



## The Institute of Optics

### Highlights from 2013

*Greetings to you from The Institute of Optics! At the close of my second year as Director, I am truly thankful for our Optics family of students, faculty, staff, alumni, IA members and friends. There is so much to be proud of from everyone's efforts this year. Recognitions and awards, a summer Photon Camp, the Center for Freeform Optics, endowed Scholarships, and a Chaired Professorship are a few highlights. With an inspired focus on outreach, 2013 became a year of significant growth in undergraduate and MS student numbers. Despite government uncertainties, our faculty remained concentrated and productive, maintaining strong leadership, and continuing ground-breaking research. International collaboration expanded, with MOU's in five countries resulting in increased opportunities. The year 2014 dawns brightly, and we look forward to continued excellence. Meliora!*



Xi-Cheng Zhang

#### January

**Daniel Smith** joined The Institute as the undergraduate program manager. Dan came to us from the U.S. Navy where he worked as an instructor & standardization pilot. **Betsy Benedict** took on a new challenge as our graduate program coordinator.



**M. Parker Givens**, professor emeritus and former acting director of **The Institute of Optics**, died peacefully at age 96. Givens gave more than 50 years of service to the University. His legacy endures in the endowed chair that bears his name—and in the memories of Institute alumni whose lives & careers he influenced.



**Prof. Chunlei Guo**, was named a fellow of the American Physical Society (APS).

#### February

**Prof. Jim Zavislan** and I attended and spoke at an alumni reception Feb. 3 during the Photonics West meeting. Even with the Super Bowl we had a record attendance of over 80 guests to hear the latest on new initiatives at The Institute. Mark your calendars for Photonics West '14 and the annual Optics alumni reunion on Feb. 2.

**Gayle Thompson** celebrated her 30<sup>th</sup> year as Optics' Secretary & Special Events Coordinator for programs such as Industrial Associates and the Summer Course Series.



#### March

**Prof. James Fienup**, received the OSA **Emmett N. Leith Medal** for 2013. Jim was recognized for the integration of optics and digital systems as demonstrated in pioneering contributions to phase retrieval, image restoration, wavefront sensing and computational imaging.

The Institute of Optics hosted the Industrial Associates Spring Program. Newport awarded 2013 Student Prizes to **Leva McIntire** and **Haomin Yao**, the Junior and Senior Graduate representatives, for their leadership and dedication.



**Prof. Wayne Knox**, after serving the Hajim School as Associate Dean of Education and New Initiatives, began a year off to pursue research on technology that could be as important to vision care as Lasik surgery. **Jim Zavislan**, stepped up as the new Associate Dean of Education and New Initiatives.

At the UR's 163<sup>rd</sup> commencement, **Prof. Miguel Alonso** received the Edward Peck Curtis Award for Excellence in Undergraduate Teaching and **Prof. Govind Agrawal** the William H. Riker Award for Graduate Teaching.

**Dr. Kevin Thompson**, visiting scientist at The Institute of Optics, received SPIE's 2013 A.E. Conrady Award.



Edmund Optics sponsored free hoodies for all faculty, staff and students of The Institute. PhD candidate **Dan Christensen** created the design and collaborated with EO and The Institute for this warm gift. **Rebecca Pettenski '15** models the hoodie.

## April

PhD Candidate **Cristina Canavesi** was one of two first-place finishers in **The Simon Games**, a business simulation competition, earning a Full-Tuition Scholarship to pursue an Executive MBA at the Simon School.

NSF graduate fellowships were awarded to Optics majors **Sarah Walters** ('13) and **Patrick Gregg** ('11), now a PhD student in electrical engineering at Boston University.

The Institute of Optics and the Department of Physics engaged in their 3<sup>rd</sup> annual **Photon Cup** soccer match on April 5. Down 0-3 midway through the match, the Institute players had to storm back to emerge as 4-3 winners.



## May



PhD candidate **Kathleen Adelsberger**, is a member of the Rochester Edge women's hockey team that won the USA Hockey National Championship at the women's Senior C Level.

**Jinxin Huang**, a graduate student in Prof. **Jannick Rolland's** lab in Optics, and **Joseph Choi**, an Optics Ph.D. student, won **SPIE Optics and Photonics Education Scholarships**.

At UR's 164th Commencement, seven Optics students earned their BS, twelve earned an MS, and thirteen achieved their PhD. Of these new alumni, Dennis Fantone (MS) is a second-generation Optics



degree recipient (dad Stephen, PhD '79).

Also, Greg McKay (BS) followed his dad Kenneth, BS '79, and brother Matt, BS '09.

Watching these families' continuing excellence in Optics was heart-warming. Anticipating the future for each of our newest alumni is always awe-inspiring.

Two optics seniors earned Hajim School awards: **Samuel Steven** received the **Donald M. Barnard Prize** and **Sarah Walters** received the **Charles L. Newton Prize**.

**Prof. David Williams**, received the **Edridge Green Medal** from the **Royal College of Ophthalmologists** in London.

## June /July

There were 81 participants in this year's two-week **Summer Course Series**. The Institute first offered a "Summer Course in Optics for Industrial Laboratory Engineers" in 1931, two years after its founding.

The Institute launched our inaugural **Photon Camp**. Fifteen rising seniors from West Irondequoit High



School spent the week learning about the field of Optics under the tutelage of **Dan Smith, Per Adamson, Jim Zavislan**, and several graduate and undergraduate Optics students.

The camp focused on four areas: lectures, lab-work, educational field trips, and a capstone project

**The 10th Rochester Conference on Coherence and Quantum Optics** which originated in The Institute by Robert Hopkins and Emil Wolf in 1960, and **the 2nd International Conference on Quantum Information and Measurement**, convened June 17 - 20.



## August

Led by Prof. Jannick Rolland, the Center for Freeform Optics was funded August 1 by the NSF and our industry partners; Ball Aerospace, NASA Goddard, Optipro Corp., Rochester Precision Optics, Sandia National Labs, PolymerPlus, Schott N. America, Wright Patterson Airforce, and Zygo Corporation.

**Prof. Nick Vamivakas'** demonstrated that it is possible to levitate diamonds as small as 100 nanometers (approximately one-thousandth the diameter of a human hair) in free space, by using a technique known as laser trapping. Published in Optics Letters, he described how to use a laser to trap nanodiamonds in space, and using another laser, cause them to emit light at given frequencies.

## September

I was selected to receive the **2014 Kenneth J. Button prize** by the International Society of Infrared, Millimeter, and Terahertz Waves.

The Institute welcomed 15 new PhD, and 21 MS graduate students. The undergraduate population continues a growth spurt, with estimates of 20 in the class of 2014, 28 in the class of 2015, 39 in the class of 2016 and 37 in the class of 2017.

PhD candidate **Mohammad Mirhoeseeini** won the OSA Emil Wolf Prize.

## October

**Govind Agrawal** and I were selected as OSA Editor-in-Chief of Advances in Optics and Photonics, and Optics Letters, respectively.

**Chunlei Guo** was elected as an OSA Fellow.

**Jim Zavislan** and **Duncan Moore** put a new spin on the Industrial Associates' meeting, holding the main meeting on Sunday, October 13<sup>th</sup>, with interviews on Monday, October 14<sup>th</sup>, while celebrating 60 Years of Optics Entrepreneurship.



The **Professor Nicholas George Endowed Scholarship** was established. During his career, Nick has advised more than 45 graduate thesis students.

**Prof. Govind Agrawal** was installed as the inaugural **Dr. James C. Wyant Professor in Optics**. President Joel Seligman led the celebration.



**Wayne Knox** hosted the **6<sup>th</sup> International Symposium of Ultrafast Photonics Technologies**. Approximately 80 scientists attended ISUPT, which provides a forum for researchers working on ultrafast photonic technologies.

## November

Five Optics students were awarded Excell Partners Prize for their portable eye examining device: **Felix Kim '14**, **Pedro Vellejo-Ramirez '16** and PhD candidates **Aizhong Zhang**, **Len Zheleznyak** and **Sam Steven**.

**Prof. Carlos Stroud** was appointed the new Divisional Associate Editor and member of the Board of Editors for APS Physical Review Letters.

**Nick Vamivakas** was awarded the 2013 International Union of Pure and Applied Physics (IUPAP) C17 Young Scientists Prize in Quantum Electronics (applied aspects).

I was selected as a Fellow of the American Association for the Advancement of Science.

UR and the Technical University of Denmark signed a Memorandum of Understanding and Non-Disclosure Agreement, paving the way for shared research and student exchange opportunities. MOU's initiated by The Institute of Optics have been signed with international Universities from five countries in 2013.



## December



The **Professor Duncan T. Moore Endowed Scholarship** was established. During his career, Duncan has advised more than 50 graduate thesis students.

I was selected as an SPIE Fellow.