



OSA Rochester Section Newsletter

Welcome!

Welcome to the OSA Rochester Section's Winter 2017 Newsletter! The purpose of our newsletters is to keep our members updated on the many exciting optics and photonics initiatives around Rochester. In this issue, we're including some exciting news from our OSA Rochester Section, University of Rochester, RIT, Monroe Community College, Rochester Regional Photonics Cluster, and American Precision Optics Manufacturer's Association. Let us begin with a Letter from OSA Rochester Section President, Daniel Staloff.

Letter from Daniel Staloff, Section President

As OSA Rochester Section strongly enters its second century of supporting the optics community, I want to remind everyone of our mission and the work that we are currently doing to support our mission.

Our mission is to "promote and disseminate knowledge of optics and photonics and closely related sciences in both the local community and throughout the world by:

- Bringing together scientists, engineers, business leaders, educators, and students,
- Providing professionals and students with educational resources for the purpose of improving and developing their abilities,
- Encouraging the sharing of knowledge and innovation, and encouraging students to study optics, photonics, and other sciences."

We support this mission through three pillars of activity: scholarships, educational talks, and optics education outreach.



Scholarship

We are currently in the fourth year of a five-year \$10,000 commitment to Monroe Community College. Each year, OSA RS contributes two \$1,000 scholarships to students enrolled in the optical technologies program. Additionally, this year we sponsored the International OSA Network of Students (IONS) conference at RIT. Our support enabled a showcase of Rochester's offerings in optics, photonics, and imaging for attendees.

Educational Talks

We continue the long tradition of hosting local and national speakers at Laboratory for Laser Energetics (LLE) on Tuesday evenings about twice per month. Speakers have lectured on various ways that optics has played an essential role in the further development of related fields such as astronomy, medicine, and communication.

Optics Education

After several years of work, we now have a third party assemble the optics suitcases that are distributed worldwide. This transition enables us to provide more suitcases than ever before. Additionally, we are in the process of revamping a program what was previously known as "Educator's day". Look for more details to come in the spring.

We are always looking for more new members and additional ways to support our mission. If you have ideas, want to participate, or have any questions, please feel free to reach out to me.

Regards, Daniel Staloff

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IONS Conference

IONS Rochester 2017 was recently held at the Rochester Institute of Technology. The International OSA Network of Students (IONS) is a student run conference held around the globe. IONS Rochester was the sole North America meeting of 2017. The conference was attended by 53 graduate and undergraduate students from countries around the world including the Phillipines, Taiwan, India, Columbia, Germany, Israel, and the Czech Republic. The conference events included technical talks and poster presentations from the attendees as well as several professional development and social events to help student network with each other and invited guests.

A major goal for IONS was to showcase the optics, photonic, and imaging community in Rochester. The conference featured three invited speakers who presented work unique to Rochester. This included Dr. Bob Fiete of the Harris Corporation, Dr. Gregory Heyworth and Dr. Jennifer Hunter of the University of Rochester.

Attendees also had the chance to network with members of the Rochester



optics industry during the Industry Lunch and Panel Discussion on Careers in Optics. Sponsors and guests from Harris, Optimax, GS Plastic Optics, Sydor and QVI participated by speaking with students about transition from academia to industry and answering anonymous question on the panel.

On the last day of IONS Rochester, attendees took a trip to the George Eastman Museum where student learned the history of George Eastman and Kodak and their connection to Rochester. The events were capped off with a final banquet featuring presentations on the RIT's student chapter community outreach and how other chapters can become more involved with their communities.

IONS Rochester 2017 could not be possible without the participation of sponsors such as the Rochester OSA local chapter. Contributions helped to provide food and travel support for those travelling to Rochester.



Building Skills for industry panel discussion. Guests and sponsors answer questions from attendees on preparing for life after graduation and transitioning to Industry.

UR Institute of Optics Welcomes a New Director

The University of Rochester's Institute of Optics welcomed their new Director, P. Scott Carney, this past July 1st. The Rochester optics community is excited to welcome a new leader to the Institute. Below is Dr. Carney's biography and a link to a University of Rochester press release announcing the new Director.

P. Scott Carney is the Director of The Institute of Optics, effective July 2017. He earned a PhD in Physics (1999) from the University of Rochester; his advisor was Professor Emil Wolf. Scott's early career included an internship at the Rome Air Development Center Photonics Lab at the now-closed Griffiss Air Force Base, classes taken at Hamilton College, and a bachelors degree in Engineering Physics (1994) from the University of Illinois Urbana-Champaign. After a post-doc at Washington University in St Louis, he returned to his undergrad alma mater as faculty in ECE Illinois where he taught for 16 years.

Scott has an established record of commitment to creating opportunities for students at all levels and from all backgrounds. At Illinois, he oversaw the expansion of their senior capstone course to more than 400 students per year, while maintaining individual excellence and a high level of personal attention to each student. He was the Rose Education Innovation Fellow, in which capacity he led and participated in multiple teaching initiatives to improve writing and presentation skills, develop communities of practice and mentor new faculty. He served as Interim Director of the new degree program, Innovation, Leadership, and Engineering Entrepreneurship (ILEE) at Illinois, creating a new paradigm for engineering education and the way we frame what an engineering career looks like.

Serving as Editor-in-Chief of the Journal of the Optical Society of America A, Scott is active in the Optical Society. Together with Urs Utzinger from our great sister school, the University of Arizona, Scott was the 2014 Program and 2016 General Co-chair of Frontiers in Optics. He continues to support both OSA meetings, such as Mathematics in Imaging, as well as non-OSA meetings, such as Near Field Optics.

In addition to his academic and societal endeavors, Scott co-founded Diagnostic Photonics, Inc., a medical device company bringing to market some of the innovations to come from his university research. Diagnostic Photonics makes a hand-held surgical microscope that renders 3-D views of tissue at the cellular scale. They recently published results of a clinical trial in which the instrument was used to inspect the margins of excised breast tumors.

Scott is primarily an applied theorist, but will do experiments in a pinch. He considers himself a generalist, but is lately focused on problems in computed imaging, spectroscopy, and coherence theory. His major career accomplishments include modeling of tip-sample interactions in near-field microscopy and the solution of related inverse problems, solution of the inverse problem for optical coherence tomography (OCT) and the subsequent invention of interferometric synthetic aperture microscopy (ISAM) and the recent development of synthetic optical holography (SOH). He has made contributions to spectroscopy and the correction of spectroscopic data to account for the effects of scattering and propagation. In addition to ongoing interest in all of these areas, he also maintains focus on problems in non-linear enhanced spectroscopy.

You can learn more about U of Rochester's new director in the UR press release linked [here](http://www.rochester.edu/newscenter/scott-carney-director-institute-optics-251812/) (<http://www.rochester.edu/newscenter/scott-carney-director-institute-optics-251812/>)



UNIVERSITY of
ROCHESTER

RIT Future Photon Initiative

The Future Photon Initiative (FPI) is the face of photonics for RIT, leveraging existing research activities of over 20 professors across five colleges in pursuit of advancing new photonic devices such as detectors, integrated silicon photonics and solar cells. FPI applies and commercializes the efforts of existing RIT groups who develop technology for the generation, transmission, manipulation, absorption, and detection of photons. Eleven groups across the RIT campus make up FPI: Center for Detectors, Integrated Photonics Group, Nanolithography Research Lab, NanoPower Research Labs, Photonic Systems Lab, Photonics and Optics Workforce Education Research project, Semiconductor Microsystems Fabrication Lab, Simone Center for Innovation and Entrepreneurship, and the Vignelli Center for Design Studies. Highlights from FPI over the last quarter:

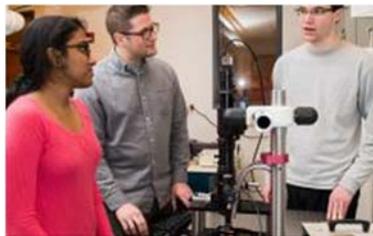
RIT Research Prepares Students for Photonics & Optics Jobs

Benjamin Zwickl, assistant professor of physics; Kelly Norris Martin, associate professor of communication; Anne Emerson Leak, post-doctoral researcher in science education, constitute an interdisciplinary team utilizing a nearly \$400,000 Education and Human Resources Core Research grant from National Science Foundation.



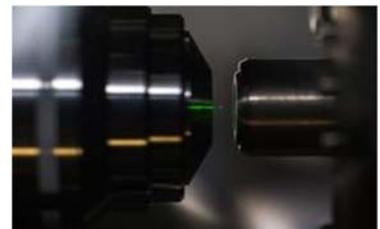
AIM-ing up: Student-researchers build the photonics ecosystem

Rochester is making an impact in photonics manufacturing, and RIT is playing a central role as a key partner in AIM Photonics, a national manufacturing initiative expected to stimulate economic development and global competitiveness.



Sensing technology takes a quantum leap with Office of Naval Research funds levitated optomechanics project

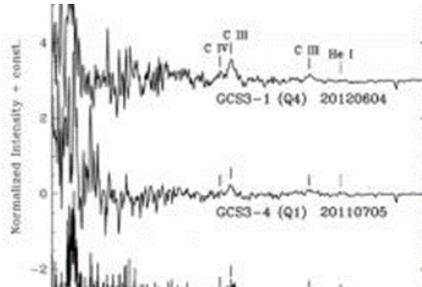
Mishkat Bhattacharya, a theoretical physicist at RIT, is investigating new precision quantum sensing solutions for the U.S. Department of the Navy's Office of Naval Research. The three-year study is supported by \$550,000 grant and is a continuation of a previous award.



RIT Future Photon Initiative, continued

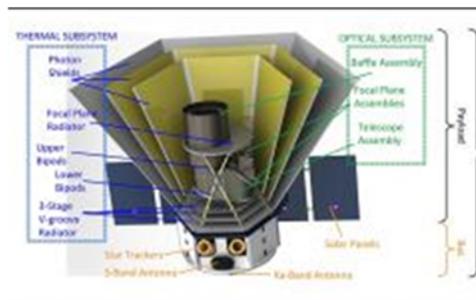
The Galactic Center's Mysterious Quintuplet Stars Unmasked

Most objects in the center of the Milky Way are so highly obscured from our view by intervening dust that, at wavelengths visible to the naked eye, only about one photon out of every trillion emitted by them toward the Earth actually reaches our planet.



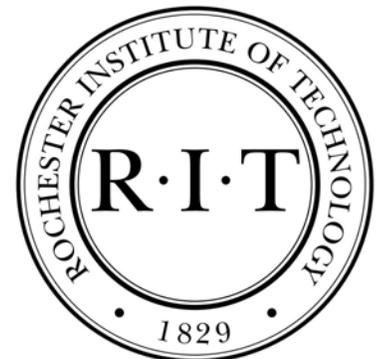
Proposed astrophysics mission to conduct the first infrared spectral survey of the sky

NASA has recently chosen six proposed astrophysics mission for concept studies. Among them is the Spectro-Photometer for the History of the Universe, Epoch of Reionization, and Ices Explorer, or SPHEREx, which aims to unlock the mysteries of the universe by performing the first all-sky spectral survey.



RIT astrophysics Ph.D. student wins competitive NASA fellowship

Rochester Institute of Technology graduate student Chi Nguyen was selected for a NASA Earth and Space Science Fellowship in Astrophysics Research. Nguyen, originally from Vietnam, is a Ph.D. student in RIT's astrophysical sciences and technology program. She is one of eight fellowship recipients selected from 141 applicants to the Astrophysics Science Research Program, a division of the NASA Earth and Space Science Fellowship Program.



RIT Chester F. Carlson Center for Imaging Science

The Chester F. Carlson Center for Imaging Science at RIT is a highly interdisciplinary University Research and Education Center, dedicated to pushing the frontiers of imaging in all its forms and uses. Through education leading to BS, MS, and PhD degrees in Imaging Science, we produce the next generation of scientists and engineers who develop and deploy imaging systems and technologies to answer fundamental scientific questions, monitor, and protect our environment, help keep our nation secure, improve computer vision, and uncover the secrets of history. From how light is generated to how the world is perceived, imaging science addresses questions about every aspect of systems that are used to create, perceive, analyze, and optimize images. Imaging Science is both truly interdisciplinary in its content and multi-disciplinary in its applications.

The Center's latest annual report can be found at <http://cis.rit.edu/about/annual-reports>, and recent news about the Center's research is at <http://cis.rit.edu/about/news>.

To arrange a visit to the Center or one of its laboratories, please contact the Center Director, Dr. Dave Messinger, at messinger@cis.rit.edu, or the Associate Director, Joe Pow, at pow@cis.rit.edu.

MCC

The Monroe Community College Optical Systems Technology program has graduated nearly 700 optics technicians in the past 50 years and we are planning to exceed that in the next 50. America needs optics technicians and we are committed to developing the talent. Strengthening and growing the Optical Systems Technology program relies upon the support of our industry partners and we are grateful for our regional optics community. A few highlights include:

- In April, the Optical Systems Technology's *Optics & Photonics Technology INnovation-OPT IN!* project was awarded over \$550,000 from the National Science Foundation. The project will strengthen the MCC Optical Systems Technology program and academic pipeline and will broaden industry and community partnerships to grow the regional optics and photonics workforce.
- In September, the Optical Systems Technology program was awarded \$760,000 from The Corning Foundation for laboratory upgrades, professional development and outreach activities, and initiatives to increase underrepresented populations.
- 6 area high schools are participating in the optics dual enrollment program, with over 200 high school students taking the Optical Systems Technology's Intro to Optics course in their high school.

To build upon the wonderful Optics Suitcase Stephen Jacobs created, we are creating an "Optics Road Show" to broaden knowledge of the optics and photonics industry. These demonstrations will include information about education and career options while exhibiting regionally-manufactured optics products to the community and pre-collegiate students. The intent is to highlight products manufactured here in Rochester to show the broad impact Rochester optics companies have on our lives. We are currently seeking donations of items to include in the Optics Road Show.

As the spring semester begins, students are working on their resumes and preparing for their summer and beyond. If your company is interested in hiring a summer intern or has a part-time or full-time opening for an optics technician please let me know.

Also, we are seeking a new full-time tenure track faculty member. If you or someone you know is interested, please see the posting here: <https://jobs.monroecc.edu/postings/4504>

Thank you again for your support.

Alexis Vogt, PhD

Associate Professor & Endowed Chair, Optical Systems Technology

RRPC

– Tom Battley, Executive Director

Nearly 20 years ago, Christopher Cotton and a group of forward-thinking optics and photonics leaders established the Rochester Regional Photonics Cluster (RRPC). Kodak and Xerox were in rapid decline; the dot-com bubble would soon burst. To survive that 1999 economic storm, regional optics, photonics, and imaging (OPI) small and medium-sized enterprises would need to innovate to thrive and support the local economy.

The national Center for Optics Manufacturing (COM) had been operating in Rochester since 1990. The Center's impact in the local — and the international — OPI community remains evident today in how complex optics are designed, fabricated, and measured.

Photonics enterprises were taking deeper root. Corning Inc. had acquired Rochester Photonics Corp., expanding in Canal Ponds Office Park. In a few short years, CEO Michael Morris would buy his company back from Corning and establish RPPC Photonics and Apollo Optical.

Another company, Semrock, was just being established. A good portion of their market focus was telecommunications and that would soon disappear.

The young company Optimax employed about 40 people at this time. They were using technologies developed locally – OptiPro's CNC glass grinding machines and QED magnetorheological finishing (MRF) machines. Focusing this and other technology on the niche small volume, quick delivery prototype optics manufacturing market, the company was poised to grow.

Enter the RPPC, which formed to

support and enhance the industry strength. Early board members included Christopher Cotton (LLE & ASE Optics); Bruno Glavich (Applied Image); John Hart (Holotek); Christopher Palmer (Richardson Gratings); Will Houde-Walter (Lasermax); Michael Foley (Fresnel); Leonard Simon (G-S Plastic Optics); Kevin Kearney (Pixel Physics); Rick Plympton (Optimax); Tom Battley (Monroe County Economic Development).

One of the Cluster's first goals was to host a major conference in the region each year. The group established and hosted Opto-Northeast in 2001 with 140 exhibitors, 120 technical papers and 1600 attendees. Not bad for a first year conference. Today you know that conference as SPIE Optifab. Other priorities that still drive the organization today are workforce development, networking events, and regional, national, and international marketing activities that promote New York State and the Finger Lakes region as hubs for optics, photonics, and imaging.

RPPC has spearheaded efforts such as operating an annual optics summer camp for high school students, raising funds for MCC's optical systems technology program (~\$1.4 million to date) and hiring Alexis Vogt, Ph.D., as MCC's first endowed professor of optics. Today over 300 high school students from our region are taking dual credit optics with MCC. These are credit bearing courses that can be used in pursuing a degree.

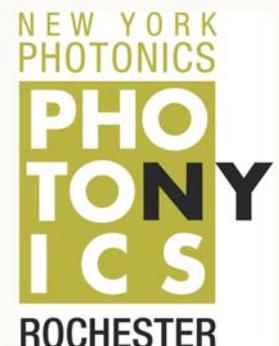
Attendees of New York Photonics annual meetings during the past ten years know that we collaborated with the National Photonics Initiative to convince lawmakers in Washington, D.C., to establish a Photonics Manufacturing Institute

in the United States, and that we were tireless advocates for establishing that institute in Rochester. AIM Photonics is ramping up today and Rochester is in a leadership position.

The Cluster is devoted to the reinvention of the Rochester Museum & Science Center as an international center for light, astronomy, and multimedia, including a complete state-of-the-art overhaul of the Strasenburgh Planetarium. During the International Year of Light in 2015 we took part in activities worldwide by hosting and promoting events highlighting Rochester's role in OPI and the importance of optics and photonics to our lives. We proposed an annual conference for multimedia and the science of light to be held each year in Rochester. We coined the acronym OPI (optics, photonics, and imaging) that our region is recognized for. Locally, in Albany, and in the nation's capital, the term is nearly synonymous with Rochester and the Finger Lakes.

RRPC (New York Photonics) is a not-for-profit organization founded to promote and enhance the New York state optics, photonics and imaging industry by fostering the cooperation of business, academia and government. We collaborate with numerous organizations to nurture the region's OPI ecosystem. We are delighted that our Albany and Washington delegates now recognize the critical importance of our industry to the future, and we are gratified to see hundreds of individual advocates from a range of perspectives, including the Chamber of Commerce, economic development officials, and legal, accounting and other service industries. We've made a great deal of progress together.

Learn about these initiatives and more at RRPC-NY.org.



American Precision Optics Manufacturer’s Association (APOMA)

The American Precision Optics Manufacturer’s Association (APOMA) is the working group of the top U.S. optics manufacturers. APOMA is committed to promoting and advancing opportunities for the precision optics industry. Several Rochester area companies are active member of APOMA, including; AccuCoat, AGI, Angstrom Precision Optics, Arielle, Corning Tropol, CVI Melles Griot (IDEX), Glass Fab, JML Optical, Launch Team, Metrology Concepts, Optimax, Photon Gear, QED, RPO, and Swift Glass.

In 2018, APOMA is launching a number of new initiatives.

Input on ITAR regulation changes

APOMA member companies will be offering comments and recommendations for potential changes to the USML or CCL sections pertaining to precision optics. Meetings will take place with SPIE’s Government Relations office during Photonics West 2018.

ISO 10110 standards development and industry rollout

It is believed that the ISO 2010 standards are vetted well enough for APOMA to push for industry wide adoption. Many firms in the precision optics supply chain use outdated and unsupported MIL specs for prescribing quality standards. APOMA will offer training classes and promote movement by member companies towards full adoption – moving the industry to one standard that is internationally recognized and supported.

National optics manufacturing apprentice program

Optimax has recently developed a New York State certified Optimax Manufacturing Apprenticeship Program. APOMA and Optimax will lead a program with other APOMA member companies to establish a national credential. The goal is to develop a credential that is federally certified, but if that is not possible, it will be an APOMA authorized and recognized credential.

APOMA Technical Workshop at Lawrence Livermore National Lab (LLNL) October 18, 19, 2018

This is an educational program for optics manufacturing engineers and technicians. Industry process equipment and metrology providers will present the latest in optics manufacturing capability along with informative talks by optics manufacturing experts. The workshop will also include a tour of National Ignition Facility (NIF).

Learn about these initiatives and more at APOMA.org.

OSA Rochester Section 2017-2018 Council

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About OSA Rochester Section

Find us at
osarochester.org

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