

Answer on Question#38787, Physics, Optics

What is difference between bifocal lens and double focal lens?

Answer.

In general, these terms are synonymous.

Bifocal literally means “two focuses.”

Term “bifocal lens” - it is rather a medical term. For example, from medical dictionary: “bifocal lens - a lens with two principal focal lengths: the upper part of the lens gives a sharp image of distant objects and the lower part gives a sharp image of near objects, as when reading. Examples are bifocal spectacles, bifocal contact lenses, and bifocal intraocular lenses. A lens that has two segments with different refractive powers, ordinarily with the upper for distant and the lower for near vision; used in bifocal glasses.”

They are made either by forming two separate surfaces on a single piece of glass or obtaining additional power by fusing a piece of high-index glass on to the front of the main lens and then polishing a single spherical surface over both glasses.

Term “double focal lens” - it is rather a technical term.

For example, it is used in scientific article “A double-focus lens interferometer for scanning force microscopy”. The beam is divided into two orthogonally polarized beams at the **double-focus lens**. The lens consists of a double concave lens of calcite and two double convex glass lens on each side. The lens of a calcite crystal has two different focal points because the crystal has two different diffractive indices depending on the polarizing state of the beams passing through it. The double-focus lens we used here is designed to have zero power for the ordinary ray and a focal length of 36.3 mm for the extraordinary ray.