OSSC eNewsletter - January 2020

Donn M Silberman (OpticsAge@gmail.com) <mailer@mail2.clubexpress.com> Wed, Jan 1, 2020 at 2:06 PM
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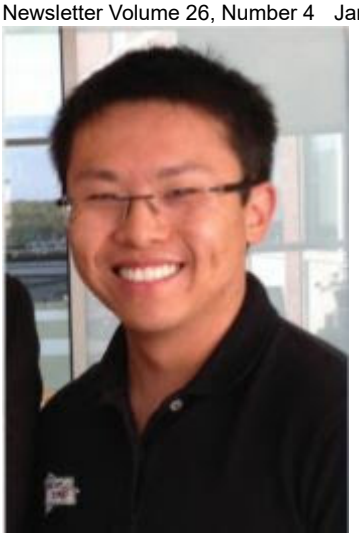
OSSC Optical Society of Southern California

IMAGES Newsletter

Newsletter Volume 26, Number 4 January 2020



In This Issue:

From the President:

Dear OSSC Members,

I hope all of you have had a safe and fulfilling holiday season! As we press on into the next decade, I want to send my personal thanks on behalf of the members of the OSSC leadership for your continued contributions to our society! I especially want to thank the members of the leadership, who's support makes it all possible, and will be the reason why the next decade of the OSSC will also be our strongest!

I want to begin by thanking Prof. Apkarian for such a great talk at our last meeting, and for all of the corporate members who exhibited. Great events such as the one last month are the lifeblood of our society, and it is those connections that make our society strong!

I would like to take some time to reflect on the last ten years, as we are fast approaching our seventh decade of operation. It gives me chills to think about how far our society has come, and the number of people that we have reached through the work that we have done. More than anything else, it's a testament to the strength of our membership, and to our community as a whole. The optics/photonics industry has seen unprecedented growth and change, and its clearly seen in the demographics in our membership. The goal and challenge of our next decade is to expand upon this great growth, strengthen the foundation of the society, and to tirelessly find ways to have positive impact on our optics community both locally and beyond. I call on all our members to be partners in this together!

Our next meeting will be in Pasadena at St. Gregory Armenian Church, one of our favorite venues! Our speaker will be Kurt Ponsor from Mindrum Precision, and I want to take a moment to thank Kurt (and the entire Mindrum team) not only for being our speaker this January, but for their years of support both personally and as a Corporate Member of the OSSC. Mindrum is one of the premier high tolerance component manufacturers on the planet, and without a doubt one of OSSC's best corporate sponsors! It is because of the support of great organizations such as Mindrum that makes up one of our society's key strengths! Thanks so much to Kurt and Mindrum, and we all can't wait for the next meeting!

Again, I want to wish everyone a happy new year, and my wish that all of us will achieve great success in 2020 and beyond!

Sincerely,

Bo Wang

President, 2019-2020

MINDRUM
PRECISION

Wednesday 8 January

A complete review of past/ present telescopes & the exotic materials used in them

by
Kurt Ponsor
President, **Mindrum Precision**

Abstract:
Astronomy is taking off with many discoveries! From black holes, to gravitational waves our scientific instruments are pushing new boundaries, but do we pay them enough attention? With a desire to get more people to follow the real stars rather than the Kardashians, we'll review a wide variety of telescopes and draw some interesting threads thru time. As Hubble turns 30 years old in April and Spitzer Space Telescope will end its mission on 30th January, we'll provide some humorous comparisons to what is important in our twitter feed. Join us as we anticipate the release of the decadal survey coming in mid-2020, and we'll look at new materials which help push the limits of these telescopes. Materials like Titanium Zirconium Molybdenum (TZM) and new ways to cut silicon carbide or boron carbide with electrical discharge machining.

About Our Speaker:

Kurt Ponsor has a Mechanical Engineering degree from the University of Virginia, served in the USAF as a helicopter pilot for 12 years and then returned to lead the family business at Mindrum Precision. He is proud of the Mindrum Family legacy which provided components for Apollo, Voyager and Gemini. He continues the dream of space exploration with current projects onboard the International Space Station, Mars Rover 2020, Juno, MAVEN, and WFIRST. Kurt believes the best way to push the limits of science is to combine new and old methods and minds. He wishes to travel into space himself one day and wants to increase the quantity and quality of eyes searching the stars for discoveries. He often quotes Newton, "If I have seen further, it is by standing on the shoulders of giants."

Venue: St. Gregory Armenian Church
2215 East Colorado Boulevard
Pasadena 91107
Reception: 6:00pm
Dinner: 7:00pm
Members: $35
Non-Members: $40
OSSC Student Members: $10
Late fee of $5 begins on Jan 4
Presentation: 8:00pm

Download the flyer to share with friends and colleagues!
Registration Here

This meeting is also posted at:
https://www.meetup.com/SoCal-Science-Cafe/events/
check out their other events too!!

From the Editor:

Hello OSSC members and fellow readers,

With this edition of the OSSC eNewsletter, I want to thank our OSSC Corporate Members who attended and exhibited at December meeting making it a great success. Below in this newsletter you can find a link to a short

video created by Quartus Engineering, a new OSSC Corporate Member that shows a few clips of the meeting.

Also in the newsletter, there is an announcement about POM - Photonics On-line Meetings being brought to the world optics & photonics communities from our colleagues at USC. These are very exciting times in our industry with so many advances in technology and means to communicate globally without having to travel the highways and flyways for events.

Hope to see you at an OSSC event soon.

Sincerely,

Donn M. Silberman

OSSC Past President & Fellow

Current OSSC Newsletter Editor

POM
Photonics Online Meetup

Welcome to the inaugural Photonics Online Meet-up (POM),

the first all-online conference for photonics researchers!

The meeting is geared to bring together a community of early career and established researchers from universities, industry, and government to amplify the role of optics and photonics in daily life.

POM is an entirely virtual online conference. Submitted abstracts will be chosen for either presentations or posters. If you don't want to experience POM alone, you can join or host a POM-hub!

The inaugural meet-up on January 13, 2020 has three themes: Optical Materials, Integrated Optics & Nano-Scale Quantum Optics.

The **Program** is announced,
and Registration is **open**!

Don't miss the virtual poster session, starting on January 9th on Twitter!

Follow @PhotonicsMeetup or #POM20!

Interested in hosting or joining a **POM-hub**? Check out the growing community!

USC University of Southern California

This information comes to the OSSC from Prof. Andrea Armani from USC.

Photonics Online Meet-up (POM) is taking place on Jan 13th (Monday) from 11am-4:30pm. The three keynote speakers are Prof. Nader Engheta, Prof. Mete Atature, and Prof. Mercedeh Khajavikhan, and their talks will be accompanied by additional shorter presentations. The complete program is available at https://sites.usc.edu/pom/program/.

The USC Hub is being held in the Michelson Center of Convergent Bioscience (MCB 101) and is being organized by the USC Optics Chapter. Free snacks and drinks, sponsored by OSA, will be served throughout the day. The USC hub is one of over 50 hubs organized globally (6 of 7 continents have hubs). A complete list is available here: https://sites.usc.edu/pom/pom-hub/

The address of MCB is:

1002 Childs Way

Los Angeles, CA 90089

If you are interested in joining this free event, please RSVP to attend the hub via the following link: https://forms.gle/NvwHHzc7FN6xifi19

And feel free to forward this link to other LA-area colleagues that might be interested.

Learn more about the conference organizers and the conference mission.

#POM20

Looking forward to seeing you all there!

Best regards,

Andrea

Photonics Media & PI (Physik Instrumente) will host a live webinar....

Advancements in Precision Motion Control for Electro-Optical Manufacturing and Laser Materials Processing
Wed, Jan 22, 2020 1:00P EST
https://www.photonics.com/Webinars/Advancements_in_Precision_Motion_Control_for/w204

With a focus on high-throughput/high-yield positioning and microrobotic solutions for leading-edge manufacturing, Scott Jordan and Matt Price from Physik Instrumente (PI) will present the latest advancements in software, control algorithms, and motion systems hardware available to design engineers and scientists in the laser processing, optics, and photonics industries. Examples will include:

Laser processing of substrates with nonuniform topologies. The presenters will discuss hardware, software, algorithms, and system architecture to support the identification and integration of selectable process zones and methods to address defects in materials through both additive and subtractive processes.
New, autonomous microrobotic and precision-positioning solutions for fast optimization in the manufacture of silicon photonic, laser electro-optic, lidar, and imaging-optic assembly and test.

Scott Jordan is head of photonics for PI and a PI fellow. A physicist with an MBA in finance/new ventures, Jordan has made multiple contributions to photonics alignment automation and precision motion control and optimization technologies.

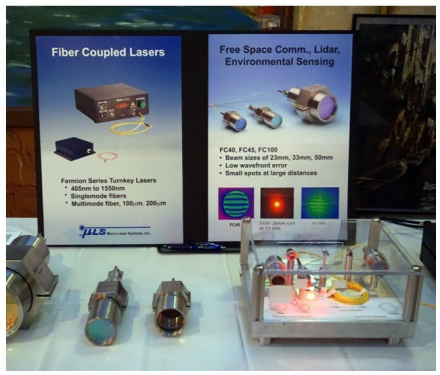
Matt Price is a technical manager for PI, working in precision automation technologies for microfabrication and metrology. A physicist with a background in laser materials processing and characterization, he has contributed to the development of motion technologies to advance capability in these fields.

New OSSC Corporate Member Quartus Engineering attended the Optical Society of Southern

California event last week In Fullerton and provided a very nice tabletop exhibit. They said, "Thank you to Bo Wang for hosting the event and allowing us to network with our colleagues while having a terrific time!" Click on the link here to **see their short video posted on LinkedIn.**

We also recognize and thank our OSSC Corporate members who exhibited at this event and our Speaker Prof. Ara Apakarian from UC Irvine.

More photos from the event can be seen on our website..... December 2019 Meeting Photo Album


Thoughts for the next Decade..... Scott Rowe, OSSC Fellow & Past President,

Thought that I would kick off 2020 with an article on megatrends I see developing in optics for the next 10 years. These are my opinions only, offered to invite discussion, and do not represent any particular institutional viewpoint.

1. Photonics West will move to China prior to 2030. This is not hard to see. With the SF Moscone center topped out, 2018 PW attendance was between 22 and 23k, where Photonics Shanghai attendance was 65k. Several logistical hurtles to overcome 1st, but this should happen prior to 2030. Expect to boost your frequent flyer miles.

2. Quantum computing/optics will see some commercial product offerings prior to 2030. This is the real deal. Don't know exactly what they will look like yet, but coprocessors or GPUs seem like a logical bet. Quantum computing offers the possibility for incredibly cheap computing, in essence disposable computing. Lots of apps for this.
3. Microscopy applications will continue to exploit and improve upon super-resolution capability, down to molecular imaging levels. Huge fields to explore here, combining AFM and Raman 2 photon processes. Prof. Apkarian may well wind up with a Nobel for his work here, just as Eric Betzig did for STED.
4. Optics of biodegradable single use materials. This might seem like coming out of left field, but I think most everyone in this space realizes that recycling single use plastics, many of which were formulated at least partially for their optical properties (think disposable water bottles) does not work. The resources (sorting, energy, water) required to recycle them make no sense, and everyone is aware of the giant garbage patches in the ocean, not to mention the volume they take up in landfills. Fortunately, I think that this is one problem that is solvable, even in the relative near term of 10 years. With a target life before degradation of say 50 years, I believe most manufacturers of single use products would switch to an optically acceptable cellulose based alternative, if these formulations can be made compatible with existing blow molding and injection molding equipment. Landfill operators could work with something that degrades with this usable life vs. 20k years for PETG. It would be a huge transformation, but doable. Optikers may play a role in this.
5. The last commercial gas laser may disappear from the marketplace prior to 2030. I know I will catch flak for this one. But Argon ion and He-CDs are all but gone, external cavity diode lasers will replace HeNe's for interferometry, their last stronghold, and CO2 lasers are being replaced by fiber lasers in most applications, and direct diodes in others. Sure there are a few scientific uses for 10 micron wavelengths, but even in cosmetic procedures they are being replaced. Excimer lasers in wafer steppers and refractive surgery procedures? Well, all-femtosecond laser procedures are well on their way to displacing excimers in the OR, and immersion litho with ArF sources is at its limit with 15-30 nm feature sizes. Plasma driven EUV sources are hitting 7 nm and the likelihood of future EUV platforms being non-excimer driven is real. There is always the repair market, just ask they guys still fixing lamp pumped Nd:YAGs.
6. VCSELs will replace edge emitter diode lasers in almost every application. Except for high average power apps. This is easy to see why, and the foundries are tooling up for this transformation now.
7. OLEDs will replace conventional LEDs in almost every application, except high brightness devices. Better color rendition, no green/yellow gap, better blacks in displays. Yes, there is a burn in issue, but this will be solved. Already happening.
8. Mt. Wilson will see a resurgence in interest, and may well become the primary training ground for future astronomers, as well as a renaissance in the public's interest in astronomy.
9. On the other hand TMT will likely not be built in Hawaii, and will have to default to the Canary Islands. I hope I am wrong on this one, but it is sure looking this way. More delays.
10. JWST will finally get off the ground in 2021, and after a 6-7 month shakeout, start yielding mind blowing science. For years. On this one, I can not even imagine what will be found.

Wishing you all a Happy New Year, and New Decade!

Scott Rowe

Note new email address scott@rowetechnical.com

QUANTUM COMPUTING REPORT

WHERE QUBITS ENTANGLE WITH COMMERCE

Doug Finke, Managing Editor

Doug Finke has been involved in the computer, semiconductor, and storage industry for over 30 years and has witnessed and helped drive the birth and growth of many new technologies during this period. He has most recently become fascinated with quantum computing and believes that many of the new technology growth patterns he has seen within the computer industry will reoccur as the quantum computing field evolves. He started the Quantum Computing Report so he could apply his wide breadth of experience to help accelerate the proliferation of quantum computing to the general marketplace.

Quantum Computing Outlook for 2020

The year 2019 was a busy year in the quantum community with a lot of new developments and announcements. We are sure that 2020 will be just as busy, if not more so, and expect continued advances. We have seen some of the roadmaps that folks in the industry have discussed so with our intrepid 20/20 vision (pardon the pun!) we will describe some of the developments that we expect to see this year. For the complete article visit:

https://quantumcomputingreport.com/our-take/quantum-computing-outlook-for-2020/

Topics Include:

Hardware
Cloud Services
Application Software
Optimizing Compilers (aka Transpilers) and Qubit Control Firmware
Wish List
Non-Technical Factors
Summary

So we expect that 2020 will be another exciting year for the quantum community with a lot of progress being made. Many of the developments will be extrapolations of things we saw in 2019, but we also expect a few surprises where new technologies or new players come in and provide something new that we did not expect. Still the developments in 2020 will represent continued progress in a technology that will require several decades to reach its full potential.

We wish everyone working in this area the best of success and look forward to reporting on your developments as the year progresses.

December 30, 2019

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UCI Division of Continuing Education

Celebrating 10 Years of Course offerings in OPTICS

UCI Optical Engineering 10 yrs - Photonics Spectra from Sept 2019 Photonics Spectra Magazine

IRVINE VALLEY COLLEGE

PHOTONICS TECHNOLOGY

Laser and Photonics Technology instructors lead hands-on, laboratory-driven classes, utilizing state-of-the-art industrial equipment, based on the industry-guided photonics curricula written by industry professionals. In addition to laboratory skills, students are offered one-on-one support and career advice, including résumé and LinkedIn profile building.

The following courses are part of **Certificate**

Programs in:
Optical Engineering and **Optical Instrument Design**
There was an Information Session - Monday 19 August
OSSC Fellow Donn Silberman was the guest speaker.
Recorded Session Here
Winter 2020 courses will begin in early January:
Advanced Lens Design
Optical Instrument Design
Optomechanical Systems Engineering
Past UCI Optical Engineering Webinars

UCI DCE Financial Aid for Optics Programs
Go to the links above to learn more about the courses and programs.
*15% discount for **OSSC** Members on courses Required for a Certificate.*
Email: **Kadie Heck**
with confirmed **OSSC** Membership
to receive discount code.
Instructors Wanted to Teach:
Optical Engineering and Optical Instrument Design!

Program Website
***IVC Laser Technology** is located on the*
IDEA at **ATEP** campus in Tustin, CA
For Information Contact:
Prof. Brian Monacelli, Ph.D.
949-824-2704
IVCphotonics@ivc.edu

WEBSITE SPONSORS

Website Sponsors are *Corporate Members* that make an additional donation to support the **OSSC.ORG** website. They enjoy all the benefits of *Corporate Membership* AND have their company logo and link prominently displayed along the left side of our website. Website Sponsorship dues are $200 per year.
New Members may select the Website Sponsor option when applying for membership using the link below.
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All Website Sponsors may contact the Website Team to add or update their company link or logo or to resolve other website issues.
For general membership questions, please contact the Membership Chair.
Become a **Corporate Member or Website Sponsor!**

Corporate Members

OSSC Corporate Members display their products at the December 2012 Corporate Member Appreciation Meeting.

Corporate Members benefit the **Optical Society of Southern California** through their generous donations of time, talent and financial resources. Corporate Membership dues are $100 per year.

Aerotech
Alluxa
Infinite Optics
Physik Instrumente
Precision Glass & Optics

AMP Optics
Äpre Instruments
AVS Southern California Chapter
AWI Industries
Cambridge Technology
Cimarron Optical Consulting
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Curt Deckert Associates
Diverse Optics
DMK Engineering
e-Las Americas
Facebook Connectivity
4D Technology
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Hadland Imaging
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Isuzu Glass
Laser Components
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Micro Laser Systems
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Reynard Corporation
Schott North America
Silicon Lightwave Technology
Spectrum Scientific
SPIE
Starrett Metrology
Supply Chain Optics
Synopsys
Trioptics
II-VI Optical Systems
UC Irvine Division of Continuing Education
Zemax
Zygo

CONFERENCES AND SEMINARS

SPIE. PHOTONICS WEST BIOS

1 - 2 February 2020
San Francisco, California
The Moscone Center

More Information

SPIE. PHOTONICS WEST

4 - 6 February 2020
San Francisco, California
The Moscone Center

More Information

OFC
The Optical Networking and Communication Conference & Exhibition
Technical Conference: 8 – 12 March 2020
Exhibition: 10 – 12 March 2020
San Diego Convention Center, San Diego, California, USA

SPIE. DEFENSE+ COMMERCIAL SENSING
Anaheim Convention Center
Anaheim, California, United States
26 - 30 April 2020

SPIE. OPTICS+ PHOTONICS

San Diego Convention Center
San Diego, California, United States
23 - 27 August 2020

This list of OSA Student Chapters in California is current as of Jan 1, 2020.

The OSSC Board would like one volunteer to reach out one of these OSA / SPIE Student Chapters and become a contact that one college or university student chapter and optics community. Please contact Donn Silberman if you would like to v

- California Institute of Technology - OSA Student Chapter
- Cal Poly Pomona Optics & Photonics Club
- Stanford University, Stanford Optical Society
- University of California, Berkeley, "PhotoBears" (Joint OSA, SPIE & IEEE Student Chapter)
- University of California, Riverside, Photonics Society (Joint SPIE & OSA Student Chapter)
- University of California, San Diego, Light Quantum at UCSD
- University of California, Santa Barbara, Photonics Society, (OSA, SPIE & IEEE Student Chapter)

- Irvine Valley College (IVC) Student Chapter (not active)
- San Francisco State University, OSA Student Chapter (not active)
- University of California, Davis, Optics Club (not active)
- University of California, Irvine, Photonics@UCS (Joint OSA & SPIE Student Chapter) (not active)
- University of California, Los Angeles (Joint OSA & SPIE Student Chapter) (not active)
- University of California, Merced (not active)

Outreach

Left: Dr. Murty Mantravadi demonstrates his Optricks! Right: Children play with home made telescopes.

The **OSSC** supports several outreach events each year. If you would like to **volunteer** to help on a project or event, please contact **OSSC** Outreach Chair - Nick Lambert, or any member of the Outreach Committee

The OSSC Optics Outreach Programs have had a long history of success over many years. At this time we are looking forward to bringing on a new outreach leader, Anthony E. Oceguera, from Cal Poly Pomona's Optics & Photonics Club, who will help us continue reaching many young people around Southern California. Please welcome Anthony and volunteer to help him create successful programs for the next year and beyond.

WELCOME NEW MEMBERS
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Travis R Brashears
Yan Cheng
Denise Durance
Steven L Ernst
Andrew J Froning
Jun Huang
Srinath Karat
Zainuddin Karriem
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Nadhir B Kosa

Juan Lozano
Anise E Mansour
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Mikhail Ovchinnikov
Arun Panneerselvam
Bill Perkins
Gopal Salvady
Nicholas A Schram
Gokce Toprak
Julian E Vimont

OSSC*welcomes***Individual***and***Corporate***
Members who joined (or rejoined) in the last 60 days.

We value your membership
and appreciate your support!
