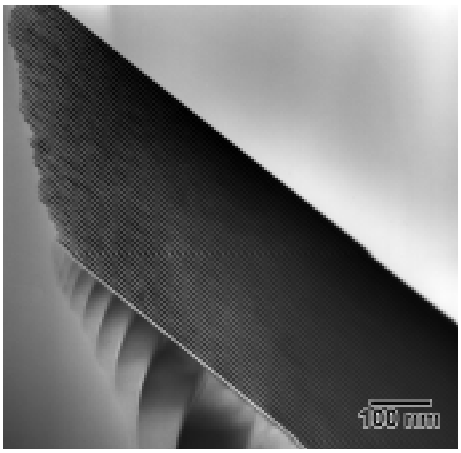
Model 520

MicroCleave™ Kit

TEM Sample Preparation



An X-ray mirror consisting of 45 layers of alternating Mo / amorphous Si (7.0nm period) on a Si substrate. Image courtesy of John McCaffrey - National Research Council of Canada.

A Multiple Quantum Well structure grown by MBE showing the thickness terraces possible with a ***MicroCleave™*** sample. Image Courtesy of Scott Walck - Materials Directorate WPAFB. (Now with PPG Industries)

The Model 520 MicroCleave™ Kit

The MicroCleave™ technique is a relatively simple and inexpensive method of producing superior cross sectional TEM specimens. For speed of preparation, it is unsurpassed. One limitation is that the technique does require the substrate material to cleave or fracture. For this reason, it has been applied almost exclusively to semiconductor materials. Recently, the technique has been extended to other substrates such as glass, silicon carbide, quartz, sapphire, and other hard materials. It is particularly well suited for rapidly examining coatings and thin films very soon after they are deposited.

Special Features

- A relatively simple and inexpensive method for preparing TEM cross sections where site specific information is not required.
- Ideal when sample availability is limited as it requires very little starting material.
- While originally designed for semiconductors, the technique has been applied to glass, silicon carbide, quartz, sapphire, and other brittle materials.
- No ion milling is required. Therefore, no amorphization, no heating effects, no ion implantation and no preferential sputtering.
- The MicroCleave™ sample is ideally suited for rapid crystallographic orientation and determination in the TEM.
- The MicroCleave™ technique is fast and typically requires preparation times of less than 1 hour. This makes it particularly well-suited for rapid examination of coatings and thin films shortly after deposition.

References:

1. ***Ultramicroscopy,*** *38* (1991) 149, John P. McCaffrey.
2. ***TEM Samples of Semiconductors Prepared by a Small-Angle Cleavage Technique,*** J.P. McCaffrey, Materials Research Society, Vol. 254 (1992).
3. ***Microscopy Research and Technique,*** 24 (1993) 180, John P. McCaffrey.
4. ***A Simplified Method for Modifying TEM Copper Grids for Use with Small Angle Cleavage Technique,*** Microscopy Today (96-4) (1996), Scott D. Walck.
5. ***The Small Angle Cleavage Technique: An* Update,** Scott D. Walck and John McCaffrey. Materials Research Society, Vol. 480 (1997).

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