

# *ATUMtome*



## The New Standard In 3D Reconstruction Sample Preparation

### Benefits

- Do not lose one single section - collect hundreds to thousands of sections on a continuous tape, uninterrupted
- Non-destructive preparation - sections can be reviewed many times at varying magnification. Use low magnification for locating regions of interest, then zoom in for higher resolution imaging. This saves time, focusing only on your regions of interest
- Sections available for years into the future for processing, post-staining, immunogold labeling and correlative imaging.
- Determine sample viability early on in the process, so you don't waste valuable time cutting and imaging a problem sample. Allows correlative microscopy for localization and then ultrastructural imaging
- Time saving - short pixel dwell time for fast detection during SEM imaging
- Uses standard sample preparation techniques and resins
- Various Kapton tape coatings available to prevent section charging
- Extremely cost effective method of 3D imaging, from hundreds to thousands of sections
- Can be upgraded to the PT3D, featuring 1 mm of uninterrupted sectioning

### Description

The ATUMtome's tape collection system (ATUM) was developed at Harvard University, where Professor Jeff Lichtman and his team designed the instrument to collect ultrathin sections to help reconstruct the brain's neural pathways; a precursor to one day mapping the entire human brain.

The RMC ATUMtome is a unique system for collecting sections on a continuous tape. Typically, a resin-embedded specimen is used on the ultramicrotome to cut serial sections that then float on a surface of the water in the diamond knife trough. The ATUMtome moves a continuous ribbon of tape through this water trough, automatically removing the serial sections from the water surface in sequence. After the sections are collected, the tape is mounted onto a silicon wafer substrate or glass slides. The sections are now ready for imaging with a scanning electron microscope or via other microscopy techniques.

### Applications

While many users work with the ATUMtome for neuroscience research, this is far from the only application. Research into biological systems and cell organelles as well as new materials research are being imaged using this array tomography technique. The ATUMtome's unique ability to collect hundreds to thousands of sections on a continuous tape opens the door for use in many serial section applications, some of which are yet to be explored.

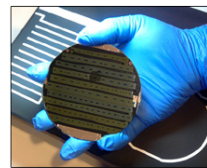
The system can be used in correlative microscopy applications involving, for example, light and scanning electron microscopy to identify regions of interest and map nanoparticles inside organs and tumors. It can also benefit users who want to image whole cells and correlate the 3D distribution of specific proteins within these cells. Stored sections can be immunolabeled multiple times for examination under epifluorescence illumination.

As research continues to transition from 2D to 3D imaging, there is a growing requirement to increase efficiency in imaging thousands of sample sections. By addressing this need, as well as the need to retain samples for future analysis, the ATUMtome is an exciting tool to consider. This is especially so among scientists who have wanted to carry out 3D reconstruction but were held back because of the impractical effort it would take to handle the many sections required.

### INCLUDES

- ATUM continuous tape feed mechanism with PC touchscreen control
- PowerTome PTPCZ with HD Video Package
- Air-activated anti-vibration table with Compressor and Ergonomic lab chair
- Diatome Ultra Maxi Diamond Knife, 4mm, 35° or 45°
- Start-up supply of Kapton tape
- 4" diameter silicon wafers
- Environmental chamber
- Anti-static device
- Water level control system
- Wafer workstation

### ATUMtome Wafer Workstation (ATUM310-0)



### OPTIONAL ACCESSORIES AND CONSUMABLES AVAILABLE FOR PURCHASE

- Diatome ATUM Sonic Knife with Controller, 3mm, 35°
- Uncoated Kapton tape, 33 meters
- Uncoated Kapton tape, glow discharged, 33 meters
- 4" Diameter Silicon Wafers
- Carrier box for 25 numbers of 4" diameter wafers
- Carrier box for 1 number of 4" diameter wafer
- Double Sided Carbon Conductive Tape, 25mm x 5m
- Double Sided Carbon Conductive Tape, 12mm x 5m
- Handle, Scalpel
- Blade, Scalpel, pack of 5

