

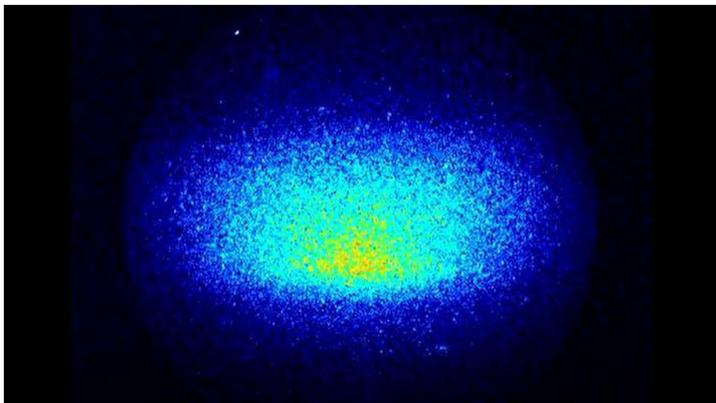


# OPEN Optics and Photonics Education News

Newsletter of the Optics and Photonics College Network

August 2019

## Laser Induced Fluorescence (LIF) Imaging Explores Molecular Interactions in Atmosphere



See full article at [photonics.com](http://photonics.com) [Scientists Apply LIF Imaging to Explore Molecular Interactions in Atmosphere.](#)

### From the Executive Director



#### Farewell from OP-TEC

In less than two weeks, OP-TEC will complete our operations, and I will finally retire. I began my career in lasers 57 years ago, when my engineering manager at Westinghouse Defense Center reassigned me to build new lasers and test them for defense applications. After 13 years of R&D for DOD, DOE & NASA, I left my engineering practice to support the education/training of laser technicians. After 32 years leading a non-profit (CORD), and 13 years directing OP-TEC, I will move on to areas of service in my community and church.

OP-TEC has been my most fulfilling effort to date. Through this NSF/ATE National Center, my associates, Center staff, national advisors, leaders at other colleges, and others, we have made major progress, enabling photonics technician education programs to meet the urgent workforce needs in this rapidly emerging field.

The accomplishments of OP-TEC will be sustained through several organizations providing access by faculty and students to all of our materials. LASER-TEC, directed by Chrys Panayiotou, will continue offering support to colleges and faculty for planning, networking and professional development. (See the following article.)

I am particularly indebted to the many colleagues who have provided friendships, valuable advice, and assistance to me. Among them are:

### In This Issue

- [LIF Atmosphere Imaging](#)
- [Farewell from OP-TEC](#)
- [Greetings from LASER-TEC](#)
- [LASER-TEC Summer Camps](#)
- [MPEC Summer Events](#)
- [LASER-TEC Resources](#)
- [MPEC Resources](#)
- [Upcoming Events](#)
- [HI-TEC Conference Report](#)
- [MentorConnect Deadline](#)
- [PACT Alumni Spotlight](#)

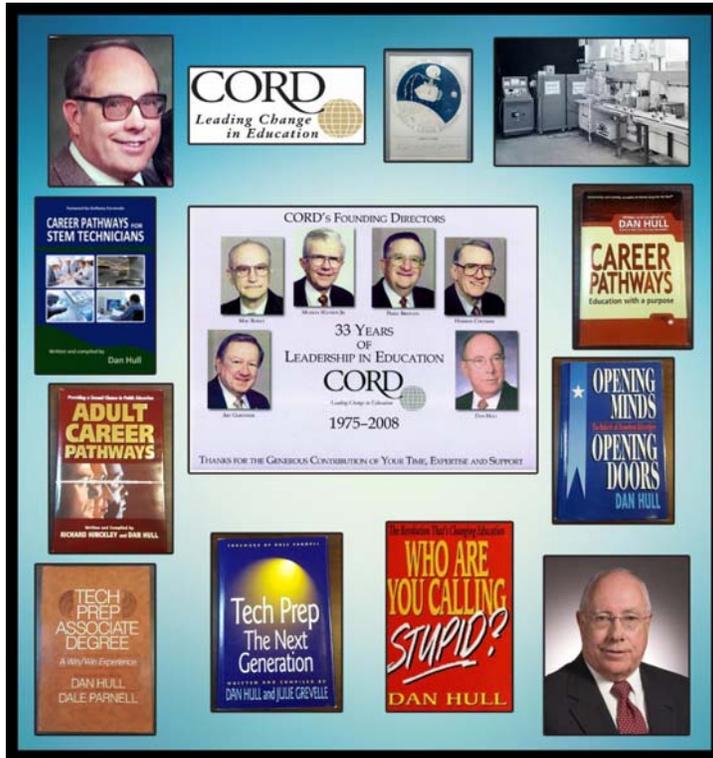
### Upcoming Events

- 09/11/19 - 09/13/19  
National Coalition of  
Advanced Technology  
Centers (NCATC) Fall  
Conference 2019  
Twin Cities, MN
- 10/23/19 - 10/25/19  
NSF ATE PI Conference  
Washington, DC
- 02/01/20 - 02/06/20  
Photonics West  
San Francisco, CA
- 03/28/20 - 03/30/20  
AACC 100th Annual  
Convention  
National Harbor, MD

### HI-TEC 2019 St. Louis Conference Report

- Art Guenther: Chief Scientist, AF Weapons Lab 1960-90
- Maurice Roney: Technical Education Visionary and Chancellor, Texas State Technical College, 1975-90
- Fred Seeber: Early Laser/Optics Program Chair at Camden County College
- M.J. Soileau: Founder of CREOL and Provost at University of Central Florida
- Leno Pedrotti: Laser/Optics Pioneer, educator and my closest friend/Christian.

Dan Hull



## From the NEW Executive Director



### Greetings from LASER-TEC

On behalf of my colleagues from around the country, we wish Dan the best, and a happy retirement. The photonics community is grateful for his work and contribution to photonics technician education for which he tirelessly spent a good portion of his professional life.

LASER-TEC will continue the OPCN operations and the publication of the OPEN newsletter. It is important to keep our photonics group together and expand it by adding new colleges embracing the niche technology of photonics. The OPEN newsletter will continue providing photonics technology content relevant to technician education that will engage college and K-12 educators, and industry.

Also, be on the lookout for my extensive interview with Dan Hull, which will be published in the Sept/October issue of the Laser Institute of America's publication, LIA Today.

Wishing you a productive fall semester,

Chrys Panayiotou



Optics and Photonics College Network members, colleagues, and educators interested in optics and photonics education traveled to St. Louis in July to attend the annual in-person meetings of the Optics and Photonics College Network (OPCN) at the 2019 HI-TEC Conference.

More than 20 faculty members and administrators from 17 colleges met July 22-23 to network together, share best practices and program updates, and review the services and resources offered by the three NSF ATE photonics centers. In the two scheduled OPCN meetings, attendees introduced themselves and their programs, received reports from the OP-TEC, LASER-TEC, and MPEC photonics centers, and learned about their latest teaching and recruiting materials and how to access and use them.

On Tuesday, the OPCN group traveled to the St. Louis Science Center and James S. McDonnell Planetarium where they were treated to a behind-the-scenes tour by Jared Farmer, manager of teacher programs. OPCN members learned about the giant film projection system in the Science Center's OMNIMAX domed theatre which will soon be upgraded to an IMAX with Laser system. The highlight of the visit was a demonstration of a huge egg-shaped opto-mechanical star projector by the amazing planetarium engineers and technicians who operate, calibrate, and maintain it. The ZEISS

## LASER-TEC Youth Summer Technology Programs



LASER-TEC has reevaluated its student outreach and began focusing on a long-term engagement with students, gradually getting them ready for laser technology programs. During summer 2019, our Center hosted seven different camps for 136 middle and high-school students! Each camp was at least 40 contact hours. One camp, The Emerging Technologies Summer Camp, was offered for eight continuous weeks for underrepresented, underserved local populations. During these camps, students explored optics, photonics, advanced electronics, programming, applied mathematical and science concepts.

The program evaluations and student assessment indicate that students have improved their knowledge in math, programming, electronics, and optics. Several students now reconsidering their previous choices of academic programs and planning dual-enrollment in the photonics program. If your college is interested in complementing program outreach with student camps, please contact LASER-TEC for more information about how to host a camp, how to leverage your institution available resources, recommended lessons, kits, and tools.



## MPEC Hosts Summer Events



The Midwest Photonics Education Center hosted its fourth annual Latino Photonics Camp at Indian Hills Community College in July. The camp was sponsored by SPIE through an Educational Outreach Grant. Dr. Andres Diaz of the Puerto Rico Photonics Institute instructed the two day camp in Spanish for fourteen Latino students from Mexico and Central America.

Students learned about the nature and composition of light, waves, polarization, light interaction, fiber optics, and light energy and performed several hands on activities using LightBlox and the OSA Optics Suitcase. Students learned about optics and assembled

UNIVERSARIUM Model IX projects more than 9,000 stars and deep sky objects in a 24-meter dome, simulating the most realistic night sky, without the interference of weather, pollution, or city lights.

The HI-TEC Conference on Wednesday and Thursday was attended by 537 people and included general sessions, dozens of presentations, and an exhibit hall where the three photonics centers hosted a photonics outreach booth.

The next HI-TEC Conference will be held July 27-30, 2020 at the DoubleTree by Hilton Hotel in Portland, Oregon. OP-TEC is currently working on a sustainability plan that may enable LASER-TEC to provide a number of OPCN members with complimentary registrations to attend the 2020 conference.

It has been a great pleasure for OP-TEC to establish the Optics and Photonics College Network and coordinate its annual in-person meetings at the HI-TEC conference over the past ten years, and now to "pass the torch" on to LASER-TEC. We hope that OPCN members will "carry on" what has been started and continue to network with each other via the "private" OPCN Group on LinkedIn. If you haven't yet joined the group, please email Jonathan Friedman [jsfriedman@suagm.edu](mailto:jsfriedman@suagm.edu).

## MentorConnect



### 2019-2020 Mentoring Cohort

**Applications now available to "Get a Mentor" for the October, 2019 - October, 2020 Mentoring Cohort.**

telescopes. Dr. Diaz explained how the optics interact to produce the images seen through a telescope. Students aligned the viewfinder lens for optimum viewing. Students used the Epilog laser to engrave images onto wood. The final activity of the camp was balloon popping with a laser. Dr. Diaz also shared information about career and educational opportunities in photonics. Latino students that previously attended this camp have enrolled in the IHCC Laser & Optics Technology Program; seven Latino students were part of the 2019 graduating class.

MPEC also hosted professional development activities this summer including the OP-TEC Fundamentals of Light and Lasers capstone for two participants, a Laser Material Processing capstone for two students, and a Fundamentals of Photonics Workshop for three students.



## LASER-TEC Laser-Photonics Technologies Series



LASER-TEC is launching the **Laser-Photonics Technologies** series of blended courses as part of the effort to increase the production of photonics technicians in the United States to meet industry demand. The goals of this project are:

- To provide education to future photonics technicians of all ages and backgrounds and prepare them for the challenges of the 21st century in the field of laser-photonics.
- To provide professional development to instructors from around the country who want to learn and add laser-photonics content to their existing programs, or create new courses and programs.
- To provide an opportunity for industry to update their incumbent workers in an efficient and cost-effective way.
- To raise awareness in the community in general about the importance of the field of photonics and light enabled technologies and applications for future technological advancements in the 21st century.

The five-course series will consist of the following courses:

- Course 1. INTRODUCTION TO PHOTONICS
- Course 2. GEOMETRICAL AND PHYSICAL OPTICS
- Course 3. FUNDAMENTALS OF FIBER OPTICS
- Course 4. LASER SYSTEMS AND APPLICATIONS
- Course 5. INTRODUCTION TO SPECTROSCOPY

All courses are blended with the theoretical part online and the practical part at LASER-TEC in Fort Pierce, FL. The tuition will be waived for educators.

The offerings for this academic year are:

### Course 1. INTRODUCTION TO PHOTONICS

If your college has not received NSF grant funding in the past seven years, has a need to develop or strengthen STEM technician education programs to meet industry needs, and you want assistance in preparing a competitive grant proposal for the NSF Advanced Technological Education program, you should consider applying as a mentee.

Formed out of Florence-Darlington Technical College's South Carolina Advanced Technological Education Center of Excellence (SC ATE), Mentor-Connect has been designed and refined to provide mentors, faculty development and resources to help community colleges benefit from the NSF Advanced Technological Education (ATE) program.

Mentor-Connect also offers opportunities throughout the year to get assistance including free technical assistance webinars.

**NSF ATE Program Funding Opportunities & Mentor-Connect Orientation Webinar Live Broadcast:**  
September 12, 2019

**Application Deadline:**  
October 11, 2019

**Notification of Selection:**  
November 8, 2019

Please read all instructions via [Get a Mentor](#) before you begin to apply. For questions, email [mentor-connect@fdtc.edu](mailto:mentor-connect@fdtc.edu) or call 843-676-8541.

## PACT Alumni Spotlight



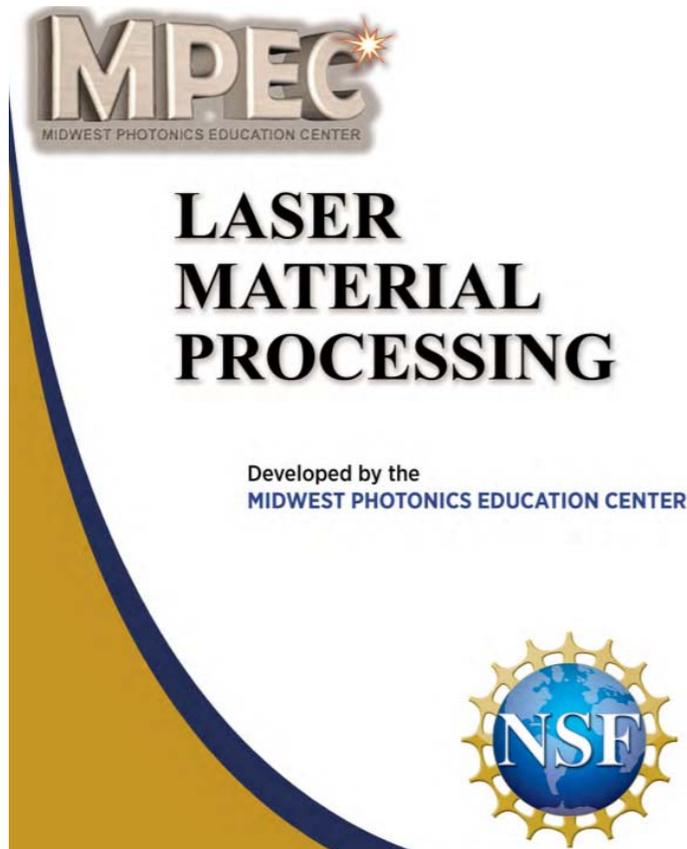
Online part: October 1 - Nov. 30, 2019  
Hands-on Labs: Dec 16 -20, 2019, Fort Pierce, FL

## Course 2. GEOMETRICAL AND PHYSICAL OPTICS

Online part: Jan. 6 - April 30, 2020  
Hands-on Labs: May 4 -8, 2020, Fort Pierce, FL

To register for these course contact Natalia Chekhovskaya at [nchekhov@irsc.edu](mailto:nchekhov@irsc.edu).

### MPEC Laser Material Processing Course Materials



MPEC will be officially closing at the end of August. MPEC has hosted and supported many outreach activities, camps, professional development courses, workshops, and symposiums, student experiences, demonstrations, conference presentations, and exhibits in the past five years. MPEC has also assisted several colleges in developing programs, courses and labs. We are extremely grateful for the support received and friendships developed through OP-TEC, LASER-TEC and the OPCN.

The course materials for the Laser Material Processing course will be available in the future through LASER-TEC. At present, anyone interested in MPEC Photonics Kits may contact Frank Reed at [frank.reed@indianhills.edu](mailto:frank.reed@indianhills.edu).

Greg Kepner

At the age of 13, Ryan Renfrew, began to work with his father on classic cars, and discovered what would become an intense fascination with electronics and optics. Thanks to that early discovery, Ryan was able to get a jumpstart on his photonics education. "My high school had a collaborative program that I was able to complete during my senior year," he recalls. "The day I graduated (high school), I started my second term of college at Indian Hills Community College (IHCC)." Even before he graduated, he had been offered thirteen very different jobs from companies throughout the United States. Whatever he chose, Ryan would earn enough money to make him financially independent-as a teenager!

Ryan now works for Cymer, Inc., at the site where the majority of research and development for the computer company Intel is conducted. "At Cymer, we are in charge of all specifications, all installations, and all upkeep on the lasers used by Intel," he explains. While Ryan obviously thrives in high-pressure environments, he sees the pressure as both the most fun and the most challenging part of his career. "Once you're responsible for a particular project or a particular individual, it's very hard to walk away."

From Ryan's perspective, photonics is an extremely competitive field. "It's all a bit of a competition. I think it requires a particular personality, whether good or bad!" If there is some particular personality trait that causes people to thrive in photonics, it's safe to say that Ryan Renfrew has it.

Read more about Ryan and other successful technicians in Success Stories in Photonics Careers (downloadable PDF at [www.optecresources.org](http://www.optecresources.org)).

**For Previous Issues of the OPEN Newsletter**

**please visit [OP-TEC's News Page](#).**

### **Join the Conversation**

We hope you enjoyed this edition of the OPEN newsletter. We would really like to hear from you. If there is some subject that you would like us to discuss or look into, please let us know at [prmanager@op-tec.org](mailto:prmanager@op-tec.org).

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