The Laboratory of the Future: the 13 partners of smartLAB 2019 at Labvolution

smartLAB is the special presentation at Labvolution (21–23 May 2019) which showcases the intelligent, networked laboratory of the future. For the third time now, several business enterprises and institutions are working together to stimulate debate, promote digitization in the laboratory, and establish common standards through the smartLAB initiative. In overall charge once again is the Institute for Industrial Chemistry (TCI) at Leibniz University in Hannover. The 13 partners of smartLAB 2019 are introduced in the following pages.

Institute for Industrial Chemistry (TCI) at Leibniz University, Hannover

The Institute for Industrial Chemistry (TCI) at Leibniz University, Hannover, is an innovative research establishment working in the field of biotechnology. Specific areas of research include bioengineering, bioprocess analytics, microsystems technology and bioinformatics. A particular research priority at present is the digitization of the laboratory. As a founder member and scientific head of the project, the TCI has been involved with smartLAB since 2015. During this time, new technologies and concepts, such as 3D printing, smart glasses, automated documentation and digital workflows, have been developed and adapted for laboratory use. The aim is to create an innovative, interactive and smart laboratory environment which provides guidance and support for laboratory personnel.

Eppendorf

Eppendorf supplies equipment, pipettes and consumables for the use cases presented at smartLAB, and provides support for the integration of these products. "smartLAB gives us the opportunity as a company to work together with others to showcase a vision of the future of the laboratory", says Dr. Tanja Musiol, Head of Global Marketing Management, Specialty Lab Products, at Eppendorf. "Our discussions with each other, and with customers at

Photos: Deutsche Messe

the show, also give us plenty of ideas and inspiration for future projects." As one of the leading companies in the life sciences sector, Eppendorf develops and markets devices, consumables and services for liquid handling, sample handling and cell handling for use in laboratories worldwide.

Fraunhofer IPA

"Industrie 4.0" is now a common theme in the work of all the specialist departments within the Fraunhofer IPA research institute. The adaptability of production processes and internal services is seen by Fraunhofer IPA as a key opportunity for successfully managing the complexity of production operations required across global markets. The Institute's Department for Laboratory Automation and Bioproduction Engineering has been working on new solutions and technologies aimed at integrating human agents, equipment and biological processes into day-to-day lab work. Research priorities here include automation, process optimization and digitization in the laboratory. The IPA's main contribution to smartLAB is in the area of connectivity and communication standards.

The Hannover Academy of Music, Theatre and Media

The Institute for Journalism and Communication Research (IJK), part of the Hannover Academy of Music, Theatre and Media, has been a byword for more than 30 years for excellence and practical relevance in communications science and media management. Teaching staff and students follow current trends in the media industry, explore new and established communication media, and study digital business models. The study of automation and digitization processes in the economy and society forms part of the Institute's remit, as well as addressing questions about their impact on businesses, employees and the general public. The IJK's role within

smartLAB, therefore, is to advise the other partners on the communication and presentation of the opportunities and challenges that come with this new laboratory concept. During the show the project managers will also be conducting a survey of laboratory users at Labvolution, asking them where they see the current challenges for their particular work environment.

iGo3D

AMS stands for Additive Manufacturing Solutions, and is the name of a business unit of iGo3D GmbH, Europe's largest distributor of 3D printers. Since 2016, AMS has been focusing on the needs of industrial and business clients in the area of additive manufacturing and reverse engineering (3D scanners). The team offers a combination of consulting, skills training and marketing services, and thus provides valuable professional support for its clients in the strategic implementation of 3D printing processes in Industrie 4.0. What AMS brings to the smartLAB team is the know-how needed to integrate additive manufacturing into the laboratory of the future as a value-adding tool. The systems and software contributed by AMS are fully compatible with Industrie 4.0 and the Internet of Things, making them an ideal adjunct to the laboratory of the future.

Köttermann

Flexibility and space – these are the issues addressed by Köttermann at smart-LAB. The leading international service provider for complete laboratory solutions made of steel has developed mobile facility units. These consist of hexagonal modules based on a "ballroom" concept. This approach to laboratory design, based on cleanroom technology, is all about the flexible arrangement of facilities and apparatus, with devices often integrated directly into furniture. Köttermann's mobile honeycomb units can easily be rearranged at any time; they form space-saving islands, and different technologies can readily be built into them. Magnetic stirrers can be integrated into the surface, for example, or shelving units recessed into the countertop.

labfolder

labfolder GmbH develops and markets a platform for data management in

laboratories, on which all data sources in the lab – collected from records, devices, processes and analyses – can be smart-linked, making lab data easier to manage, faster to access, and better organized for further analysis. labfolder is used worldwide across all research disciplines, in scientific and industrial research labs, and in data analysis and production. The software developed by labfolder is easy to use, and conforms to all industry and quality standards in laboratories. Since the start of the smartLAB initiative in 2015, labfolder has been responsible for supplying the central software, via which the components of the network partners are linked together in smart workflows. The focus is on the provision of user-friendly, intelligent, modular components for flexible process control.

Mettler Toledo

As a manufacturer of precision instruments for every stage of the value-adding chain, Mettler Toledo likewise sees the digital transformation that is central to Industrie 4.0 as an important challenge for the future. The digital recording of instrument data is not new, but the networking of these data is often technically challenging. It is extremely useful, though, if data need to be made directly available to the next stage because subsequent automatic decisions are dependent on them – a key aspect of the Internet of Things. With its own software platforms, Mettler Toledo is able to optimize these data streams within its own devices, archive them in compliance with regulations, and finally communicate lean results to other laboratories via easily configurable interfaces. As part of the smartLAB project, Mettler Toledo is using an autotitrator with its LabX software platform to demonstrate how such communication works in practice.

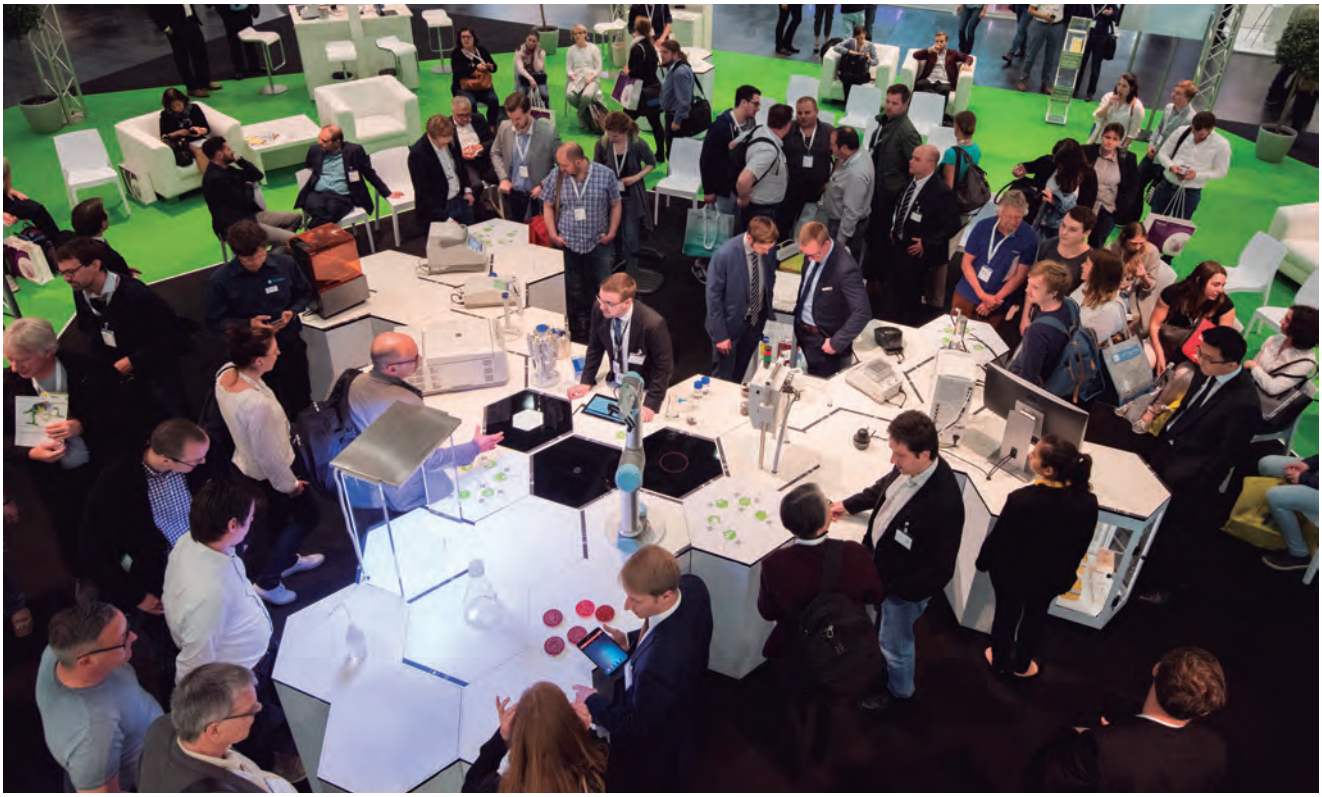
Noack Laboratorien

Noack Laboratorien GmbH is a contract research institute for the collection of data for the international registration of chemicals and active agents. The examination spectrum ranges from physical-chemical analyses to complex ecotoxicological studies. Noack Laboratorien GmbH has been a smartLAB partner since 2018, and sees itself as an interface for technical and digital innovations in the laboratory.

Noack is currently collaborating closely with the TCI at Leibniz University in Hannover on various projects, such as the acquisition of plant testing data using smart glasses, the counting of organisms by means of automatic image recognition processes, information provision (on workplace safety, for example) for laboratory staff, and automated documentation.

PreSens

PreSens is a leading global supplier of chemical-optical sensors for oxygen, pH, CO_2 and biomass. For the pharmaceutical sector, PreSens offers a broad range of ready-to-use containers with built-in, precalibrated sensors, which ensure maximum work efficiency and effective



monitoring in the lab. With smartLAB, PreSens can tailor its systems more precisely to the needs of laboratory staff, and (for example) integrate non-invasive sensors into functionalized surfaces. The company's work is designed to show how contactless measurement results can be optimally combined with other analytical data, and how easily this kind of measurement technology can be integrated into every laboratory, and every lab bench.

realworld one

With the unique virtual and augmented reality platform it has developed for industry and the scientific community, realworld one has set a new standard in collaboration between manufacturers, users and researchers. Participants from all over the world can now connect with each other and exchange information in a virtual space. As the products and process equipment are pictured in accurate detail, and are interactive and fully functional, visitors to the platform can work with them virtually. So in addition to an extremely useful practical application, the technology also opens up brand-new possibilities for staff training, safety training, sales and marketing, as well as the illustration of application scenarios. So realworld one's contribution to the smartLAB initiative is a pioneering method for visualizing work processes, learning interactively on devices, and creating lab configurations.

Sartorius

Sartorius, as a key global player in the academic and biopharma markets, is dedicated to addressing the challenges with which customers in academia and industry alike are confronted. Digitalization, connectivity, data management (ELNs/LIMS, voice controlled systems etc.) are shaping the way that future laboratories will develop both structurally and functionally. Drawing on a combination of technological development and deep application knowledge, backed by a broad lab essentials portfolio and pioneering bioanalytics platform, the Labvolution and in particular the smartLAB offers us the opportunity to explore not only in theory, but in practice, novel ways of thinking around lab processes, collaboration, communication, and integration at all levels. By doing so, Sartorius makes sure not only to stay close to the cutting edge of innovation, but to actively shape it.

Schmidt + Haensch

For more than 150 years the family firm of Schmidt + Haensch (S+H) has been manufacturing optical-electronic analytical instruments. The product portfolio includes polarimeters, refractometers, laboratory automation and process analysis systems for the food, pharmaceutical, chemical and petrochemical industries. The company supplies tailor-made solutions for each device on the basis of a modular concept. Thanks to the intuitive user interface, the user can access all the main functions with just three clicks. As the S+H tagline says: "Use it like a smart phone". All the instruments supplied by S+H can be controlled and configured externally via the touchscreen of a PC, tablet or telephone, and test results can be analyzed externally. All instruments can communicate directly with each other and calculate measurement results.

Deutsche Messe AG

As one of the world's foremost organizers of capital goods trade fairs, Deutsche Messe (Hannover, Germany) stages a rich array of events at venues in Germany and around the globe. These include Labvolution, which takes place from 21 to 23 May 2019 in Hannover. Labvolution is Europe's flagship fair for innovative lab equipment and laboratory workflow optimization. It showcases every facet of laboratory work, from the life sciences to analytical chemistry, and covers the full array of equipment and infrastructure for research, analysis, production and training laboratories, as needed by the chemical, pharmaceutical, life sciences, environmental protection, food and bioanalytics industries, as well as the R&D sector. The keynote theme at Labvolution 2019 is "The integrated lab - the networked laboratory".

www.labvolution.de