Speakers

Gaetano Volpe
ProCrea

Freeform defocus surfaces: a flexible approach to slow myopia progression in children

Myopia is the main global cause of distance vision impairment in many parts of the world. In particular, high myopia is usually associated with a higher risk of more serious diseases such as cataract, glaucoma, and retinal detachment. As a result, the risk of developing myopia must be diagnosed as soon as possible, especially in children. The search of solutions to control or limit the progression of myopia in children has received great interest in literature over the past years. Many solutions have been provided in this field, including contact lenses and ophthalmic lenses approaches.
However, some of those solutions showed very limited benefit in slowing down the myopia progression. Among the tested techniques, peripheral defocus plays a significant role and has one of the best evaluated performances. Nevertheless, some of the solutions already existing in the market have very limited feasibility in terms of refraction index availability and power range. Motivated by this gap, ProCrea has developed a freeform defocus design that presents three different zones: a central zone with prescribed power, an intermediate transition zone and an extreme zone with full defocus up to +3.50dpt. The size of the three zones is fully configurable and the design has no feasibility limitations, compared to a standard single vision lens. As a result, this design is more flexible than other solutions.

Fritz Paßmann

About blue light and appropriate correction – how useful are protective coatings?

The lecture starts with the definition of light and the processing on the retina and the resulting physiological processes like circadian rhythm and twilight myopia.
The industry is developing special blue light filters and anti-reflection coatings to mitigate disturbing effects. The DOG (German Society of Ophthalmology) doubts that blue light is harmful to the eyes.Nevertheless, how useful are such products?

Alex Incera
Coburn Technologies

Go waterless! A sustainable deblocking and alloy recovery system

The areas of lens deblocking and alloy recovery have received little attention from the lens processing industry. Lens manufacturers, lens production laboratories, and equipment manufacturers alike have viewed these areas as simple, mundane tasks with little opportunity for improvements. As a result, few investments have been made in these areas.
The reality, however, is that the current approach to deblocking and alloy recovery is a rich landscape in which to reduce waste, improve efficiency and yields, and eliminate risks to employees and the environment alike. Even the latest automated systems haven't addressed most of the opportunities associated with traditional methods.
In this session, a novel approach to lens deblocking and alloy recovery is presented and its benefits explored. This new two-step method is completely automated and does not utilize water for either deblocking or alloy recovery. It reduces costs, eliminates waste, improves lens yields, and is safer for laboratory personnel and the environment. Go waterless.

Speakers

François Breton
HPMAT

Demystifying the dip coating process for hard coating lenses

For most of the ophthalmic laboratories, among the many steps for lens manufacturing, the most critical one is certainly the hard coating process. This is probably linked to the fact that it is a chemistry related process and not a purely mechanical one. Most laboratory managers have a good knowledge of optics, mechanics and IT, but little or no knowledge of chemistry.
Besides, machine manufacturers share the same knowledge features as their customers. Most of them believe that there is a cleaning/rinsing operation before the dip coating of the lenses, but this is not really the case. Some others may know that it is not really the case, but since they also sell consumables, including lacquers, their interest is to maximize the consumption of the chemicals in their machines.
The purpose of this lecture is to explain what is happening at a molecular level during this 'black box' process.
This in order to allow laboratory managers to take control and be able to understand the influence of some critical parameters on the quality of their hard coated lenses, so that they will never face unexpected defects when they decide to change for a new supplier of consumables.

Andy Huthoefer
Satisloh

A paradigm shift in coating technology

When thinking about Hard and AR coating in lens manufacturing, it is almost impossible to not also think about high investments, clean rooms, highly skilled operators and long processing times. At the same time, digitization, online and hybrid shops rapidly change how business is done and consumers expect same or next day delivery of premium products at highest quality. This leads to ever-increasing demands on the lens manufacturing process to make lenses faster and of highest quality.
For the past several years Satisloh has been working on a new and revolutionary Film Lamination coating technology that makes Hard and AR coating production fast, easy, repeatable, sustainable, and requires a much lower investment than traditional coating. In this lecture you will learn how new Film Lamination drastically simplifies the coating process and shifts the capital intensive and complex part of coating manufacturing to mass production facilities. Labs then laminate, applying pre-manufactured coating films onto lenses in a quick and easy process using less expensive and more compact equipment. This opens up Hard and AR coating production to a broader market including small and in-store labs for which the investment in equipment, facilities and qualified personnel previously presented an entry barrier that was difficult to surmount. On top of that the resulting AR coated lenses come with added consumer benefits including increased impact resistance, reduced lens thickness and elimination of interference fringes, allowing labs to offer an exciting, value added lens product. Film lamination is positioned to do for coating what free form did for surfacing and shift its manufacturing paradigm.

Speakers

Eva Chamorro
IOT

Using accommodation to calculate oblique aberrations: a step further in lens personalization

In recent years, the rise of personalized lenses using free-form technology has resulted in a significant improvement of the optical quality of the lenses prescribed worldwide. More and more eye-care professionals are offering these customized lenses based on individual user parameters such as morphological data and frame parameters.

The possibility of using the wearer's accommodative ability is a step forward in lens customization. The use of the accommodation results in the ability to optimize the lens using a more realistic object space as well as to modulate oblique aberrations of the user in a more intelligent way.

The presentation will explain how accommodation can be included in the lens calculation to reduce the oblique aberrations in personalized lenses in a more efficient way.

Onur Karademir
Cotec

Drop on Demand printing processes for the production of "hydrophobic and oleophobic coatings" – capabilities of a disruptive technology?

Drop on Demand (DoD) printing processes have been used for years for printing magazines and books in industrial applications. Continuous development of DoD technology allows liquid coating materials to be applied to substrate surfaces in the form of "ink droplets" whose volume can be adjusted in a controlled manner in the range from picoliters to femtoliters.

Easy-to-clean coatings can thus be produced with functionally modified inks under normal atmospheres, whose properties correspond to conventional vacuum technologies.

Precise control of droplet size is achieved by adjusting ink parameters such as viscosity or temperature and the actuation sequences for the individual nozzles of the DoD print head.

Compared to atmospheric coating applications such as spray coating, the efficiency for ink utilization is close to 100%. In addition, the areas to be functionalized can be precisely selected. The DoD process enables coating of flat and three-dimensional substrates.

Ease of integration into new or existing production lines, ease of operation, reduction of system components, process steps and costs compared to vacuum technology make DoD technology for thin film coating applications a sustainable and resource-saving industrial tool of the future.

Roland Lorek
GfK

Optic market EU4 2021 – Recovery from pandemic losses

After the corona pandemic dip of 2020, optic sales recovered in 2021. For EU4 (Italy, France, Germany, Spain) the sales volume for spectacle lenses grew by 16.8% (YTD September) in 2021 vs 2020. This recovery leaves the European market only 1.3% short of its pre-corona pandemic level. Correspondingly, the sales volume of spectacle frames recovered well in 2021 (+3.1% vs. 2019).

With working from home on the rise, the beneficiary of the crises proved to be the proximity lenses (+20% vs 2019). Progressive lenses have returned to their 2019 volume level already and monofocal lenses are still down -2.7% vs 2019. In pandemic times, people seem to put more focus on quality with regards to spectacle lenses, expressed by strong growth of thin materials with higher refraction indices (1.6 and above) in all lens types.

The more social products sun glasses (volume -16% vs 2019) and contact lenses (value -8% vs 2019) still need time to fully restore former sales levels.

Speakers

Pau Artus
Horizons

Towards a better understanding of progressive lens user preferences

Since the invention of modern progressive addition lenses in 1953, the technology to design and manufacture this type of lenses has evolved considerably, leaving great successes and some failures along the way. The ongoing effort to improve this product has ramified into different design philosophies that live together in most of the markets.

However, it is known that some users tolerate or prefer some design features over others. Given the wide variety of design philosophies available, understanding user's preferences has become a key issue among designers and requires new methodologies in user testing to achieve solid and reliable knowledge.

Mo Jalie
University Ulster

What do we mean by a "perfect lens" and can we produce it?

When a new lens series is introduced by manufacturing companies, it is often described as providing perfect vision from edge-to-edge of the lens. Common examples of such marketing descriptions include:

- "Sharper vision in a thinner, flatter lens."
- "As every pixel on the lens surface has its own calculation value, each prescription can be uniquely cut into the lens. The result? You can provide your patients with pixel-perfect precision and outstanding visual performance."
- "These lenses are fitted to the particular wearer and are optimized for good vision even in the periphery of the lens."

What do these statements actually mean and can we really eliminate all lens aberrations to the degree implied by the marketing statements?

A common misconception is that "an aspheric lens will provide clearer edge-to-edge vision than one with spherical surfaces". This statement has omitted to say that an aspheric lens will provide clearer edge-to-edge vision than a flat form lens made with spherical surfaces or that it is only true for lens powers which lie beyond the range of Tscherning's Ellipse! This talk reminds the audience of what is and what is not possible to improve the off-axis performance of spectacle lenses.

Yariv Hadad
Deep Optics

The next big changes in the optical industry - how do they impact the value chain?

Over the last few hundred years, corrective lenses have essentially not changed. Although human vision is dynamic, we still use static lenses to correct it. We have developed a novel technology for dynamic lenses with no moving parts to allow for dynamic vision correction. Glasses equipped with such lenses can dynamically change their optical power to correct for different distances (for example, in the case of presbyopia) and even change the lenses optical centers, and active diameter. The underlying lens technology is based on liquid crystal (LC). The lens is built in a similar manner to a liquid crystal display (LCD), leveraging existing and reliable manufacturing production lines and processes, to assure reliable and affordable components.

We will present the first sunglasses equipped with liquid crystal lenses designed for emmetropic-presbyopic users. The glasses can change from simple plano sunglasses to reading-sunglasses with a simple swipe of the temple. We will review the glasses technology, features and design, as well as the peripherals, such as its special mobile app. We will also review future products on our roadmap utilizing the dynamic lens technology and fulfilling our vision for making vision correction adaptive.