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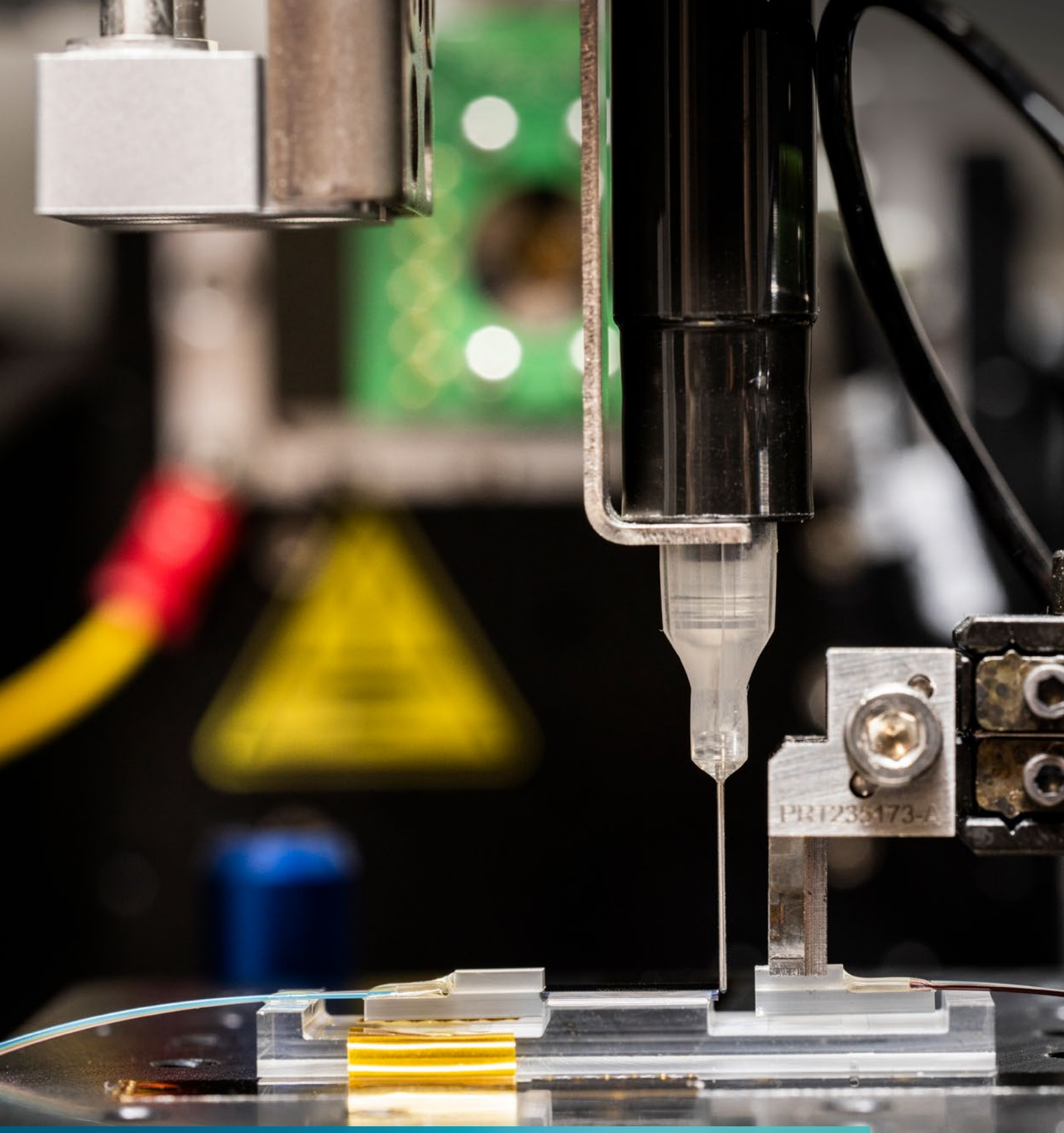
Fraunhofer Institute for Applied
Optics and Precision Engineering IOF

Packaging technologies for photonics



Towards highly efficient packaging of photonics

We provide innovative solutions for photonics packaging at highest precision. This includes assembly technologies such as handling, alignment, and joining. Our expertise in the field of joining technologies ranges from adhesive bonding and laser beam soldering to CO_2 laser splicing.

Next generation packaging solutions for photonics

The development of new systems based on photonic integrated circuits (PICs) requires smart package designs and highly precise system integration. We create innovative design and manufacturing solutions using advanced packaging technologies.

Package design

Our advanced package design incorporates all relevant areas like chip integration, electrical or optical interconnections, and thermal management of the complete system.

We offer heterogeneous packaging solutions for extreme operating conditions such as ultra-high vacuum, cryogenics, and space.

System integration technologies

Low loss fiber-to-chip coupling

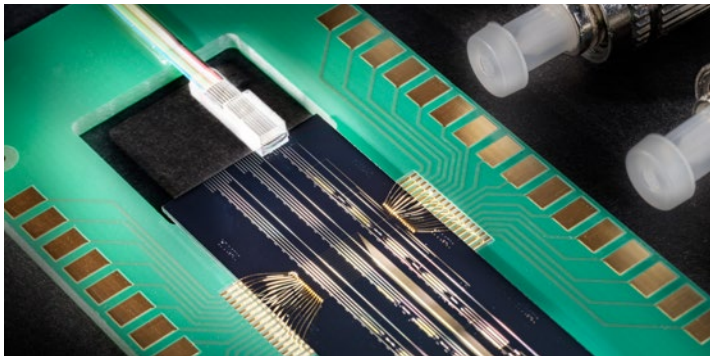
- Single fiber polarization alignment
- Fiber array coupling
- Fiber preparation

Micro-optical components integration

- Active microlens alignment and assembly
- Bonding of optics and functional structures
- Laser beam soldering of optical systems

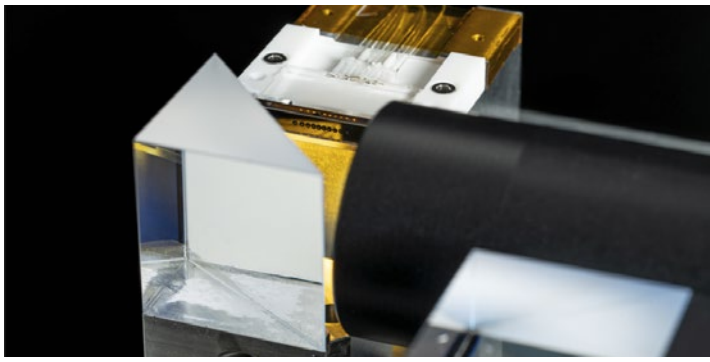
Applications

- Photonic (quantum) computing
- Ion-based quantum computing
- Satellite communication links
- Advanced optical sensing and LiDAR

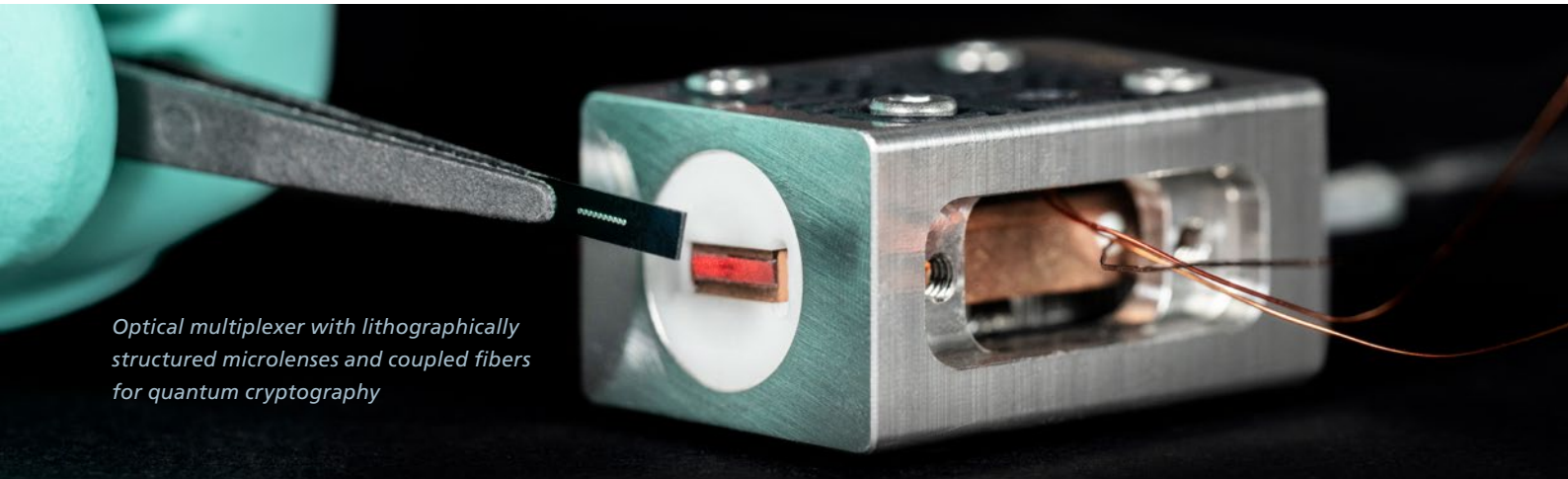


4-mode LNOI interferometer, including optical and electrical packaging for a photonic computer

Solderjet integration of a micro mirror



Integrated waveguide assembly with a microlens array inside the addressing unit of an ion-based quantum computer



Optical multiplexer with lithographically structured microlenses and coupled fibers for quantum cryptography

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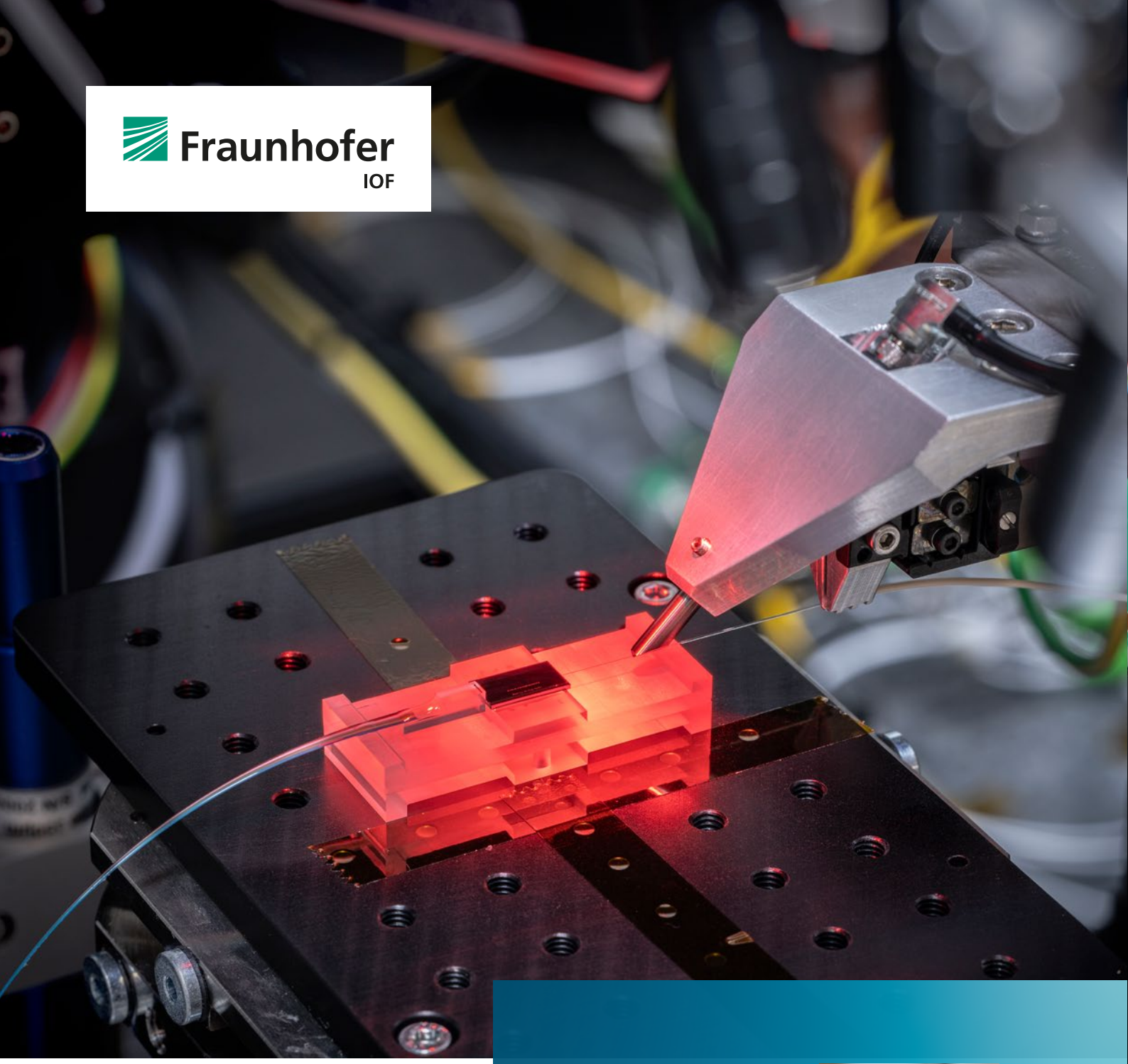

Top:
Active alignment of a single fiber and a photonic integrated circuit.

Cover:
4-mode LNOI interferometer
A lithium niobate waveguide chip with Mach-Zehnder interferometer, including optical and electrical packaging, as a core building block for photonic quantum computer.

scan
for more
info

Contact

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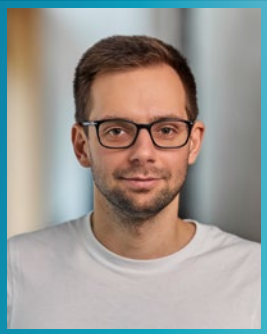

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