Focused Ion Beam

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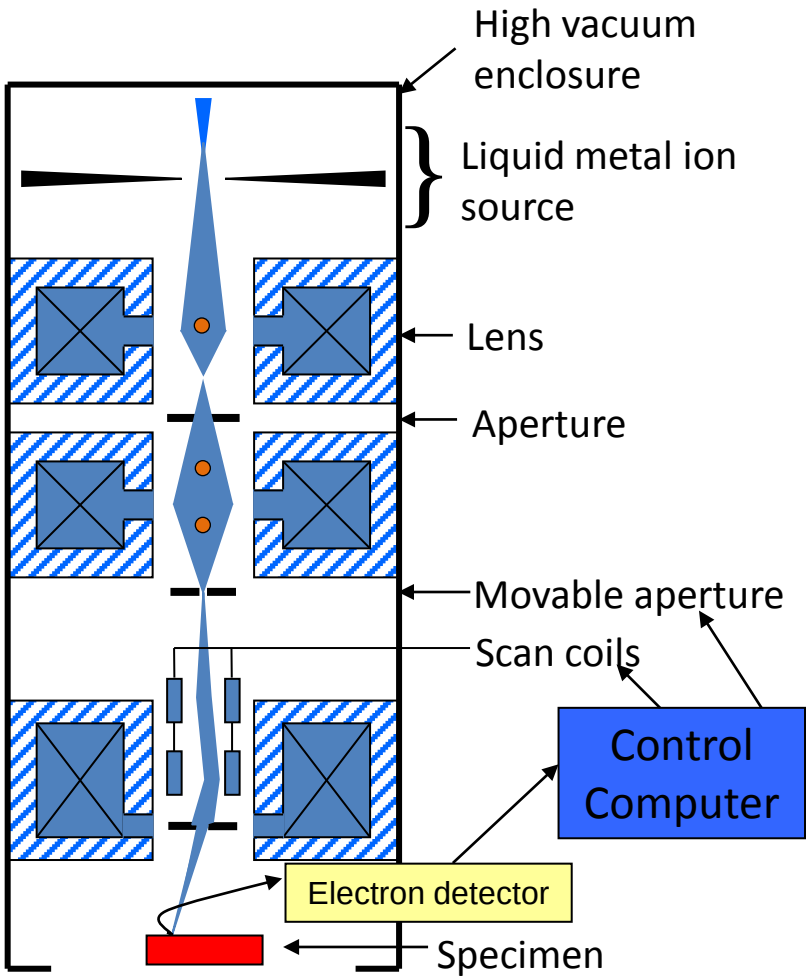
A Versatile Instrument

The FIB is a unique resource in Atlantic Canada, used for materials preparation and microsampling.

What Is ‘Fibbing’?

- Gallium ions ● are extracted from a liquid metal ion source and shaped into a fine beam via a series of electrostatic lenses.

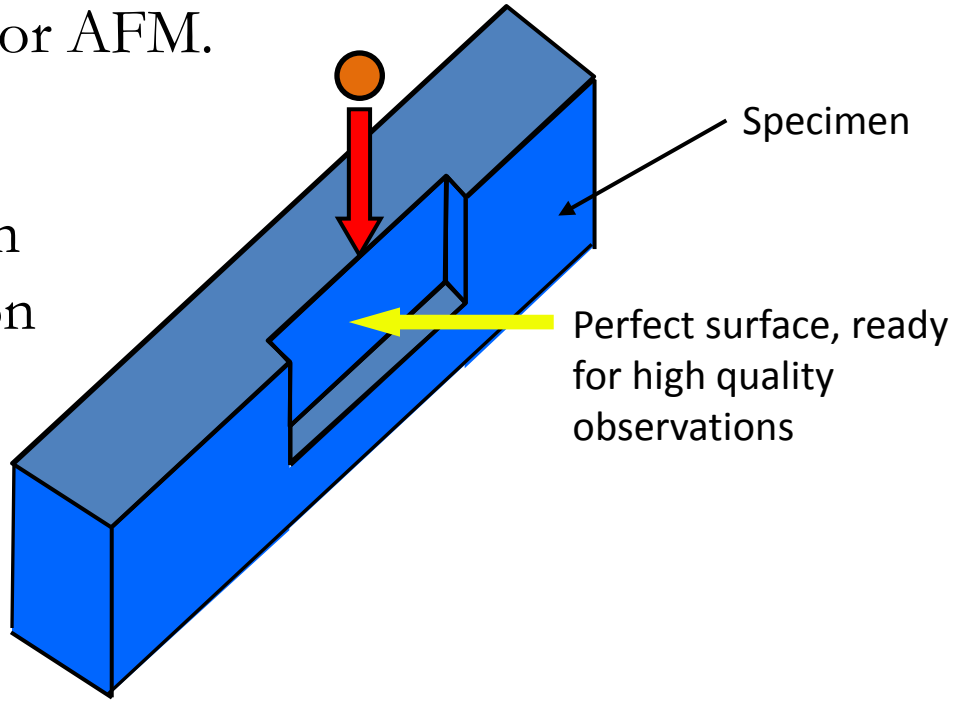
- The gallium ions carefully mill away material in a highly controlled manner.



FIB preparation of cross-sections

Fibbing is an ideal technique for preparing undamaged cross sections of delicate (and not so delicate) materials for subsequent observation in a TEM, SEM, or AFM.

Tungsten can be deposited over the area to be prepared in order to ensure that the section of interest is not damaged.



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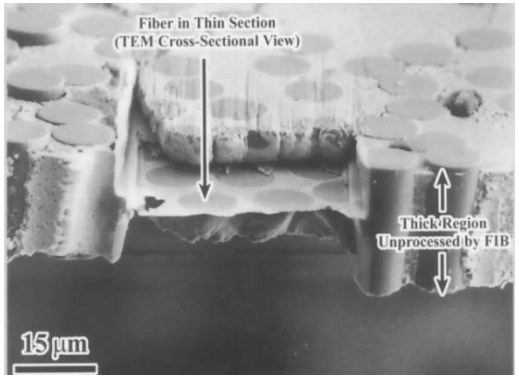
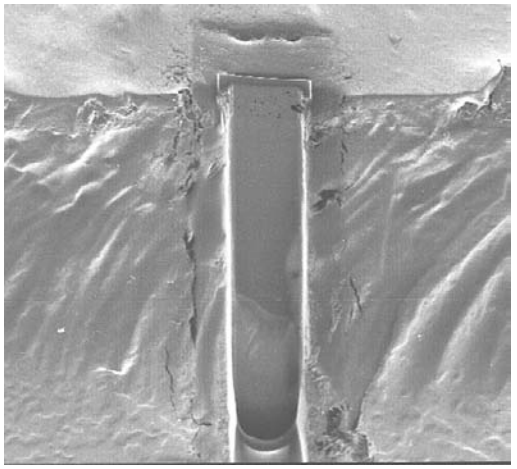
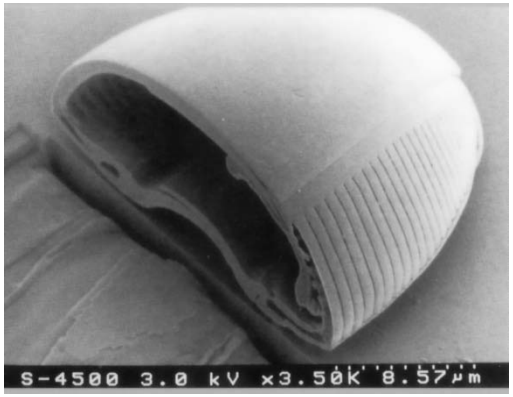
FIB Applications



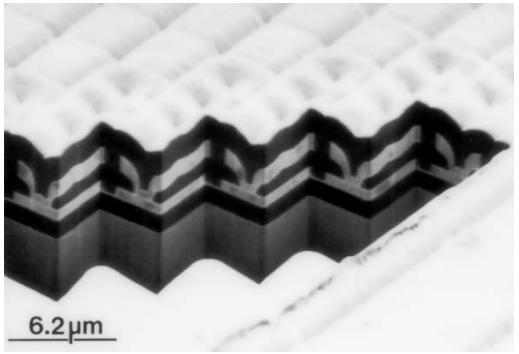
Fibre-reinforced composite



Cross-section of surgical glove



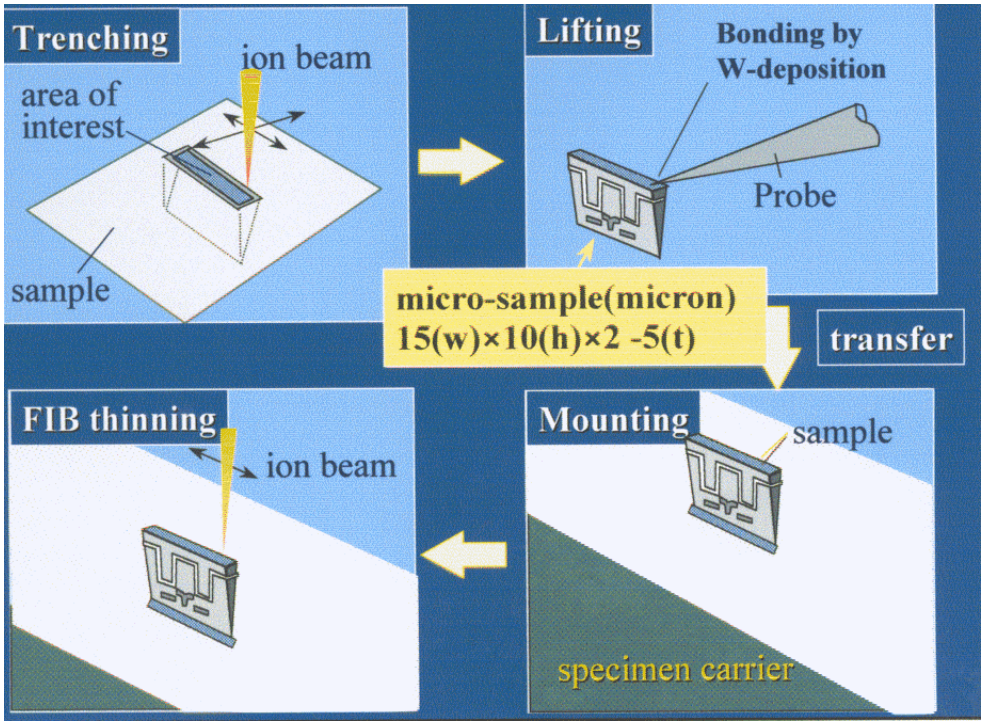
Sectioned micro-organism



Microelectronic device

In-situ microsampling

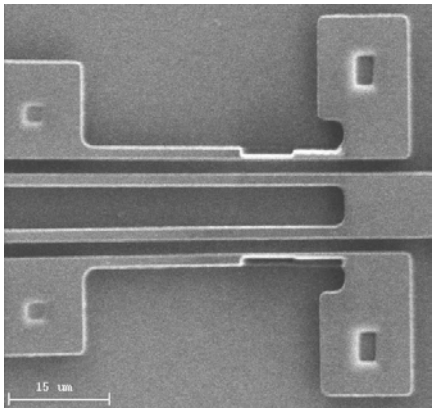
The FIB allows the operator to select a desired section of the sample, carve it out, lift it off, and deposit it on a suitable mount – all within the FIB chamber.

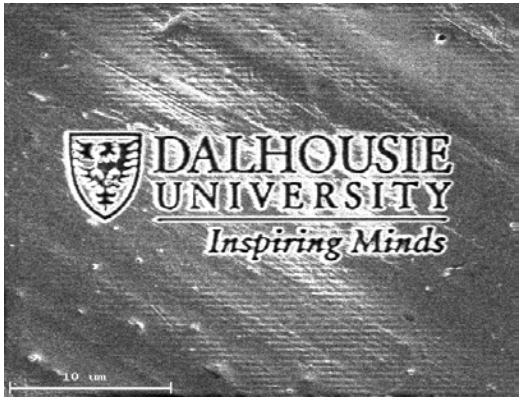


Milling

- The control software allows the user to input a bitmap which the instrument uses as a template to guide the ion beam across the surface.

- Applications include custom preparation and modifications of MEMS devices.





Selected Publications

Mottaghi, "Modification of MEMS Devices Using Focused Ion Beam", The Fourth Annual Mechanical Engineering Research Conference (MERC '11), Halifax, Canada, Apr 2011.