



CUTTING EDGE  
*sense of innovation*

# Synthesis<sup>®</sup> ⊕

EDOF (Enhanced Depth of Focus)

What is  
**the plus?**



**CUTTING EDGE**, a French group experienced in Surgical Ophthalmology, with operations in key European markets, develops and manufactures **Synthesis® (+)** a novel **EDOF** intraocular lens.

# Synthesis® (+)

**Synthesis® (+)** was engineered by a Research and Development team experienced and dedicated to design, prototype and manufacture high-quality intraocular lenses.

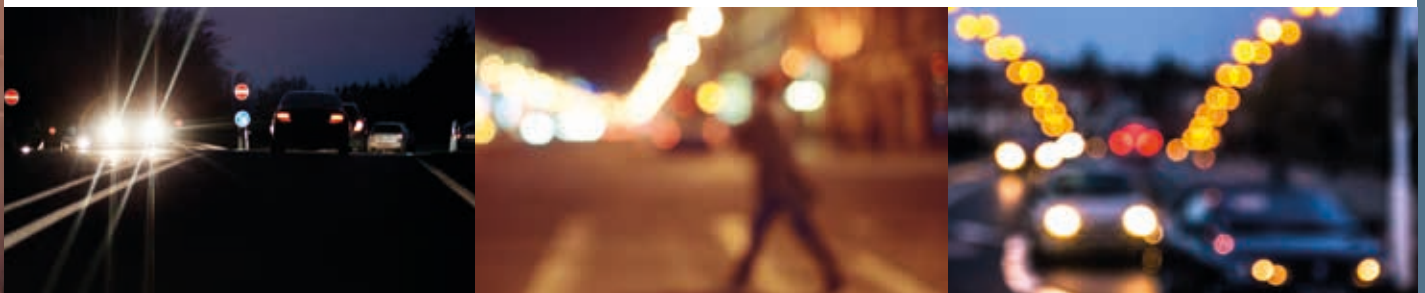
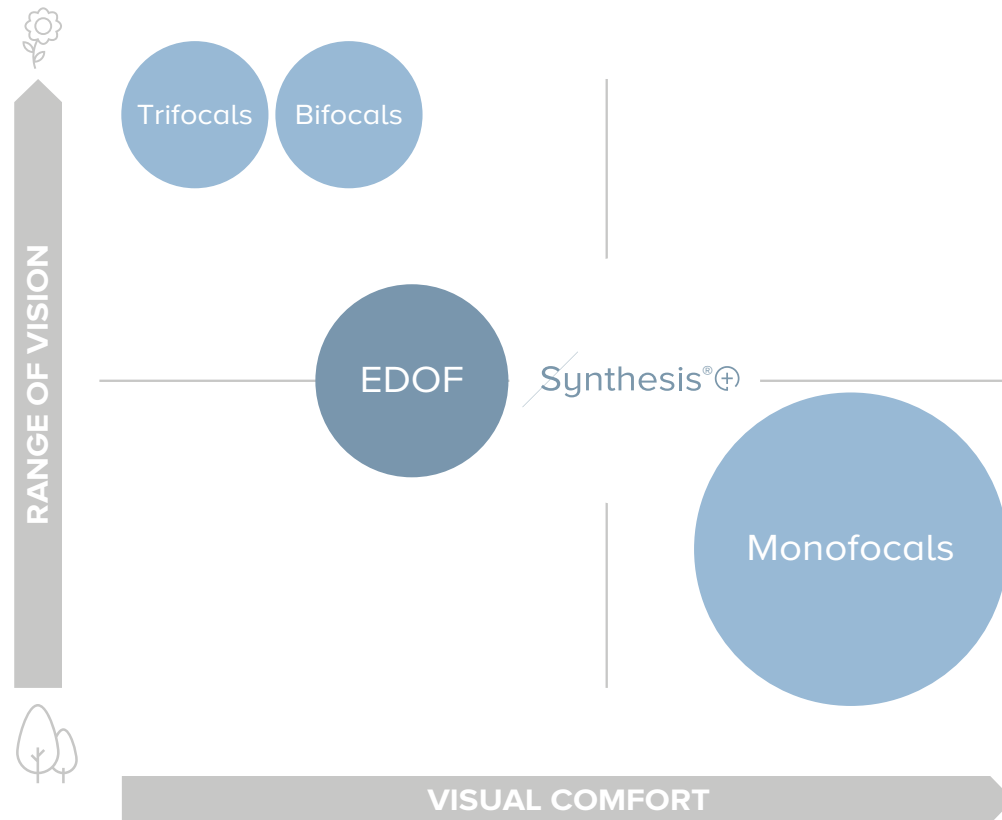
**Synthesis® (+)** is manufactured in France in the Cutting Edge state-of-the-art facility and honours quality standards **(ISO 13485)** of the medical industry.

**Synthesis® (+)** optimizes the main optical parameters allowing surgeons to offer their patients improved social vision.

**Synthesis® (+)** and **Synthesis® monofocal** offer a complementary range of preloaded IOLs (clear, yellow) for micro incision cataract surgery.

# Synthesis® ⊕

## CHOOSING THE RIGHT LENS: WHICH ALTERNATIVES?



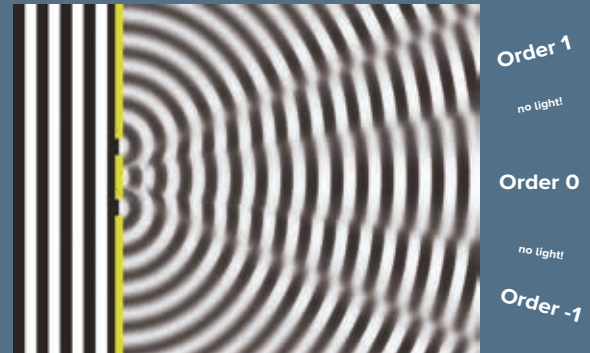
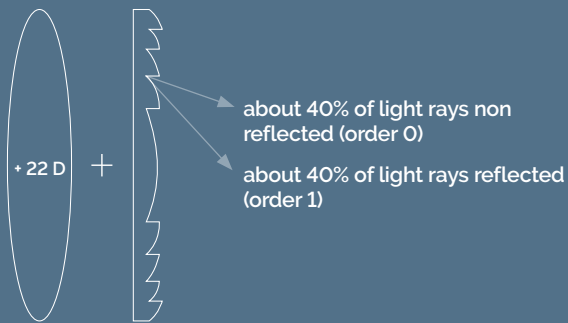
## MULTIFOCALS

### FREQUENT SIDE EFFECTS<sup>(1, 2, 3)</sup>

- Blurry vision
- Halos
- Glare
- Ghost images
- Dissatisfied patients

# DIFFRACTIVE MULTIFOCALS

## SOME OPTICAL LIMITATIONS



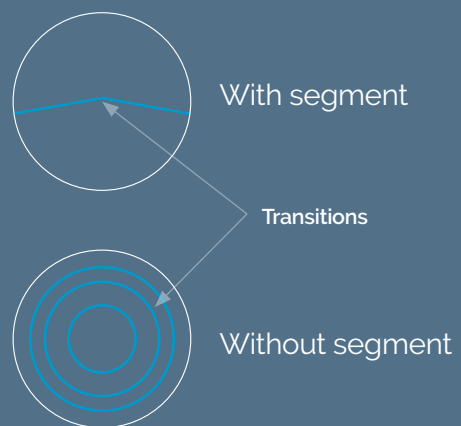
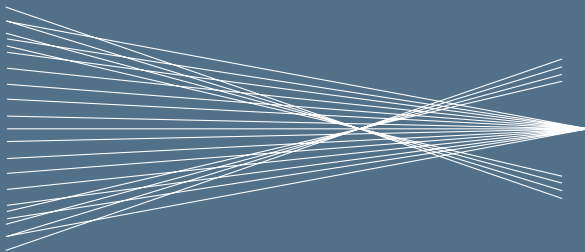
### DISADVANTAGES<sup>(1)</sup>:

- Loss of incident light (18%)
- Loss of contrast
- Unwanted optical effects

### ADVANTAGES<sup>(1)</sup>

- Near vision

# REFRACTIVE MULTIFOCALS



2 DIFFERENT CONCEPTS

### DISADVANTAGES

- Light loss due to transitions<sup>(8)</sup>

# EDOF A NEW CATEGORY

New generation of lenses provides distance vision and enhanced intermediate vision.

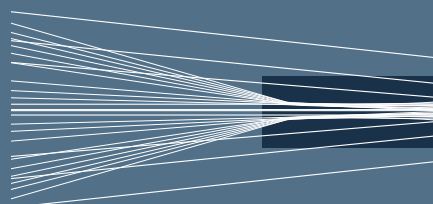
## DISADVANTAGES<sup>(3)</sup>

- **Less strong near vision**

## ADVANTAGES<sup>(3)</sup>

- **Greater contrast sensitivity**
- **Lower incidence of dysphotopsia**

## DEPTH OF FOCUS IOL



Continuous area of focal points

## RANGE OF VISION



Near Vision



Distance Vision

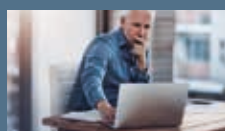
### ZONE 1

30 - 50 cm



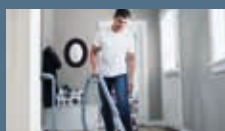
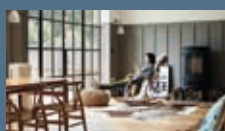
### ZONE 2

50 cm - 1 m



### ZONE 3

2 - 6 m



### ZONE 4

6 - 30 m



### ZONE 5

30 m



Near/Intermediate

Distance

Social vision

# OPTICAL QUALITY

## AN INNOVATIVE OPTICAL DESIGN

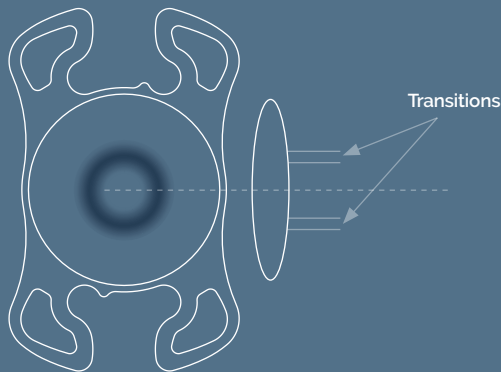
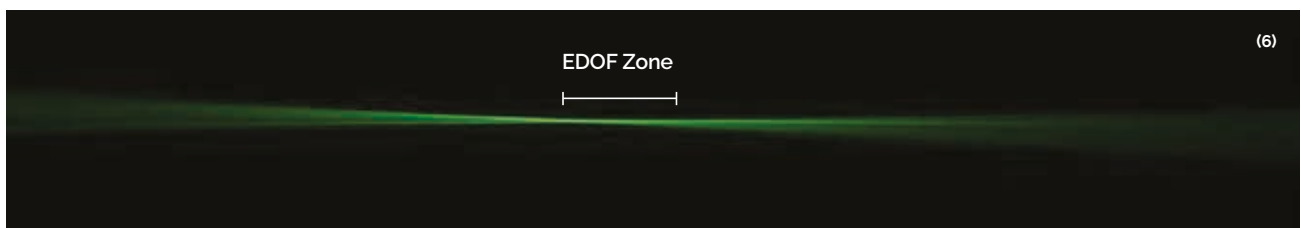
Continuous area with an EDOF central zone, a transition zone and monofocal optical periphery.

**4<sup>th</sup> and 6<sup>th</sup> spherical aberrations of opposite signs permits depth of field increase<sup>(4, 5)</sup>.**

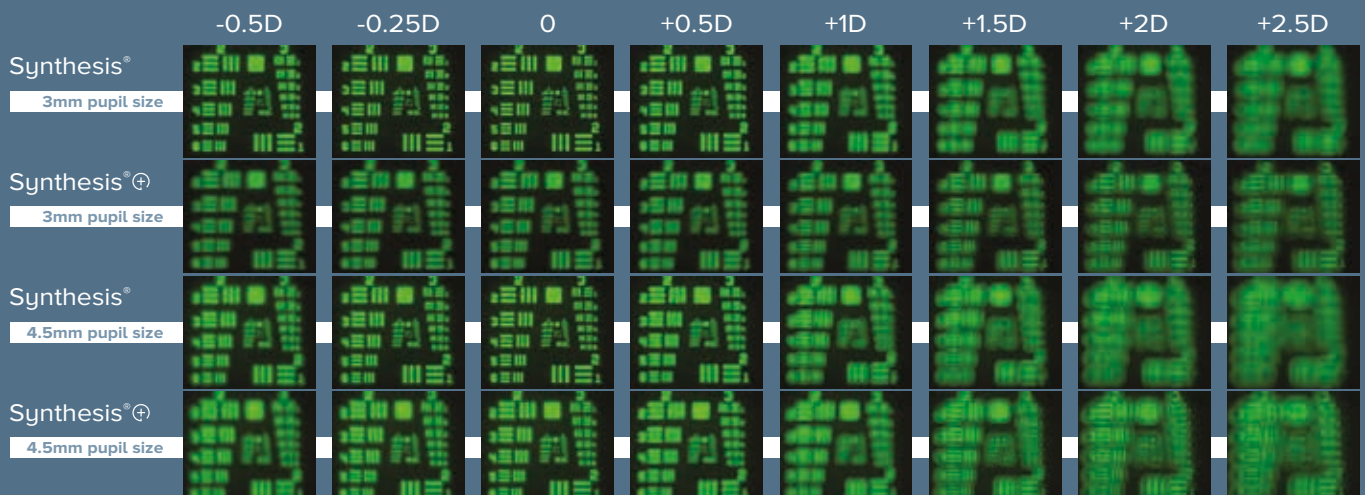
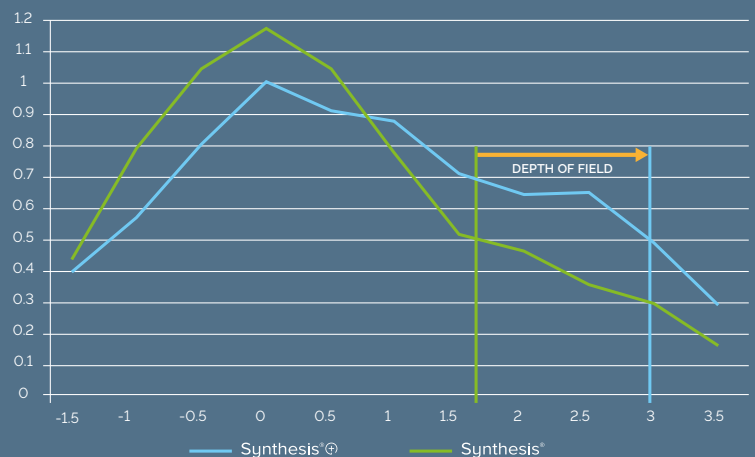


Patented transition zone under  
N° EP 18 1771 92

### SYNTHESIS® (+) RAY TRACING



### DEFOCUS CURVE<sup>(7)</sup>



Computerised simulations<sup>(9)</sup>.

# SAFETY

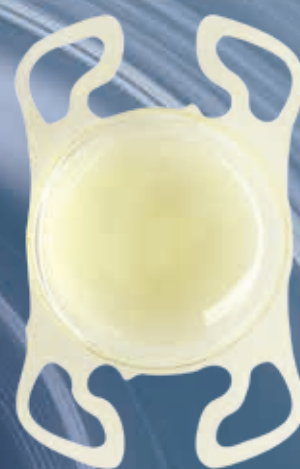
## MATERIAL

- Acrylic copolymer with ultraviolet absorption successfully used for more than 18 years.
- Optional clear or blue-light-filtering lenses

## DESIGN

- 4 point fixation haptics
- Enhanced C-Edge+ <5microns 360° square edge
- Orientation notch at the optic edge

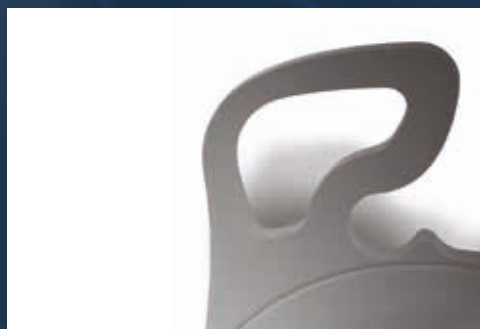
Preloaded **1.6mm**



Synthesis® ⊕

## C-EDGE+ SCANNING ELECTRON MICROSCOPY IMAGES

MAGNIFICATION 50 X



MAGNIFICATION 200 X



MAGNIFICATION 500 X

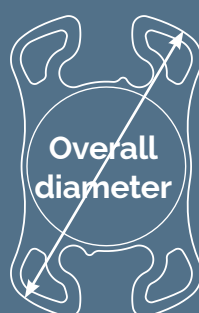


# REPRODUCIBILITY

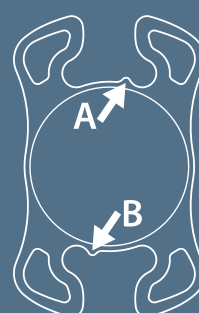
## OPTIC

- **6 mm optic** across the power range
- **3 overall diameters** to fit the capsular bag:  
11.0 mm: from 0.00D to +15.00D  
10.7 mm: from: +15.25D to 22.00D  
10.5 mm: +22.25D to +32.00D
- **Orientation notch** at the optic edge
- **Posterior shift:** vaulted design for excellent capsular bag adhesion
- **Homogeneous surface** across the power range for consistent injection forces regardless of IOL diopter<sup>(10)</sup>.

From 0.0D to 10.0D (0.5D increments)  
From 10.25 to 32.0D (0.25D increments)



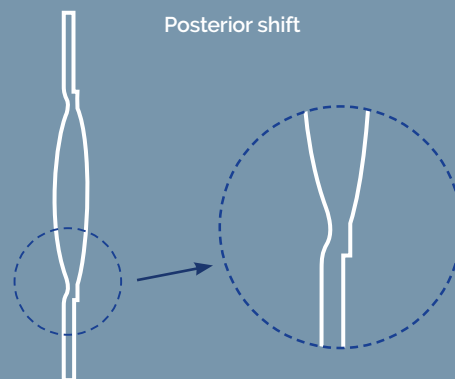
- 11.0 mm
- 10.7 mm
- 10.5 mm



1.6 mm PRELOADED  
MICS ready

Anterior side

Posterior shift



## INJECTION SYSTEM

|                                                                                     |           | Brands                   | References            | Wound-assisted recommended incision | In-the wound recommended incision | In-the-bag recommended incision |
|-------------------------------------------------------------------------------------|-----------|--------------------------|-----------------------|-------------------------------------|-----------------------------------|---------------------------------|
|  | Preloaded | MediceL Accujet™ PRO 1.6 | LP604550P (box of 10) | 1.6 mm                              | 1.8 mm                            | 2.0 mm                          |

# LOADING GUIDE

## Synthesis<sup>®</sup> ⊕ EDOF

**PRELOADED**

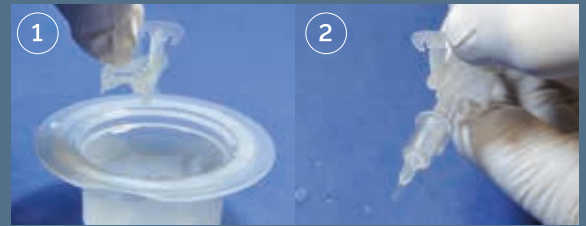
References

PRELOADED

Clear  
Yellow

PPLUS  
PYPLUS

- 1 Open the container; remove the loading cartridge that contains the IOL from the container by pulling on the armature taking care not to remove the protective clip.
- 2 Insert the loading cartridge into the injector body until it locks into position.
- 3 Carefully rinse the lens with balanced salt solution.



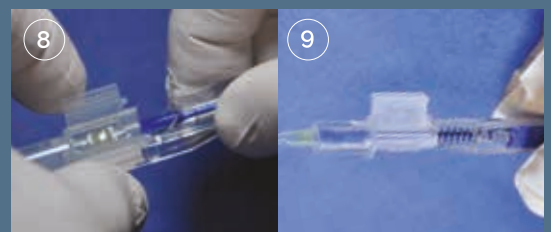
- 4 Through the filling hole, fill the cartridge tunnel with viscoelastic.
- 5 Fill a small amount of visco behind the lens at the rear of the loading chamber.
- 6 Push the plunger until the silicone tip approaches the rear of the loading chamber.



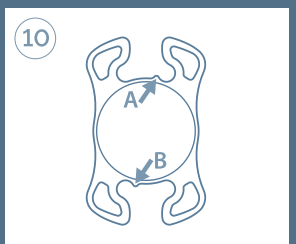
- 7 Carefully remove the clip from the loading chamber:
  - Grab the armature with two fingers while rotating the bottom hinge upwards with the thumb
  - Lift vertically.



- 8 Check that the lens is correctly positioned and close the wings of the loading chamber. When loaded correctly, you will hear a "click" sound.
- 9 Push the plunger to position the implant in the cartridge's tunnel. The system is ready for injection.



- 10 Once implanted, the orientation features of the Synthesis ⊕'s implant must be oriented at the top right (A) and at the bottom left (B).

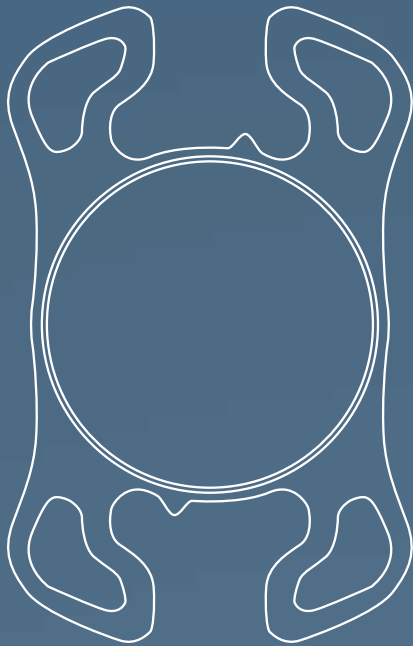


# TECHNICAL SHEET

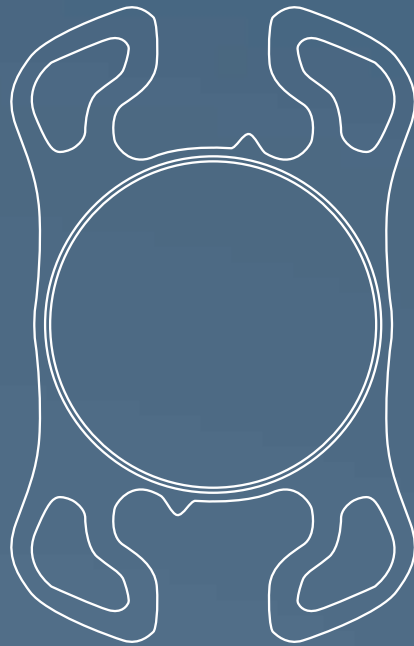
Synthesis<sup>®</sup> ⊕  
EDOF

| DESIGNATION          | SPECIFICATIONS                                                                                                                     |
|----------------------|------------------------------------------------------------------------------------------------------------------------------------|
| Optic diameter       | 6 mm across the power range (0.0 D to +32.0D)                                                                                      |
| Diopter Range        | 0.5 increments between 0.00D to +10.00D<br>0.25 increments between +10.25D to +32.00D                                              |
| Ordering information | Quarter diopters in stock between +16.25D to +26.00D.<br>(outside this range, quarter diopters available with a 4 weeks lead-time) |
| Overall diameter     | 11.0 mm: from 0.00D to +15.00D<br>10.7 mm: from +15.25D to +22.0D<br>10.5 mm: from +22.25D to 32.0D                                |
| Design               | 4 point-fixation, C-Edge+ ≤ 5 microns                                                                                              |
| Angulation           | 0°, posterior-shift feature                                                                                                        |
| Biometry             | SRK/T: A = 118.851<br>Haigis: a0 = 1.2228 (with a1 = 0.4 & a2 = 0.1)<br>Hoffer-Q: pACD = 5.4595<br>Holladay 1: SF = 1.7064         |
| References           | Synthesis+ CLEAR preloaded: <b>PPLUS</b><br>Synthesis+ YELLOW preloaded: <b>PYPLUS</b>                                             |

# ENHANCING THE SOCIAL VISION OF YOUR CATARACT PATIENTS AND IMPROVING WELLBEING



**Synthesis<sup>®</sup>**  
Acrylic Monofocal



**Synthesis<sup>®</sup>** ⊕  
EDOF

A range that makes sense

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PRELOADED | YELLOW | CLEAR | MONOFOCAL | EDOF



**CUTTING EDGE**  
*sense of innovation*

SENSE OF EXCELLENCE

SENSE OF INNOVATION

SENSE OF PARTNERSHIP

SENSE OF ETHICS

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- (2) De Vries NE, Webers CA, Touwslager WR et al. Dissatisfaction after implantation of multifocal intraocular lenses. *J Cataract Refract Surg*. 2011. 37(5):859-65
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- (4) Benard Y, Lopez-Gil N, Legras R. Subjective depth of field in presence of 4th-order and 6th-order Zernike spherical aberration using adaptive optics technology. *J Cataract Refract Surg*. 2010. 36(12):2129-38
- (5) Benard Y, Lopez-Gil N, Legras R. Optimizing the subjective depth-of-focus with combinations of fourth- and sixth-order spherical aberration. *Vision Res*. 2011. 51(23-24):2471-7
- (6) Internal report 180810. Lightfield report, Institute of Experimental Ophthalmology - Saarland University | 66421 Homburg/Saar | Germany
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- (10) Internal report FE18-013.