



AMERICAN
PRECISION OPTICS
MANUFACTURERS
ASSOCIATION

GENERAL MEETING

Oct. 18th 2023



SURFACE	CLEAR APERTURE	POWER $\lambda=632.8\text{ nm}$	IRREGULARITY $\lambda=632.8\text{ nm}$	SCRATCH/DIG	SURFACE ROUGHNESS
S1	Ø1,200	-	±0.12 P-V	60/40	<0.8 RMS
S2	Ø1,120	-	±0.12 P-V	60/40	<0.8 RMS

APOMA is the focal point of American precision optics manufacturing collaboration, facilitating the ongoing exchange of ideas and expertise amongst our diverse membership base. By advancing workforce development, defining industry standards, and sharing process improvements and innovations, APOMA bolsters operational excellence throughout all aspects of optics manufacturing. Membership consists of fabricators, coaters, material scientists, engineers, designers, and educators; who share in the unified goal to **make light work** in the United States.



AGENDA

- Introduction
- SPIE
- Optics and Photonics Caucus
 - REP. JOSEPH MORELLE
- OEOSC update
 - PAT AUGINO
- Workforce Development
 - DR. ALEXIS VOGT
- Innovations in 3D Printed Optics
 - DR. DU NGUYEN
- AmeriCOM
 - JEFF RUCKMAN



BOARD MEMBERS 2023



Lee Steneken
President

ESCO OPTICS



Travis Green
President-Elect

ALPINE RESEARCH
OPTICS/PFG OPTICS



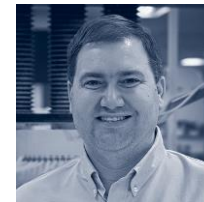
Mike Mandina
Past-President

OPTIMAX SYSTEMS



Dave Mohring
Treasurer

OPTIPRO



Zach Hobbs
Secretary

SYDOR OPTICS



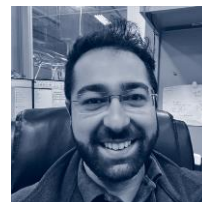
Dr. Alexis Vogt
Academic Member

MONROE COMMUNITY
COLLEGE



Shai Shafir
At-Large Member

CORNING



Navid Entezarian
At-Large Member

THORLABS



Justin Mahanna
At-Large Member

UNIVERSAL PHOTONICS



Michele Stolberg
Admin

Seeking nominations for at large members starting in 2024



NOMINATION PROCESS



The nomination process is currently open and will close on 11/3/23.

STEP 1

To apply include a short bio and letters/emails of support from three additional APOMA members.

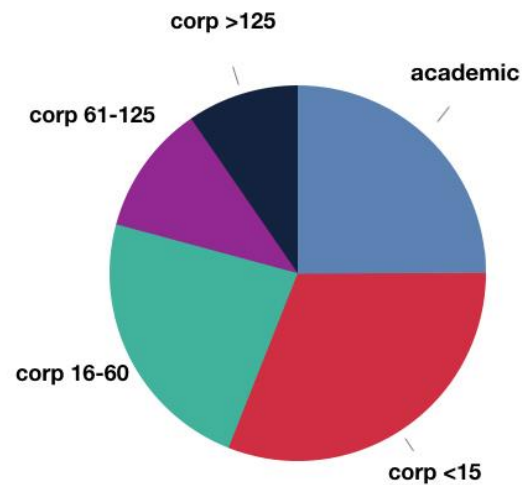
STEP 2

Nominations can be sent the APOMA Secretary Zach Hobbs — Zach@Sydor.com

Voting will take place in December, and new At-Large members will take their positions at the APOMA Annual Meeting at Photonics West 2024.

A map of the United States with state boundaries outlined in black. Twenty black dots are placed on the map to represent research sites. The dots are distributed across various states: Washington, Oregon, California, Nevada, Arizona, New Mexico, Texas, Colorado, Wyoming, Utah, Idaho, Montana, North Dakota, South Dakota, Nebraska, Kansas, Oklahoma, Missouri, Arkansas, Louisiana, Mississippi, Alabama, Georgia, South Carolina, North Carolina, Virginia, West Virginia, Kentucky, Tennessee, Mississippi, Alabama, Georgia, South Carolina, North Carolina, Virginia, West Virginia, Kentucky, Tennessee, Indiana, Michigan, Wisconsin, Illinois, Ohio, Pennsylvania, New York, Vermont, New Hampshire, and Maine.

Academic.....	30
Corporate <15.....	36
Corporate 16–60.....	27
Corporate 61–125.....	12
Corporate >125.....	14



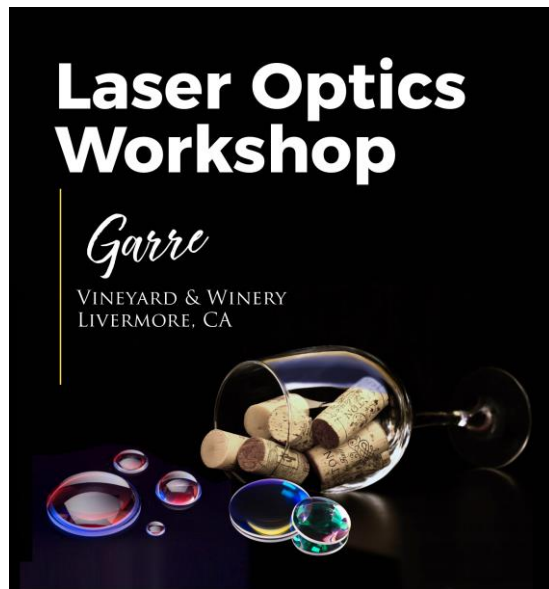
TECH WORKSHOPS



WORKSHOP TOUR



UA SCIENCE
**RICHARD F. CARIS
MIRROR LAB**
Steward Observatory



WORKSHOP TOUR



Lawrence Livermore
National Laboratory



WORKSHOP TOUR

NIST

CONNECT | COLLABORATE | INNOVATE



NOV 9 – 11, 2022 BOULDER, CO


FRONT RANGE
COMMUNITY COLLEGE
Open House

Tech Workshop
Welcome Reception

NIST Labs Tour

16 Presentations (2-DAYS)

Ranging from: sub-aperture polishing,
freeform optics, ISO standards, ITAR
regulations and much more

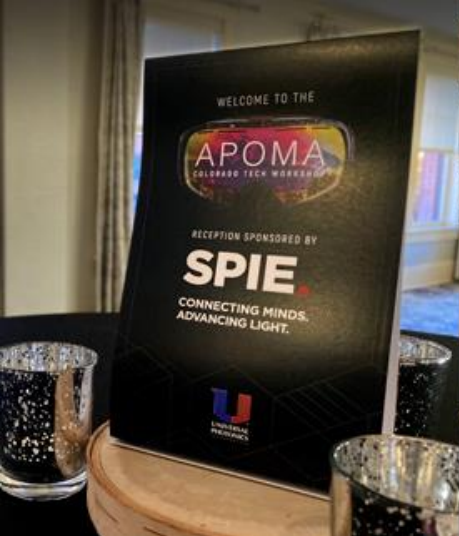
Schott Happy Hour
networking event

\$5000 Donation

FRCC Optics Program

Next workshop 2024







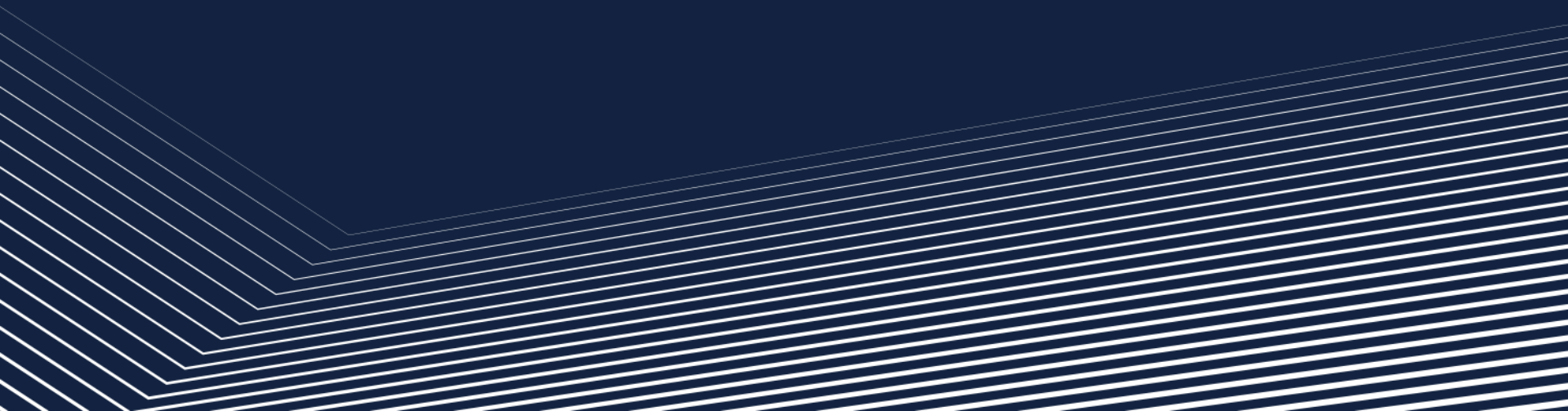
BENEFITS

The membership provides you direct access to peers and vendors who support each other

Destination workshops highlighting techniques and advancements in optics manufacturing

Source of knowledge, the APOMA leadership provides updates on government awareness in investing in optics and photonics

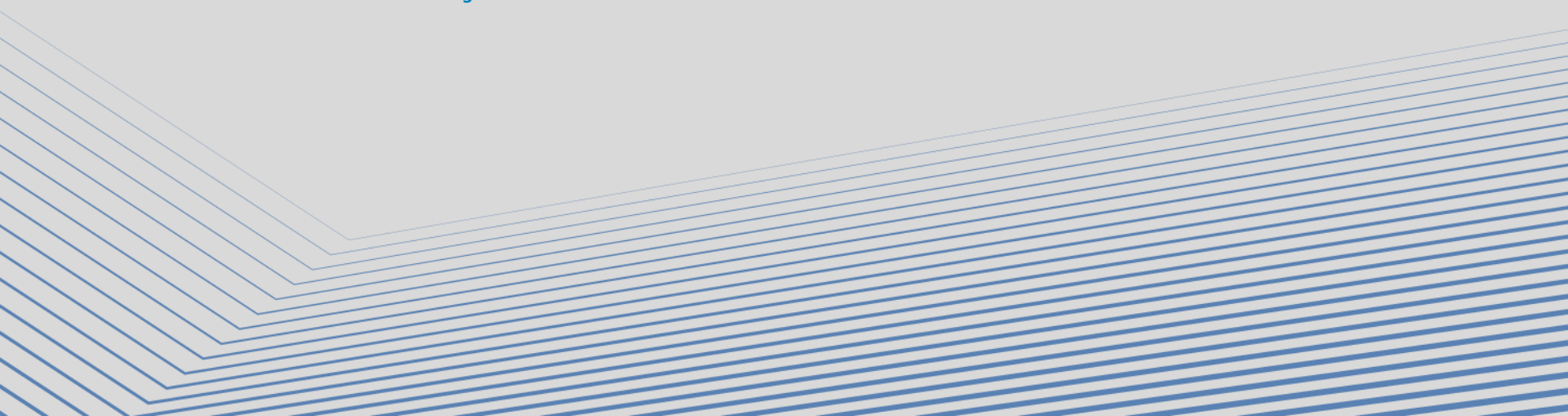
SPEAKERS



Optics and Photonics Caucus

Congressman Joseph D. Morelle

REPRESENTATIVE FOR NEW YORK'S 25th CONGRESSIONAL DISTRICT





U.S. CONGRESSMAN

JOSEPH MORELLE

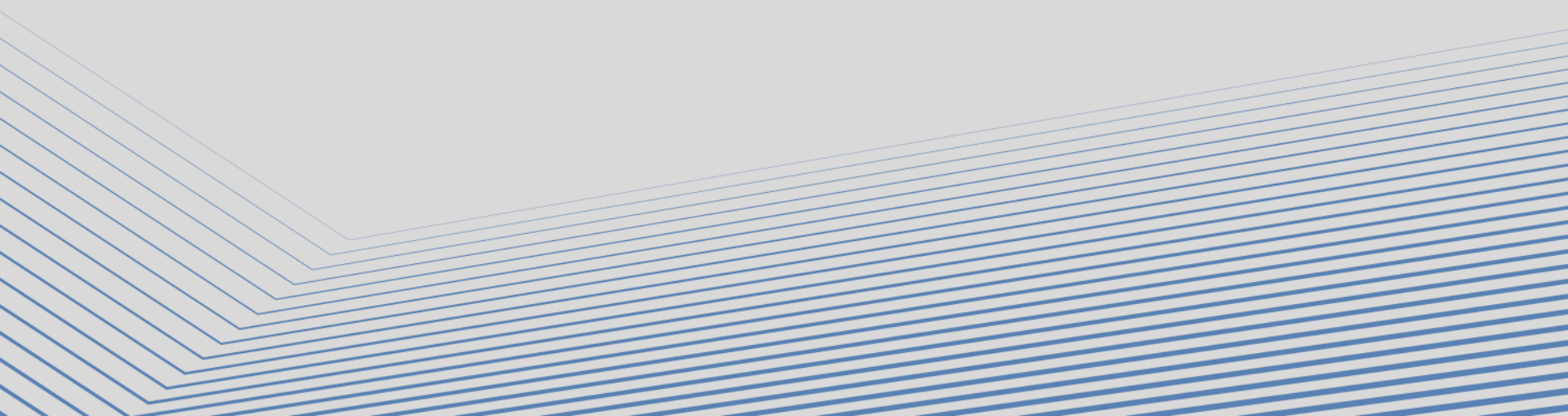
REPRESENTING THE 25TH DISTRICT OF NEW YORK



SPIE

Brad Ferguson

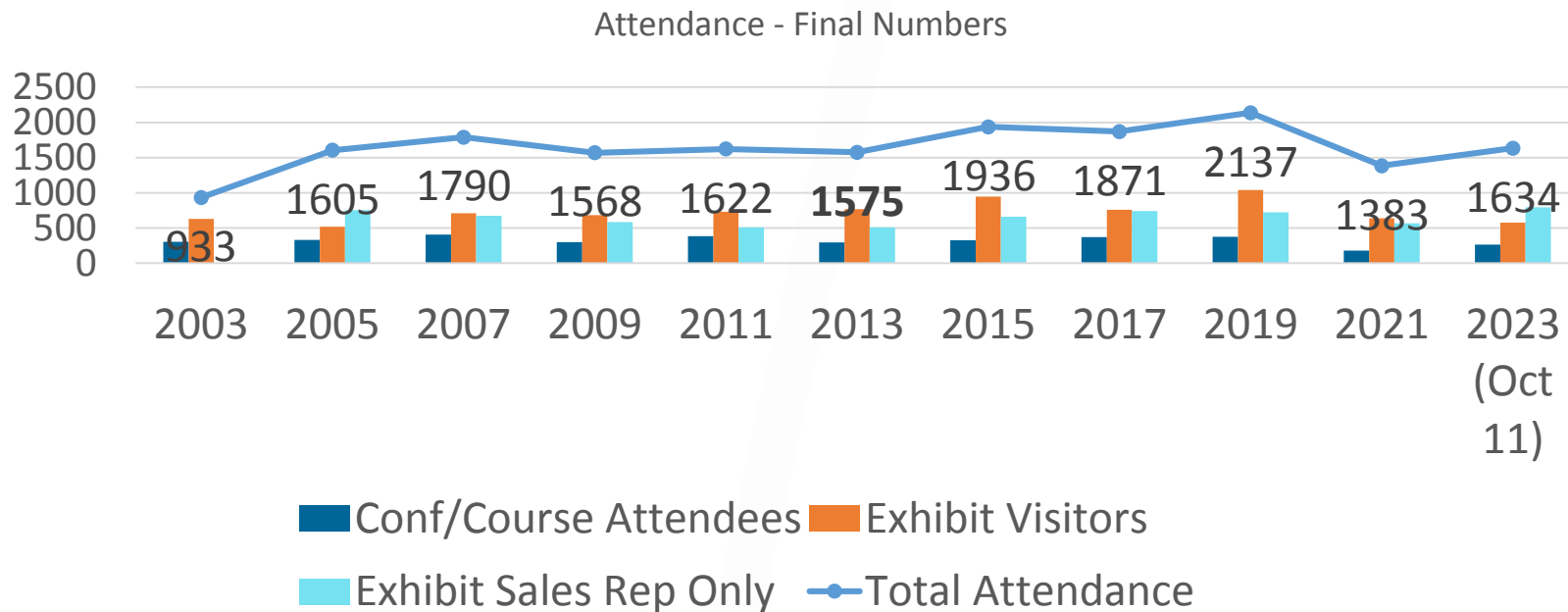
CHIEF OPERATING & FINANCE OFFICER



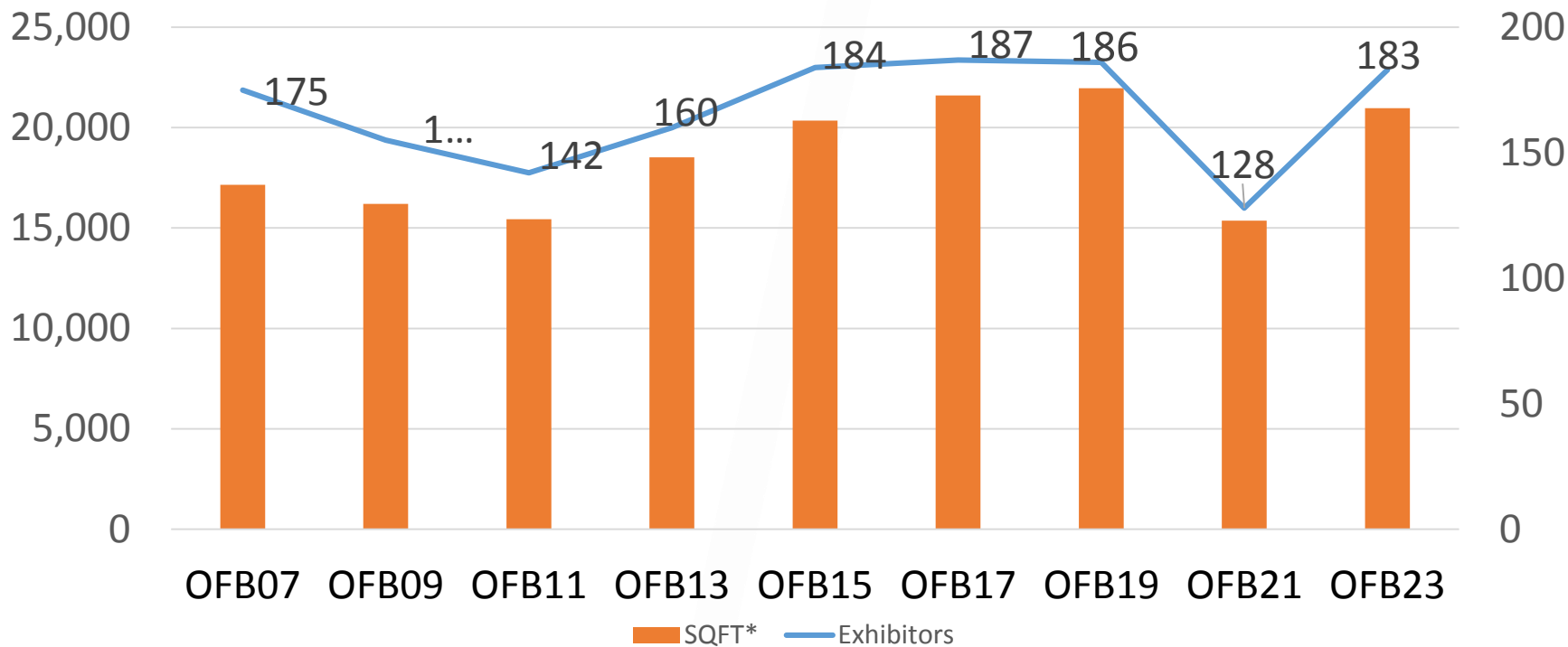
Optifab 2023 Pre-event Results (10/11) (vs. 2021)

- 1,634 Total Attendees (1,383)
- 183 Exhibitors in 2023 – SOLD-OUT show! (128)
- 574 Exhibition Visitors (639)
- 217 Conference Attendees (158)
- 70 papers (62)
- 9 courses, 136 registrations, +31% (7 courses, 56 registrations)
- Special Programs and Promotions
 - 25th Annual Clam Bake – SPIE matches net funds raised
 - APOMA General Meeting

OFB Attendance Stats



OFB Exhibiting Companies and Sq Footage



Course Update

9 Courses Scheduled – Pre-Event (10/11) Figures for 2019 *(vs. 2021)*

- Total Registrations: **136** *(56)*
- Avg reg per course: **15.4** *(8)*
- Total Registrations **↑ 243% increase as of 10/11/23**

Top Drawing Courses (all three have pre-registration numbers over 20)

SC1171 Seeing, Analyzing and Controlling Mid-Spatial Frequency (MSF) and Surface Roughness Errors on Optical Surfaces (DeGroote Nelson)

SC700 Understanding Scratch and Dig Specifications (Aikens)

SC1169 Optical Manufacturing Fundamentals (Williamson)

SPIE.OPTIFAB

Cosponsored with
APOMA

20 – 23 October 2025

Held at:
**Joseph A. Floreano
Rochester Riverside
Convention Center
Rochester, NY**



OEOSC

Pat Augino

OPTIMAX

A series of parallel blue lines of varying lengths and orientations, creating a dynamic, layered effect at the bottom of the slide. The lines originate from the left edge and fan out towards the right, with some lines being horizontal and others angled upwards.

OPTICS MANUFACTURING TECHNICIAN APPRENTICESHIP

ASCOP (National Standards)

- Continuing to Adopt ISO 10110
- Approved/Published:
 - -1 (General)
 - -5 (Surface Form)
 - -7 (Cosmetics)
 - -8 (Roughness)
 - -18 (Material)
- **Approved/Publishing soon:**
 - -11 (Non-tolerance data)
 - -12 (Aspheres)
 - -14 (Wavefront Deformation)
 - -19 (General Surface Description)

On Deck

- ISO 10110 -6 (Centering), -16 (Diffractive Surfaces) & -17 (Laser Damage)
- ISO 9211 Series (Coatings)



**Launched Redesigned Website
OEOSC.org**

OEOSC – ISO TAG (International Standards)

Recently published

- ISO 10110-16 (Diffractive surfaces) – 2023
- ISO 9022-23 (Environmental test Methods - Low Pressure w/ Cold Temps and dry or damp heat) - 2023
- ISO 9022-3 (Environmental test methods – Mechanical Stress) - 2022
- ISO 9211-2 (Specific Test methods: Abrasion, adhesion and resistance to Water) - 2022

Standards under review/in revision

- ISO 10110-5 (Surface form tolerances) - Stage: Committee Draft
- ISO 10110-6 (Centering and tilt) - Stage: Committee Draft
- ISO 10110-11 (Non-toleranced data) - Stage: Committee Draft
- ISO 14999-4 (Interpretation and evaluation of tolerances specified in ISO 10110) - Stage: Committee Draft

ISO annual meetings scheduled in Early November

- **Dave Aikens – Head of Delegation for US**
 - Any suggestions for changes, please let Dave or I know ASAP
 - US Experts – Please register if you haven't already

OEOSC Update

OEOSC – Membership

Seeking new members to participate

ASCOP – National

TF2 – Imperfections

OP1.002 – Surface Imperfections under revision
– to be published in 2024/2025

TF7 – Laser applications

TAG – International

SC1 Fundamental Standards

SC3 Materials and Coatings

SC4 Telescopes

SC5 Microscopes and Endoscopes

SC6 Geodetic Instruments

SC9 Lasers and Electro-Optics

Joining OEOSC www.oeosc.org

Direct input on current and future standards

Interactions with experts in your field

Flexible time commitment

Discounts on purchases of ISO Standards



**OEOSC will host the next Annual
International Meeting in 2024**

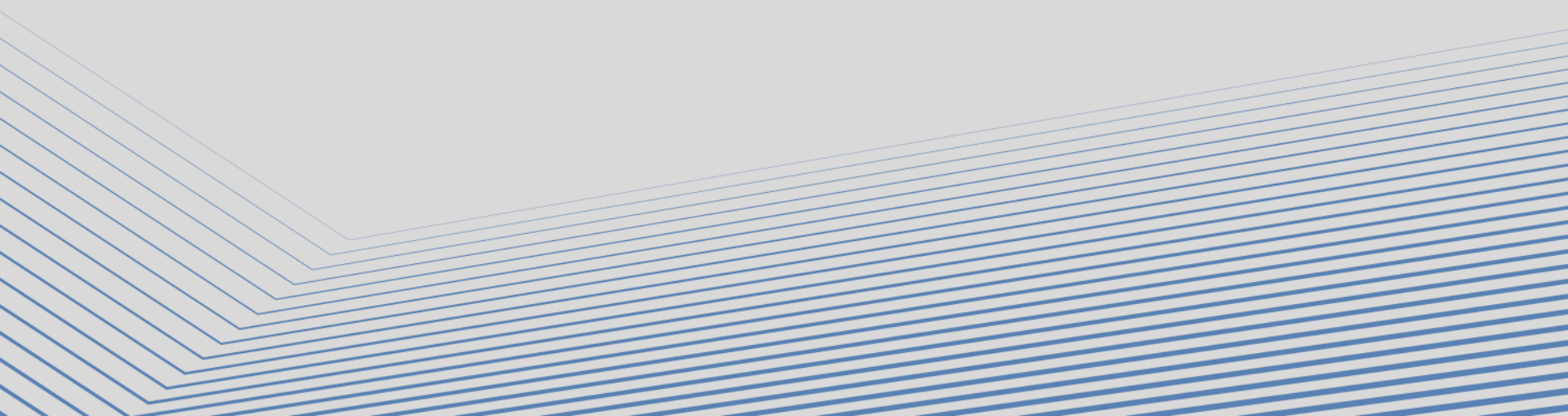
Possible locations –
Boulder, CO or Charlotte, NC

Opportunities to sponsor -
www.oeosc.org/category/news/

Workforce Development

Alexis Vogt

MONROE COMMUNITY COLLEGE



OPTICS MANUFACTURING TECHNICIAN APPRENTICESHIP

- **Structured “earn and learn” solution**
 - 2,000 hours/year
 - Customizable program to meet your manufacturing process
- **Related technical instruction**
 - Minimum 144 hours/year
- **Apprentices work in various departments learning manufacturing processes**



• Benefits to Employers

- Highly skilled workforce
- Increased employee retention
- Improved attendance, productivity, and quality

• Benefits to Apprentices

- Long-term career opportunities
- Workplace relevant skills
- Industry recognized credentials
- Earn academic credit



ROI **\$1.47** for every \$1 invested from increased productivity, reduced waste, and increased innovation

Every \$1 invested in apprenticeships leads to a public return of approximately **\$28** in benefits

<https://nationalapprenticeship.org/roi>

APPRENTICESHIP PARTNERS

Structured earn & learn program: on the job training + related technical instruction



Seeking additional optics companies!



STEPS TO DEVELOP AN OMT APPRENTICESHIP

Determine
company's critical
work function



for the on-the-job
learning

Identify related
technical instruction



aligned to the work
functions

Submit
application



Receive
approval



Select & register
apprentices



Start
apprenticeship

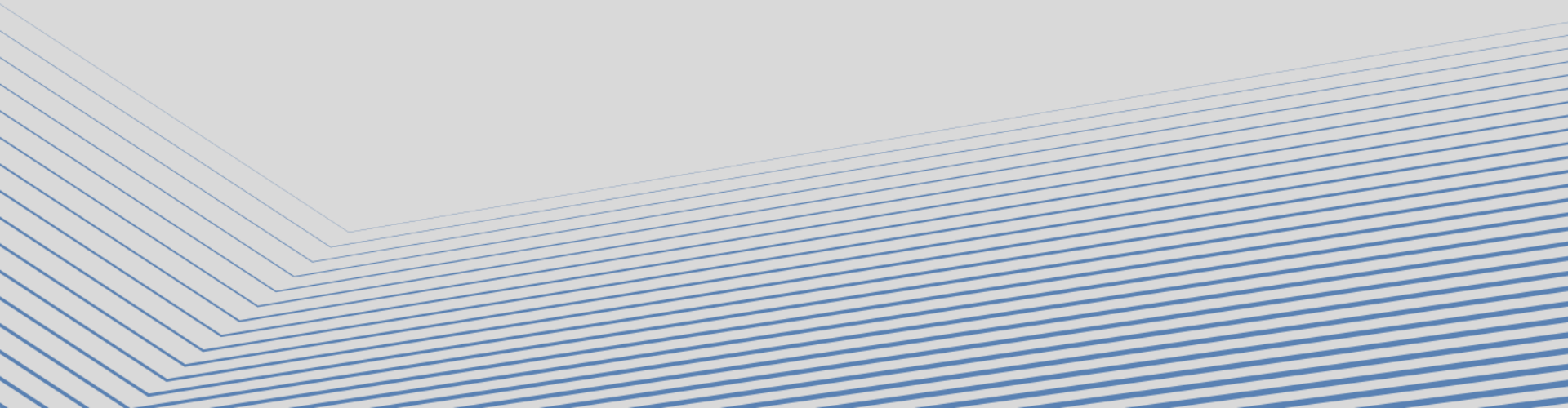


To get started contact – **Bob Lasch** rlasch@monroecc.edu (585) 292-2678

National Work-based Learning Coordinator
Monroe Community College | Optical Systems Technology

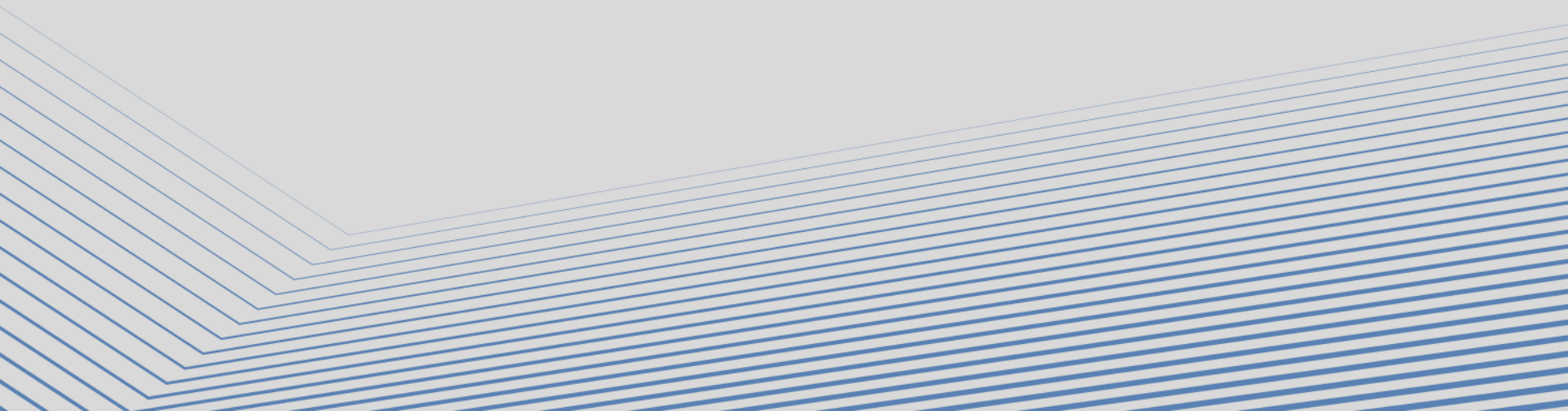
3D Printed Optics

Dr. Du Nguyen



AmeriCOM

Jeff Ruckman



Thank you and enjoy OptiFab

