

OSSC Online Webinar, March 17, 2021, 5:30pm
“Recent Advances in Freeform Optics”
Professors Thomas J. Suleski and Matthew A. Davies
University of North Carolina at Charlotte

Abstract

Freeform optics provide additional design freedoms that enable new functionality, improved optical performance, and reduced system size and weight, but also introduce numerous challenges for design, manufacturing, and measurement. Towards these challenges, the authors have conducted research in the area for over fifteen years, and the NSF I/UCRC Center for Freeform Optics (CeFO) was founded in 2013 to further advance research and education in the science, engineering, and applications of freeform optics through dedicated industry/university partnerships.

In this talk, we first provide a brief introduction to freeform optics and an overview of the Center for Freeform Optics. Selected research projects will then be highlighted, with particular emphasis on manufacturing, testing, and applications for freeform optical components and systems.

About Our Speakers

Dr. Thomas Suleski is Professor of Physics and Optical Science and CeFO Site Director at the University of North Carolina at Charlotte, with over 25 years of experience in optical design and manufacturing. Professor Suleski earned a Ph.D. in Physics from the Georgia Institute of Technology, and previously worked at Digital Optics Corporation with a wide range of military and commercial partners on the design, application, and manufacturing of micro-optical components and systems. He is co-author of *Diffraction Optics: Design, Fabrication, and Test* and serves as Senior Editor for the SPIE *Journal of Optical Microsystems*. He is a Fellow of the Optical Society of America, and a Fellow of SPIE, the International Society for Optical Engineering.

Dr. Matt Davies is Professor of Mechanical Engineering and Engineering Science, former CeFO Site Director, and a member of the Center for Precision Metrology at UNC Charlotte. He has nearly 30 years of experience in precision engineering and manufacturing science, and 15 years of experience in the precision manufacturing of freeform optics. Professor Davies earned a Ph.D. in Aerospace Engineering from Cornell University and then joined the NIST Manufacturing Engineering Laboratory where he worked on many projects in precision engineering, precision manufacturing and metrology. He is co-author of the textbook *System Dynamics for Mechanical Engineers* and was awarded the Bank of America Award for Teaching Excellence in 2015. He is a Fellow of the Fannie and John Hertz Foundation and a Fellow of the International Academy for Production Engineering Research ([CIRP](#)).