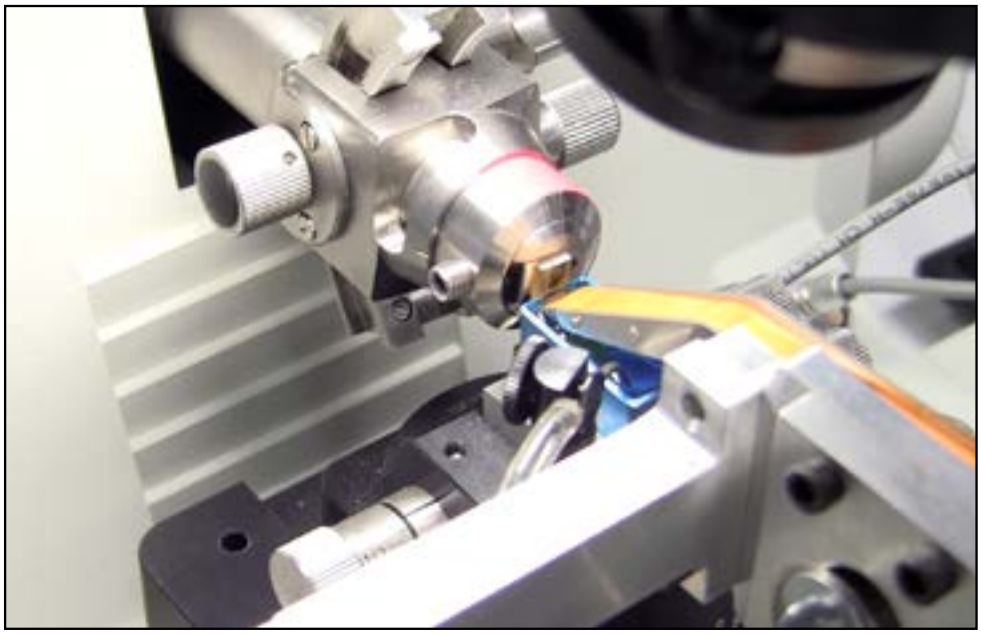
RMC Products

ATUMtome
Tape Collecting Ultramicrotome

For High Resolution Array Tomography of Biological Tissues by Early Adopter Sophisticated Users*



Manufactured under license issued by Harvard University.

Based on Automatic Tape Collecting Ultramicrotome developed by Professor Jeff Lichtman, MD, PhD, and colleagues at the Harvard University Department of Molecular and Cellular Biology.

Thousands of Ultra-thin sections in the range 30-50nm are automatically collected on 8mm wide Kapton tape for later transfer to 4" silicon wafers (4" diameter silicon discs) and subsequent SEM electron imaging.

ATUMtome consists of:

- ATUM section collecting device with PC, software, automatic water trough filler
- PT-PCZ Ultramicrotome
- PT attachment fixture with X-Y-Z positioners
- 60617-SR air activated antivibration table, compressor, ECC Environmental Control Chamber, Ergo lab chair
- 4mm Diamond Knife with large water trough

** this Harvard developed device is classified as a prototype and as such is not certified as a fully proven commercial product*

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Description

The ATUMtome is a unique ultramicrotome for collecting sections on a continuous tape. Serial sections of resin-embedded specimens are cut with a diamond knife. As the sections float off on the surface water in the knife trough, they are picked up by the moving tape of the ATUM. Researchers cut the long rolls of tape into shorter lengths and mount them on silicon wafers. The wafers are imaged with a scanning electron microscope using either secondary electron or backscattered electron imaging.

This automated serial sectioning system is unique because it allows collection and storage of large numbers of serial sections on tapes and wafers. Hundreds to thousands of serial sections can be images and then wafer libraries archived for future studies.

Applications

The ATUMtome can be used for a range of studies including tracking neurons through brain tissue, 3-D ultrastructural localization of specific proteins within cells, reconstructing the 3-D structures of small organisms and correlating antigen locations through 3-D space.

In addition to standard serial section imaging, the sections can be immunolabeled multiple times for examination under epifluorescence illumination in light microscopy and subsequent scanning electron microscopy (SEM) examination. Utilizing the epiflourescence technique, the ATUM can assist in tracking nano-particles inside organs or tumors and examine their locations using organelle-specific fluorescent markers.

In material science, the ATUM is an exellent approach for examining multi-component fluorescent polymers.

In short, by increasing the volume and efficiency in obtaining sample sections, scientists will find the ATUM an exciting tool -- especially for those who could not previously perform 3-D reconstruction due to the impractical amount of time it took to handle a large number of sections.

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