

Multifocal intraocular lens providing improved visual quality

CSIC has patented a multifocal intraocular lens (IOL), which provides a spectacle-free optimized visual quality after cataract surgery, in a wide range of intermediate distances. The patients with implanted with this lens will enjoy a high optical quality of vision independently of light conditions.

CSIC is looking for industrial partners in the ophthalmologic sector to manufacture and commercialize this technology through a patent license agreement.

An offer for patent licensing

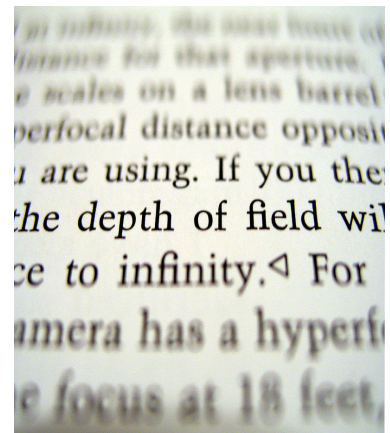
The lens provides a sharp image of objects at far, near and intermediate distances, for a wide range of pupil diameters.

IOLs are implanted in cataract surgery to replace the crystalline lens, to restore the transparency of the eye. Monofocal IOLs require the use of near vision glasses. Multifocal IOLs aim at providing far and near vision simultaneously, avoiding the use of glasses. The main drawback of multifocal IOLs is a reduced optical quality, particularly at intermediate distances.

Among the multifocal solutions, the optical quality provided by diffractive IOLs is independent of the pupil size. However, diffractive IOLs are affected by chromatic effects, reducing image quality, and provide only two (three, in some new designs) planes in focus. On the other hand, refractive IOLs can provide a wide range of distances in focus, free of chromatic effects, but their performance is often limited by the pupil size, and hence by the light conditions among other factors.

The particular multifocal IOL design methodology developed at CSIC optimizes the through-focus optical performance in a mode eye. The IOL is presents highly aspherical surfaces with curvature inversion.

The developed refractive multifocal IOL produced optimized performance in a wide rage of distances –particularly at intermediate distances-which does not depend on the pupil size, and is free of chromatic artifacts.



The developed Intraocular Lenses provide high-quality vision in a wide range of distances, including intermediate.

Main innovations and advantages

- Multifocal lens providing optimized quality of vision at intermediate distances, as well as at near and far distances.
- Superior performance, compared to existing multifocal IOLs, in eye-models based on real eye biometry.
- Independent of pupil size, and therefore of light conditions.
- Double aspheric geometry with curvature inversion in both surfaces
- Rotationally symmetrical (simplifying manufacturing).
- Compatible with conventional production processes, at no additional costs.

Patent Status

Priority patent application filed.

Contact

Prof. Susana Marcos

Visual Optics and Biophotonics lab.

Tel.: (+34) 91 561 68 00 Ext 942313

E-mail: susana@io.cfmac.csic.es

www.vision.csic.es

