

SCANNING ELECTRON MICROSCOPES

## Ion beam sputter coating with CROSS SECTION POLISHER™

## Utilize your CP for sputter coating

CROSS SECTION POLISHER<sup>TM</sup> (CP) is an SEM specimen preparation device that utilizes a broad Ar ion beam to produce artifact-free cross-sections. The same principle can be employed not only for ion-milling but also deposition of thin layer to the specimen surface, in particular, conductive coating for followup observation of a non-conductive specimen in an SEM. Figure 1(a) shows the principle of ion beam sputter coating. The target material is irradiated by the ion beam, instead of the



Figure 1: Schematic of ion beam sputter coating by CROSS SECTION POLISHER<sup>m</sup> (CP). (a) Principle of ion beam sputter coating, (b) Coating holder and targets.

specimen, creating a cone of sputtered material that is deposited on the specimen surface in a form of thin conductive coating. Figure 1(b) shows the carbon-coating holder (IB-12510CCH), that uses a carbon planchette as a target. Typically, this holder is only for the carbon coating; however, it can also be used for metal coating, simply by attaching a Au/Pd or other metal target (example shown is Fig. 2).



Figure 2: Gold coating results. (a) Au coated area on Si wafer. (b) Cross section image of Au coated layer made by CP.

Figure 2 (a) shows the surface image of gold coated area on Si wafer. Coating condition is accelerating voltage 6 kV, irradiated ion current 130  $\mu$ A and process time 3 minutes. Figure 2(b) shows the cross-section image of gold coated layer made by CP. The resulting coating thickness is 10 nm gold layer on Si wafer. This uniform layer provides good electric conductivity.

## The advantages of this method:

- No need for a dedicated sputter coater. CP can perform both polishing and coating.
- Adjust layer thickness by changing accelerating voltage and process time.
- Both carbon and metal thin layer can be deposited.