



The smart way to manage myopia in children



Myopia care for kids

HOYA
FOR THE VISIONARIES

Together we can combat myopia in children



HOYA Vision Care is one of the front-runners in the fight against myopia. As your partner, we provide you with effective solutions to protect your young patients' vision today and in the future.

MiYOSMART is an innovative² lens designed to slow down myopia progression. It was developed by HOYA Vision Care in collaboration with The Hong Kong Polytechnic University, so children can enjoy their lives more by seeing clearly.

Myopia is on the rise.¹ You play a crucial role in assisting parents in selecting effective myopia management options for their children by providing innovative technology to reshape their future vision.

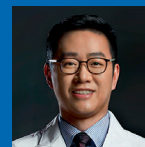
With MiYOSMART, you can continue to grow your practice with innovative solutions, while helping improve future generations' vision.



An estimated **5 billion people, half of the global population,** could be myopic by **2050**.¹

"MiYOSMART is an evolutionary spectacle lens, which demonstrates impressive efficacy in slowing down myopia progression. I am confident to recommend it as one of the first-line interventions to patients who need and seek myopia control."

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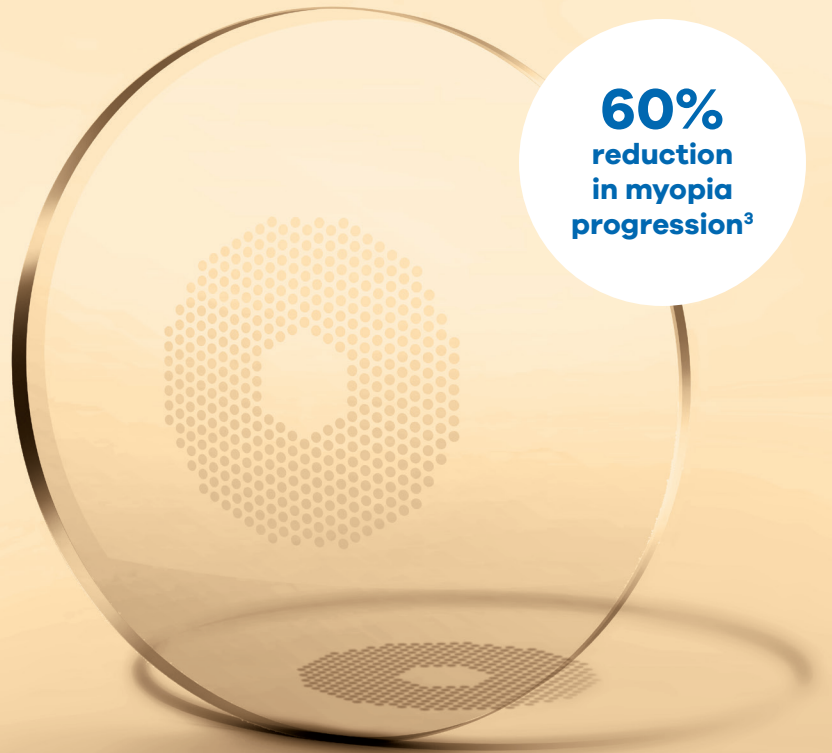


Prof. Weizhong Lan

Professor of Ophthalmology
at Aier Eye Hospital, China

Introducing: MiYOSMART

60%
reduction
in myopia
progression³



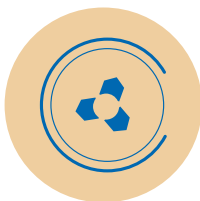
MiYOSMART is a non-invasive lens specifically designed to slow down myopia progression in a safe, easy and effective way.³⁻⁷



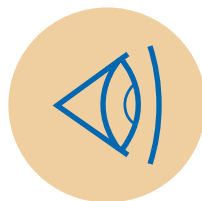
Safe³⁻⁷



Easy



Effective³⁻⁵



Non-Invasive

An award-winning myopia management solution^{8,9}



Gold Prize, Grand Award & Special Gold Award Winner, International Exhibition of Inventions of Geneva 2018



Silmo d'Or Award in Vision category, Silmo Paris Optical Fair 2020



Reported as an effective myopia management option by IMI.¹⁰

Managing myopia progression with innovative DIMS Technology²

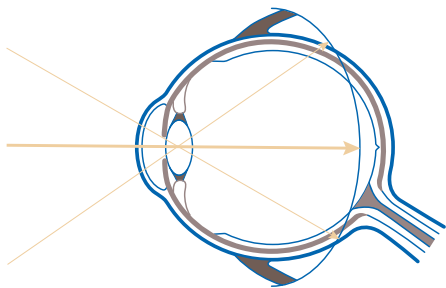


Together with The Hong Kong Polytechnic University, HOYA Vision Care developed the first lens with Defocus Incorporated Multiple Segments (DIMS) Technology that manages myopia progression. DIMS Technology is based on the peripheral defocus theory.

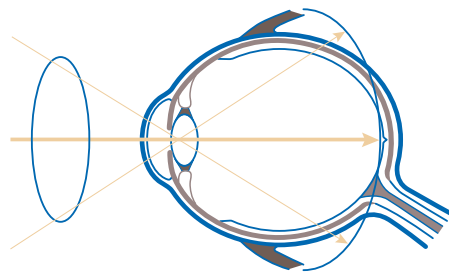
In the uncorrected myopic eye, rays are focused in front of the central part of the retina and behind in the mid-peripheral and peripheral retina. By wearing a single-vision lens, rays are focused on the retina, in the central part of it, creating peripheral hyperopic defocus in the mid peripheral and peripheral retina.

In comparison, MiYOSMART lens with DIMS Technology creates a myopic defocus, focusing rays in front of the retina while correcting the myopic refractive error on its entire surface.

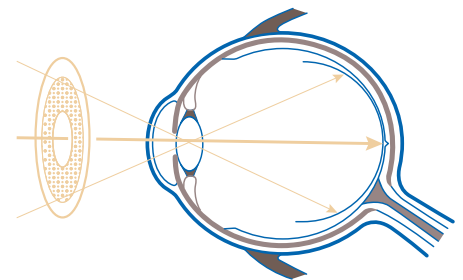
Managing Myopia with Myopic Defocus



Uncorrected Myopia



Traditional Single Vision Correction



Ideal Correction

"DIMS Technology is my first choice to manage myopia – it's safe, effective and easy to use."



Prof. Hakan Kaymak

Professor of Universität des Saarlandes and leading researcher at the Internationale Innovative Ophthalmochirurgie in Düsseldorf, Germany

A myopia management solution backed by science

Many clinical trials have been undertaken to explore the effectiveness and safety of MiYOSMART in slowing myopia progression.



Myopia progression slowed by 60% over 2 years*³

- Myopia progression, defined as change in spherical equivalent effectiveness and safety of refraction, slowed by 59%
- Axial elongation decreased by 60%
- Myopia progression stopped in 21.5% of those wearing MiYOSMART

*The 2-year randomized controlled trial involved 160 children aged 8-13 years.



Sustained effect after 3 years*⁴

- MiYOSMART lenses restored the emmetropic eye growth in children aged 8-13 by reducing axial elongation

*The 3-year follow-up clinical study included 120 children aged 8-13 from the original 2-year RCT.



Sustained myopia control over 6 years and no rebound effects upon discontinuation*⁵

- Children had less than -1.00D cumulative myopia progression on average over the entire period

*Discontinuation measurements compared with the general age-matched non-treated population. The 6-year follow-up clinical study included 90 children aged 8-13 from the original 2-year RCT.



For additional MiYOSMART studies please scan the following QR code or visit:

hoyavision.com/about-hoya/hoya-vision-care-news/news/summary-of-all-the-miyosmart-studies-and-scientific-documentation/

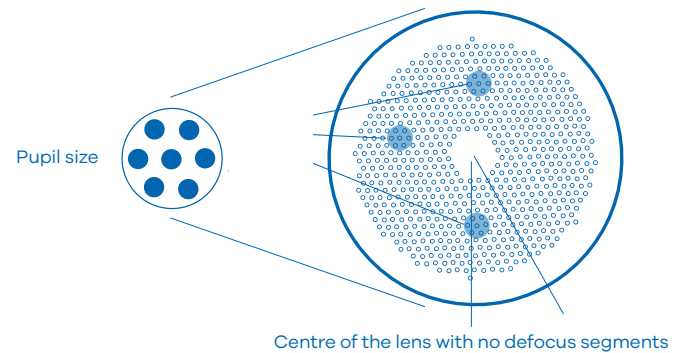
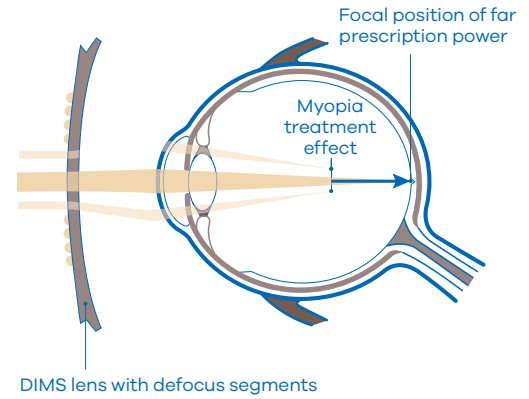
How DIMS Technology works in MiYOSMART

To effectively slow down myopia progression, myopic defocus must be present continuously, even during eye movements. This requires a significant quantity of defocus segments to be evenly distributed on the lens surface.

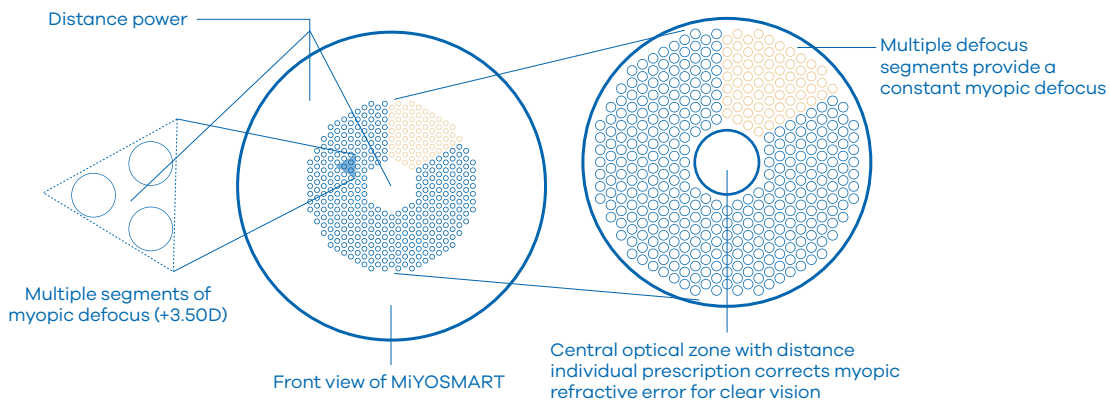
With decades of experience in ophthalmic lens development and production, HOYA Vision Care developed the DIMS Technology, executed in a honeycomb-shaped defocus segment zone to slow down myopia progression.

The 9.4mm central optical zone of the lens is a segment-free zone, designed to make it possible to measure lens power and correct the myopic refractive error for clear distance vision. The treatment area uses focus and defocus segments to provide clear vision and manage myopia progression simultaneously.

Furthermore, the cosmetic appearance of the MiYOSMART lenses is the same as regular single-vision lenses.



The result: Smooth-surfaced spectacle lenses that both correct and slow down myopia progression.³⁻⁵



Availability Chart and Product Information

Index	1.59	Treatment Zone	Around 33mm in diameter
Power	SPH: 0.00D to -10.00D	Defocus Power	+3.50D
	CYL: -4.00D	Prescribed Prism	3Δ Diopter per lens
Central Clear Zone	Total combined power -10.00 (-6.00 with -4.00 cyl)	Diameter	60 to 75mm, depending on the prescription power. Refer to the dispensing guide.
	Around 9.4mm in diameter		

With MiYOSMART's technology and your care, we can give children better vision and better protection



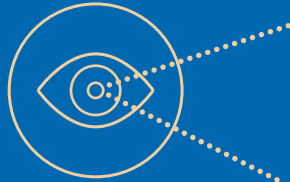
MiYOSMART Eye Shield

The impact-resistant material with UV protection

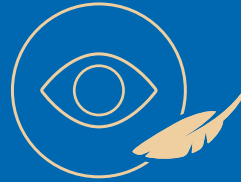
We recognize that children are active and always on the go. That's why we use polycarbonate 1.59 – a highly impact-resistant, yet thin and light material – to offer young eyes the protection they need, at all times.



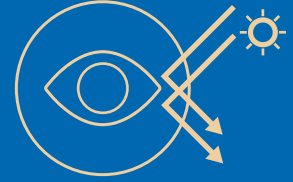
Strong and safe



Optical clarity



Thin and light



UV protection



MiYOSMART Coating

MiYOSMART comes with an easy-to-wipe, anti-reflective coating to fit into any active child's lifestyle.



Water repellent
Prevents water stains

Special anti-reflective coating
Less prone to scratches



Protect how they see the world with MiYOSMART sun lenses



Outdoor time may slow down myopia progression in children.^{16,20}

Children's eyes should be protected from intense sunlight when outdoors²¹⁻²³ as they are more susceptible to eye damage from UV light than adults. The majority of lifetime sun exposure occurs under the age of 21. It is especially important to offer them effective and reliable sun protection.²¹⁻²³ This is due to the fact that children's pupils are larger and the crystalline lenses of their eyes are more transparent, which allows more UV rays to reach the retina.²² Regular single vision sunglasses may not be the most effective myopia management solution for myopic children.^{20,24}

MiYOSMART Sun Range

MiYOSMART sun lenses adopt DIMS Technology for effective and non-invasive myopia management.^{3*} MiYOSMART sun lenses offer 100% protection from UV-A and UV-B,^{25†} reducing the risk of long-term damage to the eye.

Chameleon Photochromic - Grey

Children may find it inconvenient to change their eyeglasses every time they step outdoors. MiYOSMART Chameleon lenses does it automatically. They rapidly adapt to the levels of sunlight, providing children with as much protection as they need at any time and place.^{25,26*}

Features:

- Molded laminate photochromic film technology to preserve optical performance of DIMS Technology
- Fades back to clear indoors in seconds^{26*}
- Clear lens indoors (Category 0)*
- Swift darkening to category 2 tinting*
- Stylish grey colour

Benefits:

- Decreased symptoms of photophobia²⁸
- Reduced glare²⁷⁻²⁹
- Improved vision in intense sunlight and photo-stress recovery time^{27*}

Polarized - Grey

MiYOSMART Polarized is the ideal addition to MiYOSMART clear lenses, for extra protection from intense sunlight and glare,^{21,25} which is especially useful for photophobic children using atropine drops for myopia management. Additionally, the contrast and colours seen through MiYOSMART Polarized remain rich and vibrant, allowing children to fully experience the beauty of outdoors.³⁰

Features:

- Category 3 tinting
- Stylish grey colour

Benefits:

- Greater comfort from glare and intense sunlight²¹
- Decreased symptoms of photophobia²¹
- Improved contrast sensitivity³⁰
- Rich and vibrant colours³⁰

**Polarized
coming
soon!**

* Based on concept testing on 200 Eye Care Professionals and 815 parents (China, Italy, UK and Canada). 06/2022.

* Reaches 60% clarity after 60 seconds of fade back from the activated state at room temperature. Initial clarity (at 23°C) is 88.4 % without AR coating. Transition for clear to 90% dark state in less than 30 seconds. Tests were conducted at room temperature (23°C).

Recommendations for your new MiYOSMART wearers



Adaptation Recommendations

During the adaptation period (1-2 weeks), it is recommended that your patient is cautious during the following activities while wearing their MiYOSMART lenses:



Intensive sport activities e.g. soccer



Physical activities or physical education lessons at school



Leisure activities e.g. cycling, scootering



Walking up or down high staircases or participating in height activities, e.g. climbing

MiYOSMART lenses with DIMS Technology are generally well-tolerated and accepted by children.¹⁴ However, if the child feels any discomfort following the adaptation period of 1-2 weeks, they should contact their Eye Care Professional.

The child-friendly, easy to adapt to and non-invasive method to slow down myopia progression

Care goes beyond the lens



Spending more time outdoors

Some evidence shows that spending more time outdoors delays the onset of myopia and may reduce myopia progression.¹⁶ It is recommended to spend at least 2 hours outdoors a day.



Give eyes a break

Reduce the child's eye strain by reminding them to take breaks from intensive screen time and near work activities. Remember the 20:20:20 rule – they should take breaks every 20 minutes to look at a distance of 20 feet for 20 seconds or more.¹⁷



Seek regular eye care

The child's eyesight should be checked regularly to ensure myopia progression or other vision problems are detected and treated early. Some children may downplay their vision problems.

Supporting you to support your patients

To ensure MIYOSMART benefits are maximized, it is recommended to follow the protocol below.¹⁸



First visit

During the first visit, use cycloplegic refraction to diagnose myopia and assess visual functions of the child to get a clear overview of baseline status. Determine if the wearer is suitable for MiYOSMART (no systematic or other eye diseases should be present e.g. keratoconus, strabismus).

Take the child's and their parents' ocular and optical history.

Conduct the following examinations^{18,19}:

- Distance and near visual acuity
- Subjective and/or objective refraction
- Binocular vision and accommodation assessment
- Ocular health examination
- Cycloplegic refraction (every 6 months)
- Axial length measurement (every 6 months)
- Dilated fundus examination (annually or on indication)



Aftercare visit

This should be scheduled 2 weeks following first use of MiYOSMART.

During the aftercare visit, evaluate how the child is adapting to their MiYOSMART lenses. Ask the child or their parent to fill in the adaptation and performance questionnaire in the parent's guide to understand their experience and highlight any adaptation issues.



Follow-up visits

It is recommended that the wearer has follow-up visits for the visual functions assessment and to monitor myopia progression at least every 6 months.

Disclaimers

MiYOSMART has not been approved for myopia management in all countries, including the U.S., and is not currently available for sale in all countries, including the U.S.

MiYOSMART lenses may not be able to address individuals' conditions due to natural deficiencies, illness, pre-existing medical conditions and/or advanced age of consumers. The information contained herein is general information and is not intended to constitute medical advice.

This brochure includes recommendations for Eye Care Professionals. The Eye Care Professional is responsible to ensure that using the recommended procedure is allowed to be conducted in the country where they practice. Suitability of each recommended procedure for the patient shall be evaluated by the Eye Care Professional based on their personal professional judgment.

References

1. Holden BA, Fricke TR, Wilson DA, et al. Global Prevalence of Myopia and High Myopia and Temporal Trends from 2000 through 2050. *Ophthalmology*. 2016;123(5):1036-1042. doi:10.1016/j.ophtha.2016.01.006
2. Patent protected in China (ZL 201310628174.8), Hong Kong (1210838), and the United States (10268050 & 11029540).
3. Lam CSY, Tang WC, Tse DY, et al. Defocus Incorporated Multiple Segments (DIMS) spectacle lenses slow myopia progression: a 2-year randomised clinical trial. *Br J Ophthalmol*. 2020;104(3):363-368. doi:10.1136/bjophthalmol-2018-313739
4. Lam CS, Tang WC, Lee PH, et al. Myopia control effect of defocus incorporated multiple segments (DIMS) spectacle lens in Chinese children: results of a 3-year follow-up study. *Br J Ophthalmol*. 2022;106(8):1110-1114. doi:10.1136/bjophthalmol-2020-317664
5. Lam, C.S.Y., Tang, W.C., Zhang, H.Y. et al. Long-term myopia control effect and safety in children wearing DIMS spectacle lenses for 6 years. *Sci Rep* 13, 5475 (2023). <https://doi.org/10.1038/s41598-023-32700-7>
6. Mattern A.-I., Kaymak H., Graff B., Neller K., Langenbacher A., Seitz B., Schwahn H. Verkehrssicherheit von DIMS-Brillengläsern und Atropin in der Kombinationstherapie zur Hemmung der Myopieprogression. Poster PDo11-01 at Deutsche Ophthalmologische Gesellschaft (DOG) 2022, 29.09-02.10.2022, Berlin, Germany.
7. Schwahn H., Schütz S., Neller K., Sickenberger W., Seitz B., Kaymak H. Vision Tests on spectacle lenses and contact lenses for optical myopia correction. Poster PSo3-09 at Deutsche Ophthalmologische Gesellschaft (DOG) 2022, 29.09-02.10.2022, Berlin, Germany.
8. Winners of the exhibition's grand prix. *Inventions Geneva*. N.D. Available from: <https://inventions-geneva.ch/en/winners/> (Last accessed 01/02/2023)
9. Winners 2020. *Silmo Paris*. 2020. <https://en.silmoparis.com/SILMO-d-OR/SILMO-d-Or-Awards/2020-Winners#> (Last accessed 12/01/2023).
10. Jong M, Jonas JB, Wolffsohn JS, et al. IMI 2021 Yearly Digest. *Invest. Ophthalmol. Vis. Sci*. 2021;62(5):7. <https://doi.org/10.1167/iops.62.5.7>
11. HOYA data on file, July 2022. UVA and UVB transmittance for MiYOSMART photochromic and polarized sun spectacle lenses.
12. HOYA data on file, July 2022. Luminous transmittance for MiYOSMART photochromic sun spectacle lenses.
13. HOYA data on file, July 2022. Luminous transmittance for MiYOSMART polarized sun spectacle lenses.
14. Lu Y, Lin Z, Wen L, et al. The Adaptation and Acceptance of Defocus Incorporated Multiple Segment Lens for Chinese Children. *Am J Ophthalmol*. 2020;211:207-216. doi:10.1016/j.ajo.2019.12.002
15. Kaymak, H., Graff, B., Neller, K. et al. Myopia treatment and prophylaxis with defocus incorporated multiple segments spectacle lenses [German]. *Ophthalmologie*. 2021;118:1280-1286. doi: 10.1007/s00347-021-01452-y
16. Ho CL, Wu WF, Liou YM. Dose-Response Relationship of Outdoor Exposure and Myopia Indicators: A Systematic Review and Meta-Analysis of Various Research Methods. *Int J Environ Res Public Health*. 2019;16(14):2595. doi:10.3390/ijerph16142595
17. Boyd, K., 2020. Computers, Digital Devices and Eye Strain. [online] American Academy of Ophthalmology. Available at: <https://www.aao.org/eye-health/tips-prevention/computer-usage> (Last accessed 19/07/2022)
18. HOYA data on file, March 2022. MiYOSMART essentials for Eye Care Professionals.
19. Gifford KL, Richdale K, Kang P, et al. IMI – Clinical Management Guidelines Report. *Invest Ophthalmol Vis Sci*. 2019;60(3):M184-M203. doi:10.1167/iops.18-25977
20. Jonas JB, Ang M, Cho P, et al. IMI prevention of myopia and its progression. *Invest Ophthalmol Vis Sci*. 2021;62(5):6.
21. WSPOS. Sunlight Exposure & Children's Eyes Consensus Statement. 2016. Available at: <https://www.wspos.org/wspos-sunlight-exposure-childrens-eyes-consensus-statement/> (Last accessed 20/02/2023)
22. Prevent Blindness. Children's Eyes are More Susceptible to Long-Term Damage from UV Rays. 2011. Available at: <https://preventblindness.org/childrens-eyes-are-more-susceptible-to-long-term-damage-from-uv-rays/> (Last accessed 20/02/2023)
23. Artigas JM, Felipe A, Navea A, Fandiño A, Artigas C. Spectral transmission of the human crystalline lens in adult and elderly persons: color and total transmission of visible light. *Invest Ophthalmol Vis Sci*. 2012;53(7):4076-4084.
24. Correction of Myopia Evaluation Trial 2 Study Group for the Pediatric Eye Disease Investigator Group. Progressive addition lenses versus single-vision lenses for slowing progression of myopia in children with high accommodative lag and near esophoria. *Invest Ophthalmol Vis Sci*. 2011;52:2749-57.
25. HOYA data on file. Transmission, traffic light recognition, and UV blocking test for MiYOSMART clear and MiYOSMART sun spectacle lenses. 02/2023. Tests were conducted at room temperature (23 °C).
26. HOYA data on file. Lens performance validation test for MiYOSMART photochromic lenses – activation and deactivation. 02/2023. Tests were conducted at room temperature (23 °C).
27. Lakkis C, Weidemann K. Evaluation of the performance of photochromic spectacle lenses in children and adolescents aged 10 to 15 years. *Clin Exp Optom*. 2006;89(4):246-252.
28. Renzi-Hammond LM, Hammond BR Jr. The effects of photochromic lenses on visual performance. *Clin Exp Optom*. 2016;99(6):568-574.
29. Wu PC, Kuo HK. Effect of photochromic spectacles on visual symptoms and contrast sensitivity of myopic schoolchildren treated with low dose concentration atropine. *Invest Ophthalmol Vis Sci*. 2016;57:2484.
30. Quintana MS, Langa A, del Moral-Martinez I, et al. Polarized Filters Enhance Contrast Sensitivity When Glare Is Produced On A Flat Surface Under Photopic Conditions. *Invest Ophthalmol Vis Sci*. 2006;47(13):1225



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