Intracorneal implant to correct presbyopia

VNIVERSITAT DE VALÈNCIA

R&D RESULT

Patent

Knowledge Area

- Optics
- Ophthalmology
- Contact lenses

Collaboration

- Technology available for licensing
- Other collaborations

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201450R-Furlan, W.

Ophthalmic lens and ophthalmic lenses set to correct the presbyopia

Inventors: Walter Furlan (Universitat de València), Juan Antonio Monsoriu, Fernando Giménez (Universitat Politècnica de València), Laura Remón (AJL Ophthalmic, S.A.), Salvador García y Patricia Udaondo (Aiken- Tecnología ocular preventiva S.L.).

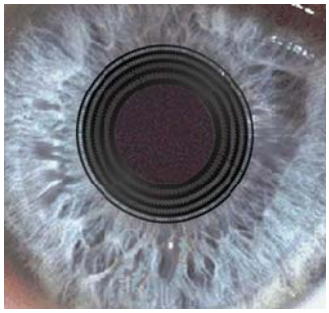
Background: The treatment of presbyopia has been addressed historically from various perspectives, from bifocals and progressive spectacles or contact lenses to multifocal intraocular lenses. All of them are intended to provide good vison to the patient at different distances. The most recent approach to the treatment of presbyopia is the use of intracorneal implants or corneal inlays. Within this type of prosthesis, the most popular for their clinical outcomes is the KAMRA®. This is simply an opaque ring with a small central aperture that produces a “pinhole effect” extending the depth of field of the presbyopic eye. However, it presents two main shortcomings. Firstly, it must be implanted in only one eye, which, in some cases, is the cause of binocular vision problems. Secondly, as the KAMRA® has thousands of randomly distributed micro-holes on its surface to allow the flow of nutrients to the cells of the corneal stroma; the light diffracted by the microholes worsens the retinal image quality. The present invention takes advantage of the effects of diffraction of the light generated by the micro-holes, to create a near focus, and to increase the intensity of the far focus, simultaneously.

The invention: Researchers at the Universitat de València in collaboration with the Universitat Politècnica de València, AJL Ophthalmic, S.A. and Aiken- Tecnología ocular preventiva S.L have developed a novel ophthalmic lens, based on a diffractive lens, with microholes that allow the flow of nutrients in the corneal stroma. This new type of prosthesis allows personalized treatment of presbyopia. Due to its high efficiency, it can be implanted in both eyes without creating problems of binocular vision. The design also allows easy adaptation to the form of intraocular lens or contact lens.

Applications: The main application of the technology is in the field of ophthalmology (refractive surgery) and optometry.

Advantages: The main advantages provided by the invention are:

- The diffraction of the light generated by the central hole and the microholes creates at least two focuses with extended depth of focus.
- The design of the lens is very versatile as it supports a variable density of holes in each zone that can be modified depending on the relative intensity of the foci and to correct ocular aberrations.
- As a corneal inlay, the invention is safer than PresbyLasik surgery for emmetropic patients, since the removal of corneal tissue is not necessary, minimizing the risk of ectasia. However, for patients with visual defects it is fully compatible with this technique.



Other related technology: Multifocal ophthalmic lens and process for their preparation, 201001R-Furlan, W; 201325R-Furlan, W

OTRI oficina de transferència de resultats d'investigació

Avda. Blasco Ibáñez, 13
46010 Valencia (España)
Tel. +34 96 3864044
otri@uv.es
www.uv.es/otri