



18-20 December 2024
IET London: Savoy Place
London, United Kingdom

Welcome!

On behalf of the whole BICOP 2024 committee, I would like to welcome you to the 2024 British and Irish Conference on Optics and Photonics!

After returning last year to popular acclaim, we are delighted again to host BICOP here in the magnificent and historic IET Savoy Place in London. Over the next 2.5 days, you'll hear about the latest world-changing advances in optics, photonics and quantum covering a broad range of timely and critical topics, from communications, sensors, AR/VR and photonic integrated circuits to quantum and manufacturing to medicine.

We have not one but two receptions this year, one featuring our signature mince pie and mulled wine and another with festive holiday canapés and beverages. Each evening will be perfect for deep, meaningful and relaxed conversations with the leading thinkers in our field before heading out to dinner (and maybe a show) in this beautiful city. You'll also get the chance to interact with our poster programme and hear from our exhibitors about their unique technology contributions to the field.

Richard Pitwon
Resolute Photonics / Seagate, Ireland
General Chair of the British and Irish Conference on Optics and Photonics

About Optica

Optica, Advancing Optics and Photonics Worldwide, is the society dedicated to promoting the generation, application, archiving and dissemination of knowledge in the field. Founded in 1916, it is the leading organization for scientists, engineers, business professionals, students and others interested in the science of light. Optica's renowned publications, meetings, online resources and in-person activities fuel discoveries, shape real-life applications and accelerate scientific, technical and educational achievement.

Presented by:

OPTICA Advancing Optics and
Photonics Worldwide

About BICOP

The British and Irish Conference on Optics and Photonics (BICOP) is a flagship conference on optics and photonics in the UK and Ireland reporting on disruptive advances in optics and photonics across diverse fields. As in past years, the primary purpose of the 2.5-day conference will again be to showcase the UK and Ireland's world-leading research and development in optics and photonics to global stakeholders with a proper balance of industry and academia.

Program Committee

Richard Pitwon, Chair, Resolute Photonics / Seagate, Ireland

Cleitus Antony, Tyndall National Institute, Ireland

Filipe M Ferreira, University College London, UK

Kamil Gradkowski, Tyndall National Institute, Ireland

Callum Littlejohns, University of Southampton and CORNERSTONE, UK

Anke Lohman, Anchored In Ltd., UK

Alison Mcleod, Technology Scotland, UK

Izabela Naydenova, Technological University Dublin, Ireland

Liam O'Faolain, Munster Technological University, Ireland

Peter G.R. Smith, University of Southampton, UK

BICOP 2024 Break/Meal Overview	
Wednesday, 18 December	
15:00-15:30	Break Sponsored by Vanguard Automation / Posters / Exhibition
17:00-17:30	Poster Session
17:00-19:00	BICOP Reception Sponsored by Senko Advanced Components
Thursday, 19 December	
10:30-11:00	Break Sponsored by Nanoscribe / Posters / Exhibition
12:10-13:00	Lunch / Posters / Exhibition
14:50-15:30	Break Sponsored by Hamamatsu Photonics UK Limited / Posters / Exhibition
17:00-17:30	Poster Session
17:00-19:00	BICOP Reception Sponsored by Carrousel Digital Limited
Friday, 20 December	
10:00-10:30	Break Sponsored by CORNERSTONE Photonics Innovation Centre / Posters / Exhibition
12:00-13:00	Lunch / Posters / Exhibition
14:30-15:00	Break / Posters / Exhibition

Wednesday, 18 December

12:00	Registration Opens	
12:30-13:00	Welcome and Opening Remarks: Richard Pitwon, BICOP Chair; Michal Lipson, Columbia University and 2023 Optica President and Rt Hon Lord Willetts FRS, HonFREng	
13:00-13:30	KN	David Payne Optoelectronics Research Centre, University of Southampton, UK
		'Nothing' is Better than Silica
13:30-15:00	Session 1a: Optical Networks , Chair: Filipe Ferreira, University College London, UK	
13:30-14:00	KN	Dimitra Simeonidou University of Bristol, UK
		UK-born optical technologies enabling solutions for the next generation mobile networks
14:00-14:20	IN	Grace Brennan Microsoft, UK
		Analog Optical Computing for Faster, Greener AI and Optimization
14:20-14:40	IN	Ryota Kinoshita Sumitomo Bakelite, Japan
		Optimum core structural design of the polymer optical waveguides for co-packaging
14:40-15:00	CT	Hani Kbashi Aston Institute of Photonic Technologies, Aston University, UK
		Octave Spanning Optical Frequency Comb Fiber Laser
15:00-15:30	Break / Posters / Exhibition Sponsored by Vanguard Automation	
15:30-17:00	Session 1b: Photonic Processing , Chair: Alison Mcleod, Technology Scotland, UK	
15:30-16:00	KN	José Capmany iPRONICS Programmable Photonics S.L, Spain
		Analog programmable photonic computing: A new paradigm for data processing
16:00-16:20	IN	Nick New Optalysys Ltd., UK
		Enabling a World of Secure Computing through the power of Photonics
16:20-16:40	IN	Juergen Czarske TU Dresden, Germany, and University of Arizona, USA
		Fiber-optical Sensing and Communication exploiting physics-informed deep learning and quantum technology
16:40-17:00	CT	Lewis Hill Max Planck Institute for the Science of Light, Germany
		Nonlinear phase switching in microresonators for all-optical computing PICs
17:00-17:30	Poster Session	
17:00-19:00	Reception Sponsored by Senko Advanced Components	

Paper Type Key	
PL	Plenary
KN	Keynote
IN	Invited
CT	Contributed

View all abstracts
and speaker bios
on optica.org.
Scan here:



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A password is no longer required to connect to the WIFI.

Thursday, 19 December

8:00		Registration Opens	
8:30-9:00	KN	Peter Knight UK National Quantum Technology Programme, UKRI and Quantum Metrology Institute, UK National Physical Laboratory, UK	Quantum Technology- from concept to devices
9:00-10:30	Session 2a: Quantum Communication , Chair: Anke Lohman, Anchored In, UK		
9:00-9:30	KN	Andrew Shields Toshiba Europe Ltd, UK	Towards scalable quantum networks
9:30-9:50	CT	Petros Laccotripes University of Cambridge and Toshiba Europe, UK	Spin-photon entanglement using an InAs/InP quantum dot emitting in the telecom C-Band
9:50-10:10	IN	Bernard Lee SENKO Advanced Components (HK) Ltd, Hong Kong SAR, China	Connecting light through hyperscale to quantum - the journey ahead for the Photonics Industry
10:10-10:30	IN	Anna Peacock University of Southampton, UK	Silicon Core Fibers for Nonlinear Photonics: Progress and Trends
10:30-11:00	Break / Posters / Exhibition Sponsored by Nanoscribe		
11:00-12:10	Session 2b: Quantum Computation , Chair: Richard Pitwon, Resolute Photonics / Seagate, Ireland		
11:00-11:30	KN	Mark Thompson PsiQuantum, UK	Integrated photonics for quantum computing
11:30-11:50	IN	Maksym (Max) Sich Aegiq, UK	Disruptive potential of linear quantum optics and deterministic photon sources
11:50-12:10	IN	Eleni Diamanti CNRS, France	Resources and applications of quantum networks
12:10-13:00	Lunch / Posters / Exhibition		
13:00-14:50	Session 3a: Optical Materials and Applications , Chair: Izabela Naydenova, Technological University Dublin, Ireland		
13:00-13:30	KN	Yasuhiko Arakawa The University of Tokyo, Japan	Advances in Quantum Dot Lasers toward Practical Implementation
13:30-13:50	CT	Suzanne Martin Technological University Dublin, Ireland	Wavelength Multiplexed Volume Holographic Optical Couplers for Solar Collection
13:50-14:10	CT	Davide Monopoli Centre for Advanced Photonics and Process Analysis, Munster Technological University, Ireland	Fabry- Pérot cavity in SiN for non-linear applications
14:10-14:30	IN	Carsten Eschenbaum SilOrix, UK	Silicon-organic hybrid electro-optic modulators for next generation optical interconnects
14:30-14:50	IN	Shiyoshi Yokoyama Kyushu University, IMCE, Japan	Material-Inspired High-Speed Modulators for 200+ Gbaud Communications
14:50-15:30	Break / Posters / Exhibition Sponsored by Hamamatsu Photonics UK Limited		
15:30-17:00	Session 3b: Biophotonics , Chair: William Whelan-Curtin, Munster Technological University, Ireland		
15:30-16:00	KN	Radu-Florin Stancu University of Kent, UK	125 Micrometer Fiber Optic Sensors for Tissue Proximity Detection and B-Scan Acquisition
16:00-16:20	CT	Madhu Veettikazhy Technical University of Denmark, Denmark	Label-Free Two-photon Lightsheet Fluorescence Microscopy for Differentiating Healthy and Diseased Animal Colon Tissue
16:20-16:40	CT	Tianrui Zhao Kings College London, UK	Cost-effective speckle contrast optical spectroscopy for non-invasive blood flow monitoring
16:40-17:00	CT	Julien Camard University of Kent, UK	Dynamic Optical Coherence Tomography for Assessment and Imaging of Embryos and Organoids
17:00-17:30	Poster Session		
17:30-19:00	Reception Sponsored by Carrousel Digital Limited		

Friday, 20 December

8:15	Registration Opens	
8:30-10:00	Session 4a: Integrated Photonic Technologies , Chair: Richard Pitwon, Resolute Photonics / Seagate, Ireland	
8:30-9:00	KN	Roel G. Baets Ghent University and imec, Belgium
		Towards additive manufacturing in silicon photonics
9:00-9:20	IN	Frank Smyth Pilot Photonics, Ireland
		Monolithically Integrated Comb Lasers for optical transceiver scaling and mmWave generation
9:20-9:40	IN	Alex Gaeta Columbia University, USA
		Optical Frequency Combs for Data Communications
9:40-10:00	CT	Abhijit Das Lund University, Sweden
		On-Chip Light Transmission between Nanoscale Optoelectronic Devices
10:00-10:30	Break / Posters / Exhibition Sponsored by CORNERSTONE Photonics Innovation Centre	
10:30-12:00	Session 4b: Manufacturing , Chair: Alison Mcleod, Technology Scotland, UK	
10:30-11:00	KN	Michal Lipson Columbia University, USA
		Scalability of Silicon photonics
11:00-11:20	IN	Stuart Smyth Sivers Photonics, UK
		Multi-Wavelength DFB Arrays for AI and HPC Applications
11:20-11:40	IN	Callum Littlejohns University of Southampton and CORNERSTONE, UK
		Unleashing the potential of silicon photonics in the UK via the CORNERSTONE Photonics Innovation Centre
11:40-12:00	CT	Masahiro Karakawa Ajinomoto Co., Inc. and Keio University, Japan
		Fabrication of GI core polymer optical waveguides enabling low loss with small bend radius (~1 mm) using high Δ resins
12:00-13:00	Lunch / Posters / Exhibition	
13:00-14:30	Session 5a: Photonics Packaging , Chair: Cleitus Anthony, Tyndall National Institute, Ireland	
13:00-13:30	KN	Peter O'Brien Tyndall Institute, University College Cork, Ireland
		Developing scalable optical and electrical packaging technologies and moving towards more integrated photonic-electronic systems
13:30-13:50	IN	Louise Bradley Trinity College Dublin, Ireland
		Metasurfaces for reprogrammable beamsteering and enhanced light-matter interaction
13:50-14:10	IN	Peter G.R. Smith University of Southampton, UK
		Creating fully transparent Augmented Reality headsets - how nonlinear optics can enable the Metaverse
14:10-14:30	CT	Noémie Estopinan Vanguard Automation GmbH, Germany
		Industry Proven Photonic Integration Using Photonic Wire Bonds & Facet Attached Micro-Lenses
14:30-15:00	Break	
15:00-16:30	Session 5b: Fibres and Sensors , Chair: Peter Smith, University of Southampton, UK	
15:00-15:30	KN	Philip St.J. Russell Max Planck Institute for the Science of Light, Germany
		Twisted light in chiral photonic crystal fibres
15:30-15:50	IN	Hideyuki Nasu Furukawa Electric Co., Ltd., Japan
		ELS modules employing an 8-Channel CWDM TOSA for SiPh Transceivers
15:50-16:10	CT	Cian Twomey Centre for Advanced Photonics and Process Analysis, Munster Technological University, Ireland
		EvanescentWave Quartz-enhanced Photoacoustic Spectroscopy Employing Dielectric Coated Side-polished Fibers for Sensing Applications
16:10-16:30	CT	Aleksandra Hernik Technological University Dublin, Ireland
		Diffraction Optical Transducers for Volatile Organic Compounds Detection
16:30-17:00	Closing Remarks: Richard Pitwon, BICOP Chair	

Poster Session Guide

Posters will be available to view during breaks, lunches, and during the two evening Poster Sessions.

Day 1

P1	Nonlinear Optics with Coupled Twin-Microresonators <i>Lewis Hill, Max Planck Institute for the Science of Light, Germany</i>
P2	Low-loss Subminiature Multimode Branched Polymer Optical Waveguide <i>Koki Atsumi, Keio University, Japan</i>
P3	Plasmonic gold nanoparticles reinforced graphene - ZnO tetrapods composite for efficient PEC water splitting <i>Muhammad Haris, Institute of Materials Science, Kaunas University of Technology (KTU), Lithuania</i>
P4	Study on solar noise suppression filtering for daytime free-space QKD <i>Ji-young Moon, Agency for Defense Development, South Korea</i>

Day 2

P5	3D Polymer Optical Waveguide-based Fan-in/out Device for Silicon Photonics Chips <i>Anzu Ito, Keio University, Japan</i>
P6	Modulated Selective Bioimaging of Fluorescent Nanodiamonds via Optical Lock-in Detection <i>Yayin Tan, The University of Hong Kong, China</i>
P7	Light Distribution Patterns in Microresonator Chain PICs with Kerr-Nonlinearity <i>Lewis Hill, Max Planck Institute for the Science of Light, Germany</i>
P8	Dislocating Spontaneous Symmetry Breaking from Exceptional Points <i>Lewis Hill, Max Planck Institute for the Science of Light, Germany</i>

Anti-Harassment Policy and Code of Conduct

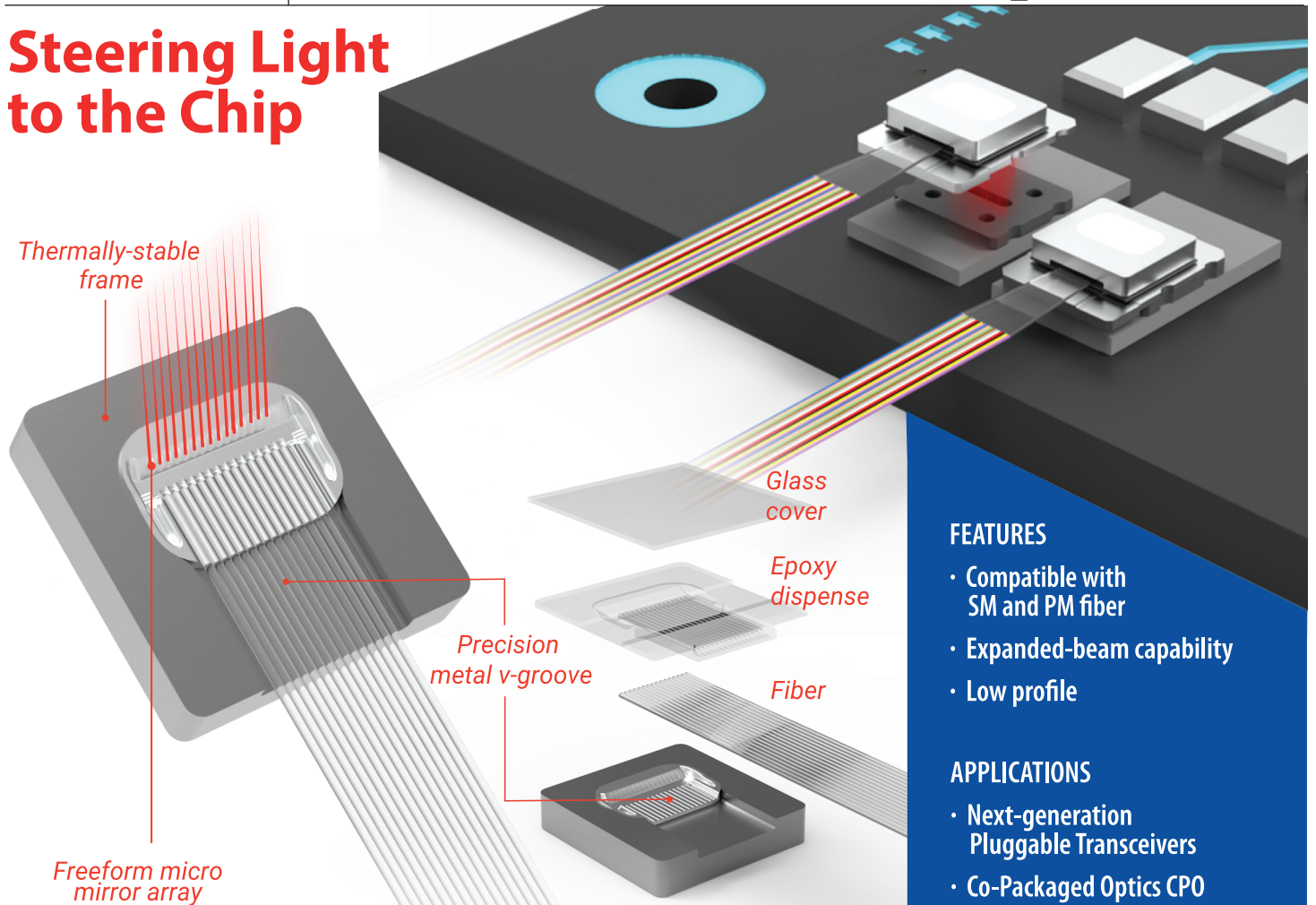
Optica is committed to providing an environment that is conducive to the free and robust exchange of scientific ideas. This environment requires that all participants be treated with equal consideration and respect. While Optica encourages vigorous debate of ideas, personal attacks create an environment in which people feel threatened or intimidated. This is not productive and does not advance the cause of science. All participants in Optica and Optica-managed events and activities are therefore expected to conduct themselves professionally and respectfully.

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- Use the online portal optica.org/incidentreport
- Email codeofconduct@optica.org

MPC | Metallic PIC Coupler

Steering Light to the Chip

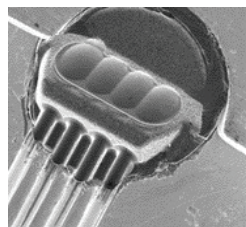


FEATURES

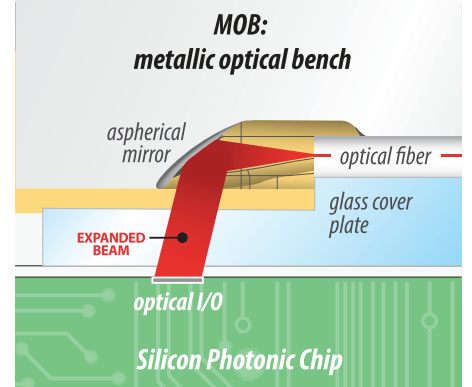
- Compatible with SM and PM fiber
- Expanded-beam capability
- Low profile

APPLICATIONS

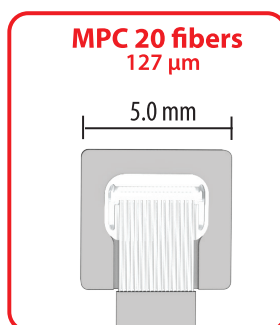
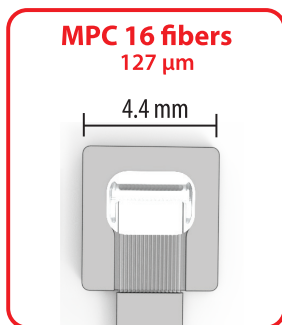
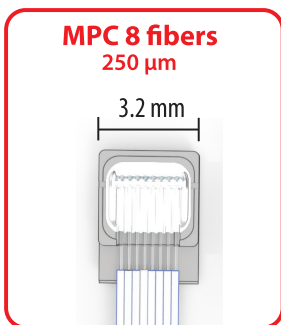
- Next-generation Pluggable Transceivers
- Co-Packaged Optics CPO
- Custom Applications (Sensors)



Metallic PIC connectors are constructed from stamped metallic optical benches. They include micro mirror arrays for folding, focusing, or expanding light beams between optical fibers and photonic devices. Mirror designs are available for multimode and single-mode applications.



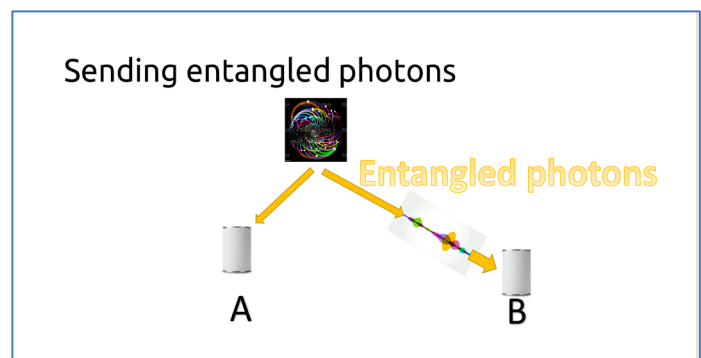
This product is subject to United States export control laws.





Designing for licensing out the IP

- Entangled Photon Communication
 - Supra-luminal
 - Secure
 - for space
 - optical fibres



patents FR3125658A1 FR3125659B1 US11843419B2

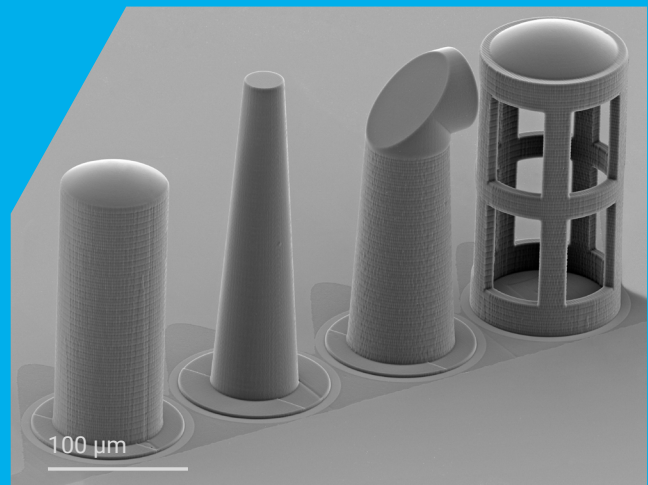
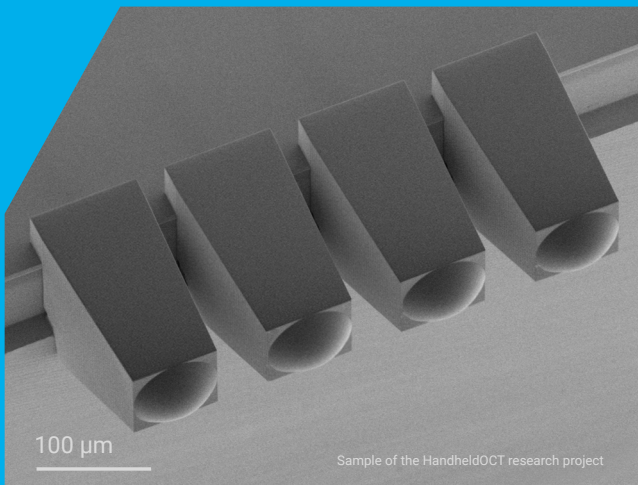
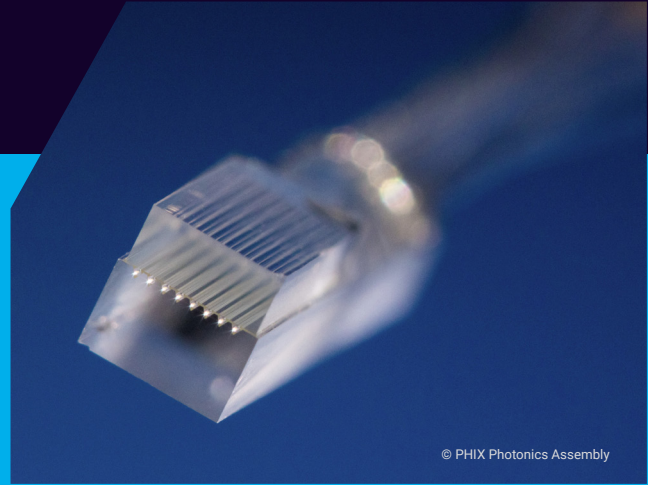
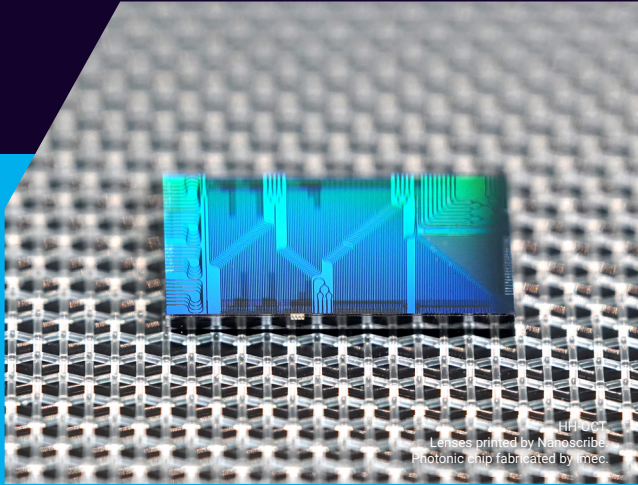


- Other schemes
 - Passive photonic router
 - Long distance photonic EPR channel

patents pending FR3139396A1 US20240106539A1 FR2309929

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Think big. Print nano.



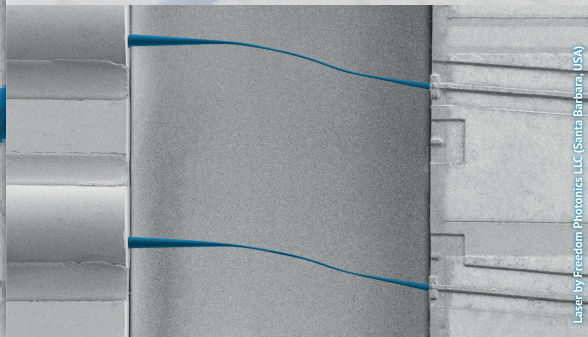
Quantum X align

Best-in-class 3D printer with nanoprecision alignment system for photonics packaging by Aligned 2-Photon Lithography A2PL®

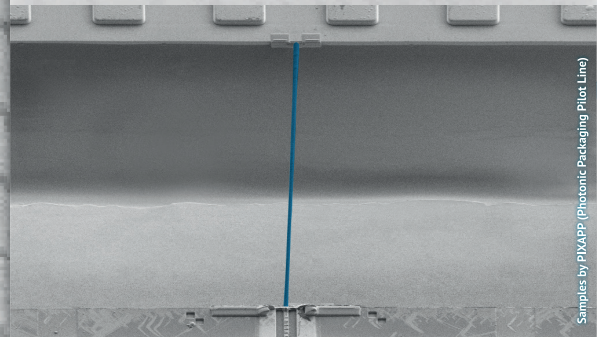
- ▶ 3D printing onto fiber facets based on fiber core detection
- ▶ 3D printing on chip surfaces or facets based on 3D topography mapping

Access the full potential of hybrid multi-chip integration

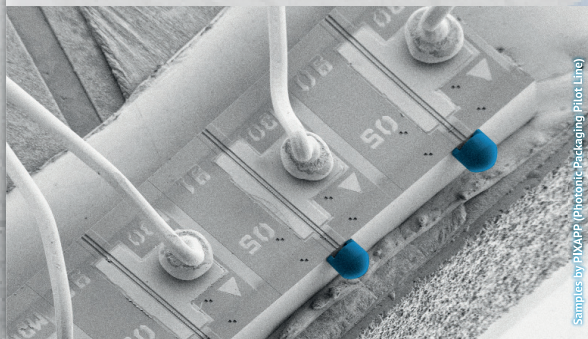
Fiber to laser



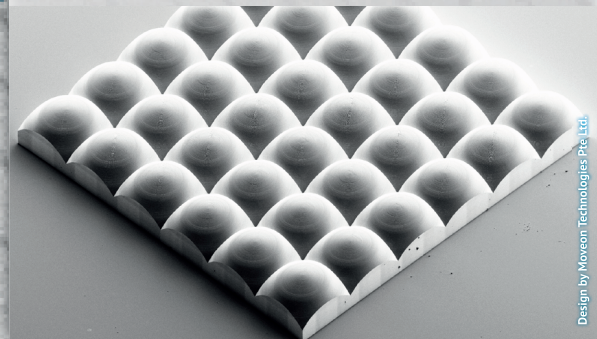
Laser to SOI chip



Lens on laser



Large scale micro-optics



vanguard
AUTOMATION
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Who we are

Resolute Photonics was founded in 2018 to provide research and development and design services for system, board and chip level optical and photonic integration for hyperscale, AI clusters, HPC, IoT and quantum applications.

Advanced Research and Development

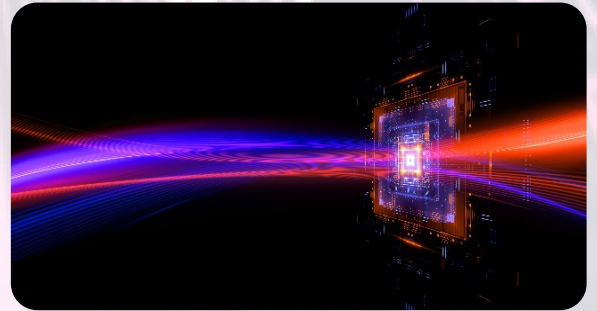
Resolute Photonics coordinates one Innovate UK project and partners on three Horizon Europe projects, where we design advanced subsystems for photonic integrated circuits for quantum, hyperscale data centres, AI clusters and IoT sensors.

EQUINOX - Ecosystem for distributed Quantum Interconnect in scalable Networks using physical layer building blocks

DYNAMOS - Dynamic and reconfigurable data centre networks with modular optical subsystems (<https://project-dynamos.eu>)

ADOPTION - Advance co-packaged optics enabling high-efficiency cloud computing (<https://www.ucc.ie/en/adoption-project>)

SYMPHONY - Smart Systems for environmental pollution detection and biogas production based on cloud-connected silicon photonic and micro-electronic hyperspectral sensor



Richard Pitwon, CEng, FIET, FInstP

Chief Executive Officer

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Website: www.resolutephotonics.com

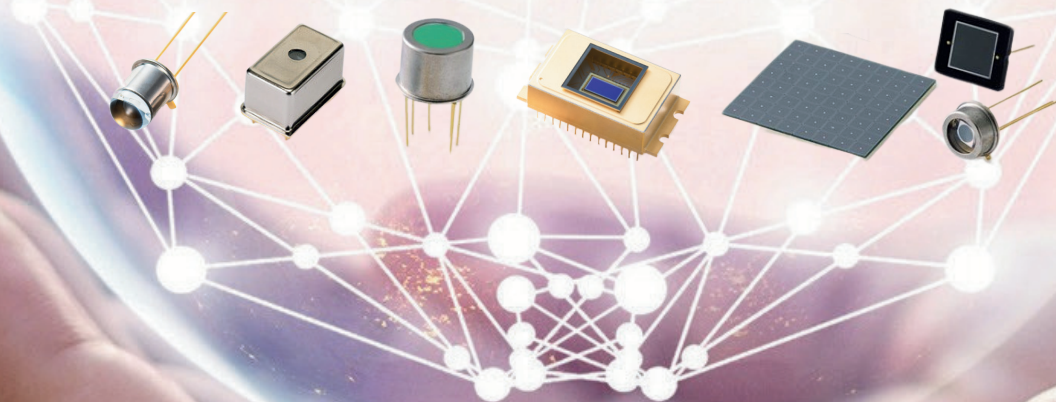
We are proud to sponsor and support the **British and Irish Conference on Optics and Photonics (BICOP 2024)** and I look forward to seeing you there!

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