



OSA Rochester Section Newsletter

Entrepreneurship in Optics and Photonics: A Panel Discussion, Held March 7th at UR Laser Lab

A panel discussion about Entrepreneurship in Optics and Photonics, hosted by OSA Rochester Section, was held at the University of Rochester Laboratory for Laser Energetics on March 7th. Our section was privileged to have been able to feature three distinguished speakers for the event, who shared their thoughts on product development, customer focus, financing, and other topics of critical relevance to our local region's entrepreneurs.

James Zavislan (University of Rochester), John Hart (Lumetrics), and John Herbrand (Attorney) participated as panelists for the evening.

Lumetrics started in 2003 with three people by licensing low coherence interferometry technology from Eastman Kodak. John and his group took the Kodak IP from paper and built a

working product and company with hardware, software, and business

continued on Page 7



John Hart is CEO of Lumetrics. The business

Entrepreneurship Panel, pictured from left to right, J. Herbrand, J. Zavislan, J. Hart [Photo credit: OSA-RS]

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The Optical Society
Rochester section
Founded in 1916

Highlights:

- > OSA-RS Hosts Entrepreneurship Panel @ URLLE
- > OSA Rochester Section 2016-2017 Speaker Series Update
- > Syntec Optics Technology/Business Overview
- > Stephen D. Jacobs Memorial Lecture to be Held March 28th
- > IONS® Rochester 2017



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Inside this issue:

Industry Spotlight	2
The President's Lens	3
Industry Spotlight	4
Speaker Series	5
About us	11
Sponsors	11

Industry Spotlight

Syntec Optics Consolidates Corporate Operations in Rochester — by Dr. Robert Parada, Syntec Optics

“2016 was an exciting year for Syntec Optics” . . . “All corporate operations were united at a single facility in Rochester”

2016 was an exciting year for Syntec Optics (www.syntecoptics.com) and its affiliate companies, Rochester Tool & Mold and Wordingham Technologies. All corporate operations were united at a single facility in Rochester. This move has beneficially impacted the company in terms of operational efficiency, workforce expansion, customer convenience, and regional collaborations. Syntec recently published a video (link below) that provides an overview of this facility and the many optics-related services available.

solutions to the marketplace, spurring innovation in single point diamond turning and advancing the state-of-the-art in polymer molding for a wide variety of optics applications having ever-tightening tolerances. Its core businesses are the polymer molding of complex optical components,

and the precision diamond turning of prototypes that will one day scale in volume to warrant molds themselves. Coupled to these businesses are the fastidious opto-mechanical fabrication capabilities of Wordingham Technologies.

Continued on page 4



Syntec has a long history of providing polymer optics



Electro-optic System Assembly [Photo credit: Syntec Optics]

Video Link: <https://www.youtube.com/watch?v=JOGx0kECxDs&feature=youtu.be>

“The President’s Lens”

Greetings Everyone,



It's my sincere hope that this newsletter finds you well.

It recently dawned on me that we are already halfway into the springtime portion of the 2016-2017 speaker series; looking back, we've had a truly great lineup of speakers thus far.

In January, Kate Medicus, of Optimax, presented her research related to defining, making, and measuring freeform optics (audience photo below).

Jie Qiao, Associate Professor at RIT, presented her research in both the characterization and use of ultrafast lasers for photonics and optics fabrication, and novel

techniques for wavefront-based freeform optics metrology.

We turned over a new leaf, of sorts, trying something a bit different this year, and organized an Optics Entrepreneurship Panel. The detailed, situational questions posed to our panelists by the audience members were testament to the fact that we have a very strong entrepreneurial spirit in our local community!

Several exciting events remain in our year, including the Steve Jacobs Memorial Lecture. Also, the Annual Dinner will be held on April 25th at the Burgundy Basin. I look forward to meeting many of you at the dinner!

Thank you, as always, for your interest and support of

our organization. The level of involvement from section members, in addition to those from the community at large has been even greater than I'd have ever expected; it's very truly appreciated.

As always, please do contact me at my email, president@osarochester.org, if you have any questions or comments.

A handwritten signature in black ink, appearing to read "Jason Rama".

Kind regards,
Jason Rama
President
OSA Rochester Section



[Photo Credit: OSA-RS]

Syntec Optics Consolidates Corporate Operations in Rochester

Industry Spotlight

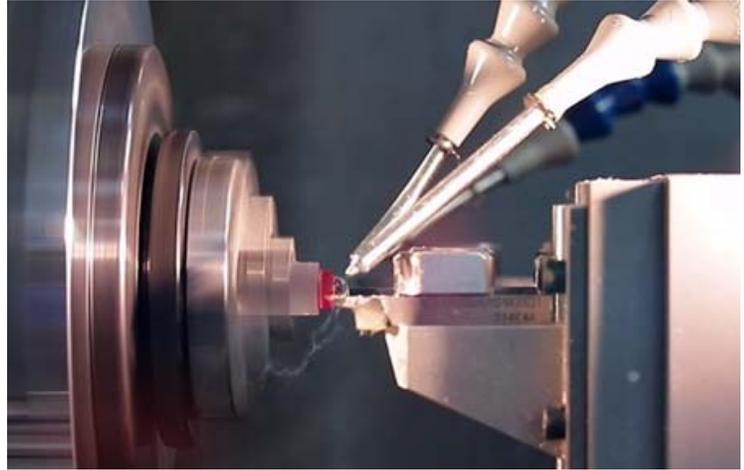
“Through sustained growth and continual investment, the corporation has steadily expanded its set of value-adding capabilities for these core businesses“

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Through sustained growth and continual investment, the corporation has steadily expanded its set of value-adding capabilities for these core businesses. Areas of recent strategic note include the following:

Electro-optic System Assembly: Syntec’s team of skilled, experienced technicians performs precision electro-optical and opto-mechanical assembly operations in its class 10,000 and 100,000 clean room facilities. A suite of machining, alignment, bonding, and sonic welding capabilities are used daily to build and test diverse medical and industrial products ranging from blood gas analyzers to fingerprint readers. To maintain repeatable high-quality results, a number of environmental controls have been implemented – including particle count monitoring, temperature regulation, air ionization, and relative humidity measurement.

Micro-lens Array Manufacturing: The demand for precision, complex polymer optics such as micro-lens arrays continues to increase. These components are used in several application areas, including illumination and spectroscopy systems. Syntec’s combined expertise in diamond turning, mold manufacturing, and design for manufacturability has led to its involvement in the manufacture of micro-lens arrays for several customers. Continuing investments are being made in state-of-the-art equipment and instrumentation to support cutting-edge fabrication techniques



Micro-lens Array Manufacturing (Photo Credit: Syntec Optics)

for complex optical components.

Thin Film Optical Coating: Syntec has developed an internal capability to apply a variety of optical thin film coatings to polymer optics including, narrow-band and broad-band anti-reflection coatings, beam splitters, and reflective metallic coatings. This allows for shorter lead times on critical programs. Syntec’s staff is trained in coating design and manufacturing, permitting custom performance goals to be satisfied on a variety of polymers.

Infrared Optics: Building on its many years of fabricating optical components for near-infrared applications, Syntec has demonstrated the capability to fabricate optics for Long Wave Infrared (LWIR) applications. An example multi-element lens prototype was recently displayed at Photonics West 2017. As the need for cost-effective LWIR solutions continues to increase, Syntec will further expand its resources to address this market.

Continued on page 8



Thin Film Optical Coating (Photo Credit: Syntec Optics)

OSA Rochester Section 2016-2017 Speaker Series Updates

Since our Late Fall issue, we have had several installments of the OSA Rochester Section 2016-2017 Speaker Series:

“Everything you want to know about freeform optics, but were afraid to ask” Kate Medicus, Optimax Systems

Kate Medicus is the R&D Team Leader at Optimax Systems. Her background is in precision engineering through NIST and the University of North Carolina at Charlotte where she received her PhD focusing on the metrology of optical components.

At Optimax, Kate leads a team that is focusing on developing manufacturing and metrology methods and pro-

cesses for the next generation of optical components.

“Ultrafast Lasers for Photonics/Optics Fabrication and Optical Differentiation Wavefront Sensing for Freeform Metrology and Wavefront Control of Laser Systems” Jie Qiao, Associate Professor, Chester F. Carlson Center for Imaging Science, Rochester Institute of Technology

Abstract:

The research on next-generation, laser-based manufacturing technologies is highly interdisciplinary, intersecting novel ultrafast laser technology, systems, metrology, precision controls, materials, and the associated laser-material interaction processes. The first part of the talk presents novel systems and physical mechanisms, processes using ultrafast lasers for the polishing and welding of photonic devices and micro-optics. The second part of the talk presents a new optical differentiation wavefront sensing technique based on measurements of wavefront slopes obtained by far-field spatial modulation with a

Speaker Series

“The research on next-generation, laser-based manufacturing technologies is highly interdisciplinary, intersecting novel ultrafast laser technology, systems, metrology, precision controls, materials, and the associated laser-material interaction processes.”



Kate Medicus, Photo Credit: OSA-RS

Continued on Page 6

Past and upcoming talks



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Date	Speaker	Title or Topic
Jan 17	Kate Medicus (Optimax)	Everything you wanted to know about freeform optics but were afraid to ask
Feb 21	Jie Qiao (RIT)	Ultrafast Lasers for Photonics/Optics Fabrication and Optical Differentiation Wavefront Sensing for Freeform Metrology and Wavefront Control of Laser Systems
Mar 28	Don Golini, SANICA Ventures	Stephen D. Jacobs Annual Memorial Lecture
Apr 25	John Degnan, Sigma Space Corp	Satellite Laser Ranging at NASA (ROSA Annual Dinner)

OSA Rochester Section 2016-2017 Speaker Series Updates (continued)

Continued from Page 5

binary pixelated filter inducing a linear amplitude transmission. This sensor is expected to offer phase measurement with higher spatial resolution, higher dynamic range and higher signal-to-noise ratio for freeform metrology lasers, vision, and astronomy applications.

Biographic Sketch:

Jie Qiao is currently an Associate Professor in the Carlson Center for Imaging Science at Rochester Institute of Technology. She leads the Advanced Optical Fabrication, Instrumentation & Metrology Laboratory where her team works on ultrafast-lasers for advanced photonics / optics fabrication and additive manufacturing, optical metrology, and instrumentation.

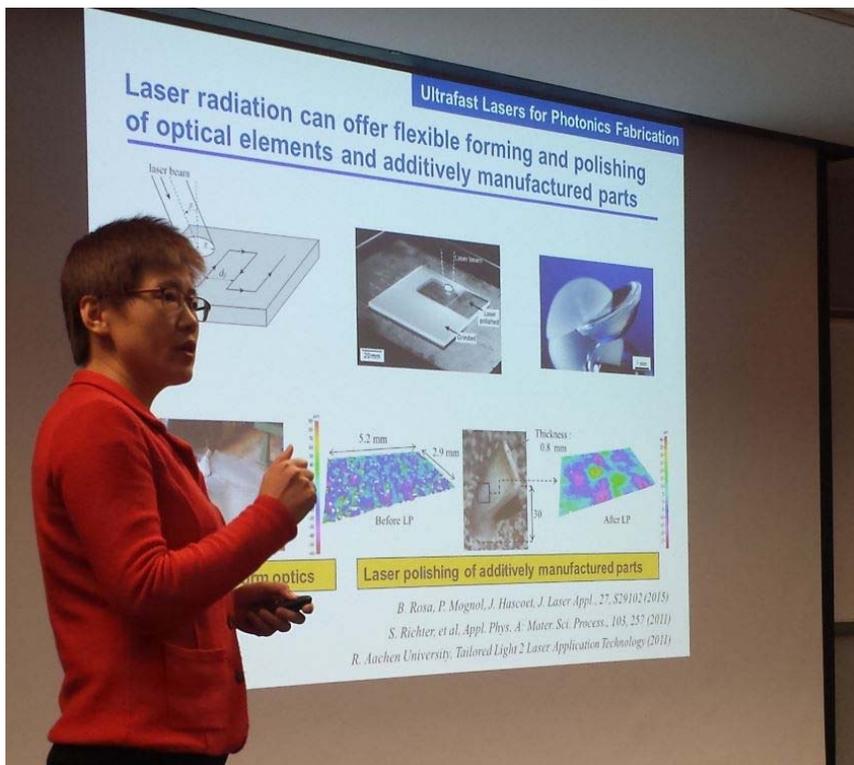
Prior to joining RIT, she was a laser system scientist at the DOE-funded Laboratory for Laser Energetics, University of Rochester from 2005 to 2013. She was the PI and led the technical team that demonstrated the world's first 1.5-meter tiled-grating pulse compressor for the kilojoule, petawatt OMEGA EP short pulse lasers. Prior to that, Dr. Qiao had worked on various innovative photonic devices, optical imaging and metrology systems, for two photonic startups and one optics company (Optikos). Dr. Qiao earned her Ph.D. in Electrical and Computer Engineering from the University of Texas at Austin and an M.B.A in entrepreneurship, strategy, finance and marketing from the Simon Graduate School of Business, University of Rochester. Dr. Qiao has 15 journal publications, over 50

conference presentations, and holds two patents. Dr. Qiao founded WiSTEE Connect (Women in Science, Technology, Engineering and Entrepreneurship, www.wisteeconnect.org) in 2013, for which she is serving as the Chair.

We very much thank all the speakers for their participation in the 2016-2017 Speaker Series!

A note about the OSA Rochester Section 2016-2017 Speaker Series:

Updates on future talk topics and dates will be posted on the OSA Rochester Section Facebook and LinkedIn pages. Please consider liking/joining both groups for the most current information regarding scheduling and topic information!



Jie Qiao, Photo Credit: OSA-RS

Entrepreneurship in Optics and Photonics: A Panel Discussion, Held March 7th at UR Laser Lab (continued)

“Our section was privileged to have been able to feature three distinguished speakers for the event, who shared their thoughts on product development, customer focus, financing, and other topics of critical relevance to our local region’s entrepreneurs”

continued from Page 1

functions. Developing and growing the company as product demand grew.

John S. Herbrand, Attorney, operates a practice whose main focus is on corporate and business law, with an emphasis on high tech companies from startup to exit. He has served as counsel to Rochester Regional Photonics Cluster since its inception in 1999. In addi-

tion to his legal practice, he is a founder of several closely held businesses in the Rochester area.

James M. Zavislan, Professor, University of Rochester, along with his academic re-sponsibilities at the Institute of Optics, has served as Director of Center for Institute Ventures, as such he has advised and has been consulted by many optics high tech startups. An inventor himself, he provides pre-commercialization services.



2017 Entrepreneurship Panelists, Clockwise from left, J. Hart, J. Zavislan, J. Herbrand [Photo credit: OSA-RS]

Syntec Optics Consolidates Corporate Operations in Rochester (continued)

Continued from page 4

The company's relocation to central Rochester has increased the number of opportunities to collaborate with various member organizations of the local OSA chapter. In academia, R&D activities and consulting arrangements have been discussed with various departments at the University of Rochester and the Rochester Institute of Technology. On the corporate side, Syntec has multiple customers located in the greater Rochester area; to serve these customers and others around the globe, Syntec collaborates with local vendors to address

specialty needs, for example, partnering with local optical design firms to analyze complex optical systems, and acquiring state-of-the-art metrology equipment from local companies that are advanced technology providers.

Syntec is excited to have joined the many optical engineering and manufacturing firms operating in Rochester, and looks forward to many additional opportunities to engage with the member organizations of the Rochester chapter of OSA. Those interested in learning more about the company and discussing collaborations are invited to send inquiries to info@syntecoptics.com.



Infrared Optics (Photo Credit: Syntec Optics)

Annual Stephen D. Jacobs Memorial Talk

Held Tuesday, Mar 28 at 7:00 PM, Laboratory for Laser Energetics - East Lobby, 240 East River Road, Rochester, NY 14623

Talk Given by Don Golini, SANICA Ventures — “The journey to commercialization of magnetorheological finishing (MRF) and random thoughts about entrepreneurship”

Annual Stephen D. Jacobs Memorial Talk

The Stephen D. Jacobs Annual Memorial Talk has been organized by the OSA-Rochester Section to honor the late Dr. Stephen D. Jacobs's local and global contributions to the fields of optical materials, liquid crystals, optics manufacturing and educational outreach. Steve spent his entire career at the University of Rochester with appointments to the Laboratory for Laser Energetics (LLE), Institute of Optics,

Materials Science and Chemical Engineering departments. His research included topics such as phosphate laser glass, frequency conversion crystals, liquid crystal laser optics, optical finishing of glass, ceramics and crystals, magnetorheological finishing (MRF), cholesteric liquid crystal flakes for display applications, and laser damage in multilayer dielectric coatings. I

n addition to his significant technical contributions Steve also had a passion for edu-

cational outreach. He volunteered as the educational outreach chair for the OSA-Rochester Section for over 15 years during which time he developed and organized the Optics Suitcase program that has been instrumental in introducing hundreds of thousands of young children to the fields of optics and materials science throughout the US and globally in over 40 countries. Steve Jacobs touched many lives. We are honored to have this annual lecture in memory of our great colleague, friend and

mentor.

Abstract

The MRF technology was invented by William Kordonski and his team in Minsk, Belarus in the early 1990s and since then, it has taken an unlikely path to reach its place in optics shops all over the world. There were many key events and people along the way who were instrumental in making that happen.

Continued on page 9

Annual Stephen D. Jacobs Memorial Talk (continued)

Continued from page 8

The Stephen Jacobs lecture is a wonderful venue for re-tracing this journey in light of the critical role Steve played in bringing the technology to Rochester and accelerating its path to commercial success.

Don Golini Bio

Don Golini is a successful entrepreneur with over twenty years of experience in the development, management and commercialization of new technologies. As president and founder of QED Technologies (www.qedmrf.com), Don

licensed a university technology and developed products that succeeded in global markets. Don is the former chairman of the Rochester Angel Network, served as an Entrepreneur-in-Residence at High Tech of Rochester, taught entrepreneurship at the University of Rochester, and serves on various boards. He received his B.S. in Optics from the University of Rochester and M.S. in Electro-Optics from Tufts University.

The talk will be held Tuesday, Mar 28 at 7:00 PM, Laboratory for Laser Energetics - East Lobby, 240 East River Road, Rochester, NY 14623



Don Golini, SANICA Ventures (Photo Credit: Don Golini)

Rochester hosting a satellite March for Science on Earth Day, April 22 — by Joey Lawson, Optimax

Around the country, groups of scientists, engineers, students, and teachers have been rallying around one another in response to the current political climate and its attitude towards science. The mischaracterization of science as a partisan issue, which has given policymakers permission to reject overwhelming evidence, is a critical and urgent matter. It is time for people who support scientific research and evidence-based policies to take a public stand and be counted. On Earth Day, April 22, these groups of science enthusiasts plan to take to the streets and March for Science.

Initiated by a group of science advocates in the DC area, there are now nearly 400 satellite marches to be held simultaneously in cities around the country, including here in Rochester, NY. The Optical Society of America has officially endorsed this movement and I hope that you will join us as well. By marching, we take one of many steps to become more active in our communities and in democratic life. We hold our leaders--both in science and in politics--accountable to the highest standards of honesty, fairness, and integrity. We gather together to send a message: we will all work to ensure that the scientific community is making our democracy stronger.

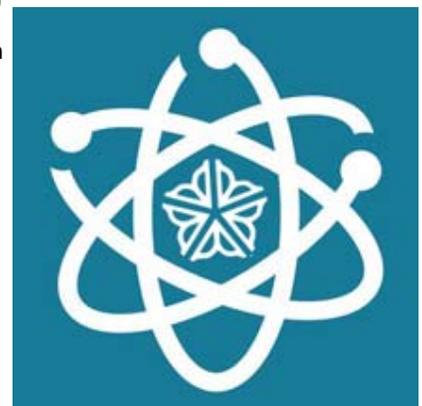
The goals of the Rochester March for Science are threefold: Humanize science, Engage the public, and Defend science. Our March in Rochester will address each of the goals. The March will begin with a rally in Martin Luther King Jr. Park at 9:30 AM immediately followed by a March through downtown.

The March will conclude at a Science Expo in the Hyatt Regency Hotel down town.

The Expo will have hands on scientifically focused demonstrations for families and children as well as demonstrations highlighting the impact of science on the history and economy of the Rochester area. Finally, the Expo will also run a series of TED-like talks by various community leaders to showcase the importance of science to our community and everyday lives.

We are calling on you to join us this April 22 and be counted as an advocate for the correct use of science in our government. You can learn more about the march from our website: www.rocmarchforscience.org

If you want to become even more involved, we are also seeking donations and volunteers to setup, marshal, and present at the Science Expo. Please see our website or email rocmarchforscience@gmail.com for more details.



IONS® Rochester 2017 — International OSA Network of Students 29 September to 2 October — by Dmitry Vorobiev, RIT



The OSA Student Chapters of the Rochester Institute of Technology and the University of Rochester were selected by the Optical Society to host the IONS Rochester 2017 conference! The conference will be held September 29 – Oct 2 on the RIT campus.

This event will bring together undergraduate and graduate students from a wide range of optics-related fields to present their research and to connect with their peers and industry leaders. Approximately 80 undergraduate and graduate students will be invited to attend conference from universities in the US and abroad. To attend, students are required to give a 20 minute presentation or present a poster.

The Conference Program consists of three plenary talks, many sessions of student presentations, two poster sessions, and several professional development / networking events. Some events, like the **Industry Lunch** and the **Panel Discussion on Careers in Optics**, are designed specifically to connect the students with local optics experts and industry leaders. Further information about the conference program, activities, and sponsors can be found at <http://ionsrochester.osahost.org>; this website will be frequently updated as the date of the conference approaches.

If you are interested in being a sponsor of IONS Rochester 2017, please contact the organizing committee at spieosa_rit@googlegroups.com



The RIT OSA Student Chapter demonstrates the schlieren imaging system at the Rochester Museum and Science Center, as part of their Featured Presenter series (from left to right: Jacob Wirth, Lauren Taylor, Ryan Ford, and Dmitry Vorobiev) (Photo Credit: D. Vorobiev)



"Lauren Taylor dazzles a young museum visitor with the spectacle of schlieren imaging" (Photo Credit: D. Vorobiev)

About OSA Rochester Section

Find us at
osarochester.org

The purpose of the Rochester Section of the Optical Society 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.

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