

THE INSTITUTE OF OPTICS

**INDUSTRIAL
ASSOCIATES**

Program & Resource Guide

Fall 2020

October 14 – October 16



HAJIM
SCHOOL OF ENGINEERING
& APPLIED SCIENCES
UNIVERSITY OF ROCHESTER

Contents

Message from the Director.....	5
Agenda	7
The Industrial Associates Overview.....	8
IA Members & Levels.....	9
Guest Speakers	
Dr. Elizabeth Rogan.....	14
Mr. Nick Kochan.....	15
Dr. Carlos Stroud	16
Dr. Susana Marcos	17
Prof. Jessica Shaw.....	18
Dr. Curtis Broadbent & Tech Transfer Team	19
Poster Session.....	20
Graduate Students Showcase & Research Talks	
MS Showcase.....	20
PhD Research Talks	26
The Institute of Optics Overview	28
Undergraduate Course of Study.....	30
Master's Program Course of Study.....	32
Doctoral Program Course of Study	33
The Institute of Optics Directory:	
Faculty.....	35
Adjunct Faculty.....	45
Senior Scientists	47
Post Docs & Other Professional Associates.....	47
Institute Staff.....	53
Professional Organizations: SPIE & OSA Student Chapters	55
Summer Short-Course Series <u>2021</u> (<i>Tentative</i>).....	56

Message from the Director



Welcome to 2020 Fall Virtual symposium of the Industrial Associates!

Thank you for participating and for your continuing support of the IA program and The Institute. In response to the COVID19 pandemic, we executed a remarkable transition this Spring. We shifted a program with almost no online instruction to an entirely online format. We made this move in strong headwinds. Our great strength, our faculty of highly accomplished and heavily decorated senior faculty, have taught with chalk on slate in front of live students for decades. Our two assistant professors are teaching new classes and are focused on approaching tenure review. Our teaching faculty had to accommodate multiple classes. Our adjuncts, many of whom have been loyal supporters of our program for years, overworked and underpaid, had their own day jobs, businesses and projects to manage in extremis as we asked them to make this journey with us. Our staff, already short-handed and dealing with all the special circumstances of supporting the nation's premier optics department, provided the technical support, institutional infrastructure and innovation needed to move on line. They did this while serving the members of this, our Industrial Associates program, our recruiting events, and our numerous efforts to provide the career opportunities optics students have come to expect. It does not seem possible. And yet we did it. Amazing.

This Fall, we reopened the University and offered our world-class optics education to students both on campus and remote. As amazing as our transition to totally on-line instruction was, teaching in this new, mixed format has been more impressive still. Our extraordinary efforts have led to MS and undergrad enrollments that are actually up considerably over last year. And as you will hear from me Wednesday, we have jumped ahead in our plans for serving our community of working professionals in their ongoing educations and career development.

Our strength is derived in part from association with our industrial partners. Your direct financial support enables us to do great things for our students. Moreover, the opportunities you provide for our graduates to change the world are the mainstays of our reputation. With this in mind, I want to encourage suggestions from our members for future directions and initiatives you see for potential collaboration, making each other ever better.

We aim for our biannual IA meetings to provide unique opportunities for our members to interact with students and faculty in a special and authentic environment of intellectual exchange and growth. We hope you will be able to take full advantage of these opportunities and help us make IA an ongoing success.

Your participation in our IA program is greatly appreciated and we value your input. Thank you for being with us this Fall!

Meliora,

A handwritten signature in black ink, appearing to read "P. Scott Carney".

P. Scott Carney
Professor and Director, The Institute of Optics

INDUSTRIAL ASSOCIATES

Agenda

INDUSTRIAL ASSOCIATES

The Institute of Optics 2020 Fall Industrial Associates Symposium Wednesday, October 14 through Friday, October 16, 2020

WEDNESDAY, October 14, 2020: 2:00PM – 5:00PM Eastern Time

All held virtually via **REMO**.

2:00 PM – Scott Carney, Professor & Director, Inst Optics
Topic: Welcome and Institute of Optics Update

3:30 PM – Nick Kochan, SPIE Student Chapter
Topic: Welcome and Institute of Optics Update

2:15 PM – Liz Rogan, CEO of OSA and The OSA Foundation
Topic: OSA Update

3:45 PM – Carlos Stroud, Professor of Optics/Physics
Topic: Jewel in the Crown Addendum

2:30 PM – Poster Session
Topic: Welcome and Institute of Optics Update

4:00 PM – Scott Carney, Professor & Director, Inst Optics
Topic: Institute of Optics' Covid-19 Outline, MS Program, Together for Rochester (TFR) Launch

3:15 PM – Networking Break

5:00PM - 6:00PM: Networking Hour (Optional)

THURSDAY, October 15, 2020: 2:00PM – 5:00PM Eastern Time

All held virtually via **REMO**.

2:00 PM – Scott Carney, Professor & Director, Inst Optics
Topic: Welcome and Opening Remarks

3:15 PM – Networking Break

2:15 PM – Dr. Susana Marcos, Professor of Research at the Institute of Optics (CSIC); Director of the Visual Optics and Biophotonics Lab, and Co-Founder of 2EyesVision
Topic: Optical technologies in ophthalmology: from the lab to industry and into the clinic
(~25 minutes + 5 Q&A)

3:30 PM – Graduate Students Research Talks
Featuring outstanding upper level Graduate Students presenting current project updates
(~10 minutes each)

2:45 PM – Master's Students Showcase
Featuring MS students presenting educational background, work experience, and career goals.
Note: They typically expect to graduate in May.
(~2-10 minutes each)

4:30 PM – Prof. Jessica Shaw, Laboratory for Laser Energetics (LLE)
Topic: Current Research Project
(~25 minutes + 5 Q&A)

5:00PM - 6:00PM: Networking Hour (Optional)

FRIDAY, October 16, 2020: 11:00AM – 3:00PM Eastern Time

All held virtually via **REMO**.

11:00 AM – Scott Carney, Professor & Director, Inst Optics
Topic: Welcome and Opening Remarks

12:30 PM – IA Company Introductions (A-Z Order)
Topic: IA company member representative(s) updates on contact info, open positions, interview opportunities
(~1 minute each)

11:15 PM – Curtis Broadbent, Licensing Mgr, UR Ventures
Topic: Technology Transfer & Optics Intellectual Property Showcase Featuring Faculty IP
(~5-10 min each)

1:15 PM – IA Company Showcase (Random Tables Assigned)
Topic: IA company member representative(s) + Luminate cohort companies w/student interaction for Q&A leading to formal interviews
(~90 minutes)

12:15 PM – Networking Break

Please note: IA companies will be in charge of scheduling virtual interviews directly with students. See résumés for contact details.

The Industrial Associates Overview

Since 1929, The Institute of Optics has been providing industry with well-educated and trained B.S., M.S., and Ph.D. graduates. Many of these graduates go on to found important companies or to play significant roles in companies of all sizes. With approximately 3,400 Institute of Optics alumni, there is little doubt The Institute has made, and continues to make, major contributions to this country's Optics industry. But education is only part of the story. The Institute's faculty, staff, and students have a tradition of interacting with companies through research collaborations, consulting arrangements, in professional societies, and via a variety of other informal exchanges of ideas and information. The Industrial Associates ("IA") Program was conceived to provide a formal framework for maintaining and nurturing this historical relationship between industry and The Institute.

Resources are required for all research and educational programs, and income derived from the IA Program plays a critical role in the operation of The Institute of Optics. In addition to covering the costs of two annual meetings, IA Program membership fees are used for important expenditures for which other sources of funds are either insufficient or unavailable. The positive impact on our educational programs of the revenue derived from the IA membership fees is enormous. Two examples are graduate student recruiting and the purchase of specialized laboratory equipment. As most of our students take positions in industry upon graduation, recruiting the best students provides very direct and tangible benefits to companies. Likewise, exposing our students to state-of-the-art laboratory instrumentation is beneficial to industry. It is no exaggeration to say that the high quality of The Institute's graduates would Spring without a strong Industrial Associates Program.

The members of the Industrial Associates Program meet formally twice each year, usually in October and March or April. The format for each meeting is technical, featuring talks by IA member company representatives, guest speakers, faculty, graduate students and undergraduates. Luncheons with faculty, staff, and students, and an evening reception add a social dimension to each meeting. After our symposium, company representatives have a day to interview students, meet with faculty, visit research centers on the campus, or structure their day with the assistance of staff. Strategic and Select members may choose two days.

In 2014, on the 40th anniversary of the IA Program, the Director's Advisory Council (DAC) Meeting was introduced. These meetings are conducted in a format similar to a company's Board of Directors meeting, and they provide a formal forum for in depth discussion of The Institute's programs with its Director, faculty and the representatives of the strategic level Industrial Associates member companies. The first Council meeting in the Fall of 2014 was primarily a review of the restructuring of the IA Program membership levels and benefits. Each DAC meeting since has provided valuable review and planning.

At our Fall 2016 Symposium, we premiered a Company Connection Showcase following input from the DAC. It was such a success that for Spring 2017 we incorporated the Company Connection Showcase in a larger venue, which we continue to feature. Our DAC members provide crucial help with ongoing ABET accreditation requirements as an external Advisory Board as they did again at the Spring 2018 and 2019 meetings. Scott Carney initiated breakout focus sessions at our Fall 2017 DAC meeting. This format engaged members in lively discussion and generated further avenues for growth. Several DAC-generated initiatives in co-ops, campus engagement, and marketing are making an impact at The Institute. This IA meeting you will see a videographer capturing some key moments and testimonials from our members and our students – another DAC-driven idea.

Finally, we are pleased to utilize Handshake as our career services platform for organizing interviews. An overview was shared during the Spring 2018 symposium along with demos. Please let us know if any additional assistance is required.

Meliora!

IA Members & Levels

Industrial Associate members are listed alphabetically within membership levels: Strategic, Society & Trade Associations, Select, Standard and Associate.

STRATEGIC IA MEMBERS



ASML
www.asml.com



Corning Incorporated
www.corning.com



Danbury Mission Technologies
(formerly Collins Aerospace)
www.dmtllc.org



Edmund Optics
www.edmundoptics.com



L3Harris Technologies (NY)
www.l3harris.com



Newport Corp | MKS Instruments
www.newport.com | www.mksinst.com



OptiPro Systems, Inc.
www.optipro.com/index.html



Synopsys
www.synopsys.com



Zemax
www.zemax.com



Zygo
www.zygo.com

INDUSTRIAL ASSOCIATES

SOCIETY, TRADE, & ACADEMIC ASSOCIATION IA MEMBERS



Monroe Community College
STATE UNIVERSITY OF NEW YORK

Monroe Community College
www.monroecc.edu



New York Photonics
www.newyorkphotonics.org
www.rrpc-ny.org



NextCorps | Luminate
www.nextcorps.org
www.luminate.org



The Optical Society
www.osa.org



The International Society for Optics and Photonics
www.spie.org

SELECT IA MEMBERS



Air Force Research Lab (AFRL)
www.wpafb.af.mil/afrl/



Apple
www.apple.com

SELECT IA MEMBERS (Continued)



II-VI Inc.
www.ii-vi.com

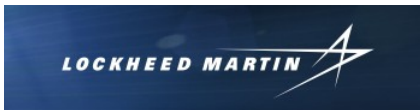


L3HARRIS

L3Harris Technologies (CA)
www.l3harris.com



Lawrence Livermore National Lab
www.llnl.gov



Lockheed Martin
 (Missile & Fire Control and Space Systems)
www.lockheedmartin.com



MIT Lincoln Laboratory
www.ll.mit.edu



Microsoft
www.microsoft.com



Raytheon
www.raytheon.com



Snap Inc.
www.snap.com



Sunny Optical Technology Group Co., Ltd.
www.sunnyoptical.com



Viavi Solutions
www.sunnyoptical.com

STANDARD IA MEMBERS



Avo Photonics

Avo Photonics
avophotonics.com

facebook
 Reality Labs

Facebook Reality Labs
www.facebook.com/careers/areas-of-work/facebookrealitylabs



JANOS Technology
www.janostech.com



JENOPTIK Optical Systems
www.jenoptik-inc.com



Navitar
www.navitar.com



Optikos
www.optikos.com



OPTIMAX Systems, Inc.
www.optimaxsl.com



Quality Vision International, Inc.
www.qvii.com



Safran | Optics 1
www.optics1.com



SONY Electronics Inc.
www.sony.com

INDUSTRIAL ASSOCIATES

ASSOCIATE IA MEMBERS



Bristol Instruments, Incorporated
www.bristol-inst.com



Gray Optics
www.grayoptics.com



Johns Hopkins Applied Physics Lab
www.jhuapl.edu



OptoSigma Corporation
www.america.optosigma.com/



Plymouth Grating Laboratory
www.plymouthgrating.com



Spica Technologies
www.toptica.com



TOPTICA Photonics, Inc.
www.toptica.com



Wavefront Research, Inc.
www.wavefrontresearch.com

Guest Speaker



Elizabeth (Liz) Rogan
CEO, The Optical Society

OSA Update

From the political arena to Hollywood to the sciences, gender has become a predominant focus of thought leaders worldwide, but change has been incremental. Scientific societies have a responsibility to improve the participation of women in STEM fields like optics and photonics. The Optical Society along with its sister societies are making an impact by focusing on the participation of women in our programs and honors. Liz Rogan will share insights regarding OSA and its partners' initiatives.

Liz Rogan has been at OSA for more than 20 years in positions initially focused on operations, the last position being Chief Operating Officer. Beginning in 2002, she was honored with the role of Chief Executive Officer of OSA and The OSA Foundation. As OSA CEO, she reports to the Board of Directors and is responsible for the oversight, strategic direction and fiscal soundness of programs and activities of this \$40M, 150+ staff society. The OSA Foundation has a \$10M+ reserve and activities include fundraising and program development. In 2016, Chad Stark became the Foundation Executive Director. In addition, Liz is the society's spokesperson and advocate to a wide range of OSA constituencies, including its members, volunteers, co-sponsors and customers, throughout the global optics community. Rogan holds a B.A. in accounting from the University of Connecticut, is a CPA, and is an alumnus of an executive business program from the Wharton School at the University of Pennsylvania

Guest Speaker



Nicholas Kochan, PhD

***Candidate in Optics and
President, SPIE—Student Chapter***

Industry, IA Members, and Student Connections

Nicholas Kochan is currently a PhD student working in the Moore Group at the University of Rochester. His research focuses on novel optical design and metrology methods, with a focus on gradient index optics. Kochan is currently the president of the SPIE student chapter at the University of Rochester, supporting and representing chapter efforts to create conversations in optics and participate in community outreach. In Spring 2019 he led a group of students in the creation of the first optics outreach event at the Rochester Lilac Festival, the largest free festival in Rochester. Kochan holds the BS in Optics and a Minor in Mathematics from the University of Rochester.

Guest Speaker



Carlos R. Stroud, Jr.

Professor of Optics

Professor of Physics

PhD, Washington University, 1969
312 Wilmot Building | (585) 275-2598

stroud@optics.rochester.edu

http://www.hajim.rochester.edu/optics/people/faculty/stroud_carlos/index.html

Carlos R. Stroud, Jr., has an AB degree in physics and mathematics from Centre College, and a PhD degree (1969) in physics from Washington University. He is currently professor of optics and professor of physics, and director of the Center for Quantum Information. He is a fellow of both the Optical Society of America and the American Physical Society. He has lectured in more than 75 different universities, held several lectureships, and since 1998 is a [distinguished traveling lecturer](#) for the Division of Laser Science of the American Physical Society.

Recent Publications

["A Jewel in the Crown"](#) - A compilation of essays in chronicling the first seventy-five years of the history of the Institute of Optics. For a list of Dr. Stroud's scientific publications, click [here](#).

Research Overview

His research interests range over most of theoretical and experimental quantum optics. Among the research accomplishments of his group are the first observation of the modification of the spectrum of spontaneous emission by a resonant laser beam, and early observations of various phenomena in three-level atomic systems driven simultaneously by two resonant laser fields including the Autler-Townes effect and coherent population trapping. More recently his group made the first observation of a spatially localized electron wave packet within an atom, and is working on production of quantum states of light and on quantum information.

Guest Speaker



Dr. Susana Marcos

*M.Sc. (1992) and Ph.D. (1996) Physics University of Salamanca
Postdoctoral Researcher (1997-2000) Harvard University with a
Fullbright and Human Frontiers Science Scholarships*

*Professor of Research at the Institute of Optics (CSIC); Director of the
Visual Optics and Biophotonics Lab, and Co-Founder of 2EyesVision.*

Instituto de Optica, CSIC, Serrano 121, Madrid 28006, Spain

Salamanca, SPAIN | September 25, 1970

***Optical technologies in ophthalmology: from the lab
to industry and into the clinic***

Susana Marcos is a MsC (1992) and PhD (1996) in Physics from the University of Salamanca and was a postdoctoral researcher (1997-2000) at Harvard University, with a Fulbright and Human Frontiers Science scholarships. She has been Director of the Institute of Optics, CSIC (2008-2012) and Director at Large of the Optical Society of America. She is currently a Professor of Research and Director of the Laboratory of Visual and Biophotonics Optics at the Institute of Optics, CSIC, where she supervises a multidisciplinary (physicists, biomedical, telecommunications, materials, mechanical engineers, chemists and vision scientists) international team of >25 members. Susana Marcos is a pioneer in the development of new techniques for the evaluation of the eye, including retinal imaging instruments, aberrometers, adaptive optics, anterior segment imaging of the eye and intraocular lens designs.

Several of these technologies (Quicksee™, SimVis™ and Isofocal IOL) have been marketed and contributed to improving the diagnosis and treatment of thousands of patients. She has published more than 180 highly cited research articles, is the inventor of 20 patent families (14 licensed to the industry), is co-founder of the Plenoptika and 2EyesVision spin-offs, has directed 18 doctoral theses and presented more than 200 talks at international conferences and conferences. Public and private projects led by Susana Marcos in the last ten years have exceeded 10 million euros in funding (2 ERC Advanced Grant, H2020-ICT Innovation Action, 3 ERC Proof of Concept Grants, 2 ITN-Marie Skłodowska-Curie Actions and dozens of contracts with international companies in the ophthalmic sector). She has served in various positions at the Optical Society of America, Spanish Society of Optics, Association for Research in Vision and Ophthalmology, MIT M + Vision Consortium and as editor in Vision Research, Biomedical Optics Express, Optica, among others.

Susana is currently the President of the Technical Scientific Committee of the National Research Agency, and is a member of the Scientific Advisory Council of the Gadea Science Foundation and the CSIC General Foundation, Alcon Research Institute, Advisory Council of the Generalitat of Valencia, and a Member Publication Council of the Optical Society. Recognitions include the Adolph Lomb Medal (Optical Society of America), ICO Prize (International Commission for Optics), Doctor Honoris Causa by the Ukraine Academy of Science and Technology, OSA Fellow, EOS Fellow, ARVO Fellow, Alcon Research Institute Award, Borish Scholar Award (Indiana University), Physics, Innovation and Technology Award (Royal Spanish Society of Physics-BBVA Foundation), Honor Plate of the Spanish Association of Scientists, King Jaime I Award, Ramón y Cajal Medal (Royal Academy of Sciences), and National Research Award in Engineering (Government of Spain).

Guest Speaker



Dr. Jessica Shaw

LLE—Laboratory for Laser Energetics

Email: jessica.shaw@rochester.edu

Spatiotemporal Pulse Shaping

Jessica Shaw is a scientist in the Plasma and Ultrafast Physics Group at the University of Rochester's Laboratory for Laser Energetics. Her research focuses on Raman Amplification of laser pulses and laser-plasma accelerators, with an emphasis on applying spatiotemporal pulse shaping to new laser-plasma accelerator concepts.

Guest Speaker



Dr. Curtis J. Broadbent

*Licensing Manager, UR Ventures
Assistant Professor Part-Time
Rochester Theory Center, Center for Coherence and Quantum Optics, and
Department of Physics and Astronomy at The University of Rochester*

Email: curtis.broadbent@rochester.edu

Technology Transfer & Optics Intellectual Property Showcase Featuring Faculty IP

Curtis Broadbent is an assistant professor (part-time) in the Department of Physics and Astronomy at the University of Rochester. He was most recently a post-doctoral research associate in Joe Eberly's research group in theoretical quantum optics (Eberly Research Group), also at the University of Rochester. He is currently investigating non-Markovian effects in open quantum systems, measures of genuinely multipartite entanglement, entropic steering inequalities, quantum state discrimination, long-distance quantum key distribution, and weak measurements.

Curtis graduated in August of 2010 from John Howell's experimental quantum optics research group (Howell Research Group) in the Department of Physics and Astronomy. While in John's group, he worked on projects related to quantum image discrimination, slow light with entangled photons and pseudo-thermal light, and applications of bipartite photonic entanglement to quantum cryptography. Additionally, he collaborated with Andrew Jordan's research group (Jordan Research Group) on an experimental and theoretical investigation into non-local weak-value measurements.

Curtis completed his undergraduate degree at Brigham Young University with a B.S. in Physics in 2003. At Brigham Young University, he worked with Scott Glasgow and Justin Peatross on dynamical notions of energy loss and irreversibility in phenomenologically modeled dielectric/field systems.

Poster Session

Each Industrial Associates meeting features a kaleidoscope of posters providing a seasonal glimpse into the research projects of The Institute of Optics. Members and attendees will find posters on display in the *Wilson Commons | Bridge Lounge* during the lunch break.

Arnab Barman Ray
Xue Dong
Ruiting Huang
Arjun Iyer

David Lippman
Nick Kochan
MS Co-op Information Table

Graduate Students Showcase & Research Talks

This part of the program features presentations by candidates for Master's and Ph.D. Degrees and will speak to their experience, research/abstract topics, and other highlights.

MS Showcase

MS Students seeking internships & post-graduation employment

Saniat Ahmed Choudhury

Education Highlights

- MS in Optics (Dec 2020), MS in EE, BS in EE, Experienced with Lumerical's FDTD, DEVICE, COMSOL, Lasers, Material processing

Work Experience

- Researcher under Dr. John Marciante, worked with high-power ultrafast lasers and material surface processing



Objectives

- To work in a research-driven optics research position
- To learn and face challenges in the industry head-on.

MS Showcase (Continued)

MS Students seeking internships & post-graduation employment

Jiwon Jung

Education Highlights

- University of Rochester
- B.S. Optical Engineering, May 2020
- M.S. Optics, Expected May 2021

Work Experience

- **Apple** [June-Aug 2020]: sequential and non-sequential raytracing (Zemax) and optical analysis of a display test station
- **General Atomics Electromagnetic Systems** [June-Aug 2018]: analyzed various imaging systems and performance through Zemax and lab set-ups
- **Advanced Physiological Optics Lab (Yoon Lab)** [Feb 2019 – Feb 2020]: studied Purkinje reflections for applications in binocular eye tracking. Experience with optical assembly, components, and alignment.



Objectives

- Seeking full-time position following May 2021 graduation
- Primary Interests: optical design, imaging systems, R&D

Alen Philip

Education Highlights

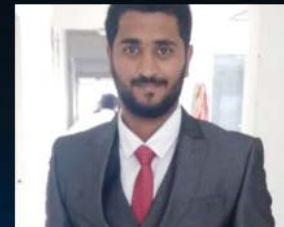
- Pursuing master's degree from the Institute of Optics
- BS-MS in Physics from Indian Institute of Science Education and Research, Bhopal

Work Experience

- MS thesis project in 3D Visualization of Folded Optical Systems in AR/VR (Ongoing)
- MS thesis project in Study of Nitrogen-vacancy Defects in Diamond
- Material science internships

Technical Strengths

- Proficient in multiple programming languages and data handling software tools
- Proficient in CodeV



Objectives

- Seeking a full-time position post graduation (May 2021)

Relevant Courses

Lens Design, Freeform Optics, Optical Fabrication and Testing, Integrated Photonics, Wave Optics and Imaging, Quantum Engineering, Quantum Information Theory, Condensed Matter Physics, Numerical Methods and Programming, Electrodynamics

*MS Showcase (Continued)***MS Students seeking internships & post-graduation employment**

Huaze Xie

Education Highlights

Current: University of Rochester, **MS in Optics**

Undergraduate: Taizhou Institute of Sciences & Technology, NUST

Major: Electric Engineering and Automation

Work Experience

Internship: Optical design for lens of CCTV via optical design software Zemax in R&D department

Phenix optic Co.,Ltd in China Hangzhou(05/15/2020-now)

Intern: Learned the structure of molds and the design and assemblage of precision molding equipments

Daeho Technology Co.,Ltd in Korea(01/13/2018-01/25/2018)



Objectives

- Designing lens / Fabrication for Optic Communication chips
- **Optical design** area for lens used for cars or CCTV or factory control system. / Some **Optical communication** instruments' manufacturer like chips.

MS Research Presentation

Topic: Phase shifting interferometry of refractive index microstructures in hydrogels

Yiyang Wu

Education Highlights

- MS 2021
- Lens design, metrology, illumination, coating, color, waveguide

Work Experience

- Optical engineer intern on AR glass at Kura Tech.
- Researcher on phase shifting interferometry of refractive index microstructure by femtosecond laser micromachining at UR



Objectives

- A full-time position needs a competitive optics person

MS Showcase (Continued)

MS Co-op Students seeking Co-op starting Winter/Spring 2021



Alex Davie

Emma Foley

efoley4@ur.rochester.edu


Education Highlights

University of Rochester

- **M.S. in Optics – Expected May '22**
 - Specializing in optical design, fabrication, and testing
- **B.S. in Biomedical Engineering, High Honors – May '20**
 - Concentration in medical optics

Work Experience

- **Collins Aerospace | Optical Engineering Intern; Fall Co-Op** (Jun '20 – Current)
 - Optical design/analysis - deep space optics
 - Stray light test device design, assembly, alignment, and operation
- **Clerio Vision, Inc | R&D Engineering Intern** (Jun – Aug '19)
 - Femtosecond laser system alignment and optimization
 - Precision metrology, tissue handling, experimental test design
- **Center for Visual Science, Hunter Lab | Research Assistant** (Dec '17 – May '19)
 - Advanced biomedical imaging (two-photon adaptive optics fluorescence lifetime ophthalmoscopy)
 - Image processing, statistical analysis, vision science

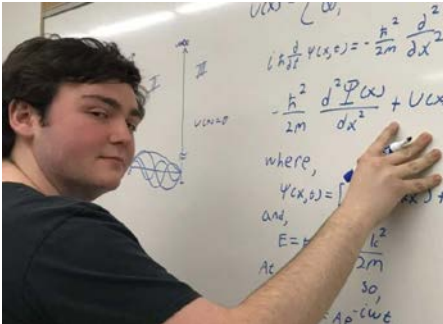


Objectives

- Seeking careers in optical design, fabrication, or testing in any field of optics
- Open to Co-op positions starting January 2021

MS Showcase (Continued)

MS Co-op Students seeking Co-op starting Winter/Spring 2021



John Gilmore

Ashley Pruett

Education Highlights

B.S. Physics at Missouri S&T

Minor in Mathematics

M.S. Optics at University of Rochester



Work Experience

- Measured the noise floor of a Michaelson Interferometer

Objectives

- I am open to a Co-Op of any kind

MS Showcase (Continued)

MS Co-op Students seeking Co-op starting Winter/Spring 2021

Kaibo Zhang

Education Highlights

- Master of Optics
- Bachelor of Electrical and Computer Engineering

Work Experience

- Research on the simulation of electromagnetism and data analysis using ANSYS and MATLAB

Objectives

Seeking a co-op position within the field of optical communication



PhD Research Talks



Nick Takaki

Advisor: Prof. Jannick Rolland-Thompson

Freeform Optics: Design-for-manufacture via orthogonal polynomials



Ruiting Huang

Advisor: Prof. Wayne Knox

Enhanced efficacy in refractive index modifications of rabbit eye globe ex-vivo with low repetition rate blue femtosecond laser pulses



Tianyi Yang

Advisor: Prof. Duncan Moore

Freeform GRIN: new variables in GRIN design

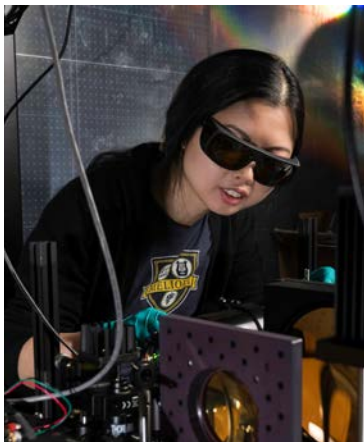
PhD Research Talks (Continued)



Ashan Ariyawansa Galabada Dewage

Advisor: Prof. Thomas Brown

Amplitude and phase sorting of orbital angular momentum modes at low light levels



Di Xu

Advisor: Prof. Jannick Rolland

Cascade optical coherence tomography (C-OCT) towards freeform metrology

The Institute of Optics Overview

It is the fate of higher education to be in a state of endless evolution. Prior to approximately 1850, colleges in the U.S. focused for the most part on the classical curriculum: ancient languages, mathematics, natural philosophy, chemistry, and moral philosophy. Over time, more specialized and practical degree programs such as business, education, science, and engineering were developed to meet the needs of a changing world. In science, the University of Rochester was an early innovator, being one of the first institutions in the U.S. to form science departments and to award the degree Bachelor of Science. One particularly prominent Rochester innovation was the founding in 1929 of The Institute of Applied Optics, the name of which was shortened in 1939 to The Institute of Optics. Now, more than six decades later, the boldness and wisdom of that move were never clearer. Who could have foreseen in 1929, more than thirty years before the demonstration of the first laser and more than forty years before the demonstration of the low-loss optical fiber, the rich and vibrant field that optical science and engineering would become!

Today, The Institute of Optics is the preeminent program of higher education in Optics in the United States. The first such program in the U.S., The Institute granted the nation's first B.S. degree in Optics to Arthur Ingalls in 1932, the first M.S. degree in Optics to Perley Nutting, Jr. in 1938, and the first Ph.D. in Optics to Wayne McKusick in 1940. Originally a stand-alone academic unit of the University of Rochester, The Institute is now an internationally recognized academic department within the university's Hajim School of Engineering and Applied Science.

Former Directors include several OSA Presidents, two university Provosts and a Director of the White House Office of Technology Policy. Other faculty and former faculty occupy similar prominent positions in professional societies, industry and the optics community in general.

The Institute of Optics features a distinguished interdisciplinary faculty made up of physicists, applied physicists, materials scientists and engineers, and a student body consisting of 170+ undergraduate majors pursuing the B.S. degree in Optics and 125+ graduate students pursuing the M.S. or Ph.D. in Optics. The early history of The Institute of Optics is graced with the names of such prominent Rochesterians as George Eastman, Edward Bausch, Rudolf and Hilda Kingslake, and Brian O'Brien. In later years, such men as Robert Hopkins and Brian Thompson helped advance The Institute's reputation.

The size of The Institute's faculty currently stands at 18 professors with full-time appointments; 13 professors with secondary Optics appointments from diverse departments such as imaging sciences, physics, dermatology, electrical and computer engineering, Laboratory for Laser Energetics, and chemistry; 11 adjunct professors and lecturers, 2 senior scientists; 20+ professional personnel, including research scientists, and post-doctoral scientists, etc.; and 8 full time staff members.

Optics is defined very broadly at Rochester, ensuring that students can select from a broad range of research fields. The faculty maintain research programs in laser physics and engineering, optical system design, optical detector, semiconductor lasers, electronic imaging, diffractive optics, fiber optics, nonlinear optics, quantum optics, optical materials, guided-wave optics and optoelectronics, theoretical foundations of optics, ultrafast phenomena, gradient-index optics, the precision manufacturing of optical elements, applications of holography, wave propagation, medical optics, image processing and wave front sensing, high-intensity laser-matter interactions, nano-optics, and biomedical optical systems, optical instrumentation, and system engineering.

INDUSTRIAL ASSOCIATES

After completing the degree, Ph.D. graduates of The Institute of Optics take positions in large and small companies, on the faculties of research universities and liberal arts colleges, and in federal laboratories.

At Rochester, The Institute of Optics strikes a balance between engineering and basic science. In teaching and research, the Optics program spans the continuum between the fundamental and the applied. Students intending to do very basic research are nevertheless required to understand such practical matters as radiometry and aberrations in lenses. Students intending to do more applied research are likewise required to take courses of a fundamental nature. The objective is to produce graduates who not only are broadly educated in the field of optics, but also respect the importance of the full spectrum of subfields.

The most serious issues facing graduate education in optics today are no different than those facing graduate education in science and engineering in general. One serious challenge is to maintain the willingness of young men and women to pursue technical graduate degrees of any sort. Another is to make sure that our citizens understand the importance of research in modern society. As a field, optical science and engineering can hold its own. It is an interesting, challenging, relevant, and intimate field, one in which it is still possible to do important work in a setting of modest size. Communicating to the general public that its future standard of living, and that of its children, depends in a very real way on today's investments in research is as important now as it has ever been. If that challenge can be met, then the future of optical science and engineering will be a bright one.

Undergraduate Course of Study

The Institute of Optics is a distinct academic department, originally established in 1929 for undergraduate education in optical science and engineering. While we at the Institute incorporate much more research and graduate education into our activities than was the case in the early 20th century, undergraduate education remains a central focus. Because of the substantial overlap between optics, mathematics, and physics, many students opt for either a minor or a double major in one of the other disciplines. By choosing appropriate technical electives, and a design project, students can complete a degree in optical engineering. Students with an interest in fundamental applied optics may opt for a senior thesis and qualify for a degree in optics.

The basic elements of this demanding degree are outlined below. The required optics courses are carefully designed to span the most significant areas in classical and modern optics. In addition, three technical electives are required, which allow students to tackle a specialty such as lens design, electron microscopy, thin films, or any course selected from the MS curriculum. Undergraduates are encouraged to gain technical experience through paid laboratory assistantships, summer research (e.g. REU) programs, industrial employment and internships, and senior-level honors research.

With a history of more than 75 years and more than three thousand graduates, the optics B.S. program is well-recognized by the optics industry and is well-established as a high-quality undergraduate department. The career choices of our undergraduates include advanced degree work leading to MS-level optical design and engineering, doctoral research leading to teaching, research, and corporate leadership, technical support and marketing, patent law, business management and a host of entrepreneurial activity.

The B.S. degree in Optics (OPT) or Optical Engineering (OE) consists of a minimum of 130 credit hours of coursework. Required courses are noted with “(req.)” in the table on the next page. Please note: The first three years are virtually identical for students pursuing either degree (all courses carry 4 credits unless otherwise indicated). The course requirements are applicable for the Class of 2021. Changes will affect students in the Class of 2020 and beyond as described on the website.

A description of all Optics courses may be found on the Optics webpage:

<http://www.optics.rochester.edu/undergraduate/courses.html>

Undergraduate Course of Study – Class of 2020 and Beyond

Year	Fall Courses	Spring Courses
Year 1: Freshman ~30 Credits	MTH 161 Calculus I CHM 131 Chemistry for Engineers WRT 105* College Writing or Cluster Course #1 OPT 101 Introduction to Optics (<i>recommended</i>)	MTH 162 Calculus II PHY 121 Mechanics WRT 105* College Writing or Cluster Course #1 OPT 211 MATLAB for Optics Majors I (2cr.)
Year 2: Sophomore ~36 Credits	OPT 241 Geometrical Optics OPT 201 Geometrical Optics Lab (2cr.) MTH 164 Multidimensional Calculus PHY 122 Electricity and Magnetism Cluster course or tech elective	OPT 261 Interference & Diffraction OPT 202 Physical Optics Lab (2cr.) OPT 287 Math Methods for Optics and Physics PHY 123 Waves and Modern Physics Cluster course or tech elective
Year 3: Junior ~32 Credits	OPT 242 Aberrations & Testing OPT 203 Aberrations & Testing Lab (2 cr.) OPT 262 Electromagnetic Theory MTH 165 Linear Algebra w/ Diff. Equations OPT 212 MATLAB for Optics Majors II (2cr.)	OPT 225 Sources and Detectors OPT 204 Sources/Detectors Lab (2cr.) ECE 210** Circuits for Engineers WRT 273 Engineering: Communicating your Professional Identity OPT 223 Quantum Theory
Year 4: Senior ~32 Credits	B.S. in Optics (OPT) OPT 320 Senior Thesis I Cluster, Tech, or free elective x 3 B.S. in Optics (OE) OPT 310 Senior Design I Cluster, tech, or free elective x 3	B.S. in Optics (OPT) OPT 321 Senior Thesis II Cluster, tech, or free elective x 3 B.S. in Optics (OE) OPT 311 Senior Design II Cluster, tech, or free elective x 3

*Students not enrolled in **WRT 105** in the Fall should take cluster course #1. Students enrolled in **WRT 105** in the Fall should take cluster course #1 in the Spring.

****Note:** Students may elect to take 16 credits during Freshman Spring semester (16 credit minimum is required to be eligible for Dean's List).

Master's Program Course of Study

<http://www.optics.rochester.edu/graduate/ms.html#standard>

There are three basic ways to earn the M.S. degree. The first involves completing six graduate-level Optics courses and a thesis, a program that typically requires two years to complete. The second requires completing eight courses and writing a paper based on literature research, a program that can be completed in a single year. The third, also a non-thesis option, is an M.S. Co-Op program, in which a one-year work-period in industry is inserted between the two required semesters of coursework, making it a two-year program overall. Between 1988 and 2020, The Institute placed 91 M.S. students in one-year Co-Op slots in 23 companies.

A typical set of courses taken by students enrolled in either of the non-thesis M.S. options appears in the table below. Four of the eight courses are required (req.), the remaining four are electives. Examples of alternative choices are Optical Thin Film Coatings, Guided-Wave Optics, Biomedical Optics, and Lens Design, among others. Another version of the non-thesis route allows the M.S. student more opportunity to concentrate in a specific sub-field of Optics.

Interest in the M.S. degree program remains high among both students and employers. The typical M.S. applicant holds a B.S. degree in Physics, Electrical Engineering, or Optics, but it is not uncommon for those holding M.S. degrees in Physics or Electrical Engineering, or even doctorates in allied fields, to apply for admission to the Optics M.S. program. In recent years, The Institute has admitted M.S. applicants holding Ph.D.'s in Physics from MIT, Stanford, and Purdue, and one with a Ph.D. in Physical Chemistry from Johns Hopkins. No matter what a student's educational background is, the M.S. Degree in Optics is a professional credential that identifies the graduate as a bona fide optical engineer.

Fall Courses	Spring Courses
Wave Optics and Imaging (req.)	Detection of Optical Radiation (req.)
Foundations of Modern Optics (req.)	Optics Laboratory (req.) or Elective
Optics Laboratory (req.) or Elective	Elective
Elective	Elective

Optics is defined very broadly at Rochester, ensuring that students can select from a broad range of research fields. The faculty maintain research programs in laser physics and engineering, optical system design, optical detector, semiconductor lasers, electronic imaging, diffractive optics, fiber optics, nonlinear optics, quantum optics, optical materials, guided-wave optics and optoelectronics, theoretical foundations of optics, ultrafast phenomena, gradient-index optics, the precision manufacturing of optical elements, applications of holography, wave propagation, medical optics, image processing and wave front sensing, high-intensity laser-matter interactions, nano-optics, and biomedical optical systems, optical instrumentation, and system engineering.

Doctoral Program Course of Study

<http://www.optics.rochester.edu/graduate/phd.html>

The Institute of Optics has separate admissions processes for the M.S. and Ph.D. programs; admission to the M.S. program does not confer admission to the Ph.D. program, nor is the M.S. required to earn the Ph.D. For the last fifteen years, The Institute has enrolled approximately 16 Ph.D. students each year from a pool of applicants that numbers in the hundreds. In any given year 55 – 65% of the students admitted are U.S. citizens.

Ph.D. students take a common set of seven core courses, plus one elective in their first year (except in cases where a student's previous coursework argues for a change).

Year 1: Fall Courses	Year 1: Spring Courses
Physical Optics (Fourier Optics) (req.)	Electromagnetic Theory (req.)
Geometrical Optics (req.)	Instrumental Optics (req.)
Radiation and Detectors (req.)	Quantum Mechanics (req.)
Mathematical Methods (req.)	Fundamentals of Lasers

Second-year Ph.D. students combine more specialized courses that aim to prepare them for research with two semesters of service as teaching assistants (mandatory). Any remaining courses are taken in the third year, but most of the third year and beyond is devoted to research. The time required to complete the Ph.D. depends on the student's interaction with his or her adviser and thesis committee. With their guidance, the student is assured of steady progress and beneficial advice.

Year 2/3: Fall Courses	Year 2/3: Spring Courses
Quantum Electronics I, II Nano-Optics	Lens Design Medical Imaging
Advanced Lens Design Optical	Optical Properties of Materials
Communications Optical Fabrication & Testing Biomedical Optics	Principles of Eye Design
Electronic Imaging Systems	Quantum Optics
Waveguide Optoelectronic Devices	Optics Laboratory Advanced
Optical Interference Coatings	Optical Coatings Polarization
Nonlinear Optics	Technical Entrepreneurship

Doctoral Program Course of Study (Cont'd)

Optics is defined very broadly at Rochester, ensuring that students can select from a broad range of research fields. The faculty maintain research programs in laser physics and engineering, optical system design, optical detector, semiconductor lasers, electronic imaging, diffractive optics, fiber optics, nonlinear optics, quantum optics, optical materials, guided-wave optics and optoelectronics, theoretical foundations of optics, ultrafast phenomena, gradient-index optics, the precision manufacturing of optical elements, applications of holography, wave propagation, medical optics, image processing and wave front sensing, high-intensity laser-matter interactions, nano-optics, and biomedical optical systems, optical instrumentation, and system engineering.

After completing the degree, Ph.D. graduates of The Institute of Optics take positions in large and small companies, on the faculties of research universities and liberal arts colleges, and in federal laboratories.

At Rochester, The Institute of Optics strikes a balance between engineering and basic science. In teaching and research, the Optics program spans the continuum between the fundamental and the applied. Students intending to do very basic research are nevertheless required to understand such practical matters as radiometry and aberrations in lenses. Students intending to do more applied research are likewise required to take courses of a fundamental nature. The objective is to produce graduates who not only are broadly educated in the field of optics, but also respect the importance of the full spectrum of subfields.

The most serious issues facing graduate education in optics today are no different than those facing graduate education in science and engineering in general. One serious challenge is to maintain the willingness of young men and women to pursue technical graduate degrees of any sort. Another is to make sure that our citizens understand the importance of research in modern society. As a field, optical science and engineering can hold its own. It is an interesting, challenging, relevant, and intimate field, one in which it is still possible to do important work in a setting of modest size. Communicating to the general public that its future standard of living, and that of its children, depends in a very real way on today's investments in research is as important now as it has ever been. If that challenge can be met, then the future of optical science and engineering will be a bright one.

The Institute of Optics Directory

Faculty

The subsequent pages list each faculty member alphabetically with his or her contact information and website (as available). **Click on name for short biography and research overview / abstract.**



[Agrawal, Govind P.](#)

James C. Wyant Professor of Optics

Professor of Physics

Senior Scientist, LLE

gpa@optics.rochester.edu | (585) 275-4846

515 Goergen Hall

[Website](#)

Interests: Fiber Optics; Lasers; Optical Communications



[Alonso, Miguel A.](#)

Professor of Optics

alonso@optics.rochester.edu | (585) 275-7227

213 Wilmot Building

[Website](#)

Interests: Mathematical Models of Wave Propagation



[Bentley, Julie](#)

Associate Professor of Optics

bentley@optics.rochester.edu | (585) 273-1687

407 Goergen Hall

Interests: Optical Design; Engineering



[Berger, Andrew J.](#)

Professor of Optics

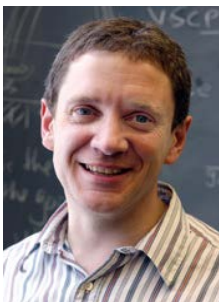
Associate Professor of Biomedical Engineering

ajberger@optics.rochester.edu | (585) 273-4724

405 Goergen Hall

[Website](#)

Interests: Biomedical Optics; Optics Education



Bigelow, Nicholas P.

Lee A. DuBridge Professor of Physics

Professor of Optics

nbig@lle.rochester.edu | (585) 275-8549

312 Bausch & Lomb Building

[Website](#)

Interests: Quantum Optics; Quantum Physics



Boyd, Robert

Professor of Optics

Professor of Physics

boyd@optics.rochester.edu | (585) 275-2329

308 Wilmot Building

[Website](#)

Interests: Nonlinear Optics



Bromage, Jake

Associate Professor of Optics

Senior Scientist and Group Leader, Laser Technology Development, LLE

jbrom@lle.rochester.edu | (585) 273-5105

270A LLE—Laboratory for Laser Energetics

Interests: Ultrafast and ultra-intense lasers, optical parametric amplification, and laser diagnostics



Brown, Thomas G.

Professor of Optics

brown@optics.rochester.edu | (585) 275-7816

516 Goergen Hall

Interests: Optoelectronics



Cardenas, Jaime

Assistant Professor of Optics

jaime.cardenas@rochester.edu | (585) 275-7320

226 Wilmot Building

[Website](#)

Interests: Nanophotonics; Integrated Photonics; Biophotonics; Lasers; Nonlinear Photonics



Carney, Scott

Professor of Optics

Director of the Institute of Optics

scott.carney@rochester.edu | (585) 274-0113

113 Wilmot Building

Interests: Computed Imaging; Spectroscopy; Coherence Theory



Eberly, Joseph H.

Andrew Carnegie Professor of Physics

Professor of Optics

eberly@pas.rochester.edu | (585) 275-4351

321 Bausch & Lomb Building

Interests: Quantum Optics



Fienup, James R.

Robert E. Hopkins Professor of Optics

Professor of Electrical and Computer Engineering

Professor in the Center for Visual Science

fienup@optics.rochester.edu | (585) 275-8009

410 Wilmot Building

[Website](#)

Interests: Image Reconstruction; Wavefront Sensing



Foster, Thomas

Professor of Imaging Sciences

Professor of Optics

Professor of Physics

Professor of Biomedical Engineering

thomas.foster@rochester.edu | (585) 275-1347

3-5333 Medical Center

[Website](#)

Interests: Medical Optics; Photodynamic Therapy



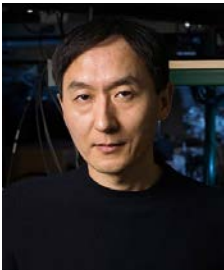
George, Nicholas

Emeritus Professor of Optics

nicholas.george@rochester.edu

[Website](#)

Interests: Physical Optics; Imaging



Guo, Chunlei

Professor of Optics

guo@optics.rochester.edu | (585) 275-2134

419 Wilmot Building

[Website](#)

Interests: Laser-Matter Interactions; Ultrafast Phenomena; Surface Functionalization; Atomic & Molecular Physics



Hunter, Jennifer

Assistant Professor, Department of Ophthalmology

Assistant Professor, Department of Biomedical Engineering

Assistant Professor, Center for Visual Science A&S

Assistant Professor, The Institute of Optics

jhunter@UR.Rochester.edu | (585) 273-4935

G4111 School of Medicine and Dentistry

[Website](#)

Interests: Retinal damage; Retinal imaging



Huxlin, Krystel

James V. Aquavella, MD Professorship in Ophthalmology

Director of Research, Department of Ophthalmology

Professor of Ophthalmology

Professor of Brain/Cognitive Sciences

Professor of Visual Science

Professor of Neuroscience

Professor of Optics

khuxlin@ur.rochester.edu | (585) 275-5495

G3186 School of Medicine and Dentistry

[Website](#)

Interests: Physiological Optics; Laser Vision Correction; Visual Neuroscience and Perception; Clinical Applications



Knox, Wayne H.

Professor of Optics
Professor of Physics
Professor of Visual Sciences
Professor of Materials Science
wknox@optics.rochester.edu | (585) 273-5520
507 Goergen Hall
[Website](#)



Krauss, Todd D.

Professor of Chemistry
Professor of Optics
Chair, Chemistry Department
krauss@chem.rochester.edu | (585) 275-5093
465 Hutchinson Hall
[Website](#)

Interests: Optics of nanoscale semiconductor materials; Quantum optics and nanoscience



Kruschwitz, Brian

Associate Professor of Optics
Senior Scientist, LLE
bkru@lle.rochester.edu | (585) 273-5104
LLE—Laboratory for Laser Energetics

Interests: High energy and high power laser systems; Optical systems; Adaptive optics; Laser diagnostics



Kruschwitz, Jennifer D. T.

Assistant Professor of Optics
jennifer.kruschwitz@rochester.edu | (585) 276-7823
509 Wilmot Building

Interests: Optical Interference Coatings and Color



Lin, Qiang

Associate Professor of Optics and Electrical and Computer Engineering

qiang.lin@rochester.edu | (585) 275-3799

342 Hopeman Building

[Website](#)

Interests: Nanophotonic Devices; Physics and Applications



Marciante, John

Associate Professor of Optics

marciante@optics.rochester.edu | (585) 273-4737

514 Goergen Hall

[Website](#)

Interests: Lasers; Waveguides; Fiber Optics; Ultrafast



Miller, Benjamin L.

Dean's Professor of Dermatology

Professor of Biomedical Engineering

Professor of Optics

Professor of Biochemistry and Biophysics

benjamin_miller@urmc.rochester.edu | (585) 275-9085

5-6141A Medical Center

[Website](#)

Interests: Optical Biosensing and Integrated Photonics



Moore, Duncan T.

Rudolf and Hilda Kingslake Professor in Optical Engineering Science

Professor of Optics

Professor of Biomedical Engineering

*Professor of Business Administration in the William E. Simon Graduate School
of Business Administration*

moore@optics.rochester.edu | (585) 275-5248

409A Goergen Hall

[Website](#)

Interests: Optical Engineering; Lens Design & Manufacturing; Gradient-Index Optics



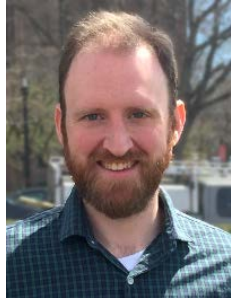
Oliver, James

Associate Professor

Scientist, LLE

joli@lle.rochester.edu | (585) 275-1194

LLE—Laboratory for Laser Energetics



Renninger, William

Assistant Professor of Optics

william.renninger@rochester.edu | (585) 276-3709

214 Wilmot Building

[Website](#)

Interests: Experimental Nonlinear Optics



Rolland, Jannick

Brian J. Thompson Professor of Optical Engineering

Professor of Optics and Biomedical Engineering

Professor in the Center for Visual Science

Director, NSF/IUCRC: Center for Freeform Optics *Director, R.E. Hopkins Center for Optical Design & Engineering*

rolland@optics.rochester.edu | (585) 752-1013

505 Goergen Hall

[Website](#)

Interests: Optical System Design; Instrumentation and System Engineering; Optical Coherence Tomography; Head Worn Displays



Schmidt, Greg

Assistant Professor of Optics

greg.schmidt@rochester.edu | (585) 275-8012

408 Goergen Hall



Stroud, Carlos R., Jr.

Professor of Optics

Professor of Physics

stroud@optics.rochester.edu | (585) 275-2598

312 Wilmot Building

[Website](#)

Interests: Quantum Optics



Thompson, Brian

Emeritus Professor of Optics

Provost Emeritus

[Email address not available](#)



Vamivakas, Nick

Professor of Quantum Optics & Quantum Physics

nick.vamivakas@rochester.edu | (585) 275-2089

101 Wilmot Annex

[Website](#)

Interests: Quantum Optics; Quantum Physics



Visser, Taco Dirk

Professor of Optics

tvisser@ur.rochester.edu | (585) 273-1155

315 Wilmot Building



Wicks, Gary W.

Professor of Optics

wicks@optics.rochester.edu | (585) 275-4867

109A Wilmot Building

[Website](#)

Interests: Molecular Beam Epitaxy; Semiconductor Optoelectronics



Williams, David R.

William G. Allyn Professor of Medical Optics

Professor of Optics

Professor of Brain and Cognitive Sciences

Professor of Ophthalmology

Professor of Biomedical Engineering

Director, Center for Visual Science

david@cvs.rochester.edu | (585) 275-8672

270 Meliora Hall

[Website](#)

Interests: The Human Visual System; Physiological Optics



Yoon, Geunyoung

Professor of Ophthalmology, Optics

Center for Visual science and Biomedical Engineering

gyoon@ur.rochester.edu | (585) 273-4998

G-3184 Medical Center

[Website](#)

Interests: Biomedical and Visual Optics; Ophthalmic Optics; Human Vision; Adaptive Optics



Zavislan, James M.

Associate Professor of Optics

Associate Professor of Biomedical Engineering

Associate Professor of Ophthalmology

Associate Professor, Center for Visual Science

Associate Dean of Education and New Initiatives

Mercer Brugler Distinguished Teaching Professor 2018-2021

zavislan@optics.rochester.edu | (585) 275-9819

414 Goergen Hall

[Website](#)

Interests: Optical Engineering; Biomedical Optical Systems



Zhang, Xi-Cheng

M. Parker Givens Professor of Optics

Professor of Physics

Xi-Cheng.Zhang@rochester.edu | (585) 275-0333

415 Goergen Hall

[Website](#)

Interests: Ultrafast Photonics; Nonlinear Optics; Laser Physics; TeraHertz Waves



Zuegel, Jonathan D.

Professor of Optics

Director, Laser Development and Engineering Division of LLE

Senior Scientist, LLE

zuegel@lle.rochester.edu | (585) 275-4425

278 LLE—Laboratory for Laser Energetics

Interests: Solid-State Lasers; Nonlinear Optics; Electro-Optics; Laser Diagnostics

Adjunct Faculty

This section lists the adjunct faculty members alphabetically with their contact information.



Bowen, John

Adjunct Faculty Member

Bowen@photogear.com | (585) 415-1752



Buralli, Dale

Adjunct Associate Professor

buralli@apollooptical.com | (585) 272-6174



Cobb, Josh

Adjunct Faculty Member

joshua.cobb@rochester.edu | phone number not available



Eastman, Clarke

Adjunct Faculty Member

clarke.eastman@gmail.com | (585) 275-2961



Lukishova, Svetlana G.

Group Leader and Adjust Professor

lukishov@optics.rochester.edu | (585) 276-5283

303 Wilmot Building

[Website](#)

Interests: Quantum Nanophotonics; Liquid Crystals; Nonlinear Optics; Quantum and Nano-Optics Teaching Experiments; History of Optics and Photonics



McIntyre, Brian

Lecturer

brian.mcintyre@rochester.edu | (585) 275-3058
202 Wilmot Building



Nelson, Jessica DeGroot

Adjunct Assistant Professor

jnelson@optimaxsi.com | (585) 265-1020



Savich, Greg

Adjunct Assistant Professor

gregory.savich@rochester.edu | (585) 273-1774
125 Gavett Hall



Visconti, Anthony

Adjunct Faculty Member

anthony.visconti@rochester.edu | *phone number not available*



Walters, Sarah

Adjunct Faculty Member

swalter3@ur.rochester.edu

Senior Scientists

This section alphabetically lists other professionals associated with the Institute of Optics and their contact information.



Jerry Kuper

Visiting Scientist, Boyd Group

djwkuper@gmail.com | (585) 275-6924
415 Goergen Hall

Post Docs & Other Professional Associates

This section alphabetically lists other professionals associated with the Institute of Optics and their contact information.



Bauer, Aaron

Research Engineer, Rolland Group

aaron.bauer@rochester.edu | (585) 273-4037
503 Goergen Hall



Canavesi, Cristina

Research Associate

UR Center Coordinator NSF I/UCRC Center for Freeform Optics

c.canavesi@rochester.edu | (585) 273-4037
503 Goergen Hall



Chen, Keren

Postdoctoral Associate, Berger Group

kerenchen@rochester.edu | (585) 275-7481
403 Goergen Hall



Cheng, Fei

Postdoctoral Associate, Vamivakas Group
fei.cheng@rochester.edu | (573) 368-8657
105 Wilmot Annex



Dadras, Siamak

Postdoctoral Associate, Vamivakas Group
s.dadrasmarani@rochester.edu | (405) 742-7665
127 Wilmot Building



Dai, Jianming

Visiting Scientist, Zhang Group
jianmingdai@tju.edu.cn | *phone number not available*



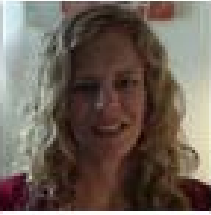
E, Yiwen

Postdoctoral Associate, Zhang Group
ye2@ur.rochester.edu | (585) 275-6924
415 Goergen Hall



Eastman, Jay

Executive Consultant, Industrial Associates Program
jmerx788@me.com | (585) 230-4589
Optel, Inc.



Brown, Kim Hughes

AS&E Web Project Manager

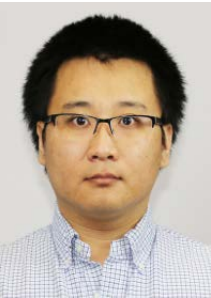
kim.brown@rochester.edu | (585) 276-3734
610 Hylan Building



El Kabbash, Mohamed

Post-doctoral Associate, Guo Group

melkabba@ur.rochester.edu | *phone number not available*
403 Goergen Hall



He, Yizhuo

Postdoctoral Associate, Guo Group

yhe39@ur.rochester.edu | *phone number not available*
403 Wilmot Building



Heiniger, Adam

Scientist, Marciante Group

adam.heiniger@rochester.edu | (585) 275-7834
513 Goergen Hall



Huang, Pingjie

Visiting Scholar, Zhang Group

phuang11@optics.rochester.edu | (585) 351-1317
416 Goergen Hall



Koch, Michael

Research Engineer, Wicks Group
mkoc@lle.rochester.edu | (585) 273-2677
LLE—Laboratory for Laser Energetics



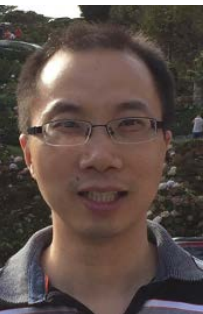
Konthasinghe, Kumarasiri

Postdoctoral Associate, Vamivakas Group
kkonthas@ur.rochester.edu | (585) 275-7379
105 Wilmot Annex



Leidner, Jordan

Scientist, Marciante Group
jordan.leidner@rochester.edu | (585) 275-7834
513 Goergen Hall



Qian, Xiaofeng

Research Associate, Vamivakas Group
xiaofeng.qian@rochester.edu | (585) 275-8533
215 Wilmot Building



Rasskazov, Ilia

Postdoctoral Associate
irasskaz@ur.Rochester.edu
Wilmot Building



Saulnier, Debra

Postdoctoral Associate
Brown Research Group
debra.saulnier@rochester.edu



Schultz, Justin

Postdoctoral Fellow
juschul@optics.rochester.edu | (585) 275-4975
167 Bausch & Lomb Building



Singh, Subhash

Visiting Scientist, Guo Group
subhash.singh@rochester.edu | *phone number not available*
403 Wilmot Building



Wang, Zhiqiang

Postdoctoral Associate
Renninger Lab
zwang151@ur.rochester.edu
224 Wilmot Building



Zhan, Zhibing

Visiting Scientist, Guo Group
zhibingzhan@rochester.edu | *phone number not available*
403 Wilmot Building

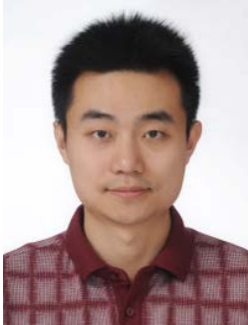


Zhang, Jihua

Postdoctoral Associate, Guo Group

jihuazhang@rochester.edu | (585) 276-4248

402 Wilmot Building



Zhang, Ying

Visiting Scientist, Guo Group

yzh247@optics.rochester.edu | (585) 275-2301

403 Wilmot Building

Graduate Students

View list of graduate students and contact information here:

<http://www.hajim.rochester.edu/optics/gradstudents/index.html>

Institute Staff

This section lists each staff member alphabetically with his or her area or responsibility and contact information.



Brea, Meir

Staff Accountant

meir.brea@rochester.edu | (585) 275-2672

123 Wilmot Building



Buck, Ellen

Development Manager, CBE and IA

ellen.buck@rochester.edu | (585) 275-1786

B.360-H Saunders Research Building



Chapa, Cecilia

Project Representative

cecilia.chapa@rochester.edu | *no phone number available*



Davies, Kai

Graduate Program Coordinator

kai.davies@rochester.edu | (585) 275-7629

105 Wilmot Building



Haring, Tal

Strategic Analyst and Executive Assistant to the Director

tal.haring@rochester.edu | (585) 275-4722

114 Wilmot Building



Herger, Edward

Senior Lab Engineer

edward.herger@rochester.edu | (585) 275-7762

533 Wilmot Building

INDUSTRIAL ASSOCIATES

**Kafka, Kari***Financial Analyst*kari.brick@rochester.edu | (585) 275-2318

114a Wilmot Building

**Mitchell, Jim***Nano Fabrication Laboratory Technician*Jmitch30@ur.rochester.edu | *phone number not available***Newman, Dustin***Undergraduate Program Coordinator*dustin.newman@rochester.edu | (585) 275-7764

106 Wilmot Building

**Pomerantz, Michael***Technical Associate*mpomera2@ur.rochester.edu | (585) 276-6818

103 Hopeman Building

**Russell, Lori***Administrator, The Institute of Optics*lrussell@optics.rochester.edu | (585) 275-5048

115 Wilmot Building

**Snopkowski, Adrienne***CeFO Financial Analyst*adrienne.snopkowski@rochester.edu | (585) 273-4040

505a Goergen Hall

Professional Organizations: Student Chapters

SPIE

SPIE is the International Society for Optics and Photonics. The University of Rochester Student Chapter was established in 2009 and has since grown to be the largest student chapter in North America, with over 80 registered student and alumni chapter members. We promote optical science and engineering while supporting the professional development of our chapter members. To accomplish this, we regularly teach and display optical technologies to members of the Rochester community, invite speakers to visit with students on campus, and schedule tours of local optics companies.

Current Officers:

President: Nick Kochan

Vice President: Nick Takaki

Secretary: Katie Dunn

Treasurer: Romita Chaudhuri

Web Administrator: Saniat Choudhury

Communications Officer: Ben Moon

Outreach Chair: Saleem Iqbal

If you would like to host a company tour or collaborate with us on outreach or professional development events, please contact urspie@gmail.com.

OSA

The University of Rochester's Optical Society (OSA) Student Chapter is a pre-professional organization and academic club. Our mission is to promote and advance the science of light amongst the student body of the University of Rochester. One of our largest goals each year is to provide students with professional development workshops aimed at giving them the skills they need to succeed. As our events this semester have been hosted virtually, we have been working to find creative ways to engage with and teach optics to the campus and community at large, as well as host virtual social events to promote interaction between students to supplement what they are not getting in person this semester. Our biggest event of the year, bringing together Institute undergraduates, graduates, and faculty, is our annual Photon Cup soccer match with the Physics department. While last year's game was canceled, we are optimistic about returning to defend our title as champions this spring.

Current Officers:

President: Benjamin Nussbaum

Professional Development Chair: Cherine Ghazouani

Social Chair: Madelyn Sabatini

Outreach Chair: Icel Sukovaty

Secretary: Dwight Fairchild

Business Manager: Anand Idris

Please contact Benjamin Nussbaum at bnussbau@u.rochester.edu with any questions, comments, or ideas.

Optics Summer Short-Course Series

June 2021

In 2020, The Institute of Optics offered its 59th and first virtual annual Summer Short-Course Series with a mix of a courses and virtual course times. *Course dates for 2021 are under review.* The courses listed below will most likely be offered again along with a few new courses. For updates and details in 2021, please continue to monitor updates at: <http://www.hajim.rochester.edu/optics/summer/registration.html>.

Applied Concepts—colorimetry and vision, wave guide photonics, and more.

Fundamental Concepts—covering lenses, aberrations, principles of diffraction, optical systems, polarization, birefringence and crystal optics, and radiometry and detection.

Integrated Photonics Circuits—targeted for students, researchers, and engineers in industry, who want to learn the fundamental aspects of integrated photonics circuits.

Introduction to Computational Imaging and Information Essentials—introduces computational imaging, a modern paradigm in imaging in which the burden of image formation is no longer borne solely by optical physics.

Modern Optical Engineering—covering optical testing and instrumentation, optical manufacturing, optical thin film coatings, diffractive optics, and glass in modern optics.

Optical System Design—introduces participants to both fundamental and advanced concepts in optical system design by integrating classroom lectures with software training labs. The course can be taken as a full week course or as one of two three-day course options depending on interest/skill level. *Introduction to Optical System Design* covers first order layout, image quality evaluation, aberration theory, optimization, and refractive/reflective design forms. *Advanced topics in optical system design* begins with refractive/reflective design forms and then covers advanced optimization techniques, zoom lenses, aspheres, stray light analysis, tolerancing, and illumination design.

Optical Thin Film Coating Technology—covers all aspects of optical interference devices including thin-film design, digital design methods, and coating and characterization.



