



Florida's Photonics Boom: What's Behind It (And What's Ahead)

A Q&A with James E. Pearson and Alexandre Fong, Florida Photonics Cluster

Florida is home to one of the largest and most active concentrations of photonics activity in the world. The state boasts 270+ photonics companies, which employ 5,700 optics professionals and generate over \$3.6 billion in annual sales. It is also a hub of optics and photonics research, with nearly 80 photonics faculty researchers at centers such as the University of Central Florida's CREOL – College of Optics and Photonics and the University of South Florida's Laboratory for Remote Sensing and Bio-MEMS and Microsystems Laboratory. Some 100 photonics specialists graduate from Florida colleges and universities each year, entering fields including lasers, fiber optics, optical and laser materials, thin film coatings, optical components, and many others.



One of the principal facilitators of Florida's photonics industry success has been the Florida Photonics Cluster (FPC; www.floridaphotonicscluster.com), a not-for-profit organization dedicated to unifying the state's various photonics companies and organizations. The FPC is led by President Alexandre Fong and Executive Director James E. Pearson, PhD. (For full bios, please scroll to the end of this article.)

Photonics Online had the privilege of meeting up with Fong and Pearson at Photonics West 2011, to get an update on the FPC and its current and future activities. In this Q&A, Fong and Pearson provide an introduction to the FPC, discuss the current state of the photonics industry in Florida, explore some of the factors behind its impressive growth, and look ahead to the challenges it may face in the coming years — and what the FPC plans to do to help overcome them.

When was the FPC formed and why?

The Florida Photonics Cluster (FPC) was incorporated in 1995 as the Florida Electro-Optics Industry Association (FEOIA), a 501c(6) nonprofit, to support the rapidly developing photonics industry in Florida, which had been a state-wide focus area for economic development since the mid-1980s. The FEOIA changed its name to Florida Photonics Cluster in 2002 as "photonics" became the term best describing the breadth of the technologies. The FPC is designed to support the growth and profitability of the Florida photonics industry through the strength of a unified voice, and to make Florida the place to go for photonics solutions. The FPC is dedicated to enhancing the industry through effective collaboration by bringing together the knowledge, expertise, and service that each organization has to offer to meet the following goals:

- Foster the expansion and growth of Florida's optics and photonics industry by partnering with economic development organizations, state universities and community colleges, and local and state governments.
- Market Florida's optics and photonics companies worldwide.
- Facilitate and provide a means of communication within the business community.
- Partner with the Florida education community to enhance and develop a competent statewide optics and photonics-based workforce.

How is the association funded?

Most of the financing for the FPC comes from dues paid by the companies or from in-kind services that the members provide. The Florida High Tech Corridor Council (FHTCC; www.floridahightech.com) is a strong supporter of photonics and provides funds for marketing, outreach, and other FPC activities that support the overall industry. We do have some members who provide some services — for example, our website development and hosting is provided by a member company. They do that without charge to us, and we, of course, provide them opportunities for marketing their products to our members.

How many members do you have?

We current have 51 members: 31 photonics companies, 8 university organizations (including the University of Central Florida Business Incubator and Photonics Incubator), 6 supplier companies, and 6 other organizations. The FPC is open to all companies and organizations that provide optics and photonics products or services, and also to non-photonics companies who provide services and products to photonics companies. The organization has grown to its current size from just 16 members (10 companies, 5 university organizations, and the FHTCC), with 9 new members to date in 2011, so we must be doing something right!

Describe a typical FPC member.

Our members cover such a wide range of products and company size that there really isn't a "typical" FPC member, except for their commitment to the photonics field and industry. As noted previously, the members are varied in their primary product, but here are a few additional facts:

- **Photonics companies.** These range from consultants and one-person companies to large corporations such as Northrop Grumman Laser Systems in Apopka, FL, and Harris Electro-Optical Solutions in Melbourne, FL. Some are fairly recent startups (Optigrate and Sunrise Optical are two examples) and others have been in business for many years.
- **University organizations.** Connection of the industry to education resources is crucial, particularly with the rapid growth of the industry and of many of the FPC member companies. The FPC has members from the University of South Florida, Florida Institute of Technology, and University of Central Florida (six, including CREOL, The College of Optics and Photonics).
- **Supplier companies.** These companies provide services and products of great value to photonics companies and have many of our members as their customers. They include suppliers of: web-hosting and marketing (OnTarget Web Solutions), legal services (Bond, Schoeneck, & King), logoed products (Williams & Associates), exhibit products and support (Diamond Level Service), and trade publications (*Laser Focus World* and *BioOptics World*).
- **Other organizations.** These members are economic development organizations (the FHTCC, Metro Orlando EDC) and professional and trade associations (SPIE, Manufacturers Association of Central Florida, Laser Institute of America, OIDA).

What FPC benefits do your members value most?

The highest-value benefit will vary among members, but I think that since the FPC's primary mission is to help its members grow and prosper, the networking and information services that the FPC provides are at the top of the list. There is also what we say in our byline: "The strength of a unified industry voice" for advocating at the legislative levels, for developing educational opportunities, for providing resources such as access to technical facilities and industry trained personnel, and for working with a wide variety of other industry and professional organizations.

What are the association's primary goals for 2011?

Our primary goals will remain in 2011 and as we go forward, with our strategy focusing on four primary areas: membership services, communications and marketing, education programs, and technology development (particularly connecting companies with university research and intellectual property).

Tell us a little bit about the current state of the Florida photonics industry.

The Florida photonics industry is strong and growing. This is demonstrated by comparing the industry in 1998 to what it was in 2008 (all numbers from a survey and study funded in 1998 by USF's Office of Economic Development and by the FHTCC in 2008, both studies done by Guy Hagen). Here are the comparisons:

<u>Item</u>	<u>1999</u>	<u>2009</u>
Number of companies	148+	271+
Photonics-specific annual sales	Over \$2B	Over \$3.6B
Impact on Florida annual sales	Over \$4B	Over \$7.2B
Number of jobs produced	11,000	27,000
Number of optics professionals	3,400	5,700
Annual university research funding	\$12M-\$15M	\$20M+

What factors have contributed to the industry's rapid growth in Florida?

In 1999, the most important issues for photonics companies were identified in a survey as (1) marketing, (2) workforce, (3) research and development. With a great combination of federal, state, regional, and local financial and other support, all of these issues were addressed, and the results made a great contribution to the growth of the industry. Another factor that has made a great contribution has been the industry's ability to attract and retain some of the best talent in the field — in research and development, in manufacturing, in marketing and distribution, in business management, and in education. And last, but far from least, is the tremendous support and resources available to the industry. Examples of these resources include: expanding education in photonics at the university and community colleges, technology and business incubators at USF and UCF, enlightened IP policies at the universities (particularly at UCF) that emphasize a win-win partnership, and most recently programs such as Grow Florida (www.growfl.com) that offer a variety of resources at no cost to second-stage companies to help them grow their sales and profitability.

**What are the biggest challenges facing the Florida photonics industry in the next few years?
What will the FPC to do help overcome those challenges?**

The biggest challenge facing the Florida photonics industry is the growing emphasis on photonics technologies and related products in other regions both in the United States (Arizona, Colorado, New York, California, and others) and internationally (particularly the European Union). The opportunity for growth in this industry is now widely recognized, and other regions and countries are increasing their investment in the field while the United States — and to some degree Florida — are stagnant or having to contract because of the recent recession. This is in spite of the tremendous return the state has experienced from its involvement in this critical enabling technology. The FPC will continue to emphasize what the

association does well: bringing the industry together to cooperate for mutual advantage through membership services, communications and marketing, education programs, and technology development, with an emphasis on increasing the rate of technology transfer from universities to industry and advocating for continued investment in this critical field.

About The Participants

Alexandre Fong is senior VP of life sciences and instrumentation and business development for Gooch and Housego in Orlando. A Chartered Engineer, he holds undergraduate and graduate degrees in experimental physics from York University in Toronto, Canada, and an MBA from the University of Florida. Fong is a published author and lecturer in the fields of precision light measurement, life sciences imaging, remote sensing, applied optics, and lasers. He is also an active member of the American Physical Society (APS), the Optical Society of America (OSA), SPIE, the International Commission on Illumination (CIE), the Council for Optical Radiation Measurement (CORM), and the Institute of Physics. He is also past chair of the OSA Public Policy Committee. Prior to joining Gooch and Housego, Fong held senior business and technical management positions at ITT Industries, Newport Corporation, and Honeywell International. He is also founder of Cirrus Photonics, LLC.

James E. Pearson received his PhD in electrical engineering and physics from the California Institute of Technology. From 2004-2009, he was director of research and administration for CREOL and special assistant to the UCF VP for research. Currently semi-retired, he is a special consultant to UCF, contributing to a variety of projects including photonics technician training and certification. During his career, he has also served as executive director of ISA (then the Instrumentation, Systems, and Automation Society), executive director of SPIE, chief scientist at the United Technologies Research Center (UTRC), and president of UT Optical Systems. He is a Life Fellow of SPIE, a Fellow of OSA, a Senior Life Member of IEEE, a past president of the Council of Engineering and Scientific Society Executives (CESSE), and has served on the board and several committees of these societies.