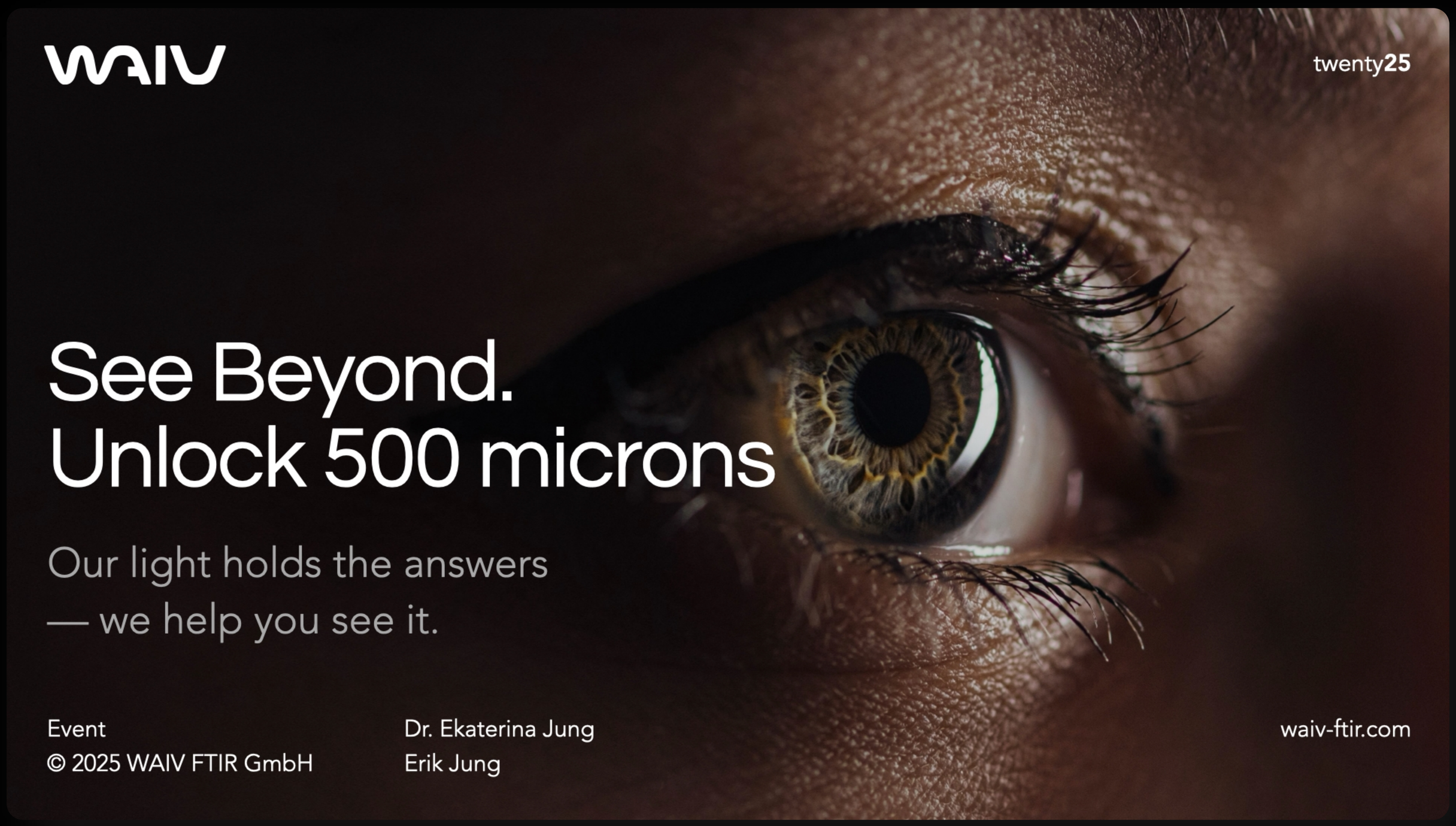

We are WAIV FTIR GmbH and we developed the most compact and most broadband FTIR Spectrometer on the market. Our goal is to help you see the answers our light holds for you.

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That’s FTIR

Current broadband Fourier-transform infrared spectrometers (FTIR) can be used in a wide variety of ways — from environmental research and industry to applications in space for the analysis of light and materials.

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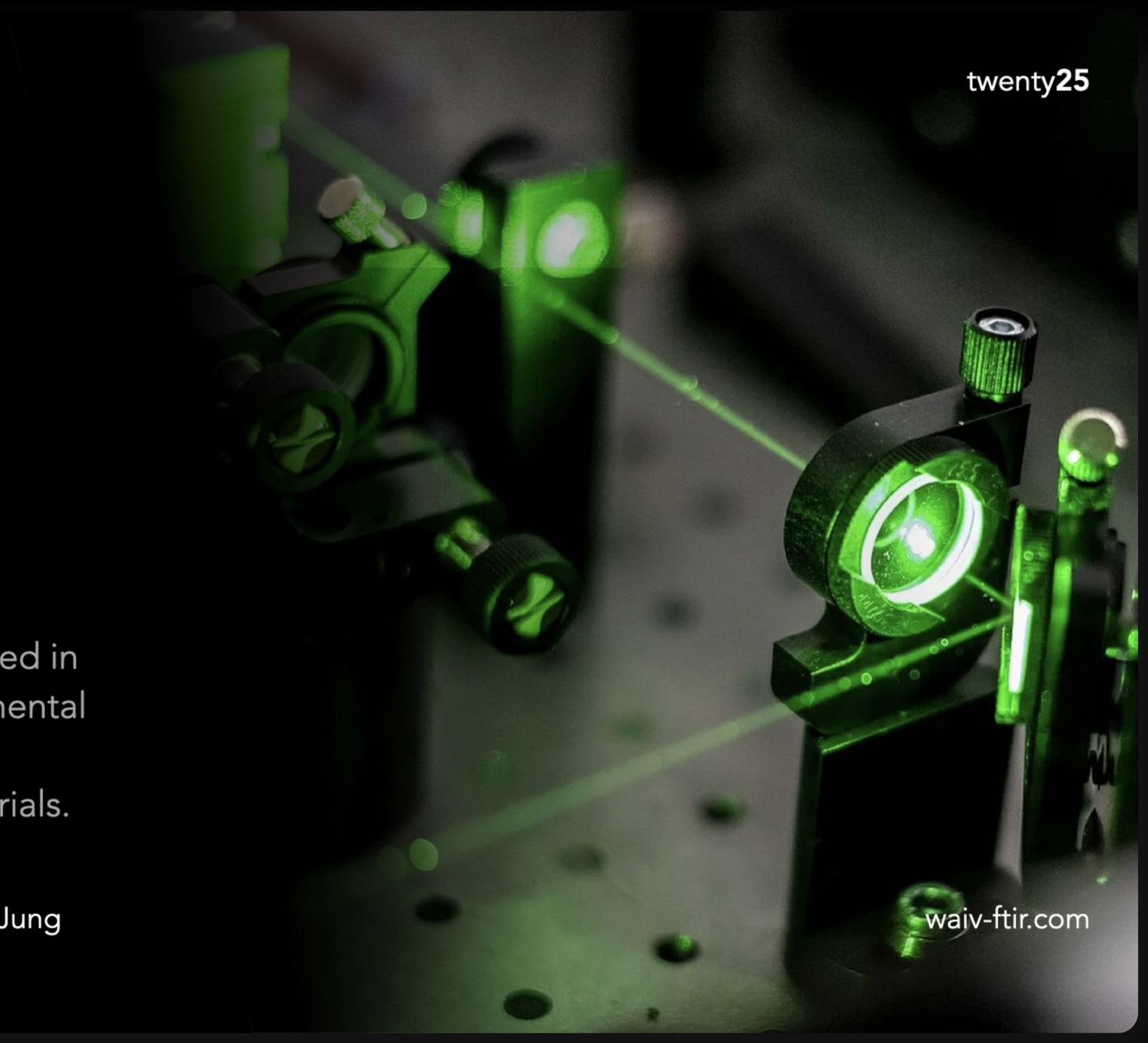
Erik Jung



Before we get talking about us, we would like to explain what FTIR Spectroscopy actually is. It’s a technology that’s around since the early 19th century and hasn’t changed much. It uses a Michelson Interferometer to disassemble light into different wavelengths „or colors“. Based on those colors we can tell different things about the light. For example what Material emitted the light or from what material it bounced off and what structural properties those materials have. This technology is already widely used like in Laserscience, RnD, environmental monitoring, gemology, and quality Control but it has major drawbacks. This sounds awesome, but why are we trying to improve this technology if it already looks that refined and established already?

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Meet Dr. Anita

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That’s where we’d like you to meet Dr. Anita.
She’s a microbiologist who recently developed a new protein to support the fight against COVID-19. Her first batch amounts to just 10 µg, and it now needs to be analyzed for purity and molecular properties.

There’s only one problem: her lab doesn’t have an FTIR spectrometer.

When she starts researching, every suitable device she finds is far too large for her compact lab—and, as it often goes in science, big devices come with big price tags.

So she looks for smaller, more affordable alternatives, but soon realizes that most of them offer only a limited spectral range. To get the full picture, she’d need to buy multiple instruments and learn how to use each of them.

That’s when she faces the next challenge: these devices are complex to operate and require expert knowledge. Even the data processing is time-consuming and difficult to manage.

After some frustration, she discovers that external labs can perform FTIR measurements for her. Excited, she gives them a call—only to learn that her sample is 100 × too small to provide usable data, as half of the infrared beam is lost in the interferometer.

Determined to move forward, Dr. Anita rolls up her sleeves and produces 100 more batches of her protein to overcome this obstacle.

And it’s not just Dr. Anita who’s struggling.
Every interview we conducted revealed the same pain points, regardless of the industry. It always comes down to the same challenges:
the time it takes to measure a sample,
the size and price of the device,
the complexity of use,
and–perhaps the biggest limitation–the required sample concentration.

A device that could overcome these barriers would truly be a game changer.

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This is Aura – our answer to all those challenges.
Aura is the world’s first compact, broadband FTIR spectrometer covering 5–500 µm with unmatched stability, simplicity, and sensitivity. Our innovation breaks the boundaries of conventional FTIR spectrometers – not only for Free-Electron Laser applications, but also for everyday laboratory work.

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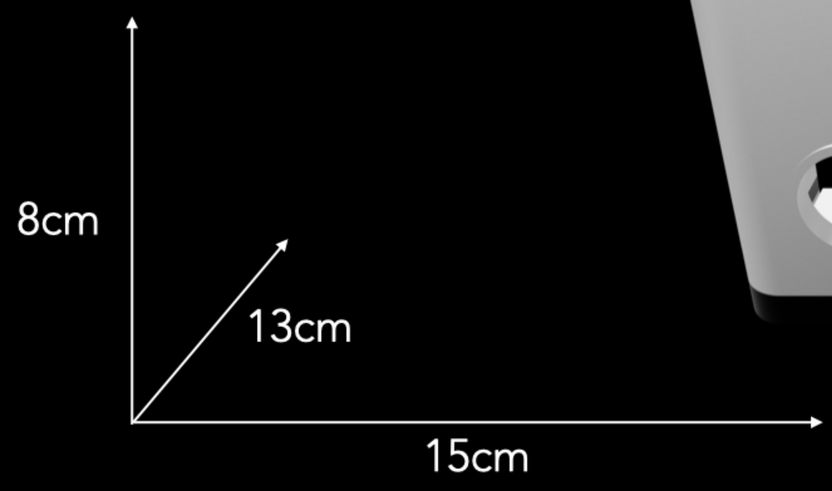

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Our unique alignment allows for a small form factor while keeping signal and measurement quality. Every bit of information that enters our system will be converted in spectra and the corresponding measurement.

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A spectral range covering the THz-Gap starting from 5µm up to 500µm.

Currently testing 2µm - 5µm.
Math is looking good!

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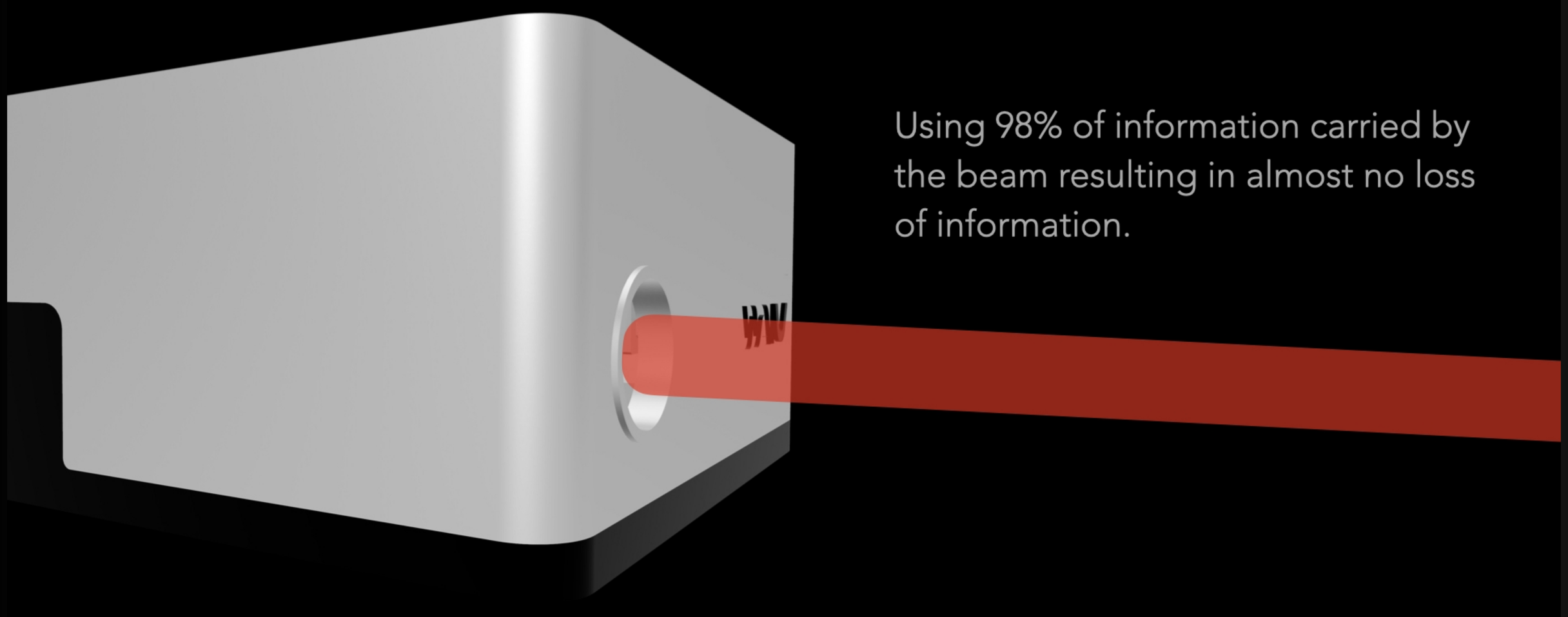
Laboratory tests have already confirmed our exceptionally broad spectral range – spanning from 5 µm all the way up to 500 µm – breaking conventional limits and enabling effortless measurements even within the challenging THz gap. This means there are virtually no materials or infrared wavelengths beyond our device's reach. We are currently extending our validation further by demonstrating accurate performance down to 2 µm, pushing the boundaries of what FTIR technology can achieve.



As mentioned before, our system can utilize nearly all incoming light entering through its iris. This is achieved by moving away from the traditional Michelson interferometer design. Instead, our optical layout relies entirely on reflective components, eliminating the need for a transmissive beamsplitter. Consequently, all the light – and the information it carries – is directed toward the detector rather than being partially lost. Furthermore, with no transmissive elements in the optical path, the only absorption present in the non-vacuum version of our device is that of the ambient air. In addition, the relatively short optical path provides unmatched mechanical and thermal stability, ensuring consistent and reliable measurements over time.

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But not all innovation is hidden inside the box. We also invested significant effort in understanding what users truly need. The result is a fully Plug & Play device — simply connect it to power and your computer, and it’s ready to use. The software is hosted directly on the device and accessed through a web-based interface, offering an intuitive and user-friendly experience. It enables quick and effortless operation not only for scientists but for anyone who requires reliable infrared measurements.

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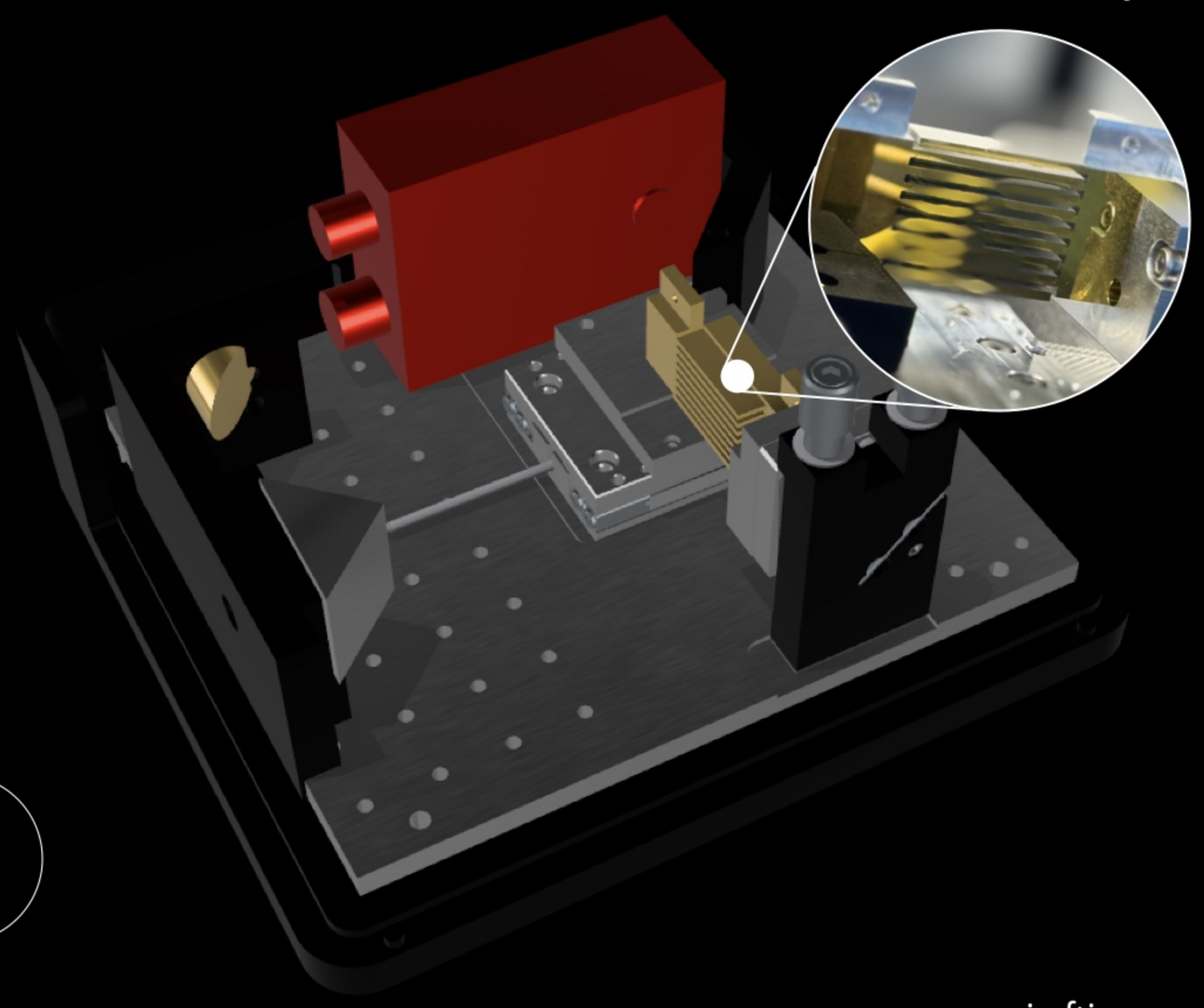
Our Innovation

- Purely reflective optics
- Top-class detectors
- precise manufacturing



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These specifications were made possible through our unique design principles that challenge industry conventions. Traditional FTIR systems relying on transmissive optics struggle significantly in the THz range – so we pivoted to a fully reflective optical setup. This approach allowed us to outperform every comparable FTIR system on the market in terms of price, size, and performance. To further enhance measurement quality, we employ detectors so sensitive they can even pick up mobile phone signals in the room. And to push miniaturization even further, we turned to wire erosion manufacturing, enabling us to shrink our optical components and achieve nanometer-level precision in production.

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Laser industry & Science

Quality Management

RnD in Pharma

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Stability, precision, and cost-effectiveness are highly valued across all industries. Our initial focus is on the laser and scientific sectors, leveraging our network to place the first units of our device’s initial version. From there, we plan to expand into industrial production environments by integrating fiber-optic connectivity, enabling real-time quality monitoring on production lines. As the final step before mass production, we aim to introduce an ATR sample chamber to broaden our reach into R&D applications in polymer, battery, and pharmaceutical research.

The People*

Who make it happen

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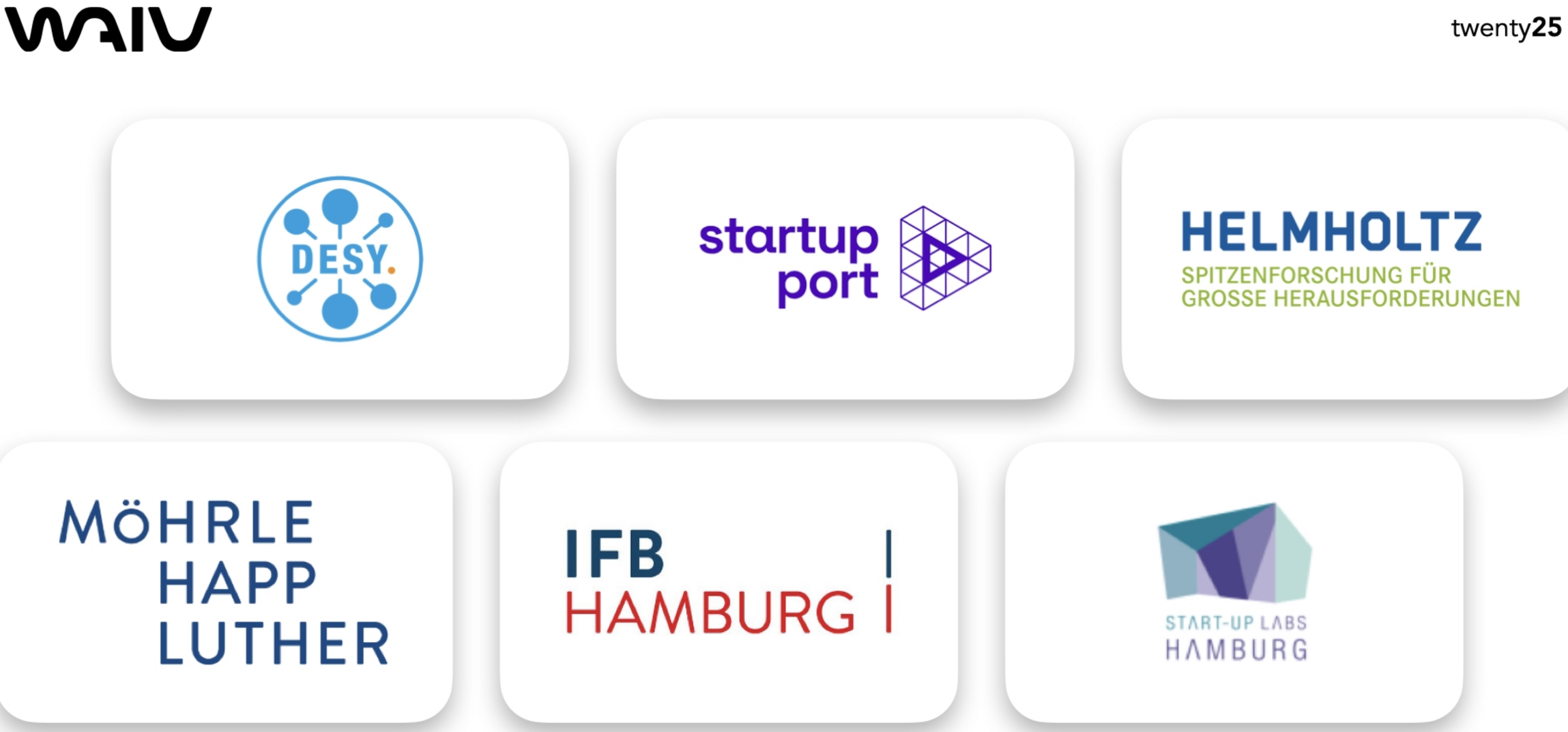
The people working every day to make this vision a reality are our CEO, Ekaterina Jung, and our COO Erik Jung – supported by “King,” our emotional support animal who keeps the team grounded during stressful moments.
Ekaterina leads the company’s vision and drives our strategic direction, ensuring that every step we take aligns with our long-term goals. Erik brings an entrepreneurial mindset with extensive experience in company financing and oversees day-to-day operations, ensuring that everything runs seamlessly. But we admit that this idea wouldn’t have come as far as it did without our strong network of supporters.



It all began at DESY, where we developed our first prototype and received our initial funding through the GENERATOR program. The DESY Startup Office played a crucial role in helping us secure additional support from the Helmholtz Association and the IFB. We also extend our sincere thanks to Startup Port for their valuable guidance, and to the team at MHL, whose support during our funding phase was instrumental in helping us navigate the challenges of early-stage development.

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Get to know us — we'd love to talk.

Download our reading deck in multiple languages

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If we've sparked your curiosity, here's how you can reach us – it's easy! Send us an email, give us a call, or connect with us on LinkedIn. We're always happy to share our work and even more grateful when others share their ideas with us. So don't hesitate – we'd love to hear from you!