WET CELL
USE INSTRUCTIONS

SPI Supplies
206 Garfield Avenue,
West Chester, PA 19380, USA

SPI Supplies Wet Cell Kit Instructions

Introduction:

The use of silicon nitride membrane TEM grids has now gone "mainstream" in that they are now being used widely for doing TEM work. Their main application has been as a TEM grid. Recent advances in backscattered electron (BSE) imaging now make possible the imaging of samples while wet, inside of a cell fashioned with a silicon nitride membrane window. So long as the sample of interest can be placed in good contact with the membrane, it can be imaged with a BSE detector.

Equipment needed:

Those with older SEMs will be pleasantly surprised to learn that they can use this new cutting edge technology without the need to purchase a new and expensive SEM. One can use the technique and the SPI Supplies Brand of SEM Wet Cell Kits even if the SEM is 20 or more years old! Naturally, one could expect better quality images if they had a newer instrument and the newest generation backscattered electron detector, but as with any other type of microscopy, for even one who really does need the "ultimate" resolution of the technique being used, there are ten others who are not pushing the limits of resolution.

Preparation of the wet sample:

The most important consideration is that the sample be in close contact with the "well" side of the membrane window grid. We know that cells can be grown easily onto the window. We also know that liquids such as emulsions of all types will spread easily. Wet tissue samples can be placed in contact with the membrane. Coalescing latex samples can be spread onto the membrane as well as can wet geological samples.

Closure of the cell:

This step should be followed quickly so that liquid from the "well" does not evaporate. With the "well" side up, we recommend spreading the epoxy glue from the kit in a circular pattern around the outside of the window, using the SPI #01271-MB wooden probe. A single "blank" (supplied with the kit) is placed on top of the glue circle, with gentle pressing to make sure there is complete sealing of the two silicon halves of the wet cell. The seal, if done properly, should be vacuum compatible and should not leak in the vacuum of the SEM.

Mounting on the sample mount:

We recommend the use of SPI #05073-BA double sided conductive carbon discs. The wet cell is pressed onto the carbon disc, which itself has already been mounted on the SEM mount of choice. The window in the wet cell should be in the "up" position. We suggest allowing the glue to cure for at least six hours before insertion into the vacuum of the SEM. We also advise allowing the prepump vacuum to pump on the sample for at least five minutes to make sure there are no residual unreacted chemical species present.

Viewing in the BSE mode:

Use your BSE detector as you would for viewing any other sample in the BSE mode.

Revised: EER
11/15