APPLICATION NOTE | Sample Drift

Sample drift can be a very serious issue in FIB. For most short milling operations or quick analysis slight drift can be tolerated. But for longer scans, such as mapping in EDS or EBSD, drift can be a serious issue.

Drift arises from several sources:

1. Mechanical drift of stage or sample
2. Charging effects causing beam to drift
3. Magnetic fields

Of all the above causes the mechanical drift is one of the easiest to correct. Standard samples from FEI have been placed in the FIB for extended periods and there is no appreciable drift either from the SEM or ion beam. This indicates that the primary cause of drift is the sample itself. The primary culprit of sample drift for users is carbon tape.

The carbon tape has adhesives and when it is placed in a vacuum you can see bubbles form on the tape. If a sample is placed on this tape it will surely drift. Described is a method that I currently use on all samples that does not cause sample drift due to mounting.

New Sample Mounting Procedure

Place a small amount of Crazy Glue™ on a sample pin mount. *(usually not a full drop)*

1. Place sample on glue droplet.
2. Allow several minutes to dry *(this should be done the day before or hour before FIB reservation to ensure glue is dry)*
3. After glue has dried, place a small drop of conductive silver paste near but not touching the sample *(this will prevent the Ag from excessively wicking onto your sample)*
4. Use an eyelash brush to spread the Ag paint to your sample and onto the sides all the way to the top of the sample.
5. Place the sample in a heating block that is warm to the touch and let it set for 5min. *(this will get rid of any volatiles from the paint)*
6. Coat your sample with sputter coater and use as before.

If you have had issues with drift this should eliminate drift due to sample mounting. This should work well in other SEM's also.