

Reduced optical instrument to simulate simultaneous vision

CSIC has improved the capabilities of a successful previous simultaneous vision design, by deploying a miniaturized low-cost optical device, capable of providing the patient with a pure simultaneous visual experience. This experience is similar to that achieved by multifocal solutions in contact lenses, intraocular lenses or refractive surgery presbyopic ablation patterns.

This instrument not only preserves the advantages of the first prototype, including delivery of a real, non-invasive experience but also, thanks to focus-tunable lenses, all the technology has been resized in a handheld system, ideal for the use by clinicians at a very affordable cost.

An offer for patent licensing

A user friendly affordable device capable of providing the patient with a pure simultaneous vision experience

In simultaneous vision correction, the multifocal performance is achieved at the expense of a degradation of the optical quality of the images. The perceived quality of the images is therefore modified and patients need to become adapted. Some patients do not tolerate a multifocal image, making it necessary to screen patient's tolerance to bifocality and to customize the choice of the bifocal design.

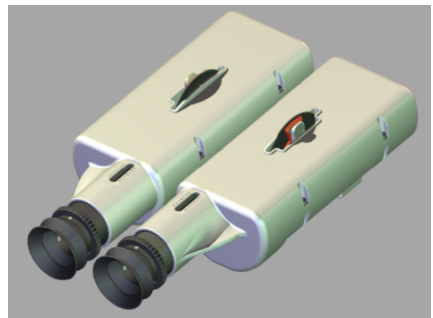
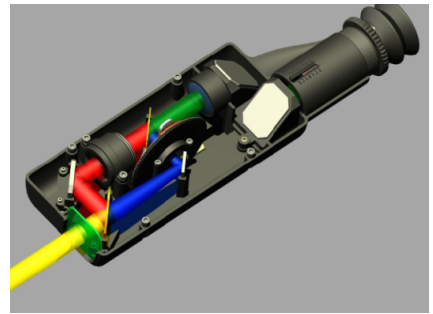
CSIC has previously patented the first non-invasive instrument to provide a pure simultaneous vision experience, by superposing images with different amounts of defocus, while preserving magnification and alignment in a versatile two channel instrument. However, such technology requires a static and medium-sized infrastructure (motion-engine controlled platforms). While well suited to test bifocal vision in clinical patients, the optical bench design limited testing in a fixed environment.

This drawback is now overcome thanks to focus-tunable lenses that change their optics in response to an electric signal. At least one of the image channels passes through the focus-tunable lenses, which avoids misalignments and errors and allows to remarkably shortening the size (volume and weight) of the device.

Main innovations and advantages

- Handheld technology able to provide a real experience of non-invasive, immediate, actual simultaneous vision with no location restrictions.
- Ideal for use by ophthalmologist in patients with reduced mobility such as elderly or disable .
- Low cost (less than 1,000\$/unit) due to the use of easily available components.
- It cuts down the investment requirements (space and infrastructure)
- The advantages and applications of the original prototype remain unaltered: I) Rapid test to identify and guide patient candidates to multifocal vision corrections, II) avoids the frustrating, expensive trial-and-error process of multifocal contact lens fitting and III) increases patient satisfaction in the implantation of multifocal intraocular lenses or presbyopic corneal refractive surgery.

The previous simultaneous vision device is highly resized thanks to focus-tunable lenses



The new handheld technology allows its use in unrestricted environments

Patent Status

Priority patent application filed (worldwide effect)

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

