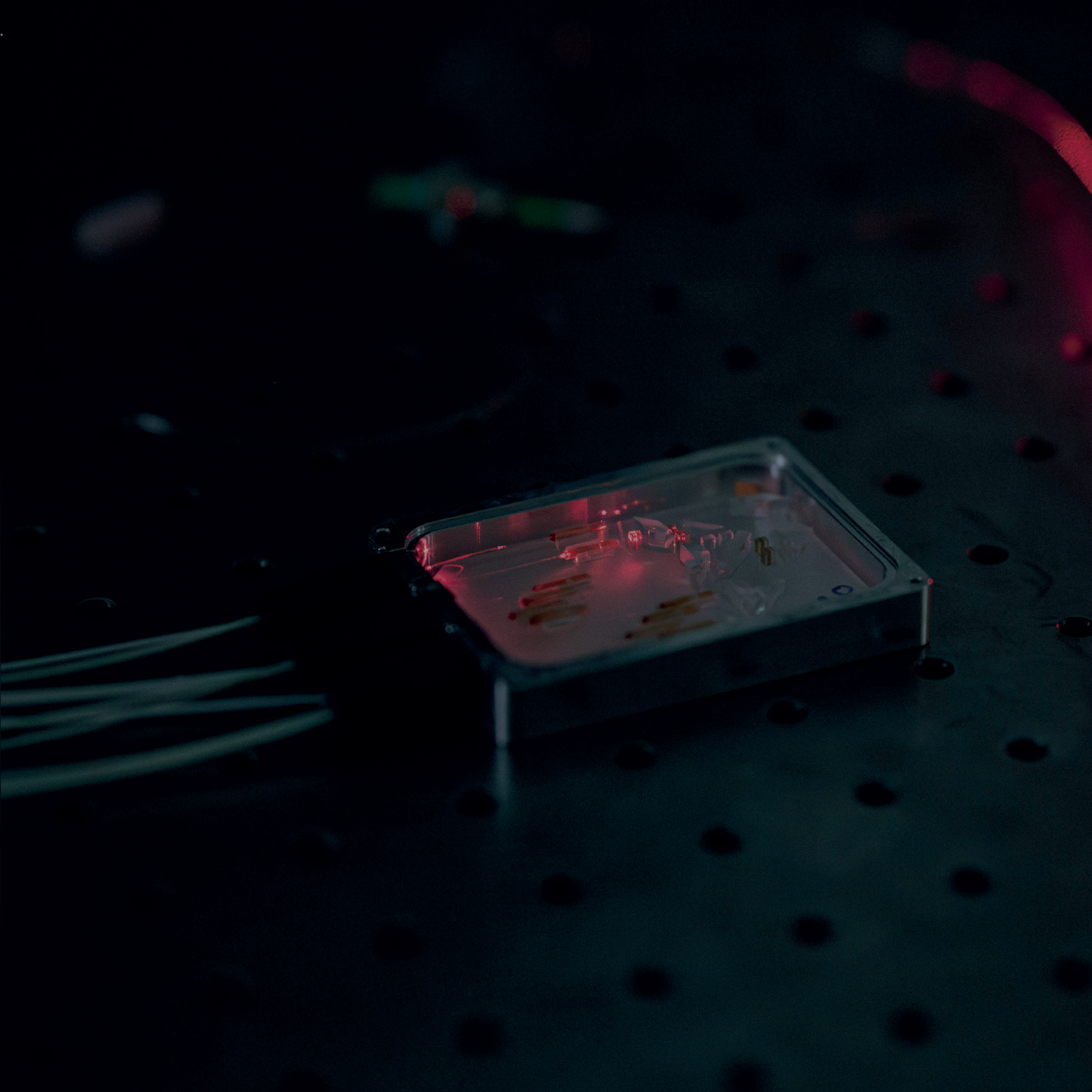


MICRO-OPTIC ASSEMBLIES

A close-up photograph of a micro-optic assembly. The central component is a small, clear, rectangular prism (likely a waveguide or lens) mounted on a metallic base. A thin, dark fiber or probe is inserted into a hole in the base. The background is blurred, showing other mechanical parts and a blue-tinted lighting scheme.

exail



**Compact, reliable
micro-optics
solutions**

With over 20 years of expertise and technical know-how, Exail designs state-of-the-art free-space micro-optical assemblies that meet the demands of the most critical environments, including space deployment.

Exail micro-optical modules integrate complex optical functions (power splitters, combiners, optical switches, frequency shifters, etc.) in compact, ultra-stable packages, combining miniaturization and high performance.

These turnkey fibered benches offer excellent alignment stability over a wide temperature range.

Transforming large photonic experiments into Exail micro-optics assemblies is ideal for applications requiring precision and reliability, such as quantum technology, QKD, LiDAR, and space communications.

Thanks to their innovative design, Exail's micro-optical technologies simplify installation while delivering high performance even under extreme conditions.

INTEGRATED MICRO-OPTICS FOR ADVANCED PHOTONICS ARCHITECTURE

COHERENT DETECTION | DEMODULATION | MULTIPLEXING | SIGNAL | DELAY CONTROL



CUSTOM MUX/ DEMUX

MICS

The industry's most flexible Dense Wavelength Division Multiplexing (DWDM) range—from 6.25 GHz to 400 GHz channel spacing—using our proprietary bulk grating technology.



90° OPTICAL HYBRID

COH

Performs phase, amplitude, and polarization extraction for coherent detection by combining a signal and a local oscillator through interference.



INTEGRATED MICRO- OPTICS BENCHES

iMOB

A modular, industry-grade platform for integrating complex optical setups, customizable to meet a great variety of optical designs...



VARIABLE OPTICAL DELAY

VODL

Provides ultra-stable and finely tunable optical delays up to 12 ns (longer on request), ideal for time-domain signal processing.



DELAY LINE INTERFEROMETER

MINT

Converts phase-keyed signals to amplitude-keyed format by interfering a signal with a time-delayed copy of itself (one bit-time delay).

UNMATCHED RELIABILITY

FROM THE DEEP SEA
TO OUTER SPACE

Micro-optical assemblies engineered for long-term stability in harsh environments

Exail has worked closely with space agencies to raise the TRL of its micro-optical benches, positioning the technology as a key enabler for future space missions. Early space-environment tests have confirmed excellent resistance to shock and vibration. To meet rising demand, Exail has invested in a hermetic seam-sealing system, enabling mass production in a controlled atmosphere at atmospheric pressure.

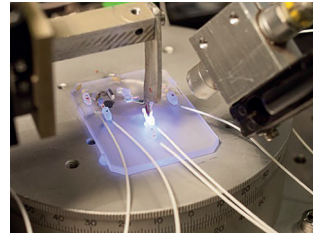
STATE-OF-THE-ART MICRO-OPTICAL ASSEMBLIES

FOR LASER, QUANTUM, SPACE AND TELECOM APPLICATIONS



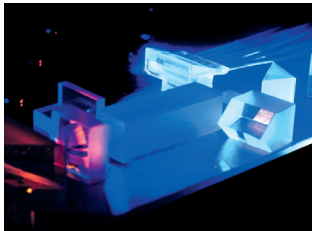
OPTIMIZED PRECISION AND CONTROL

Exail leverages six-axis micro-positioning to deliver unmatched assembly precision and repeatability. Each optical component is actively aligned with sub-micron accuracy, drastically reducing error margins. Our assemblies meet the most rigorous industry requirements for reliability and performance.



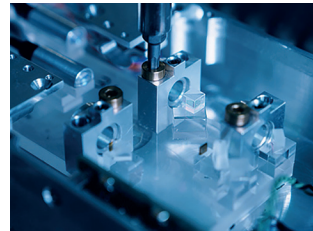
ACTIVE ALIGNMENT AND PRECISION METHODOLOGY

Using real-time active alignment, Exail ensures each component is precisely positioned and permanently bonded. This method guarantees optimal optical coupling, minimizes insertion loss, and removes the need for post-assembly adjustment or cleaning.



FROM SPECIFICATION TO SCALABLE PRODUCTION

Exail develops optical products in assembly epoxies, built to be used in extreme environments as EOM subsystems. Exail can lead or be part in all the product development steps.

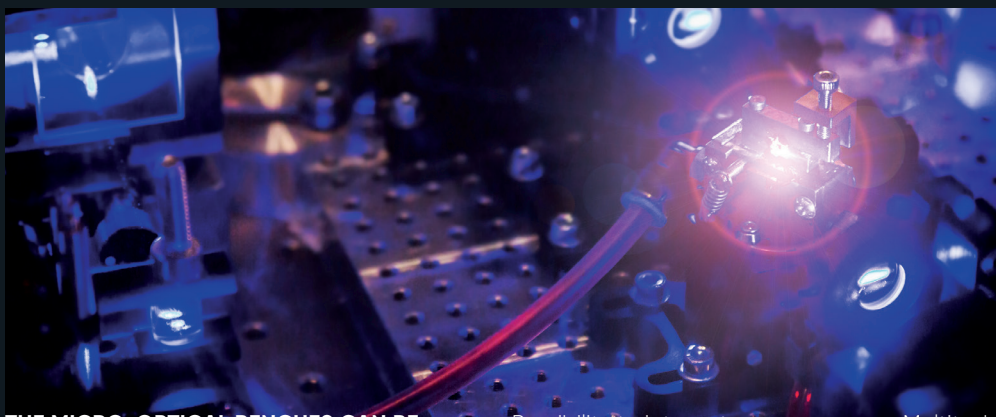


ADHESIVES AND MATERIALS EXPERTISE

Exail selects the most suitable assembly materials, including adhesives and substrates, tailored to the specific environmental conditions of each application. They are chosen to ensure optimal performance, reliability, and durability of the assemblies, even in the most demanding environments.

SHRINK YOUR LABORATORY

TURNING A COMPLEX EXPERIMENT INTO A COMPACT AND ROBUST SYSTEM



THE MICRO-OPTICAL BENCHES CAN BE CUSTOMIZED AT WILL TO MEET A GREAT VARIETY OF OPTICAL DESIGNS:

- Possibility to integrate photodiodes, shutters, AOMs, EOMs, waveplates
- Wide choice of operating wavelength, from 400 nm to 2 μ m
- Multitude of configurations available: 1x2, 2x3, 1x6... with several choices of fibers and connectors.

Photonics set-ups usually take large lab space. Quantum experiments, for example, require to feature stringent optical specifications. Exail micro-optics can be an ideal solution to miniaturize such complex photonic experiments into a module of very small footprint.

A WIDE RANGE OF FUNCTIONS FOR YOUR PROJECTS:

 Half Wave Plate	 Rotative Half Wave Plate	 Polarisation Beam Splitter (PBS)	 Collimator PMF
 Quarter Wave Plate	 Rotative Quarter Wave Plate	 Non-Polarizing Beam Splitter (NPBS)	 Collimator SMF
 Polarizer	 AOM	 Converging lens	 Shutter
 Photodetector	 EOM	 Mirror	 Other function Describe your legend



Scan the QR Code to submit your hand-drawn micro-optic assembly.



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Our sales and technical team is ready to assist you. For any request, feel free to contact us:
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