SCS Swiss Chemical Society

Community News

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SWISS CHEMICAL SOCIETY NEWS

SCS Scientific Award Program 2024: Call for Nominations

As one of our four strategic pillars, SCS honors excellence in science and chemistry respectively and is proud of its renowned award program that goes back to 1936 with the ceremony of the first Werner Prizes to Dr. T. Postenak, Genève, and Prof. G. Schwarzenbach, Zurich.

The Society opened the call for nominations for the SCS Awards 2024. Nominations have to be submitted electronically to info@scg.ch. The deadline for all documents to reach the Swiss Chemical Society is September 30.

Paracelsus Prize
CHF 20'000 and medal in gold awarded to an internationally outstanding scientist for his/her lifetime achievements in chemical research.

Werner Prize
CHF 10'000 and medal in bronze. Awarded to a promising young scientist for outstanding independent chemical research.

Sandmeyer Award
CHF 10'000 for individuals or CHF 20'000 for groups. Awarded to a person or to a group for outstanding work in industrial or applied chemistry.

SCS Industrial Science Awards
This program includes awards on three career levels with cash checks of CHF 7'000, 10'000 and 15'000. It honors active industrial scientists working in Switzerland for their outstanding contributions in industrial R&D.

Green & Sustainable Chemistry Award
CHF 10'000. Honors outstanding scientific discoveries that lay the foundation for environmentally friendly approaches and products. It is supported by Syngenta as founding partner and SusChem Switzerland as hosting institution.

Grammaticakis-Neumann Award
CHF 5'000. The Prize is awarded to a promising young scientist for outstanding accomplishments in the field of experimental or theoretical photochemistry.

Balmer Prize
CHF 2'000 for individuals and CHF 2'000 for the school's chemistry department or CHF 3'000 for a group and CHF 1'000 for the school's chemistry department. Awarded to a teacher working in Switzerland at high school (gymnasium) level for innovation in chemistry teaching.

Dr. Max Lüthi Award
CHF 1'000 and medal in bronze. Presented for an outstanding diploma thesis in Chemistry conducted at a Swiss University of Applied Sciences.

METAS Award
CHF 5'000. Honors outstanding contribution to the field of metrology in chemistry and/or biology.

Cancer Drug Discovery Research Award
CHF 10'000 in total for 2–4 winners. The award (supported by RGCC International) honors outstanding scientific achievements of MSc, PhD students or Postdocs from Switzerland that are working in the field of cancer drug discovery research.

DMCCB PhD Prize
Certificate and cash check of CHF 1'500. The prize is for exceptional PhD theses in the field of Medicinal Chemistry and/or Chemical Biology completed at a Swiss University or ETH/EPF.

DIAC Fellowship Award
CHF 1'000 and lecture tour in Switzerland. The distinction is granted to distinguished scientists from Industry for significant contributions and innovations over many years in the field of industrial chemistry and chemical process technology in Switzerland.

Website: *https://scg.ch/awards*

Successful UK - Switzerland Bilateral Meeting!

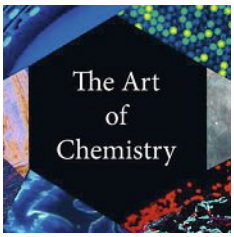
The international bilateral meeting between the Royal Society and the Swiss Academy of Sciences was successfully held on 15–16 June 2023 in London.

16 prominent scientists from each country presented their work and discussed collaborations in two parallel sessions, one on Pandemic Preparedeness and the other on Net Zero. Both topics concentrated on how facilities – such as those at the Paul Scherrer Institut (PSI) in Switzerland or the Diamond light source in UK – can be used for materials and catalysis for net zero greenhouse gas emissions and for enabling biomolecular science for pandemic preparedness.

The objective of the meeting was to build on and strengthen scientific ties between Switzerland and the UK. On a bilateral basis among scientists, this was certainly achieved given the high mutual interest and many stimulating scientific discussions. On a more institutional basis there was also a strong will expressed for increasing partnership. Further discussions in the months to come shall define how this can concretise in a fruitful way with benefits for scientists and institutions on both sides of the Channel.

Image: SCNAT
Source: *https://map.scnat.ch*

New exhibition at ETH Zurich, Department of Chemistry and Applied Biosciences (D-CHAB): The Art of Chemistry



Have you ever wondered what lies under your skin? How can you examine thousands of cells? What does a catalyst look like, and can aerosols be made visible? "The Art of Chemistry" exhibition – visitable at ETH's Hönggerberg campus (HCI / H-floor) and online, curated by Julia Ecker and Oliver Renn (PR D-CHAB) – approaches science in a different way. The exhibition, curated by Julia Ecker and Oliver Renn (PR-DCHAB), provides insights into some of the research areas and illustrates that chemistry is not only exciting, but beautiful – sometimes truly artistic. Click on the images for a more description and enjoy the journey into the world of molecules

Researchers in chemistry sometimes see themselves as molecular craftsmen: learning their craft, mastering it, creating new things, extending existing things, finding solutions, and being excited by chemistry's potential to change the world in a positive way. Good motivations. But apart from that, they also find the world of molecules simply beautiful: be it the bright colors and aesthetic shapes of inorganic compounds, the impressive molecular architectures in organics, or elegantly designed molecular binding pockets. However, this beauty is usually only seen by those who search through interdisciplinary publications or have the necessary tools and laboratory access. The public sometimes lacks access to such images or impressions, which may contribute to the idea that chemistry is associated more with abstraction and complexity and less with aesthetics. Images can make the molecular world tangible, arouse fascination, and demonstrate how multifaceted scientific practice, chemistry and its applications can be. This is exciting not only for people outside the field but also for researchers in chemistry who cannot keep track of all aspects of the field. Therefore, Public Relations D-CHAB has taken this year's International Chemistry Olympiad as an opportunity to launch a small exhibition, which could also be sent on tour one day.
Vladimir-Prelog-Weg 10, HCI building, H-floor
Monday–Friday 8:00–18:00.
Website: *https://artofchemistry.ethz.ch*

Ružička-Prize 2023: call for nominations

The Ružička-Prize is awarded each year to a young scientist for her/his outstanding, published contribution in the field of chemistry, achieved either in Switzerland or by a Swiss citizen abroad.

Proposals for candidates (age limit 40 years) may be submitted written or e-mail until Monday, September 18, 2023 (date of receipt) to

ETH Zurich, D-CHAB
Prof. Dr. Wendelin Stark
Vladimir-Prelog-Weg 2, HCI H 209,
8093 Zurich
or by e-mail to wendelin.stark@chem.ethz.ch and manuela.caprani@chem.ethz.ch.

About the Ružička Prize
The Ružička Prize, named after the ETH professor and Nobel laureate Leopold Ružička, is considered one of the most important awards for the promotion of young scientists in the field of chemistry in Switzerland.
Source: *https://chab.ethz.ch*

A Warm Welcome to Our New Members!

Period: 02.06.2023–10.07.2023

Nandu Ashtaman Pillai Syamaladevi, Bern - Kasra Asnaashari, Zurich - Rabab Azizi, Zurich - Maximilian Beckers, Basel - Giada Bedendi, Geneva - Paola Caramenti, Basel - Priscila Cavassin, Bern - Çetin Çelik, Zurich - Ziwei Chai, Zurich - Kangwei Chen, Zurich - Irene Chetschik, Zurich - Ahhyeon Choi, Pohang (KR) - Filipe Coelho, Geneva - Antoine Etourneau, Neuchâtel - Valentina Foli, Bern - Matilde Folkesson, Fribourg - Rafaela Gazzi, Bern - Gabriela Hernandez Fernandez del Castillo, Richterswil - Klemens Hoegenauer, Basel - Maximilian Horn, Bern - Ishfaq Ibni Hashim, Ghent (BE) - Soumyadip Jana, Zurich - Ralf Kaegi, Dübendorf - Paul Katzberger, Zurich - Daja Krummenacher, Kriens - Yuen Yee Lau , Zurich - Peng Liu, Zurich - Luis Enrique Llanes Montesino, Geneva - Anastasiia Lukovkina, Geneva - Viviana Maffeis, Basel - Anzhelika Moiseeva, Dottingen - Michelle Jessy Müller, Zurich - Nathalia Münch, Zurich - Charlie Munsch, Blotzheim (FR) - Merve Örer, Geneva - Markus Orsi, Bern - Enric Petrus, Dübendorf - Beatrice Rassati, Bern - Leon Rebhan, Bern - Edoardo Renaldin, Villigen - Kai Roeseler, Gland - Noah Rychener, Signau - Ajay Saini, Jaipur (IN) - Aaron Schultz , Zurich - Nikolai Shcherbakov, Zurich - Ricardo Miguel Silvestre Dos Reis, Fribourg - Sebastian Sjöström, Zurich - Cleo Soldini, Dübendorf - Gabriela Stadler, Schlieren - Kaja Stalder, Langenthal - Oya Tagit, Muttenz - Anna Vagstad, Zurich - Vasiliki Valsamidou, Bern - Marleen Vetter, Thun - Till Vollmer, Beatenberg - Zarah Walsh-Korb, Lörrach (D) - Paula Widmer, Zurich - Titus Wuermeling, Muttenz - Janis Mikelis Zakis, Stein AG - Egor Zhilin, Bern - Giuseppe Zuccarello, Basel.

HONORS, AWARDS, APPOINTMENTS

Best Oral and Best Poster Presentation Award Winners of the 1st Swiss Symposium on Materials Chemistry 2023

The 1st Swiss Symposium on Materials Chemistry 2023 was a major event organized by the SCS Materials Chemistry (MatChem) Network with the aim of connecting scientists across all materials chemistry related fields in Switzerland, including solid-state-chemistry, materials synthesis, and advanced characterization.The program included a keynote lecture, invited lectures, contributed lectures by PhD students and postdocs, as well as a poster session. The two best student presentations were awarded with the Best Oral and the Best Poster Presentation Award, that includes a certificate and prize money of 100 CHF each. Congratulations to
Florian Schenk, ETH Zurich (Best oral presentation award)
«Solution-processed phase-change memory from molecular telluride inks» and
Dietger Van den Eynden, University of Basel (Best poster presentation award)
«Fatty acid capped, metal oxo clusters as the smallest conceivable nanocrystal prototypes; from synthesis to application»

The prize was handed over by Prof. Maksym Kovalenko, Chair of the MatChem network of the SCS and Organizer of the

symposium and Dr. Simon Böhme, Organizer of the symposium.
Website: *https://matchem23.scg.ch*

Prof. Fabian von Rohr, University of Geneva, awarded the EU-40 Materials Prize 2023

Prof. Fabian O. von Rohr, University of Geneva, Department of Quantum Matter Physics received the EU-40 Materials Prize 2023 for his work on Chemical Principles for Quantum Materials Discovery.

«The discovery of materials with tailored properties has, time and again, proven to be a crucial stimulus for technological advancement and, by implication, of societal progress. Quantum materials discovery, in particular, is widely considered to have a key role in the development of such next-generation technologies that will meet the urgent technological demands of our society. Our research aims at establishing a general experimental platform for realizing new quantum materials. In this presentation, I will discuss some of our recent results regarding the discovery and characterization of new quantum materials. This work is at the intersection of condensed-matter physics and materials synthesis, and as I will discuss here, a special emphasis on the combination of physical and chemical concepts is extremely important for developing these new quantum materials.»

The award recognizes the excellence of this researcher's work at the intersection of chemistry and physics, aimed at the discovery of new quantum materials and is reserved to researchers showing exceptional promise as leaders in the materials science having performed the research for which this prize is awarded while working in Europe.
It will be presented at the 2023 Spring meeting of the European Materials Research Society.
Source: *https://european-mrs.com*

Xile Hu, EPFL Lausanne, wins EFCATS Robert K. Grasselli Award for Catalysis 2023

Prof. Xile Hu, EPFL Lausanne, has won the Robert K. Grasselli Award for Catalysis from the European Federation of Catalysis Societies (EFCATS) for his research on developing catalysts from Earth-abundant elements for chemical transformations related to synthesis, energy, and sustainability.

The EFCATS award recognizes Hu particularly for his original and impactful contributions in the fields of water oxidation and hydrogen oxidation.

His work provides a high-level molecular understanding of the fundamentals of heterogeneous electrocatalysis, and is potentially of significant commercial value; the recently founded startup NovaMea SA is based on technologies derived from his research.
Given every two years by the European Federation of Catalysis Societies (EFCATS), the Robert K. Grasselli Award for Catalysis"aims to recognize outstanding theoretical and experimental contributions in the field of oxidation catalysis that advance understanding and practice of catalysis during the last five years prior to the year the award will be given."
Source: *https://efcats.org*

Prof. Ed Constable, University of Basel, new member of the RSC Board of Trustees

Prof. Ed Constable has been appointed as a member of the Board of Trustees of the UK's Royal Society of Chemistry following the 2023 elections.
The Royal Society of Chemistry represents chemists and chemistry in the UK and is well known to our department through its prestigious journals such as Chemical Communications. The RSC is a charity governed by its Board of Trustees. The Board of Trustees consists of up to 18 members, nine of whom are directly elected by the membership.

Ed is proud to take on this new role, promoting the cause of chemistry in the UK, Switzerland and Europe.
Source: *https://chemie.unibas.ch*

JOURNAL NEWS

Chemistry Europe Journal Issue 1, Volume 1

Chemistry Europe published the first issue of their new flagship journal Chemistry Europe. Chemistry Europe invites scientists from all areas of chemistry to submit their manuscripts to Chemistry-Europe.

All OpenAccess articles are available here: *https://chemistry-europe.onlinelibrary.wiley.com/toc/27514765/2023/1/1*
Source: *https://chemistry-europe.onlinelibrary.wiley.com*

EurJIC celebrates its 25-year anniversary

Twenty-five years ago, the Dutch and German chemical societies (KNCV and GDCh) took the initiative to create strong European journals with a global reach. Cooperation with more European national chemical societies soon followed, and the amalgamation of their national journals led to the formation of EurJIC under the ownership of Chemistry Europe. With its strong European roots, EurJIC has since developed into a leading inorganic chemistry journal serving an international community.

Since 2013 the Swiss Chemical Society is a full member of Chemistry Europe and likes to congratulate EurJIC for its anniversary.
Website: *https://chemistry-europe.onlinelibrary.wiley.com*

Helvetica, Volume 106, Issue 7, July 2023

Research Articles

Quantum Crystallography and Complementary Bonding Analysis of Agostic Interactions in Titanium Amides
Lorraine A. Malaspina, Nils Frerichs, Christian Adler, Marc Schmidtmann, Rüdiger Beckhaus, Simon Grabowsky

Incipient Nucleophilic Attack on a Carbonyl Group Adjacent to a Stereogenic Centre in *Peri* Naphthalene Derivatives
Jonathan C. Bristow, Ray Leslie, John D. Wallis

Engineering Host–Guest Interactions in Organic Framework Materials for Drug Delivery
Michelle Ernst, Ganna Gryn'ova

Tetrel-Centered Exchange Cascades to Decouple Inhibition and Induction of Thiol-Mediated Uptake: Introducing Cell-Penetrating Thiolactones, Focus on Reversible *Michael* Acceptor Dimers
Bumhee Lim, Naomi Sakai, Stefan Matile

Azido-Functionalized Fullerenes, Perylenediimide, Perylene, and Tetraphenylethylene as Crosslinkers for Applications in Materials Science
Carmen Villegas, Aurel Diacon, Thérèse Gorisse, Lionel Derue, Ingrid Freuze, Magali Allain, Hussein Awada, Olivier Dautel, Guillaume Wantz, Piétrick Hudhomme

Very Important Paper

Si-Tethered Bis- and Tris-Malonates for the Regioselective Preparation of Fullerene Multi-Adducts
Franck Schillinger, Uwe Hahn, Sebastiano Guerra, Thi Minh Nguyet Trinh, David Sigwalt, Michel Holler, Iwona Nierengarten, Jean-François Nierengarten

Bottom-Up Synthesis, Dispersion and Properties of Rectangular-Shaped Graphene Quantum Dots
Julien Lavie, Van Binh Vu, Daniel Medina-Lopez, Yannick Dappe, Thomas Liu, Loïc Rondin, Jean-Sébastien Lauret, Sylvain Latil, Stéphane Campidelli

Inverse Polyamidoamine (i-PAMAM) Dendrimer Antimicrobials
Etienne Bonvin, Jean-Louis Reymond

Photoinduced Electron Transfer in Clicked Ferrocene-BODIPY-Fullerene Conjugates
Jad Rabah, Anam Fatima, Hélène Fensterbank, Karen Wright, Anne Vallée, Maïssa Gueye, Gotard Burdzinski, Gilles Clavier, Fabien Miomandre, Julie Pham, Michel Sliwa, Rachel Méallet-Renault, Karine Steenkeste, Thomas Pino, Minh-Huong Ha-Thi, Emmanuel Allard

On the Structure–Odor Correlation of Muguet Aldehydes: Synthesis of 3-(4'-Isobutyl-2'-methylphenyl)propanal (*Nympheal*) and Four Novel Derivatives from a *Hagemann*'s Ester
Eva Ohrmann, Vijayanand Chandrasekaran, Bernd Hölscher, Philip Kraft

Website: *https://onlinelibrary.wiley.com/journal/15222675*

INDUSTRIAL NEWS

Source: *www.chemanager-online.com*

"We Want to Be a Big Fish"

Siegfried CEO Wolfgang Wienand on the Company's Strategy and Future Growth Opportunities

June 1, 2023 The CDMO (contract development and manufacturing organizations) business has a bright future, of that Siegfried CEO Wolfgang Wienand is certain. The economic advantages alone speak for this compared to in-house production by the pharmaceutical companies themselves. Although Siegfried has already reached sufficient critical size within its industry, he sees the company continuing on its growth path. The goal is to take over an even larger share of the value chain from pharmaceutical companies in the future.

CHEManager: *In your view, what characterizes a good CDMO?*

Wolfgang Wienand: It's the combination of various success factors. There is technology, capacity, regional footprint, cost competitiveness, to mention a few. However, the most important one is trust. That is important in any business of course, but it is especially true between a pharmaceutical company and a CDMO. Firstly, of course, because the products we manufacture ultimately end up in the bodies of patients. So, the expectations in terms of quality and reliability are particularly high, for good reason. But there is also a commercial point. A certain product, manufactured by us, may generate sales in the tens of millions for us, but such a product can very well represent sales in the billions for the customer. This means that if we can't deliver, it's not good for us, but it's even worse for our customers, because they may lose hundreds of millions or billions as a result. Since our customers can hardly reflect this risk contractually, for a pharma company it eventually boils down to the simple question: Do I trust this company? Do I trust these people, for them to stand up and make it work and deliver what they promised? Underpinning this trust with tangible actions and consistent performance is crucial if you want to be a strategic partner and successfully operate in the high-value segments of the CDMO market.

How do you establish this trust?

W. Wienand: Among other things, by a proven track record and by having critical size. This ensures that you have a high degree of stability on the financial side and don't fall over at the first gust of wind. It is also advantageous to have a global presence so that we can supply and support customers in all relevant markets. Since we have several locations, we are able to offer dual sourcing within the Siegfried network, *i.e.*, the manufacture of a product at two or more different locations. This gives us redundancy in the network and flexibility on the capacity side.

What other factors play a role?

W. Wienand: Trust is of fundamental importance, but of course, it is not enough if you want to play in the most attractive CDMO segments. That's why there is a whole group of other important factors. These include technological breadth, *i.e.*, the ability to offer customers a solution to their problems, whatever they might be. As a CDMO, you have to be able to handle the full range of chemical technologies. Otherwise, the customer ends up with a scattered supply chain in which one CDMO performs only one or two steps before the next one has to take over.

How important are the aspects of quality and cost?

W. Wienand: Price is not everything in our market. But of course, the customer wants to be supplied at competitive prices. While this is a relative measure, quality, in turn, is absolute. You have to be able to prove over decades that you really know how to manufacture safe high-quality APIs (active pharmaceutical ingredients) or drugs. The challenge, which only the few leading CDMO master, is to check the box for all of them and not only a few and fail on the others. Then and only then you qualify as a trusted strategic partner to the pharmaceutical industry to industrialize their most precious innovations.

You are one of the few suppliers who offer the manufacturing of active ingredients and finished dosage forms of drugs under one roof. What benefit does this offer to your customers?

W. Wienand: The synergies between these two segments in terms of equipment, technologies and qualification of personnel are limited. However, the integration of these activities in the hands of one supplier offers a compelling value proposition for our customers. Taking over such a large chunk of our customers' value chain leads to a maximum reduction in complexity on the customer side. This includes not only the manufacturing of APIs and Finished Dosage Forms (FDFs) for our customers, but also the management of the supply chain and a uniform quality management system. A large pharmaceutical company often has thousands of suppliers. This causes enormous complexity, as all these suppliers must be managed and kept on track. As an integrated supplier we provide everything from a C2 or C3 building block over the complex active ingredient to almost any finished dosage form from a single source and within consistent management of quality, processes and supply chain.

Is the combination of drug substances and drug products the CDMO model for the future?

W. Wienand: That is our conviction. Basically, with our integrated setting we are anticipating the future supply model in our industry as we expect it to evolve. We believe that in five to ten years, large CDMO companies like Siegfried will have taken over an even larger part of the pharmaceutical value creation for our customers comprising both, the development and manufacture of the active pharmaceutical ingredient and the finished dosage form of a drug. We want to and will be able to support our customers in the solution of as many of their tasks as possible.

The challenges for CDMOs are great: intense competition, cost pressure, constant technological advancements, and consolidation – how do you respond to this demanding environment?

W. Wienand: We have set our sights on playing in the top segment of the CDMO market. This is where we see the greatest opportunity to differentiate ourselves and earn adequate returns. That was and is our strategic goal. We have achieved this step by step over the past decade through organic growth and acquisitions and are now number five or six in our market.

Why is it so important to play at the top?

W. Wienand: Pharmaceutical customers give their most important innovations and products, *i.e.*, their most precious assets, to the strongest and most capable CDMO. To be strong and to be able to offer the broadest range of capabilities, a CDMO needs critical size in terms of capacities and breadth of technologies. In return, they expect efficient problem solving, highest quality and security of supply, but are also prepared to pay accordingly, because only then the CDMO have the necessary to invest in the necessary critical size.

How do you define critical size – is it depth of service, is it geographic distribution, is it measured by revenue?

W. Wienand: The critical size is derived as an imperative from the aforementioned success factors: Quality, financial stability, flexibility, capacity, technology breadth. Each individual criterion is always associated with size. So, how broad is our technology portfolio? It is only broad if we can afford to invest in a broad set of high-end technologies. To be able to afford a lot, we need a lot of sales with adequate profits.

On the capacity side, if I want to offer dual sourcing for security of supply, flexibility and capacity that is available also on short notice, we also need size. As a small CDMO with 200 cubic meters of capacity, I can't afford to have 50 cubic meters or 25 percent of my total capacity sitting around idle because a customer might request additional volumes on short notice. But if I have a total of 2000 cubic meters, then 50 cubic meters represents only 2.5 percent. I can afford that. That gives us spare capacity to help a customer if needed. A pharmaceutical company expects that from its strategic partner.

So, on the one hand you have achieved critical size, but on the other hand you also say that you still want to continue to grow. What role will Siegfried play in the consolidation of the CDMO industry in the coming years?

W. Wienand: We want to stay in the top ten. And to advance further. We want to be big fish and consolidate, not small fish and be consolidated. That's our ambition, that's what our strategy is geared towards. To achieve this, we have the necessary will, ideas, know-how and the necessary financial resources.

How much money can you raise for this?

W. Wienand: Without having to increase capital, about half a billion Swiss francs.

You have a strong presence in the small molecule sector, and you repeatedly emphasize how important this is for you. Will you use acquisitions to diversify and put more emphasis on biologics, for example?

W. Wienand: In the area of M&A as well as organic investments, we are proceeding in three directions. First, it is part of our strategy to further strengthen ourselves where we are already strong, be it organically or through acquisitions. Secondly, we are pursuing the approach of adding certain technologies to our portfolio. I am thinking here, for example, of particle technologies like micronization, lyophilization or spray drying. The same applies to drug delivery platforms in the area of formulation. The third field of action concerns entering CDMO market segments where we are not yet active. It is quite conceivable for us to enter the space of biological drug substances like proteins or antibodies. We would most likely not build this up organically but do this through an acquisition. In addition, there is cell & gene therapy, which is at the forefront of medicinal research. We can also imagine an investment there because we believe that this segment can be very attractive for Siegfried.

Siegfried is now 150 years old. According to your ideas, the company should continue to be active in the next 150 years. What will it take to achieve this?

W. Wienand: We need to retain and further develop our strong corporate culture. This is characterized, among other things, by a

will to grow and, at the same time, to take good and sustainable entrepreneurial decisions which hold true not only tomorrow but far beyond. If you want to grow, you need a growth mindset in your teams and a positive attitude towards change. Furthermore, of course, we need sustainable economic success. Because this puts us in a position to earn the financial resources we need to invest in our future and to capture the many opportunities in this growing market.

Are you confident that the large pharmaceutical industry will continue to need the services of CDMOs in the future? Or do you think it's possible that the trend could go back to more in-house production at Big Pharma?

W. Wienand: I consider the basic logic of the CDMO model to be very conclusive and compelling. It is driven by the fact that pharmaceutical companies want to invest their cash in innovation and new therapies. They don't want to invest it in brick and mortar. So as long as they can find a reliable, capable, high-quality partner and the manufacturing process can be sufficiently well described, specified and controlled, there is a strong incentive for them not to invest in their own capacities but outsource. Incidentally, this is also what their investors expect. In addition, from the point of view of diversification, we as a large CDMO can do something that even Big Pharma cannot: When pharma companies keep their own production facilities, they can essentially use them for their own drugs only. This means that even for large companies their in-house manufacturing portfolio is limited. This translates into a significant risk of underutilization or even write-offs of their expensive assets if an important product fails and the volumes disappear. We as a large CDMO, on the other hand, can go to any pharmaceutical company in the world and thus can create a much larger portfolio of projects and products. These are of course inherently risky, too, but the individual risks are much better diversified in our larger portfolio leading to a much lower risk of underutilization and idle costs. In the end, this leads to greater capital efficiency at the CDMO as compared to in-house manufacturing by a pharmaceutical company. These economic benefits for our customers are tangible and real. And that's why I am so confident that the CDMO business model with its sound economic logic will continue to thrive.

Lonza Acquires ADC Specialist Synaffix

June 2, 2023: Swiss CDMO Lonza has acquired Dutch-based Synaffix, a biotech focused on ADC development. The deal comprises an initial cash injection of €100 million and up to €60 million in additional performance-based considerations. Synaffix will continue to operate under its existing name. Swiss CDMO Lonza has acquired Synaffix, a Dutch-based biotech focused on the development of ADCs. As a Lonza company, Synaffix will continue to operate under its existing name and further expand its operations in Oss, the Netherlands. The transaction comprises an initial financial consideration of €100 million in cash and up to €60 million in additional performance-based considerations. The company's revenues and margins will be recognized in Lonza's balance sheet from the date of acquisition. Combining Lonza's development and manufacturing capabilities with the Synaffix ADC technology platform will provide customers and licensees with a comprehensive service to rapidly discover, develop, scale up and commercialize novel and differentiated ADCs, the CDMO said. "These enhanced capabilities," it said, "will streamline the path to clinic and commercialization." Supported by a dedicated scientific team, the Synaffix technology platform, which includes payload and site-specific linker technologies, will enhance and extend Lonza's integrated ADC services, including its early-phase offering, the Basel-headquartered company added. While ADCs offer widespread and targeted treatment potential against cancer, they also present a range of complex development and manufacturing challenges, Lonza said, noting that in this sense the Synaffix ADC technology platform comprising proprietary GlycoConnect, HydraSpace and toxSYN technologies has the potential to considerably enhance the efficacy and tolerability of ADCs.. Calling the Synaffix ADC technology, "the gold standard," Ulrich Osswald, Lonza's vice president for licensing, said the acquisition will help the Basel firm to expand its strategic position in bioconjugates, enhancing its value proposition for clinical customers. By the reverse token, Synaffix CEO Peter van de Sande, pointing to "strong and immediate synergies," said that under the Lonza umbrella his company will be in a better position to fast-track technology innovations in bioconjugates beyond cytotoxic ADCs. In its center of excellence for bioconjugate technology development, the integrated operation will focus on out-licensing bioconjugates technologies for cytotoxic ADCs, targeted gene therapy, immune cell engagers applications and beyond, Lonza said.

Germany's Messer to Buy Out Investor CVC

June 2, 2023: Toward bringing global operations under sole family control for the first time since selling the bulk to Hoechst 1965, German industrial gases producer Messer is buying out investor CVC. To finance the plan, the company will sell a stake to Singapore sovereign wealth fund GIC. German industrial gases producer Messer, currently the only privately owned business of its kind type globally, is restructuring its share capital in a move toward bringing its entire global operations under sole family control for the first time since selling three-quarters of its assets to the now defunct Hoechst group in 1965. In a first step, the Bad Soden-based principal operating company Messer SE & Co KG will acquire all shares held by CVC Capital Partners Fund VII in the joint venture Messer Industries by the end of this year and integrate these assets into its portfolio. In parallel, to help pay CVC for its shares and strengthen the company's financial position, Messer will sell a minority stake (of around 20%, reports say) to GIC, the company that manages Singapore's sovereign wealth fund. With the buyout of CVC, which is due to complete by the end of this year, supervisory board chairman Stefan Messer, family patriarch in the third generation, said the gases producer will create the foundation "to continue and our successful 125-year history globally together with GIC and thus differentiate ourselves from our listed competitors." GIC will remain a long-term minority shareholder, Messer said, noting that the "successful cooperation" with the US private equity group was "designed to be temporary from the outset." Bernd Eulitz, who succeeded Stefan Messer as CEO at the end of April, commented that as an integrated company the German player will grow into new dimensions, both organically and through targeted acquisitions, and as the world's largest privately held industrial gases specialist become the top challenger to the industry's "big three": UK-based Linde, France's Air Liquide and Air Products of the US. Alexander Dibelius, who has responsibility for CVC's business in Germany, added that the four-year partnership, "based on an ambitious joint business plan, a clear allocation of roles, mutual respect and trust, wrote a success story at Messer Industries and realized a significant increase in value for all parties involved." The JV Messer Industries, which comprises the group's companies in North and South America, along with others in western Europe, was formed at the beginning of March 2019, together with CVC as a vehicle to purchase assets that German rival Linde was obliged to shed to gain regulatory clearance for its merger with US gases giant Praxair. The deal included substantially all of Linde's US bulk business and its operations in Brazil, Canada and Colombia, which together generated sales of around $1.7 billion in 2017. Messer brought into the new JV its operations in Spain, Portugal, Switzerland, France, Benelux, Denmark and

Germany, which employed 780 people and generated 2017 sales revenue of €334 million. The gases company had sold its own North American holdings to France's Air Liquide in 2004. In 2022 Messer Industries posted sales of €2.59 billion and EBITDA of €749 million. In total, the Messer group reported sales of €4.16 billion and EBITDA of €1.17 billion for that year. The German company now said it sees "good opportunities" to more than double its business volume by the end of the decade. Both Messer and CVC said they profited from the partnership. But according to reports from the German financial sector, the private equity investor profited most. The €3 billion or more Messer is reportedly paying CVC for its shares is said to be worth nearly five times their 2018 value.

Siegfried Demonstrates Biologics Expertise in Hameln
The Technologically Demanding Biologics Fill & Finish Segment. A Business with Future.

June 5, 2023: The Fill & Finish of biologic drugs is expensive and poses special technological challenges for CDMOs. At the German site in Hameln, Siegfried has successfully proven these capabilities over the past two years by producing Covid-19 vaccines and a significant number of clinical batches for several biological companies. By investing in its competencies, capacities and flexibility, the company intends to further expand this demanding but promising business area. Siegfried entered new territory on September 14, 2020. On that day, the company announced that it had signed a collaboration and supply agreement with the German biotech company Biontech for the filling and packaging of commercial quantities of the innovative Covid-19 vaccine candidate BNT162b2. From mid-2021 to the end of 2022, the vaccine, which played a key role in the management of the Corona pandemic, was filled at Siegfried's German site in Hameln. For the aseptic filling and packaging ("Fill & Finish") of the vaccine, the company invested in a dedicated production facility and provided special storage capacity. The next step followed in May 2021. Siegfried agreed with Novavax to handle the aseptic filling of the protein-based coronavirus vaccine NVX-CoV2373 for the US company in the future. The contract was extended the following year until the end of 2023. The two vaccines are biologically manufactured drugs. In contrast to products with a chemical composition, biopharmaceuticals are characterized by a more complex molecular structure and a significantly more demanding production process. The demands on CDMOs like Siegfried are correspondingly high. Through these projects, the Swiss company demonstrated its ability to solve technologically demanding tasks even on short notice as well as to quickly ramp up capacities as required. With the investments in competencies and multi-purpose capacities in Hameln, Siegfried has already been able to support a number of customers with development and manufacturing services beyond vaccines.

Every Drop Is Important

In the biological Fill & Finish process, every drop counts, because the production of the active ingredient is very expensive. For example, 30 liters of drug substance yields 1 million doses of drug product. In this context, Siegfried points out that it has the equipment and experience to limit waste and leftovers and to ensure no interruptions in manufacturing. With the new production line, the CDMO is also able to perform 100% inline check weighing. In addition, the company is very flexible in producing a wide range of quantities. For clinical trials, for example, Siegfried has a special line for small batches with minimal losses. Here the CDMO can produce batches of only 4 to 8 liters and doses of just 0.2 milliliters. But Siegfried can also do big things: In one of its projects they produced 760,000 cans in 500 liters - the company claims it is the only one that can do that. Even though they are used to dealing with complex processes in Hameln, some products present a special challenge. Like Biontech's Covid-19 vaccine, which had to be cooled down to minus 80 degrees. The problem: The stoppers that seal the vials become as hard as stone at minus 50 degrees, says Marianne Späne, Chief Business Officer (CBO) of Siegfried. Their ability to seal diminishes. That's why they developed their own solution. Which one? Späne only says: "IP" - intellectual property. Trade secret.

The Future of Biologics

Up to now, the liquid pharmaceutical products they fill in Hameln have mostly been based on small molecules, *i.e.* chemically produced active ingredients. Biologics still account for a small proportion. But that is set to change in the future. Given the growing pipeline of biologics, lack of technical expertise, and huge capital investment in the installation of Fill & Finish equipment, a rising number of pharmaceutical companies are turning to contract service providers in order to ensure the development of quality drug products. This surge in the demand for biologics Fill & Finish services has presented opportunities for service providers having such capabilities. Digital screens at the entrances to the production halls in Hameln show, which products are currently being manufactured. Basically they fill almost all sterile liquid pharmaceuticals, a total of more than 100 different products: anesthetics, water and also the Covid-19 vaccines from Biontech and Novavax, with which Siegfried has proven its capabilities "as one of the leading service providers in the CDMO sector for technologically demanding products such as Covid-19 vaccines," according to CEO Wolfgang Wienand.

Sophisticated Process

CBO Späne adds that the quality of the biologics and liquid drugs they produce in Hameln depends primarily on strict adherence to processes. One thing is to be avoided at all costs: That germs get into the production process or even into the drugs. After all, the products they manufacture here are highly sensitive. In addition to vaccines, they also include anesthetics that are injected into patients' bodies before operations. Nothing can be allowed to go wrong. Sterile and aseptic production means germ-free production. This kind of manufacturing process is one of the most demanding procedures in pharmaceutical production and places highest demands on rooms, air quality, starting materials, surfaces and personnel. There are two ways to ensure sterility or aseptic conditions: One is heating the liquid drugs. For 15 minutes at 121 degrees in so-called autoclaves. These are basically oversized steam ovens that can hold several metal boxes, each containing thousands of ampoules or vials. But not all drugs can withstand these temperatures, including most biologics. Then the only option is to manufacture them in a germ-free environment. The problem is that people always carry germs with them. They stick to their clothing, but they also adhere to tables, walls and work surfaces. And: You can't make them visible. There is no spray that can be used to detect the germs as small colorful dots in the environment. Accordingly, the Siegfried employees at the Hameln site make great efforts with regard to purity. It already starts in the warehouse - the incoming crates are transferred here from wood to aluminum pallets. Employees can only enter the actual production area through locks and with special protective clothing. Particularly sensitive production steps are carried out fully automatically in specially separated rooms.

From 5,000 to 30 Million Vials

The site has belonged to Siegfried since the takeover of the former family-owned company Hameln Pharma in 2014. Around 500 employees work here, in the southern part of Lower Saxony, in three shifts five days a week, sometimes seven days a week, in sterile and aseptic filling. They are specialists in this. Hameln, says Späne, is the largest sterile filling site in the Siegfried fam-

ily. Here they produce on eight filling and four packaging lines for about 30 to 50 pharmaceutical customers. Some have had production for years in the town known for the Pied Piper saga, others for just one production run. The volume of orders also varies greatly: sometimes it's just 5000 units for biopharmaceuticals, sometimes it´s 50,000 or even 30 million ampoules or vials per customer and year. The El Masnou site in northern Spain, 20 minutes north of Barcelona, also specializes in handling aseptic products, in particular opthalmics. Nearly 400 employees here manufacture and package sterile ophthalmic products including eye drops, eye ointments, ear and nose sprays. The Siegfried sterile and aseptic filling network also includes the US site in Irvine, California. The plant with its more than 120 employees has been part of the company since 2012 and primarily serves customers from the US market.

Constant Control, Constant Cleaning

Production is one thing, checking processes and sterility is another. At Siegfried's Hameln site, they check constantly, in the running process, so to speak. Employees take measurements on surfaces, they measure air quality, and employees are "wiped down". Data is continuously collected and documented to prove that the batches are germ-free. Visual inspections also have an important function. With an alert eye, employees check whether the heat-formed vials are properly sealed. Do they have a bulging head, *i.e.*, is the glass around the top too thin? If so, the vials are sorted out by hand. It is a strenuous job that requires constant attention and is exhausting. That's why the inspectors take turns every 20 minutes. Elsewhere, however, machines check whether the vials contain the correct amount of liquid and are really free of particles. To do this, the vials are set into rapid rotation, followed by an abrupt stop. And in order to test the tightness of the vials, they are subjected to high voltage.

Twice a Year the Big Check

Twice a year, each production line undergoes a major check. The process is called Mediafill. In this process, a solution capable of strong growth is brought into contact with the surfaces of the production line. It is a demanding and technically challenging procedure. Contamination must be avoided at all costs. That's why cleaning, always cleaning. "In sterile production, they literally clean themselves to pieces," says the Chief Business Officer.

60 Employees in Quality Control

At the Hameln site alone, 60 employees work in quality control. Added to this are the production employees, who also make sure that processes and quality fit in the daily workflow. In addition, they attach importance to service. Späne: "Our principle is: If someone comes to us with a problem, we'll find the solution." Or as Siegfried's corporate slogan says: "Expect more." In Hameln, this is brought to life in a very concrete way.

Sustainability – The Many Facets of Action

The Pharma & Biotech Industry Already Contributes Significantly to Reduce Its Environmental Footprint. Nevertheless, Even More Can Be Done.

June 5, 2023: Climate change, energy crisis, the call for a more environmentally compatible production method and socially responsible action do not stop at the pharmaceutical and biotech industries. Sustainability is becoming a central competitive and reputation factor and carries a high economic value. This need not be to the industry´s disadvantage. It helps companies to make processes more efficient, reduces energy consumption and keeps costs in check. But is the pharmaceutical industry already doing enough in this regard? It's just a small word, but simultaneously a big term: hard to grasp, a bit fuzzy, ambiguous, yet on everyone's lips and increasingly important: Sustainability. Some call it a megatrend. Sustainability is so elusive because it includes several dimensions such as fair trade, social commitment, prudent use of resources, natural ingredients, animal welfare, environmentally friendly packaging or regional production. Also, governance, compliance and integrity are an important part of sustainability. Last but not least compliance issues such as product quality, transparency in collaboration with healthcare professionals as well as patients, and anti-corruption remain important. As with nearly every industry, pharmaceutical and biotech companies cannot avoid dealing with the contents and implications of this term. The European Federation of Pharmaceutical Industries and Associations (EFPIA) admits that there are many risks associated in the whole life cycle of a medicinal product that impact the environment negatively. Further understanding of these impacts and the interface between society, health and the environment is the key to guaranteeing that the pharmaceutical industry can form and execute actions. For its part, the consulting firm PWC emphasizes the need to set the right priorities when it comes to sustainability. Even though many healthcare companies have committed to stricter climate protection targets, the industries still emit significant amounts of greenhouse gases. Adjusting production and supply chains would not only benefit the environment, but also add value.

Importance of Social Criteria

In addition to environmental aspects, social criteria also play an important role, *i.e.*, above all access to medicines for humans and animals and food security. According to PWC this topic is receiving a lot of attention, but there remains substantial untapped potential. Decision-makers need to develop a focus on the issues that fit their strategy, using all available levers - from research and development to pricing strategies and capacity building. The focus here in the future will be particularly on developing countries with immature agriculture and healthcare systems.

Digital Integrity

PWC also highlights the importance of digital aspects when it comes to sustainability: The industry is currently undergoing a transformation from traditional value chains to a patient-centric business model. Data plays a central role in this. For this model to be sustainable and for patients to trust companies, a high level of data protection must be ensured, argues the consulting company. High ethical standards and consistent implementation are therefore necessary to successfully shape the digitalization of pharmaceutical and life science companies.

What Pharma Is Already Doing

A closer look shows that the healthcare industry is already making a lot of efforts in terms of sustainability. Although research driven pharmaceutical companies do not typically belong to high energy consuming companies, they are at the forefront of numerous ground-breaking initiatives to help reduce CO_2 emissions, according to EFPIA. The German Association of Research-based Pharmaceutical Companies (Vfa) points out that pharmaceutical manufacturers are committed to the guiding principle of sustainability. Thanks to their „long-standing and international commitment to the environment," they are well positioned to meet the challenges of the future. And Bengt Mattson, chair of the Interassociation Industry Pharmaceuticals in the Environment Task Force, says in a blog for EFPIA the industry has already taken „strides forward in minimizing its emissions and driving environmental sustainability. Every stakeholder concerned must play its fair part and the industry has taken a leading role in this respect."

Target: CO_2-Neutral

In fact, many companies want to become CO_2-neutral in the coming years, or at least significantly reduce their CO_2 emissions. Roche has set itself the strategic goal of halving its environmental footprint between 2020 and 2029. On the way there, CO_2 emissions per employee are to be reduced globally by 40% by 2025. Boehringer Ingelheim aims to become climate-neutral in its operations by 2030. And Novartis wants to achieve CO_2 neutrality in its own operations by 2025 and complete CO_2 neutrality by 2030. Siegfried has set itself the goal to reduce its CO_2 footprint by 50 percent by 2030. In addition, the CDMO will introduce long-term activities conforming to the so-called net-zero target 2050 to limit global warming to 1.5°C via the reduction of greenhouse gas emissions. Moreover, industry experts emphasize that innovative technologies are key to their success in environmental sustainability. Such technologies enable high output in next-generation facilities with a smaller physical footprint, smaller carbon footprint, and less water usage.

Less Wastewater, Less Waste

In this context the German Vfa points out, that the consumption of energy and raw materials has already been declining significantly for years; less wastewater and waste are being produced, and greenhouse gas emissions are also falling. The industry is therefore not only meeting the increasing requirements of environmental legislation. In many cases, the companies are even going above and beyond the prescribed level to protect the environment, climate and natural resources. This also applies to the European pharma and biotech scene. According to information from EFPIA, the members of the association take responsibility for reducing environmental risks from manufacturing emissions, through implementation of risk-based containment procedures in their manufacturing Effluent Management Programs. They also pursue extended producer responsibility (EPR) programs for waste pharmaceuticals and support the meds disposal campaign and other take-back schemes. Beyond this, even small steps can have a big effect. Many companies offer bike-to-share stations to their employees, use green electricity from biomass power plants, build solar panels on its plant roofs, operate beehives on their premises, or offer only food that comes from the region in the plant cafeteria. For Siegfried for example, sustainability has been one of the company's five core values since 2019. In 2021 the Swiss CDMO called into life the Corporate Sustainability Board, an interdisciplinary body that coordinates and pools its sustainability activities. These efforts are being recognized by external parties and independent institutions. In addition to certifications such as the ISS ESG Rating and the MSCI ESG Rating, Siegfried has also been included in the Dow Jones Sustainability Index Europe in 2021.

More Can Be Done

Nevertheless, more can be done. EFPIA believes, a cooperative approach with broader stakeholders to be the way that will allow to expand the common knowledge and comprehension of the industry on how to proactively handle any potential risks imposed by the existence of Pharmaceuticals in the Environment (PiE). Consequently, EFPIA along with AESGP and Medicines for Europe have established the Eco-Pharmaco-Stewardship (EPS) framework with the focus on PiE and is executed across the industry and with broader stakeholders in the healthcare and environmental sector. As part of the pharmaceutical legislative review, the Commission will adopt legislation looking at strengthening the environmental risk assessment for medicines. Minimizing the impact of pharmaceuticals on the environment, the extended Environmental Risk Assessment (eERA) concept was proposed by the pharmaceutical industry to address the challenges and strengthen the Environmental Risk Assessment process in the EU. As pointed out in a blog on the EFPIA website, ERA should be reviewed and, if necessary, updated throughout a product's lifecycle to reflect the latest information on the medicine's potential impact on the environment, while avoiding duplications of submissions for off-patent drugs. However, the focus should be on the active pharmaceutical ingredients (APIs) entering the environment and not on each single product, as a single API can be used in multiple products. Regulatory, academic and industry resources and associated environmental mitigation strategies should be prioritized on those APIs that pose a potential risk to the environment.

German Supply Chain Sourcing Obligations Act Heats Tempers

In parallel, the framework conditions are also being adjusted, for instance in Germany. The new Supply Chain Sourcing Obligations Act (LkSG), which came into force at the beginning of 2023, heated tempers in the run-up. Supporters see the regulation primarily as a necessary instrument to push companies toward more sustainable practices; others argue that the legislation will not bring any noticeable changes in society. The LkSG focuses on the social aspects of sustainability, such as human rights, child labor, working conditions or fair pay, and only marginally addresses specific environmental issues. Especially for highly regulated industries like the pharmaceutical industry, it can be assumed that they know better how to deal with administrative efforts, since topics like the traceability of each batch already have to be ensured today. Thus, it can be expected that the documentation processes are well established and can be applied or adapted. Risk-based assessments are also known and proven in the pharmaceutical industry from approvals, validations and qualifications.

Communication Is Key

In addition to all active measures in sustainability, another aspect also plays an important role: communication. "Sustainability doesn't work without transparency," says Robert Paffen, Partner at PWC Germany. "The last decade has seen a steady increase in public demand for transparency for pharmaceutical and life science companies on their environmental, social and governance performance, including their contributions to the local economy." According to the proverb: Do good and talk about it.

Novartis Takes Chinook Therapeutics for $3.5 billion

June 15, 2023: Swiss drugmaker Novartis has agreed to acquire Chinook Therapeutics, a US clinical-stage biopharma, for $3.5 billion. Chinook has two late-stage drugs in development to treat Immunoglobulin A Nephropathy (IgAN), a rare and progressive kidney disease that mostly affects young adults and currently lacks targeted treatment options. The therapies are Atrasentan, an oral endothelin A receptor antagonist (ERA) and Zigakibart, a monoclonal antibody. Atrasentan is currently in Phase 3 development for IgAN and has shown significant reductions in proteinuria. Atrasentan is also in early-stage development for other rare kidney diseases. A phase 3 trial for Zigakibart in IgAN is expected to start in Q3 2023. Novartis said Chinook has deep expertise in modeling and understanding kidney disease and a promising early pipeline to address a number of severe renal conditions. Both companies' boards have unanimously approved the deal, which is expected to close in the second half of 2023. Earlier this month, Novartis paid $87.5 million for Avrobio's investigational hematopoietic stem cell (HSC) gene therapy program for cystinosis, a rare genetic disease where amino acid cystine builds up in the body's tissues and organs.