

## SPECTROSCOPY - AS PRECISE AS A FINGERPRINT

**WILD**  
**PHOTONIC**

A 4D view of the  
beating heart using  
WILD's technology

3

Decoding matter  
with light

4

3D printed brackets:  
biocompatible and  
a perfect fit

7

# A FASCINATION FOR THE INVISIBLE.



**Wolfgang Warum**  
 Managing Director CTO  
 WILD Holding

Spectroscopy allows us to look into a world invisible to the naked eye, and it's becoming an increasingly indispensable tool. A technology previously reserved for fully equipped laboratories is now mobile and suitable for daily use. Miniaturised systems, from robust NIR spectrographs in sorting facilities to mobile handheld devices in agriculture, are now capable of delivering reliable data on site. The areas of application are growing ever wider, while requirements are becoming more complex, and this is where WILD comes into play.

Our in-depth understanding of optics, mechanics, electronics and software allows us to help our customers transform their ideas into robust products suitable for everyday use quickly, precisely and ready for serial production. Our customers not only benefit from our technological depth but also from our close collaboration with the Silicon Austria Labs research centre. Together, we can identify cutting-edge technologies early, develop customised solutions and minimise development times in the long run.

We will be describing two particularly exciting customer projects to demonstrate what modern medicine can achieve nowadays: We are supporting the market introduction of LUMA Vision, the first catheter-based 4D imaging platform - a milestone in navigation for cardiological surgery. Longstanding WILD customer Lithoz is also showcasing a world first, a completely novel aluminium oxide material for 3D-printed brackets. These are made using 3D printers largely manufactured by WILD.

If you are also interested in shaping the future with us, we look forward to a personal meeting. Why not at the Laser World of Photonics in Munich? There, we will be demonstrating what is possible when experience, interdisciplinary expertise and technological passion meet the spirit of innovation.

Wolfgang Warum



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# LUMA GOES WILD.

**With the support of WILD as a serial production partner, LUMA Vision is bringing the first catheter-based 4D imaging system to the market that offers real-time imagery of the beating heart thanks to an innovative navigation platform.**

Atrial fibrillation, the most common form of cardiac arrhythmia worldwide, significantly increases the risk of stroke and heart failure. Treatment of this disorder is complex and puts a great burden on those affected. With VERAFEYE™, German-Irish medical technology company LUMA Vision is about to revolutionise the treatment of cardiac arrhythmias. The novelty here is that, contrary to conventional systems which mostly deliver two-dimensional or, at best, three-dimensional images, VERAFEYE™ features a 4D navigation and imaging platform that displays the heart in motion. As a result, physicians can carry out interventions with much greater certainty.

## **DYNAMIC VISUALISATION MEANS GREATER PRECISION**

For this purpose, LUMA Vision uses a proprietary catheter sensor in combination with advanced imaging to deliver 360-degree images of the beating heart and its surrounding anatomy in real time. Artificial intelligence simultaneously analyses all this image data and automatically identifies relevant structures, thus supporting cardiologists in their assessment of the tissue. This facilitates instrument control, reduces intervention times and increases patient safety.

The end-to-end system is unique in clinical application to date. A true innovation with a startup behind it, one that

deliberately took the WILD Group on board for the transition to serial production and the subsequent stable manufacturing of the device. "As a young team, it is important for us to receive honest feedback on our product and its demanding manufacturing from an experienced technology partner", stresses Torsten Scheuermann, Director Advanced Projects at LUMA Vision. "We were won over by WILD's references and its longstanding experience in optics, signal processing, robotics, mechatronics and precision mechanics. In addition, they work on the basis of validated processes and they guarantee a stable product quality. The close coordination and open communication also help create transparency and trust - two essential factors for us as a young company with limited resources."

The WILD Group is currently supporting the transition to serial production and will ultimately take over serial manufacturing as well. In addition to assembly and mechanical manufacturing, there will be a particular focus on building up a resilient supply chain for over 400 individual parts. "We feel that we are in very good hands and we communicate on a daily basis to achieve the ambitious timelines for the production transfer", Scheuermann explains. The first systems are scheduled to roll off the line within 2025. "We are planning a lot of things in the coming years and WILD will have a very important role to play."

# SPECTROSCOPY: TRACKING DOWN THE ELEMENTS

**Innovative spectrometers collect complex information in real time - any time and everywhere. This paves the way to completely new applications. By working together with WILD, customers can be sure their ideas will result in a precise, robust product that is ready for serial production, regardless of its intended use.**

What used to be reserved for laboratories can now fit in any jacket pocket: miniaturised spectroscopic systems are opening up completely new fields of application for quick, precise and cost-efficient analyses in everyday scenarios. Already today, consumers can use their smartphone to measure the humidity of their skin, winegrowers can check the maturity of their grapes directly in the vineyard, and compact breath analysis devices will soon be able to detect signs of disease like diabetes. This is made possible by new sensor principles, intelligent software and miniaturised optical components that are rapidly expanding the limits of what is technically feasible.

For a quick time to market for these powerful spectroscopic systems, however, you also need a development and manufacturing partner who can contribute in-depth knowledge in the optics, mechanics and electronics. Thanks to its close cooperation with research centre Silicon Austria Labs (SAL),

the WILD Group can offer even more: together, the two can identify cutting-edge technologies early, develop customised solutions and get products ready for the market in the shortest time possible.

## INDUSTRY DIVERSITY MEETS TECHNOLOGICAL DEPTH

“Our core expertise lies in optics, which is in turn at the heart of every spectroscopy application - be it UV-VIS, emission, fluorescence, IR or NIR spectroscopy. What distinguishes these analysis methods is their wavelength. Therefore, each system requires precisely adjusted light sources, optical filters and detectors. Thanks to our longstanding experience, we have become experts in the composition and selection of these factors and components - always keeping an eye on an efficient transition to serial production and device design”, explains Martina Trinkel from Business Development at the WILD Group. Especially





when requirements for tightness, resistance to temperature, robustness and precision are very strict, WILD plays to its strength of enormous experience, as numerous reference examples demonstrate.

**FROM GOODS RECEIPT TO RECYCLING**

For instance, the stable optomechanical design of an NIR spectrograph co-developed and manufactured by WILD ensures that the device can be used directly in the process line at sorting facilities. “Our optical components, such as diffraction grating, imaging optics for the camera and custom-made mechanical components can easily withstand dust, vibrations and temperature variations of up to 50 degrees,” stresses Stefan Werkl, Head of Business Unit Optical Technologies at WILD GmbH.

WILD can also contribute its expertise when it comes to the development and manufacturing of mobile VIS and NIR measuring instruments. For a customer specialising in mobile spectroscopy systems for industrial and agricultural applications, WILD integrated its innovative sensor system into a portable handheld system.

In the metals industry, optical emission spectrometers from a longstanding WILD customer and market leader in industrial measurement technology and laboratory equipment are used to reliably analyse steels and alloys such as aluminium, nickel or copper. From raw material through goods receipt to recycling: these spark spectrometers guarantee quality in each phase, even in safety-critical applications or 3D-printed metal components. In addition, they are essential for cost control, risk minimisation and productivity.

**PARTNERSHIP WITH SAL IS AN ENGINE OF INNOVATION**

Thomas Ladstätter, Senior Business Development Manager for sensor systems at Silicon Austria Labs, sees a lot of

potential in the future, especially in miniaturisation. “The combination of integrated optical microsystems and AI-enabled data evaluation opens completely new possibilities. Therefore, a research focus at SAL is on non-linear spectroscopic methods that demonstrate a significantly higher sensitivity to molecular details, while allowing for the measurement of ultrafast processes with high temporal resolution. Medical technology applications, e.g. in cancer diagnosis or label-free pathology, and even in food analysis

or environmental monitoring, can massively benefit from this”, Ladstätter insists.

Moreover, he believes miniaturisation has a positive impact on costs. “Especially in personalised medicine, applications currently reserved to laboratories will become

feasible in the future. Compact spectral engines integrated into portable devices can also yield benefits in the detection of hazardous chemical or biological substances. This is an important topic in view of the current challenges in European security policy”, adds Ladstätter.

**The interview on page 6 explains how WILD customers can benefit from the close collaboration with SAL.**

“**Our core expertise lies in optics, which is in turn at the heart of every spectroscopy application - be it UV-VIS, emission, fluorescence, IR or NIR spectroscopy.**

*Martina Trinkel, Business Development WILD Gruppe*

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# STAYING AHEAD THROUGH RESEARCH.

**Whether for funding projects, infrastructure or technical obstacles - SAL supports partners like WILD in developing innovative solutions.**

Silicon Austria Labs GmbH (SAL) is the country's cutting edge research centre for electronic and software-based systems, the technological backbone of numerous sectors like medical diagnostics, environmental analysis or quality control. SAL pairs up industry players like the WILD Group with scientists. Together, they conduct application-oriented research along the ESBS value chain. In the following interview, Thomas Ladstätter, Senior Business Development Manager for sensor systems explains how WILD customers can benefit from this.

***Where do you see the challenges in the development of highly precise spectroscopy systems, and how can SAL help WILD customers better manage these?***

"A central challenge in system development is the minimisation of environmental impacts such as temperature

fluctuations, which can compromise measurement accuracy. Moreover, the selection and integration of high-performance laser sources can be technically very demanding. In order to measure very small concentrations, for instance, SAL is currently conducting research on how to transfer high-performance methods already established in scientific applications to industrial applications. With regard to their sensitivity and selectivity, these methods outperform any systems available on the market today by a multiple. The techniques tested here include CARS, SFG and multiphoton spectroscopy approaches, in combination with powerful algorithms for a precise analysis of large data volumes. SAL supports partners like the WILD Group and its customers in integrating such novel components on a system level, focusing both on the final application and on the cost aspects."

***What makes the infrastructure of your institution so outstanding?***

"Our services in connection with the use of infrastructure range from simulation and modelling of (micro)optical systems such as wavefront analyses to optical measurement technology and characterisation. We now have a brand-new test and validation laboratory in Graz, where we can conduct vibration and temperature tests at component and system level, as well as accelerated ageing tests. Moreover, a corrosion test chamber was recently added to our portfolio.

***Are there any special funding projects which could be interesting for WILD customers?***

"We can co-finance projects of industry partners with public funds as part of our "SAL Cooperative Research" programme. SAL covers 50% of the overall project costs. The industry partner contributes its share of 25% in cash and another 25% in kind.

**INTERESTED IN JOINT RESEARCH  
PROJECTS WITH SAL AND WILD?**

**Feel free to contact CTO Wolfgang Warum  
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# A PERFECT, 3D-PRINTED SMILE.

Longstanding WILD customer Lithoz recently presented LithaBite, a state-of-the-art aluminium oxide material for 3D-printed translucent brackets, heralding a new era in dental medicine.



Around 200,000 people - children, teenagers and adults alike - undergo orthodontic treatment in Austria each year. In Germany, that figure is over 1.3 million. The overwhelming majority of them receive fixed brackets. In most cases, they are standardised and made using elaborate milling or injection moulds, with the result that their manufacturing process is neither individualised nor efficient. On the contrary: These methods require extreme fixed costs for tools, impose great limitations on design and do not offer a customised fit.

Vienna-based high-tech company Lithoz is taking a completely new approach. At the International Dental Show 2025, they presented LithaBite, a revolutionary material on aluminium oxide basis for a tool-free production of translucent brackets using 3D-printing. "LithaBite was specially developed for a seamless integration with natural teeth. It combines an impressive slot geometry precision of less than 7 µm and minimal material consumption of less than 0.1 g per bracket, while offering robust scalability for industrial serial production. This is a world first, and so far, we are the only ones who have managed to manufacture it", stresses Lithoz CEO Johannes Homa.

## EFFICIENCY WITH FULL DESIGN FREEDOM

The proven LCM technology used to create the material layer by layer guarantees maximum geometrical

and design freedom. Combined with the company's own unique digital surface enhancement (DSE) software, it ensures particularly smooth surfaces. The result: brackets that can be perfectly adjusted to one's individual teeth and are aesthetically appealing, comfortable to wear, long-lasting, and biocompatible.

## SERIAL PRECISION

The medical miniatures are printed on a CeraFab System S65 Medical, which is largely manufactured by WILD. "We are very proud to have been chosen by Lithoz as a technology partner from the very start, and that we were also substantially involved in the development of this

device", says WILD CTO Wolfgang Warum. The CeraFab System S65 Medical is not only suitable for the production of brackets, it can also print biocompatible components of almost unlimited geometrical shapes – such as jawbone implants or perfectly customised dental crowns.

"The major advantage of this modular device is a combination of reliable compliance with medical specifications, high speed and industrial scalability. At 150 layers per minute, it allows for a cost-efficient serial production of high-performance ceramics", adds Lithoz CTO Johannes Benedikt.



# Innovation connects.

**The international photonics community is meeting at the LASER World of PHOTONICS 2025 in Munich. The WILD Group is joining the fair as a strong technology partner for complex laser applications and photonic systems.**

There are exciting challenges ahead for global key players, pioneers and trailblazers in the photonics industry, which have been caused by rapid technological changes, increasing requirements for precision and efficiency and the growing use of AI. There is great need for innovative solutions that have one thing in common: high-precision optics, which require ever more complex manufacturing processes and form the very foundation of efficient photonic systems.

This is where WILD, a coveted development and manufacturing partner comes into play. Our experts use their extensive expertise to support customers in areas ranging from the design of the optical path, electronics and software, through alignment turning of high-precision optics to cleanroom assembly, thus helping them put demanding optical systems into serial production efficiently and at low cost. "Our reference projects demonstrate the breadth of our range of services: from aerial cameras and hyperspectral imaging through

in-vitro diagnostics to laser systems for industrial component inspection and optical 3D scanners, we enable innovations across all industries," says Head of Business Development Franz Aigner. "In addition, PHOTONIC, our lighting specialist, offers comprehensive solutions for endoscopy, microscopy and fluorescence imaging."

To find out more about how we seamlessly accompany projects from idea to serial production, visit us at the WKO booth (B3.224), where we will be jointly represented with other Austrian industrial and research companies. Arrange a personal meeting with us now. A short email to [martina.trinkel@wild.at](mailto:martina.trinkel@wild.at) or [franz.aigner@wild.at](mailto:franz.aigner@wild.at) will suffice.

**VISIT US AT OUR BOOTH B3.224  
WE LOOK FORWARD TO SEEING YOU!**



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**Photos:** WILD Gruppe, Luma Vision, Lithoz, SAL, Messe München, Adobe Stock

## THE WILD GROUP

The WILD Group is comprised of the WILD brands which are established in Völkermarkt and Wernberg (Austria) and Trnava (Slovakia), as well as Vienna-based PHOTONIC. The technology partner develops and produces optomechatronic systems for medical and industrial applications as well as optical technologies exclusively on behalf of its customers. Approximately 500 staff members are always the first choice whenever precision and reliability are called for and wherever innovation takes place.