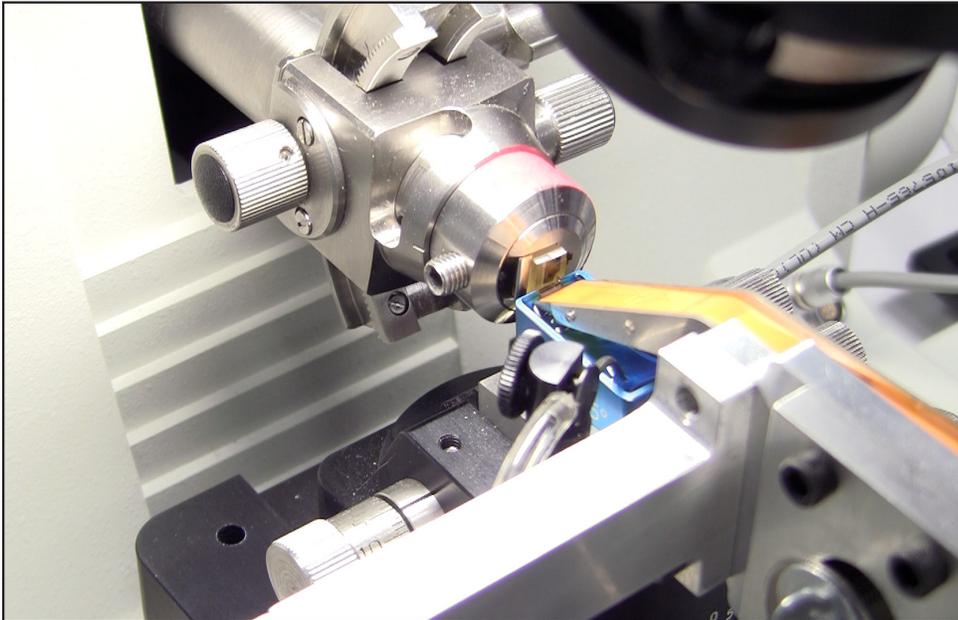


For High Resolution Array Tomography of Biological Tissues



The ATUMtome's tape collecting part of the system (ATUM) is under license from Harvard University where Professor Jeff Lichtman, MD, and his team designed the instrument to help collect ultrathin sections to help reconstruct the brain's neural pathways -- a precursor to one day mapping the entire human brain.

Thousands of ultra-thin sections with a thickness of 30nm can be automatically collected on 8mm wide Kapton tape for SEM imaging and subsequent 3-D reconstruction.

Features & Benefits

- Collects hundreds to thousands of sections on a continuous tape
- Non-destructive to sample, with sections available for years into the future for processing, post-staining, immunogold labeling, correlative imaging -- and at any work pace desired.
- Section thickness usually range from 30nm to 5,000nm, with thinner sections possible.
- Determines sample viability sooner in the process so you don't waste valuable time cutting and imaging a problem sample.
- Uses multiple resolutions for locating regions of interest, then zooming in for higher resolution imaging
- Allows correlative microscopy for localization and then ultra-structural imaging
- Prepares samples allowing short pixel dwell time for fast detection of images during EM
- Uses standard sample preparation techniques and resins
- Charging effect on sections is manageable
- Priced at a fraction of the cost of alternative 3-D imaging techniques

Description

The RMC ATUMtome is a unique system for collecting sections on a continuous tape. Typically, researchers mount resin-embedded specimens on the ultramicrotome, cutting 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 sequential order. After the sections are collected, researchers mount the tape in strips on substrates like a silicon wafers or glass slides. The populated wafers are now ready for imaging with a scanning electron microscope or using other microscopy techniques.

Applications

Many early adopters of the ATUMtome are currently using the system for neuroscience research. However, 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.

The system can be used in correlative microscopy applications involving, for example, light and scanning electron microscopy to identify regions of interest and map nano-particles inside organs and tumors. It can also benefit users who want to image whole cells and correlate the 3-D 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 2-D to 3-D 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, especially among scientists who have wanted to do 3-D reconstruction but were held back because of the impractical effort it would take to handle all the sections needed.

ATUMtome System

ATUMtome supplied complete with:

- ATUM continuous tape feed mechanism with PC control software
- PowerTome PT-PCZ
- Air-activated anti-vibration microtomy table including ATUM attachment interface with x-y-z fine control positioning of tape/section pick-up head
- Silent compressor
- Environmental chamber
- Anti-static device
- Ergonomic lab chair
- 4 mm diamond knife, 35 degrees for room temperature ultra-thin sectioning, mounted in large-cavity blue anodized holder
- Water level control system
- Wafer workstation
- Start-up supply of Kapton tape
- Four 4" diameter silicon wafers

Dimensions: 49" W x 36" D x 54" H

Weight: 796 lbs. (361 kg)

Electrical: *input:* 110 - 240 VAC 50/60 Hz

output: 255 watts

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