



Quantum networks

The cover shows an artistic impression of a reconfigurable, multiplexed quantum entanglement network. At the heart of the network is a programmable multiport circuit, depicted here as a tetradecahedron at the centre. The circuit can be reprogrammed to route or teleport photonic entanglement between multiple network users, as depicted by the cuboids and spheres. The glowing lines represent multiplexed entanglement channels.

See [Malik](#)

Image: Mehul Malik and Saroch Leedumrongwatthanakun, Heriot-Watt University (concept) and Greg Stevenson, Pinpoint Studio (design). Cover design: Bethany Yukomanovic

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News & Views

- News & Views**

05 Feb 2026

A lens for attosecond pulses

A Hydrogen plasma that is generated with controllable density distribution can act as a lens to tightly focus extreme-ultraviolet attosecond pulses.

Malte C. Kakuza
- News & Views**

05 Feb 2026

Scaling quantum photonics networks

Mode mixing and mapping with a piece of multimode optical fibre and spatial light modulators creates a bridge between two isolated quantum networks, linking distant nodes with quantum connectivity.

Yun-Ru Fan & Qiang Zhou
- News & Views**

05 Feb 2026

Lithium tantalate meets silicon photonics

Lithium tantalate (LiTaO₃) is heterogeneously integrated with silicon photonics circuits, enabling high modulation speed, reduced bias drift and a high optical damage threshold, while ensuring full compatibility with the existing silicon photonics process design kit.

Yikai Su & Yong Zhang
- News & Views**

05 Feb 2026

Nanoscale probing of interfaces

Anastasia Vasychenkova



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Review Articles

- Review Article**

08 Jan 2026

Stable deep-blue organic light-emitting diodes based on sensitized fluorescence

This Review discusses recent advances in sensitized fluorescence emitters for deep-blue organic light-emitting diodes, reviewing progress in molecular design and device performance as well as key remaining challenges.

Dongdong Zhang, Hengyi Dai ... Lian Duan

[Partner Content](#)

Using silicon to guide terahertz waves

New technologies are opening up the terahertz gap for sensing applications.

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Articles

- Article**

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04 Nov 2025

Plasma lens for focusing attosecond pulses

A plasma lens capable of focusing broadband extreme-ultraviolet attosecond pulses is demonstrated.

Evaldas Svirplys, Harry Jones ... Bernd Schütte
- Article**

11 Nov 2025

Completely characterizing multimode second-order nonlinear optical quantum processes

A resource-efficient characterization method to completely characterize multimode second-order nonlinear optical quantum processes is demonstrated, satisfying the required physical condition. Scaling quadratically with the mode number, it enables complete 16-mode analysis.

Geunhee Gwak, Chan Roh ... Young-Sik Ra
- Article**

26 Jan 2026

Optical coherent perfect absorption and amplification in a time-varying medium

The researchers show that a subwavelength film of indium tin oxide, the bulk permittivity of which is strategically modulated via optical pumping, can be dynamically tuned to act as both a non-resonant amplifier and a perfect absorber. The findings extend the concept of coherent perfect absorption to the temporal domain and may enable coherent manipulation of light in Floquet-engineered complex photonic systems.

Emanuele Galiffi, Anthony C. Harwood ... Riccardo Sapienza
- Article**

03 Nov 2025

Vapour-assisted surface treatment for highly stable fully printed carbon-electrode perovskite solar modules

A vapour post-treatment strategy enables fully printed carbon-electrode perovskite solar modules with an area of about 50 cm² and a certified power conversion efficiency of 19.26%. The modules show no performance decay after 1,000 h of continuous operation at 65 °C.

Xiaozhen Wei, Kai Zhang ... Shihe Yang
- Article**

24 Nov 2025

Spontaneous 2D perovskite formation at the buried interface of perovskite solar cells enhances crystallization uniformity and defect passivation

Formation of a near-phase-pure two-dimensional perovskite at the buried interface of perovskite solar cells enables improved crystallization and defect passivation, resulting in devices with a certified power conversion efficiency of 26.02%. Ninety-five per cent of the initial PCE is maintained after 1,000 hours of operation.

Yuping Gao, Hang Liu ... Yongsheng Liu
- Article**

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14 Nov 2025

Measurement of optically induced broken time-reversal symmetry in atomically thin crystals

An all-optical method involving third-harmonic Faraday rotation is used to probe the breaking of time-reversal symmetry in mono- and bilayer transition metal dichalcogenide WS₂.

Florentine Friedrich, Paul Herrmann ... Giancarlo Soavi
- Article**

07 Jan 2026

In-pixel colour correction with organic self-adaptive transistors

A colour correction array featuring red-, green- and blue-sensitive organic transistors integrated within a single pixel enables self-adaptive intensity and colour correction.

Zihan He, Wei Wang ... Chong-an Di
- Article**

Open Access

26 Nov 2025

A large-scale reconfigurable multiplexed quantum photonic network

A reconfigurable eight-user photonic network is realized by connecting two local four-user networks through a programmable 8 × 8-dimensional multi-port device. Multiplexed routing and swapping of qubit entanglement are demonstrated for all network configurations and channels.

Natalia Herrera Valencia, Annameng Ma ... Mehul Malik
- Article**

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15 Dec 2025

Low-threshold lasing from colloidal quantum dots under quasi-continuous-wave excitation

Researchers demonstrate quantum dot lasing using excitation by an electrically modulated (0.1–1% duty cycle), low-power continuous-wave laser diode, achieving lasing at a pump intensity just above 500 W cm⁻² at 77 K and 3.6 kW cm⁻² at room temperature.

Donghyo Hahn, Changjo Kim ... Victor I. Klimov
- Article**

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19 Nov 2025

Multi-plateau high-harmonic generation in liquids driven by off-site recombination

The second plateau in high-harmonic generation from liquids is due to off-site recombination of electrons, facilitated by the spatial delocalization of electron-hole wavefunctions.

Angana Mondal, Ofer Neufeld ... Hans Jakob Wörner
- Article**

13 Jan 2026

A high-speed heterogeneous lithium tantalate silicon photonics platform

Lithium tantalate is heterogeneously integrated with silicon photonic integrated circuits via a micro-transfer printing process in a manner fully compatible with existing workflows. A Mach-Zehnder modulator with an insertion loss of 2.9 dB and 70 GHz operation is demonstrated.

Margot Niels, Tom Vanackere ... Maximilien Bilet
- Article**

19 Jan 2026

Axially chiral molecular contacts with low isomerization barriers for perovskite solar cells

A non-coplanar axially chiral molecular contact favours the crystalline growth of perovskite film and improves interfacial stability in perovskite solar cells. Small-area devices yield a certified power conversion efficiency of 26.44% and maintain 96% of it after 2,000 hours of operation.

Wenhan Yang, Xin Guan ... Chao Liang

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Amendments & Corrections

- Author Correction**

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22 Jan 2026

Author Correction: Stabilizing high-efficiency perovskite solar cells via strategic interfacial contact engineering

Guixiang Li, Zuhong Zhang ... Antonio Abate
- Publisher Correction**

23 Jan 2026

Publisher Correction: Spontaneous 2D perovskite formation at the buried interface of perovskite solar cells enhances crystallization uniformity and defect passivation

Yuping Gao, Hang Liu ... Yongsheng Liu

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