

Title:

Different Types Of Microscopes

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573

Summary:

Microscopes are mechanical devices used for viewing objects and materials so minute in size that they are undetectable by the naked eye. The process conducted with such an instrument, called Microscopy, uses the combined schools of optical science and light reflection, controlled and manipulated through lenses, to study small objects at close range.

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Keywords:

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Article Body:

Microscopes are mechanical devices used for viewing objects and materials so minute in size that they are undetectable by the naked eye. The process conducted with such an instrument, called Microscopy, uses the combined schools of optical science and light reflection, controlled and manipulated through lenses, to study small objects at close range.

The basic microscope consists of several complex and interrelated parts: a cylinder that provides a necessary space of air between the ocular lens (eye piece) situated at the top and the objective lens fixed at the bottom, hovering close to a stage containing an optical assembly on a rotating arm and a centered hole through which a light shines from a solid U-shaped stand beneath. Magnifying values for the ocular range through X5, X10, to X20, while the values for the objective lens has a broader span: X5, X10, X20, X40, X80, and X100. These values provide the observer with a spectrum of possible distance orientations and degrees of sharpness as are necessary for viewing and analysis.

Several different kinds of microscopes exist, each having particular features:

Optical Microscope: The first ever created. The optical microscope has one or two lenses that work to enlarge and enhance images placed between the lower-most lens and the light source.

Simple Optical Microscope—uses one lens, the convex lens, in the magnifying process. This kind of microscope was used by Anton Van Leeuwenhoek during the late-sixteen and early-seventeenth centuries, around the time that the microscope was invented.

Compound Optical Microscope—has two lenses, one for the eyepiece to serve the ocular perspective and one of short focal length for objective perspective. Multiple lenses work to minimize both chromatic and spherical aberrations so that the view is unobstructed and uncorrupted.

Stereo Microscope: This is also known as the Dissecting Microscope, and uses two separate optical shafts (for both eyes) to create a three-dimensional image of the object through two slightly different viewpoints. This kind of microscope conducts microsurgery, dissection, watch-making, small circuit board manufacturing, etc.

Inverted Microscope: This kind of microscope views objects from an inverted position than that of regular microscopes. The inverted microscope specializes in the study of cell cultures in liquid.

Petrographic Microscope: This kind of microscope features a polarizing filter, a rotating stage, and gypsum plate. Petrographic Microscopes specialize in the study of inorganic substances whose properties tend to alter through shifting perspective.

Pocket Microscope: This kind of microscope consists of a single shaft with an eye piece at one end and an adjustable objective lens at the other. This old-style microscope has a case for easy carry.

Electron Microscopes: This kind of microscope employs electron waves running parallel to a magnetic field providing higher resolution. Two Electron Microscopes are the Scanning Electron Microscope and the Transmission Electron Microscope.

Scanning Probe Microscope: This kind of microscope measures interaction between a physical probe and a sample to form a micrograph. Only surface data can be collected and analyzed from the sample. Types of Scanning Probe Microscopes include the Atomic Force Microscope, the Scanning Tunneling Microscope, the Electric Force Microscope, and the Magnetic Force Microscope.

Science wouldn't be what it is today without the microscope, as this device is

the primary instrument by which the world and all of its elements are measured and assessed. It is with the microscope that we take a look inside of ourselves so we can learn and understand who we are and how we work.