



Attendees at Frontiers in Optics. Photo courtesy of the Optical Society.

Frontiers in Optics

In mid-October, the Optical Society's ninety-sixth annual meeting was held in Rochester Riverside Convention Center.

The conference offered almost nine hundred presentations to over seventeen hundred attendees; both numbers are up from last year's meeting in San Jose, California.

The first day of the conference featured a variety of short courses and a tribute to University of Rochester optics professor **Emil Wolf**.

The second day began with a plenary session and an awards ceremony, and also featured presentations from well-known researchers: **Marlan Scully** of

Texas A&M University discussed quantum photocells, **Michael Fayer** of Stanford University spoke about ultrafast vibrational echo spectroscopy, **Al Goshaw** of Duke University addressed the Higgs boson, **David Williams** of the University of Rochester discussed retinal imaging and **Paul Corkum** of the University of Ottawa spoke about attosecond photonics.

Industry was well represented in two days of exhibits, at which the latest products from eighty leading optics and photonics companies were on display.

The next annual meeting will be held in October 2013 in Orlando, Florida.

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The purpose of the Rochester Section of the Optical Society of America is to promote and disseminate knowledge of optics and closely related sciences in both its local community and throughout the world by (i) bringing together scientists, engineers, business leaders, educators and students, (ii) providing professionals and students with educational resources for the purpose of improving and developing their abilities, (iii) encouraging the sharing of knowledge and innovation, and (iv) encouraging students to study optics and other sciences.

◆ ◆ ◆ ◆ ◆ **Upcoming Events** ◆ ◆ ◆ ◆ ◆

◆ **OSA-RS Program** ◆

In November we have two talks on the technical program:

Tuesday, November 13th, 2012

“Latest Developments in MRF Technologies”

Dr **Andrew Kulawiec**
QED Technologies
Rochester, New York

Tuesday, November 27th, 2012

“What’s Up at Semrock?
Complex Thin Film Coatings
for Spectral Transmission
and Dispersion Control, and
Who is IDEX/Semrock”

Dr **Turan Erdogan**
IDEX/Semrock
Rochester, New York

Both talks are open to the public and will start at 7:00 pm and will be held at the Coliseum at the University of Rochester’s Laboratory for Laser Energetics (LLE), 240 East River Road, Rochester, New York, 14623.

Still not a member of the Rochester Section?!

What are you waiting for?!

Go to <https://osarochester.wildapricot.org/membershipform.html> to choose the right membership category for you.

**Mark Your Calendars!
Optics Events in 2013**

Photonics West

February 2-7, 2013
San Francisco, California
<http://spie.org/x2584.xml>

OFC/NFOEC

March 17-21, 2013
Anaheim, California
<http://www.ofcnfoec.org/>

**OSA, Rochester Section
Annual Dinner Meeting**

May 7, 2013
Rochester, New York
<http://www.osarochester.org/AnnualDinner.html>

CLEO

June 9-14, 2013
San Jose, California
<http://cleoconference.org>

Photonics North

June 3-5, 2013
Ottawa, Ontario, Canada
<http://www.photonicsnorth.com>

SPIE Annual Meeting

August 25-29, 2013
San Diego, California
<http://spie.org/x30491.xml>

OSA Annual Meeting

October 5-9, 2013
Orlando, Florida
<http://www.frontiersinoptics.com/home/fio-2013/>

Optifab

October 15-17, 2013
Rochester, New York
<http://spie.org/x6567.xml>

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The Optical Society of America, Rochester Section, is grateful for the continued support of its corporate members.

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Lumetrics Receives NIH Grant

Lumetrics, Inc. has been awarded a \$973,000 research and development grant from the National Institutes of Health – National Eye Institute to fund development of a digital hand-held diagnostic ophthalmic instrument.

The instrument is a pen-sized camera that will serve as a clinical tool for inspecting the human retina.

Lumetrics, based in Rochester, is a twenty-person photonics manufacturing company known for its OptiGauge thickness measurement system used by manufacturers of medical devices, optics, and industrial materials. The system measures the thickness of translucent materials.

"We are extremely pleased that the National Institutes of Health found our idea worthy of such a large and prestigious grant," said Lumetrics' CEO **John Hart** in a prepared statement. "The collaboration with the University of Rochester and its Flaum Eye Institute is an incredible opportunity for Lumetrics and will lead to new jobs at our company and expanded purchasing for our local talented supplier community."



Do you have news of interest to the OSA-RS membership?

Contact Chris Palmer at [president\(at\)osarochester.org](mailto:president(at)osarochester.org)

Regional Accelerator Awarded \$1.9M

Ten public-private partnerships across the country were awarded a total of \$20 million to help revitalize American manufacturing and encourage investment. One of these partnerships, the only one in New York State, is the Rochester Regional Optics, Photonics and Imaging Accelerator program.

The ten partnerships were selected through the Advanced Manufacturing Jobs and Innovation Accelerator Challenge, a grant process started earlier this year to support efforts to strengthen advanced manufacturing.

The Rochester Regional Optics, Photonics and Imaging Accelerator is a program involving High Tech Rochester, NYSTAR (the division of science, technology and innovation of Empire State Development, the state's economic development

agency) and the University of Rochester. The program will accelerate the growth of optics, photonics and imaging companies by leveraging the Rochester region's strengths in education, workforce training and technology development.

According to the office of US Senator Charles Schumer of New York, the funds are designed to support advanced manufacturing, create sustainable jobs, develop a skilled workforce, encourage small business development and accelerate technology innovation.

"Rochester has long been a world leader when it comes to pushing the boundaries of optics and imaging and this massive federal investment will build on Rochester's preeminence in these industries."

Senator Charles Schumer

OSA-RS Council Welcomes New House Co-Chair

The executive council of the Optical Society of America, Rochester Section, is pleased to welcome **Alexandra Artusio-Glimpse** as House Co-Chair.

Aly received a bachelor's degree in imaging and photographic technology from the Rochester Institute of Technology. She is presently a third year graduate student there, pursuing a doctorate in imaging science. She is a recipient of a Graduate Student Fellowship from the National Science Foundation. Her research with advisor **Grover Swartzlander** addresses optical lift (the optical analogue of aerodynamic lift).

In addition to serving as treasurer of the RIT student chapter of SPIE, Aly will serve the local OSA section as house co-chair with Yuhong Yao of the University of Rochester.



Richardson Gratings Helps Find Nearest Extrasolar Planet

Since the discovery in 1988 (and confirmation in 2003) of the first planet orbiting a star other than the Sun, the existence of over eight hundred extrasolar planets ('exoplanets') has been confirmed, with over two thousand additional candidates being investigated.

In October, the star system closest to our Sun — the Alpha Centauri cluster, only 4.3 light years away — was found to contain a planet with approximately the same mass as the Earth, and therefore one of the least massive exoplanets discovered so far.

The technique used to discover this exoplanet, named Alpha Centauri Bb, involved measuring the radial velocity of the star Alpha Centauri B over a four-year period to detect slight movements due to the orbit of this star around the common center of mass it shares with a planet. This planet was particularly difficult to find due to the two companion stars in the cluster.

Measuring the change in radial velocity — about one mile per hour — is performed using Doppler spectroscopy, and requires an instrument with extremely high spectral resolving power. Alpha Centauri Bb was detected using the High Accuracy Radial velocity Planet Searcher (HARPS) spectrometer at the European Southern Observatory in Chile, which contains a 214 x 840 mm mosaic echelle grating manufactured by Richardson Gratings. The HARPS instrument has now detected seventy-five exoplanets.

◇ Vignettes ◇

Brian Hart, an optical engineer with ITT Exelis Geospatial Systems, had the paper "Filtering Wavefront Maps Improves Uncertainty Estimates" published in the September 2012 issues of *Optics and Photonics News*.

David Williams, professor of optics at the University of Rochester, is one of the recipients of the 2012 António Champalimaud Vision Award. The award recognizes William's work using adaptive optics to correct for imperfections in the eye.

The Optical Society has announced that **Philip Russell** has been elected as its vice president for 2013. Russell is the director of the Photonics and New Materials group at the Max Planck Institute for the Science of Light, located at the University of Erlangen, Germany. He will serve as president-elect in 2014, president in 2015 and past-president in 2016.

Mike Bechtold, president of OptiPro Systems, was interviewed on October 17th on News 8. He spoke about the company's thirty-year history, his optimism regarding the optics industry and why Rochester is a good location for his company.

Jim Sydor, president of Stefan Sydor Optics, will be honored on November 15th at Monroe Community College's 23rd annual Salute to Excellence, at which he will be inducted into the MCC Alumni Hall of Fame. Sydor is a 1971 graduate of the college's optical technology program.

WORKinOPTICS.com

The Optical Society's niche online job board, WORKinOPTICS.com, connects leading employers, qualified job seekers and consultants within the optics and photonics community.

Members may post resumes. students may look for internships, and employers may search and recruit from more than 1,500 qualified job seekers.

<http://www.workinoptics.com>

OSA Fellow Wins 2012 Nobel Prize in Physics

OSA fellow David J. Wineland, of NIST in Boulder, Colorado, and Serge Haroche, of Collège de France, shared the 2012 Nobel Prize in Physics for "independently invent[ing] and develop[ing] methods for measuring and manipulating individual particles while preserving their quantum-mechanical nature, in ways that were previously thought unattainable."

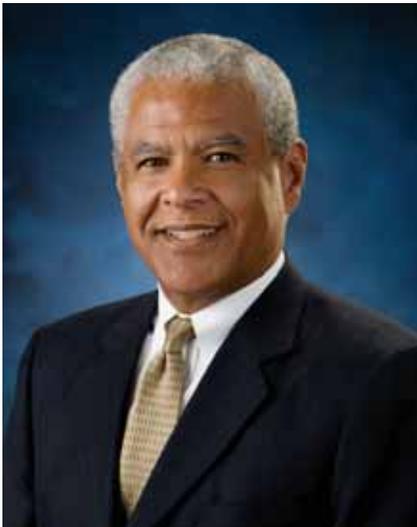
Wineland developed a method for cooling atoms using light, using laser pulses to suppress the thermal motion of an ion and put it in its lowest energy state. While in this state, the quantum phenomena of the ion may be observed.

The Nobel Prize in Physics is awarded each year by the Royal Swedish Academy of Sciences to those who make "the most important discovery or invention within the field of physics." Wineland joins twenty-five OSA members who are Nobel laureates.

Interview with an Optics Luminary

Edward White

Eastman Kodak Co. and
Edward White Consulting



Edward White

Ed White had a long and distinguished career at Eastman Kodak Company, most recently serving as head of Kodak's optics business. After retiring a few years ago, Ed has made a success of his second career: consulting. He was recently chosen to join the team of optics experts who researched and wrote the Harnessing Light II study commissioned by the National Academy of Sciences.

OSA-RS: Please tell us about yourself.

Ed: I started my post high school education at a SUNY technical college then went on

to earn a BS degree in Mechanical Engineering and an MBA, both from the University of Rochester.

The first phase of my career was at Eastman Kodak. I began work at Kodak as an intern two years before finishing my engineering degree at the University of Rochester. Although Kodak is going through difficult times now, make no mistake, Kodak was a wonderful company to work for. The training and experience I obtained at Kodak were second to none. I had the opportunity to have a wide range of assignments and experiences while working for the same company, which is a bit unique. Experiences in R&D, product and process engineering, manufacturing, customer service and the business units, to name just a few, allowed me to develop a broad set of skills and capabilities. The opportunities to manage and lead various parts of the company domestically and internationally were fantastic.

I retired from Kodak in 2009 and began the second phase of my career ... a consulting business focused on helping companies solve challenging business, technical and operational problems domestically and internationally. Business strategy, new product development, operational excellence, and manufacturing capability are some of the areas in which I consult. This part of my career leverages much of what I learned and developed at Kodak, working internally with many divisions of Kodak and externally with large and small firms around the world. It also builds on the experiences associated with working with a

variety of domestic and international clients.

OSA-RS: When did you first start working in optics?

Ed: That's an interesting story.

I spent the first half of my Kodak career working in and supporting the Sensitized Products side (film and paper) of Kodak's business. In 1994 I moved to the equipment side (cameras, projectors, copiers, scanners, &c) of the business as Director of Facilities for Equipment Manufacturing. I was part of a team of directors, each leading a specific part of equipment manufacturing.

One of the team members, Bob Belluscio, was leading the Optics organization. In 1996, Bob passed away suddenly. The following week, my boss asked me to fill Bob's position. I initially resisted; in fact I said "thank you, no." My boss insisted that leading the Optics organization would be a good opportunity and a good experience. He won the debate and I moved to lead the Optics organization soon after.

Looking back, the move to Optics was one of the best opportunities I had at Kodak. It was a fantastic experience! I had a great team from R&D, design and engineering through manufacturing and we had world-leading capability in the US, Germany, Mexico, Taiwan, China and Japan.

We were able to grow the business from essentially providing optics only for Kodak products to nearly a \$100 million business that produced products for internal use and external sale.

OSA-RS: Tell us a bit about operational excellence ... is that a topic that you commonly find in optics companies, or it is still new to our industry?

Ed: My definition of Operational Excellence is fairly straight-forward. Once the needs of the customers are understood and a business strategy is constructed, operational excellence addresses setting goals, measuring performance against those goals and continuously improving.

Although operational excellence is often thought of as relating to manufacturing, it clearly applies to all aspects of a business including R&D, engineering, marketing & sales and of course manufacturing. The optics industry is not different from other industries in that there are companies which are exceptional in this area and there are companies that can improve. A systematic approach starting with the business strategy and resulting in measurable goals placed on each organization in the company that are built on year over year improvement will benefit any company, regardless of size. Organizations generally respond very favorably to knowing clearly and concisely what is expected of them. How the goals and the continuous improvement is achieved often involves employing a number of tools and principles including "lean principles." These tools and principles are very powerful when employed appropriately and can lead to dramatic improvements in operating performance. Specifically regarding optics companies ... a number of companies have

implemented and are implementing these tools and principles, and they are seeing immediate and long-term benefits.

OSA-RS: In your experience, how do engineers view manufacturing engineering, compared with design engineering?

Ed: This subject presents a real opportunity for collaboration between industry and academia. Today, in my opinion, not enough focus is put on manufacturing engineering. When I talk to engineers who are just entering the workforce, not many of them are considering manufacturing engineering. Most of them talk about developing products. There is no doubt that developing new products is important, but it will not be possible to get these products to market and continually supply the products

"Although Kodak is going through difficult times now, make no mistake, Kodak was a wonderful company to work for."

Ed White

if we don't have a good base of manufacturing engineers! In my experience, the best product developers have a solid background in manufacturing. These development engineers know what it takes to get a product into and out of manufacturing, they know what causes cost to be added and they know how to remove cost in the design phase (the least expensive place to take cost out of a product). I believe more emphasis should be put on the role of the manufacturing engineer during the education process. I also believe industry could and should implement a process which rotates development engineers

through manufacturing as part of their training. In addition, as new products are developed, the development engineers could follow the product into manufacturing for a period of time to ensure a smooth transition from development to manufacturing while at the same time getting valuable manufacturing experience and providing capable talent to the manufacturing organization.

OSA-RS: How has optics manufacturing changed during your career? What has improved, and what has not?

Ed: There have been considerable changes in optics manufacturing during my career. It is worth saying upfront that it seems the specifications and tolerances on components and systems are more demanding now than earlier in my career. The desire to have higher performing optical systems and the desire to have physically smaller systems have, in part, driven this. The result is that designers today specify very challenging geometries, materials and form factors. In the face of these manufacturing challenges, manufacturing capability has improved by a lot. Precision CNC generating, polishing and finishing, diamond turning and grinding, glass and polymer molding are a few of the areas which have experienced improvement. Metrology of complex geometries along with large apertures is another area that has seen considerable improvement. In general, with these capability improvements, the manufacturing processes have become much more deterministic. The improve-

ments I described are by no means limited to optics manufacturing in the United States. Worldwide, optics manufacturing has become much more capable over the past two decades with optics manufacturing in Asia experiencing major improvement.

OSA-RS: Tell me about participating on the committee that wrote the *Harnessing Light II* report.

Ed: I felt very privileged to have been asked to participate on *Harnessing Light II* report. One of the best parts of participation was the collaboration with colleagues on the committee, all of whom have a deep desire to see optics and photonics in the US grow and prosper. Although my focus on the committee was advanced manufacturing, it was enlightening and energizing to address the variety of subject areas represented by the chapters in the report. The reward for the work done by the committee will be that the report is used,

in some way, to advance US optics and photonics and lead to a resulting growth in jobs.

OSA-RS: What future do you see for the American optics industry, and what changes would you propose now to lead to a brighter future?

Ed: The future is bright for the US optics industry. I believe the US will continue to design and manufacture some of the most challenging and highest performing optical systems in the world. There is an opinion shared by many that optical components and systems cannot be competitively manufactured in the United States. I don't share that opinion. I believe certain products can be effectively and competitively manufactured domestically. Prototypes and early production, low- and mid-volume products, high and ultra-high precision products and export-controlled products are a few of the products areas that can be competitively manufactured here in the US.



*Ed White, second from left, participating in the panel discussion on the *Harnessing Light II* report at *Frontiers in Optics*.*

Photo courtesy of the Optical Society.

OSA Launches New Journal: *Photonics Research*

The Optical Society (OSA), in cooperation with the Shanghai Institute of Optics and Fine Mechanics (SIOM) and Chinese Laser Press (CLP), will launch a new journal entitled *Photonics Research* in June 2013.

The journal will primarily publish peer-reviewed original research papers along with review articles. Topics will cover a broad range of optics and photonics areas, from basic to applied research.

The journal, which will be led by editor-in-chief Professor Zhiping Zhou of Peking University in China and an international editorial board, will follow a cascading peer review system — a first for OSA journals — which will benefit authors who may have submitted to another OSA journal but whose paper or topic area are more suited for this new journal.

“OSA is proud to provide a global platform for international optics and photonics research while simultaneously offering new options for authors of OSA journal papers,” said Elizabeth Nolan, OSA’s chief publishing officer in a prepared statement. “By expanding our portfolio to include this exclusive collaboration with SIOM and CLP, we open the door to further engagement with China’s scientific community and expand the high-quality content of OSA’s already successful journal collection. This partnership adds clear value to optics and photonics researchers around the world.”