**DIVINE KANU**

**ANA 402**

**16/MHS01/122**

**GLASS KNIFE**

A **glass knife** is a knife with a blade composed of glass. The cutting edge of a glass knife is formed from a fracture line, and is extremely sharp. Glass knives were used in antiquity due to their natural sharpness and the ease with which they could be manufactured. In modern electron microscopy, glass knives are used to make the ultrathin sections needed for imaging.

Modern glass knives were once the blade of choice for the ultra-thin sectioning required in transmission electron microscope because they can be manufactured by hand and are sharper than softer metal blades because the crystalline structure of metals makes it impossible to obtain a continuous sharp edge.

**How its made**

The device used in making a glass knife is called an **ultramicrotome.** Glass knives can be produced by hand using pliers with two raised bumps on one jaw and a single bump between the two bumps on the opposing jaw, but special machines called "knife-makers" are used in most electron microscopy laboratories to ensure repeatable results.

The glass used typically starts out as 1-inch-wide (25 mm) strips of 1⁄4-inch-thick (6.4 mm) plate glass, which is cut into 1 inch (2.5 cm) squares. The glass square is then scored across the diagonal with a steel or tungsten carbide glass-cutting wheel to determine where the square will break, and pressure is then applied gradually across the opposite diagonal until the square breaks. This technique provides two usable knife edges, one on each of the two resulting triangles. The better the break is aligned with the diagonal, the better the cutting edge.

**Reference**

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3, Quekett, John (1848). A practical Treatise on the use of the microscope. London: Hippolyte Bailliere. pp. 306, Chapter XII (Microtomes and Microtome Knives).