

Interview with Alexandre Fong of Optronic Labs

By Mark Fihn

Alexandre Fong is Vice-President of Sales and Marketing at Optronic Laboratories, Inc. He holds undergraduate and graduate degrees in Experimental Physics from York University in Toronto, Canada and an MBA from the University of Florida. Alex is a published author and lecturer in the field of precision light measurement, applied optics and lasers, an active member of the APS, OSA, SPIE, CIE, CORM and the Institute of Physics and a Chartered Engineer. Prior to joining Optronic Laboratories, Inc. Alex held senior business and technical management positions at ITT Industries, Newport Corporation and Honeywell International.



Tell us about the specialties offered by Optronic Laboratories: I tend to refer to Optronic Laboratories, Inc. as a “NIST spin-off” since our founders came from NIST. We have grown over the past 35 years from a provider of NIST traceable working calibration standards and services to a premier precision light measurement products and services company. Our radiometric, photometric, spectral instruments, detectors, integrating spheres and other input optics are considered the highest quality of any manufacturer in the industry and set the bar for other players in terms of precision and accuracy. Because of our history and our commitment to excellence, we’re often referred to by our customers as the “NIST quality” instrument company. Ultimately I think our greatest asset is our expertise and ability to deliver light measurement solutions that are bona fide and not just approximations. Many people come to us when no one else can answer the questions they have. Our work ranges from the UV-VIS-NIR to the IR (200 nm to 30 μ m) wavelength ranges and we have delivered solutions to everything from the characterization and compliance of the most sophisticated NVIS instrumentation and commercial displays to tanning beds and lighting.

How do your sales split between uses, (metrology, R&D, quality control, or production) and between sectors (research, academia, industry, and military)? We are actually very diversified and have traditionally served metrology, R&D and production/quality control clients in research, industrial and defense segments almost evenly. Like many established instrument manufacturers our original markets were institutional, but the rapid growth of the display and solid state lighting markets have shifted the focus towards more industrial end-users and customers and it has become a much bigger part of our business recently. This has meant some adaptive steps but it has also been an exciting challenge for us and as an early entrant in many of these end-product applications during the formative developmental stages we bring the added depth of insight that few sensor and instrumentation firms have that are focused exclusively on process control solutions.

Give us your philosophy about calibration – is it better for machines to be calibrated frequently, or manufactured in a way that does not require frequent calibration? Because we supply calibrations standards as well as instruments, we get asked this a lot. The fact is that there is no such thing as permanent calibration. While it is always preferable to minimize the requirement, particularly in industrial process control settings, all materials change over time and that means drift. Since the level of drift is time dependent, the required amount of calibration is dictated by the accuracy or uncertainty requirement. We try to understand the application in terms of ensuring the highest stability, accuracy and precision practical, required by prescribing the right instrument, detectors and optics and recommend recalibration subsequent to how much uncertainty the user can tolerate. That may mean, daily, weekly, monthly or annually.

To what display-related standards bodies is Optronic Laboratories a member? We’re active in a number of organizations that promote standards in the area of display measurements including CIE, the Council for Optical Measurement (CORM) as well broader organizations related to display development technologies. We feel out involvement is critical, because as instrument manufacturers we have unparalleled insight into the practical considerations and implications of such criteria as they emerge.

What areas in the area of display metrology do you see as needing more attention by standards bodies? By far optical performance remains the least regulated criteria in the assessment of display technology products. Ed Kelley at NIST has done the most comprehensive work in this area through VESA and is a leader in the efforts to create an ISO specification. The VESA document provides excellent guidance on such measurements and provides for flexibility on the part of manufacturers to apply them. However, the recent growth in the industry has meant that many personnel who are charged with the responsibility of applying such criteria have little or no background in optical measurements. This introduces the risk that they will follow the letter but not the spirit of VESA and in some cases, biasing the process inordinately in their favor. The result is that products are not consistent which could have dire implications for consumers and the market. Hence, education must be a critical component of this effort.

In terms of display metrology, what do you see as the most difficult thing to measure? Well from a marketing standpoint, I think the most challenging aspect of what we do for display manufacturers is to adapt to the variety of display types and measurement requirements. This ties into my comment about standards just now. Most of the time when customers come to us they are not sure about what they need to measure, let alone how. Physics often dictates what can be done but this is often at odds with what they may interpret from a specification. This leads to an iterative process where expectations often have to be adjusted in order for a practical solution to be developed.

In general, do measurement devices from different companies yield the same results, or are there significant differences between “comparable” devices? We have been involved with so many display types, even when dealing with comparable devices, that it’s hard to draw conclusions. Typically, we first engage with our clients while in the developmental stage and as you are aware what is exciting about this business is that much of the technology is continually evolving. So there is always something innovative, different and special about the display we are looking at. It would be convenient to say that we are seeing products that are getting brighter for example, but that isn’t always the desired case. Compatibility with the application or environment, which ranges from cell phones to military aircraft displays, is what most device manufacturers are after, so we get all sorts of requirements and results.

To avoid rewarding a particular company, are there ways that standards bodies can avoid specifying a particular piece of measurement equipment? While the measurement criteria often depends on the environment or application that the device under test was designed for, as I said, physics is physics and the definitions of precision and accuracy should not be up for negotiation. I think the biggest concern for us is the potential for the blurring of what should be a hard specification by instrument manufacturers who offer sub-par equipment and market it by confusing or misleading device manufacturers. I’m in Asia right now where the majority of display production takes place and have noticed that the combination of lack of technical expertise in optical measurements, pressure to deliver product and language barriers can potentially lead to potentially meaningless specifications. Most people working in the field have traditionally come with a strong electronics background. However, without an understanding of how optical radiation measurement works, there is no appreciation for an instrument that does it correctly over one that provides spurious results. Because there is a cost difference, the importance of requirements such as NIST tractability, which our instruments have, need to be spelled out. I think standards bodies need to convey these requirements clearly in terms of the optimal technology to be employed and set the bar high to ensure rigor when it comes to instrumentation to stem potential bias.

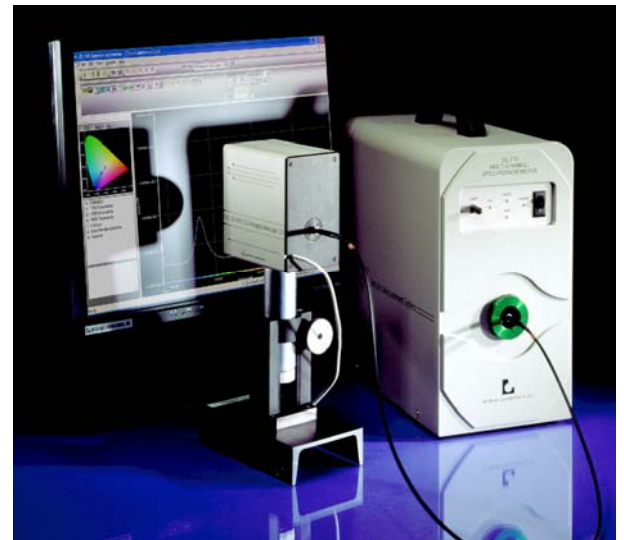
What are some measurement tools your customers are requesting that are not yet being provided for in the industry? Due to their high accuracy and precision, our instruments have typically been associated with research grade measurements. What’s been interesting to watch is how those levels of performance are now moving to the product floor. In the past, production test equipment has been of much lower performance than what is needed now. This is because the performance of what is being measured now is so much higher. Adapting high performance equipment to this new environment at a reasonable cost is the biggest challenge and it is always changing. 24-7 on-line requirements for example impose levels of robustness that must be engineered into such products. Still, portability adds another dimension.

Do you see much specsmanship from your users? Initially, in the developmental stage, most of our customers want to objectively determine what they have on their hands. When it comes to production however, I think that specsmanship is the major motivation for coming to us. They want to be able to say that their products meet or exceed certain performance attributes but they want to do it honestly. There is immediate concern if they read low on a unit and we are often the first people they contact to see whether the source of the problem lies in the measurement or the product. The problem I have is that occasionally we may encounter someone who is looking to get a number they want, regardless of its basis or veracity. I think we may see this more and more as what is a high-end display product today becomes tomorrow's commodity.

What sorts of things can you as an instruments manufacturer do to help avoid specsmanship in the industry? I think our only real tool is education. We need to make people aware of how measurement methodology works and why a given instrument will ensure that it follows it. Standards bodies can help greatly in reiterating the message but we need to bring it home to the end-user through advertising, articles and on a one to one basis.

What devices are your biggest sellers into the display industry?

Our most popular tool for display manufacturers is the OL770 DMS Display measurement system. It combines a fiber coupled high sensitivity high-speed multi-channel spectroradiometer with a high quality direct viewing imaging telescope, USB interface and powerful applications software tools to provide all critical optical display measurements in a portable package. The imaging telescope can be located remotely from the spectroradiometer which makes it perfect for uses in confined environments and integration into production automation. We are also seeing a lot of interest in our OL731 USB Smart Detector which is an economical compact self-contained radiometer/photometer with a built-in 6 decade preamplifier and automated gain adjustment that can be tailored to the spectral response of the user's specific application requirements with the use of a range of sensors and filters. It is ideal for high volume integration into production automation. Like all our instruments, NIST-traceable calibration of the response of each unit can be provided. We also manufacture a wide variety of detectors and input optics including custom integrating spheres. In fact, we recently delivered a huge 76" sphere to a Japanese display manufacturer to test multiple flat panel displays.



OL770 Display Measurement System

What devices do you think should see sales growth into the displays industry? Right now, I'm especially excited the potential for flexible displays as well as commercial versions of personal head-up displays (HUDs). I personally believe the latter may emerge as the next phase of not only portable but multi-media entertainment in general. I am pleased that some of the leading innovators in this technology have chosen to work with our equipment and hope that it means we will have the opportunity to continue to play a role in its development. Another area many of our customers work in is in the creation of new high brightness solid-state lighting technologies and OLEDs. They will continue to be critical to the successful development integrated display products.

Any exciting new plans in the works? Many! We have quite a few new products coming out this next year to address display manufacturers in all segments. Our goal is to bring high performance and affordability to display testing and I think our product will reflect that. We'll make some announcement soon both here and in other trade publications. We're also exploring some interesting proposals for joint ventures to supply complete VESA test solutions to the display market.