Multifocal contact lenses for myopia control

R&D RESULT

Patent

Knowledge Area

- Optics
- Ophthalmology
- Contact lenses

Collaboration

- Technology available for licensing
- Other collaborations

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Multifocal contact lenses with aperiodic geometries for myopia control

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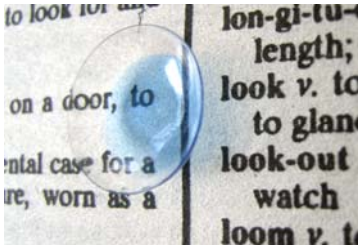
Background: The study of temporal progression of myopia is of great interest for both ophthalmologists and optometrists, mainly because of the high risk of diseases associated with this refractive error. Experimental studies prove that blurs in periphery of the retina, beyond the fovea, can regulate eye's growth. For this reason, it has been suggested that induction of peripheral refractive error sustained over time may be an effective treatment for the prevention of myopia progression. That peripheral defocus can be induced by different ophthalmic elements, such as contact lenses. There are some designs of bifocal contact lenses that have afforded effective therapeutic results. However, current bifocal lenses for myopia control have the limitation that for pupil diameters above 3.5 mm do not allow generating a relative peripheral myopic defocus greater than -1.2 D without simultaneously causing foveal blur around -0.50 D.

The invention: Developed contact lenses, based on aperiodic geometries, get better performance of myopia control than those achieved by conventional bifocal lenses, obtaining a relative peripheral myopic defocus greater than -1.2 D and simultaneously a foveal blur lower than -0.55 D for pupil diameters greater than 3.5 mm. This technology allows myopia control based on the correction of myopia related to foveal vision of the eye in which the ophthalmic lens is placed and /or the generation of myopic defocus in the peripheral retina of the eye in which ophthalmic lens is placed, in order to slow the progression of myopia. This is due to its innovative design that allows tuning the positions of the foci with the set of construction parameters used. The distinctive feature of these new designs is the way in which different concentric annular zones with a no periodic distribution are positioned.

Applications: The main application of the technology is in the field of **ophthalmology** for the design of multifocal lenses for myopia control.

Advantages: The main advantages provided by the invention are:

- Greater peripheral myopic defocus and lower foveal blur for pupil diameters greater than 3.5 mm than current lenses.
- Lenses with aperiodic geometries generate a sharper image at all distances since they are innately multifocal.
- These lenses produce images with less halos, since they have less chromatic aberration due to foci overlap.
- Required manufacturing equipment is the same as that used for conventional contact lenses.



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

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