

THE INSTITUTE OF OPTICS

INDUSTRIAL ASSOCIATES

Program & Resource Guide
April 4 – 7, 2019



HAJIM
SCHOOL OF ENGINEERING
& APPLIED SCIENCES
UNIVERSITY of ROCHESTER

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Message from the Director



Welcome to the Spring 2019 session of the Industrial Associates!

Thank you for attending and for your continuing support of the IA program and The Institute. The Institute has never been in better shape. Our Fall program resulted in a lot of positive feedback and we are working to implement many of the ideas you all brought to that meeting. We are pleased to continue to connect our IA members with the resources that make a difference in the world of optics.

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. The Friday evening reception provides a networking opportunity for members, students and faculty in a relaxed environment. The Company Connection Showcase provides excellent face-to-face interaction for IA members with students. We hope you will be able to take full advantage of these opportunities and help us make IA an ongoing success.

We are pleased to welcome staff members; Tal Haring joins as my assistant and strategic analyst; Kai Davies is covering our graduate program coordinator duties; Tyler Jean-Mary is our new project assistant; Trevor O'Loughlin is serving as interim laboratory coordinator; and Cecilia Chapa is our new special project representative, helping to make this meeting happen.

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

Meliora,

A handwritten signature in black ink, appearing to read 'Scott'.

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

Agenda

THURSDAY, April 4, 2019

Events held at the Hilton Garden Inn | University & Medical Center, 30 Celebration Drive, Rochester, NY
For Strategic Level Members only and others at personal invitation of Dr. Carney.

2:00 - 5:30	Director's Advisory Council Meeting
5:30 - 7:30	Reception w/Light Dinner
8:00 - 9:30	Nightcap with the Director

FRIDAY, April 5, 2019

Events held in Douglass Commons, Feldman Ballroom and Wilson Commons, Hirst Lounge

8:00 - 2:30	Symposium will be held in <i>Douglass Commons, Feldman Ballroom</i>
2:45 - 5:30	Company Connection Showcase will be held in <i>Wilson Commons, Hirst Lounge</i>
6:00 - 8:30	Reception will be held in <i>Douglass Commons, Feldman Ballroom</i>

8:00 - 9:00	Continental Breakfast
9:00 - 9:15	Welcome—The Institute of Optics Update <i>Dr. P. Scott Carney, Director and Professor of Optics, University of Rochester</i>
9:15 - 9:35	Faculty Highlight <i>Richard Feldman, President, University of Rochester</i>
9:35 - 9:55	Distinguished Alumni Presentation—Financial perspectives on the photonics industry—industries in collision <i>Ms. Linda Smith (BS89), CEO, Ceres Technology Advisors, Inc.</i>
9:55 - 10:15	90th Anniversary of Optics <i>Dr. Carlos Stroud, Institute of Optics, University of Rochester</i>
10:15 - 10:30	Company Connection Intros (Part 1) Brief introductions by company representatives (Z → R) - 11
10:30 - 10:45	Master's Students Showcase <i>MS students present educational background, work experience and career goals.</i>
10:45 - 11:00	Networking Break
11:00 - 11:20	Guest Speaker <i>The Honorable Joseph D. Morelle, Congressional Rep NY 25th District</i>
11:20 - 11:55	Company Connection Intros (Part 2) Brief introductions by company representatives (Q → K) - 11
11:55 - 12:25	Senior Design Showcase <i>Dr. P. Scott Carney, Director and Professor of Optics, University of Rochester</i>

12:25 - 1:35	Lunch and Poster Session <i>Douglass Commons Feldman Ballroom</i> <i>Wilson Commons Hirst Lounge</i> <u>Note:</u> Lunch will be in <i>Feldman Ballroom</i> Posters will be in <i>Hirst Lounge</i>
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FRIDAY, April 5, 2019 (Continued)

- 1:35 - 1:50 **Student Awards**
- 1:50 - 2:10 **Optics Current Event—Siegman School on Lasers**
Jonathan Zuegel, Professor of Optics | Director, Laser Development & Engineering | Senior Scientist, Laboratory of Laser Energetics
- 2:10 - 2:40 **Graduate Student Research Talks**
*PhD Graduate Students of the University of Rochester
(Successive talks of 10-15 minutes each)*
- 2:40 - 3:00 **Company Connection Intros (Part 3)**
Brief introductions by company representatives (J → A) - 11
- 3:00 - 5:30 **Company Connection Showcase**
Wilson Commons, Hirst Lounge
- 5:30 - 5:45 **Networking Break**
- 5:45 - 6:00 **Return to *Douglass Commons* | *Feldman Ballroom***
- 6:00 - 8:30 **Industrial Associates Reception**
Douglass Commons, Feldman Ballroom
- 6:30 - 6:35 **Welcoming Remarks**
Dr. P. Scott Carney, Director and Professor of Optics, University of Rochester

SATURDAY, April 6, 2019

Interviews for Associate, Standard, Select, & Strategic IA members:

- 8:30 - 5:00 **Company - Student Employment Interviews—All**
Various rooms in Goergen Hall & Wilmot Building
- 12:00 - 1:00 **Lunch for interviewing Employers, Faculty/Staff**
Goergen Hall | CR110
- 12:00 - 1:00 **Lunch for interviewing Students**
Goergen Hall | 5th Floor Lounge

SUNDAY, April 7, 2019

Interviews continue for Select & Strategic IA members only:

- 9:00 - 12:00 **Company - Student Employment Interviews**
Various rooms in Goergen Hall & Wilmot Building

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 more than 3,000 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 meeting. 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 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



Collins Aerospace
A United Technologies Company

Collins Aerospace
www.collinsaerospace.com



Corning Incorporated
www.corning.com



Edmund Optics
www.edmundoptics.com



Harris Corporation
www.harris.com



KLA
www.kla.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
1958 GRADUATE OF NEW YORK

Monroe Community College
www.monroecc.edu



Rochester Regional Photonics Cluster
www.rrpc-ny.org
www.newyorkphotonics.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



BAE SYSTEMS
www.baesystems.com



Futurewei Technologies
 (sub: Huawei)
www.huawei.com



IDEX Health & Science
 (subs: Melles Griot & Semrock Incorporated)
www.idex-hs.com

INDUSTRIAL ASSOCIATES

SELECT IA MEMBERS (Continued)



II-VI Incorporated
www.ii-vi.com



L3 Technologies
www.l3t.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



Raytheon
www.raytheon.com



Rochester Precision Optics
www.rpoptics.com



Schott Glass Technologies
www.us.schott.com



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



Viavi Solutions
www.sunnyoptical.com



Xerox Corporation
www.xerox.com

INDUSTRIAL ASSOCIATES

STANDARD IA MEMBERS

facebook
Reality Labs

Facebook Reality Labs
<https://www.facebook.com/careers/areas-of-work/facebookrealitylabs>



JENOPTIK Optical Systems
www.jenoptik-inc.com



Luna Innovations
www.lunainc.com



Navitar
www.navitar.com



OPTIMAX Systems, Inc.
www.optimaxsl.com



Quality Vision International, Inc.
www.qvii.com



Vuzix
www.vuzix.com

ASSOCIATE IA MEMBERS



Bristol Instruments, Incorporated
www.bristol-inst.com



Daheng Optics
www.cdoptics.com

ASSOCIATE IA MEMBERS (Continued)



Johns Hopkins Applied Physics Lab
www.jhuapl.edu



North Inc.
www.bynorth.com



Optikos
www.optikos.com



Plymouth Grating Laboratory
www.plymouthgrating.com



RPC Photonics, Inc.
www.rpcphotonics.com



TopLeader Optic Tec.
www.oetopleader.com



TOPTICA Photonics, Inc.
www.toptica.com



Wavefront Research, Inc.
www.wavefrontresearch.com

Faculty Highlight



Richard Feldman

President, University of Rochester

Feldman's foremost priority during his tenure as president has been working with faculty, students, and staff to foster change in the campus climate and create a culture of respect, while ensuring that the University's ongoing strategic and operational priorities are effectively addressed.

Feldman joined the University of Rochester in 1975 as a professor of philosophy. He chaired the philosophy department for 13 years before becoming dean of the College in 2006. He stepped down as dean of the College at the end of the 2016–17 academic year.

As dean, Feldman oversaw the College's undergraduate programs, both curricular and co-curricular. He led the units, programs, and initiatives that serve the academic and nonacademic needs of undergraduates in Arts, Sciences & Engineering on the River Campus. Early in his career, he was deeply involved in developing the Rochester Curriculum, which allows undergraduates to build their own curriculum based on their unique strengths and interests. Feldman was instrumental in developing and launching the University's CARE Network, which has become a model program in higher education, helping to identify and refer resources to students who are in or heading toward distress.

A distinguished epistemologist, he also directed a unique internship program placing undergraduate students in the Rochester City School District to help city school children develop writing, critical thinking, analytical reading, and problem-solving skills. In 2014, he oversaw the University's re-accreditation process by the Middle States Commission on Higher Education and in 2016, co-chaired the Presidential Commission on Race and Diversity, composed of students, faculty, and staff, to assess the state of campus climate and offer recommendations for improvement.

Feldman has received fellowships and grants from the Mellon Foundation, the National Endowment for the Humanities, the National Defense Education Act, and the American Council of Learned Societies. In 2011, he was recognized by his peers with "Feldmania," an academic conference celebrating his contributions to epistemology. In 2016, he received the University's William H. Riker University Award for Excellence in Graduate Teaching and the Romanell-Phi Beta Kappa Professorship, awarded nationally to scholars in the field of philosophy to recognize not only distinguished achievement but also the recipient's contribution to public understanding of philosophy. He has written or edited five books and authored more than 75 papers on the subjects of epistemology and metaphysics. He was ranked among the 25 most important epistemologists since 1945 by his philosophy peers in a survey led by the Leiter Reports philosophy blog.

Feldman has a bachelor's degree from Cornell University and a PhD from the University of Massachusetts Amherst. He and his wife, Andrea, have a daughter and two grandsons.

Distinguished Alum Speaker



Linda Smith

President, Ceres Technology Advisors

Financial perspectives on the photonics industry—industries in collision

As President of Ceres Technology Advisors, Linda Smith provides merger and acquisition advisory services to photonics companies. She is well-known for her role in identifying opportunities in optics and laser markets. She held founding and leadership roles at early stage, venture capital financed companies commercializing integrated optics and MEMS technologies, as well as marketing and sales management positions at Thermo Electron/Spectra Physics and LINOS Photonics/Qioptiq. She is an Accredited Senior Appraiser (ASA) in business valuation, Fellow of SPIE and member of the EY Entrepreneurial Winning Women. She holds B.S. in Optics from the University of Rochester and M.B.A. from Babson College.

Abstract:

The traditional, insider's view of photonics has seen it as an enabling technology for many vertical markets. However, as markets—and photonics technologies—have evolved, an alternative view shows a transformed landscape in which photonics is just one of numerous industries that are colliding to become part of new ecosystems. A few examples are sectors focused on mobility, retail, healthcare, and urbanization. To understand what is happening and gauge how these new models impact market valuations and acquisition strategies, Linda Smith explores recent M&A activity and private equity investments relative to these new business models for component-manufacturing companies making optics, lasers, and imaging equipment.

Guest Speaker



The Honorable Joseph D. Morelle

Congressman Joe Morelle represents New York's 25th Congressional District, which includes almost the entirety of Monroe County. He was elected to the United States House of Representatives in November 2018 following the death of longtime optics champion Congresswoman Louise Slaughter. A lifelong resident of Upstate New York, Rep. Morelle is a former small business owner and was previously elected to the Monroe County Legislature as well as the New York State Assembly, where he served as Majority Leader from 2013-2018.

Throughout his career, Rep. Morelle has worked diligently to improve and expand access to healthcare for all people, grow our economy, and protect our communities by passing legislation to ban assault weapons and strengthen gun background checks. During his tenure in the State Legislature, he authored more than 200 laws. Among those bills are major reforms to the workers compensation system, laws to require carbon monoxide detectors in one- and two-family homes, toughen regulations governing charitable organizations, protect the elderly and infirm who live in nursing homes or receive home based health care, and raise senior citizens' real property tax exemption. Morelle sponsored bills to exempt veterans from certain state licensing fees, protect their gravesites, and assist them with regard to the civil service application process.

In recognition of his extraordinary contributions to our community and to the University of Rochester, the University of Rochester presented Joe Morelle in 2016 with one of its highest awards – the Eastman Medal, which recognizes individuals who embody the high ideals for which the University stands. Joe has been a long-time champion of the University's Laboratory for Laser Energetics and advancing the region's optics, photonics and imaging sector.

Rep. Joe Morelle currently serves as a member of the House Committee on Rules, the House Committee on Budget, and the House Committee on Education and Labor.

As a member on the Education and Labor Committee, Rep. Morelle also serves as part of the Early Childhood, Elementary and Secondary Education Subcommittee, and the Health, Employment, Labor and Pensions Subcommittee.

A graduate of the State University of New York at Geneseo, Rep. Morelle resides in the town of Irondequoit in Rochester, New York, with his wife, Mary Beth. They have three children and three grandchildren.

Guest Speaker



Jonathan D. Zuegel

Professor of Optics

Director, Laser Development and Engineering

Division of LLE

Senior Scientist, LLE

Siegman School on Lasers

Jonathan D. Zuegel received the B.S. (1983) and Masters of Engineering (1984) degrees in Electrical Engineering from Cornell University. After serving in the U.S. Navy in the Department of Energy Division of Naval Reactors, he received the Ph.D. in Optics from The Institute of Optics at the University of Rochester in 1996. Dr. Zuegel is a Fellow of the Optical

Society of America (OSA) and served as program chair and general chair for a number of conferences, including the OSA Advanced Solid State Photonics (ASSP) topical meeting, the biennial conference of the International Committee on Ultra-Intense Lasers (ICUIL) and the Conference on Lasers and Electro-Optics (CLEO). He also serves on the CLEO Steering Committee and several international advisory committees related to the Extreme Light Infrastructure (ELI) in Europe.

Dr. Zuegel is Laser Development and Engineering Division Director and a Senior Scientist at the Laboratory for Laser Energetics (LLE) at the University of Rochester. As division director, Dr. Zuegel leads a multidisciplinary technical staff for developing and maintaining technology, custom equipment and the infrastructure needed to conduct research at LLE. His specific areas of research interest are in the fields of solid-state lasers, nonlinear optics, electro-optics and laser diagnostics. He is currently involved in laser research and development efforts including: diode-pumped lasers, optical parametric chirped pulse amplification (OPCPA), high-speed electro-optic devices for laser switching and modulation, fiber laser systems, and advanced laser beam smoothing. His research activities support advanced laser systems for laser fusion and high-field physics in the OMEGA and OMEGA EP lasers at LLE, as well as the National Ignition Facility at Lawrence Livermore National Laboratory.

Graduate Students' Showcase

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.

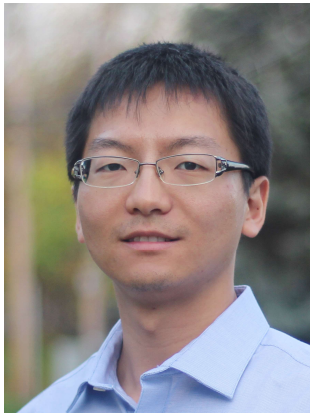


Luis Aleman Castaneda, Optics PhD Student

Advisor: Prof. Thomas G. Brown, Institute of Optics

Title: Geometric Phase Shearing Interferometer

Abstract: We present a new approach for performing common-path shearing interferometry using geometric phase introduced via spin-orbit coupling devices. Having a linearly polarized incident wavefront, the shearing mechanism relies on a couple of subsequent identical spatially-varying axis birefringent plates, e.g. a pair of Q-plates, that write opposite geometric phases on the two circularly polarized components, thus enabling almost any tailored directional derivative while securing a compact and robust layout.



Rui Luo, PhD in Optics

Advisor: Qiang Lin, Associate Professor of Electrical and Computer Engineering, Associate Professor of optics

Title: Integrated nonlinear photonics in lithium niobate

Abstract: This talk discusses integrated nonlinear photonics on an emerging platform: lithium niobate on insulator. This platform offers sub-micron-thick single-crystalline lithium niobate (refractive index > 2.1) on top of buried silicon oxide (refractive index < 1.5), enabling microscale optical confinement that can enhance nonlinear optical interactions. On-chip wavelength conversion, using the quadratic or cubic nonlinearity, is presented in low-loss lithium niobate nanophotonic waveguides and microresonators.

**Juniyali Nauriyal, ECE PhD Student**

Advisor: Prof. Jaime Cardenas, Institute of Optics

Title: Fiber to chip fusion splicing for low loss optical packaging

Abstract: Silicon photonic devices are poised to enter high volume markets such as data-communications, biological sensing, and optical phased arrays; however, permanently attaching fiber to the photonic chip with high optical efficiency remains a challenge. We present a robust and low-loss packaging technique of permanent optical edge coupling between a fiber and a chip using fusion splicing which is low cost and scalable to high volume manufacturing. We fuse an SMF-28 cleaved fiber to the chip via CO₂ laser and reinforce it with optical adhesive. We demonstrate minimum loss of 1.0dB per-facet with 0.6dB penalty over 160nm bandwidth from 1480nm-1640nm.

**Robert Pettit, Optics PhD Student**

Advisor: Prof. Nick Vamivakas, Institute of Optics

Title: Toward coherent vibrations on the mesoscale with levitated optomechanics

Abstract: Optomechanical systems are currently being developed to study foundational questions in quantum mechanics and to push the limits of precision metrology. While the traditional picture of an optomechanical system utilizes an optical cavity with a movable mirror, recent efforts have been made to build a platform that does not rely on a cavity-based architecture. Here a cavity-free optomechanical system using an optically levitated nanoparticle is presented. Using this platform, a phonon laser is developed that can provide a pathway toward a coherent source of phonons for mesoscale levitated objects.

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](#) | [Hirst Lounge](#) during the lunchbreak.

Students participating in the poster session include:

Luis Aleman Castaneda

Wesley Chiang

Marissa Granados Baez

Rui Luo

Jiakai Lyu

Juniyali Nauriyal

Meiting Song

Kaitlin Wozniak

Raymond Yu

Yi Zhang

Music by Eastman artists at the Reception

TRINIDY

Josh Achiron (Guitar): <https://joshachiron.com>

Joshua hails from Atlanta, Georgia and has been playing guitar for 15 years and performs regularly around Atlanta, Asheville, Jacksonville and Rochester New York. Joshua is pursuing his love for music at the Eastman School in Rochester New York, earning a dual degree in both Classical and Jazz guitar. He has studied with great mentors such as Rich Thompson, Bob Sneider, and Gary Versace.

Josh has had opportunities to share the stage with the likes of Bob Mintzer, John Daversa, and Robin Eubanks which have heightened his pedigree as a performer. He continues to seek out enriching musical opportunities and make connections with people along the way.

Emiel De Jaegher (Trumpet):

Emiel started playing trumpet at the age of 11, studying under the instruction of Marques Carroll. Throughout high school, he was a member of school jazz bands as well as Midwest Young Artists, where he performed around the world at prestigious venues in France, Netherlands, Italy, Ireland, and Scotland.

He is currently a junior undergraduate student at the Eastman School of Music/University of Rochester doing a dual degree in Jazz Studies and Contemporary Media studying with Clay Jenkins/Bill Dobbins (jazz trumpet performance) as well as Brain and Cognitive Sciences at the University of Rochester. In 2016-2017, he started his first year at the Eastman School of Music by being named a semi finalist for the jazz division of the National Trumpet Competition. He was also been named as a semifinalist for the 2019 small classical ensemble and won 3rd place as a finalist in jazz division for the National Trumpet Competition. He was also recently accepted as a member of the 2019 Betty Carter Jazz Ahead Program. He has also formed several groups throughout his time at school including the band called Trinity, a chordless trio featuring Stephen Parisi on bass and Ryan Brasley on drums that performs around upstate New York.

Throughout his time playing trumpet, Emiel has had the opportunity to share the stage with Danilo Pérez, Conrad Herwig, Martin Wind, Bill Cunliffe, Scott Robinson, Charles Pillow, Tanya Darby, John Clayton, Marquis Hill, Lauren Sevian, Matt Wilson, Ingrid Jensen, and Tim Hagans.

Stephen Parisi Jr. (Bass):

Stephen Parisi Jr is a jazz bassist and composer from Buffalo, New York. Stephen has played with artists such as Bobby Militello, Mark Filsinger, Jane Monheit, and Daryl Washington. Stephen has worked with Chris Vidala, Jay Ashby and is currently attending the Eastman School of Music studying with Jeff Campbell.

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 22 professors with full-time appointments; 12 professors with secondary Optics appointments from diverse departments such as imaging sciences, physics, dermatology, electrical and computer engineering, Laboratory for Laser Energetics, and chemistry; 9 adjunct professors and lecturers, 1 senior scientist; 20+ professional personnel, including research scientists, and post-doctoral scientists, etc.; and 10 staff members.

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 2019. 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 2019 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 2018, The Institute placed 90 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

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 at 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

[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 at LLE

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

270A LLE

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

[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.

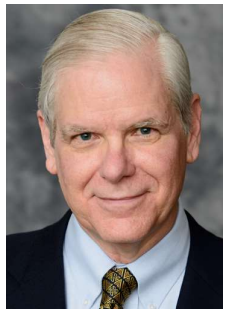
Andrew Carnegie Professor of Physics

Professor of Optics

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

321 Bausch & Lomb

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

Senior Scientist at LLE

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

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3-5333 Medical Center

[Website](#)

Interests: Medical Optics; Photodynamic Therapy



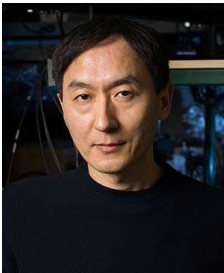
George, Nicholas

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
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

[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



Renninger, William

Assistant Professor of Optics

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214 Wilmot

[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) 276-4562

505 Goergen Hall

[Website](#)

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



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

Associate Professor of Quantum Optics & Quantum Physics

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

101 Wilmot Annex

[Website](#)

Interests: Quantum Optics; Quantum Physics



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

Dean for Research in Arts, Sciences and Engineering Director of the 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
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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 Building
[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 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.



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Adjunct Faculty Member

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Cobb, Josh

Adjunct Faculty Member

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Eastman, Clarke

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McIntyre, Brian

Lecturer

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Nelson, Jessica DeGroot

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Oliver, James

Senior Lecturer

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Savich, Greg

Adjunct Assistant Professor

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



Visconti, Anthony

Adjunct Faculty Member

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Senior Scientists

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



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[Website](#)

Other Professionals

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



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Research Associate

UR Center Coordinator NSF I/UCRC Center for Freeform Optics

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Chen, Keren

Postdoctoral Associate, Berger Group

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E, Yiwen

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Eastman, Jay

Executive Consultant, Industrial Associates Program

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AS&E Web Project Manager

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Scientist, Marciante Group

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Huang, Pingjie

Visiting Scholar, Zhang Group

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Koch, Michael

Research Engineer, Wicks Group

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Konthasinghe, Kumarasiri

Postdoctoral Associate, Vamivakas Group

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Jerry Kuper

Visiting Scientist, Boyd Group

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



Leidner, Jordan

Scientist, Marciante Group

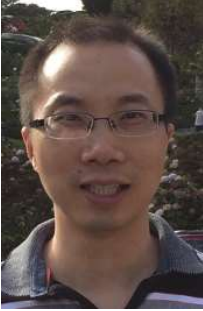
leidner@optics.rochester.edu | (585) 275-7834 | Goergen 513



Jim Mitchell

Nano Fabrication Laboratory Technician

Jmitch30@ur.rochester.edu



Qian, Xiaofeng

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Schmidt, Greg

Research Engineer, Moore Group

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Schultz, Justin

Postdoctoral Fellow

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Sheikh, Mumtaz

Visiting Research Assistant Professor

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Singh, Subhash

Visiting Scientist, Guo Group

subhash.singh@rochester.edu | Wilmot 403



Zhan, Zhibing

Visiting Scientist, Guo Group

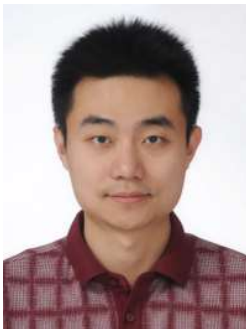
zzhan@ur.rochester.edu | Wilmot 403



Zhang, Jihua

Postdoctoral Associate, Guo Group

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Zhang, Ying

Visiting Scientist, Guo Group

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Staff

INDUSTRIAL ASSOCIATES

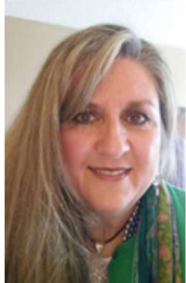
This section lists each staff member alphabetically with his or her area or responsibility and contact information.



Brea, Meir

Staff Accountant

meir.brea@rochester.edu | (585) 275-2672 | Wilmot 123



Buck, Ellen

Development Manager, CBE and IA

ellen.buck@rochester.edu | (585) 275-1786 | Saunders, B.360-H



Chapa, Cecilia

Project Representative

cecilia.chapa@rochester.edu | (585) 273-1155 | Wilmot 315



Davies, Kai

Graduate Program Coordinator

kai.davies@rochester.edu | (585) 275-7720 | Wilmot 105



Haring, Tal

Strategic Analyst and Executive Assistant to the Director

tal.haring@rochester.edu | (585) 275-4722 | Wilmot 114



Jean-Mary, Tyler

Project Assistant

tjeanmar@ur.rochester.edu | (585) 276-4367 | Wilmot 122



Newman, Dustin

Undergraduate Program Coordinator

dustin.newman@rochester.edu | (585) 275-7764 | Wilmot 106



O'Loughlin, Trevor

Interim Lab Coordinator

trevor.oloughlin@rochester.edu | (585) 275-7762 | Wilmot 533



Pomerantz, Michael

Technical Associate

mpomera2@ur.rochester.edu | (585) 276-6818 | Hopeman 103



Russell, Lori

Administrator

lrussell@optics.rochester.edu | (585) 275-5048 | Wilmot 115



Snopkowski, Adrienne

Financial Analyst

adrienne.snopkowski@rochester.edu | (585) 275-2381 | Wilmot 114

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 one of the largest chapters in the world with 53 student members and 13 alumni members. We aim to promote optical science and engineering, and support 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.

Officers:

President: Di Xu

Secretary: Sara Gearhart

Treasurer: Nicholas Takaki

Vice President: Ashan Ariyawansa

Web Administrator: Robert Draham

Communications Officer: Kaitlin Dunn

If you would like to host a company tour in your facility or if you want to interact with us to organize outreach or professional events, please contact us at urspie@gmail.com.

OSA

U of R's Optical Society student chapter (OSA) is a pre-professional organization and an academic club. Our mission is to empower and connect students of optics and related studies through our love and appreciation for the science of light. Currently we are involved in a club-wide optical engineering project, and various outreach events to engage the Rochester community in optics. The student chapter also builds connections between the undergraduates, graduates, and faculty of the Institute through events such as our annual Photon Cup soccer game.

Officers:

President: Jake Rosvold

Secretary: Evan James

Business Manager: Robert Moore

Senior Advisor: Jaren Ashcraft

Vice President: Chris Pressimone

Events Manager: Garrett Beals

Outreach Coordinators: Dylan Beckman & Michael Taylor

Please contact Jake Rosvold at jrosvold@u.rochester.edu with any questions.

Optics Summer Short-Course Series

June 10-21, 2019

The Institute of Optics offers its 58th annual Summer Short-Course Series with a mix of a one-week courses and two-and-a-half-day courses listed below. To register, go to: <http://www.hajim.rochester.edu/optics/summer/registration.html>

1. **Fundamental Concepts (with labs): June 10-12** Covering lenses, aberrations, principles of diffraction, optical systems, polarization, birefringence and crystal optics, and radiometry and detection.
2. **Applied Concepts: June 12-14** Colorimetry and vision, wave guide photonics, and more.
3. **Integrated Photonic Circuits: June 10-14** Waveguide fundamentals, passive and active devices, numerical modeling, layout, fabrication in the cleanroom and testing.
4. **Opto-Mechanical Analysis: June 10-12** Covering opto-mechanical analysis methods used to design high performance optical systems. Finite element modeling techniques for analyzing light-weight mirrors, mounts, and lens systems will be discussed. Other topics include fitting surface distortions with Zernike polynomials and the analysis of line-of-sight jitter in vibration environments. The integration of thermal and structural responses into optical software is presented.
5. **Opto-Mechanical Analysis Lab: June 12-14** Taught in a computer lab to illustrate the use of SigFit to solve a variety of opto-mechanical problems, including surface deformation, rigid body motion, active optics, line-of-sight calculations, thermo-optic and stress-optic analysis, opto-mechanical tolerance analysis, offset aperture analysis and analysis of diffractive optics.
6. **Optical Thin Film Coating Technology: June 17-21** Covering all aspects of optical interference devices including thin-film design, digital design methods, and coating and characterization.
7. **Optical System Design: June 17-21** Introduces participants to both fundamental and advanced concepts in optical system design by integrating classroom lectures with software training labs in the Hopkins Optical Design Center. 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 (June 17-19)* covers first order layout, image quality evaluation, aberration theory, optimization, and refractive/reflective design forms. *Advanced topics in optical system (June 19-21)* design begins with refractive/reflective design forms and then covers advanced optimization techniques, zoom lenses, aspheres, stray light analysis, tolerancing, and illumination design.
8. **Modern Optical Engineering (with labs): June 19-21** Covering optical testing and instrumentation, optical manufacturing, optical thin film coatings, diffractive optics, and glass in modern optics.

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