

# AGAR HIGH RESOLUTION SPUTTER COATER

Amended October 2001

The sputter coater is set up with a platinum/palladium target, as opposed to the more usual gold target. This is due to the fact that the FE SEM, on an ideal specimen, will resolve gold particles, and platinum has a much finer grain size.

The coater is fitted with a film thickness monitor which works on the quartz crystal microbalance principle. The crystal is positioned inside the chamber.

The principle of the sputter coater is very different from the carbon coater used to coat grids. After reaching vacuum, an inert gas (argon) is introduced into the chamber. In practice the chamber is flushed a couple of times with argon gas to ensure there are no stray oxygen or water molecules. A high voltage is then applied to the target so that argon atoms surrounding the target are ionised to  $\text{Ar}^+$  and electrons. The positive argon ions then hit the negatively charged target with such force that some of the target metal atoms leave the source. These are 'bounced around' in the chamber and eventually settle on the specimen. Due to the bouncing around, the metal atoms arrive from all directions to evenly coat rough surfaces.

## INSTRUCTIONS FOR USE

The sputter coater is even easier to use than the bench top carbon coater! There is a built in, automatic coating cycle that includes all the flush/leak stages that would normally have to be controlled manually. The argon supply is set to the correct pressure, so do not touch the gas supply tap.

DO NOT TOUCH SPECIMENS WITH BARE HANDS, ESPECIALLY IF THEY ARE TO BE VIEWED UNDER THE FEG SEM.

DO NOT TOUCH ANY INTERNAL PART OF THE CHAMBER WITH BARE HANDS.

1. The coater is not kept under vacuum, so open the chamber CAREFULLY and load your specimens into the holders. CAREFULLY lower the top plate so that the lid fits snugly on the 'O' ring.
2. Turn on the POWER on the control unit front panel (which starts the vacuum pumps), and turn on the film thickness monitor (FTM).
3. Select "MTM" on the control unit front panel.
4. Press the ZERO CHECK button on the FTM.
5. Select the film thickness required - press and hold the SETPOINT button on the FTM and use the up and down buttons to select the thickness in nm. Between 10 - 20 nm is normally sufficient.
6. Press the STATUS button on the FTM so that the display on the coater reads "t 1".
7. Wait for the green READY light to come on (right hand side of the control unit front panel).
8. Press CYCLE/STOP button.
9. When the purple plasma glow starts, it is possible to rotate your stubs using the small black dial on the stage control. If you grasp the stage control dial (large black dial on the side of the chamber) and turn, it tilts the stage.

After the plasma glow, when the FTM reading has reached its preset value, you can turn the vacuum off and remove your very pretty, coated specimens!