Optomechanix

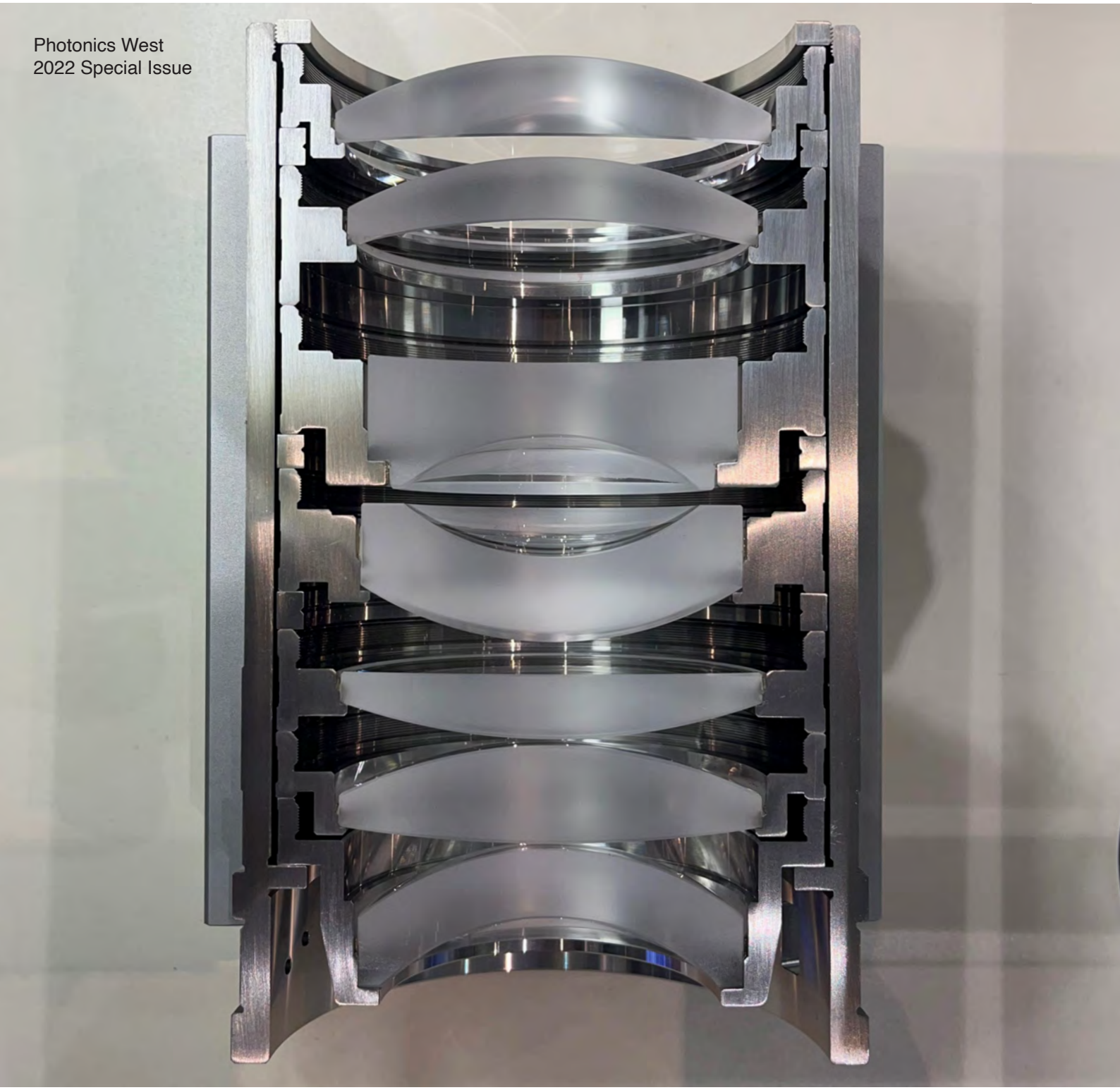
Visiting Photonics West 2022

Exhibition Floor

Optics Market Review

February 2022

Photonics West
2022 Special Issue



Technical journal of OMiD, Opto-Mechanical Institute of Design

Photonics West 2022 held at Moscone center, San Fransisco

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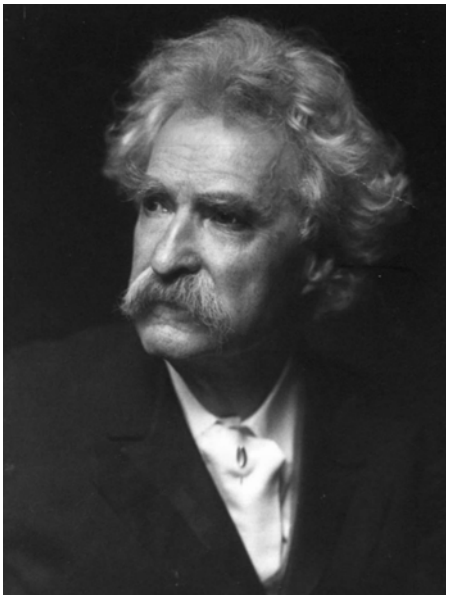


Mark Twain portriat

This issue Dedicated to:

Samuel Langhorne Clemens (1835-1910) known by his pen name **Mark Twain**, was an American writer, humorist, entrepreneur, publisher, and lecturer. Perhaps his famous quotes explains the man.

Forgiveness is the fregrance the violet sheds to the heel that crushed it.

In the first place, God made idiots. That was practice. The he made school boards.

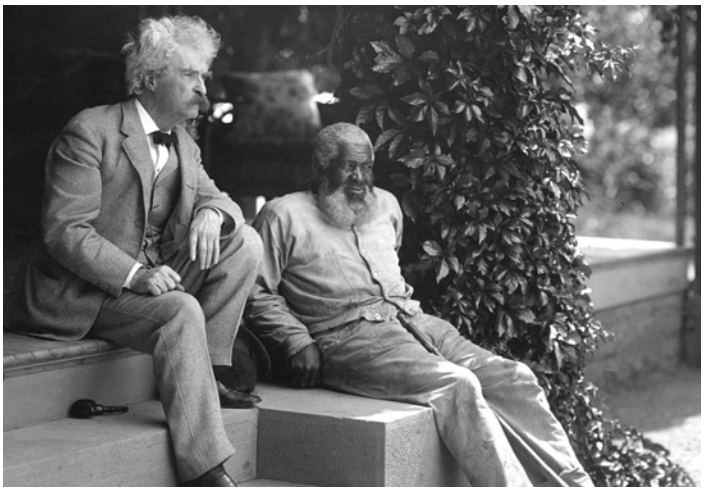
Praise is well, complement is well, but affection - that's the last and final and most precious reward any man can win. Whether by character or achievement.

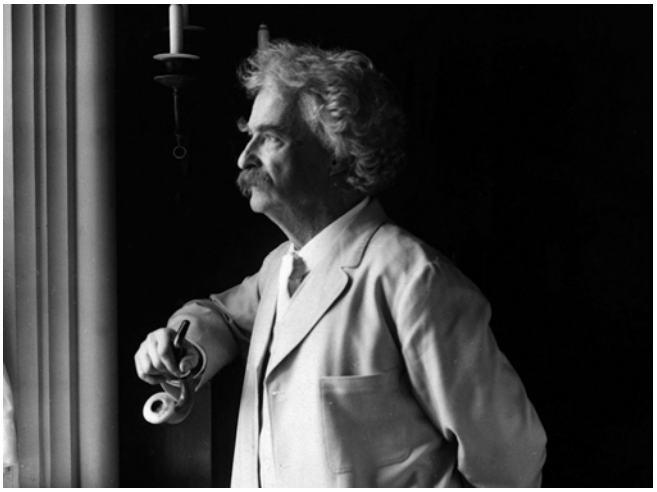
A successful book is not made of what's in it but what is left out of it.

Prosperity is the best protector of principle.

Whenever you find that you are on the side of the majority, it is time to pause and reflect.

His novels include The Adventures of Tom Sawyer (1876) and its sequel, Adventures of Huckleberry Finn (1884), the latter of which has often been called the "Great American Novel". His wit and satire, in prose and in speech, earned praise from critics and peers, and he was a friend to presidents, artists, industrialists, and European royalty.





Mark Twain, and his long time friend John T. Lewis; His inspiration for the character Jim in "Huckelberry Finn".

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Optomechanix is a quarterly journal of Opto-Mechanical Institute of Design (OMiD), with technical articles for practical, hands-on opto-mechanical engineers. This magazine is privately founded.

Cover page photo: Lens barrel cutaway display at Photonics West 2022 exhibition
Inside page photo: Front entery of Photonics West 2019 in Moscone caneter, San Fransisco, California

Attending Photonics West Show 2022 (Feb 5-7)

I attended this year's Photonics West, to display the real hardware I have been showing throughout the year in Opto-mechanix magazine. The show was put together knowing there will be less exhibitors, and less attendees. So there was a lot of empty space but not so visible, thanks to the excellent work of whomever did the interior design. The show turned out well thanks to the great efforts of SPIE staff as well as good attitude in part of the exhibitors. Less than a quarter of the 18,768 attendees in 2019 showed up this year (3,263 technical + 2,905 exhibition visitors). Before the pandemic, there were 1,350 exhibitors vs 950 in 2022. Like a luxury cruise, there were more exhibition staff (3,951) than exhibition attendees. Some major players didn't show up like Thorlabs, MKS (Newport), Excelitas (Linos), Hamamitsu, and some small European companies like Sill Optics withdrew from the exhibition for the rise of the new

The mainl entery to the show at Mascone, Feb 4th, 2022.

Huge LED display is the overwhelming background as the attendees enter the show down the escalator to North Hall F.

The exhibition space also featured a game of chess. right, SPIE booth were giving away women in optics calendars.

Covid cases. What I personally felt was the big players who had helped the show grow in the past years had left us stranded, and this gave the opportunity to small companies to show their genuine love of optics. So for being a small part of the optics community, small companies felt a sense of pride at this show. Ever since I immigrated to America, I had felt alienated at times for being separated from my own cultural heritage, but I finally realized this is a real American experience as a whole. This country was founded on immigration, and they all felt the same way. I think this is why people in this country are so open to new ideas no matter where they come from.

The role of trade shows isn't to produce immediate sales. There is the emotional energy you receive by meeting people in your own field of interest, and there was a lot of that going on. I think this is the attitude that would help an industry to prosper, and grow. More than its highly promising market, optics is an exciting field left behind by people like Galileo.

Ali Afshari
Chief Editor,
Optomechanix

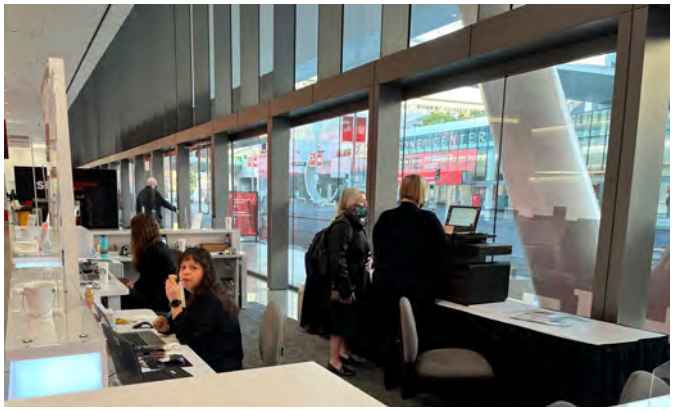
Overall exhibition space layout. Right, SPIE has been successfully publishing these quick reference books for 8 years.

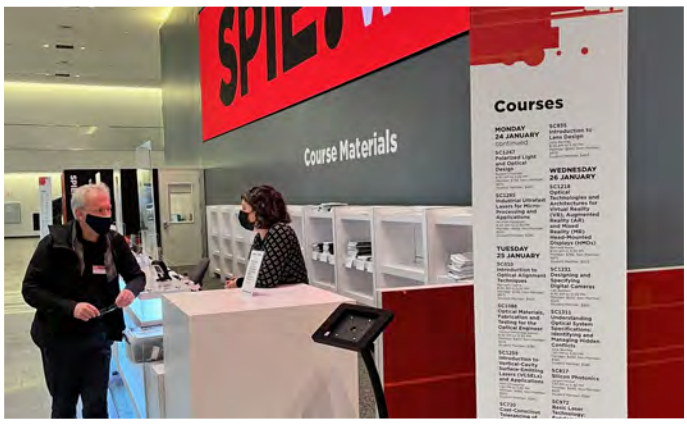
More show space with the usual booth size by Optosigma (left), and Modulight (right).

Exhibition by PI (left). Edmund (right), has been busy during the pandemic with three new optics manuals, and catalogs.

European pavilion from Germany (right), and Japan. China wasn't so present although their products were displayed at many booths.

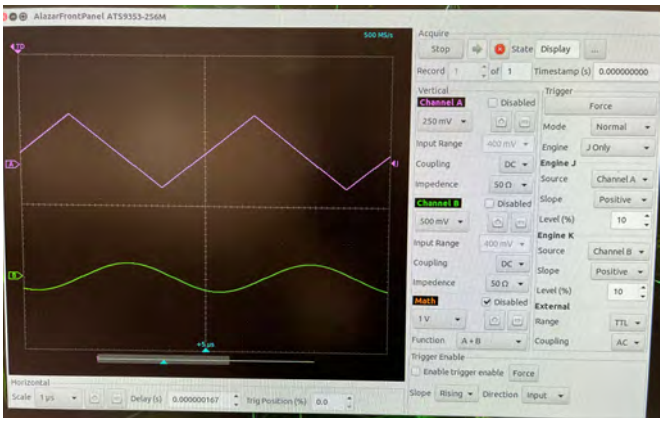
The childeren's play statute in front of Mascone (left), and its vibrant night view (right).



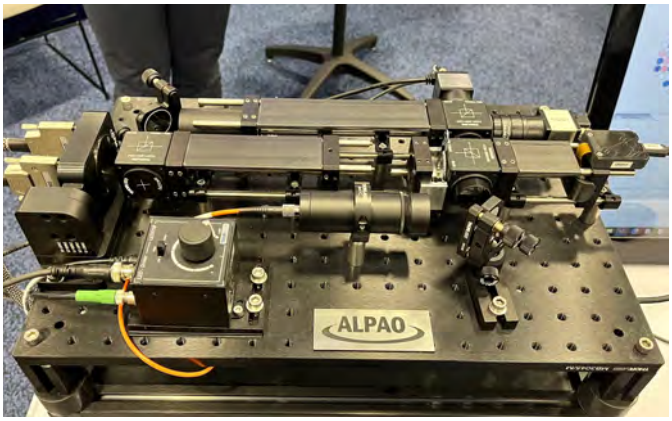


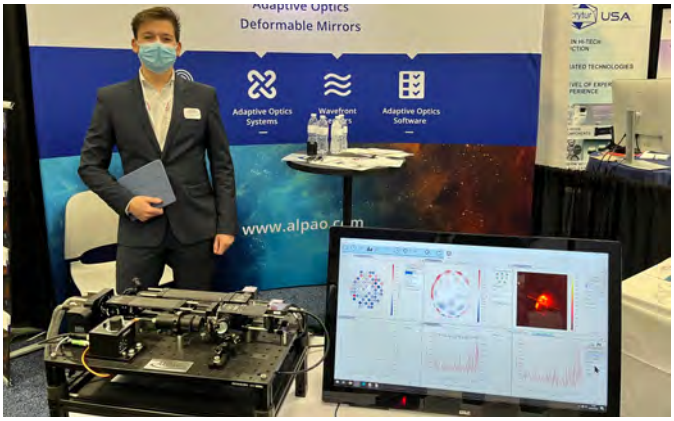
Left, Sara Burns seating behind the registration counter. Right, SPIE short courses, and booklets during the week.

Signal digitizer boards by **AlazarTech** for high speed multichannel signal capture, and play back. www.alazartech.com

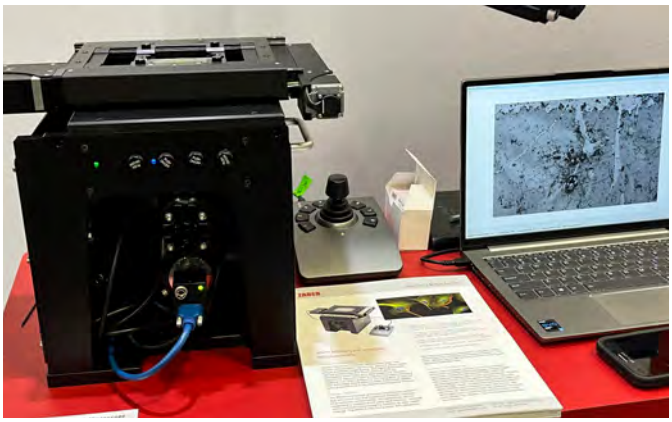


Display doftware (left), and a variety of signal capture boards (right).

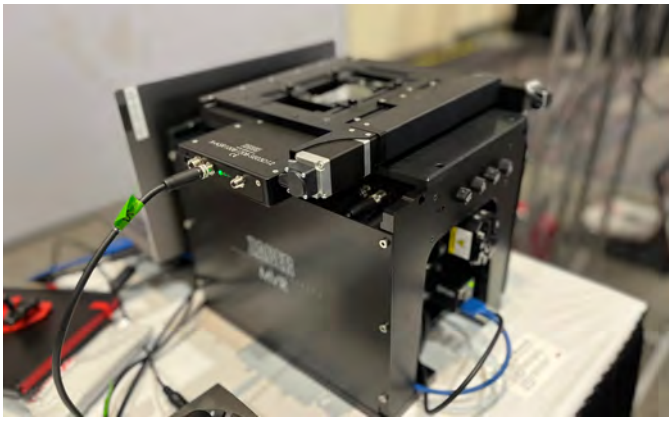


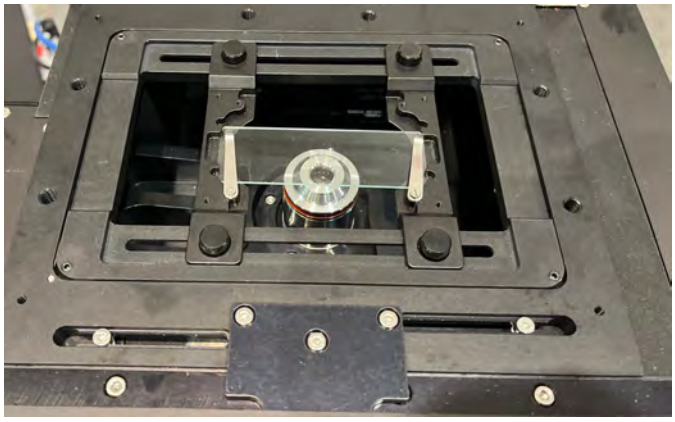


ALPAO France, deformable, or adaptive optics is diplayed in this small breadboard setup built with cage system.

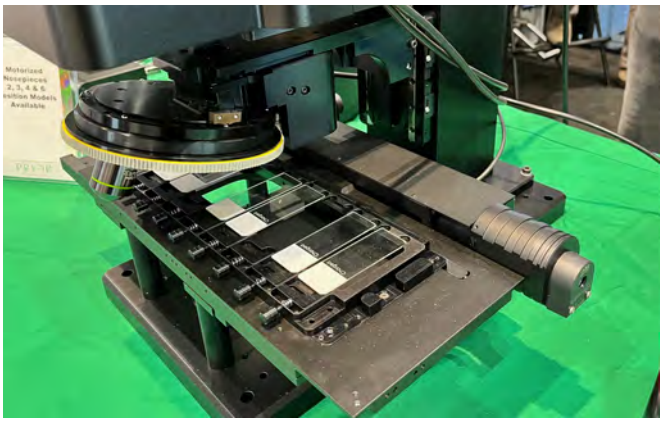


Zaber optics has introduced a similar product as Ethaluma, and others' inverted microscope. www.zaber.com

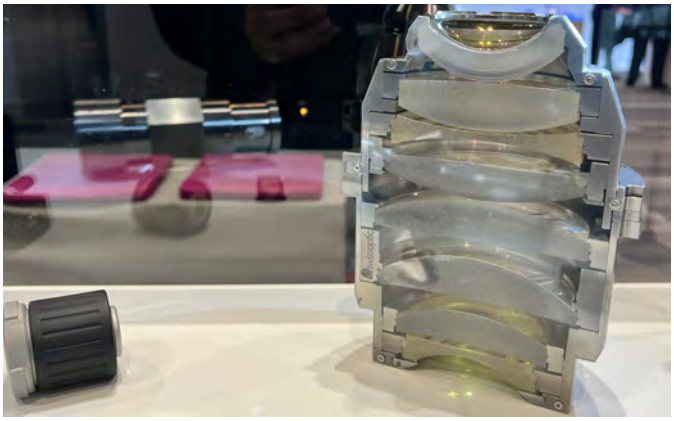




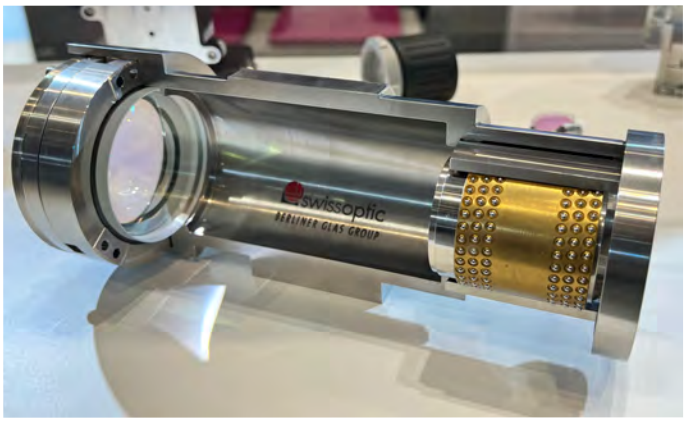
More views of Zaber's inverted microscope (left) with adjustable microscope slide carrier (right).



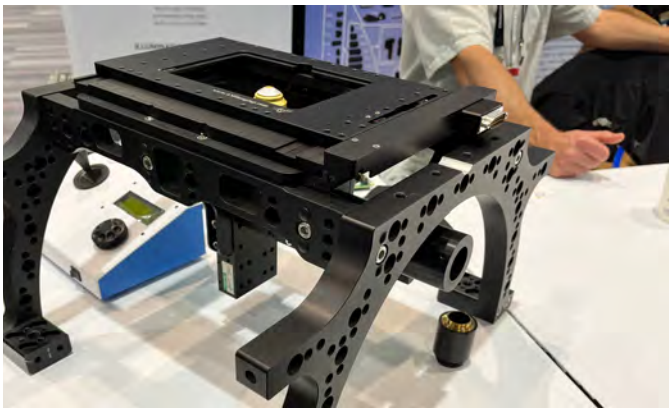
Prior's multi slide carrier (above, left), and how it's designed to be easily interchangeable.



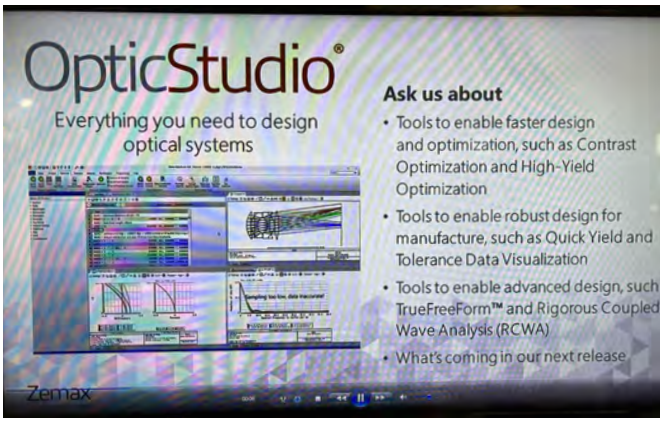
Prior still makes the laser track autofocus module (Left). Lens barrel assembly by Swissoptic (right).

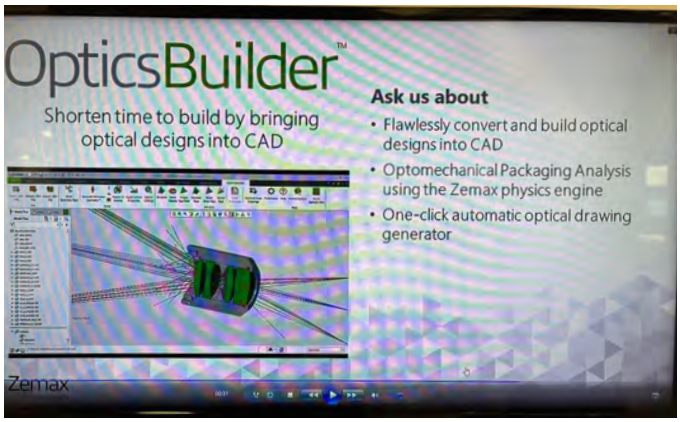


This huge linear bearing guide rail (right) always catches the eye at shows with their slick design, by **Swissoptic**

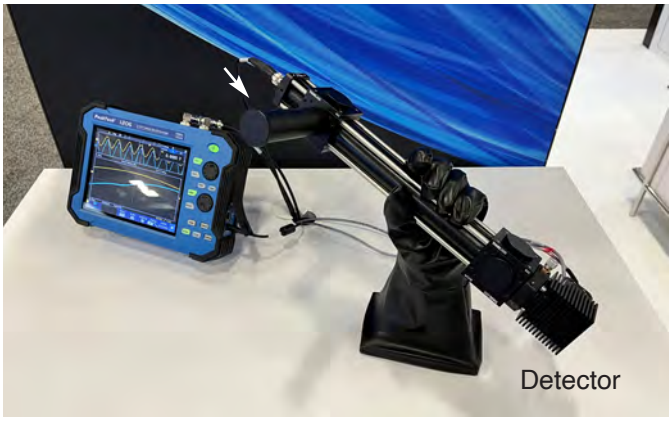


Applied Scientific instrumentation's inverted microscope is an open frame (left), and reconfigurable.

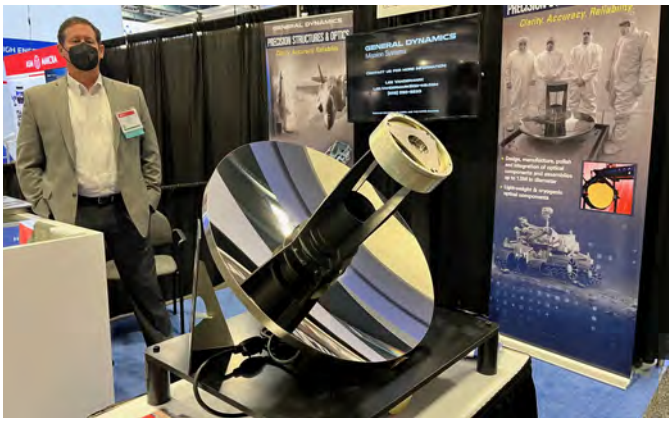


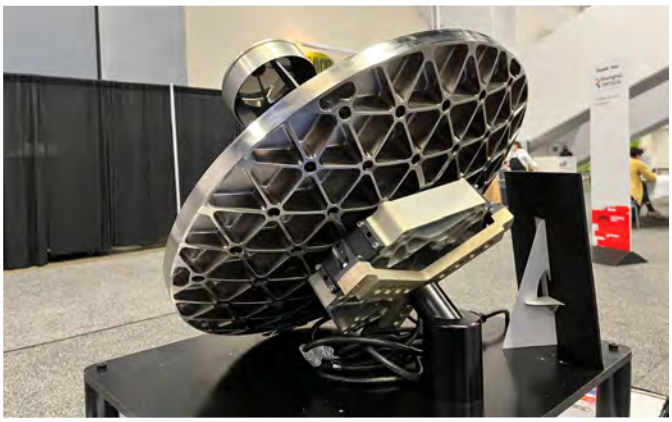


Not a good news for **Zemax** users: The company was aquired by Ansys, and Zemax will no longer work with Solidworks.



Co2 gas detector using detector made by **Nanoplus**. The Co2 gas entersthrough the tube (arrow)



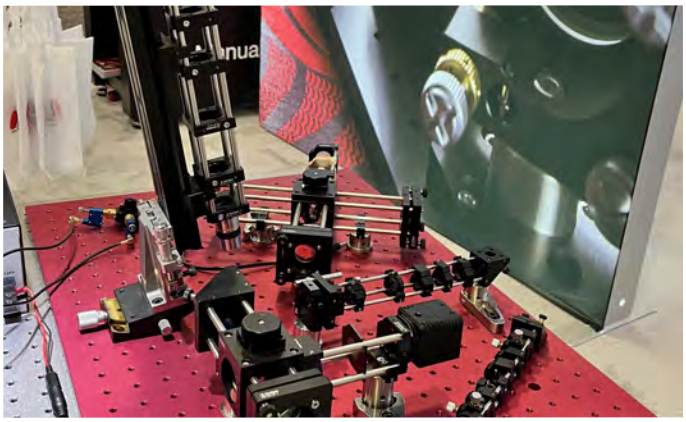


Light telescopic mirror made by General Dynamics

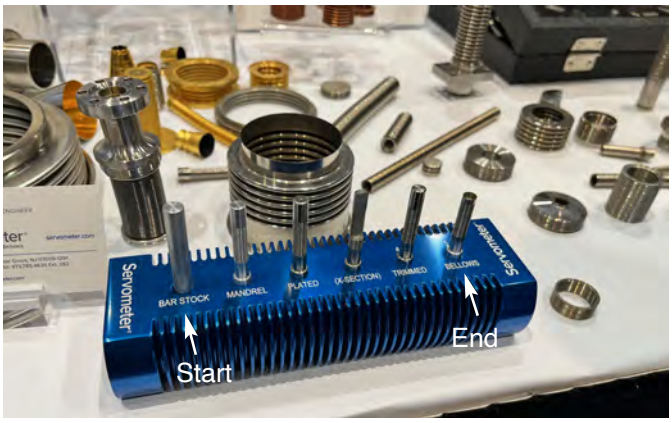
Optomechanix displays its new Optoform II product line at the show, and past copies of this magazine (left).

Canon displays this 50-1000 (20:1 zoom ratio) lens. It is offered in both PL, and EF mounts, with a price tag of $70,000

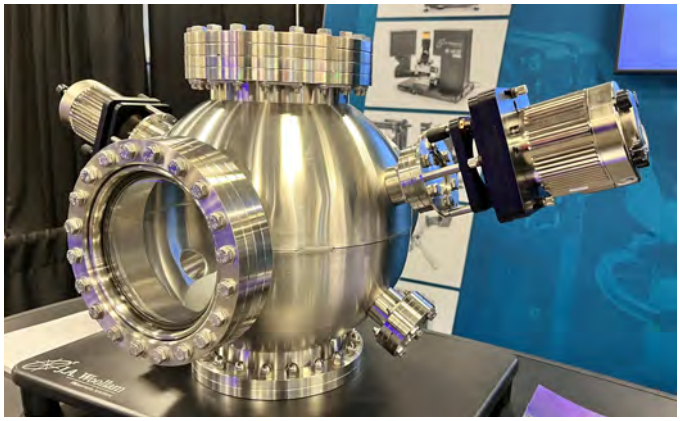
More views of Canon 50-1000 zoom. The lens f/stop varies between T5 ~ T8.9 throughout its zoom range.



OptoSigma's cage system with 4 rods (left) and with 3 rods (right).

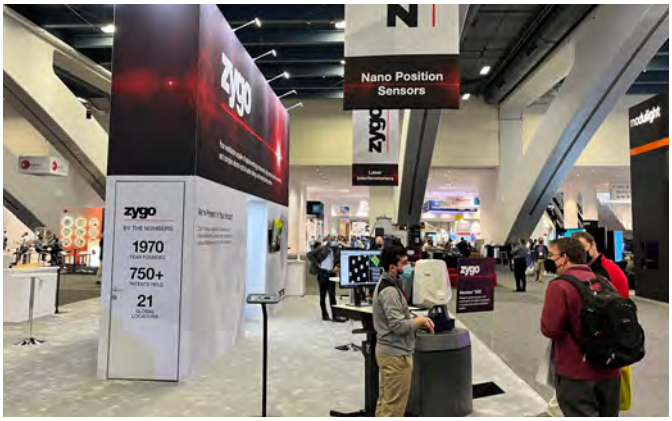


MW components displays how they produce these fine Chrome plated bellows by etching off their inner metal core.

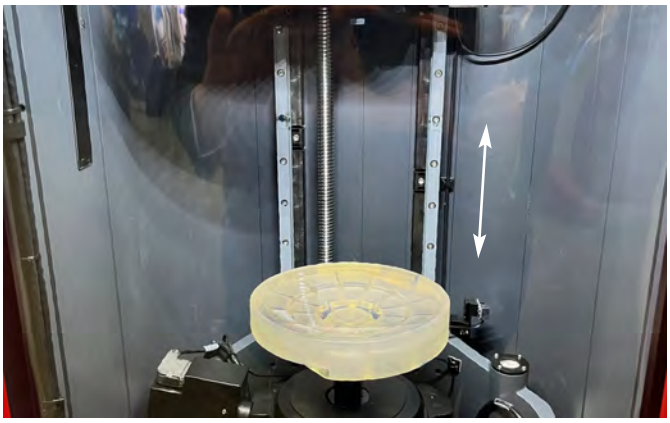


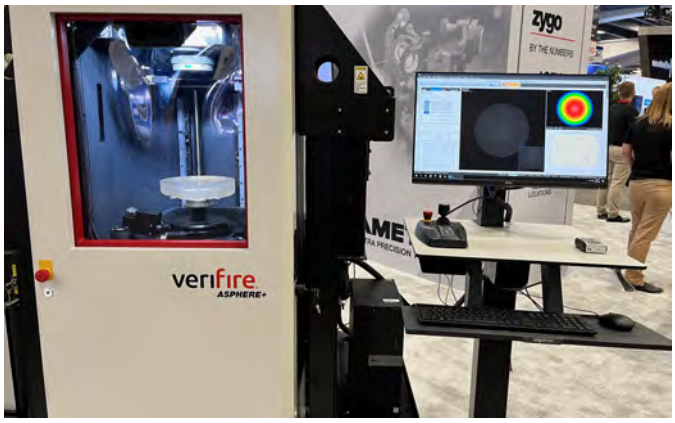
JA Woolam displays their ellipsometry software, and hardware. www.jawoolam.com

Unibond optical adhesives were given away at **Universal Photonics** booth: They'd melt by heat, and will dry instantly.



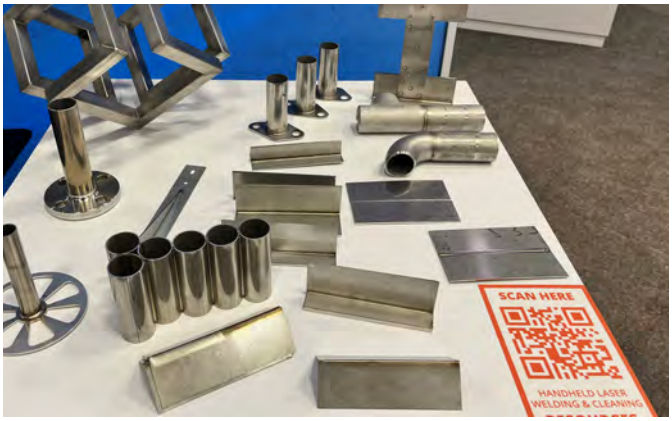
Zygo's Nexview microscope profiler, and measurement software (right). Above, right, Zygo's Verifire interferometer.



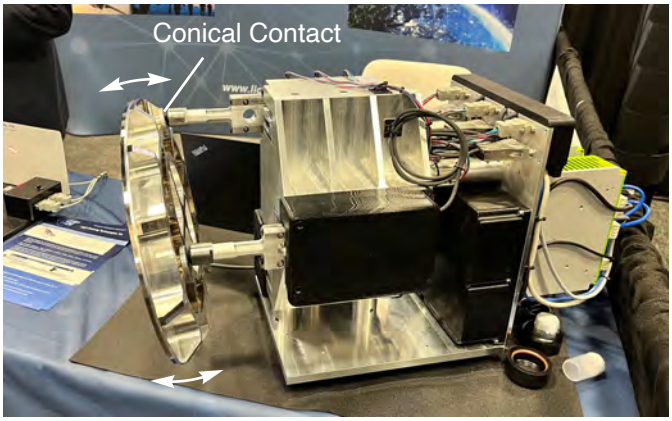


Zygo's Verifier fully enclosed motorized sample handling measures Aspheric mirror's focal length, surface quality, etc.

EV Manufacturing solutions displayed many weldign heads, and Light Weld lser welder, plus a variety of welded components (right).

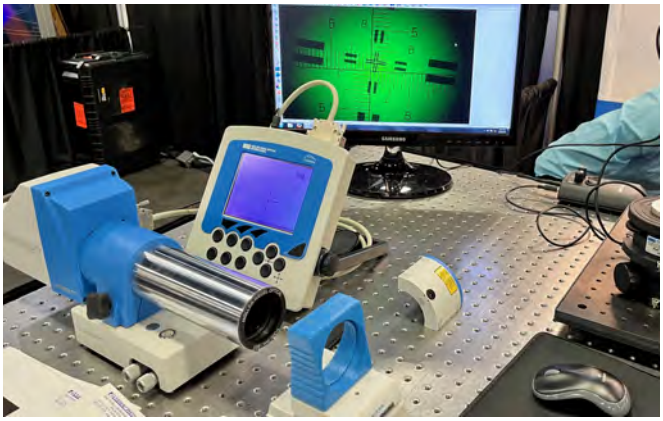


Close up of welded components by EV manufacturing solutions, and vrious laser welding heads (right).



LST light steering technologies introduced their medium size, and small magnetically held steer mirrors.

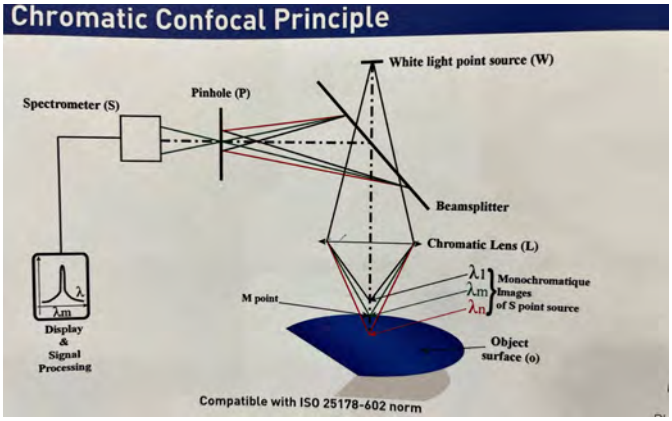
Lenses by **Schneider** optics (Germany), some of which are rated to go to space.

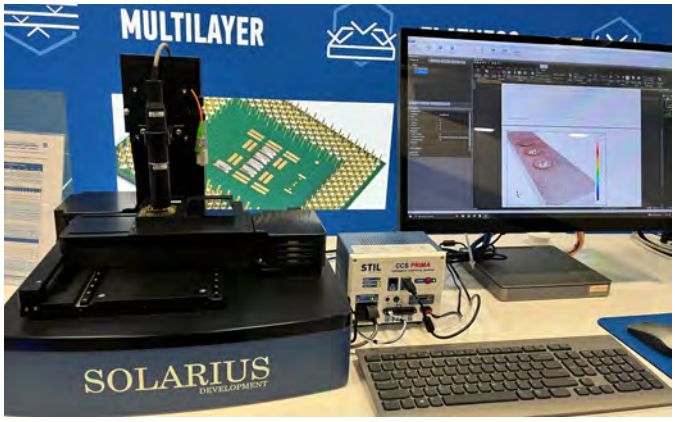


Fremont Photonics offers autocollimators, and various lens testing tescopes, targets, and test fixtures.

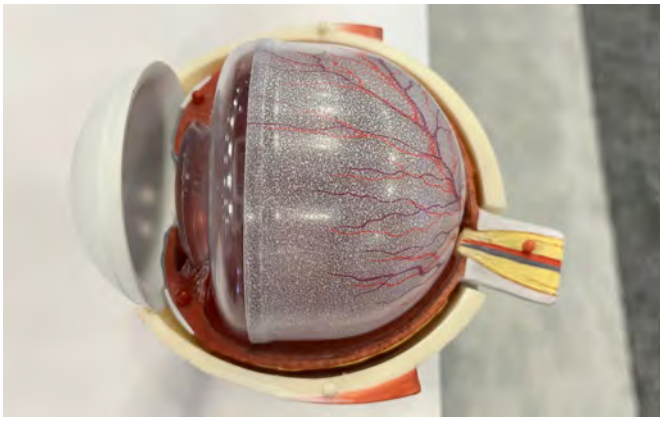
Mloptic (Nanjing China) with lenses for UV lithography (right) for semiconductor. Also supplier of live sciences, etc.

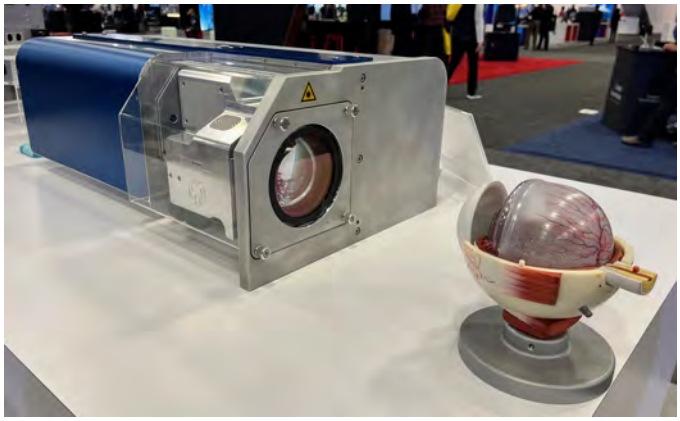
Various retaining screws are shown that can be sealed inside **Redivac** plastic vaccum seals.



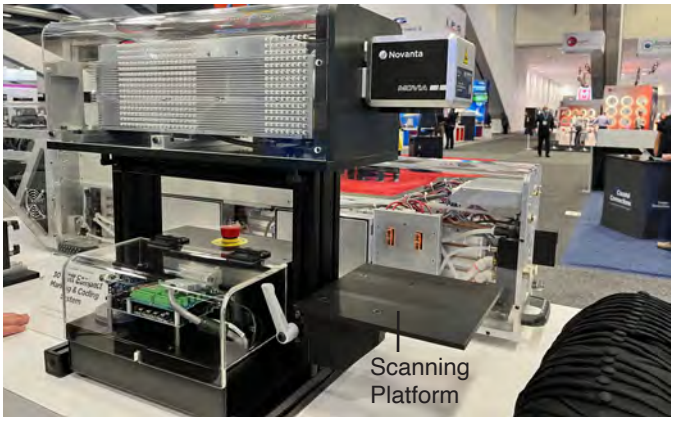


Marposs (France) displayed their chromatic confocal principle that is able to detect object contours by the refected ʎ.

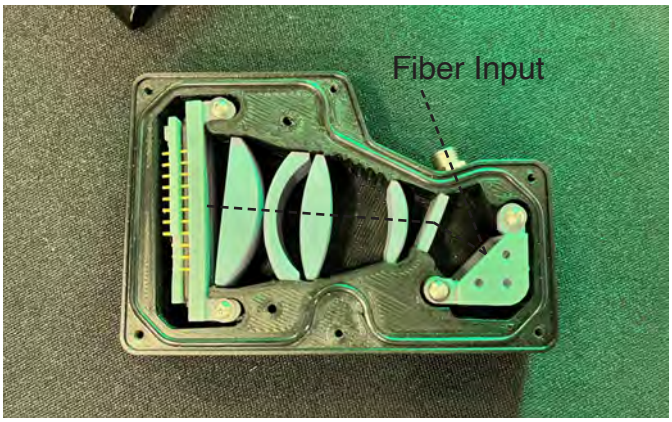




An eye model (left) infront of eurgery aparatus (right) using scanning galvos for greater control of eye surgery procedure.

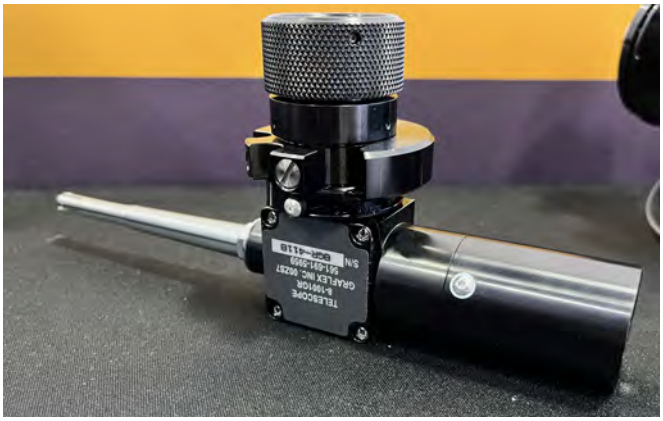


Novanta produces galvo systems as well as vision systems for inspection, and measurement



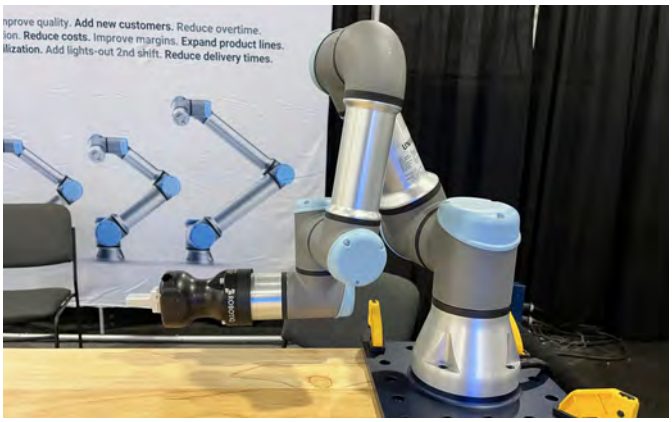
Salvo Fiber optics spectrometer module shown in cross section (left), and in actual use (right).

Various zoom rifel scopes, and motorized zoom optics at **Salvo** Technologies booth.



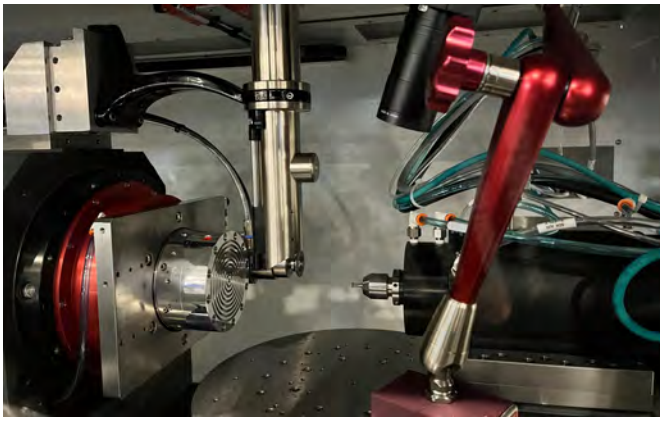
The rifle scope alignment tool is inserted on the barrel, and projects a laser beam for the scope's alignment (Salvo).

4" ultra compact cassegrain optics with integrated secondary mirror at **Sonx** (Germany) booth.

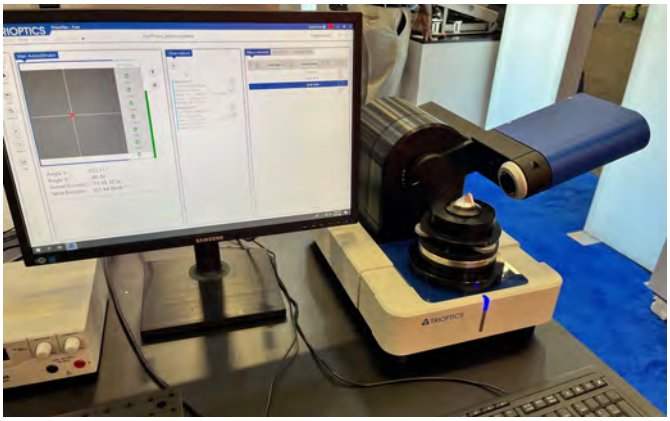


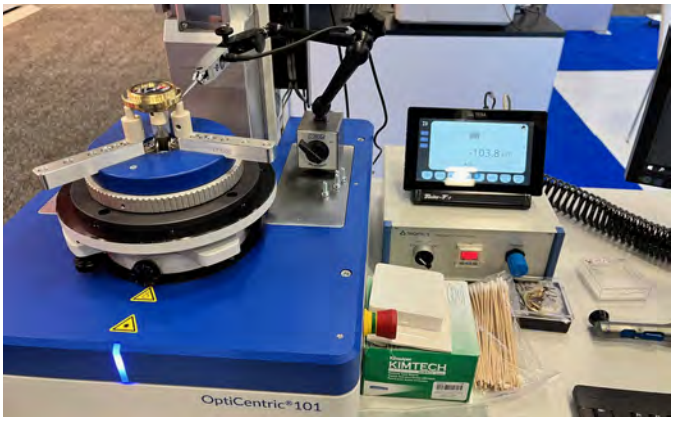
Robatic arm at **3D Infotech** booth with AI camera head for distance, and object recognition performed programed tasks.

Robotic arm (robonano series) in **Fanuc** booth performed minature parts handling tasks, etc.

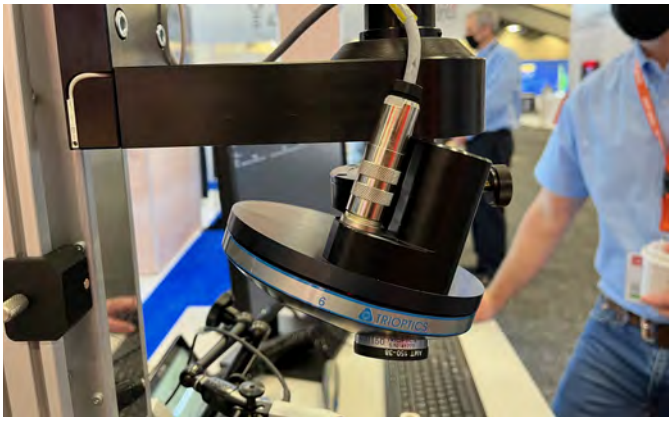


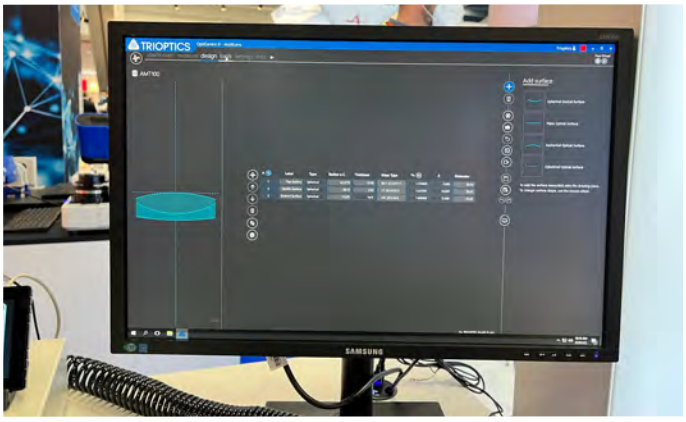
Nanotech precisiondiamond turning machine (right). Inside the machine is shown with chuck, Aluminum chip vaccum, and cutting tool.



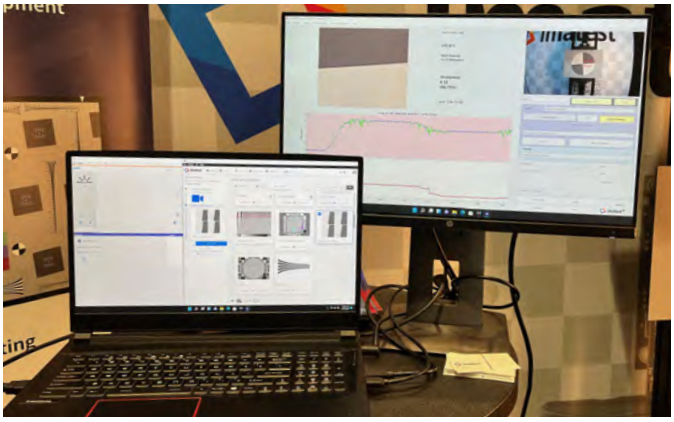


Trioptics displayed their various test stations for quick assembly, and alignment of optical lens cells.



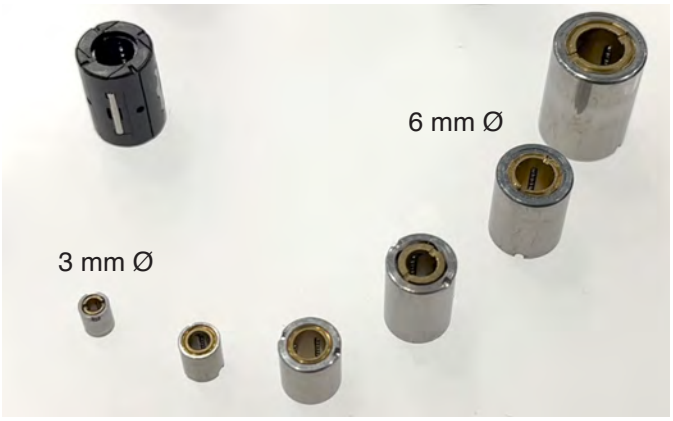


Close up of the Trioptics machine reveals motorized nose turret, and control/measurement software.

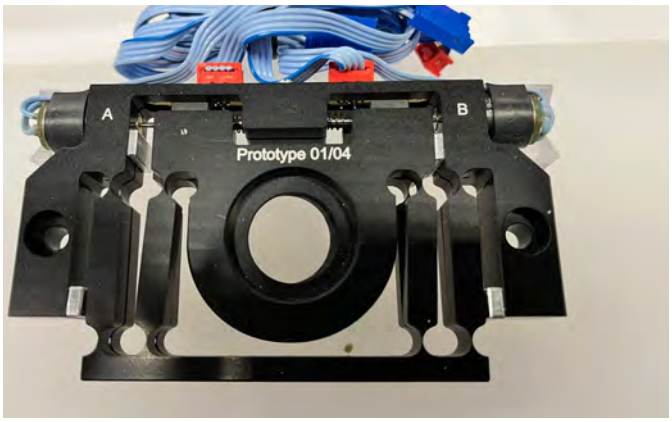


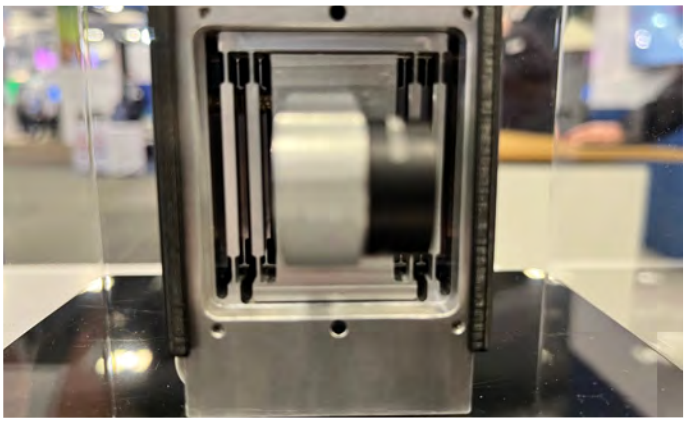
Ground level Image tester by **imagtest** performs MTF testing of lenses with motorized optical rail.

Light weight composit breadboards distributed by **APS** advanced photonics sciences.

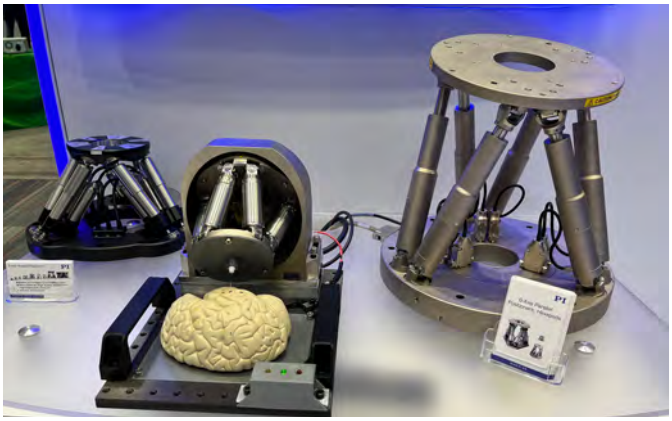


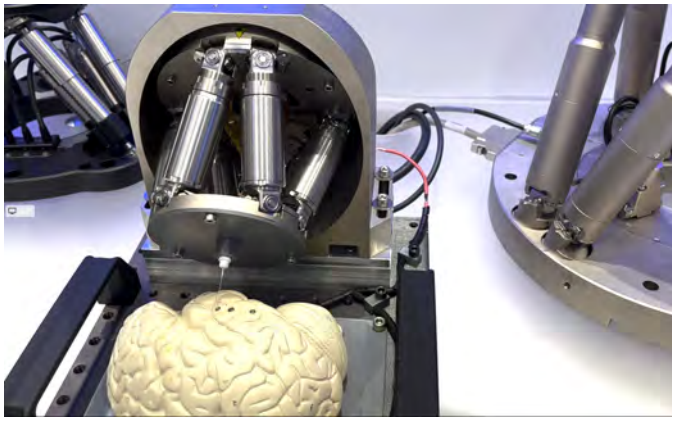
Swiss miniturization of linear bearings by **MPS**, such as the 3 mm circulating linear bearing with 1.5 mm inner shaft (left).



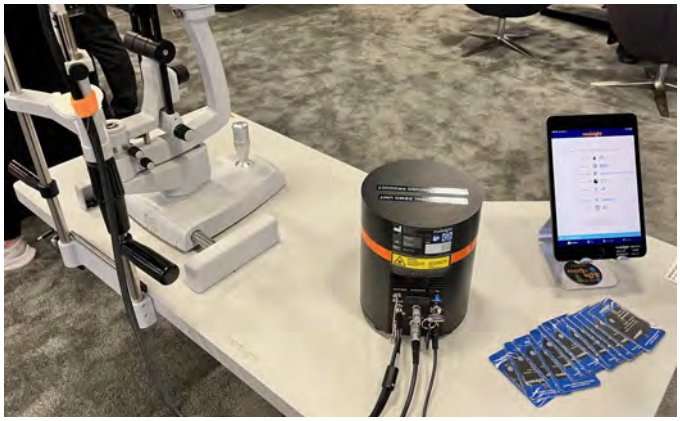


Two flexure type positionners; One for X or Y axis positioning via minature motors (left), and Z axis positioning (right).

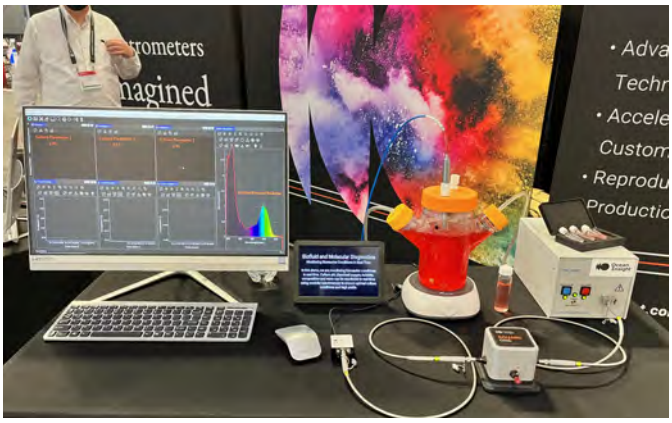




Hexapod display at **PI** booth, displays its application in doing brain surgery (close up, right).



Slit lamp attachement for eye surgery by **Modulight** may be attached to slit lamp by various manufacturers. Right, computer interface.



Colorful eye catching setup for measuring ocean studies (left) with sensors, and display software by **Ocean Insight.**

Keyence inspection workdstation produces the most vivid colorful images of electronics connectors, etc. (left).

Industry Trends and Outlook

There was an insightful presentation by Peter Hallett, director of marketing and industry relations at SPIE on industry growth (2012~2020). It was a detail study of the photonics market growth in number of companies, core components sales, number of photonics employees, salary growth, etc. The study shows what is summarized in his last slide below. His ending comment: “It’s a good industry to be in”.

Summary – Strong industry growth

- Core photonics market exceeds $300B for the first time
  - CAGR >6.5%
- Companies and jobs growing at >7% CAGR
- New growth dominated by China
  - Revenues reached $45B and jobs ~400k
  - Revenue/employee and salaries are increasing
- Photonics technologies underpin a >$10 Trillion market
  - Data consistent with EU study
- Even with the pandemic the photonics industry remains strong

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