

2015
Newsletters

About us

Elliot Scientific supports the UK and Ireland's academic and industrial communities as a leading supplier of equipment dedicated to the advancement of the physical and biological sciences.

We design and build our own ranges that are marketed globally under the Elliot|Martock and Elliot Scientific brands. These include award-winning Optical Tweezers, world-renowned flexure stages, micropositioners, fibre positioning components, automated alignment systems, waveguide manipulators and many others.

Distribution

Elliot Scientific is also a major distributor, providing sales and product information, technical support and after-sales services on behalf of many innovative companies based in Europe, America and Asia, to end-users in the UK and Ireland.

As such, we supply speciality optical fibre and custom optics, lasers and LEDs, positioning systems and opto-mechanics, cryogenic and magnetic instruments, sensors, systems and other technologies from these carefully selected manufacturers.

Quality

All of our customers - from academic institutions and government agencies through to commercial researchers and industry - are provided with a top-quality service backed up by solid technical support from our knowledgeable team.

Elliot Scientific has been BS EN ISO 9002 registered since 1993 and BS EN ISO 9001 registered since 2003. We understand the need for continual improvement in services and traceability, both in distribution and manufacture. Our commitment to this ensures our standards are the highest in our industry.

New Year, New Website



It has been a number of years since we last redesigned our website and a lot has happened in that time. Wide screen monitors for computers are now de rigueur, tablet and mobile devices are ubiquitous, and scientific research requires a more multi-disciplinary approach.

To satisfy all these, Elliot Scientific spent several months testing different software products in order to find one that maintained the ease of use of our existing site, yet delivered features expected in the modern web environment.

Do **have a look around**, and if you find any bugs or errors - mobile devices are currently excluded, **let us know** and we might send you a mystery gift. ☺

Elliot Scientific's Optical Tweezers are on the spot at BIOS EXPO 2015 next month



Elliot Scientific Optical Tweezers have proven to be a popular choice of research instrument for trapping experiments by scientists around the world.

Optical Tweezers are an invaluable tool for measuring and exerting forces in the microscopic world. The picoNewton forces that light can exert on minuscule particles have empowered scientists, particularly those in biomedicine, enabling them to perform important studies on single molecules, cells and colloids without inflicting damage.

Elliot Scientific offers the most comprehensive range of optical tweezers available:

- Component based "open architecture" systems
- Self-contained portable, desktop single beam workstations
- Single spot Optical Tweezers for integration with commercial microscopes
- PC controlled multi-spot Optical Tweezers integrated with commercial microscopes
- Force Measurement options -
 - For single trap stiffness: A Quadrant Photodetector (QPD)
 - For multi-trap stiffness: Camera Particle Tracking (CPT) technology

An E3500 Optical Tweezers system equipped with QPD and CPT will be demonstrated in **Booth 8523** at **BIOS EXPO 2015** next month. If you're not going to the exhibition and conference, you can still experience our Tweezers in action by watching these application videos.

For more information, **contact us now**. Custom systems are our speciality.

25 Years of Solution Science



Celebrating
25 years of
Solution Science

Elliot Scientific
1990 - 2015

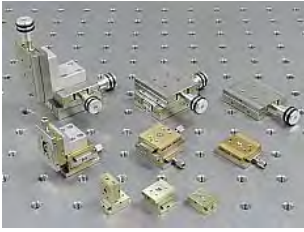
Twenty-five years ago this month, Mike Elliot incorporated Elliot Scientific Ltd. A veteran of both Spectra-Physics and Newport, Mike developed the company in order to support academic and manufacturing sectors globally.

With a long-standing team of experienced scientists and engineers, Elliot Scientific has succeeded in that goal, providing specialist yet balanced advice to ensure that the products and solutions we supply suit the customer's needs.

Elliot Scientific has delivered a quarter of a century of solution science for research and industry, and the company remains committed to Mike's ideal of providing a high quality service at all levels. Here's to the next twenty-five years.

Elliot|Martock products will be in position at Photonics West

Elliot|Martock high-resolution (under half a micron) **precision miniature slides** have been popular with scientists and OEMs for nearly 40 years.



With a useful selection of Small, Very Small and Ultra Small models (with travels of 10, 5 and 3 mm respectively), the range satisfies many requirements for a stable and compact precision stage in both research and industry.

Our market-leading micro-positioners offer single, dual and three axis configurations with a variety of adjustment options such as simple screws to precision micrometers. A number of accessories - such as post adaptors - complement each range to further enhance their flexibility of use, and we also offer tilt and **rotation mechanisms**.



Our **Gold Series Flexure Stages** are our **best export**. Scientists and engineers around the world recognise that these are the **best performing** and **best value** high-resolution XYZ positioners in the world. They feature:

- 20 nm resolution with 2 mm travel per axis
- Excellent operation and superb long term stability
- Great versatility from a petite package

These precision engineered stages are highly adaptable for use in a multitude of situations. Choose from systems preconfigured for fibre launch, such as free space light into photonic crystal fibres, or for alignment of other types of optical device. Note that we offer a number of left and/or right-handed ready-built configurations at lower cost when compared to purchasing individual parts.



Once again, these positioners come with a choice of adjustment options. Simple thumbwheels, precision micrometers, and piezo driven adjusters are available for use in any combination. An extensive range of add-ons, accessories, and attachments ensure that most applications can be satisfied. If not, contact us for a custom solution.

These stages will be demonstrated in **Booth 4642** at **Photonics West** next month. If you're attending the exhibition, do come along and find out more about our UK manufactured Elliot|Martock products. Alternatively, please **contact us** for further details.



Photodigm's Mercury package now available for all its laser diode wavelengths

Photodigm - Booth 4443 at **Photonics West** - has redefined the definition of *high power* in single frequency spectroscopic laser diodes by utilising advances in epitaxial design and wafer fabrication, allowing users to immediately notice lower threshold and higher slope efficiencies when compared to earlier generations.



Mercury with 2" flex cable

To accommodate higher powers, Photodigm has developed the Mercury package to overcome the limitations of the commonly used TO-8 mount. Mercury offers many advantages:

- Small volume, only 9.2 x 5.5 x 5.4 mm
- Capacity to handle up to 1 W of laser power
- Low thermal mass for rapid wavelength tuning
- Flex cable breakout of electrical connections
- Test mount for laboratory use (see photo)
- OEM and custom versions available
- Built-in Peltier and thermistor for rapid closed-loop feedback temperature control



Mercury mounted for lab use

For details about these or other products Photodigm offer, **contact us** now.

International Year of Light: Events to end of February



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e-Luminate Festival & Light: Beyond the Bulb

Cambridge: February 11th to 15th

Society of Light and Lighting Masterclass

Leeds City Museum: February 26th

24:00:00 - Lighting in the urban age

Fitzroy Street, London: Till March 1st

- *Need to measure light or colour?*

Then have a look at **Gamma Scientific** - Booth 5612 at **Photonics West**.

Scanning Resonant Probe Microscope Kit from Mad City Labs



SPM-M is a popular kit from **Mad City Labs** - Booth 8532 at **BIOS EXPO 2015** and **Booth 532** at **Photonics West** - that allows researchers to construct an affordable high performance, closed loop, scanning resonant probe microscope.

By combining the **MadPLL®** instrument package with a Mad City Labs high resolution nanopositioning system, the seamless integration of the hardware and the automated control of MadPLL® means that you can concentrate on getting results, not tweaking parameters.

Applications for the SPM-M Kit include:

- Nanoscale characterisation
- Nanoscale fabrication
 - Optical antennas
 - Nano-optics
 - Semiconductors
 - Data storage



The SPM-M Kit is ideal for research and teaching laboratories - **view a demo video** - offering high performance, versatility, simplicity and excellent value. For more information, please **contact us**.

Next month see us at BIOS EXPO 2015 & Photonics West, 7th-12th February in San Francisco

BIOS EXPO 2015

Booth 8523

February 7th-8th

Photonics West

Booth 4626

February 10th-12th



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Custom Lake Shore CRX Probe Station with CRAIC Spectrophotometer installed at Southampton



Elliot Scientific recently installed a unique integration of **Lake Shore** CRX micro-manipulated probe station, **CRAIC Technologies** InGaS Spectrophotometer, and Zeiss microscope at the University of Southampton's Centre for Photonic Metamaterials.

Combining our knowledge of both CRAIC and Lake Shore products, we offset mounted a Zeiss microscope carrying the CRAIC Spectrophotometer onto the probe station.

The microscope was supported in a custom manufactured rig to provide smooth movement in three axes above the sample chamber, enabling the researchers to closely observe the optical properties of nanostructured materials at cryogenic temperatures through a broadband objective lens of special design.



Contact us if your next project requires a custom engineering solution. We can help.

Vescent's D2-135 Module offers superb frequency detuning for master and slave lasers

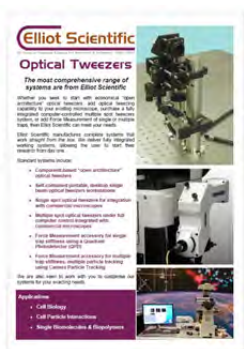
The **Vescent Photonics D2-135 Offset Phase Lock Servo** generates a frequency offset to a slave laser. The D2-135 OPLS precisely controls the frequency detuning between the master and slave lasers, and provides for an extremely tight phase lock between them. Broad, rapid detuning of the slave laser is possible via a phase frequency detector and an adjustable-parameter PID loop filter, which enables true phase lock with the conveniently large capture range of a phase lock.



- Options for either optical or electrical beat note inputs
- Quickly adjust the frequency detuning between two lasers
- High-bandwidth and large gain dynamic range
- Uses PFD (Phase/Frequency Detector)
- Offset Phase Locks up to 10 GHz
- Feed forward for rapid tuning and fast frequency jumping
- Internal VCO or external reference frequency input
- Offset Frequency stability determined by external reference stability
- User-adjustable servo loop parameters
- Internal ramp generator

Associated products from **Vescent Photonics** include a matching heterodyne module and high speed beat note detector, as well as low noise diode laser drivers and a PID servo loop controller. For further details, please **contact us**.

Optical Tweezers brochure for 2015 now online



Optical Tweezers have been around for a long time. Over 40 years have passed since Arthur Ashkin and his colleagues described the single-beam gradient force trap and sparked a realisation in many scientists that this novel instrument would be a powerful tool for use in the course of their research. However, the costs and complexities of building Optical Tweezers were often prohibitive.

With the development of easy to use 'straight out of the box' systems by Elliot Scientific, Optical Tweezers have come down from the heights of esoteric research and can be found in many labs around the world.

We have now released our latest **Optical Tweezers Brochure** for 2015 which describes all the systems we offer; from open architecture kits to flagship computer-controlled multiple spot trapping systems with force detection and more.

Please **contact us now** for details.

International Year of Light: Events to end of March



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International Year of Light Launch Scotland

Edinburgh: February 23rd

Cambridge Science Festival

Cambridge: March 9th-22nd

Science & Engineering Day: Light Express RoadShow

The University of Southampton, March 14th

☀ *Need to measure light or colour?* Then have a look at **Gamma Scientific**

FEMTOLASERS release latest ultrafast optics catalogue



FEMTOOPTICS™ by **FEMTOLASERS**, is a premier line of optics optimised for femtosecond laser applications that include spectroscopy, OCT, THz, microscopy, micromachining and attoscience.

A new digital-only catalogue has just been released for 2015 that features an expanded range of broadband, low dispersion optical components. The FEMTOOPTICS™ product family has been specifically tailored for the optical needs of the femtosecond laser community, and it delivers with a comprehensive range of focusing optics, waveplates and mirrors.

In contrast to products offered by other manufacturers, FEMTOOPTICS™ are optimised for femtosecond pulse manipulation. Transmission optics are as thin as possible, AR-coatings are ultra broadband, metallic mirrors have low dispersion dielectric overcoatings, while focusing optics and waveplates are optimised both in terms of group delay dispersion and chromatic aberrations.

Download the **FEMTOOPTICS™ catalogue here** or, for more information about these or other products from FEMTOLASERS, **contact us now**.

Next month, meet Elliot Scientific at...



Photonex Roadshow: The University of Southampton

March 9th



SU2P Symposium: The University of St. Andrews

March 23rd-24th

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New CODIXX colorPol® Polariser Brochures



CODIXX
colorPol® polarizers

The CODIXX range of tough, dichroic glass-based colorPol® polarisers pass or stop polarised light, modulate or reduce brightness, diminish noise and lots more. With over two dozen standard colorPol® versions available for use throughout the UV, VIS, NIR and mid-IR wavelength ranges, CODIXX have released two catalogues to help you choose the right polariser for your application.

CODIXX colorPol® polarisers deliver:

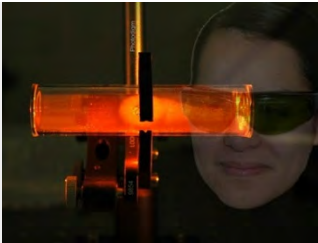
- High contrast ratios
- High transmittance values
- Large acceptance angles
- Resistance to UV radiation and chemicals
- Resistance to temperatures up to +400 °C

The **colorPol® catalogue** is supplemented with a **High Transmission brochure** especially for the for the optical telecoms industry.

Please **contact us** for technical specifications, and details about standard and custom options.

Atom Optics & Spectroscopy benefit from Photodigm Laser Diodes

Spectroscopy Certified™



- Rb - Rubidium
- K - Potassium
- Cs - Caesium
- Metastable He

Photodigm specialises in manufacturing high power single spatial and longitudinal mode laser diodes. By incorporating their proprietary DBR - Distributed Bragg Reflector - technology within a monolithic architecture, Photodigm delivers unequalled performance for researchers requiring excellent spectral purity and superior beam quality with high output powers, whilst ensuring long term reliability and stability. Typical high-resolution spectroscopy applications include:

- Atomic and Molecular Optical Physics
- Cold Atom Spectroscopy & Precision Instrumentation, for example:
 - Advanced gravimeters
 - Magnetometers
 - Atomic clocks
 - Gyroscopes
- Raman Spectroscopy, Interferometry, Lidar and Metrology



With a narrow linewidth on the order of 1 MHz, and powers up to 300 mW, Photodigm DBR lasers are uniquely suited to numerous precision projects.

For more information about **Photodigm laser diodes**, please **contact us**.

SU2P Symposium opens next week



Next week, Elliot Scientific's roadshow team will be setting up their expo table at the **SU2P Symposium**. This will be the sixth in this series of annual events, taking place over two days (23rd and 24th March) at **The University of St. Andrews**.

The Symposium will again include a list of exceptional speakers from around the world who will present details of leading edge research and industrial exploitation over a wide range of photonics and related topics. Attendees will enjoy the very best in new photonics, get to see **Elliot Scientific products** at the parallel exhibition, and have excellent opportunities for international networking.

SU2P was developed to build enduring relationships and form the basis of a network which helps to sustain the economic impact of photonics in both the UK and California. It is a partnership between the California Institute of Technology, Glasgow University, Heriot-Watt University, Stanford University, the University of St. Andrews, the University of Strathclyde, LINC Scotland and the ESP KTN.

International Year of Light: Events to end of March



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Talking Science: The Light Fantastic

Diamond Light Source Oxford, March 20th

Science & Magic of Light, the Universe and Everything

Edinburgh: March 28th

How to be brilliant: with Neil Knowles

London: April 28th

☀ *Need to measure light or colour?* Then have a look at **Gamma Scientific**

μLS put emphasis on diffraction limited circular beams



Micro Laser Systems (μLS) manufacture diode laser modules and instruments with an emphasis on optical packaging to provide diffraction limited, circular beams with low wavefront error and low divergence. Options allow for large collimated beams or sub-micron focused spots.

Among the products μLS offer are:

- Fibre collimators
- Fibre focusers
- Multimode fibre Receiver/Collector
- Free space lasers
- Fibre-coupled lasers
- Wavelengths up to 1600 nm
- High performance diode lasers



Micro Laser Systems also produce diode laser drivers and TEC controllers in both bench-top and OEM versions. Visit our [μLS product pages](#) or [contact us](#) for more details.

FLEX™ from CRAIC Technologies - a superior solution for analytical challenges



FLEX™, a UV-visible-NIR microspectrophotometer designed to be flexible in configuration, capability and pricing, has been launched by **CRAIC Technologies**.

Tailored for cost effective multiple spectroscopic analysis of many types of microscopic samples, FLEX™ operates from the deep ultraviolet to the near infrared. Depending upon the configuration, samples can be quickly and accurately analysed by absorbance, reflectance, luminescence and fluorescence.

FLEX™ can also image microscopic samples directly via its DirecVu™ optics and grab high resolution digital colour stills. Additional options include a measurement capability for refractive indices and thin film thickness. FLEX™ is a multi-functional tool for the laboratory or factory, offering superior solutions for analytical challenges.

For further details on this and other **CRAIC products**, please [contact us](#).

Next month, meet Elliot Scientific at...



Traffex 2015: NEC Birmingham

April 21st-23rd



OPIE'15 Laser Expo: Pacifico Yokohama, Japan

April 22nd-24th



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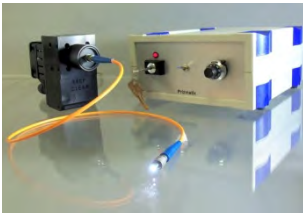


**Library
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YouTube Channel

Introducing Prizmatix Modular Systems for Biophotonics



*** STOP PRESS ***

Prizmatix will be with us at the
Oxford Day of Photonics
Monday April 20th

Elliot Scientific is pleased to introduce an exciting new range of products from **Prizmatix** for microscopy, optogenetics (see below), and other scientific or industrial applications.

Prizmatix is a scientist-led designer and manufacturer that specialises in ultra high-power LED illumination systems with up to 4 Watts output. Their systems incorporate the latest technologies within modular components to offer maximum versatility in light delivery. The product range includes:

- **Ultra high-power LEDs for microscopy and imaging**
- available in a range of power levels and wavelengths across the spectrum
- **Optogenetics**
- single and dual wavelength systems for use **in-vivo** and **in-vitro**
- **Multi-wavelength LED systems**
- modularity and versatility for custom setups
- **Fibre-coupled units**
- up to 11 different wavelengths in one box

Experienced in the development of various photonics products for fluorescence and Raman spectroscopy, microscopy, and absorption measurements using fibre-optic techniques and related technologies in bioscience, Prizmatix have engineered a versatile and modular range of optical components

From these, a comprehensive custom setup can be put together in a variety of configurations quickly and conveniently. Ideal for the neurosciences, biophysics, biochemistry et al. Typical experiments include:

- Multiwavelength detection & excitation
- Intensity monitoring
- In-line filtering, attenuation or polarisation
- Reflectance or fluorescence detection for in situ, in vivo, or in vitro applications

Contact us now for details and technical specifications of the standard and custom products in the Prizmatix range.

New minimum pulse distortion optics from FEMTOLASERS



New optics for ultrafast TiS lasers from **FEMTOOPTICS** by FEMTOLASERS are optimised to minimise pulse distortion:

- Dielectric 5% & 10% beamsplitters | sub-7 fs | p-polarised now in 2" diameters
 - Constant splitting ratio over a large spectral bandwidth
 - Minimum GDD upon both reflection and transmission
- Dielectrically enhanced Ag mirrors now in 3" diameters
 - High reflectance and low GDD over ~ one optical octave
- Ultra broadband dielectric 0° and 45° mirrors now in 3" diameters
 - Maximum bandwidth achievable with non-dispersive dielectric mirrors
 - High reflectance

For more info about these and other **FEMTOLASER products**, please **contact us**.

RoadVista hits Traffex next week: Elliot Scientific drives to Birmingham

RoadVista is an established manufacturer of retroreflectometer equipment for compliance testing of road signs and line markings. Now available in the UK and Ireland, the instruments deliver the highest performance in accuracy, reliability, and usability, and will be demonstrated at **Traffex in Birmingham** next week. Illustrated below are three of five systems Elliot Scientific will be showing:



The **RoadVista 922D** handheld retroreflectometer is designed to measure the retroreflection (RA) of road signs and other materials. It features an annular measurement geometry simplifying the measurement process and meets BS EN 12899-1 and DIN 67520 test specifications.



RoadVista's **StripeMaster 2 Touch** is a retroreflectometer designed for use in the field to measure retroreflectivity (RL) of glass beads embedded in white or yellow thermoplastic, traffic paint or temporary marking materials.

RoadVista's Laserlux CEN 30 (below right), a vehicle mounted road retroreflectometer system will also be at the show. This instrument can measure road markings in real time while travelling at varying traffic speeds.

ROADVISTA

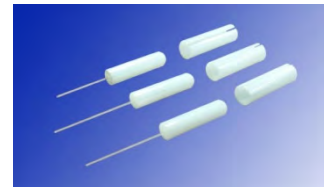


Contact us now for more details about the RoadVista range, or call 01582 766300

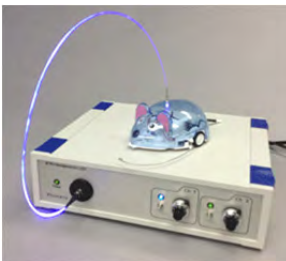
In-vivo and In-vitro products for Optogenetics from Prizmatix



Prizmatix offer a full range of modules for in-vivo and in-vitro optogenetics. Starting from single wavelength plug-and-go Optogenetics-LED kits, to multi-wavelength systems in the same fibre for activation and silencing. From light sources to cannulae and everything in between, Prizmatix provides all the components necessary for researchers working in neuroscience, neurobiology, biochemistry and biophysics.



Fibre-coupled high-power Prizmatix **Optogenetics LED light sources** can be triggered by an external TTL input and are specially designed to provide violet, blue, green or red light for activation or silencing of various opsins such as Channelrhodopsin (ChR), Halorhodopsin (NpHR), Archaelhodopsin (ArchT) and many others.



With better than millisecond-scale temporal precision, Prizmatix has been the researcher's equipment choice in **over 140 published scientific papers**. For zebrafish larvae, Prizmatix also offer an Ultra High Power LED illumination system for microplate Optogenetic set-ups.

Visit our **Prizmatix product pages** or **contact us** for more details about this scientist-designed *Optogenetics Toolkit* range.

Optical Tweezers at OPIE next week: Elliot Scientific flies to Yokohama

OPTICS & PHOTONICS International Exhibition
OPIE '15



Elliot Scientific is demonstrating Optical Tweezers and our range of precision positioning systems – from ultra-small slides to the Elliot Gold Series XYZ Flexure Stages – in the **LASER EXPO Zone at OPIE'15, Yokohama**.

Organised by the Laser Society of Japan, this technology exhibition is the largest laser related tradeshow in the country, enabling researchers and industry to discover the trends in nano- and macro-laser processing, optical communications, biotechnology and nanotechnology.

We will be joining our Japanese distributor **Autex** in **Booth O-1**.

The show takes place from April 22nd to 24th at the Pacifico Yokohama.

International Year of Light: Events to end of May



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The Light Project - Capturing Light

London, April 30th

All that Glitters: Egyptian Light in London

London: May 14th

Light: Beyond the Bulb

Burgess Hill: To July 31st

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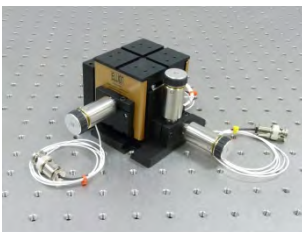
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New 3-Channel Piezo Controller from Elliot Scientific



The all new **E1100 Piezo Controller** is an open loop, three channel amplifier suitable for driving low voltage (up to 150 V) piezo actuators and stacks. The E1100 has been especially designed to incorporate the latest technologies, and combines low noise and outstanding stability with a high power output. This makes it ideal for open loop, high resolution control of piezoelectric devices, in particular, the **MDE123** and **MDE125** Piezo-driven Flexure Stages by Elliot|Martock.

Key features

- USB interface
- Output noise: <math>< 50 \mu\text{V}_{\text{RMS}}</math>
- Output stability: <math>< 0.01\%</math> over 16 hours
- Voltage control by BNC, potentiometer, or USB



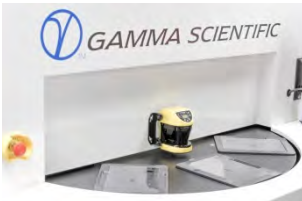
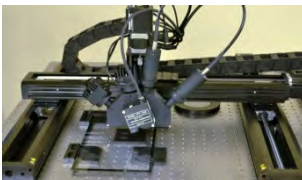
The E1100 is equipped with a digital front panel display and three methods per channel for input voltage control. These are: high-resolution BNC inputs, potentiometers, and a USB 2.0 interface. One or more of these methods can be employed, however all inputs are summed together to produce the 0-150 V output.

The rear panel features the Windows™-compatible USB port for 16-bit digital voltage commands. Software drivers, LabVIEW examples, a LabVIEW tutorial, and C# graphic user interface are all included. LabVIEW and C# examples are open source and can be used as a starting point for user defined routines. The rear panel also contains the three BNC output connectors for interfacing to the user's piezo devices.

Although designed mainly for benchtop use, a rack mount option is available for purchase. Please **contact us** for full specifications and pricing information.

See the new controllers at **Laser World of Photonics** in Munich next month **Hall B3 Booth 260**

Gamma Scientific Thin Film Measurement Systems for High Volume Testing



Gamma Scientific's Thin Film Measurement Systems deliver a number of unique features that maximise **production** line uptime and enable faster inspection of components.

By blocking bottom surface reflection on transparent substrates, Gamma Scientific's spectral gonireflectance measurements save time and money by measuring only the first surface reflection - without the need to cut, blacken, or coarse grind the second surface of the sample under test.

Gamma Scientific thin film measurement systems also excel in high volume testing applications where speed is crucial. Systems feature industry leading spectroradiometer performance, fast algorithms and optimised mechanics and optics. Typical applications are:

- | | |
|-----------------------------|----------------------------|
| ▪ Mobile & Wearable Devices | ▪ Touchscreen Devices |
| ▪ Anti-Reflective Coatings | ▪ CMOS Image Sensors |
| ▪ LED Lighting | ▪ Photovoltaic/Solar Cells |
| ▪ Multi-Function Displays | ▪ Head Up Displays |

For more information about these **Thin Film Measurement Systems** available from Gamma Scientific, **contact us now**.

Diode-pumped fibre amplifiers and lasers from IPG Photonics



IPG Photonics offers reliable diode-pumped amplifiers and lasers using Ytterbium, Erbium, or Thulium doped optical fibres as gain media. All are compact, air-cooled and use direct diode pumping for optimum efficiency.

IPG designed and manufactured, these commercial/non-telecommunications lasers are used in a broad range of OEM and lab applications such as optical tweezers and trapping, graphics and imaging, marking and materials processing, remote sensing and research, medical and defence.

Elliot Scientific can supply continuous wave (CW), linearly and randomly polarised, standard linewidth or single frequency diode-pumped solid-state fibre lasers, as well as diode-pumped fibre amplifiers, with up to 20 W output power.

IPG's advanced fibre devices are a quantum leap forward, providing the best in diode-pumped solid-state reliability and performance. To determine the ideal fibre laser for your application, please **contact us**.

Vescent Photonics ICE™: Integrated Control Electronics



Precise control and stabilisation of a broad range of semiconductor lasers and an associated array of photonics tools is possible via the **Vescent Photonics ICE™** system.

ICE, short for Integrated Control Electronics, is easy to integrate into a variety of systems. For example: gravity, magnetic or inertial sensor applications, quantum computing and cryptography systems, or atomic clock, BEC and cold atom experiments can all benefit.

ICE is a compact suite of digitally controlled analog electronics that will drive, frequency and temperature stabilise, and offset lock DBR or DFB lasers. It offers the following features:

- Precise laser control and stabilisation
- Control up to four locked lasers
- Current and Temperature control
- Frequency locking
- Offset locking
- Beat Note detection
- Serial commands or GUI



Contact us now for more information, or **download a datasheet** detailing an ICE-controlled four-laser system (*lower photo*).

International Year of Light: Events to end of June



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Making light work for you

Birmingham: May 19th

Optical Demands of Astronomy

Edinburgh, June 16th

Actinic

Edinburgh: June 26th to July 26th

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Next month, meet Elliot Scientific at...



Photonex Roadshow Scotland: University of Strathclyde

3rd June 2015

Stand S3



Laser World of Photonics: Messe München, Germany

22nd-25th June 2015

Hall B3 Booth 260



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CryoLab: An elegant new solution for measurements at low temperature from Kryoz Technologies



- Plug-and-play cooling platform
- Fast, controlled temperature cycling
- One system - various applications
- No cryogenic fluids involved
- Turbopump option



Elliot Scientific is now distributing products from **Kryoz Technologies** in the UK and Ireland.

The **CryoLab Series** is a range of fully integrated desktop systems designed for rapid circuit or material characterisation measurements from ambient down to cryogenic temperatures in a fully automated manner. Doing measurements doesn't require any experience or know-how of cryogenics, vacuum technology or thermodynamics from the user. Applications include:

- High Temperature Superconductors (HTS)
- Thin Films
- Thermoelectrics - The Seebeck Effect
- Resistance & Hall coefficient measurements *by the van der Pauw Method*
- Optical sensors



The test sample - maximum size 10 x 10 mm - is affixed to a guitar-shaped carrier with electrical connections made to it from integrated bonding/solder pads. These are routed through the CryoLab for connection to a DAQ interface or CryoLab Breakout Box. A two minute demo video can be seen [here](#).

Although CryoLab can be fully operated as a stand-alone, the companion CryoVision software enables control of the system in more detail. All parameters can be seen at a glance, and switching between user-defined set-points and saved programs can be made. A smartphone app is also available.

For information on these exciting new products from **Kryoz Technologies**, please [contact us](#).

Vescent to launch new 'Slimline ICE' systems this summer for AMOP applications



This summer will see the launch of the Slimline ICE system (SLICE) by **Vescent Photonics**.

Based on the proven Integrated Control Electronics system, SLICE is a new modular product range developed for high-speed, low-noise analogue control of semiconductor lasers. It offers a digital interface, for ease and flexibility; and a single function per SLICE, so you can mix, match and easily expand.

Each individual SLICE incorporates a single ICE board. For example, one could have a CS1 board to drive and peak lock a diode, while another might have a QT1 to control four temperature loops. Any ICE board currently available can be chosen for a SLICE, and new ones are in development. These include:

- A two channel current controller offering 1 amp per channel
- A low-noise Libbrecht-Hall current driver
- A servo board similar to the D2-125, but with more functions
- ...and more

So, if you are considering a new multi-laser system, then **ICE** is your best choice, but if you want to add functionality to your existing system, then SLICE will give you a specific capability.

For more information about ICE, SLICE or **Vescent Photonics**, then please [contact us](#).

International Year of Light: Events to end of July



INTERNATIONAL
YEAR OF LIGHT
2015

Actinic

Edinburgh: June 26th to July 26th

Rutherford Appleton Laboratory Open Days

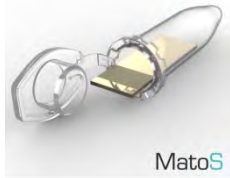
Harwell, Oxfordshire: July 8th to 11th

Light Weekend

Hailsham, East Sussex: July 18th to 19th

- *Need to measure light or colour?* Then have a look at **Gamma Scientific**

New, smaller, SERS substrates from Ato ID revealed



MatoS



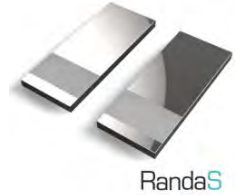
Mato

Ato ID has issued performance and application details for their next-generation of disposable glass substrates for Surface Enhanced Raman Spectroscopy (SERS) and/or Surface Enhanced Fluorescence (SEF).

The new, smaller Ato ID 'MatoS' gold and 'RandaS' silver Plasmonic Sensor Substrates are available in addition to the existing 1" square 'Randa' and 'Mato' ranges and continue to deliver up to 8x more sensitivity than leading rivals.

The new ½" long small form factor slides are individually vacuum packed in 1.5 ml microcentrifuge tubes to enable easier handling for fresh, on-the-spot analysis of immersed material.

- Size: 12.5 x 5 x 1 mm
- Active area: 3 x 5 mm
- Excitation wavelengths:
 - Silver *RandaS*: 442 nm to NIR
 - Gold *MatoS*: 600 nm to NIR



RandaS

Download the Ato ID brochure

For extra information about these new SERS substrates from Ato ID, please **contact us**.

Latest Lake Shore download enhances Model 372 low temperature measurements



Lake Shore Cryotronics has released an update for the Model 372 AC Resistance Bridge and Temperature Controller that increases the speed at which data can be collected, and delivers more accurate measurements.

The **Model 372** readily performs multiple tasks at very low temperatures. These include controlling and reading temperature, and sample impedance measurements. With this firmware update, the instrument adds two new user-selectable AC excitation frequencies: 11.6 and 18.2 Hz, to supplement the existing 9.8, 13.7 and 16.2 Hz frequencies, expanding the number of simultaneous measurements that can be made.

In addition, replacement of the instrument's original linear interpolation method with a new cubic-spline algorithm improves accuracy and reduces interpolation error by as much as 0.2 mK when converting resistance measurements to temperature values.

These latest enhancements ensure that the 372 retains its industry-leading capabilities, making it ideal for ultra-low temperature applications in the sub-1 K range. Please **contact us** for further information on this update.

Next week, meet Elliot Scientific and Vescent Photonics at...



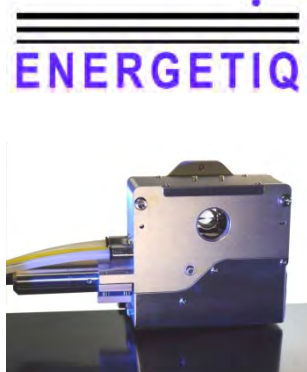
Laser World of Photonics: Messe München, Germany

22nd-25th June 2015
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New OEM LDLS™ is the latest ultra-bright performer from Energetiq



Energetiq introduced the new EQ-400 high power, ultra-bright Laser-Driven Light Source (LDLS™) at the recent Laser World of Photonics in Munich.

Based on the existing highly successful LDLS™ series, the EQ-400 offers the highest radiance and irradiance available in a true broadband white light source. The EQ-400 features a compact lamp housing built with clean construction techniques to ensure long lamp life and stability. With a 170-2100 nm wavelength range, and a choice of dual-beam output or a single-beam output with retro-reflector, the EQ-400 is suitable for a wide variety of applications.

- High spectral radiance: > 100 mW/mm².sr.nm from 100 µm aperture
- Spectral power: > 10 mW/nm from a 500 µm aperture
- Very low noise: < 0.02%
- Small plasma: 300 x 800 µm FWHM

If you have an OEM application that requires stable and ultra-bright illumination, please **contact us** as we have the solution.

New additions to laser safety filters from NoIR LaserShields



NoIR LaserShields has had ten of their existing filters for laser safety CE-approved. These are the: 10, 50, 60, 90, 92, 5032, 6032, RT1, RT2 and YG4.

NoIR also revealed, at the recent Laser World of Photonics exhibition, a breakthrough **polymer filter for Holmium-doped fibre lasers** operating between 2 and 3 microns - the **HOY**.

NoIR have been manufacturing high-quality internationally-certified safety eyewear for the protection of laser users in a broad range of fields and applications for many years now, offering protection from:

- UV, visible, and IR lasers
- Multiple waveband devices
- Therapeutic and cosmetic treatments (Patients and Clinicians)
- Laser pens (Pilots and Police)

Elliot Scientific's expert advice will guide you to the best in cost-effective laser safety. From academics, beauticians and clinicians... we protect the alphabet of laser users.

Contact us with details of your laser or application and we will be happy to help you choose the correct filters, spectacle frames or goggles.

Sensitive magnetometry for physics and the biological sciences from Tristan Technologies



Tristan Technologies delivers world-leading SQUID sensors through their superior performance iMAG range. Magnetic sensing applications, such as materials analysis and biomagnetism, can benefit from Tristan's sensors, instrumentation and electronics.

The iMAG series of SQUID components includes microprocessor-based multichannel control electronics and advanced fibre optic linked flux-locked loop circuits. Tristan manufactures complete SQUID systems based on either low-temperature or high-temperature technology. For in-depth information, please **contact us**.

International Year of Light: Events to end of August



Light Fantastic: Adventures in the Science of Light

Bradford: From July 18th

Centre for Quantum Photonics Summer School

Bristol, August 3rd to 7th

Complex Nanophotonics Science Camp

Windsor Great Park: August 18th to 20th

☀ **Need to measure light or colour?** Then have a look at **Gamma Scientific**

Honeywell Sperian adds laser filters for several wavebands



Honeywell Sperian has recently introduced new filters for the following wavebands:

- Vis-IR
- Near IR
- Alexandrite-Diode-YAG combos
- CO₂

Honeywell

SPERIAN

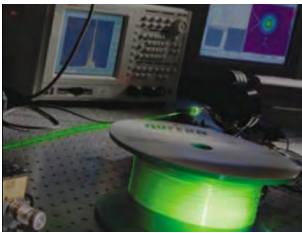


Honeywell Sperian offers a broad range of laser eye protection products:

- UV, Visible, and Infrared filters
- Multiple waveband filters
- Protection for patients, pilots and police
- Sheet material and barrier systems
- A wide range of stylish spectacle frames and comfortable goggles

If you need advice choosing the correct filter, our experts are on hand and ready to help. **Contact us** with details of your laser's performance and we will recommend suitable protection.

New coating options for NuSensor fibres: Carbon/Acrylate or Carbon/Polyimide



Nufern has expanded its NuSENSOR product line that features graded index multimode (MM) fibres designed for Distributed Temperature Sensing (DTS), and single-mode (SM) fibres designed for Distributed Temperature and Strain Sensing (DTSS) and Fiber Bragg Grating (FBG) based sensors. Both the MM and SM fibres are available with polyimide coverings and either pure silica or germanium doped core glass compositions.

Nufern is now offering these fibres with composite coatings: carbon/acrylate for temperatures up to 150 °C, or carbon/polyimide for up to 300 °C, making them also ideal for H₂ rich environments. Details about the NuSENSOR range can be obtained by **contacting us**.

Forthcoming events: September is going to be a busy month for Elliot Scientific...



LASER WORLD OF PHOTONICS INDIA



QuAMP 2015

September 2nd to 3rd: Brighton

Laser World of Photonics India

September 9th to 11th: New Delhi

Quantum UK 2015

September 28th to 30th: Oxford



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PLUTO's in the news again: Spatial Light Modulators by HOLOEYE

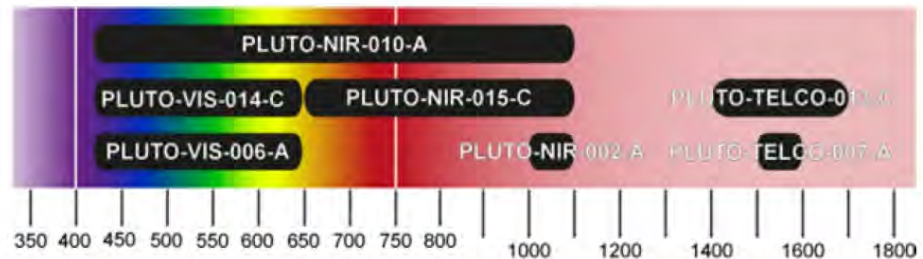


PLUTO phase-only SLM panels from **HOLOEYE** are optimised for use in different wavelength ranges, use fast full digital addressing for high reliability, and come with a compact driver unit.

Alongside the standard PLUTO-VIS and PLUTO-NIR there are special high retardation (-HR) models available. These show considerably higher phase retardation compared to the standard panels. The high retardation models can enable mod 4π or even mod 6π , which can be of benefit for applications such as wavefront generation.

Other applications may require a stable phase response, and this can be accomplished using the high retardation panels and driving the panels with lower voltage settings for 2π phase retardation. Response times in this instance are reduced, but phase stability is significantly enhanced.

A summary of the models is shown in the graphic below, but do **contact us** for more detailed product specifications, and information about HOLOEYE's other SLMs, kits and diffractive optics.



Device	Wavelength Range	Fill Factor	Comment
PLUTO-VIS-014-C	420 – 650 nm	92 %	
PLUTO-VIS-006-A	420 – 700 nm	87 %	High Retardation Version
PLUTO-NIR-010-A	420 – 1100 nm	92 %	
PLUTO-NIR-015-C	650 – 1100 nm	92 %	High Retardation Version
PLUTO-NIR-002-A	1000 – 1100 nm	87 %	
PLUTO-TELCO-007-A	1520 – 1620 nm	87 %	
PLUTO-TELCO-013-C	1400 – 1700 nm	92 %	

Ultra-fine screw pitches up to 508 TPI aid adjustment



Kozak Micro manufactures super-smooth adjustment screw sets with threads as fine as **508 TPI (0.05 mm pitch)**. Available through Elliot Scientific in the UK and Ireland, these adjusters can be purchased in single or OEM quantities.

Proprietary manufacturing on a variety of customised machine tools enables Kozak Micro to produce adjusters in a range of pitches that are superior to industry standards. Thread classes exceed the highest 3A-3B Unified Thread Standard (UTS) by as much as 50%.

Elliot Scientific offers 6 imperial and 4 metric thread pitch ranges of matched-set micropositioning adjustment screws and unbraked bushings that deliver the highest precision and smoothest movement by far for the most demanding of applications.

Contact us now for more information.



508
DPI

Robust microscope platform offers precision alignment of instrumentation



The **RM21™** is described by **Mad City Labs** as a *Microscope Platform for the Future*, because the precision aligned RM21™ is designed for maximum user accessibility - a feature that offers opportunities to develop flexible configuration instruments with ease.

With a robust design, precision manufacturing and assembly, the RM21™ is the ideal platform for a range of microscopy applications such as super resolution (SR) microscopy, fluorescence microscopy and TIRF. Easy alignment of microscopy and optical components is achieved within its three dimensional space as all posts and fixturing points are referenced to a known datum.

The RM21™ includes a precision platform and an axial, motorised Z-axis suitable for lens positioning. The Z-axis has a displacement of 50 mm (2") with a 95 nm step size and 50 nm repeatability. An encoder option is also available. For more information, please **contact us**.

International Year of Light: Events to end of September



INTERNATIONAL
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Glass Reflections, "Glass in the Year of Light"

Cambridge: September 7th to 9th

Supramolecular Photochemistry: Faraday Discussion

Cambridge: September 15th to 17th

Future Light Technology and Human Health

Guildford: September 20th to 23rd

☀ *Need to measure light or colour?* Then have a look at **Gamma Scientific**

Stability under load is a Kinetic Systems forté



Kinetic Systems has been at the forefront of the vibration isolation and optical table market in the US for over 30 years and is a world leader in the development and application of advanced LF vibration control systems that provide vibration-free work environments for sensitive equipment.

Elliot Scientific routinely solves a wide variety of complex vibration isolation problems for our customers in applications as diverse as metrology, medical research, laser R&D and semiconductor manufacturing.

Find out how a **Kinetic Systems' solution** can help you by **contacting us** today.

Next month, meet Elliot Scientific at...



QuAMP 2015

September 2nd to 3rd: Brighton



Laser World of Photonics India

September 9th to 11th: New Delhi



Quantum UK 2015

September 28th to 30th: Oxford



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CryoSpectra brings cryogenic cooling into the vacuum chamber



CryoSpectra deliver the simplest way to bring cryogenic temperatures into a vacuum chamber through their uniquely designed cryorefrigeration systems. Now available from Elliot Scientific in the UK and Ireland, these high cooling capacity systems are easily the best way to cool laser crystals via a very small cold head, to cryogenic temperatures.

The CryoSpectra K Series of low acoustic noise cryorefrigerators are especially designed for work in the lab. The closed-loop cooling system ensures maintenance-free operation, while the ultra-compact cold head guarantees an absolutely vibration-free chilled surface for inside the vacuum chambers of high power laser systems.

Features

- High cooling capacity
- Cool-down time 20 minutes
- Compact cold head
- Vibration-free
- Maintenance-free
- Quiet operation

Applications

- Laser crystal cooling
- High power laser amplifiers
- CEP stabilised laser systems
- Ti:Sapphire amplifier systems
- Quantum Cascade Lasers
- Cryopumping

Over a dozen models delivering between 90 and 170 Kelvin are available, with each cryorefrigerator offering a particular cooling capacity dependent on compressor size and whether it is air or water-cooled.

The 38 or 50 mm diameter gold-plated and polished cold heads are available with CFF or KF flanges for easy attachment, eliminating the need for costly custom vacuum chambers. The unique, compact design also allows for a reduction in chamber size, leading to better vacuum conditions and the benefit of reduced pump down times. For more information, please **contact us**.

Lake Shore release new Probe Station catalogue... featuring Elliot Scientific



Lake Shore have released their latest Probe Station catalogue that details how their systems provide precisely controlled environments for the non-destructive measurement of the electrical properties of materials and prototype electronic devices.

Researchers are enabled in their fundamental science work by Lake Shore equipment's ability to deliver consistently accurate and repeatable measurements in an easy and convenient way. Probe stations are versatile platforms that are often used as a multi-use community asset in many academic settings, or for dedicated materials research at semiconductor foundries.

Elliot Scientific feature in this publication, as Lake Shore thank us for the work we recently carried out in developing what was a unique integration of **Lake Shore CRX** micro-manipulated probe station, an InGaS Spectrophotometer from **CRAIC Technologies**, and a Zeiss microscope head for Southampton University's Centre for Photonic Metamaterials.



Probe stations are typically used for material studies that include sampling IV and CV curves over a range of temperatures, microwave and electro-optical property responses, magneto-transport characterisation, Hall effect measurements, and so on.

Lake Shore offer six cryogen and four cryogen-free probe stations with various capabilities. For more information, **contact us** for a printed catalogue, or download a **PDF version** here.

This month, meet Elliot Scientific at...



Quantum UK 2015
September 28th to 30th: Oxford

Photonex will soon be upon us... Elliot Scientific looks forward to next month's expo!



Photonex takes place next month and Elliot Scientific will be on **Stand B10**, ready to discuss how we can bring solutions to your science applications. Visitors to the exhibition will be able to experience our wares first-hand, with such products as:



- Cryorefrigerators & Cold Heads from **CryoSpectra**
- Flexure Stages & Slides from **Elliot|Martock**
- Plasma-based Light Sources from **Energetiq**
- Spatial Light Modulators from **HOLOEYE**
- Circuit/Material Characterisation Systems from **Kryoz**
- Nanopositioners from **Mad City Labs**
- Powerful LEDs for Optogenetics from **Prizmatix**
- Electro-optic, Waveguide, and Laser Technologies from **Vescent**

These are just a sample of the products we will be showing or demonstrating at Photonex, so do come and visit **Stand B10** to discover more of what we offer for science and industry.

Photonex | 14th-15th October | Ricoh Arena Coventry

International Year of Light: Events to end of October



The Aston Year of Light 2015 Conference

Birmingham: October 6th to 7th

Photonex 2015

Coventry: October 14th to 15th

Asian-European Symposium on Organic Optoelectronics Light

Edinburgh: October 27th to 29th

Capacitance is the basis of versatile measurement; as envisioned by Andeen-Hagerling



Andeen-Hagerling have manufactured capacitance and capacitance/loss bridge test equipment for use in the lab and field for over thirty years. Their products enable measurement of pressure, cryogenic temperature, and fluid levels, are used in material characterisation; and displacement and strain testing. The company offers a range of instrumentation that includes:

Capacitance and Loss Meters: The Andeen-Hagerling AH 2550A series measures capacitance and loss in medium and high impedance ranges.

Capacitance Standards: The Andeen-Hagerling AH 1100 capacitance standard frame contains up to four AH 11A fused-silica capacitance standards, and provides reference capacitors of unexcelled stability.

Multi-frequency Capacitance/Loss Bridges: The AH 2700 series offers unparalleled stability, resolution, linearity and accuracy in a multi-frequency capacitance/loss bridge.

For more information about these products and their applications, **contact us now**.



Website



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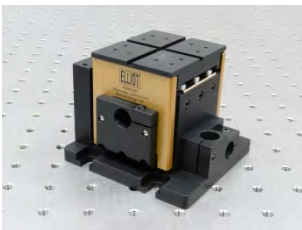
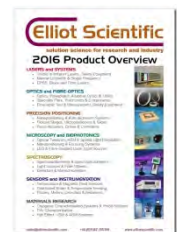
YouTube Channel



14/15 October 2015 · Ricoh Arena Coventry

Next week sees the opening of the UK's premier show dedicated to the technology of light. **Photonex** brings together all aspects of industry and research, developing strong business relationships, exploring research solutions, and examining applications for photonics in academia, research and manufacturing.

Elliot Scientific will have printed copies of our brand new **2016 Product Overview** brochure available at the show (but if you cannot wait until then, [download a PDF version here](#)), plus a selection of the following products. Visit us on **stand B10**.



Flexure Stages & Slides from Elliot|Martock

Our **Gold Series Flexure Stages** are our best export. Scientists and engineers around the world recognise that these are the best performing and best value high-resolution XYZ positioners in the world. They feature:

- 20 nm resolution with 2 mm travel per axis
- Excellent operation and superb long term stability
- Great versatility from a petite package



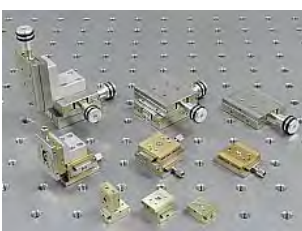
These precision engineered stages are highly adaptable for use in a multitude of situations. Choose from systems preconfigured for fibre launch, such as free space light into photonic crystal fibres, or for alignment of other types of optical device. Note that we offer a number of left and/or right-handed ready-built configurations at lower cost when compared to purchasing individual parts.



Once again, these positioners come with a choice of adjustment options. Simple thumbwheels, precision micrometers, and piezo driven adjusters are available for use in any combination. An extensive range of add-ons, accessories, and attachments ensure that most applications can be satisfied. If not, **contact us** for a custom solution.

Elliot Martock high-resolution ($< 0.5 \mu\text{m}$) **precision miniature slides** have been popular with scientists and OEMs for nearly 40 years.

With a useful selection of Small, Very Small and Ultra Small models (with travels of 10, 5 and 3 mm respectively), the range satisfies many requirements for a stable and compact precision stage in both research and industry.



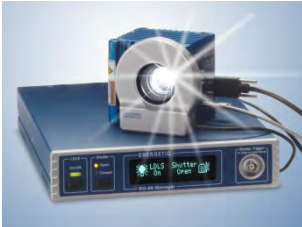
Our market-leading micro-positioners offer single, dual and three axis configurations with a variety of adjustment options such as simple screws to precision micrometers. A number of accessories - such as post adaptors - complement each range to further enhance their flexibility of use, and we also offer tilt and **rotation mechanisms**.



Plasma-based Light Sources from Energetiq

Scientists in many disciplines need broad spectrum bright light for various imaging and analytical applications. Traditional multi-lamp systems comprising tungsten/halogen, xenon-arc or deuterium bulbs are costly, optically inefficient, and have limited lifetimes. Consequently, the Energetiq® LDLS™, that utilises a Laser-Driven Light Source, has revolutionised research with its high brightness over a broad spectral range, from 170 nm through to the visible and beyond.

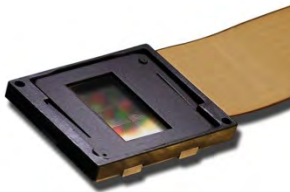
Energetiq® offers the compact EQ-99X as either a free-space or fibre-coupled unit, plus a calibrated model that covers the full UV-Visible range from 200 to 800 nm with output at comparable levels across that spectrum, and an even higher intensity EQ-1500 model for extreme high brightness.



The EQ-99 series can be enhanced by adding valuable functionality with the EQ-99 Manager. This provides a USB computer interface, real-time status monitoring, advanced control of an optional shutter assembly, and a universal power supply.

Spatial Light Modulators from HOLOEYE

The **PLUTO** range from HOLOEYE are just some of the Spatial Light Modulators the company offers. Different panel versions are optimised for use in different wavelength ranges, and all versions come with a compact driver unit to deliver reliable, fast, full digital addressing.



Alongside the standard PLUTO-VIS and PLUTO-NIR there are special high retardation (-HR) models available. These show a considerably higher phase retardation compared to the standard panels. The high retardation models can enable mod 4π or even mod 6π , which can be of benefit for applications such as wavefront generation.

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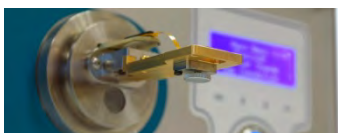
HOLOEYE also offer the OptiXplorer, a kit for educational purposes that provides a variety of tutorials using an SLM for image projection, adaptive optics, optical metrology and diffractive optic experiments. OptiXplorer is a powerful product that allows the demonstration and active exploration of a wide range of optical phenomena for students at universities and university-level institutions.



Circuit/Material Characterisation Systems from Kryoz

Elliot Scientific is now distributing products from **Kryoz Technologies** in the UK and Ireland. The **CryoLab Series** is a range of fully integrated desktop systems designed for rapid circuit or material characterisation measurements from ambient down to cryogenic temperatures in a fully automated manner. Doing measurements doesn't require any experience or know-how of cryogenics, vacuum technology or thermodynamics from the user. Applications include:

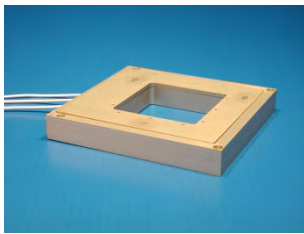
- High Temperature Superconductors (HTS)
- Thin Films
- Optical sensors
- Thermoelectrics - The Seebeck Effect
- Resistance & Hall coefficient measurements
by the van der Pauw Method



The test sample - maximum size 10 x 10 mm - is affixed to a guitar-shaped carrier with electrical connections made to it from integrated bonding/solder pads. These are routed through the CryoLab for connection to a DAQ interface or CryoLab Breakout Box. A two minute **demo video can be seen here**.

Although CryoLab can be fully operated as a stand-alone, the companion CryoVision software enables control of the system in more detail. All parameters can be seen at a glance, and switching between user-defined set-points and saved programs can be made. A smartphone app is also available.





Nanopositioners from Mad City Labs

Mad City Labs (Madison City, Wisconsin) is a leading US manufacturer of flexure based nanopositioning systems capable of sub-nanometre positioning resolution.

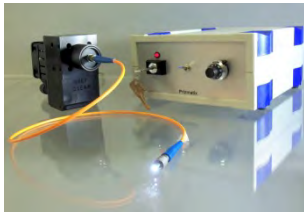
Elliot Scientific offers their nanopositioning equipment as single or multi-axis stages, rotation/tilt stages and focus mechanisms for numerous biophysics and lifescience applications. UHV versions are also available for nanotech researchers.



Systems from Mad City Labs combine long range motion with exceptional linearity, orthogonality, and stability with nanometre step-size and sub-nanometre resolution. These features provide innovative and practical control solutions for:

- Super resolution microscopy
- High speed confocal imaging
- AFM, NSOM and scanning probe microscopy
- Fibre positioning & high resolution optical alignment
- Single molecule spectroscopy & particle tracking
- Sub-diffraction limit microscopy, nanoscopy & lithography

The Mad City Labs range complements Elliot Scientific's portfolio of micro and nanopositioning systems, and makes us the logical choice of micropositioner supplier to the nanotech, biophysics and lifescience communities in academia and industry.



Powerful LEDs for Optogenetics from Prizmatix

Elliot Scientific is pleased to introduce an exciting new range of products from **Prizmatix** for microscopy, optogenetics (see below), and other scientific or industrial applications.

Prizmatix is a scientist-led designer and manufacturer that specialises in ultra high-power LED illumination systems with up to 4 Watts output. Their systems incorporate the latest technologies within modular components to offer maximum versatility in light delivery. The product range includes:

- **Ultra high-power LEDs for microscopy and imaging**
 - available in a range of power levels and wavelengths across the spectrum
- **Optogenetics**
 - single and dual wavelength systems for use **in-vivo** and **in-vitro**
- **Multi-wavelength LED systems**
 - modularity and versatility for custom setups
- **Fibre-coupled units**
 - up to 11 different wavelengths in one box

Experienced in the development of various photonics products for fluorescence and Raman spectroscopy, microscopy, and absorption measurements using fibre-optic techniques and related technologies in bioscience, Prizmatix have engineered a versatile and modular range of optical components.

From these, a comprehensive custom setup can be put together in a variety of configurations quickly and conveniently. Ideal for the neurosciences, biophysics, biochemistry et al. Typical experiments include:

- Multiwavelength detection & excitation
- Intensity monitoring
- In-line filtering, attenuation or polarisation
- Reflectance or fluorescence detection for in situ, in vivo, or in vitro applications





Laser technologies from Vescent

Laser & Electro-Optic Electronics

- Power Supply, Controller, and Servos

Vescent laser and electro-optic control electronics provide the lowest noise, highest bandwidth, and greatest flexibility of any commercially available products. From laser current drivers with a noise density of less than 100 pA/√Hz, to laser servos with full PI²D loop filter reconfigurability, Vescent's unmatched performance is designed for the most demanding AMO research.

Ultrastable Narrow Linewidth Lasers

- Ultrastable, large mode-hop-free tuning

Vescent narrow linewidth CW lasers are constructed with very short laser cavities and no moving parts or piezos. This unique combination provides a large mode-hop-free tuning range and immunity to vibration.

Accessory Modules

- Electro-optic and Optical Ancillaries

Vescent optical and electro-optical modules deliver rugged, vibration immune operation, and are designed to be mutually compatible. This allows the user to take advantage of Vescent's non-mechanical approach to design sophisticated AMO experiments within uniquely small footprints on optical tables.

Contact us for further information or visit our [Vescent pages](#)

Plus...

- Rugged polarisers from [CODIXX](#)
- Cryorefrigerators & Cold Heads from [CryoSpectra](#)
- Ultra-fine adjuster-screw sets from [Kozak Micro](#)
- Laser safety spectacles from [NoIR Lasershields](#)
- Monochromators and light sources from [Spectral Products](#)
- OEM laser modules and optics from [Micro Laser Systems](#)



Next month, meet Elliot Scientific at...



Institute of Photonics

Institute of Photonics 20th Anniversary

November 4th: Technology and Innovation Centre, Glasgow



Website



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New fibre laser range now available to researchers through Elliot Scientific from IPG Photonics



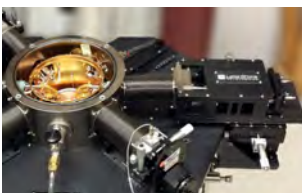
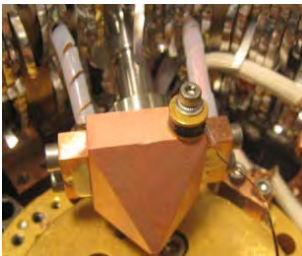
A broader range of **IPG Photonics'** reliable diode-pumped lasers and amplifiers using doped optical fibres as gain media are now available to researchers through Elliot Scientific, including the newly introduced Raman series of orange and red lasers.

The four groups of laser systems, encompassing dozens of individual models, offer a choice in terms of power output, polarisation mode, pulsed or continuous wave, plus single or multimode, and single frequency options. Choose from:

- Raman lasers: Orange or Red wavelengths**
 Up to 20 W from a super-compact lightweight optical head linked to a small air-cooled control module makes these lasers ideal for adaptive optics and guide star applications, flow cytometry, holography and spectroscopy
- 1.0 micron Ytterbium-doped fibre lasers & amplifiers**
 Continuous wave (CW), Q-switched and single frequency diode-pumped solid-state fibre lasers, as well as diode-pumped fibre amplifiers, for coherent or spectral beam combining, sensors, He3 pumping, optical tweezers and SHG applications
- 1.5 micron Erbium-doped fibre lasers, amplifiers & broadband sources**
 Around 1500 nm, only IPG Photonics offers the widest range of devices in a variety of powers and configurations for a multitude of scientific uses
- 2.0 micron Thulium-doped fibre lasers**
 Medical and other research applications abound for these compact, high-power, wavelength-selectable, single-mode CW or pulsed sources operating in the 1900 to 2400 nm spectral region

For more information, please [contact us](#).

New THz-frequency contact probing for cryogenic applications from Lake Shore



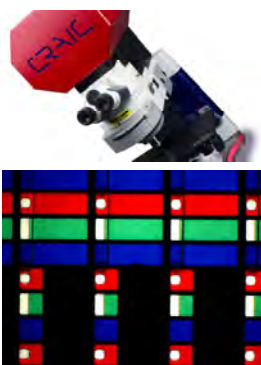
Lake Shore has released details of their new THz-frequency contact probes for cryogenic applications. Compatible with Lake Shore's **CPX, CPX-VF, CRX-4K, and CRX-VF** systems, the THz probe arm offers:

- Precise on-wafer contact THz probing of millimetre wave devices
- New measurement possibilities for next-generation electronics
- THz probes can be combined with standard DC/RF/microwave probe arms
- Features a low-loss THz waveguide
- Supports vector network analysers (VNAs) with suitable frequency extenders
- Enables calibrated S-parameter and other hf electrical measurements at cryogenic temperatures and in magnetic fields

Signal deterioration at frequencies above 75 GHz has limited high-frequency contact measurement of electronic devices at room temperature, let alone cryogenic ones. Now Lake Shore's breakthrough technology of a specially developed low-loss THz-frequency waveguide delivers excellent signal integrity over longer distances, at lower temperatures, and with superior arm mobility. All without interfering with the other probes in the system.

[Download the THz probe arm flyer here](#) or [contact us](#) for more details.

Photoluminescence microspectroscopy from CRAIC Technologies



CRAIC Technologies' microspectrophotometers can acquire photoluminescence spectra from microscopic sample areas throughout the UV, visible and NIR regions. In addition, the time dependencies of these spectra can be monitored using CRAIC's own kinetic software TimePro™.

Photoluminescence encompasses short-term fluorescence, long-term phosphorescence, and any other type of photon emission that a sample exhibits. As more products and devices utilise ever smaller photoluminescent (PL) light sources in ever more demanding environments, the ability to test those devices with ultra-high spatial resolution and fidelity becomes increasingly important. CRAIC Technologies microspectrometers are ideally suited for both research and quality control of such devices as they can quickly characterise and qualify PL devices.

For more information about products from CRAIC Technologies and their applications, [contact us now](#).

New Neoptix OmniFlex 2 multi-channel temperature monitor



Neoptix has added to their fibre optic temperature measurement range with the **OmniFlex™ 2 System**, a fully upgradeable, multi-channel temperature monitor field upgradeable to as many as 104 channels.

The OmniFlex 2 System allows use of several types of plug-in OmniModules in the same chassis. These modules can easily be mixed and matched to meet the needs of specific test projects. The current OmniModules are:

- 4-channel direct measurement module operating at 10 Hz/channel
- 4-channel multiplexed module operating at 250 ms/channel
- 8-channel multiplexed module operating at 250 ms/channel
- 16-channel 0-10 V analogue output module

The basic OmniFlex 2 chassis is a standard 3U in height that can accommodate up to 6 OmniModules, while a 6U version can be fitted with a total of 13. Additional chassis can be cascaded by linking them via a router.

The unit can be controlled by its onboard colour touchscreen, or remotely using a web browser via Ethernet. The latter method is more comprehensive, as it enables remote module configuration, data-logging capabilities, full electrical isolation, and optional WiFi connectivity. For more information, please **contact us**.

Website

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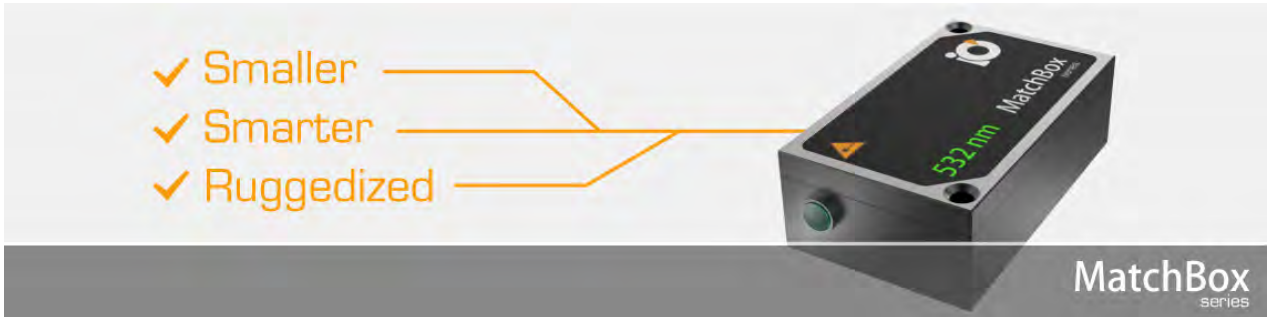
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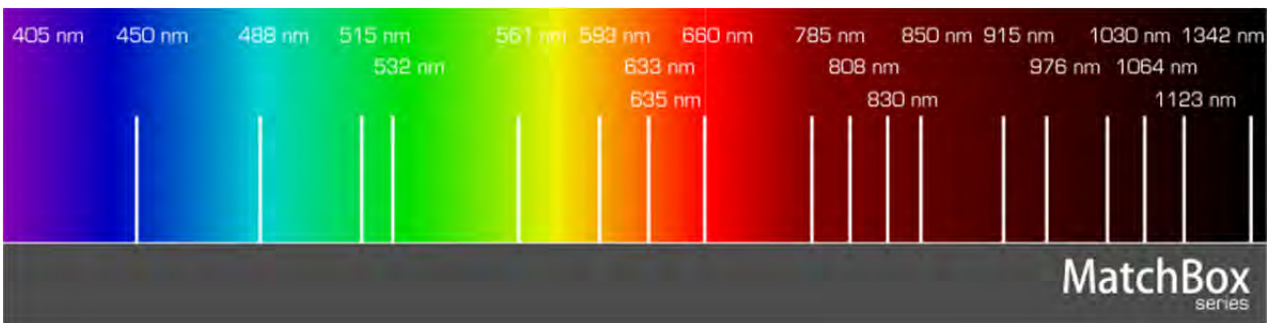
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New MatchBox₂ laser series from Integrated Optics



MatchBox₂: Smaller, smarter, and rugged.



Up to 20 wavelengths available, from 405 to 1342 nm.

Ultra-low noise	Single-Box design	Active thermal management
High electrical efficiency	Hermetical sealing	Vibration proof

MatchBox₂ series

Many significant features, such as hermetically sealed, shock proof, active thermal management and more. Contact us for more details of the new product specifications and availability.

New THz-frequency contact probing for cryogenic applications from Lake Shore



With the introduction of a 2 μm optical coating, **Micro Laser Systems (μLS)** have significantly broadened the available wavelengths their **FC laser collimators** can operate in. μLS can now offer standard collimators in four wavebands that cover the 350 to 2300 nm spectral range.

Designed specifically for single mode fibre, polarisation maintaining fibre, and fibre laser applications requiring a pure Gaussian beam, the μLS FC collimators deliver a very clean output with no diffraction patterns or beam distortions from apertures up to 45 mm in diameter.

Micro Laser Systems' FC Series collimators can be used with any commercially available fibre-coupled laser, including Ar, YAG, TIS, HeNe, or DPSS systems.

Features

- For single mode and PM fibres
- Gaussian beam at any distance
- Wavefront error < λ/10
- Up to 45 mm aperture
- Adjustable focus/collimation
- 350 to 2300 nm in 4 wavebands
- Optimised for high power and fibre lasers



For more information, please **contact us**.

OZ Optics delivers high quality fibre optic solutions to research and industry



OZ Optics is one of the leading fibre optic suppliers in the world, with an outstanding reputation as a manufacturer of high quality components for use in telecommunications, laboratory, industrial, military and medical fields.

Elliot Scientific is the official distributor for the very broad range of products produced by OZ. From connectors and patchcords, to beam splitters and combiners, Elliot Scientific supplies numerous academic, research and OEM customers throughout the UK with **standard and bespoke components**.

OZ Optics also manufacture **hand-held test equipment**, such as power meters and fault locators, as well as light sources and fibre pigtailed **laser modules**.

Our OZ Optics-trained engineers can help you refine the solution to your fibre optic connection problem, or enable a stalled design to go from concept to reality with a custom component. **Contact us** now for more information.

Newsletter subscription preferences



Elliot Scientific sends a newsletter like this to thousands of our contacts every month, and we would like you to know that you can help us improve this service. If you have changed your email or postal address and wish to continue receiving this newsletter, then do let us know. Just send a message to our **subscription team** with your details.

If you or a colleague are not regular readers, then you can subscribe to our newsletter by using the sign up form on our **homepage**. Should you want to unsubscribe at some point, there is always a dedicated link for you to do so at the bottom of every newsletter we send out.

Elliot Scientific Optics: Superior quality laser mirrors and waveplates from stock



Elliot Scientific Optics are a select range of superior quality laser optics in standard sizes that we offer from stock for next working-day delivery in the UK, along with low-cost high-quality dyed glass, ND and dichroic filters available on a short lead time to customers around the globe.

The Elliot Scientific range of **high power Nd:YAG mirrors** have high reflectance coatings intended for laser beam steering applications. Damage threshold is high, typically 20 J/cm² for 20 nS pulses or 10 MW/cm² CW at 1064 nm. Fabricated on BK7 substrates using hard electron beam deposited dielectric materials, they have excellent resistance to abrasion, moisture and laboratory solvents.

Our range of **high power zero order waveplates** have the damage threshold of an optically contacted interface, the mechanical strength of a solid component, and the price tag of a multiple-order waveplate thanks to the adhesive-free Molecular Fusion™ process used in their manufacture.

Elliot Scientific's **filter catalogue** is available in half-inch or one-inch diameters, or as two-inch squares of genuine Schott® glass. Our neutral density filter range is also offered in the same formats, but do enquire about custom sizes of our:

- Dichroic & band pass filters
- Long & short-pass filters
- Neutral density filters - both reflective & absorptive

Please **contact us** about these and other **specialist optics** Elliot Scientific can supply.

The Elliot Scientific office will be closed for the winter holidays from close of business on Thursday, December 24th.

We re-open at 8:30 am on Monday, January 4th 2016





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