WIOL-CF®

bioanalogic IOL

SIMPLY NATURAL

medicem

Closer to the natural crystalline lens than ever before

WIOL–CF® is the bioanalogic, polyfocal intraocular lens with the largest optics in the industry, the highest contrast sensitivity, exceptionally low incidence of PCO and optical phenomena and long-term stability of its material.

These features are enabled by a combination of a unique material developed exclusively for intraocular applications and a bioanalogic approach to IOL design that transforms current trends.

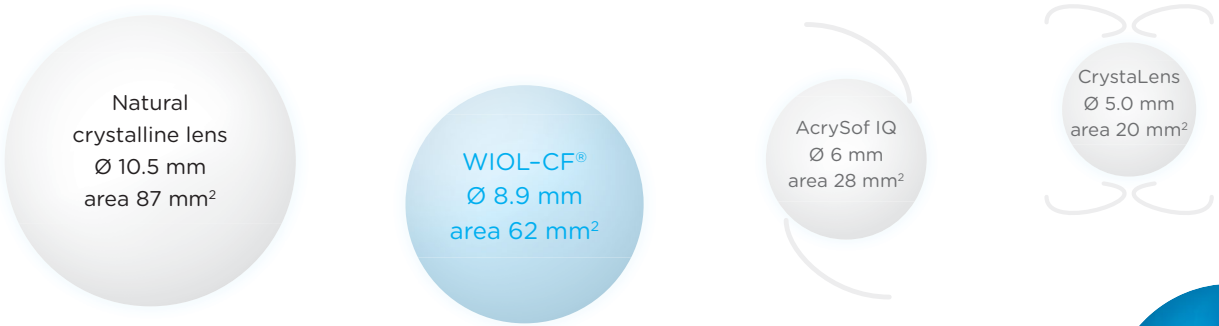
WHAT IS WIGEL®

WIGEL® is a specific hydrogel developed exclusively for intraocular applications. Our research aimed to develop the material that closely resembles the properties of the natural crystalline lens. WIGEL® is a cross-linked metacrylic copolymer with negative-charged carboxylate groups expressed on its surface and high water content (an average of 42%).

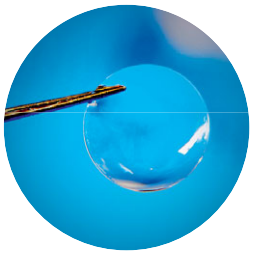
While rich hydration makes the lens exceptionally smooth on the surface, flexible and soft, the negative charge repells protein adsorption, avoids cell adhesion and proliferation and prevents calcifications or glistenings.

Thanks to soft and flexible material we could make the lens with an optics diameter of almost 9 millimeters, close to the size of the natural crystalline lens.

The negatively charged surface also solves the common problem of posterior capsule opacification for the long-term.[1]



WIOL–CF® features the largests optics in the industry enabling effective, undisturbed vision also at wide pupil aperture and excellent contrast sensitivity in all light conditions.
The size of WIOL–CF® is close to the size of the natural crystalline lens.



WIOL-CF® is a natural replacement of the human crystalline lens in both cataract and presbyopia

POLYFOCALITY OFFERS MORE THAN MULTIFOCALITY

WIOL-CF® provides patients large and continuous depth of focus reaching up to 3.5 diopters and good visual acuity with all distances. This restores self confidence of the patients in a wide range of life situations. Absence of diffractive or refractive rings or other types of optical zones limits the incidence of optical phenomena to significantly lower levels than those observed with conventional multifocal or trifocal IOLs.[2,3]

HIGH CONTRAST SENSITIVITY PRESERVES GOOD VISUAL QUALITY IN MESOPIC CONDITIONS

High contrast sensistivity improves vision in suboptimal light conditions. This aspect of vision quality is often ignored despite the fact that it can critically influence comfort and safety in numerous life situations, e.g. while driving a car.

EXTRAORDINARY LOW INCIDENCE OF PCO

WIOL-CF® is placed in the capsule in a similar way as the natural crystalline lens. It adheres closely to the posterior capsule. This position prevents migration and proliferation of the cells in this area and ensures long-term, unchanged transparency of the lens.[1,3]

WIOL-CF®
bioanalogic IOL

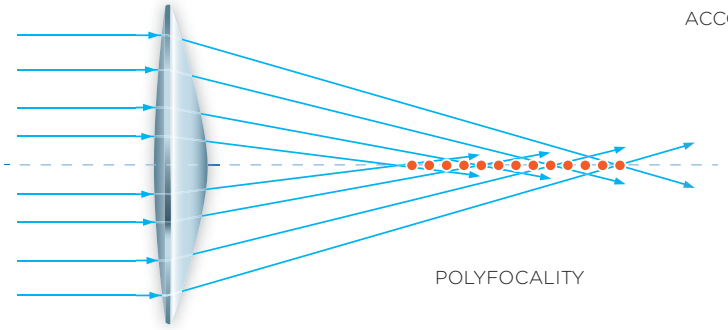
WIOL–CF®: How does it work

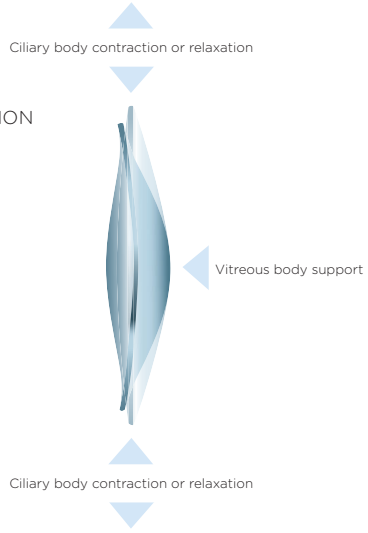
POLYFOCALITY AND PSEUDO-ACCOMMODATION

Polyfocality of WIOL–CF® is achieved through negative spherical aberration derived from smooth hyperbolic shape of its optics. Optical power decreases continuously from center to the periphery of the lens and creates infinite number of focal points from which the brain selects the optimal picture.[4] This creates an image with large depth of focus and also enables natural influence of pupil´s constriction on focus: the constricted pupil defines an area with a higher average optical power compared to the area defined by the dilated pupil, similarly to the human lens.

ACCOMMODATION

Material with high content of water makes WIOL–CF® very soft and flexible. It enables WIOL–CF® to change the shape following the contraction or relaxation of the ciliary body. This particular mechanism represents the true accommodation of the lens.[5]

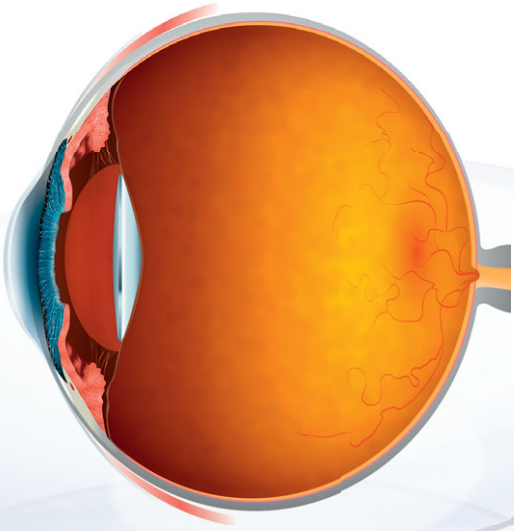




Thanks to the unique combination of 3 mechanisms of action, WIOL–CF® provides long-lasting, good visual acuity with all distances without the need to divide the optics into diffractive or refractive zones.

POSITION IN THE EYE

Due to its shape, size and a very smooth surface, WIOL–CF® adheres completely to the posterior capsule. Close adhesion and shrinkage of the capsule around the lens ensure its centration and stability. The position of the lens prevents the migration of cells to the posterior capsule and formation of PCO.



Clinical results

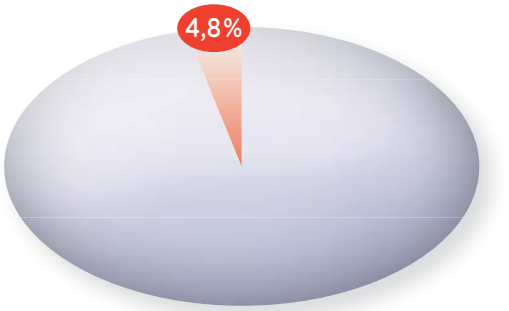
In MEDICEM we believe that the quality of vision is more than just three numeric values of visual acuity for different distances. Therefore, we have developed the lens with properties balanced in a broader range of parameters, providing increased overall quality of vision. With WIOL-CF® you achieve good visual acuities for all distances without compromises in other areas: contrast sensitivity, incidence of disturbing optical phenomena or PCO.

TRANSPARENCY OF MATERIAL

2 to 9 years after implantation none of inspected lenses have shown visible changes of the lens itself such as glistenings, deposits or opacification [8]

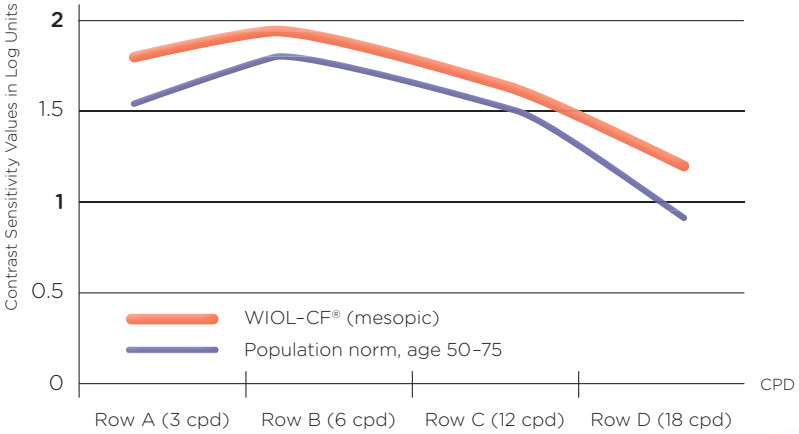
LOW INCIDENCE OF OPTICAL PHEMONEMA

Solicited reporting shows less than 5% of disturbing optical phenomena [6]



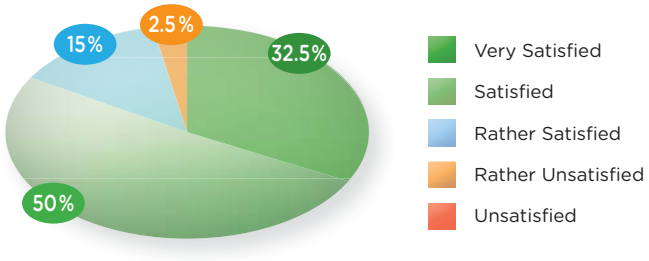
HIGH CONTRAST SENSITIVITY

Contrast sensitivity of WIOL-CF® exceeds population norms for all light conditions [6]



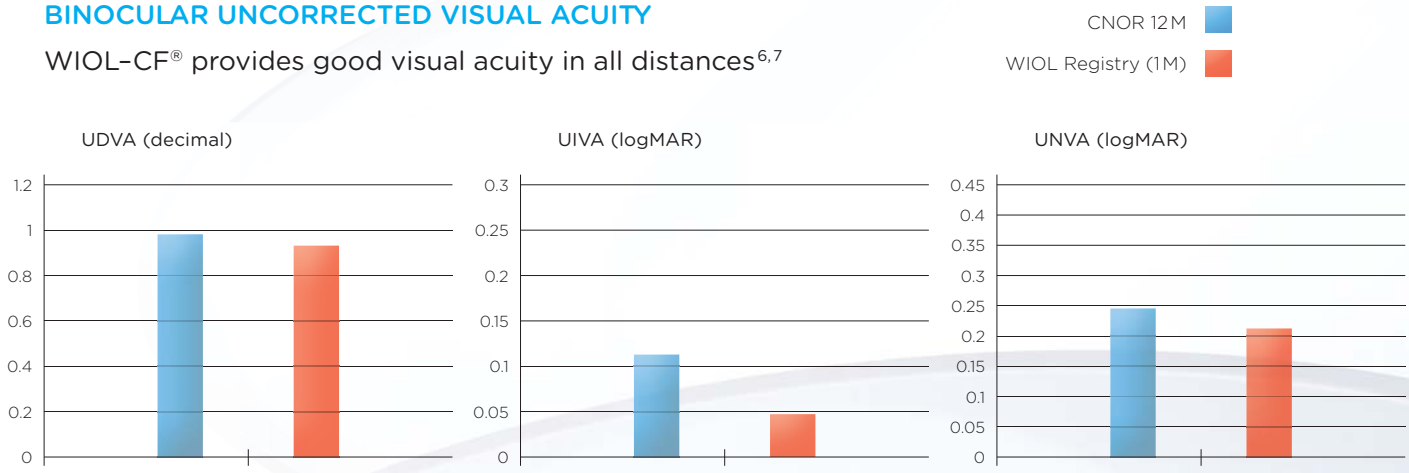
OVER 97 % SATISFIED

Patients reported satisfaction with long term performance of of WIOL-CF® [8]



BINOCULAR UNCORRECTED VISUAL ACUITY

WIOL-CF® provides good visual acuity in all distances [6,7]



WIOL-CF®
bioanalogic IOL

OUR HISTORY

The history of MEDICEM is built directly on the scientific heritage of the Biomaterial Laboratory of prof. Otto Wichterle, the inventor of soft hydrogel contact lenses, which today represent an industry of more than 7 billion USD annually. The scientific team at MEDICEM has successfully addressed many technological obstacles associated with hydrogel use in intraocular applications and created the pipeline of intraocular surgical devices, addressing many unmet needs in ophthalmic surgery. Just as in the previous case involving contact lenses, ownership of exclusive competences and intellectual property enables MEDICEM to apply substantially different bioanalogic approaches and to reach extraordinary results compared with existing mainstream engineering technologies.

Prof. Otto Wichterle

TECHNICAL SPECIFICATIONS

Diameter of optical part of IOL:	8.6–8.9 mm
Central thickness:	0.8–1.7 mm
Refraction:	15 D to 30 D, dividing by 0.5 D
Recommended A-constant:	119.5 (SRK/T), 120 (SRK II)
Methodology for power calculation:	use web based calculator at http://www.wiols.com
Water content:	42% +/– 1%
Refractive index:	1.43 +/– 0.005

References:

1) Stoy VA et al: ASCRS–ASOA, San Francisco, 2006
2) Pallikaris IG: ESCRS, Budapest, 2010
3) Nylander A et al: 11th Winter Refractive Surgery Meeting, Athens, 2006
4) Manns F et al: Experimental Eye Research 78, 2004; Dubbelman M et al: Vision Research 4, 2005; Kasthurirangan S et al: Journal of Vision, 2011; Dubbelman M et al: Vision Research 43, 2003; Vision Research 41, 2001;
5) Pallikaris IG et al: ESCRS, Prague, 2012
6) Hlozanek M.: CNOR (Czech National Observational Registry): Interim Analysis; ESCRS Symposium, London, 2014
7) WIOL International Registry: Interim Analysis 6/2014 Data on file
8) Mazal Z. et al.: Long term results of WIOL-CF® intraocular lens implantation. Congress of Czech Society of Refractive and Cataract Surgery, Ostrava, 2014

MEDICEM International GmbH
Baarerstrasse 8, 6300 Zug, Switzerland

www.wiols.com www.medicem.com