM observation.

In this brief, a measurement sample is mounted on an angle to change the incident angle of the ion beam and eliminate striations.

2. Processing method

A slice cut from the measurement sample was mounted on mesh. As seen in Figure 1, the mesh was inclined 15°to 20°before the sample was mounted.

As seen on the right side of the figure below, make sure the microprobe and gas gun nozzle do not contact the raised portion on the right side.

3. Conclusion

By mounting the TEM sample at an angle and changing the incident angle of the FIB beam, differences in etching rates caused by material quality can be somewhat alleviated and the "window blind effect" can be repressed.

This method makes it possible to prepare optimal TEM samples with minimal striations.

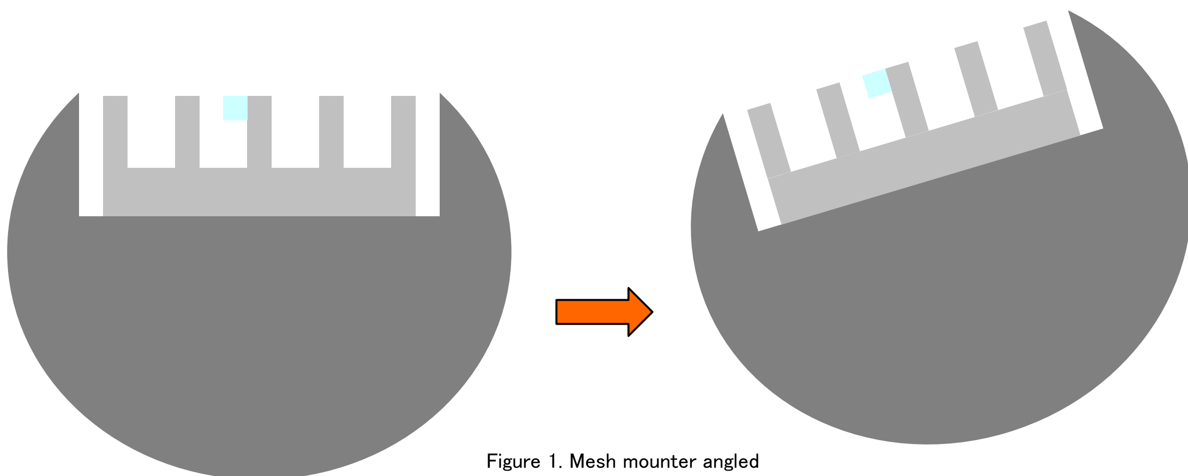

Figure 1. Mesh mounter angled

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