

# 放緩近視增長的嶄新技術

## A Novel Optical Method for Retarding Myopia Progression

### 以「光學離焦」(DISC)軟性隱形眼鏡放緩近視增長

### The Defocus Incorporated Soft Contact (DISC) lens for myopia control in children

專利編號及國家: 7,506,983 B2 (美國)

#### 特色與優點

本技術以眼睛的自然反饋機制，從而避免了因藥物或手術造成的不良反應。把「光學離焦」應用於隱形眼鏡上，不但為使用者提供清晰、舒適的視力，亦同時有效地減慢近視度數的增長。

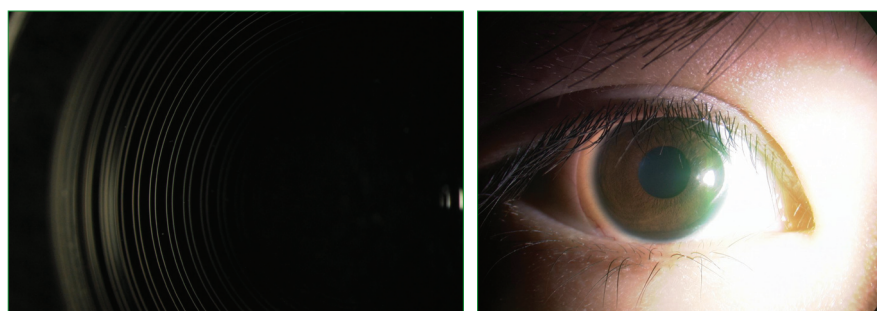
#### 應用

本技術特別針對近視率偏高的地區如香港、新加坡、台灣、以及中國內地，DISC能有助患上近視的兒童和青少年減慢加深速度，同時讓他們仍然保持清晰的視力，為日常生活帶來方便。「正向光學離焦」能抑制近視增長的速度，為治療其他的屈光不正帶來新曙光，例如用相反方向的「光學離焦」(負向光學離焦)或可醫治遠視。

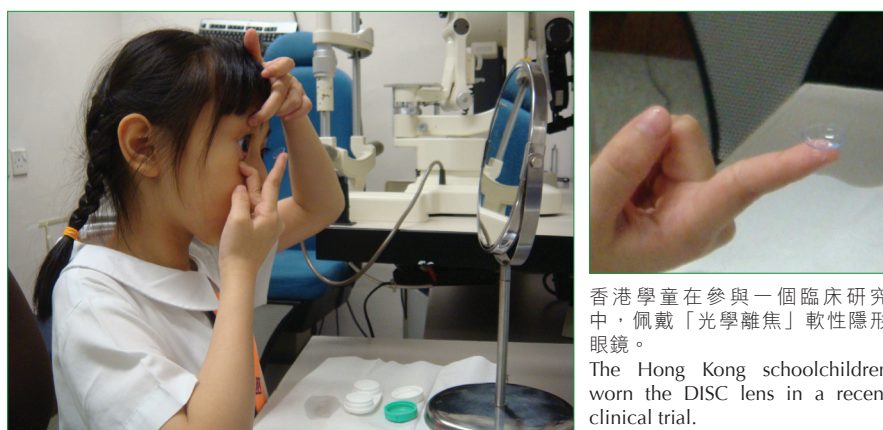
#### 獎項

- Sek-J in Chew Travel Grant, 視覺與眼科研究協會2005
- 第39屆瑞士日內瓦國際發明展 - 評審團特別嘉許金獎 (2011年4月)
- 羅馬尼亞克盧日納波卡科技大學 - 特別大獎 (2011年4月)

「近視」已成為一種十分普遍的眼疾，在亞洲地區更是越趨流行，它更是其中一種導致失明的重要原因。到目前為止，暫時仍沒有任何臨床可以接受的方法來控制近視的加深速度。理大眼科視光學院研究小組已成功發明了一種新技術，利用了眼睛的自然反饋機制(學名: 正視化現象)，即眼球大小和形狀會因應所接收的影像和像差等訊號而改變。「光學離焦」(DISC)軟性隱形眼鏡是一種多區域設計的雙光鏡片，它除了提供清晰的視力之外，亦同時令佩戴者接收到「正向光學離焦」(即抑制近視形成)的訊號。據理大的臨床測試結果顯示，「光學離焦」軟性隱形眼鏡能夠有效放緩香港學童(八至十三歲)的近視加深速度達50%。



「光學離焦」軟性隱形眼鏡包含了「屈光/近視矯正區」和「正向光學離焦/控制近視區」。  
The DISC lens comprises optical zones for correcting refractive error and 'positive' defocus zones for myopia control.



香港學童在參與一個臨床研究中，佩戴「光學離焦」軟性隱形眼鏡。  
The Hong Kong schoolchildren worn the DISC lens in a recent clinical trial.

Myopia (short-sightedness), a major cause of ocular morbidity and blindness, is reaching epidemic proportions in many parts of Asia. So far, there is no clinically acceptable method to control the progression of myopia. Recently, the research team from PolyU's School of Optometry has invented a novel method, "DISC" lens, utilizing a natural homeostatic mechanism of the eye, known as "emmetropization", by which the size of the eyes is regulated by optical inputs from the environment. The DISC lens is a multi-zone bifocal soft contact lens which simultaneously provides clear vision and constant myopic defocus ("STOP" signal to myopia) at all viewing distances. Our recent clinical control trial, the first of its kind in the world, has shown the DISC lens slowed down myopia progression by about 50% in Hong Kong schoolchildren (8 -13 years old).

#### Principal Investigator

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控制兒童和青少年的近視加深速度  
To retard the progression of myopia in children and youngsters

Patent No.: 7,506,983 B2 (US)

#### Special Features and Advantages

The invention takes advantage of the natural homeostasis of the eye, avoiding adverse effects from drug or surgery. The functional element, optical defocus, can be incorporated into wide-accepted forms of contact lens to provide clear and comfortable vision while myopia is being controlled.

#### Applications

This invention is highly relevant to many Asian countries including Hong Kong, Singapore, Taiwan and the Chinese mainland, with myopia prevalence as high as other parts of the world. This device, as an optical aid, can provide clear vision and retard the myopia progression in children/youngsters at the same time. Since optical defocus can alter the process of myopia progression, it opens up new opportunity for treating other refractive error such as hyperopia using suitable defocus.

#### Awards

- Sek-J in Chew Travel Grant, Meeting of the Association for Research in Vision and Ophthalmology (ARVO) 2005
- Gold Medal with the Congratulations of the Jury - 39th International Exhibition of Geneva, Switzerland (April 2011)
- Grand Prize of The Technical University of Cluj-Napoca - Romania (April 2011)



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