

Successful R&I in Europe - 12th European Network Event

Simple, robust and cost-effective Lasers for LiDAR in Aviation and Space

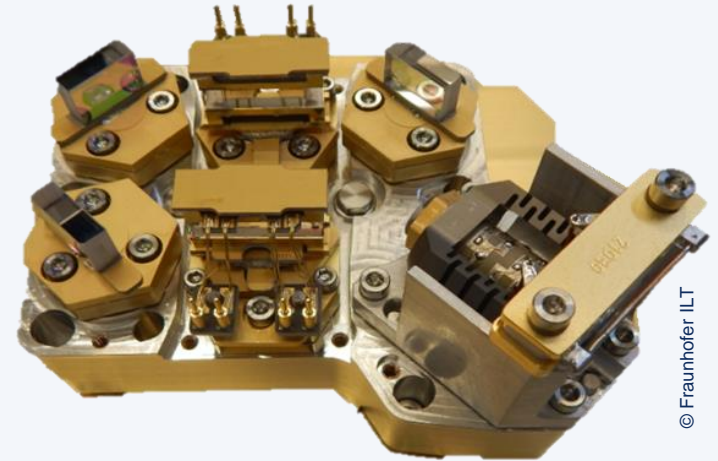


Who we are: RUPHOS – Rugged Photonics Systems GmbH

- **Founded in December 2023**
- **Based in Aachen, Germany**
- **Spin-Off from Fraunhofer Institute for Laser Technology, Aachen → close collaboration**

- **Design and assembly of lasers and optical assemblies for space and aviation**
- **Technology: soldering of optical components**
 - Robust under harsh environments
 - Long lifetime (no organic contamination)

- **Contact**
 - bastian.gronloh@ruphos.de
 - CEO and co-founder

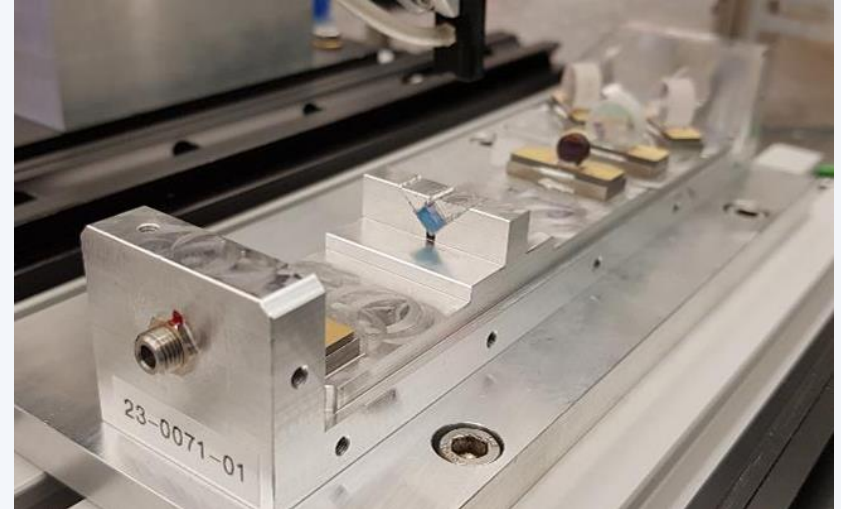


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Project Topics

LiDAR Lasers + other Rugged Optical Assemblies

- **Tailored, pulsed Nd:YAG lasers**
 - Output energy in the mJ range
 - Pulse repetition rate up to 1 kHz
 - Pulse duration < 10 ns
 - Flexible fiber-coupled pump
- **Platform adaptation towards**
 - Frequency-converted output (MIR, VIS, UV)
 - MIR laser gain media
 - Active Q-switching
- **Other possible assemblies**
 - Signal pick-up
 - Fiber coupling



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Project Topics

What we would like to work on – curious for your ideas

Aviation

- **On-board sensor for DAA**
- **Support for take-off and landing in demanding environment**
- **Turbulence detection**
- **Volcanic ash detection**

Environment

- **Drone-based air quality monitoring**
- **Support for sustainable agriculture**
- **Satellite-based earth observation**
 - Biomass mapping
 - Generate support information for passive instruments





Partners

What we are looking for

- **LiDAR System Designers / Integrators**
- **LiDAR Signal Processing Experts**

For avionics / drone-based applications

- **DAA System Design and Architecture**
- **DAA Testing**
- **Experience in Avionics certification and regulation**

For satellite-based applications

- **Instrument Design**
- **Platform Experts**





Our previous Expertise

Technology heritage

- **MERLIN laser technology**
 - Flux-free soldering
 - Unparalleled stability over temperature, shock, vibration
 - No outgassing – no LIC → long lifetime
- **TRL-6 laser components with space qualification for resonators, amplifiers, frequency converters, fiber couplers...**

Expertise of the founders:

- **12+ years of experience in space business**
- **15+ years of laser and optical engineering**
- **PMP-certified project management**



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