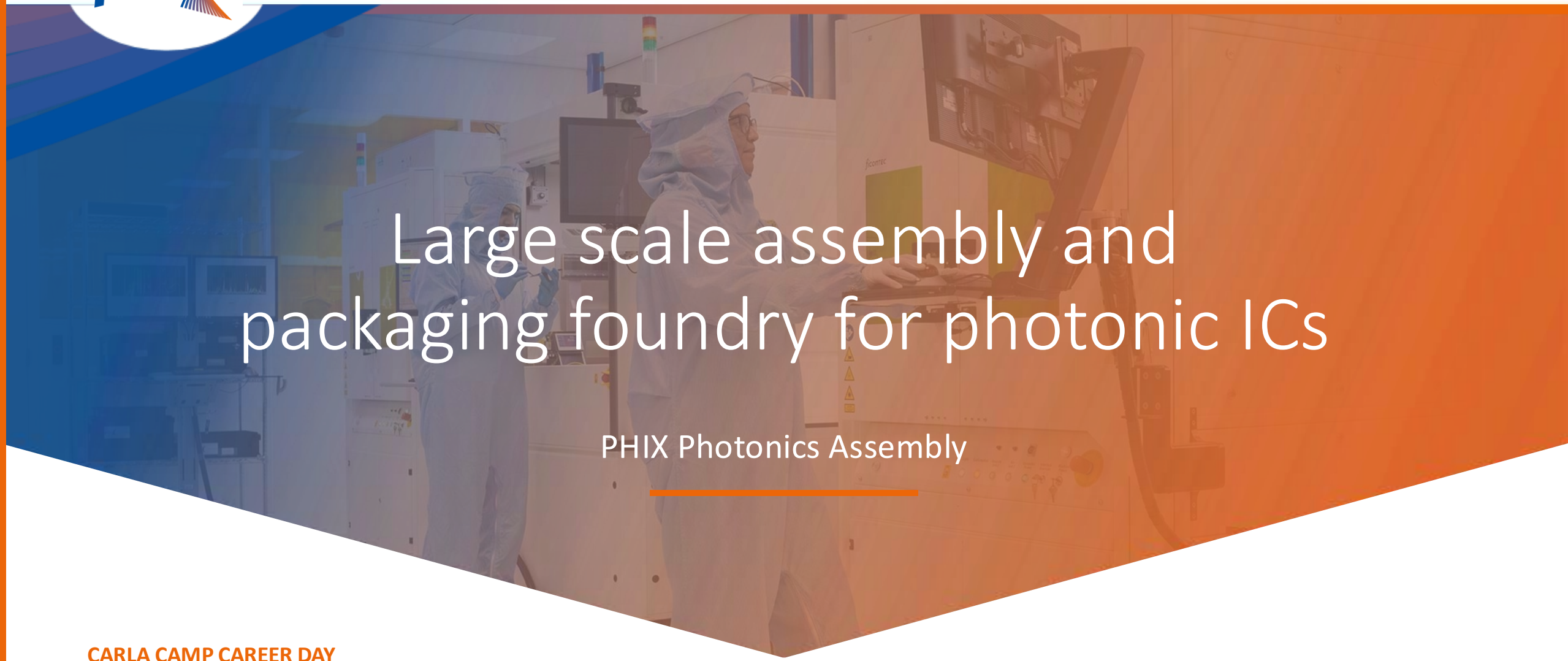
PHOTONICS ASSEMBLY



Large scale assembly and packaging foundry for photonic ICs

PHIX Photonics Assembly

CARLA CAMP CAREER DAY
2024

Contents

Who am I?

- Background
- My role at PHIX

What does PHIX do?

- A production company…
- …with massive dependence on engineers!

What is it like to work at PHIX?

- Meet one of my colleagues in engineering
- Company culture

Who am I?

Introduction: Gijs van Ouwerkerk

- Country of origin:

  The Netherlands

- Background:

  PhD in Mechanical Engineering
  (University of Twente, 2009)

  Professional photographer
  (freelance, 2008-present)

- Role:

  Marketing Manager

Introduction: Gijs van Ouwerkerk

Making PHIX visible

- Organizing participation in exhibitions
- Website content and development
- Social media posts
- Photography and videography
- Technical documentation
- Company flyers, banners, promotional goodies
- Education and talent acquisition
- …and much more

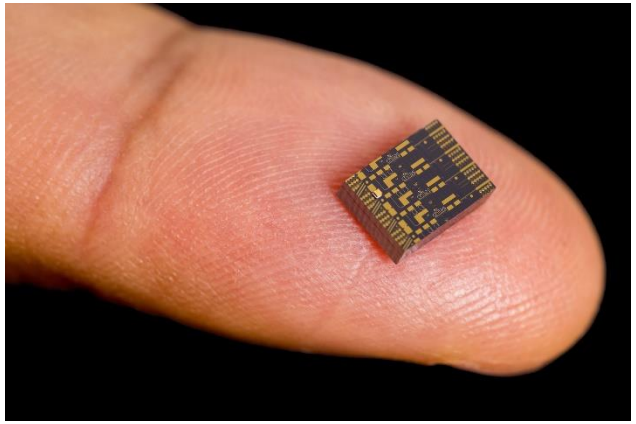
What does PHIX do?

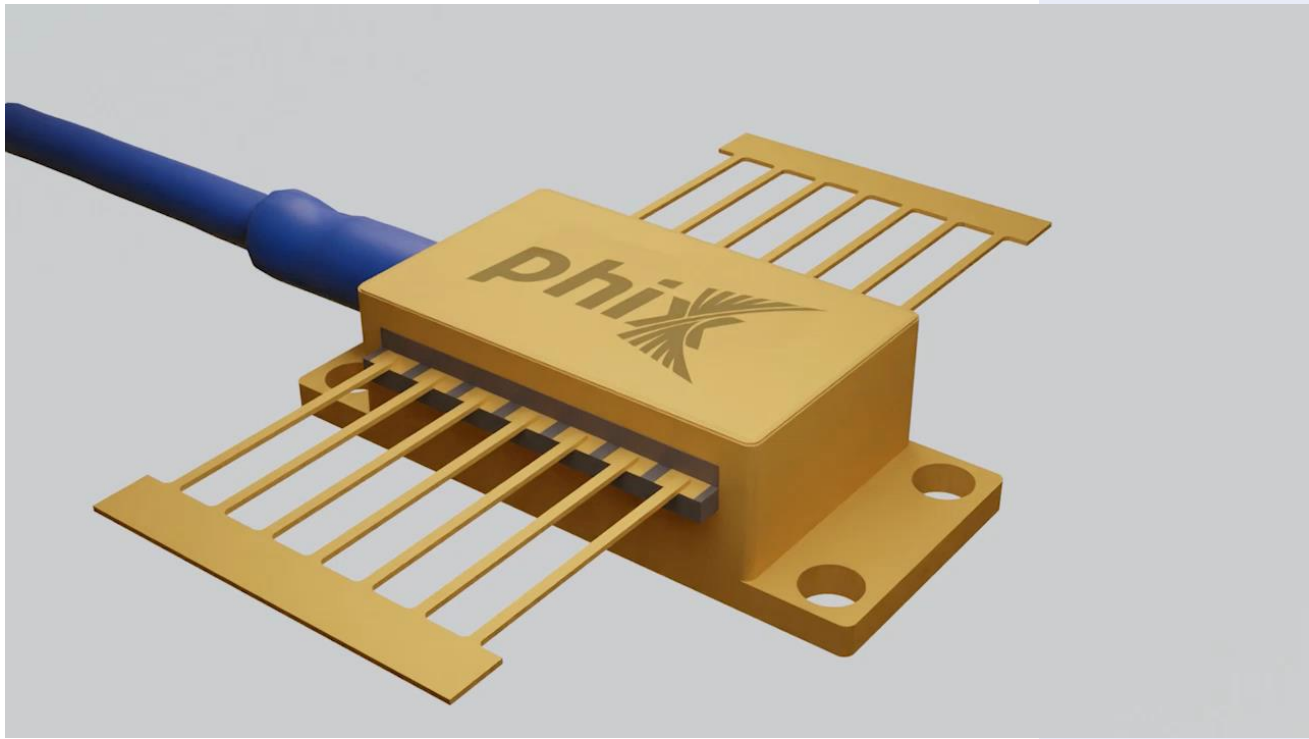
A PIC by itself is not a product!

It needs:

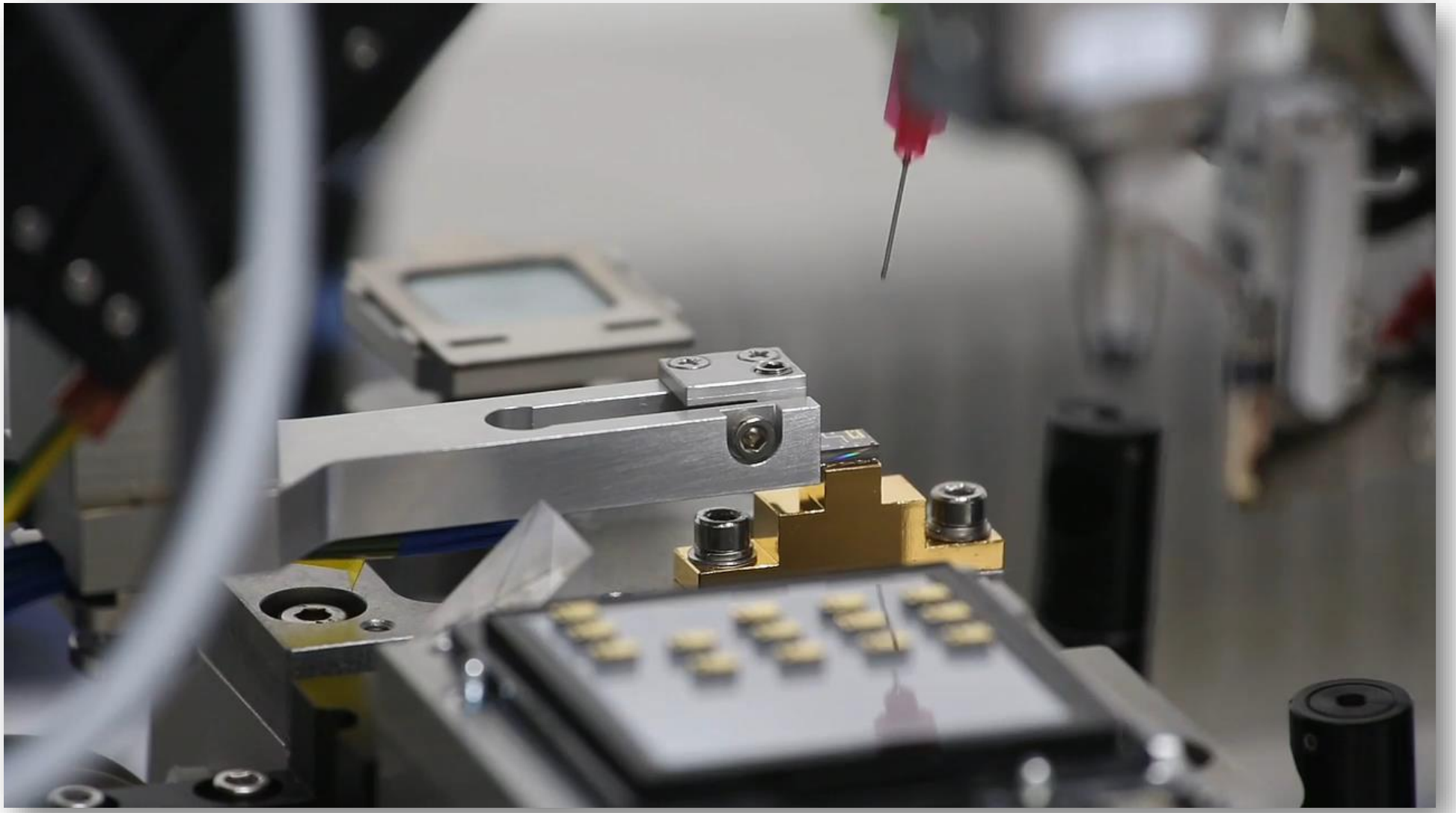
- Optical interconnection (fibers / free-space / other chips)
- Electrical interconnection (wire bonds / electronic ICs)
- Thermal management (active / passive)
- Mechanical support (robustness / sealing)

Photonics Packaging (What we do)





Example: automated edge coupling



Who we are

PHIX is a world leading foundry for packaging and assembly of components and modules based on photonic chips, in scalable production volumes.

- Spun off from LioniX, but now independent and serving customers big and small worldwide
- One of the fastest growing production companies in The Netherlands
- 55 people, with 18 nationalities

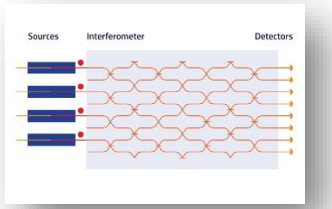
Where we’re located

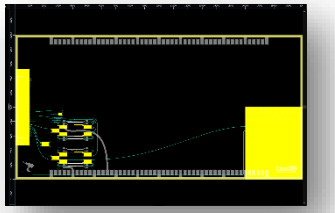
New 1800 m^2 building in Enschede

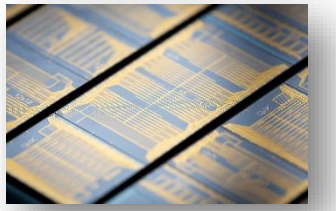
- 600 m^2 cleanroom production facilities, up to ISO 5 specification
- Spacious offices, with room for cooperation and quietness
- Great coffee!

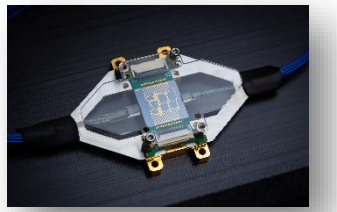
Where we’re located

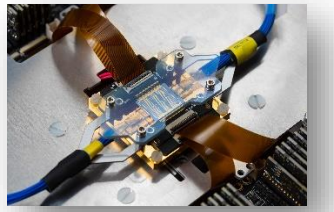
Our position in the value chain











Idea

PIC Design + Product Design

Manufacturing
- PIC
- Housing
- Electronics
- Fibers

Packaging Assembly Test

OEM customers

End application

Product development

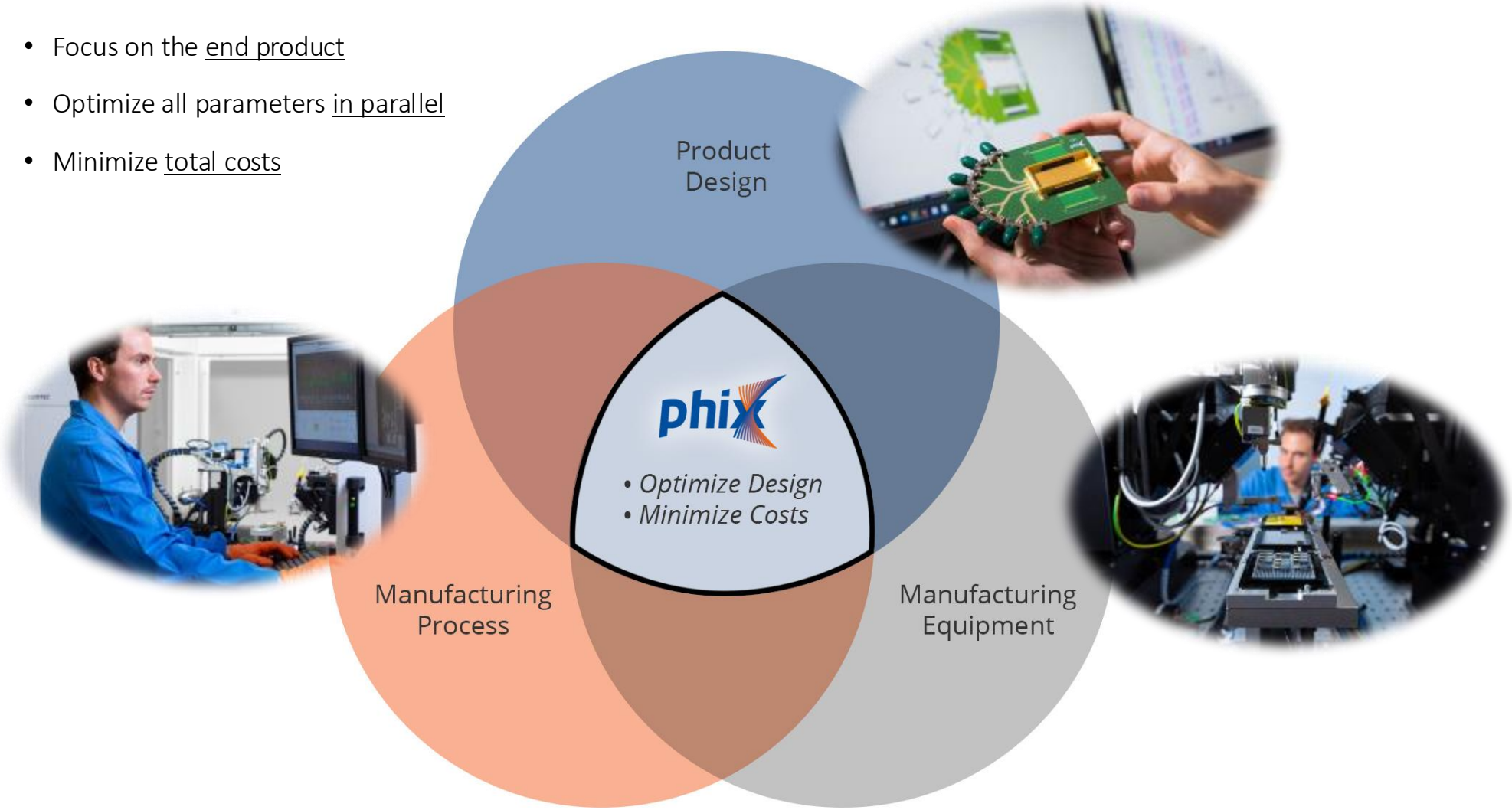
Process Development

Equipment Development

Images courtesy of QuiX Quantum

PHIX Approach to Packaging & Scale-up

- Focus on the end product
- Optimize all parameters in parallel
- Minimize total costs



Three types of customers

Prototype packages

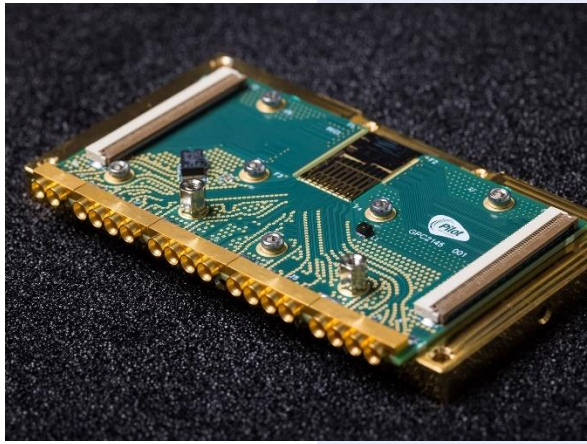
- Chip characterization and device demonstrators
- 1-100 units

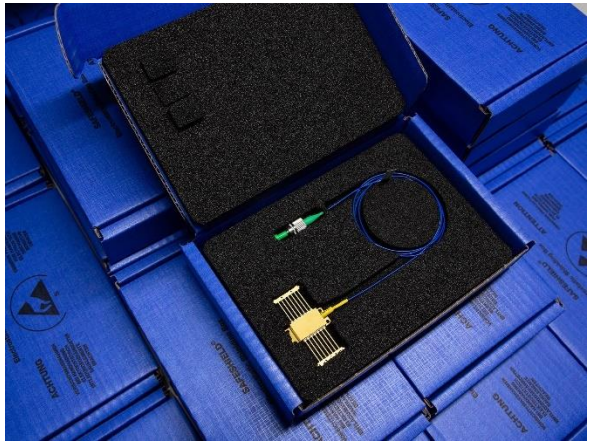
Volume packages

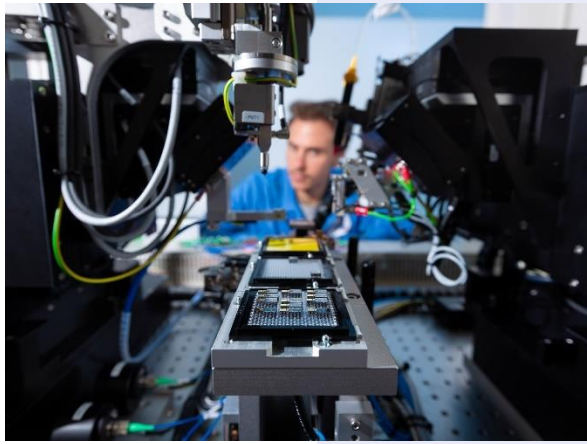
- Optimized for manufacturability, cost, and reliability
- 100+ units

Contract manufacturing

- Providing outsourced or second-sourced component production







Applications of PICs packaged by PHIX

- Self-driving vehicles (LiDAR and IMU units)
- Photonic quantum computing
- Point-of-care medical devices
- Next generation optical transceivers
- Measurement and sensing (metrology)

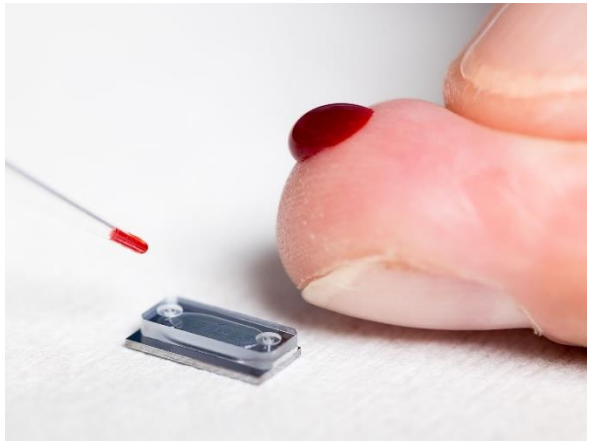


Image courtesy of Surfix Diagnostics

Research projects

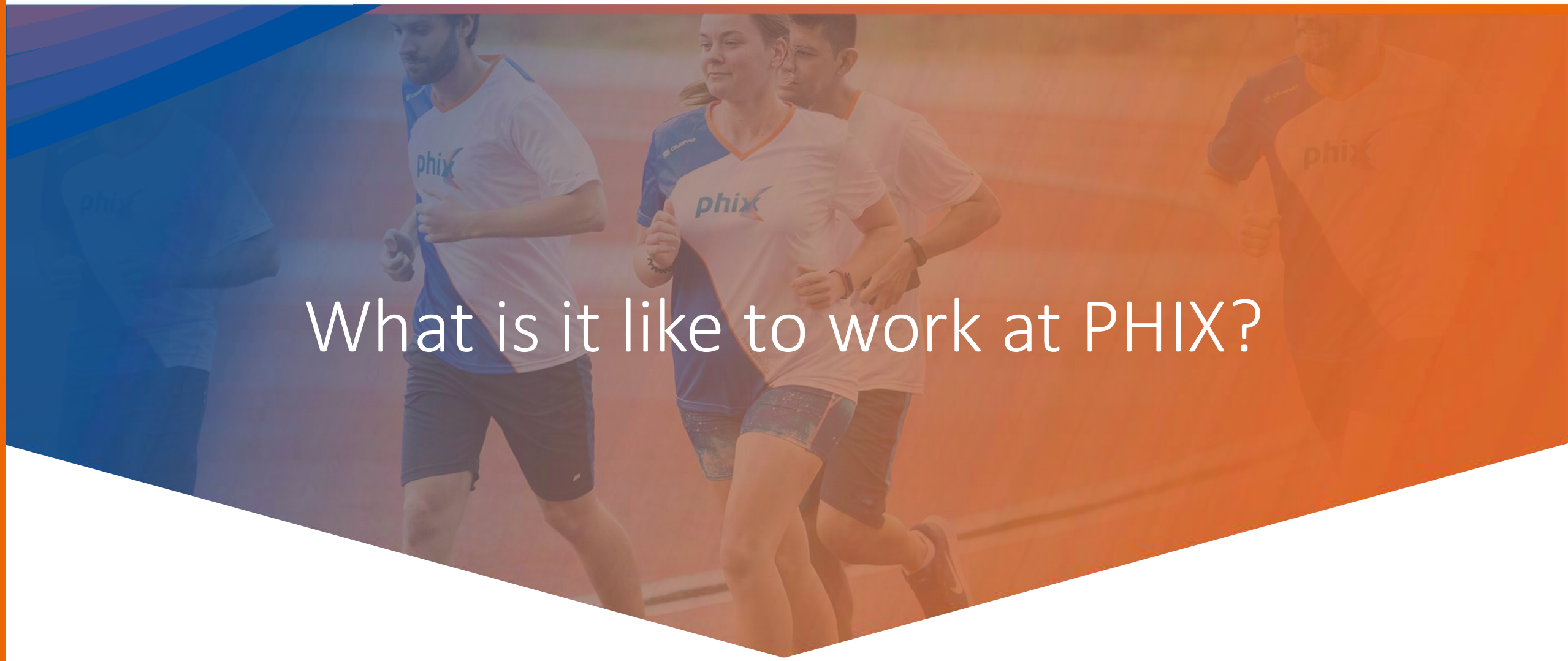
Working with (inter)national partners to innovate

- Projects of 1-4 years
- Involving (inter)national companies, research institutes and universities
- Strengthening the industry by forging new partnerships

Tackle the packaging challenges of tomorrow

For example:

- Build a drone-mounted wireless photonic transceiver
- Package a wafer-sized photonic chip with 3000+ electrical connections



What is it like to work at PHIX?

Meet my colleague: Anne Leenstra

- Country of origin:

  The Netherlands

- Background:

  MSc in Nanotechnology and BSc in Advanced Technology (University of Twente)

- Role:

  Process automation engineer

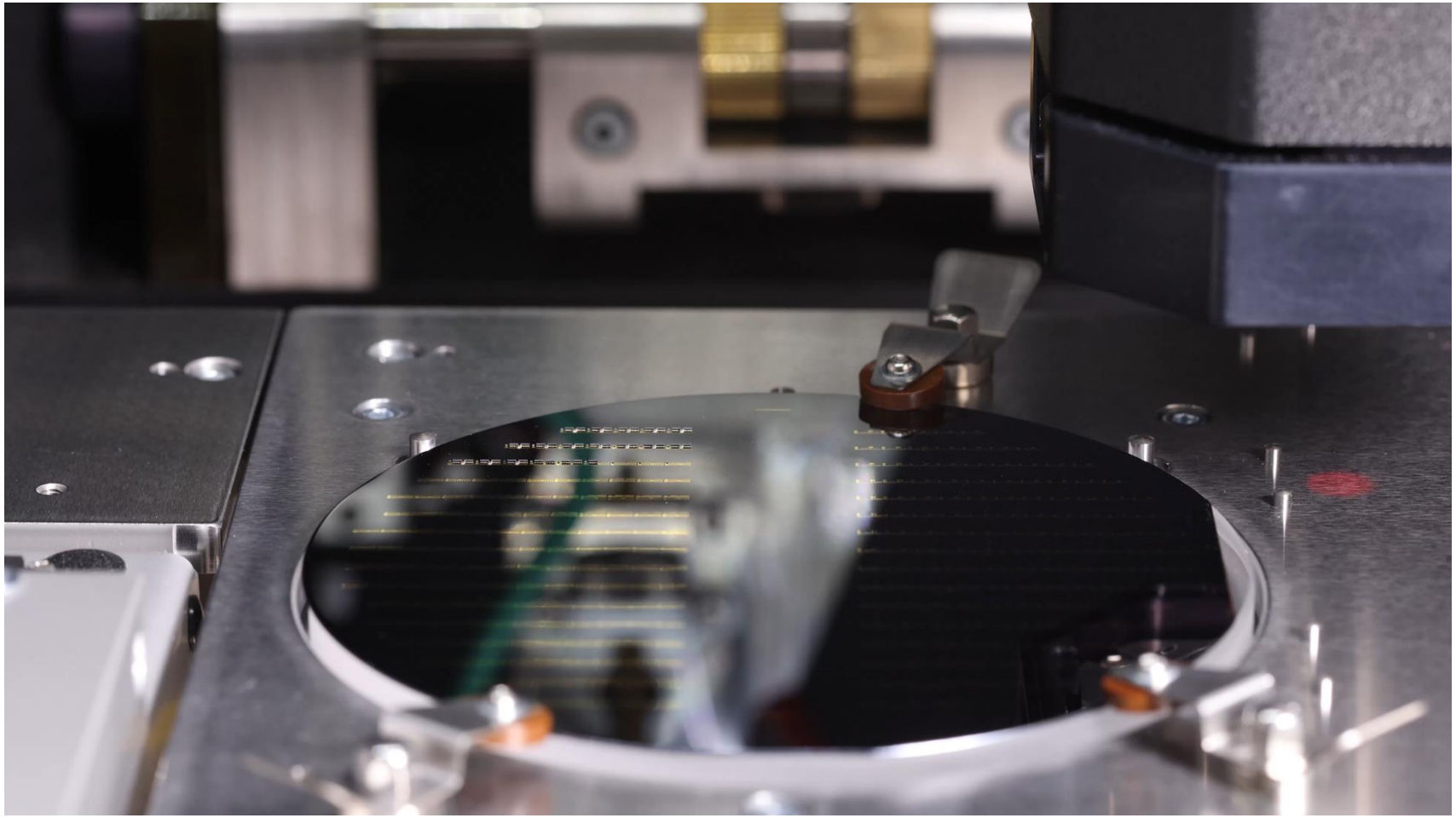
Meet my colleague: Anne Leenstra

Anne's job

- Developing and optimizing automated assembly processes
- Purchasing, installing and modifying equipment
- Process improvement in terms of precision, speed, and reliability
- Training operators

Meet my colleague: Anne Leenstra

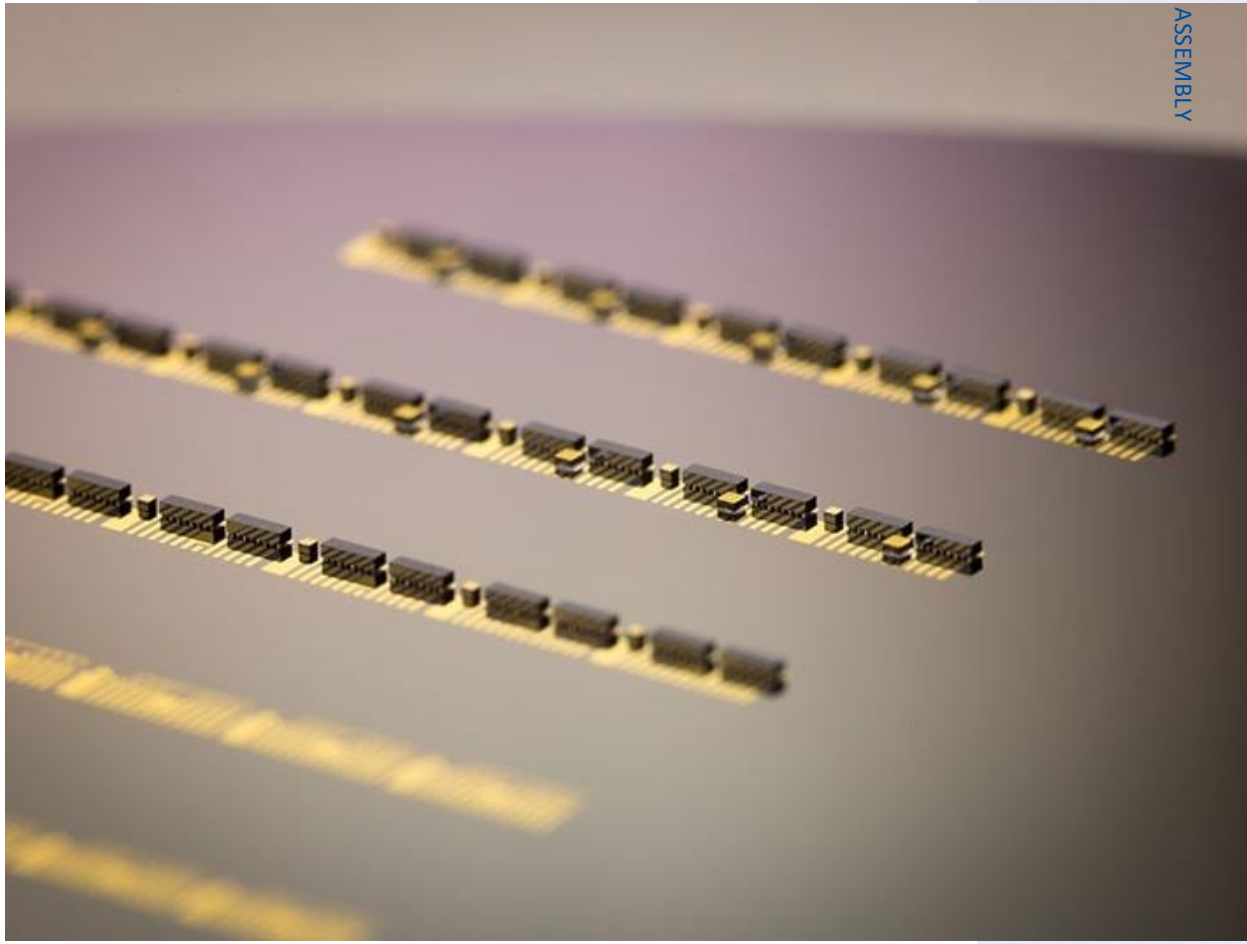
Example: wafer level chip bonding



Meet my colleague: Anne Leenstra

Solder reflow by laser heating

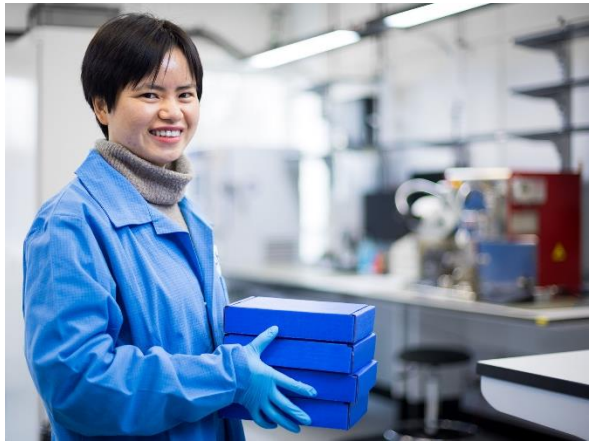
- Laser heating module developed and installed in collaboration with machine manufacturer Finetech
- Local heating enables wafer-level assembly



An inspiring workplace

A great place to work

- Be at the heart of the integrated photonics revolution
- Learn something new every day
- Multidisciplinary collaboration with colleagues from 18 different nationalities
- Combine desk work with hands-on assembly
- Flat hierarchy with much room to take responsibility and develop new skills
- Great team spirit: working together to make a scale-up succeed



Open positions: phix.com/careers

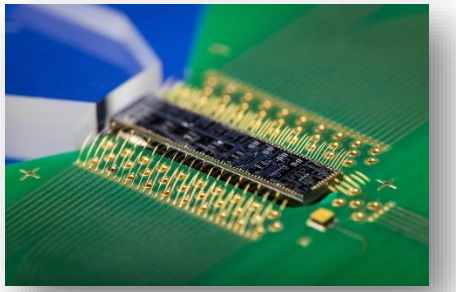
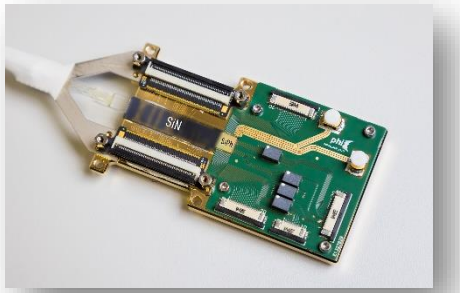
Tip: send an open application!

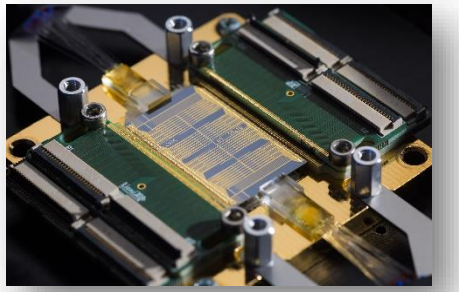
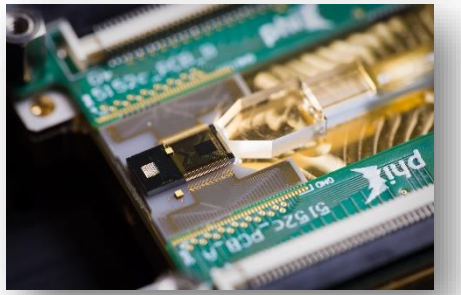
Find out more about us

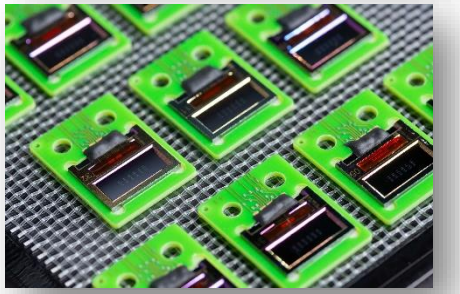
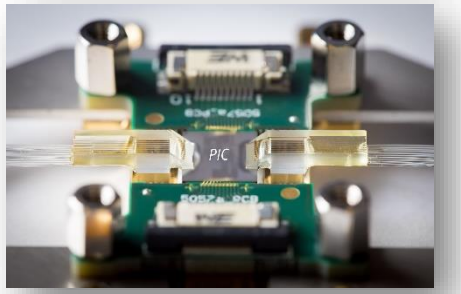
Visit our website for more product details, news, and more!

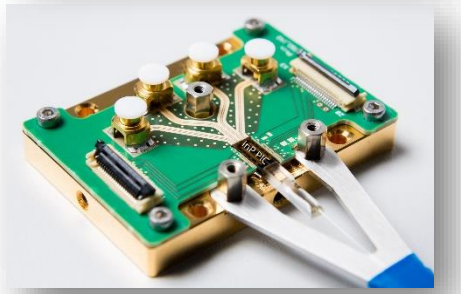
Questions?

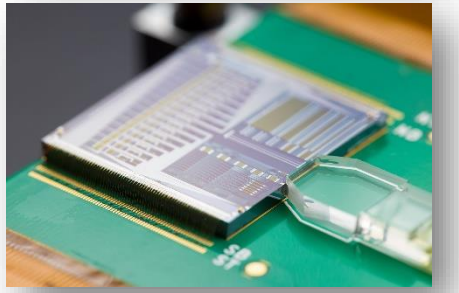
Product examples

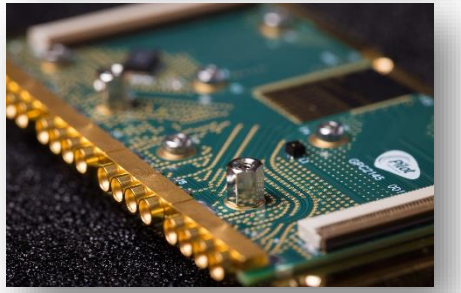



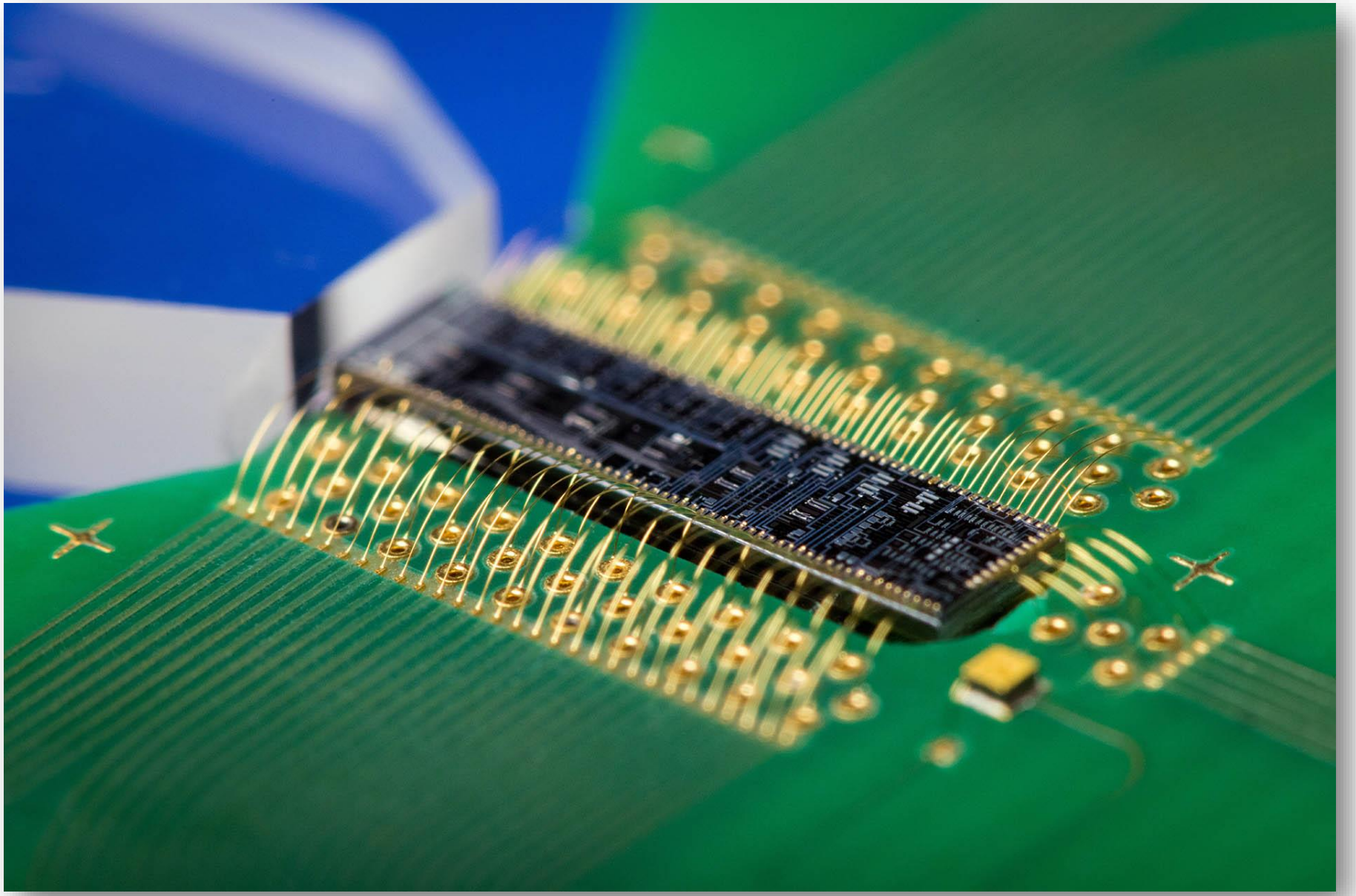



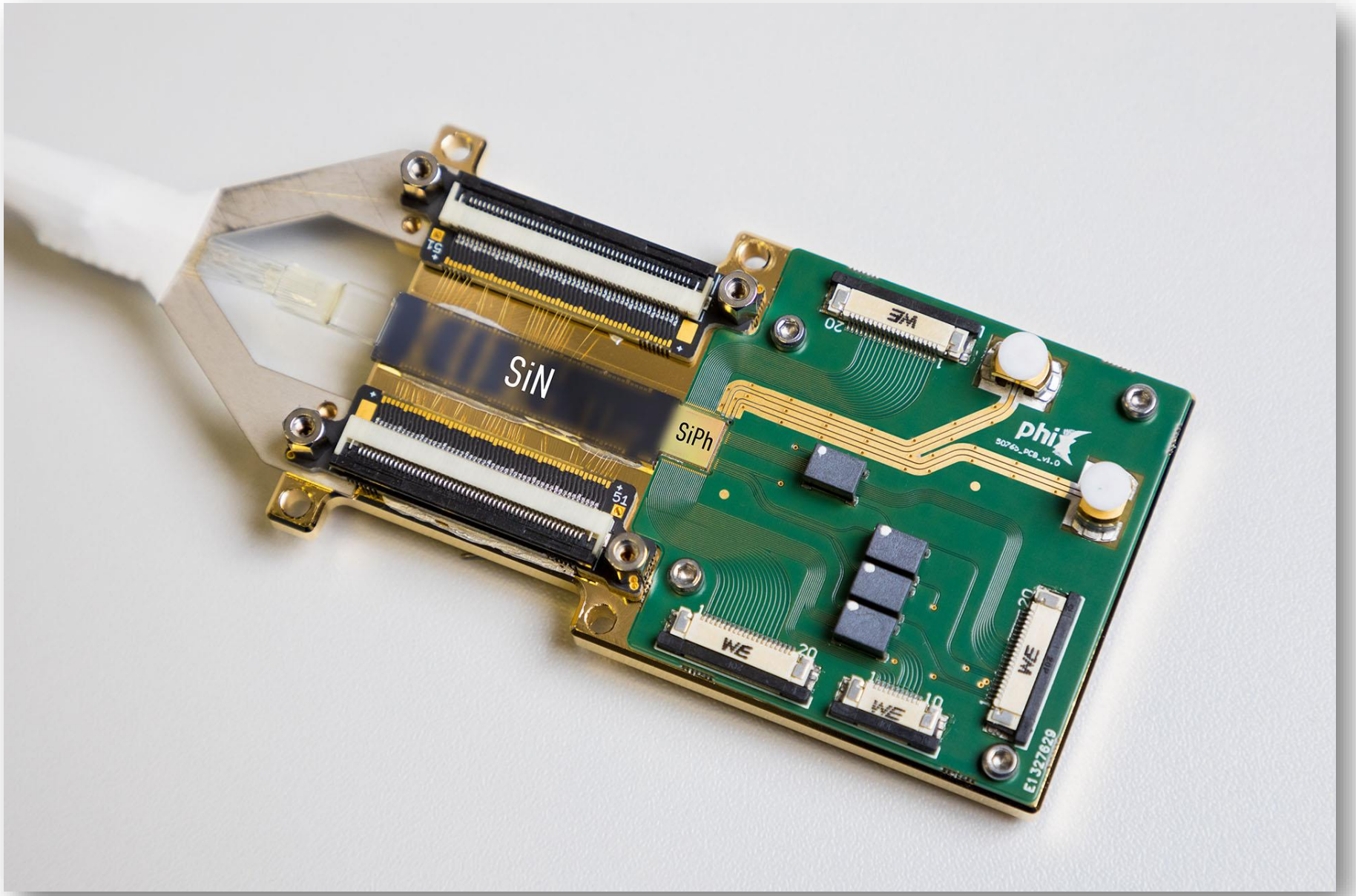









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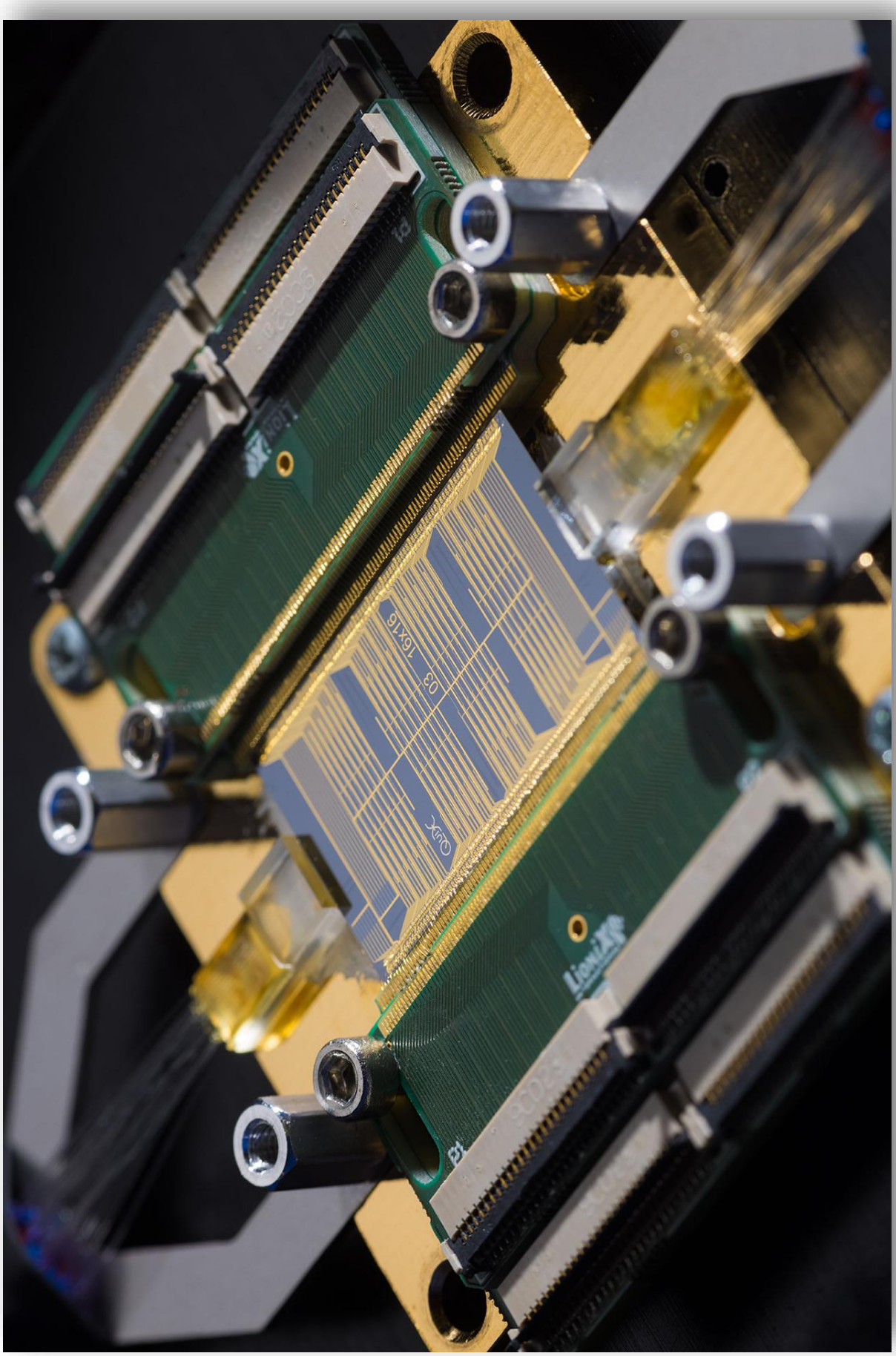
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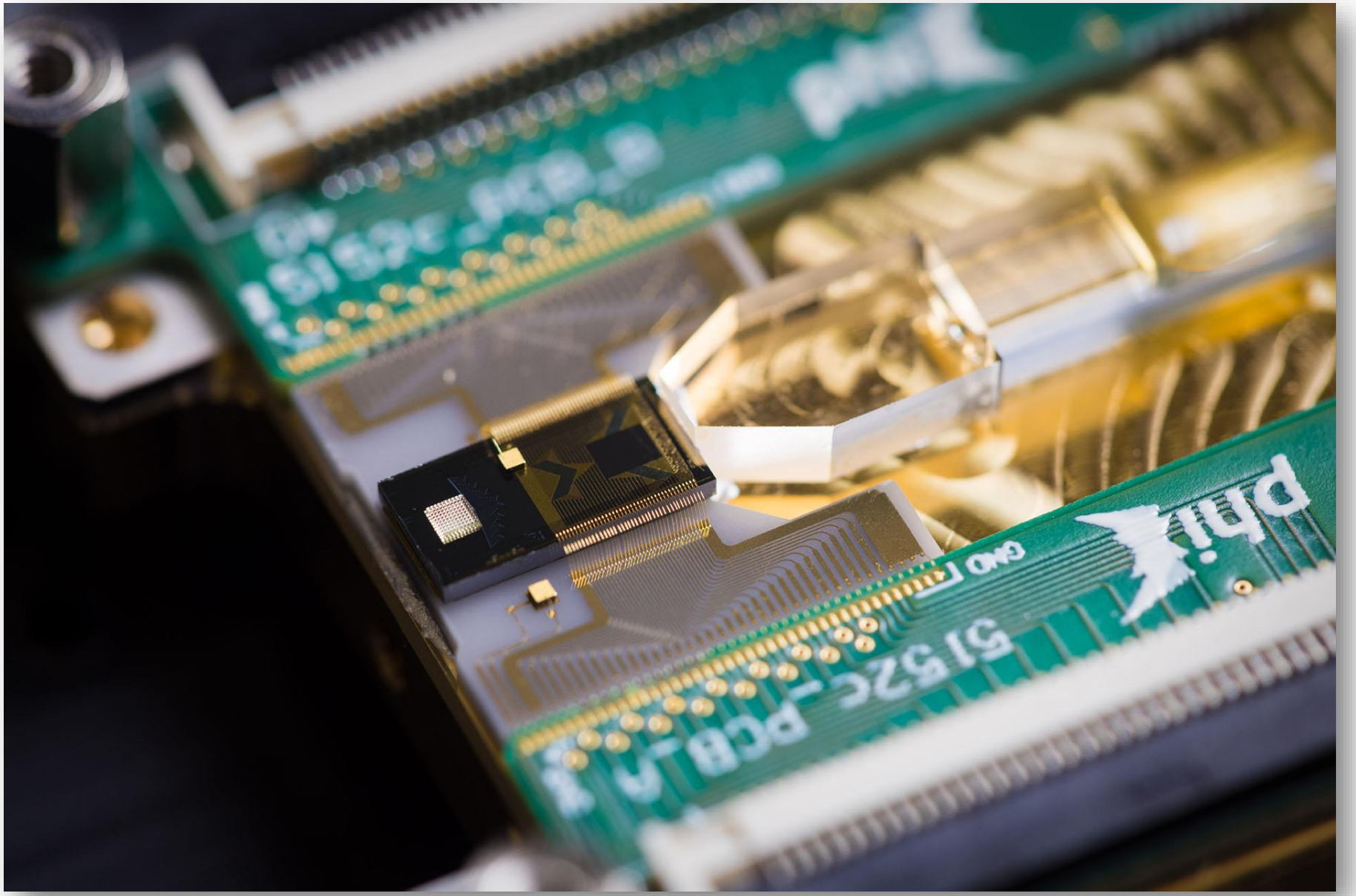
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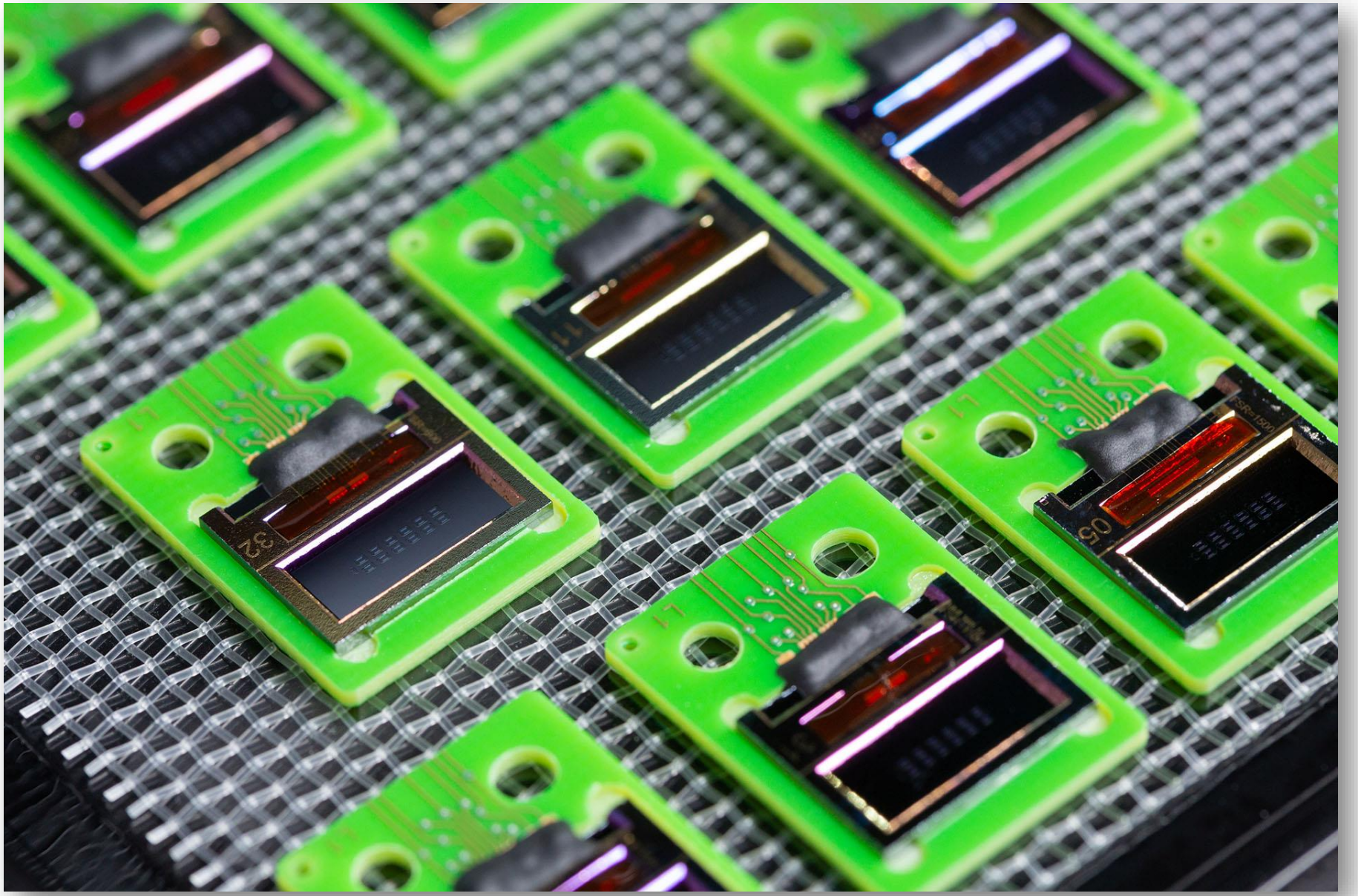

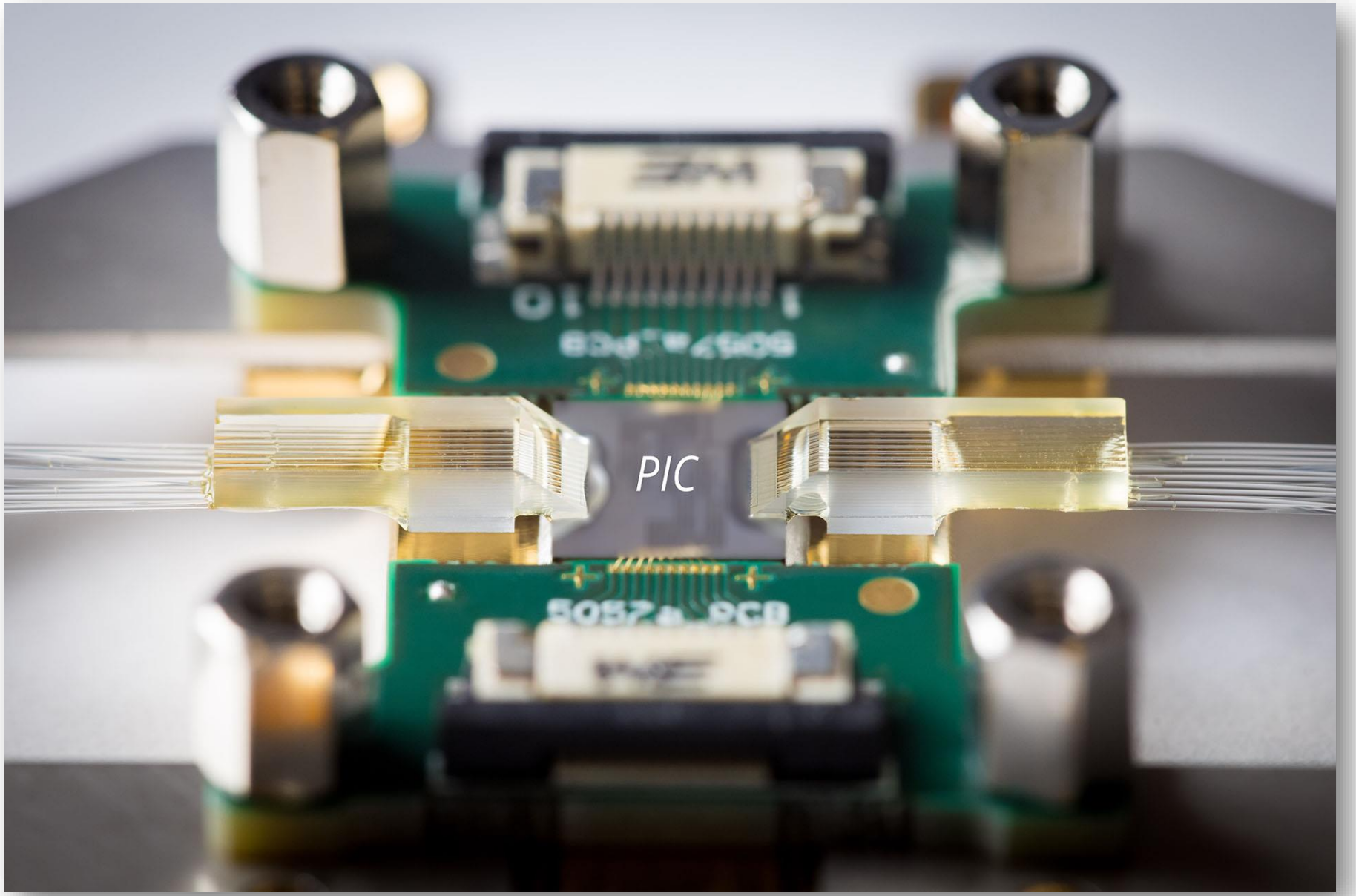
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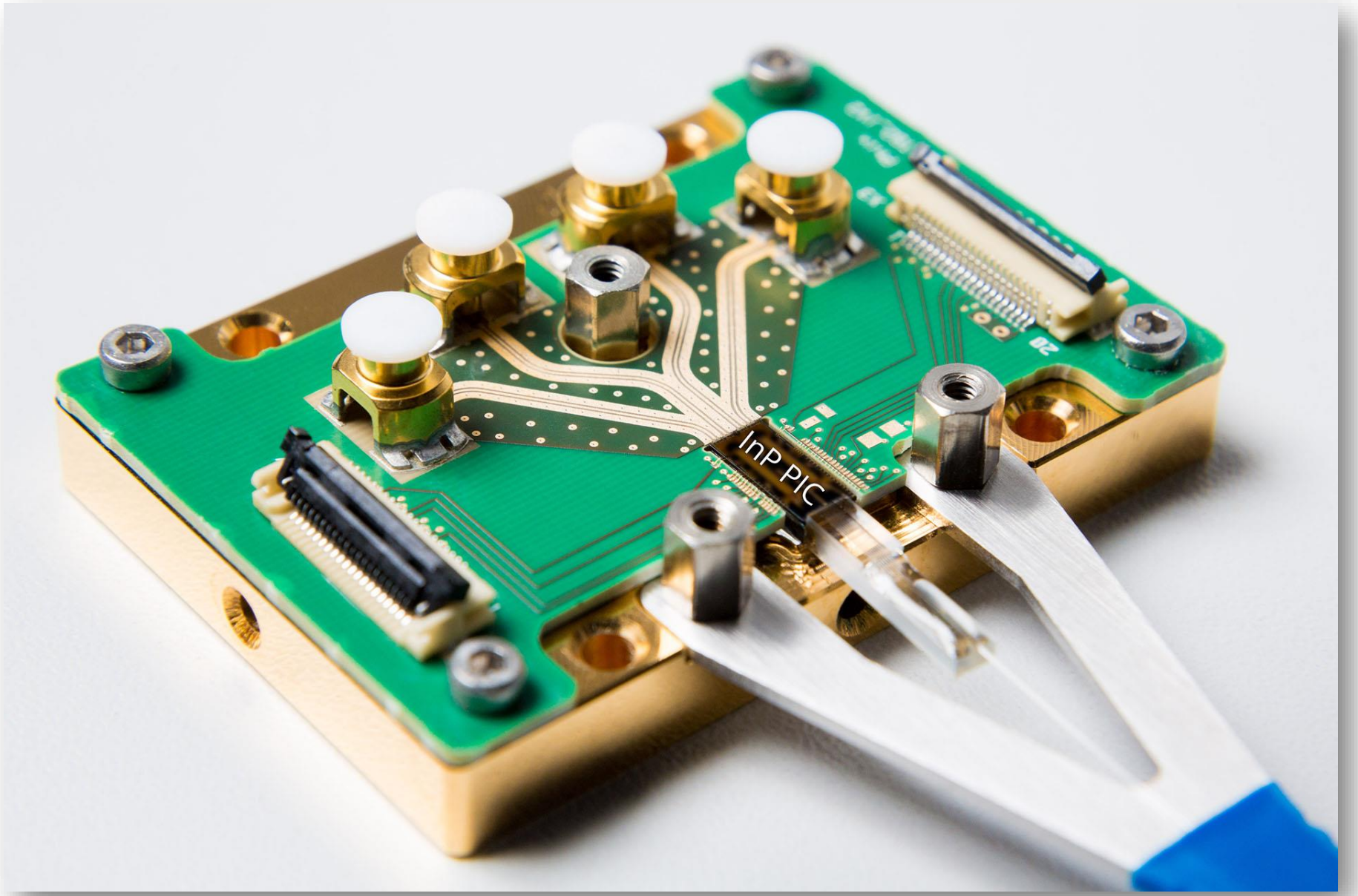
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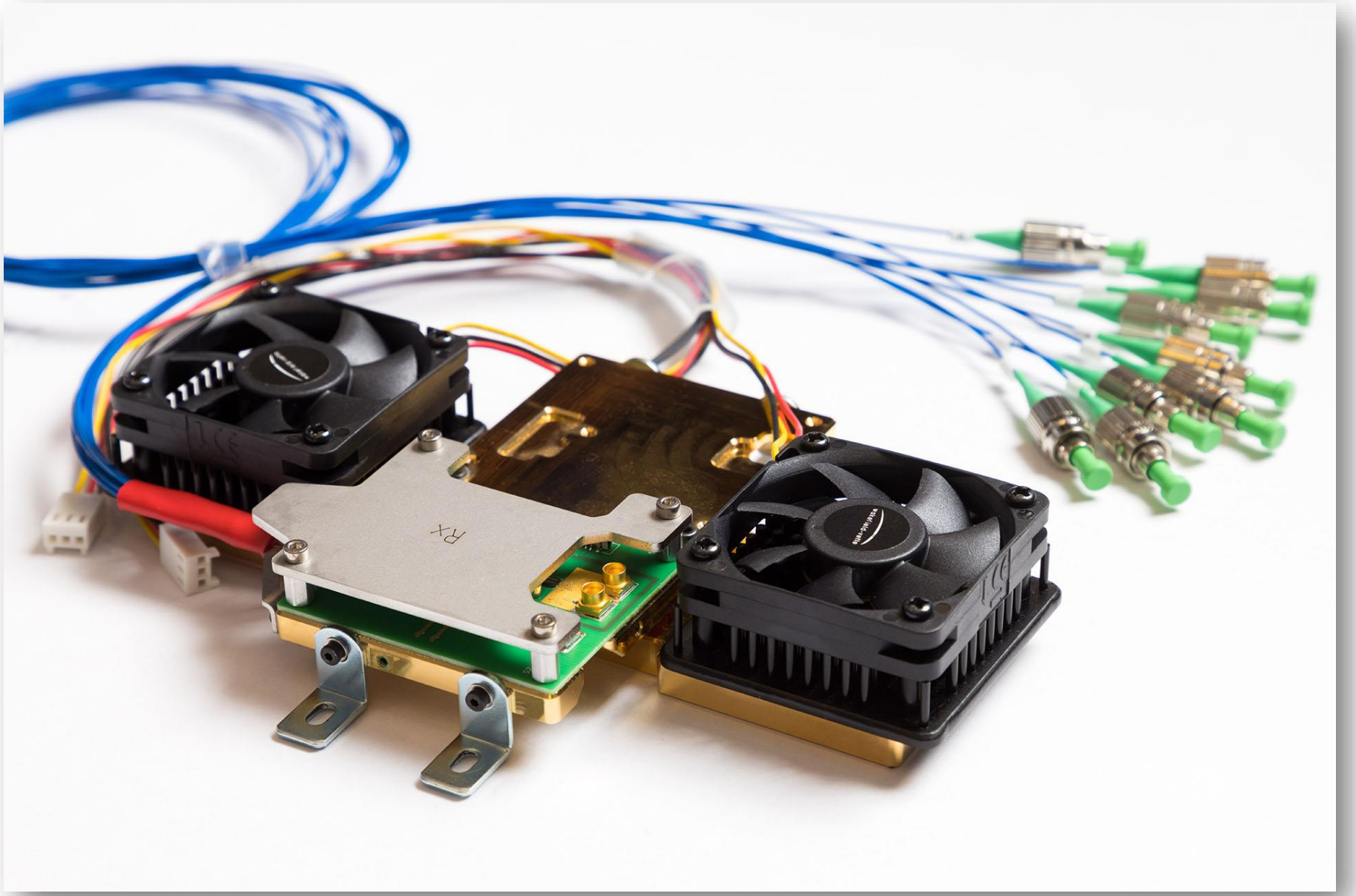
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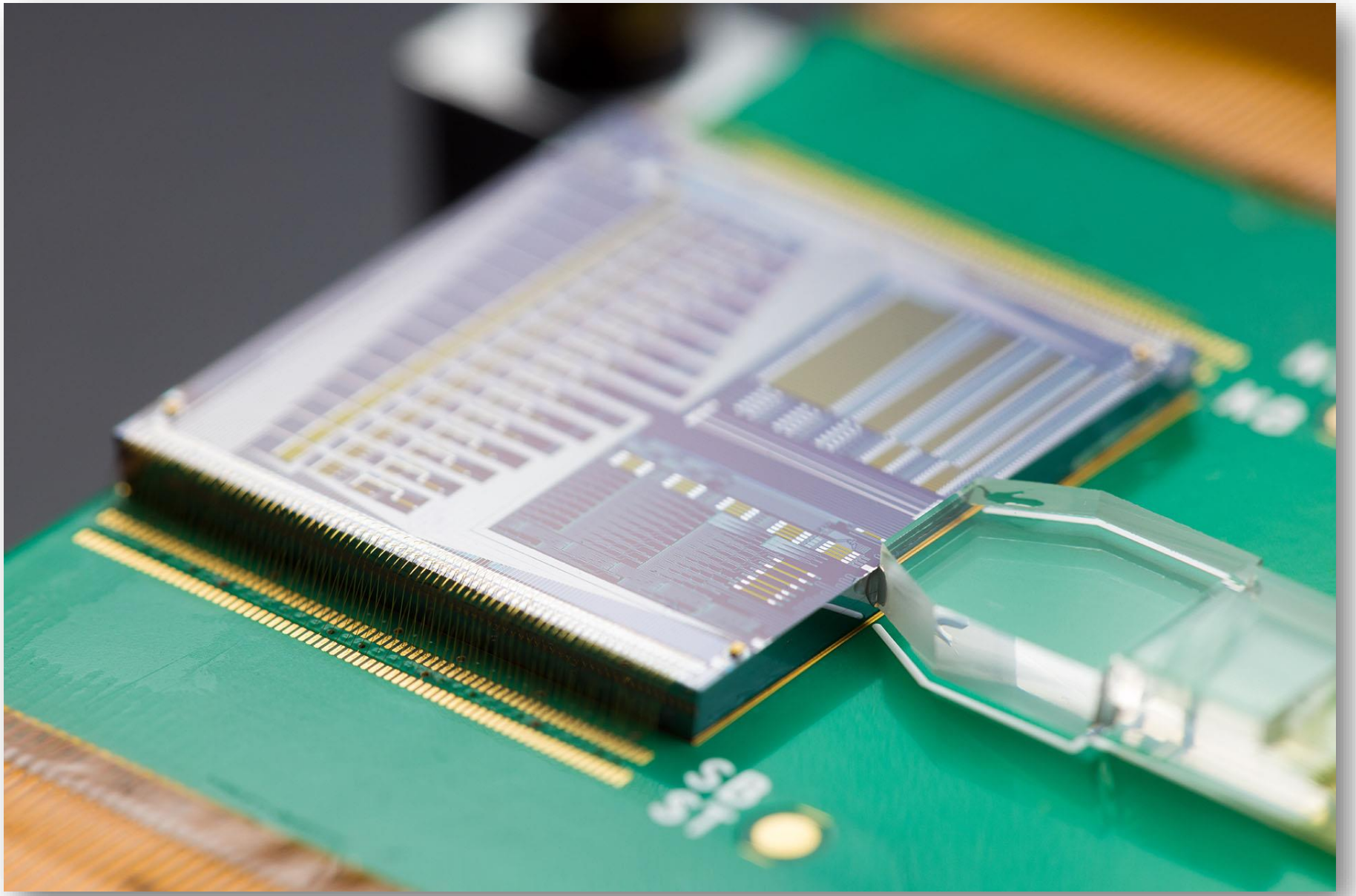

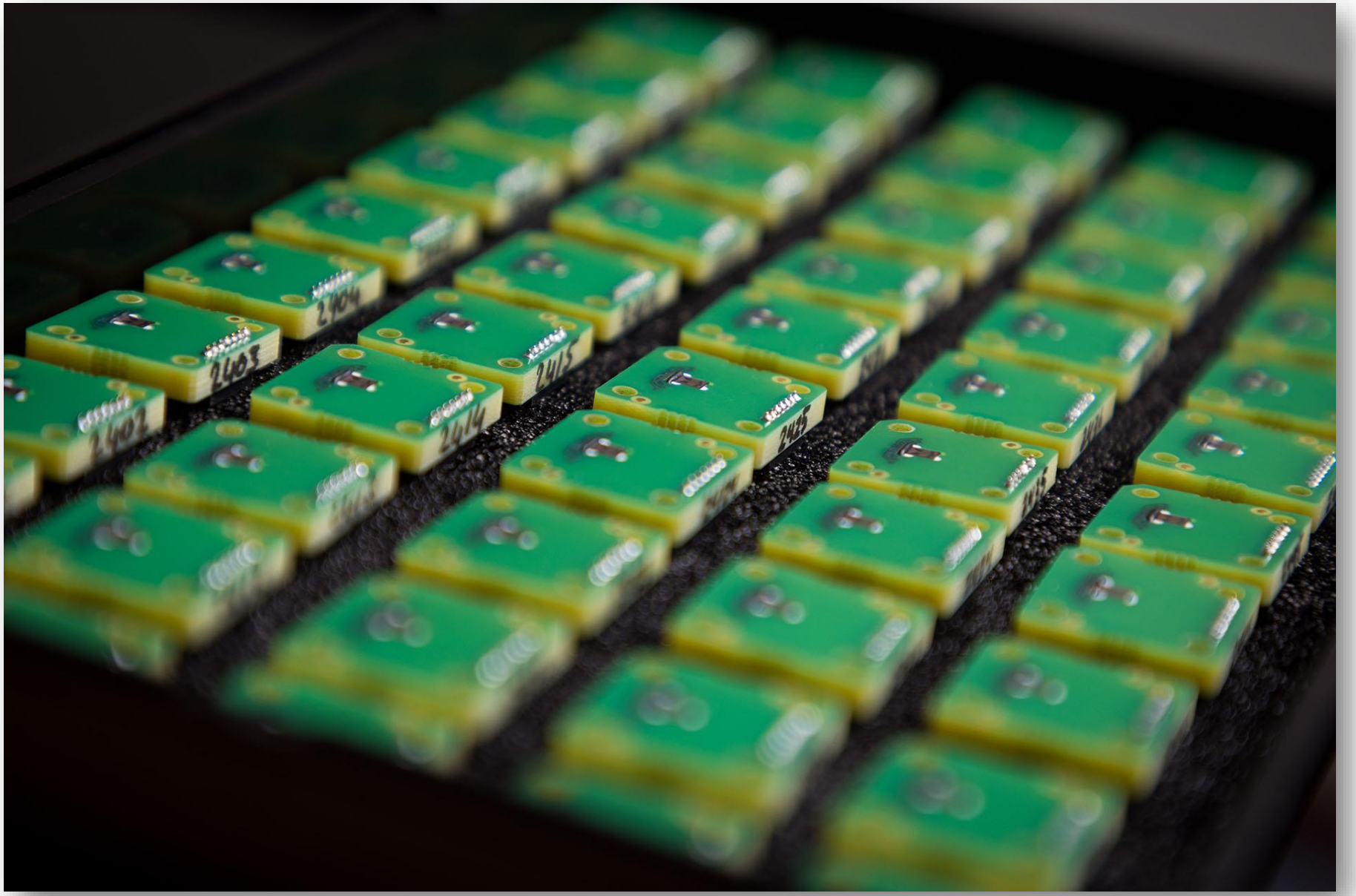
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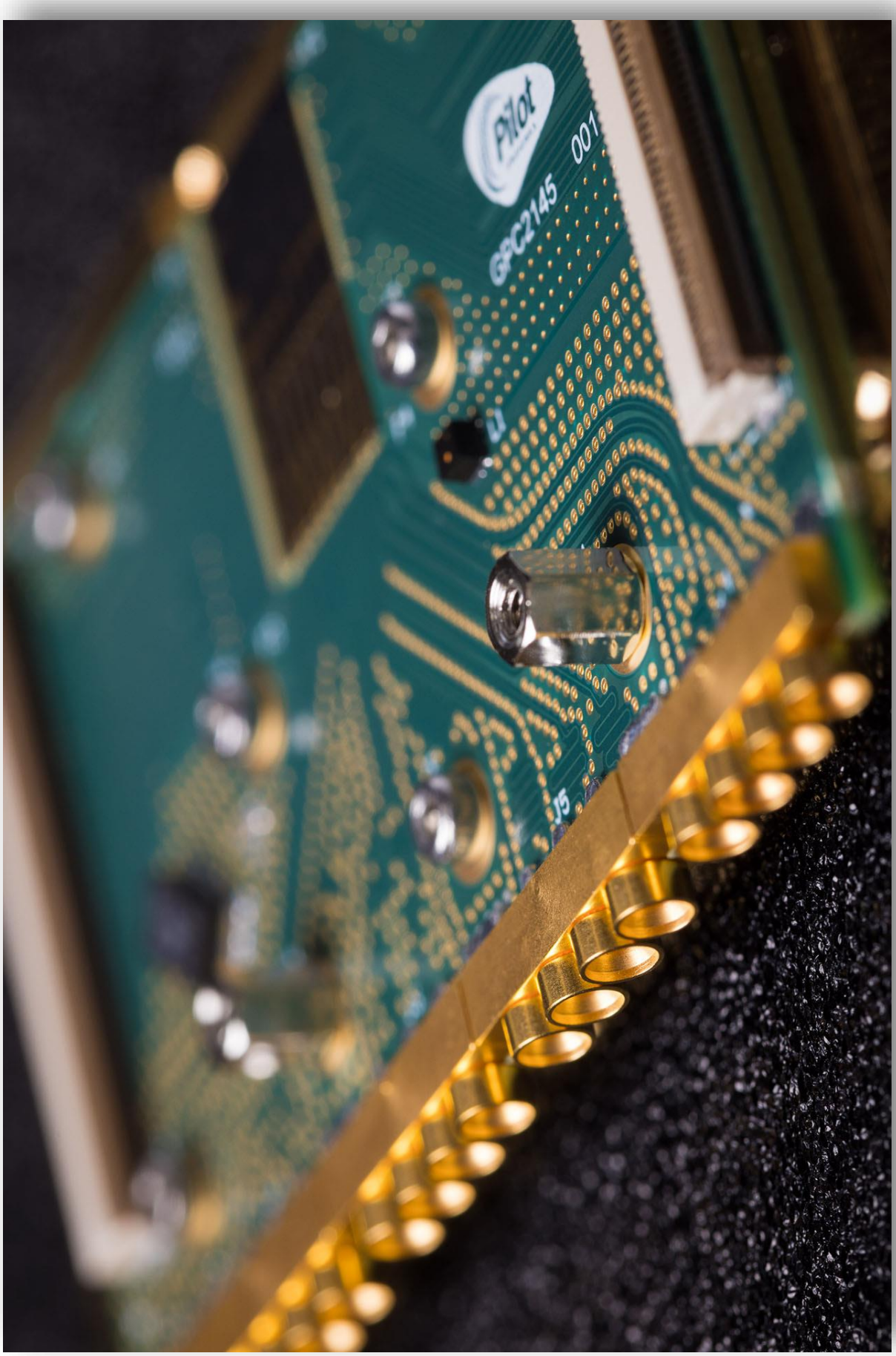
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