

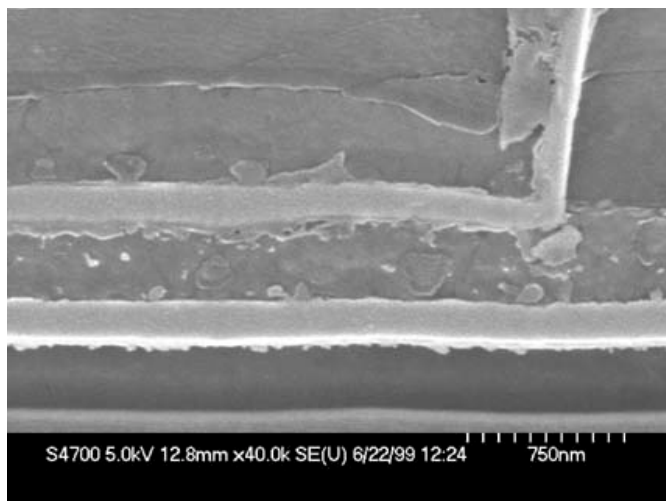
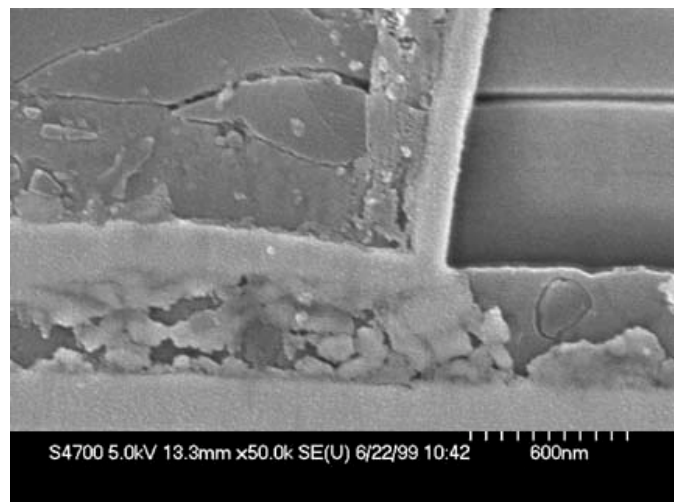
Applications Note: Specimen Preparation for SEM by Ion Milling



Ion milling has long been used as the final processing step in TEM specimen preparation. Once a specimen has been mechanically thinned to a few microns, the ion mill is used to complete thinning of the sample to electron transparency. With its large vacuum chamber, the Fischione Instruments Model 1010 Low Angle Milling and Polishing (LAMP) Ion Mill readily accommodates specimens larger than the standard 3 mm diameter TEM sample. With complete adjustability of ion gun angle, voltage and current, this allows the Model 1010 to be used as a final polishing step for bulk specimens.

One application of this is for SEM specimen preparation of semiconductor devices. As device sizes shrink, critical dimension measurement of the various components becomes more and more important.

After mechanical thinning, the metal layers of this semiconductor device have smeared, precluding determination of where each layer begins and ends. This prevents accurate determination of the metal layer thickness.



After ion milling with the Fischione Instruments Model 1010 LAMP for 20 minutes, the smearing of the metal layers has been removed. Strong delineation of the layers can now be seen. Using ion milling as a final SEM specimen preparation step has allowed all of the necessary measurements to be gathered from the device.