Designed for Patient Satisfaction

Simulated Clinical Performance

OptiVis® clinical performance of monocular photopic defocus VA curve is simulated with reference to the clinical results by Myrian Böhm *et al*[2] and the PanOptix® design[3] as shown in Figure 9. The OptiVis® VA curve is projected to be "flat" continually from far to near. The OptiVis® binocular photopic Contrast Sensitivity is simulated with reference to the PanOptix® FDA PMA study result.[4] OptiVis® and PanOptix® provide equivalent CS according to the result shown in Figure 10.

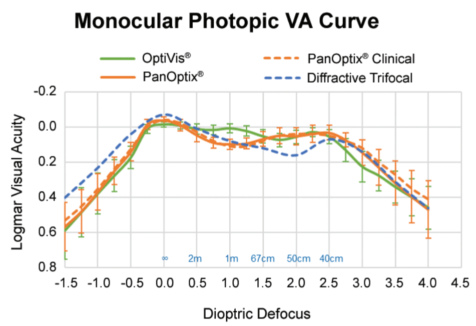

Figure 9: Simulated Defocus Curve

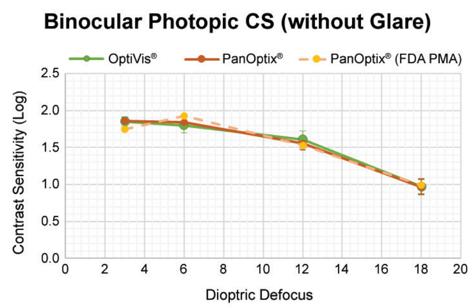

Figure 10: Simulated Contrast Sensitivity

Reduction of Dysphotopsia (Halos)

Retinal Image of far bright object at the eye with OptiVis® results in minimized halo propensity. Fig. 11 illustrates the simulated scotopic retinal impression of a set of car head lights at about a distance of 200 meters away.

Figure 11: Retinal impression of nighttime headlights

Several OptiVis® design features contributed to the reduction of dysphotopsia:

- Unique apodization profile
- Bi-sign aspherization to maximize Far contrast, even with lens misalignment

1. Yueai Liu, "Quint-Focal Diffractive Intraocular Lens", US 2022/0133469 Al, May 2022
2. J Cataract Refract Surg. 2019 Nov;45(11):1625-1636.
3. https://theophthalmologist.com/fileadmin/top/issues/0816/Alcon.pdf
4. https://www.accessdata.fda.gov/cdrh_docs/pdf4/P040020S087B.pdf

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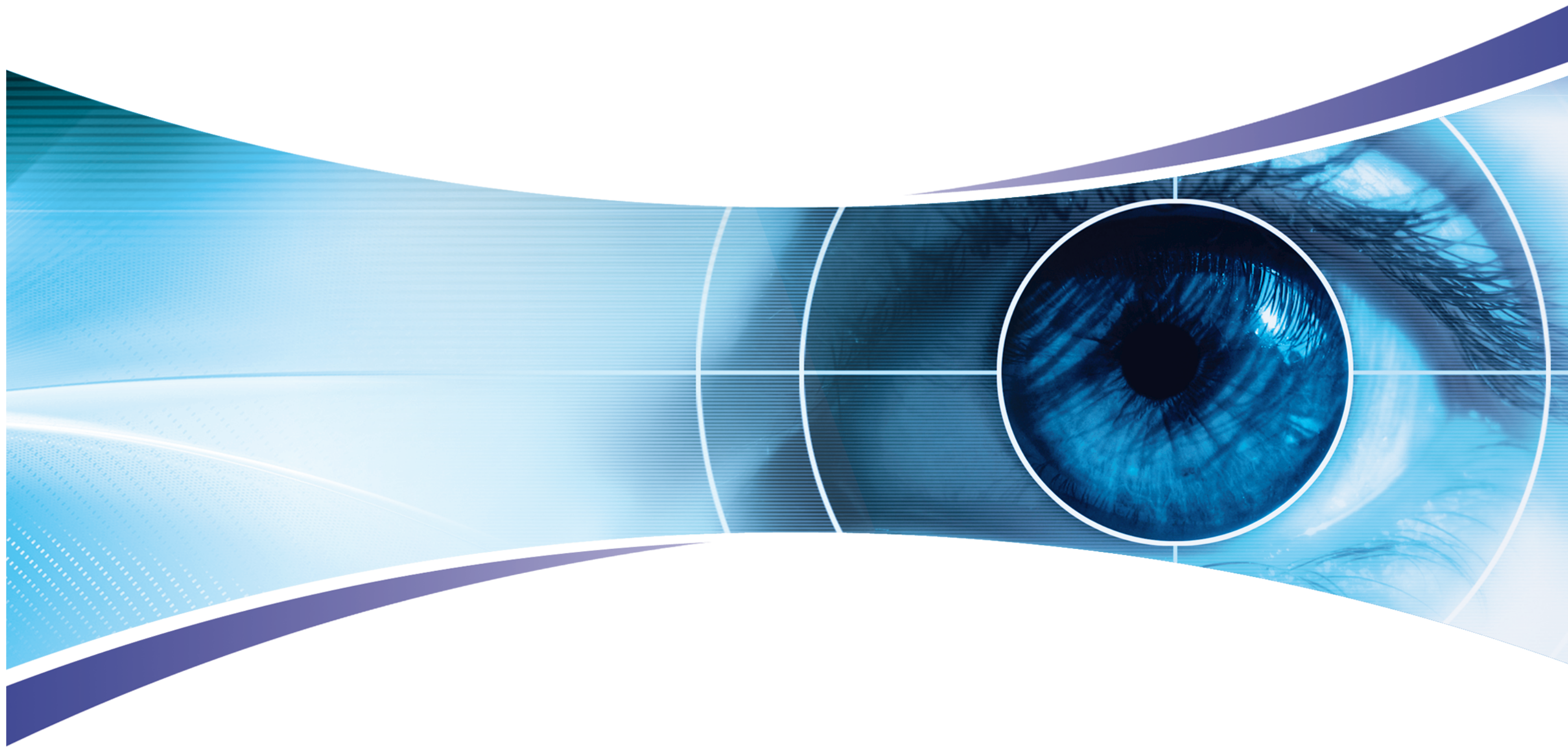
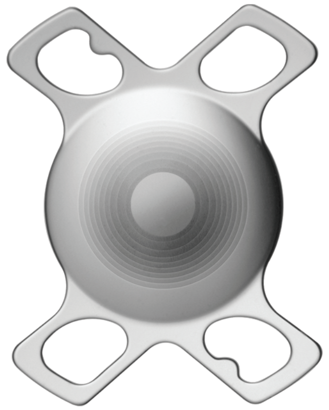
OptiVis®

Multifocal IOL





Predictably excellent vision

Far. Intermediate. Near.

All distances, all lighting conditions.

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The One and Only *Quint*-focal MIOL

OptiVis® Multifocal IOL

4th Generation Quint-focal MIOL

OptiVis® is the 4th generation diffractive MIOL. The 1st generation is the bi-focal MIOL created with two consecutive diffraction orders. The 2nd generation is the trifocal MIOL created with three consecutive diffraction orders. The 3rd generation is also trifocal but created with quadra-focal diffractive optics with the energy at the second diffraction order suppressed. Both bifocal and trifocal MIOLs cannot provide a solid through focus vision from far to near. This 4th generation diffractive MIOL is created with quint focal diffractive optics technology with optical energy distributed at five focal distances. Hence, it can provide a true full range of vision for presbyopia correction. Figure 1 symbolically illustrates the through-focus diffraction energy allocation for the different generations of MIOLs.

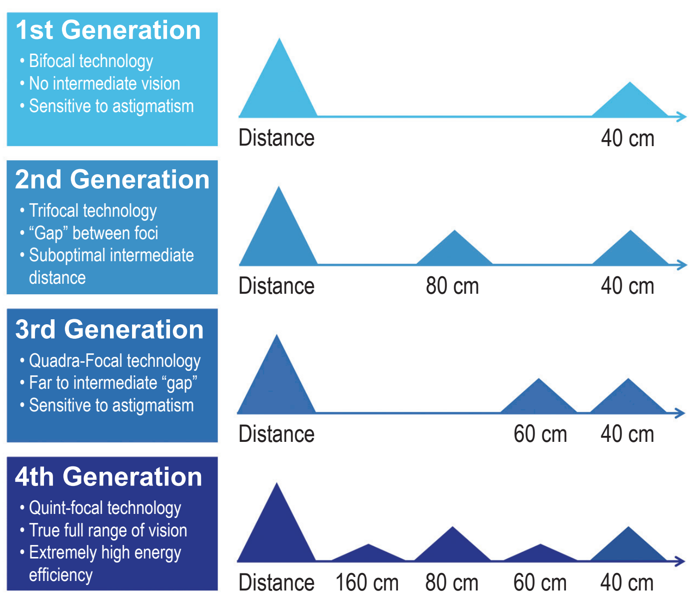

Figure 1: Four Generations of MIOLs

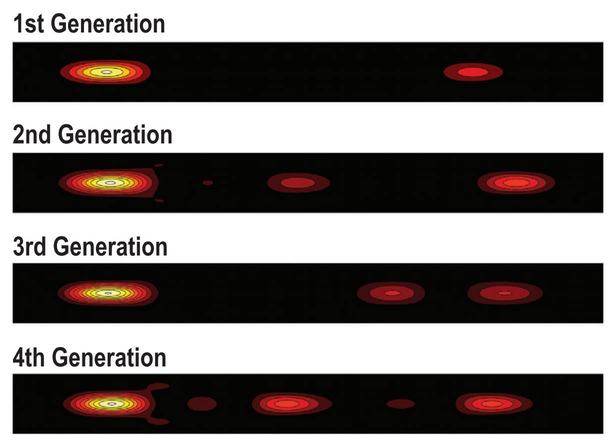

Figure 2: PSF of Four Generations of MIOLs

Figure 2 shows the energy distribution of the four generations of MIOLs obtained with ray-tracing simulation of the through focus point spread function. The five focal points of the OptiVis® MIOL are clearly shown.

OptiVis® Specifications

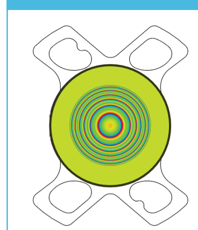

Figure 3

- Material: hydrophilic acrylic with UV-absorber
- One-piece design with 6 mm optic diameter and 11.0 mm overall diameter
- Spherical aberration correcting Adaptiv® Aspheric Optics
- Quint focal diffractive optics with intermediate and near addition dioptric powers of 1.6 D and 3.2 D

- 100% energy efficiency
- 3.8 mm diffractive aperture
- Dioptric power ranges from10 D to 30 D with 0.5 D intervals.

Fig. 3 shows the OptiVis® product design. OptiVis® utilizes the proprietary[1] quint focal diffractive optics to provide patients a full range of vision from near to distant far with ~100% energy usage as illustrated in Fig. 4.

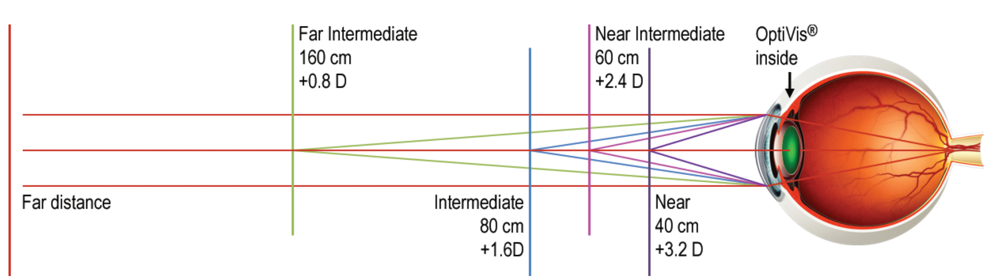

Figure 4: OptiVis® provides patient a full range of vision from far to near

Far, Intermediate, Near

All distances, all lighting conditions

OptiVis® Technology Offers ~100% Energy Usage

The energy usage efficiency of the first three generations of diffractive MIOLs ranges from ~82% for the 1st generation to 88% for the 3rd generation. The energy loss is about 12% to 18% in these predecessors of OptiVis®. This lost energy is utilized at two focal positions of far intermediate and near intermediate in the OptiVis® quint focal design, hence providing as steppingstones to bridge the vision from far to intermediate, and then to near. The total energy efficiency is theoretically 100% as is shown in Figure 5. For this reason, the OptiVis® MIOL is expected to be free of optical disturbances.

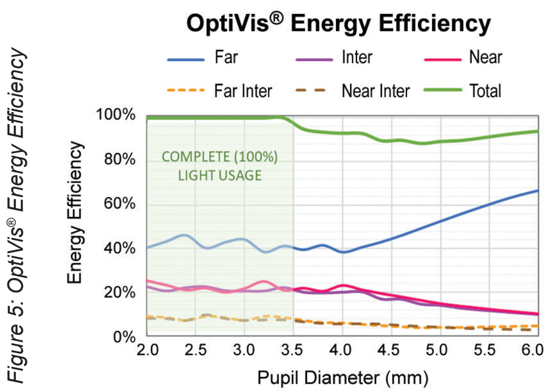

Figure 5: OptiVis® Energy Efficiency

Demonstration of "Continous" Image Quality

Through-Focus MTF test of the OptiVis® IOL indicates more continuous and higher energy in the broad intermediate range as is shown in Figure 6 and Figure 7, for 3.0 mm and 4.5 mm apertures respectively for a 20 D IOL.

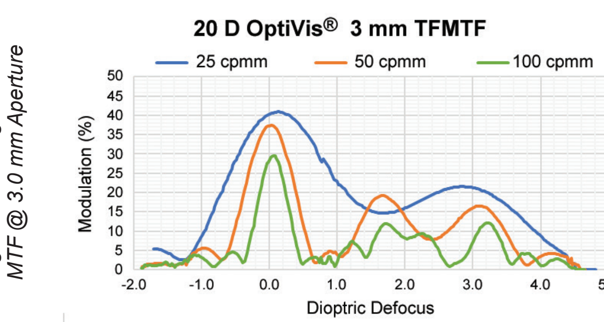

Figure 6: Through Focus MTF @ 3.0 mm Aperture

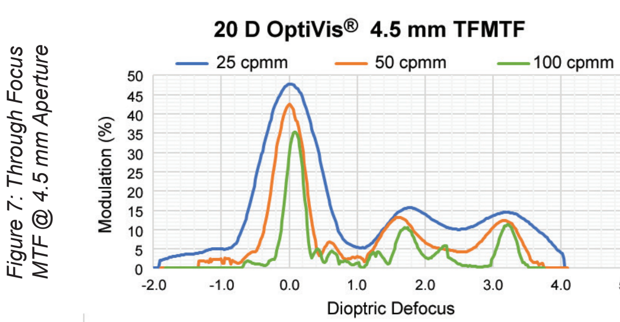

Figure 7: Through Focus MTF @ 4.5 mm Aperture

Bench simulation of through focus retinal imagery for 2 mm, 3 mm, and 4.5 mm apertures obtained with a spherical aberration matching model cornea demonstrates stable image quality through the entire depth of focus from the simulated distance from infinity to near reading distance of 40 cm as shown in Figure 8.

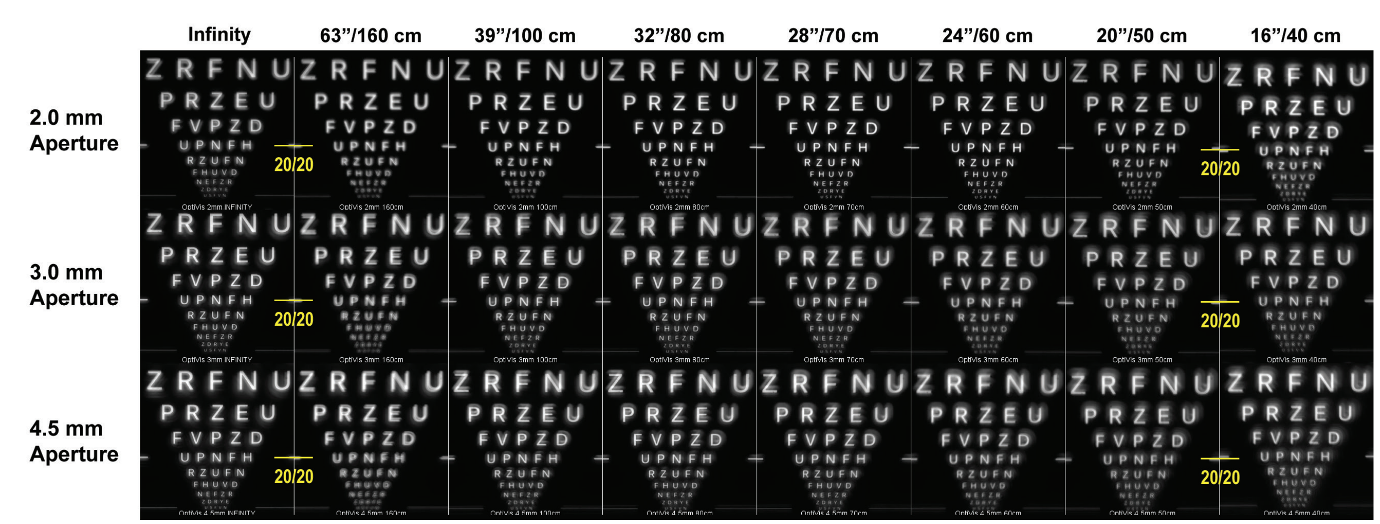

Figure 8: Through focus imagery at 2 mm, 3 mm, and 4.5 mm apertures