

NANO 703/703L
Lab: TEM Sample Prep-Ultramicrotomy
Due: Final Exam

GOAL

TEM requires samples thinned to electron transparency, typically less than 100 nm. Ultramicrotomy is one technique to prepare thin sections, using an especially fine, sharp knife, and a drive mechanism for precise thickness control. Diamond knives are preferred, for their durability and quality, but glass knives are inexpensive, disposable, and easily produced (Fig.). The goal of this lab is to become familiar with the function and capabilities of the ultramicrotome.

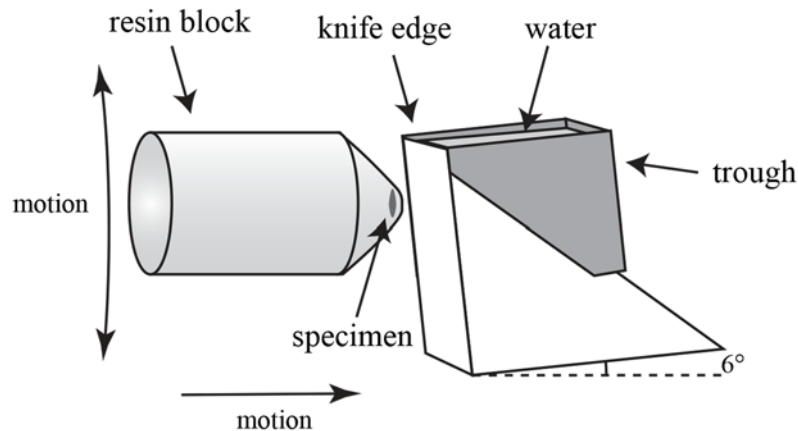


Fig.: Simplified drawing of ultramicrotome. A glass knife is prepared with a water trough. A specimen embedded in polymer resin is passed over the knife edge, while advancing by a fixed distance after each pass. The knife is inclined for clearance after the cut.

PROCEDURE

Please familiarize yourself with the function and capabilities of the ultramicrotome.

REPORT

Please provide a description of the ultramicrotome. Describe at least one area of research in which it could be used for TEM sample preparation.