



Ref. OTRI

201001R-Furlan, W

Knowledge area

Optics
Ophthalmology

Collaboration

Technology available to licensing
Other collaborations may be considered

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Multifocal contact lenses with aperiodic-fractal geometry for presbyopia correction

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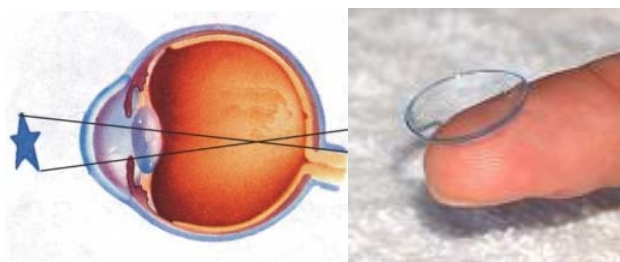
Background: The main disadvantage of presbyopia or ageing eye, -caused by the incapability to focus on close objects- is the need to use reading glasses. Nowadays, contact lenses for presbyopia provide the wearer a correct vision for the 80% of the daily activities. Nevertheless, these contact lenses have vision limitations in some circumstances. The majority of currently lenses for presbyopia are bifocal contact lenses. These existing lenses -including those for alternating monovision- have predetermined focus points that allow little flexibility in design, providing a no-optimized vision quality for medium distances. For these reasons, new contact lenses more advantageous than bifocal ones -improving all distance vision and with multifocal properties- are needed.

The invention: The developed contact lenses -based on aperiodic-fractal geometries provide better images than those generated by conventional bifocal lenses. This is due to its new design that allows multiple foci with the set of construction parameters used. The main characteristic of this design is the aperiodic distribution of the different concentric ring zones. Thus, it is possible to design contact lenses -with a construction procedure analogous to conventional contact lenses- that are real multifocal lenses and consequently with a good vision in near, far and intermediate distances.

Applications: The main application of the technology is in contactology and ophthalmology for the design of multifocal lenses (both contact and intraocular lenses).

Advantages: The most remarkable advantages provided by this technology are:

- Lenses with no-periodic geometry provide a clearer image at all distances than conventional ones since they are multifocal.
- Lenses produce images with fewer halos, since they show less chromatic aberration due to focus superposition.
- Lenses are less pupil size dependant because of the high depth of focus obtained with theses lenses. Therefore, the adaptation period is unproblematic.
- Production equipments required for lenses with aperiodic-fractal geometry are the same as for conventional contact lenses.



Información adicional

