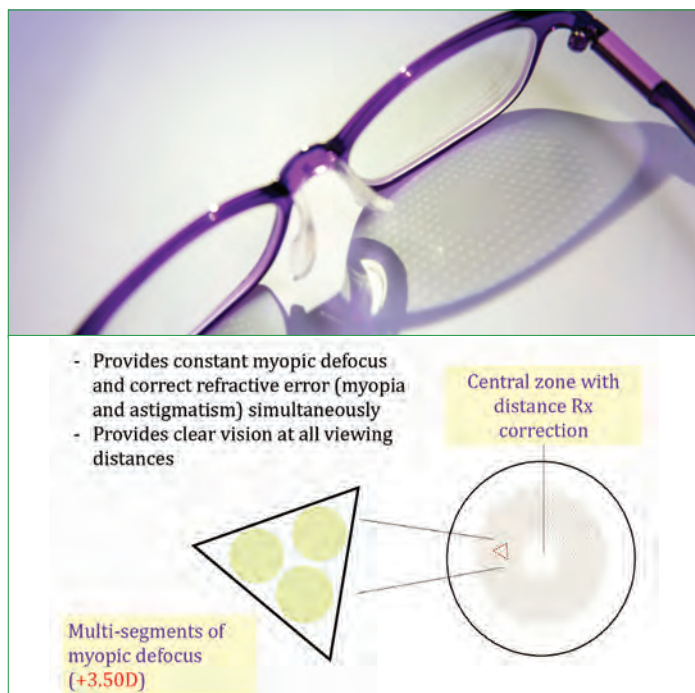


控制近視加深的「多區正向光學離焦」眼鏡鏡片 Defocus Incorporated Multiple Segments (DIMS) Spectacle Lens for Myopia Control

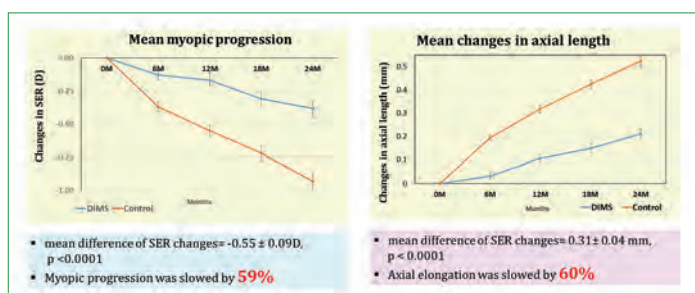
能放緩兒童近視加深的近視眼鏡鏡片
Spectacle lens retards myopia progression in children

近視是導致視覺功能下降的主要因素之一，此情況在亞洲地區極為普遍。「多區正向光學離焦」鏡片是一種多區域微透鏡設計的近視鏡片，它能提供清晰的視野力，同時能令配戴者接收「正向光學離焦」(抑制近視形成的訊號)。按照自然規律，眼球的大小會因應所接收的影像訊號而改變，本發明就是基於這眼睛的自然反饋機制而設計。

研發團隊近期的臨床研究結果顯示，此鏡片能有效地減慢香港學童(八至十三歲)的近視加深速度達60%。這種新治療方法可以幫助減少高度近視(低於-5D)人群(全球約9.38億)，大大降低與近視眼相關疾病的整體風險，例如視網膜脫離和青光眼等。



DIMS 鏡片的設計
Design of DIMS lens



臨床測試結果(屈光及眼軸的變化)

Results of the clinical trial (changes in refractions and axial length)

Myopia (short-sightedness) is one major cause of ocular morbidity, and is reaching epidemic proportions in Asia. The DIMS lens is an optical lens with multiple “micro-lens segments” for slowing myopia progression, which projects constant myopic defocus (the “STOP” signal to myopia). It can slow myopic progression while providing clear vision at all viewing distances. The invention utilizes a natural homeostatic mechanism of the eye in which the eyeball size is regulated by physical natures of optical inputs. Our recent clinical trial has shown the DIMS lens slowed myopia progression by 60% in Hong Kong schoolchildren (8 - 13 years old). This new treatment method can help to reduce high myopia (below -5D) population (around 938 million globally), drastically lowering the overall risk of myopia associated eye diseases, e.g. retinal detachment and glaucoma.

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專利申請編號: US2017/0131567 A1 (美國), CN104678572A (中國)

特色與優點

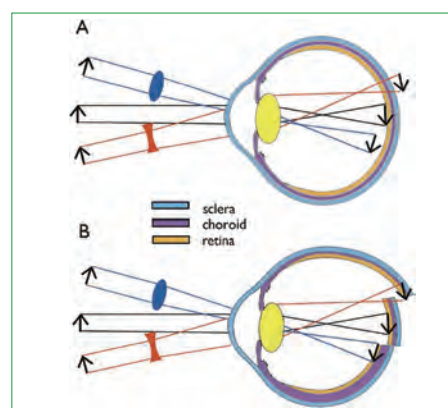
- 運用眼睛的自然反饋機制，從而避免使用藥物或矯視手術後可能帶來不可逆轉的不良反應
- 本發明把「光學離焦」應用於眼鏡片上，不但為使用者提供清晰的視力，同時能有效地減慢近視度數的增長
- 能於年輕時阻止近視加深，可降低罹患高度近視相關視網膜病變的風險
- 驗配眼鏡鏡片的方法與其他光學鏡片沒有區別

應用

- 矯正屈光不正(近視和散光)，為使用者提供清晰、舒適的視力
- 有效地減慢學童近視度數的增長
- 為治療其他屈光不正問題帶來新曙光，例如用相反方向(負向)的「光學離焦」或可醫治遠視

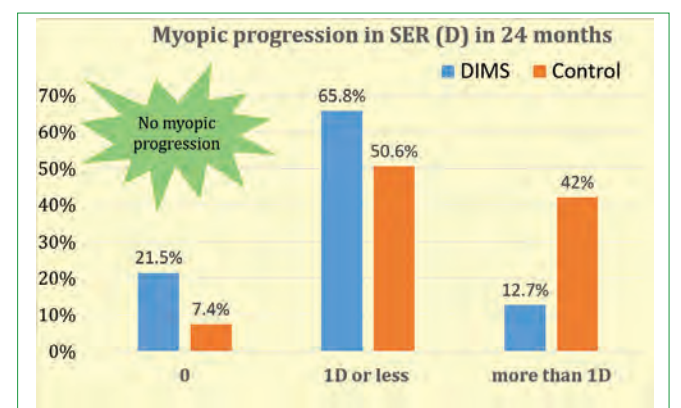
獎項

- 第46屆瑞士日內瓦國際發明展 - 全場總冠軍 (2018年4月)
- 俄羅斯特別大獎 (2018年4月)
- 第46屆瑞士日內瓦國際發明展 - 評判特別嘉許金獎 (2018年4月)



光學離焦所引起的眼睛補償反應

Ocular compensation for lens-induced defocus
Photo source: Homeostasis of eye growth and the question of myopia. Neuron. 2004 Aug 19;43(4):447-68. Review



臨床測試結果(受測者的近視加深變化)

Results of the clinical trial (frequency of subjects with and without myopic progression)

Patent application No.: US2017/0131567 A1 (US), CN104678572A(China)

Special Features and Advantages

- The mechanism is based on natural homeostasis of the eye, thus possible adverse and irreversible effects of drug for myopia control or refractive surgery can be avoided
- The functional element, optical defocus, can be incorporated into this widely accepted form of spectacle lens to provide clear and comfort vision as well as myopia progression control
- By reducing myopia progression at a young age, the risk of high myopia retinal complication will also be reduced
- The fitting of the spectacle lens is same as the other optical lens

Applications

- Corrects refractive error (myopia and astigmatism) for providing clear vision for the wearer
- Retards myopic progression in children and youngsters
- Potentially cures other refractive errors such as hyperopia by using the opposite way of defocus

Awards

- Grand Prize of the 46th International Exhibition of Inventions of Geneva, Switzerland (Apr 2018)
- Prize of the Legal Company « Gorodissky & Partners », Russia (Apr 2018)
- Gold Medal with the Congratulations of Jury - 46th International Exhibition of Inventions of Geneva, Switzerland (Apr 2018)



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