

# ENVISION 2021

September 14-15, 2021

## Agenda | September 14

**8:30 AM - 9:00 AM PDT**

### CEO Keynote

Subbiah, Chief Executive Officer, Zemax

Zemax CEO Dr. Subbiah shares his insights into the opportunities for accelerating innovation in optical product design and how Zemax is investing our technology and services to ensure we remain the "gold standard" for optical simulation software.

**9:05 AM - 9:50 AM PDT**

### From flat optics to flat optical systems

Bernard Kress, Partner Optical Architect at Hololens

Maria Pace, PhD, Technology Leader in Mixed Reality, Microsoft

Optical Systems on Chip SoCs (Photonic Integrated Circuits) can be designed & fabricated using multiple-element patterning on a single front/back quartz wafer in a space folded architecture to reduce size, weight and costs, and allow lithographic alignment of the various optical elements within the final system.

#### SIMULATION DRIVING INNOVATION TRACK

#### INDUSTRY INSIGHTS FOR OPTICAL PRODUCT TRACK

**10:00 AM - 10:45 AM PDT**

### Modular, high resolution mapping of UV-C dose distribution across N95 respirator surfaces using Zemax OpticStudio

Alison Su, Postdoctoral Researcher, UC Berkeley

COVID-19 spurred a rapid need for modular UV-C systems to decontaminate used N95 respirators. However, validating decontamination is a challenge. This presentation will discuss commercial N95 decontamination systems and how to quantify the UV-C distributions.

### Laser power beaming on the moon

Brian Turner, KC Space Pirates

KC Space Pirates recently won a second place prize in NASA's Watts on the Moon Challenge. This session will cover the applications of Laser Power Beaming on the Moon and KC Space Pirates prior laser power beaming accomplishments. Including a review of how quality optics design plays a critical role in this emerging technology.

**10:50 AM - 11:35 AM PDT**

### How to combine lens design and metasurface and why it is a fascinating new technology

Simon Thibault, Professor at Laval University, Principal Optical Designer at Immersion, Laval University

This talk will discuss the growth and utility of Metasurfaces in the present-day marketplace. Particularly, this talk will discuss leveraging DLLs in OpticStudio to generate metasurfaces for design and analysis, without relying on FDTD simulations.

### Optical glasses ready for future market requirements

Dr. Uwe Petzold, Project Manager, SCHOTT

Current market trends request special optical positions and more extreme features of optical glasses. SCHOTT will share insights into these trends and the exacting requirements that they introduce into optical glass manufacturing and metrology.

**11:40 AM - 12:25 PM PDT**

### Design for quality: multifunctional metasurface flat optics

Tian Gu, Research Scientist, MIT

This talk will discuss the utility and challenges of metasurfaces for traditionally complicated optical systems. The speaker will focus on ultra-compact, all-dielectric, flat metasurface optics such as ultra-wide field-of-view metalenses, solid-state active meta-optics, and new optical architectures.

### Pushing the design envelope of freeforms: Find out what's possible today from a manufacturer

Jessica DeGroot Nelson, Director of Technology and Strategy, Optimax

This presentation will cover all facets of manufacturing and testing of freeform optics. The speaker will focus on freeform definitions and tolerancing examples to bridge the gap between the "on-paper" design and finished freeform component.

**12:30 PM - 2:00 PM PDT**

### Networking & Sponsor Sessions

# ENVISION 2021

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## Agenda | September 15

**8:30 AM - 9:30 AM PDT**

### Product Update

Dorothy Pults, Chief Product Marketing Officer, Zemax  
Lisa Clauson and Esteban Carbajal, Product Managers, Zemax

Joining Envision for the first time, please welcome Zemax Chief Product and Marketing Officer, Dorothy Pults, as she shares the newest updates and offerings available in the suite of Zemax Products. Joining her will be Zemax Product Business Managers, Esteban Carbajal and Lisa Clauson for an informative session highlighting product line updates including our new OpticStudio STAR module.

### SIMULATION DRIVING INNOVATION TRACK

**9:35 AM - 10:20 AM PDT**

#### Baraja Lidar: Spectrum scan + Random modulated continuous wave

Xiaoli Tang, Optical Engineering Lead, Baraja

Lidar is a crucial technology for autonomous vehicles. This talk introduces lidar for self-driving cars with focus on Baraja key technologies: spectrum scan and random modulated continuous wave.

### INDUSTRY INSIGHTS FOR OPTICAL PRODUCT TRACK

#### Using error budgets to guide the development of optical systems

Jennifer Michels, Design Consultant, Red Head Optical

We discuss the use of the error budget to manage the allocation of tolerances and predict system performance through development, using 10 key steps for error budgeting.

**10:25 AM - 11:05 AM PDT**

#### Coherent focal plane arrays in silicon photonics, towards high performance 3D Imaging using LIDAR

Remus Nicolaescu, Chief Executive Officer, PointCloud

This talk will present an overview of architectural implementations of large-scale coherent focal plane arrays and their operation in a 4D imaging system. Performance characteristics, tradeoffs and design optimization for different applications will be discussed.

#### How to "align" your optical system using Zemax OpticStudio

Brian Catanzaro, Optical Engineering Consultant, CFE Solutions

Optical assemblies are rarely assembled to the precision that is necessary to achieve performance. This talk will explore tolerances and alignment, creating as-built models of optical systems, debugging opto-mechanical alignment techniques, and transferring these techniques to the manufacturing floor.

**11:10 AM - 11:55 AM PDT**

#### Optical Design of a compact, large-field AR system based on the pancake lens

Dave Kessler, Owner, Kessler Optics & Photonics Solutions, Ltd.

Many AR systems are see-through systems where the see-through is either digital or has combiners and/or pupil expanders. The digital see-through usually introduces lag, and elements placed in the see-through channel may reduce transmission and contrast or induce artifacts. Here we discuss the optical design of this "see-above" system where the outside world view is not affected at all and the augmented channel is provided by a pancake lens relay at close proximity.

#### Applications for high resolution, wide FOV cameras without distortion

Zak Niazi, CEO, Circle Optics

In this talk, Circle Optics will discuss the development and application of a new lensing technique which yields distortion-free, ultra-wide field of view capture without post processing.

**12:00 PM - 12:45 PM PDT**

### CTO Locknote

Sanjay Gangadhara, CTO, Zemax

Join Zemax CTO, Sanjay Gangadhara, as he explores some of the latest developments in optics and how these trends are being influenced by the rapidly changing markets. Attend to find out how these trends will impact both the future products you'll be developing and the Zemax tools you'll be using to design them.

**12:50 PM - 2:00 PM PDT**

### Networking & Sponsor Sessions