

Webinar

Flat Optics with VirtualLab Fusion

Diffractive Lenses: Concept, Modeling, Design, and Fabrication Data

Date: 13 January 2021

Times: 10:00 – 11:00 and 18:00 – 19:00 (CET)

Speaker: Frank Wyrowski

Registration: Please register by clicking [here](#).

Smooth, often spherical, surfaces between homogeneous media dominate lens design. The introduction of aspherical and freeform surfaces has added design freedom to obtain compact lens systems with improved quality and new functions. According to the Fresnel equations, surfaces typically do not add a phase variation to the incident light. Diffractive surfaces introduce the freedom to add an extra phase variation onto the incident light. Interest in how to use this extra design freedom best has gained momentum in recent years, aiming at more compact systems and better performance. The nature of the diffractive structure allows for special functionalities like multiple foci, but also leads to some challenges, like a strong wavelength dependency.

In the webinar we introduce the concept of diffractive lens and generalize it to the usage of digital holographic surfaces. We briefly compare it with the metalens and Fresnel-type lens approaches. The modeling theory of diffractive lenses is discussed and its implementation and usage in VirtualLab Fusion demonstrated. Then we turn to the use of diffractive lenses in design by presenting design workflows in VirtualLab Fusion. This includes the combined design of diffractive lenses and freeform surfaces. In another workflow we combine design in Zemax® OpticStudio® with modeling in VirtualLab Fusion. The design process is finished by the generation and export of fabrication data for the diffractive lens in a lithographic or 3D print production process.

The webinar is suited for anybody interested in learning about the concept of diffractive lenses and its modeling and design in the fast physical optics software VirtualLab Fusion.

