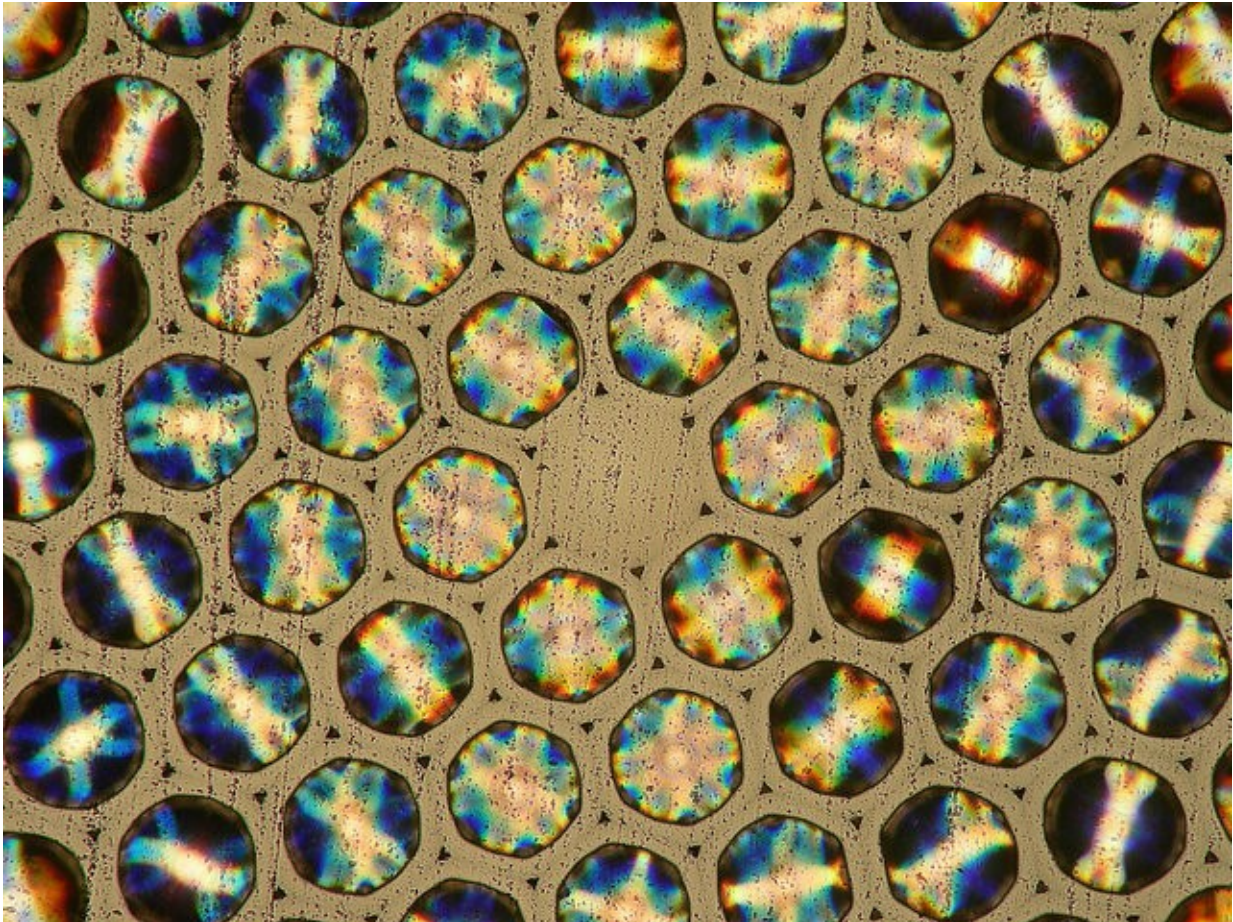


# More reliable way to produce single photons

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Credit: University of Bath

Physicists at the University of Bath have developed a technique to more reliably produce single photons that can be imprinted with quantum information.

The invention will benefit a variety of processes which rely on photons to carry quantum information, such as quantum computing, secure quantum communication and precision measurements at low light levels.

Photons, particles of light, can be imprinted with information to be used for things like carrying out calculations and transmitting messages. To do this you need to create individual photons, which is a complicated and difficult process.

However researchers from the Centre for Photonics and Photonic Materials have implemented a new way to improve the performance of single-photon sources using fibre-optics and fast [optical switches](#).

They combined several individual sources of photons using optical switches, a technique called multiplexing, using fibre optics fabricated at the University. The resulting device not only makes generating [single photons](#) more reliable but also allows control of properties of the photons created, including their colour.

Dr Robert Francis-Jones, from the Centre for Photonics and Photonic Materials, said: "Developing improved sources of single photons is one of the most pressing issues in [quantum information](#) processing. Through this research we hope to accelerate the transition of quantum-enhanced technologies from the lab to applications such as drug discovery."

The study is published in the journal *Optica*.

**More information:** Robert J. A. Francis-Jones et al. All-fiber multiplexed source of high-purity single photons, *Optica* (2016). [DOI: 10.1364/OPTICA.3.001270](https://doi.org/10.1364/OPTICA.3.001270)

Provided by University of Bath

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