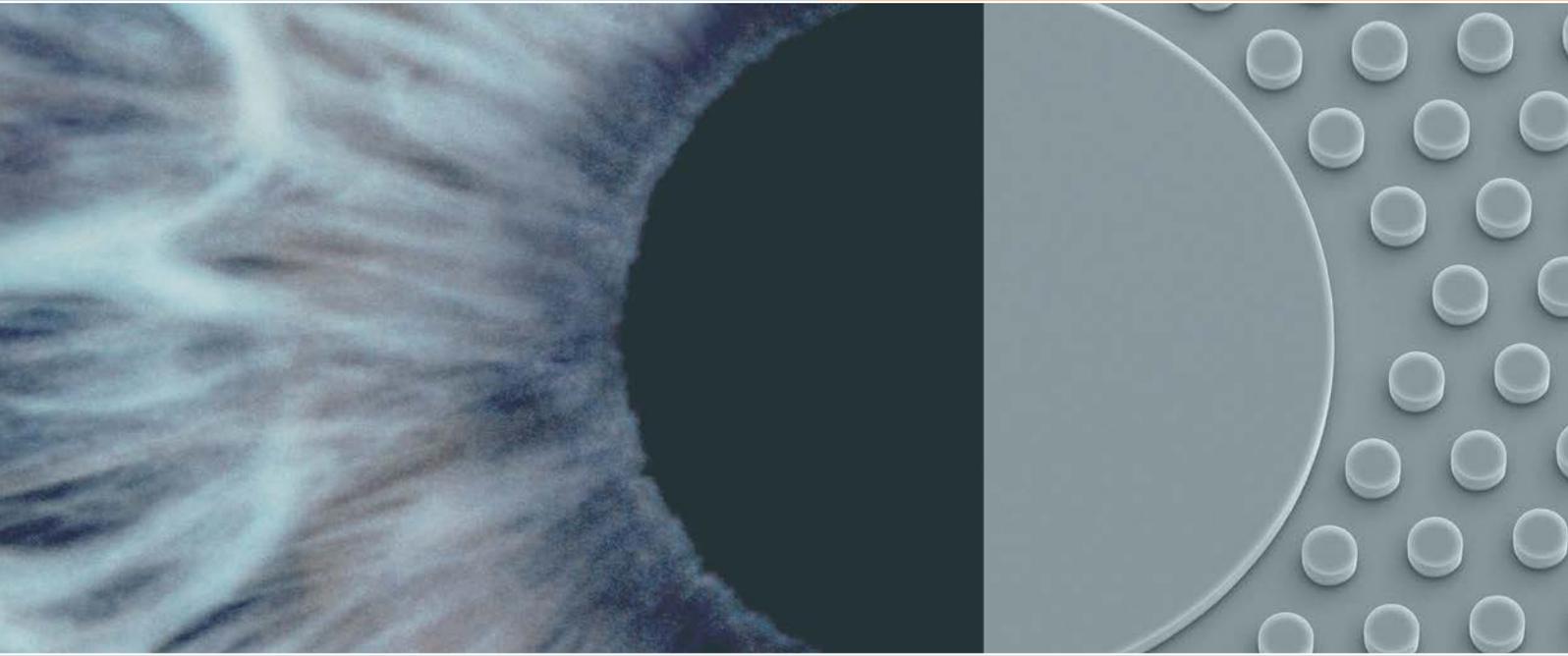


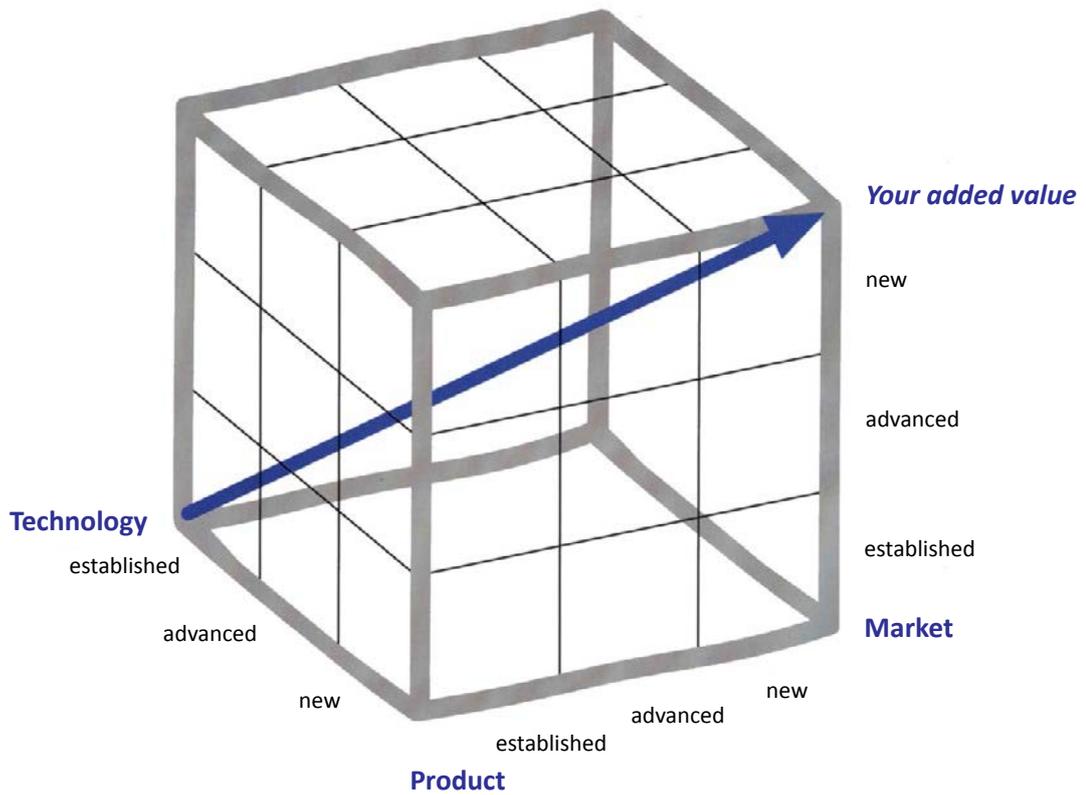
Approach the single component solution.

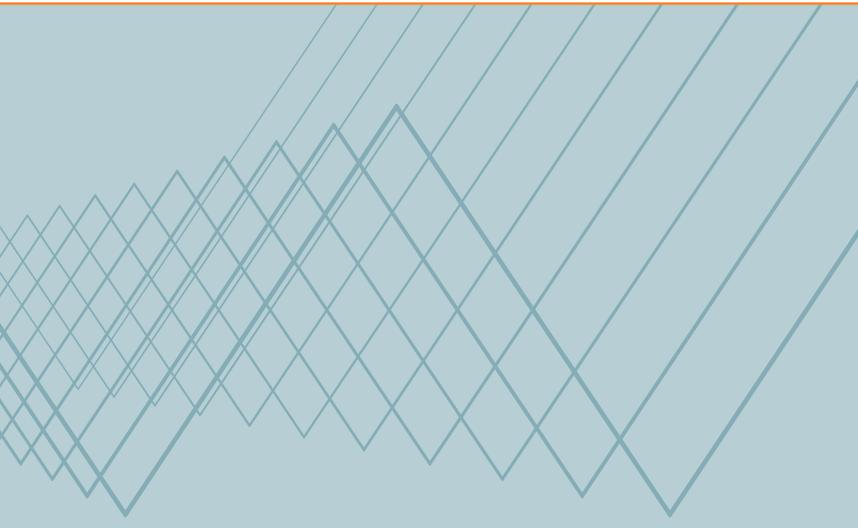


**INSION:**  
Progressing with spectral innovation.



## Our view on innovation.





## **When seeing becomes receiving.**

Gaining access to and thus receiving valid, analytically substantiated information is the core of our business. At INSION we have a clear vision. This is to provide our customers with integrated spectral sensors, tailored to meet the functional and commercial requirements of their specific OEM applications.

Based on state-of-the-art technology, profound know-how and more than a decade of expertise in the field of microoptics we combine technological compassion with entrepreneurial vision.

Looking for specific spectral solutions to fully meet your demands and expectations? See what we can do for you and your business.

**WELCOME TO OUR WORLD OF INTEGRATED SPECTRAL SOLUTIONS!**



## Your request: Our mission.

Are you looking for medical grade reliability, accuracy, miniaturization and robustness going along with attractive cost structures comprising both, acquisition expenses and ongoing costs? INSON's one-chip microspectrometers enable you to offer your customers more than standardized lab ware.

Starting at the core of things, our design philosophy is handling the customer's entire optical signal path ingeniously matched to our products and technologies. Which either means reducing the approach to a single integrative solution with all functional elements being integrated into one chip. Or creating a setup that combines already existing microspectrometer concepts with a semi-integrated solution.

Our monolithic spectrometer design combining micro-injection-molding replication processes, high-end PVD and optical assembly processes serves as the basis for innovative products in the fields of:

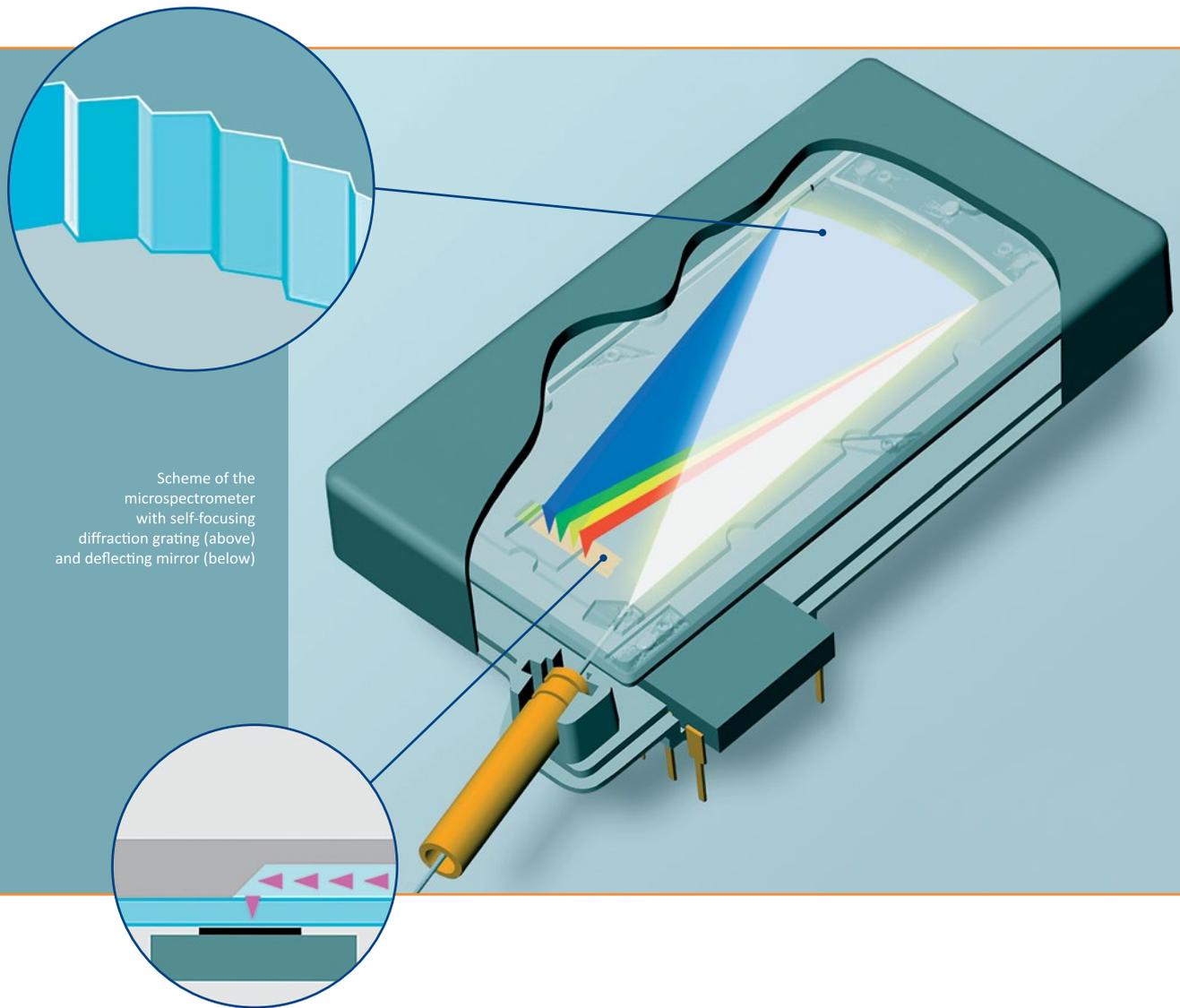
- decentralized medical diagnostics and analytics
- process sensors
- analytical instrumentation for harsh environments



## Inside INSION.

As a specialist in the field of microoptics, INSION is proud of its dedicated, motivated and highly-skilled team of experts that has been working interdisciplinary for more than 15 years. The INSION core team consists of product and application specialists as well as production and sales experts who have developed a variety of spectral sensors for medical, analytical and process control applications, including their production process designs and manufacturing. Each sensor is optimized to fulfill both: its' technical and market demands.

With its core team stemming from the business division Microoptics at Boehringer Ingelheim microParts, INSION is a well-established, internationally active enterprise in the microoptics industry. INSION was founded in 2011 and is located in Heilbronn and Dortmund, Germany.



Scheme of the microspectrometer with self-focusing diffraction grating (above) and deflecting mirror (below)

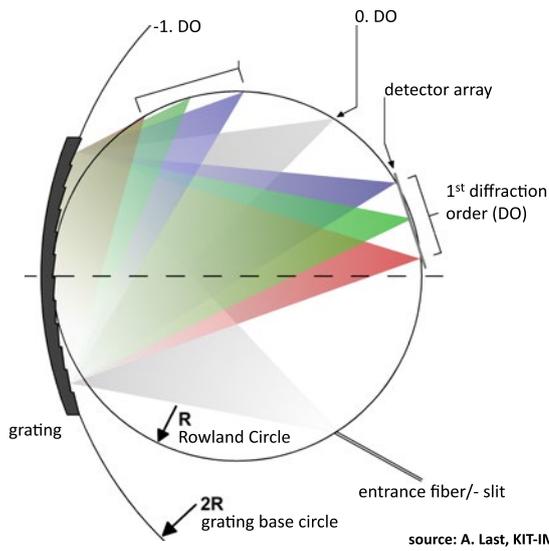
## The world of microoptics – integrated on a single chip.

INSON focuses on microspectrometers and spectral sensors which integrate all optical elements on a single micro-molded chip.

We develop and produce spectral sensors which are tailored to specific application requests. Our products include the light source, the optical sampling system and the microspectrometer as detection system. Optionally, the sensor can be equipped with an OEM electronics platform for system control and data processing. All components combine outstanding technical properties with regard to quality, application, handling and system integration.

All INSON products and processes are developed and established in accordance with the rules and regulations of ISO 9001 and ISO 13485.

### Rowland Circle arrangement



## The INSION microspectrometer.

INSION's microspectrometer products are based on a self-focusing Echelle diffraction grating in the Rowland configuration. All functional elements of the microspectrometer – entrance slit, reflective grating, deflecting mirror and light traps – are monolithically integrated into a single chip. The microspectrometer chip itself, lid and enclosure are manufactured to be highly efficient and homogeneously reproduced by using micro injection molding technology.

Depending on the application and the specific wavelength range the INSION microspectrometers are equipped with a low noise CMOS, a highly sensitive CCD or a temperature controlled InGaAs line scan detector array.

The INSION standard products are currently working in the wavelength range between 300 nm and 1700 nm. They are available as fiber-connected OEM microspectrometer modules or as OEM systems, including an electronics platform for control and data preprocessing. Customer specific products are already working outside of our standard product wavelength boundaries.



IdentaColor II®

DC3000™

HemoNIR™

SUPER ID clinchem

X-One

**BiliChek® by Philips**

Mobile analysis equipment for non-invasive measurement of newborn jaundice. The instrument yields rapid, accurate results regardless of skin pigmentation. The measurement is taken by purely optical means through the baby's skin. No blood samples are required. Clinically tested, FDA approved.

**IdentaColor II® by IDENTA**

The measuring device enables precise determination of the individual tooth shade. It involves complex, translucent measurements independently of the environmental conditions.

**DC3000™ by Sarin Technologies**

Portable colorimeter for the exact quality determination of diamonds.

**HemoNIR™ by NIRscience Corp.**

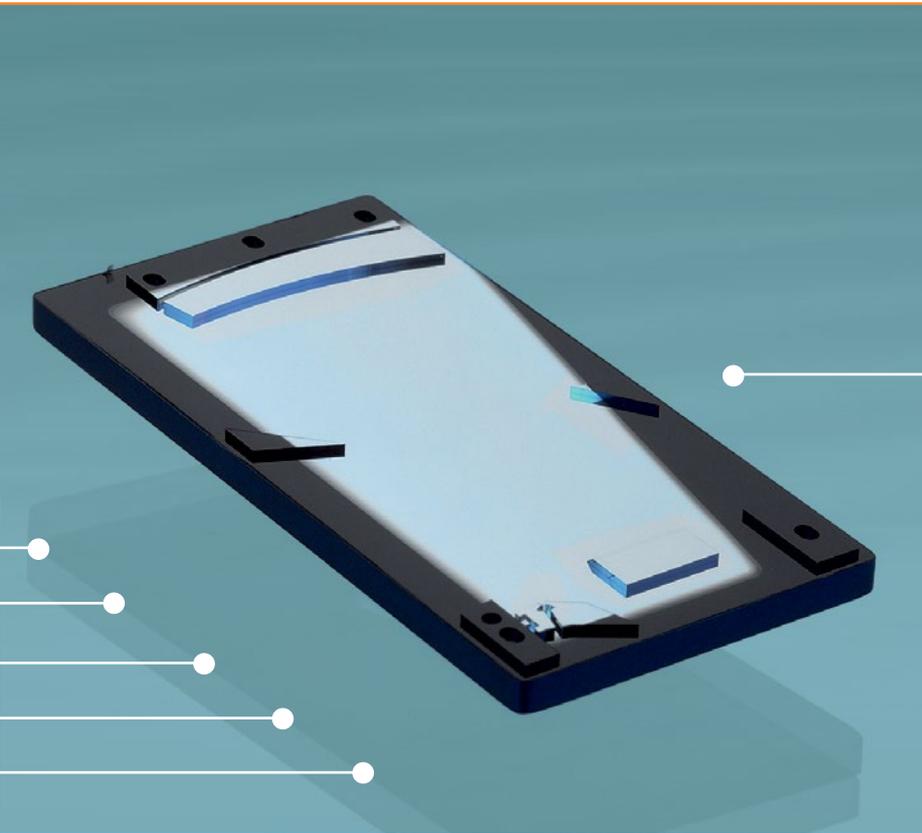
Compact, battery-powered handheld device for measuring Total-Hb, Met-Hb and Carboxy-Hb and other blood parameters from a sample of less than 10 µl. Use of the spectrometer enables a purely optical measurement to be performed without adding any reagents.

**SUPER ID clinchem by Dr. Müller Gerätebau GmbH**

SUPER ID clinchem is providing laboratory grade test results in a POCT device for state of the art in-vitro diagnostic tests.

**X-One by NIR-Online GmbH**

The NIR microspectrometer is used to measure quality-determining factors, for example in food and pharmaceutical industries.



**PHILIPS**  
sense and simplicity



## INSION application references.

INSION customers benefit from the high performance of our microspectrometers in various application fields:

It is integrated in devices, that are approved by the FDA, ranging from medical diagnostics in typical in-vitro assays, clinical analyzers, to point-of-care applications, innovative reagentless hand-held blood analyzers or trans-dermal spectral analyzers.

INSION spectrometers are the basis for detection systems in the field of food processing, pharmaceutical production, chemical process control and sorting machines as well as for invisible security markers or for detecting hazardous substances.

Other applications are established in the fields of analytical instrumentation, elemental and environmental analysis as well as colorimetry.

The use of the microspectrometer allows for an amazingly small sampling and detection system at the point of interest. This strategy is minimizing typical sampling errors, like for example the change of the sample constitution between sampling and off-line analytical investigation. Thus, the microspectrometer grants enhanced specificity and sensitivity.

In addition to significant functional advantages, these applications in decentralized analytics and diagnostics deliver immediate results at minimum cost-per-test.



## Services and competences.

In the field of application development the INSION team has a background of more than 15 years in business and provides profound expertise. Typically, a new product development for an OEM customer starts with an analysis phase including a conceptual preparation of the measurement task based on our technology, generating a basic product concept and a preliminary product design. This study will be followed by a product development phase delivering prototype units and a production set-up phase to achieve pilot serial status. Our milestone project set-up assures performance validation of technical and economic parameters and provides a sound basis for the regulatory approval of our customers' final products.

Our product platform is based on the LIGA-microtechnology and has its roots at the Karlsruhe Institute of Technology (KIT). This core technology generates sophisticated mold inserts for the production of injection molded microstructures at large quantities with consistent quality. INSION cooperates with KIT's Institute of Microtechnology in the fields of technology and product design.

Through INSION's "one team" approach, which stands for the close collaboration of our team with the development engineers and application specialists of our OEM customers, we are speeding up time-to-market and development efficiency.



## **The INSION credo: Quality at its best.**

The core of our product philosophy is to integrate maximum functionality into a moldable microchip – and to pay close attention to all details. Using precisely controlled batch processing, our products are unique with regard to their robustness, stability and inter-instrument agreement.

To ensure highest product quality throughout all project phases, our procedures include methods such as FMEA, SPC and lean 6 sigma. All development and production processes of INSION's products have been established and optimized according with the rules and regulations of ISO 9001 and ISO 13485. The INSION quality management system continues these established processes and rules in our standards.



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