

# UltrAuFoil FAQs



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

## FAQs for UltrAuFoil

- **Why is the foil made of gold?**  
Because it is a highly conductive, non-oxidizing, radiation-hard material whose surface is chemically inert and biocompatible?
- **Why is the foil 500 Å thick?**  
400-500 Å is optimal because it minimizes motion as much as thicker layers but still gives thin ice films under typical blotting conditions. Below 400 Å, the performance of the gold support foils begins to degrade.
- **Why is the TEM grid made of gold?**  
Using the same metal eliminates differential thermal contraction during cooling of the sample and therefore prevents changes in the geometry and tension of the support foil.
- **How should I store the UltrAuFoil® and within which time should I use them?**  
The UltrAuFoil® like our other products should be stored in a grid storage box in a dark, cool and low-humidity environment. Generally there is no date of expiry, but we recommend to use them within two years.
- **Do I need to modify the UltrAuFoil® before use?**  
No, they are ready for use when delivered. They can be made more hydrophilic using standard glow discharge and plasma systems or other gold surface treatments.
- **How do I set up the beam for data collection?**  
Currently, the recommended electron beam geometry is circularly symmetric beam, centered on the hole, which encompasses a small region of the support around each hole. The micrograph is taken in the center of the hole.
- **How do I focus using UltrAuFoil®?**  
Since there is no amorphous material in the gold support structure, Thon rings cannot be used to focus. As discussed in the publication, several other options are available, but the two simplest are:
  1. Turn on beam tilt wobble and minimize the image shift.
  2. Look for the diffracted beams at the edge of a hole with the objective aperture removed. When the shift between the diffracted beams and the crystals of gold is minimized, the foil is in focus.
- **How do I correct the astigmatism?**  
We recommend using a calibration specimen to correct the stigmatism and beam tilt prior to collecting data on UltrAuFoil®.
- **Can I use automated data collection methods?**  
Yes, automated data collection has been successfully tested on UltrAuFoil® using beam tilt to focus.

- **Are UltrAuFoil<sup>®</sup> fragile?**

No, they are similar or less fragile than traditional carbon foils. But if mishandled with tweezers or broken during freeze plunging, the stability of the support may be severely degraded. We recommend collecting data only from squares where the foil is uniform and intact.

- **Can I add a continuous film of amorphous carbon?**

Yes. Standard float transfer methods work fine for transferring thin films of carbon onto UltrAuFoil<sup>®</sup>.

Revised: MKM

Date: 5/29