



Innovative System & Technique for Correction of Eye Conditions



The Problem

A vast majority of people suffer from serious visual problems such as myopia, hyperopia or presbyopia. The aging global population and increasing prevalence of chronic diseases resulting from unhealthy lifestyle will continue to drive growth in therapeutic eye care services. Existing treatments include the use of spectacles, contact lenses, and laser surgery.



The Solution

This proposed novel treatment might be executed on everyone, making spectacles or contact lenses redundant. This innovative therapy includes the use of a portable laser towards specific laser patterns onto the patient cornea (upper layer burning) followed by pattern stabilization/functionalization with fully biocompatible nanoparticles (NPs, NPs-based eye droplets) that strongly and positively modify patient eyes refractive indexes with highly positive therapeutic consequences.



The Commercial Benefit

This outstanding NPs-based therapy for eye corrective actions is effective for all age range including both children and the older population



Market Potential

Vision represents a ~\$36 billion industry comprised of services (~\$15 billion) and sale of corrective eye glasses and lenses (~\$21 billion) with steady expected growth of ~1-2%. Corrective eye surgery is removing 500K patients annually from the 150 million vision correction population. It is expected that surgery volume will increase as quality improves and price continues to decrease. In 2012, for example, 19 million LASIK took place in the U.S.



Target Markets/Industries

- Vision industry
- Corrective eye surgery market



Intellectual Property

Patent Pending



Team: Primary Inventor

Prof. Zeev Zalevsky

- Prof. Zeev Zalevsky is head of the Electro-Optics study program at the Faculty of Engineering and director of the Nano Photonics Center at the Institute of Nanotechnology and Advanced Materials (BINA).
- Prof. Zalevsky's outstanding impact of the research includes H-factor of 45 and an impressive number of 9930 citations.
- Prof. Zeev Zalevsky is acting as a reviewer at various scientific journals including Nature Photonics, Nano Letters, Nature Communications, Nature Light: Science & Applications, Nature Scientific Reports, ACS Nano, ACS Photonics, Biophotonics, NanoScale, Communications Physics and others peer review journals



Prof. Jean-Paul Lellouche

- Prof. Jean-Paul (Moshe) Lellouche is the Head of the Department of Chemistry and also registered in the Nano Materials Center at the Institute of Nanotechnology and Advanced Materials (BINA) dealing with a wide range of nanofabrication/application-relating R&D activities (such as, anti-bacterial, gene silencing, anti-parasitic, drug delivery nanoparticles).
- Prof. J.P. Lellouche has authored 150 peer-reviewed papers, 15 patents and 3 book chapters while attracting more than US\$ 6,581,000 in external grant funding – H-Index: 26 with 2342 citations



Future Research

We plan to focus on future commercial developments of industrial optimized preparation and provision of nanodrops biocompatible NPs, and on fabrication and optimized production of retina-patterning laser devices and relating device software.



The Opportunity

Investors are invited to license our patent through a licensing agreement with sponsored research.



Keywords

- Biocompatible
- Hyperelective
- Nanoparticles
- Synthetic Nano-Drops
- Myopia Corrective Therapies
- Hyperopia Corrective Therapies
- Presbyopia Corrective Therapies
- Retina Laser Patterning
- Refractive Index Corrective Methodology