FINE & SPECIALTY CHEMICALS

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Markets in Transition

Dear Reader,

The fine and specialty chemicals market has emerged as one of the most important chemicals segments worldwide. Numbers on the market size vary, as the definition of „fine chemicals“ and „specialty chemicals“ is somewhat vague. Reports estimate the sector to have a global volume of around $850 billion, or roughly one quarter of the total global chemicals market. The market is further projected to grow at around 5% and exceed $1 trillion before the year 2020.

By definition, fine chemicals are used as building blocks or starting materials for specialty chemicals, particularly pharmaceuticals and agrochemicals. Specialty chemicals are materials used in numerous other sectors such as automobile, construction, cosmetics, packaging, plastics, oil & gas, paper or textile industries on the basis of their performance or function. Hence, they are also referred to as performance chemicals.

The market is in transition. During the last 10 years, the specialty chemicals industry has experienced lower overall profitability within a more competitive environment. Historically, North American, Western European, and Japanese companies have dominated the fine and specialty chemicals business. However, with the rapid growth of the newly industrialized Asian economies and rising standards of living in many developing countries, the center of gravity of the global chemical industry is shifting. Industrialization in emerging regions has led to an increasing demand from countries like India and China. In 2014, the Asia-Pacific region contributed around a 35% share of the world specialty chemicals market and remains the largest market for specialty chemicals in terms of value, followed by North America and Europe.

While volume consumption of specialty chemicals is expected to increase at close to 5% on a global basis, it differs significantly by regions.

While the combined consumption in North America, Western Europe, and Japan will grow only at about 2% per year, growth in emerging markets will be much higher. China will continue to have the highest growth rate. Although the country is seeing some short-term setbacks in its economy, the forecast still expects a growth rate for the consumption of specialty chemicals of 7% per year.

Increasingly, North American, European, and Japanese specialty chemical producers look to developing regions for growth. At the same time, Chinese and Indian manufacturers have become key players in several specialty chemical markets. In addition, chemical companies in the Middle East, who have been focusing on producing basic chemicals and polymers primarily to leverage their regional feedstock advantage, will likely move downstream into performance and specialty segments.

As Western players are facing increasing pressure from rival producers, and local players try to capture a larger share of the global market, specialty chemicals companies around the world must find new ways to grow and compete.

As a differentiating component, many fine and specialty chemicals companies provide value-added service to their customers. Constant focus on research and development (R&D) activities has led to the development of advanced specialty chemicals with optimum features. Specialty chemicals manufacturers are trying to improve their margins by implementing price increases to compensate for higher R&D, energy, and raw material costs. However, on the other hand, the ongoing commoditization of certain specialty chemicals will lower the market entry barrier for new players.

As is the chemicals market, the publishing sector is also in transition, and the drivers are the same: globalization and digitalization. Our readership's media consumption and user behavior is constantly changing, and the demand for digital products, e-newsletters, e-books, and apps is rising. To meet this changing environment, Wiley is evolving from a traditional print publisher to a provider of multiple digital media platforms. In addition, globalization requires that media and information is made available around the globe instantly.

With this first issue of *CHEManager International Fine and Specialty Chemicals*, we are implementing the new concept that we developed for our established newspaper brand. Beginning this year, our new series of focused English-language issues will, in addition to *Fine & Specialty Chemicals*, comprise the issues *Chemical Distribution & Logistics*, *Pharma & Biotech*, and *Regions & Locations*.

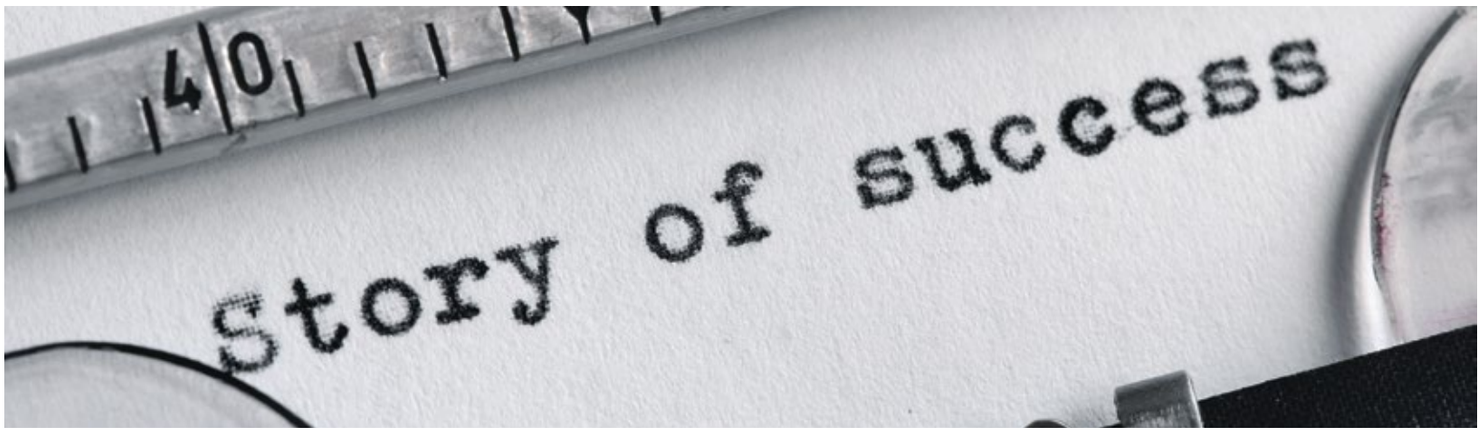
Dr. Michael Reubold, CHEManager

CHEManager International's special editions and will cater more to the changing information needs and interests of our target audience. The new magazine-style tabloid format is easily converted to a digital format, thus complementing our *CHEManager International* web portal and bi-weekly e-newsletters. The print and digital versions combined will allow us to penetrate all important Western regions as well as the emerging markets with the *CHEManager* brand effectively reaching more readers in shorter time.

Take the time to study this issue, it will be time well invested.

Dr. Michael Reubold,
Managing Editor, CHEManager

Content



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Pattern Of Success

Management Differentiates Winners Among Chemicals Spinoffs

Is there a proven management recipe for turning a chemical industry spinoff into a success story? Camelot Management Consultants analyzed the history and performance of 20 such spinoffs. Despite individual differences between these firms, we saw a clear picture: Although there was no one-size-fits-all approach, we found a pattern of management actions that distinguished successful players – a pattern that seemed trivial but was not easily translated into action.

Dr. Yorck Dietrich,
Camelot Management Consultants

Covestro's recent initial public offering is only the latest of many spinoffs in the European chemical industry, which include Clariant, Trevira, Rhodia, Celanese, Basell, Cognis and Lanxess, to name but a few. Their mother companies, mostly chemical/life science conglomerates, divest businesses they no longer consider "core," often because of diminishing margins due to maturing product portfolios and low-cost competition. While some of the new players remain listed, others were taken over from the start or later by private investors.

These investors fall into two categories: On the one hand are private equity firms such as Blackstone (Celanese), Platinum (DyStar) and Permira (Cognis, CABB); on the other hand are private investors or privately held companies such as Access (LyondellBasell, which originated as a spinoff from BASF and Shell), Ineos (acquiring businesses from, e.g., BP, ICI, BASF and Lanxess) and Koch Industries (Invista, combining businesses from DuPont and Hoechst, among others).

In contrast to private equity firms, investors in the latter category tend to pursue a buy-and-hold strategy. The emergence of these players strongly supports the finding that success can be related to good management practices, at least to some extent. Some private equity firms even focus on restructuring companies immediately after a spinoff, while others target restructured spinoffs to pursue growth strategies.

What Makes The Difference?

But what is the connection between management and success? To answer this question we must first define how success can be measured. Profitability in terms of net income and profitable growth in terms of increasing sales and net income are sound indicators. In the case of listed companies, (relative) stock market performance can be used as an approximation that is often correlated with net income growth. Good management is only one of many factors that influence shareholder value. Nevertheless, among the analyzed cases there are some peculiarities that strongly hint at management as a differentiator.

The success stories of Celanese and LyondellBasell cannot be fully explained by reference to the careful timing of entries and exits of their new investors, or (in the case of LyondellBasell) by the influence of shale gas. Celanese's performance following the IPO has deviated significantly from its pre-Blackstone performance, even if the higher stock market valuation in the US is taken into account. The stock also outperformed its peers. LyondellBasell shows the same picture in comparison with the past (before the financial crisis/Chapter 11) as well as with its peers.

Clariant started during an economic boom, boosted further by the specialty-chemicals hype of those days. After the boom subsided, complex structures, reluctant restructuring and portfolio management, disappointing earnings and disappointed expectations led to a long slump that ended only when new management took over in 2008. In contrast, Lanxess came into being in the context of a weaker economy but surprised the financial community with energetic and convincingly communicated restructuring measures. In terms of share price, it strongly outperformed its peers in the early years.

Pragmatism And Speed

The findings strongly suggest that certain approaches contributed to better performance, whereas others did not. But which management actions are most likely to make spinoffs successful? We typically see two periods or rather threads of action after a company has been spun off: The restructuring phase is followed by a growth period, which means growing profits rather than sheer size. Whether spinoffs use that simple logic or break it down into a four-stage master plan, such as the one Lanxess promoted after 2005, it is important that a compelling rationale drives stakeholders' expectations and serves as a benchmark for successful implementation.

Both phases can be associated with certain success factors and pitfalls. Removing an inherited burden of layers of corporate overhead, complex or bureaucratic processes and blurred responsibilities is sometimes sufficient to restore profitability. Restructuring means pragmatism and speed — short payback periods are key. Internal benchmarking with robust metrics is often sufficient to identify best performers (that will become the new standard) or low per-

formers (that will be eliminated) whether it regards products, plants or sales offices.

After James Gallogly took over as CEO of LyondellBasell in 2009, he benchmarked all production assets in order to obtain the same cost structure, performance and head count as those of comparable facilities. Similar patterns can be derived from Dave Weidman's actions as the new CEO of Celanese in 2004. Strong management incentives ensure a tenacious approach to implementation. Leave no stone unturned.

Preventing businesses from destroying value, either through restructuring or divestment, is even more important. Therefore, the organizational structure should facilitate smooth portfolio management. Celanese, for example, divested and acquired businesses amounting to a third of the revenue from 2005 to 2007.

Avoiding Pitfalls

Delayed or protracted restructuring is a key reason for underperformance. Companies sometimes ease off rigorous cost cutting once the business outlook improves, and sometimes they are reluctant to pursue active portfolio management. Managing the transition to a growth strategy is a considerable challenge as well. Stakeholders should not be allowed to perceive cost cutting as a thing of the past — they should understand that only the methods change. Now more systematic approaches such as operational excellence, lean supply-chain management or Six Sigma must deliver steady, incremental improvements over a longer period. Digitization becomes a priority to prevent complexity from overwhelming a business.

While complexity is one pitfall of a growth strategy, bad timing is another. Private companies should be in a better position to pursue anti-cyclical investment (something that Koch Industries has emphasized). Another success factor is balancing external against organic growth and achieving organic growth with reasonable capital expenditures. LyondellBasell was able to profit from the US shale gas boom ahead of its competitors. Rather than building new crackers, Gallogly expanded capacity at his existing plants and converted them to use feedstock made from natural gas. Capacity was increased within two years, while building new plants would have taken six. That helped turn LyondellBasell into a "cash machine" (Forbes) that realized superior shareholder value.

What is remarkable about successful spinoffs is not the ingenuity of their plans but how effectively they are implemented. It is all about setting the right priorities, being pragmatic in analysis and problem-solving while being tenacious in realization. Provided that spinoffs deliver on their plans, shareholder recognition will not fail them.

Dr. Yorck Dietrich, Principal,
Camelot Management Consultants,
Munich, Germany

Chemicals 4.0 – Bringing the Industry to the Next Level

Growing Complexity Puts Focus on the Future

Industry 4.0 sparks intensive discussions within the chemical industry. The question is whether this is really new or just a fancy label for some well-known practices. IT has always been a key success factor, hasn't it? And what about industry-specific characteristics? Is Industry 4.0 relevant for this industry with its different nature of production? Or is it limited to automotive?

Dr. Götz G. Wehberg,
Deloitte Consulting

To understand the effect of Industry 4.0 on the chemical industry, it is best to discuss this concept from a value lever perspective rather than a technical point of view. Countries such as the US with its Industrial Internet Consortium (IIC) are highly ambitious. If Germany wants to maintain its leading role in Industry 4.0 as well as in chemicals, there is no time for "happy engineering."

Beyond Happy Engineering

Chemical markets are becoming more complex. Industry trends like global demand shift, consolidation and commoditization are the pacemakers for this development, which the chemical industry must address. In addition, uncertainties such as political revolutions or pandemics as well as unforeseen wild cards, such as terror attacks or infrastructure breakdowns, challenge the chemical industry. Twenty years ago, studies showed that such development leads to significantly higher need for coordination within the chain. If chemical companies do not manage appropriately this ends up in a lack of integration as well as erosion of competitive edge.

On the other hand, Industry 4.0 provides the opportunity to enhance integration and strengthen competitiveness of chemical companies. Industry 4.0 means managing value-added networks in an agile and comprehensive fashion, while leveraging new technologies such as cyber physical systems (CPS), cloud computing, low-cost sensors or additive manufacturing. Conclusively, CPS and other technologies are a necessary precondition; however, applying such technologies on a stand-alone basis is not sufficient for guaranteeing its commercial viability and strategic fit.

While a kind of happy engineering was driving the Industry 4.0 discussion at the very beginning, it is key that its value-added and competitive influence focuses on the future. Furthermore, the chemical industry's specific characteristics have to be taken into account. This industry is typically characterized by continuous production, as opposed to discrete production in other non-process industries. Furthermore, the business of chemical companies is characterized by significant asset intensity as well as logistics and energy cost.

Approaches to Chemicals 4.0

Three approaches determine the digitization for the chemical industry: process transparency, data-based operating models as well as digital business models (fig. 1). The logic of the three approaches is materializing in many industries being digitalized. It can be applied to the chemical industry as long as specific industry characteristics are being considered.

The approaches shown in figure 1 build on each other and are cascaded, which means digital business models require data-based operations as well as transparency. While new digital business models show the highest commercial significance, many chemical companies are still in the transparency phase.

For the chemical industry, Chemicals 4.0 is an innovative management concept that leverages Internet technologies, systematically. It is the

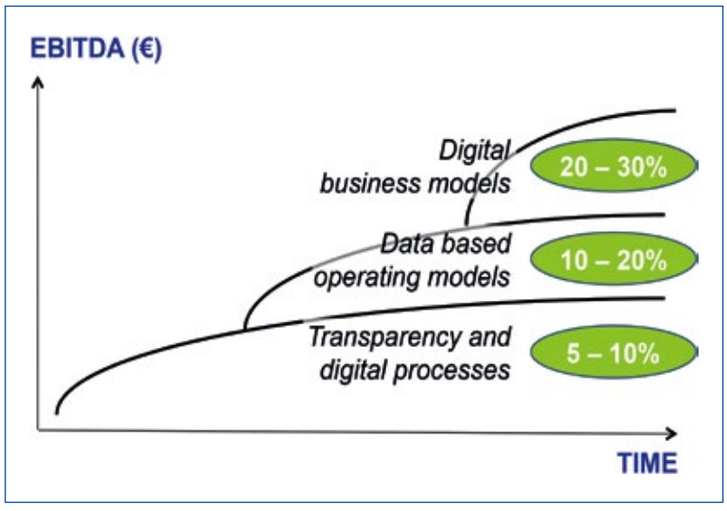

Fig. 1: Approaches for the digitization of the chemical industry

Function	TRADITIONAL VERBUND		NEW VERBUND	
	Key focus	Maximum savings	Key focus	On top savings
Logistics	• On site synergies • Multi purpose logistics assets • Initial value chain integration	60%	• Self organized and leveraged • CPS, Cloud based and virtual • Predictive S&OP	10 - 20%
Energy	• Upstream integrated • Fossil energy • Base load focus	30%	• Leveraging market liquidity • Including renewable and smart • Demand side management	5 - 15%
Maintenance	• Time based services • Partly outsourced • Frame contracted or insourced	10%	• Predictive and sensor based • Performance related • Scalable and on demand	3 - 10%
Procurement	• Strategic sourcing • Supplier development • Limited compliance	15%	• Category strategies • Crowd sourcing • Learning Procurement IT	5 – 15%
Technology	• Push and product focused • Organically • Chemistry and Physics	10%	• Pull and eco system extended • Open innovation • Applications and combinations	10 – 30%
HR	• Optimization and processes • Resources • STEM* capabilities	20%	• New competences and business • MINT talents • Smart and customer centric	5 – 10%
Clients	• Customer requirements • One face to the customer • Initial value chain integration	30%	• Customers of customers • Crowd based customer service • Predictive demand	10 - 20%

* Science, Technology, Engineering and Mathematics

Fig. 2: New Verbund operations for chemical companies

	Triple Long Tail		
	Product Long Tail	Service Long Tail	Price Long Tail
Scope	• Digital products • Non-digital products	• Basic services • Value added and digital services	• Value and cost based pricing structures
Value lever	• Customized product • Margin mark-up	• Customer retention • Proper cost allocation	• Value price • De-Averaging • Dynamic Pricing
Pre-condition	• Low transaction cost • Right / outsourcing • Flexible PPC	• Low transaction cost • Right / outsourcing • Scalable resources	• Cost control • Knowledge of customer value • Price algorithms

Fig. 3: Strategy of the Triple Long Tail

response to what Industry 4.0 means for the chemical industry but not limited to it. In addition, it provides support for responding to other challenges, like CO_2 emissions and German "Energiewende." This multisolution character makes Chemicals 4.0 very effective and puts it on the CEO agenda in the chemical industry. It thus brings chemical operations and businesses to the next level. Furthermore, it potentially supports selected key trends, such as individualization of customer behavior and market consolidation. For this reason, Chemicals 4.0 can be considered a driver of market dynamics in the industry.

What is the effect for the German "Verbund" strategy of chemical companies? Focused business models are more and more replacing integrated value chains. The ongoing portfolio development of the chemical industry — because of the global demand shift, commoditization and market consolidation among others — challenges the traditional Verbund strategy. In this context, Chemicals 4.0 offers the vision of a New Verbund (fig. 2). In addition to the integrated management of vertical and horizontal synergies, a more self-organized coordination through the Internet of Things (IoT) gains traction and facilitates synergies as well as flexibility on an arms-lengths basis and through business objects. The Verbund strategy evolves from a focus on site synergies to value-chain networks, and from corporate boundaries to virtual partnerships, conclusively.

Over and beyond Chemicals 4.0 operations, business model evolution will consider product individualization as well as service customization in the future. This is because Internet technologies are facilitating so-called long tail strategies. Besides a long tail of individualized products and customized services, a pricing long tail generates value (fig. 3). These three dimensions together determine the so-called triple long tail strategy.

Making Chemicals 4.0 Happen

In order to achieve real momentum and address the topic, comprehensively, the digital transformation has to be initiated systematically. The Chemicals 4.0 journey, thus, has to cover proper governance, offering portfolio, processes, capabilities and human resources as well as IT infrastructure, among others. Only a holistic approach makes sure chemicals companies leverage the New Verbund sufficiently, as opposed to covering the topic for alibi purposes.

Given the new character of Chemicals 4.0, we need to follow up with this topic in order to leverage lessons from its execution. Concepts have to be refined and sharpened, solutions to be proven and early successes to be multiplied to strengthen momentum. Maintaining the leadership position of Germany's chemical industry will not come without a cost but will take high efforts of all stakeholders.

Dr. Götz G. Wehberg, Partner, Strategy & Operation/Chemicals & Special Materials, Deloitte Consulting GmbH, Düsseldorf, Germany

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References for this article are available from the author.

Discover Your Route!

Computer-aided Synthesis Design Cuts Time and Costs out of Pharma R&D

Time is money; this holds particularly true for drug research and development. The global pharmaceutical industry spends about $100 billion a year on R&D. Researchers are, therefore, always looking for faster ways to synthesize molecules, so they can cut time from initial discovery and patenting to the launch of a new drug. ChemPlanner is a new cheminformatics software tool targeted at organic chemists for predicting synthetic routes to target molecules. The tool, developed by Wiley and launched in September 2015, is currently sold as Software as a Service (SaaS) solution and hosted on the publishing company's servers, with a local installation version coming this year. Dr. Michael Reubold speaks with Dr. David Flanagan, Director, Lab Solutions at Wiley, about how ChemPlanner can assist pharma researchers and what differentiates the product from other reaction prediction tools.

CHEManager: Dr. Flanagan, what are the key features of ChemPlanner and who can benefit from it?

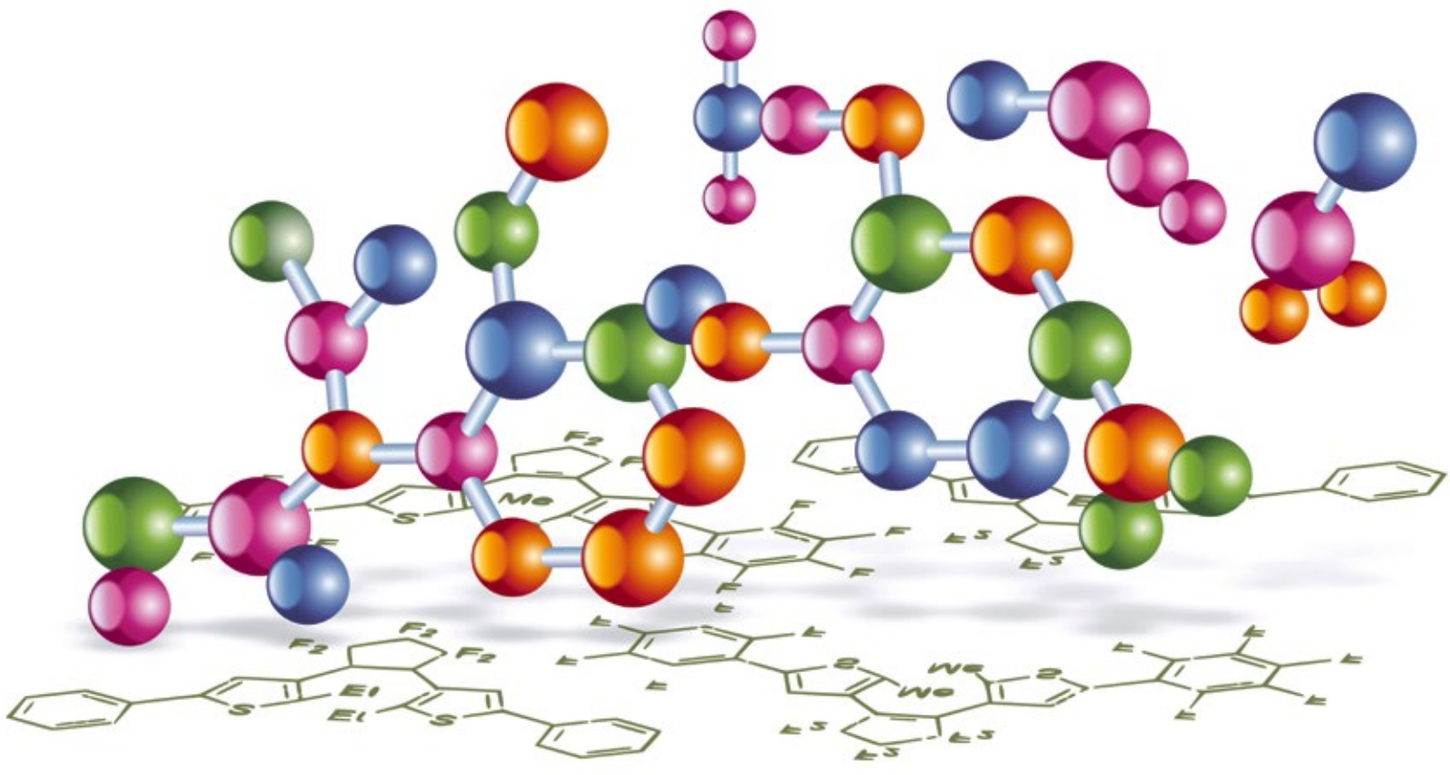
Dr. D. Flanagan: ChemPlanner is a reaction prediction tool based on machine learning for organic chemists. Chemis can draw their target molecule and ChemPlanner will predict the shortest, fastest, cheapest route to the target, even through predicted, never-before-reported reactions, based on what it has learned about organic chemistry.

ChemPlanner has three key features. First, it boosts your productivity. ChemPlanner reduces literature researching drudgery and cuts down on planning time so that you can synthesize more molecules and complete more projects faster. Second, it boosts your creativity. ChemPlanner can suggest routes you wouldn't have necessarily considered and unlocks ideas for new routes. Finally, ChemPlanner is easy to use. We've spent a lot of time working with chemists to design the interface and the user experience so that ChemPlanner fits well into researchers' workflows.

How does ChemPlanner work, what data is it based on?

Dr. D. Flanagan: ChemPlanner works by combining industry-leading cheminformatics software with high-quality reaction data. ChemPlanner analyzes a database of reactions to isolate individual reaction cores that it can then cluster into rules. It is these rules, automatically extracted and clustered by algorithms into reaction classes that a chemist might recognize, for example as a particular name reaction. When ChemPlanner analyzes millions of reactions, it can derive rules that basically cover all of organic chemistry. ChemPlanner currently uses the ChemInform Reaction Database (CIRX) to generate its rules knowledgebase, and in the future customers will be able to derive rules from their own reactions as well. While not necessary, this will allow you to use a customized version of ChemPlanner with focused coverage in areas of chemical space especially relevant to your particular targets.

Dr. David Flanagan, Wiley



What makes ChemPlanner particularly interesting for pharma companies?

Dr. D. Flanagan: ChemPlanner is useful for anybody who synthesizes organic molecules, including industries like pharmaceuticals, fine chemicals, CROs, agrochemicals, flavors and fragrances, and biotech. But, it is particularly important for the pharmaceutical industry to be able to make more molecules more efficiently. If you consider that it takes 10 to 12 years for a drug to move from prediscovery to FDA approval, any product that could potentially decrease that time would be very valuable. Not only would patients have access to life-improving drugs earlier, but also the companies would have their molecule in the market while under patent protection longer.

Can you roughly estimate the cost saving potential ChemPlanner is offering for pharma companies?

Dr. D. Flanagan: It is hard at this point to estimate the value or a cost savings that a product like ChemPlanner could deliver, but we can consider the value that pharmaceutical companies place on shortening the time from discovery to FDA approval. For example, the FDA will give you what's called a Priority Review Voucher if you develop a new drug for neglected or pediatric diseases. This voucher will let you fast track your FDA application for a new drug, taking four months off the process. These vouchers are tradable, with the last voucher sold for $350 million. From this, you can calculate that taking one month off a 12 year process could be worth up to $87 million for the right pharmaceutical company. We think that ChemPlanner has the potential for this kind of time savings.

„Taking one month off a 12 year process could be worth up to $87 million."

What differentiates ChemPlanner from other tools like Reaxys or SciFinder?

Dr. D. Flanagan: Today, chemists tend to use A&I services like Elsevier's Reaxys or SciFinder from CAS to plan synthetic routes. However, these products are used for straight database lookups, and leave most of the mental work planning the synthesis for the chemist to do. ChemPlanner does two key things standard reaction database services don't offer. First, ChemPlanner will analyze all of the possibilities and predict the shortest, fastest, cheapest, most efficient overall route to a target molecule, instead of making the chemist piece together individual reactions and hope that they find the overall best route. It is hard for a person to keep track of all of the variables involved in planning a route, such as number of steps, reliability of the reaction, cost and availability of starting materials, and interference of different functional groups, in their head. But for a computer, finding the globally optimal combination of these variables from millions of possible solutions is relatively easy. In addition, since ChemPlanner in effect "knows" all of organic chemistry, it can predict reactions that haven't been reported in the literature and captured in databases.

Here's one way to think about the power of predicted reactions. There are about 100 million (108) molecules registered in the CAS database. But, the number of possible small molecules it is calculated to be somewhere between 1055 and 1065. That means that only a vanishingly small number (10-47 %) of possible molecules have been reported in the literature and databased. If we take the number of molecules captured in the CAS database as a proxy for the number of reactions captured in databases, we can also assume that a vanishingly small number of possible reactions have been captured in databases. This is why we think ChemPlanner's rule-based learning approach that can cover significantly more chemical reaction space is preferable to a simple reaction database approach.

What kind of feedback have you got from researchers so far?

Dr. D. Flanagan: ChemPlanner 1.0 launched in September, and we've already had a lot of positive feedback from customers who are using it for their own synthetic targets. They like the user interface, they like the quality of her predictions that our cheminformatics algorithms produce, and they like that we have a solid platform and a roadmap for further improvements and developments for the product. Our customers include some of the world's top 10 pharma companies, and we are looking forward to more chemists at more companies adopting ChemPlanner as a tool that they can use every day to improve their productivity and be more creative. We've shipped two updates since then incorproating customer feedback and suggestions.

„ChemPlanner can suggest routes you wouldn't have necessarily considered."

What are your expectations for the adoption of ChemPlanner on the market?

Dr. D. Flanagan: A global top-ten pharmaceutical company has purchased a group license and will use it for process chemistry, to reduce the cost of producing a molecule for clinical trials, as well as for discovery chemistry. The pharma company has been an early adopter of computer-aided synthesis design technology, and was one of the first customers of ARChem, which was the predecessor to ChemPlanner. They particularly like ChemPlanner's user interface, the quality of the predictions that our cheminformatics algorithms produce, and that we have a solid platform and a roadmap for further improvements and developments for the product. We think there is scale for sales to grow, both horizontally as we increase the number of users and sites at a company using ChemPlanner, as well as vertically as we monetize new features and capabilities on our roadmap.

www.chemplanner.com

Agrochemicals – a Modern Love Story

Stakes in the Agrochemicals Market Are High and All Cards Are Not Yet on the Table

Until recently, few outsiders would have called the agricultural chemicals sector exciting. It's hard to imagine, for example, a thriller or torrid love story or even a poem set in a soybean field, although the Scottish national poet Robert Burns did set some of his in rye fields two centuries ago.

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In the 21st century, the flurry of M&A activity — in particular the hitherto wholly unexpected merger plans of Dow and DuPont and the prospect that ownership of some of the world's most crop protection technology will devolve to China — is adding global drama to this usually quiet business. Market watchers are on the edge of their seats as the next chapter unfolds.

To put it somewhat irreverently, in the not-too-distant past the agrochemicals market was a fairly solid and straightforward story. Before the need to keep a step ahead of the competition and ever stricter environmental legislation shifted the perspective toward developing innovative new products it seemed to be mostly about which producer could convince the most farmers to spread the most chemicals across the most fields in a short growing season.

Where the spotlight was once on developing new wipe-out herbicides, insecticides and fungicides, today's market challenges are seed treatment and plant biology, foremostly genetic manipulation of crops for even greater and broader yields. Only companies with vast financial and physical resources can keep up with the trends, developing or buying the needed technology. Little surprise, then, that the race to take over competitors with the right puzzle pieces is showing signs of overheating.

Bigger Is Better

As population growth and the trend to larger, often industrialized, farming increasingly set the backdrop for market movements, it seems clear to all players that being bigger is the better way to cut a larger slice of the pie, which itself is growing. Compared with the 1990s, the figures are mind-boggling. In 2015, the global chemical seed treatment market was estimated to be worth nearly $4 billion and it now looks set to cross the $6 billion threshold by 2020, while the value of the bioinsecticides market is forecast to pass $774 million by 2020.

Especially when companies cast the specter of world hunger and the security of the food supply on the wall to underscore the need for access to certain molecules, the current buy-and-sell frenzy in the agriculture sector sometimes makes for captivating reading. Behind the scenes, however, the process of consolidation has been in progress for more than three decades. The portfolios of today's global market leaders largely reflect the merger spree of the 1990s, though the M&A of a decade earlier was worth taking notice of.

Monsanto's Path to the Top

Due especially to Monsanto's enormous acquisition appetite and its drive to tighten its grip on the seeds market (never anticipating a formidable rival such as the proposed DowDuPont in its midst), the US agrochemicals market has become more monolithic than Europe's. A recent report by equity research and economic analysis group CLSA Americas asserts, too, that Monsanto's path to the top was paved by the inertia of its rivals on two continents.

Firstly, the analysis goes, DuPont failed to adequately utilize the resources it picked up with the buyout of a seed treatment pioneer, the company aptly named Pioneer, in the late 1990s. The failure especially of major European players such as Syngenta to recognize what would be the wave of the future is also given credit — or blamed — for Monsanto's rise. Preoccupied with integrating different corporate cultures from different companies, the Europeans may have not been focused enough on the goal, some observers say.

Syngenta, the soon-to-be blushing Swiss bride of a "Chinaman," is the result of a complex series of swap-and-trade transactions dating from 1996, when the two Swiss giants Sandoz and Ciba-Geigy pooled their agricultural chemicals assets to leverage synergies, just as they merged their pharmaceutical activities into Novartis and their specialty chemicals businesses into Clariant.

The carefully crafted portfolios and the exploitation of the two Swiss companies' chemical crop protection products gave rise to a formidable force in this conventional market, making Syngenta an attractive match for both seeds-heavy Monsanto and technology-hungry ChemChina.

Bayer CropScience in its current form emerged from another spectacular deal, the group's headline-grabbing €7.25 billion acquisition in 2002 of Aventis CropScience, a company resulting from the 1999 merger of the agrochemical assets of erstwhile French and German chemical industry heavyweights Rhone-Poulenc and Hoechst. From a European perspective, this was not unlike the planned DowDuPont fusion. Here, Bayer was able to pick up important assets, both in seed traits and plant engineering.

Aventis CropScience, which could trace part of its history to the 1983 agrochemicals merger of Hoechst and Berlin-based chemical-pharmaceutical producer Schering to form AgrEvo, was itself not an old company. Three years before this deal, Schering had acquired Britain's newly merged Fisons-Boots. The number of players shrank again three

years later, when Rhone-Poulenc took over the relevant business of US-based Union Carbide for $575 million in 1986.

Short-lived AgrEvo, built up with great fanfare, was a pioneer in its own right, sowing many of the seeds that have grown into Bayer CropScience products. While German companies were just initiating collaborations with research institutes, many of the seeds of change had already been germinated in British think tanks acquired by Fisons-Boots. It was AgrEvo that took the first baby steps toward gene manipulation with its €1 billion acquisition of Belgium's Plant Genetic Systems in 1999 — shortly before Aventis rose from the Franco-German ashes.

What Next?

Gazing into the crystal ball to predict the future of the agrochemicals market, it's not always easy for analysts or other skilled observers to see how it will be recombined. When others collect the "spoils" of the ongoing M&A rounds that merger partners will be forced to divest, the makeup of individual segments or whole companies may shift quickly. Already, perceptions of where the players stand may deceive. While Monsanto is generally acknowledged to dominate the seeds segment, this seems to be only partially true.

According to CLSA's research, Syngenta's seeds portfolio, though much smaller, is more balanced than that of Monsanto, and the portfolios of DuPont and Dow tilt strongly toward traits. Bayer and BASF, the smallest players in seeds altogether, are focused almost solely on traits — which actually puts them both ahead of Monsanto here. To paint a clearer picture of what various players are looking for in a deal, the researchers lumped together the companies' seeds, traits and crop protection assets as if they were of equal importance, without considering the knock-on effects of uncompleted deals that certainly would require divestments.

Although it means nothing in terms of actual market clout, their conclusion was that pre-merger DuPont had the most overall leverage, followed by Syngenta and Monsanto. In this scenario, which way the final bargaining chips fall will depend on which company needs to fill which hole in its portfolio and how much money it is ready to put on the table.

In the end, the game may be played by different rules. Speculation rampant as this issue went to press suggested that the market giants may have a few tricks up their corporate sleeves. Reports that BASF — world's largest chemical producer in terms of sales — had or might still be maneuvering behind the scenes to prevent the DowDuPont-merger from going ahead, if regulatory authorities didn't intervene to kill first, were followed by talk that Monsanto had made a $30 billion offer to buy all of Bayer CropScience.

Another wild card in the deck is ChemChina's need to borrow $35 billion — nearly all of the purchase price for Syngenta. The acquisition is the most expensive in China's history. Western players could be expected to help finance the deal in exchange for some of the Swiss company's more lucrative assets.

Dede Williams,
CHEManager

On Track and Ready for Growth

With a Technologically Driven Approach WeylChem Focuses on Attractive Market Areas

WeylChem is one of three major platforms in the portfolio of the International Chemical Investors Group (ICIG). With its non-GMP Fine Chemicals and Custom Manufacturing businesses and annual sales of more than €650 million, the company is also one of the cornerstones of ICIG's strategy: "We have reached a size where we can be called the market leader in custom manufacturing for various industries," says Dr. Frank Wegener, who joined ICIG as President of the WeylChem Group of Companies on January 1, 2015. Dr. Michael Reubold met with Frank Wegener in his Frankfurt-Fechenheim office to learn about the future strategy for the company.

CHEManager: Dr. Wegener, what is the role of WeylChem within the ICIG portfolio?

Dr. F. Wegener: ICIG continues to look for businesses which are no longer core business to bigger chemical or pharmaceutical companies. The businesses should add value, i.e. by offering synergies with existing parts or should offer the creation of value in another way. Insofar, WeylChem fits exactly to that template.

How do you translate the ICIG strategy to your strategic plans?

Dr. F. Wegener: WeylChem continues to harvest synergies between existing operations allowing us to enhance the business profitability, thus improving our ability to invest into new technologies which form the main basis for the custom manufacturing business. Remember that most of our businesses have been out of the strategic focus with their previous owners for some time, both in terms of attention as well as with regard to the ability to invest substantially. We needed to restructure most of these businesses and created a new perspective for them. This is an important aspect of all businesses owned by ICIG.

What defines the company's standing within the ICIG and the markets you serve?

Dr. F. Wegener: Our customers value our ability to offer most of the technologies they need to get their complex molecules manufactured by a sizable partner in Western Europe or in North America. Our commitment to exclusive custom synthesis and our state-of-the-art assets give our customer a stable and reliable supply position. Our size and our competences give us the opportunity to capture synergies between our nine operating group companies and allow us to implement efficient and reliable processes. After having completed the last two acquisitions, Allessa and the Detergents & Intermediates business from Clariant, we have made major steps to restructure our businesses and to establish a new structure. With other words: we are on track with our plans and ready for growth, organically or by acquisitions.

WeylChem is in the meantime the leading provider of custom manufacturing service e.g. to customers in the agrochemicals industry. We are known for our full range of technical capabilities — from the synthesis of a new molecule in the lab to the fast realization of a production on an industrial scale. With the size we have reached and our portfolio of companies having various strengths, we are able to optimize value chains and realize growth in attractive markets. Insofar, our strategy in WeylChem is well aligned with ICIG's targets and fits well to the long-term holding intention of our owners.

We are developing ourselves towards becoming a leading value creator in the fine chemicals industry which will enable our customers and us to achieve more.

In which markets do you see growth potential for WeylChem?

Dr. F. Wegener: One of our main focuses is the agrochemical industry. That hasn't changed. However, during that last two years, the industry is experiencing a difficult cycle which affects us. About one third of our sales are realized in that industry, the bottom of the cycle is expected in 2016. We will not drop the attention to that industry but we have built up a significant business in other industries.

Dr. Frank Wegener, WeylChem Group of Companies

Since the last acquisition early 2014 we have a footprint in the detergent industry with bleach boosters, surfactants, catalysts and other functional detergent ingredients. This business accounts for about 30% of our overall revenues. We always supplied products and services to various other industries such as personal care, plastics, and catalysts, only to mention some. We have recently reviewed our strengths in these segments and came to the conclusion that our offering can contribute value to customers in these industries too.

Which new markets do you want to enter and how?

Dr. F. Wegener: There are some attractive markets which we did not serve with a very focused approach in the past. The agrochemicals custom manufacturing activities have been in the center of our activities for many years. However, also in the past, WeylChem group companies have been known for the competence in pigments manufacturing, for high performance offerings in the electronic industry, in custom manufacturing for water treatment and oilfield chemicals, just to mention some areas. Our approach has been strongly technologically driven which we want to keep as a core competence.

We will now enter more deeply into the areas with an attractive growth potential and a good match with our capabilities. We want to understand more deeply how we can make our customers more successful by adapting more efficiently to their needs. In order to do that, we need to intensify the dialogue with our customers and customer customers.

What investments will you make to realize this growth strategy?

Dr. F. Wegener: If you look at our strategy WeylChem 2020, we anticipate gaining significant momentum by applying best operational industry practices and thus realizing excellence. Our group companies have been coming together with a high pace and have various cultural and organizational backgrounds. Introducing methods to work efficiently together releases energy and funds which are available for investments into growth. That's one of the main sources we will use to develop our network of production assets. We have already made major steps into that direction. With some of our technologies, we are 'the last man standing' in Europe, which we see as an asset for our customers and a positive challenge for us.

"With some of our technologies, we are ‚the last man standing' in Europe".

Furthermore, we continue to invest into the education of our Sales organization. Most of our sales people have an academic degree in chemistry or a related technical discipline. That's a strength we want to keep, at the same time we are planning to expand our sales force and will enable our people to understand our customer needs better. We see that as one of our most important steps and investments into the future.

You are planning a relaunch of WeylChem. Can you share some details on it?

Dr. F. Wegener: We have more than doubled our size during the last 2 years. With the recent acquisitions, we have also broadened our offer in terms of the relevant markets as well as technology wise. WeylChem has gained importance for new and existing customer – we want to make sure that our new setup and our brand promises get the right attention. We have also made changes in the way we are organized. The new organization reflects the principle of striving to keep the entrepreneurial spirit of self-standing group companies combined with the ability to use group synergies. We think that this fosters innovation which we need in order to cope with the increasing demands of our customers.

Additionally we will apply changes in the way we set priorities and present ourselves. Our technologies will always be of utmost importance; that will not change. However, we want to attract the best people from an industry which is known to be somewhat conservative. We see that as a challenge which we are ready to take.

www.wechlchem.com

ICIG Acquires Sandoz Site in Frankfurt-Höchst

International Chemical Investors Group (ICIG) and Novartis have entered into an agreement under which ICIG will acquire Sandoz Industrial Products from Novartis. The company manufactures enzyme-based fermentation products and intermediates for the pharmaceutical industry, especially for the use in antibiotics.

Sandoz's decision to withdraw from the production of intermediates for 7-ACA antibiotics for external customers in May 2015 initiated a dual track process preparing the site for a sale while alternatively considering a shutdown of its operation at the Frankfurt-Höchst Industrial Park.

With this agreement, Sandoz Industrial Products will maintain its operations associated with CordenPharma, the pharma platform of ICIG. The business will be complementary to both ICIG's pharma activities as well as to its chemicals activities within WeylChem. The site represents an important building block for further expansion into fermentation-based production technology for ICIG. (mr)

Saltigo Invests in Leverkusen Site

Saltigo, a wholly-owned subsidiary of specialty chemicals company Lanxess, has started the planning process for two new production lines at the Central Organics Pilot Plant (ZeTO) in Leverkusen, Germany. Construction is due to begin midway through this year, with the start of production scheduled for the end of 2017. The expansion at the ZeTO is part of a €60 million investment plan announced in 2015.

At a total of 10 production facilities at its two sites in Leverkusen and Dormagen, the custom manufacturing specialist works on up to 150 projects for customers from the agrochemical, pharmaceutical and fine chemicals industries each year. These projects include active ingredients and intermediates for crop protection agents and medicines together with chemicals for numerous applications.

While Saltigo expects further growth in the pharma project pipeline in 2016, the annual revenue of the agrochemical business has risen to around €300 million — a 75% share of the company's total sales. In 2009, an investment project worth around €50 million started with a key agrochemical customer. In 2012, this was followed by a strategic focus on agrochemicals, in particular projects with large production volumes for this sector. (mr)

After Pharma's Patent Cliff

Analysts Predict Boosts from Growth Rates and New Drugs, More Competition from Biosimilars

Analysts love looking into the future, particularly when it comes to big pharma's prospect for growth and earnings. The industry experts of Morningstar see slowing patent losses over the next five years. This should accelerate the growth rates of big pharma firms and increase returns on invested capital as new pipeline drugs launch.

Chicago-based provider of investment research Morningstar defines the biggest change in this year's analysis as the decreasing exposure of pharma to patent losses. As the patent cliff peak has worked through the system, big pharma's five-year generics exposure now looks the lowest since before 2010. In aggregate, analysts Damien Conover and Sonia Vora view big pharma as 7% undervalued, largely driven by overly pessimistic pipeline expectations.

The slowdown of generic competition should considerably increase the five-year annual compound growth rates of big pharma companies, from the flat earnings growth that was expected in 2011 and 2012 to the 6% the analysts currently model for 2014-2019.

A major parameter of the effect from patent losses is the potential success of biosimilars. Conover and Vora expect that global sales for the top 10 biologics facing biosimilar competition will decline from $62 billion in 2014 to $35 billion in 2020.

More Biologic Therapies

With regard to research and development, the significant trends are reduced development time to bring drugs to the market and an increasing focus on developing biologic therapies rather than traditional small-molecule drugs. In the view of Morningstar, the US Food and Drug Administration appears very accommodating in approving drugs on early-stage data in indications of unmet medical need. The recently approved immuno-oncology drugs and other cancer drugs offer the best evidence to support this trend.

Conover and Vora calculate total biologic sales to represent over 30% of big pharma total sales over the next 10 years, up from close to 20% in the moment. The increased representation from biologics should prolong the branded life of drug portfolios, as biosimilar competition seems much less severe than traditional small-molecule generic competition. The four leading companies with expanding biologics include Bristol-Myers Squibb (BMS) and Merck, both with leading positions in immuno-oncology, Eli Lilly with immunology- and oncology-focused monoclonal antibodies, and Sanofi with its biologic cholesterol-lowering drug Praluent.

Sanofi, Novartis and Eli Lilly on Top

In total, the analysts score Sanofi at the top, followed by Novartis and Eli Lilly. The analysts note Sanofi's robust growth from currently marketed products, and minimal patent losses in the next five years. Sanofi's continuously growing rare disease, consumer, vaccine and animal-health segments, combined with an improving late-stage and mid-stage pipeline, led by the recent approval of Praluent, more than offset limited generic competition to long-acting insulin Lantus.

Adjusting for total size, BMS scores at the top of the group and looks undervalued, mainly driven by a strong entrenchment in immuno-oncology. Bristol's likely first-mover advantage in several cancer indications along with several combination cancer assets in early-stage development should lead to Bristol gaining over a third of the $30 billion+ immuno-oncology market by 2022.

Morningstar also lists the most underappreciated pipeline drugs by consensus. These include AbbVie's fibroids drug candidate Elagolix, Bayer's diabetic neuropathy project Finerenone and Bristol-Myers Squibb's cancer drug candidate Opdivo.

No More Big Bets on Potential Blockbusters

Pharma experts from the international auditing and consultancy organization Price Waterhouse Coopers (PwC) predict that shifts in the market are forcing scientists, executives, regulatory bodies, health-care officials and pharmaceutical investors to take a hard look at the sector and rethink how to do business. As PwC notes in its "Pharma 2020" report, the era of making big bets on potential blockbuster drugs is over.

In 2016 and beyond, health-care policymakers and payers will play a much greater role in the industry. PwC states that these parties are increasingly mandating what doctors are allowed to prescribe. More and more of them are moving toward measuring the pharmaeconomic performance of drugs. The prevalence of electronic medical records is facilitating this methodology, as such records offer the data required for outcome-based pricing.

Meanwhile, diseases that were previously considered fatal are becoming chronic in the face of more effective treatment. In the view of PwC the recent growth of chronic disease is placing greater pressure on healthcare budgets in times of an aging population.

2.5 Million Terabytes of Data per Day

As data is changing the way that health-care payers evaluate a drug's worth, data is also transforming the methods by which new drugs are developed. PwC claims in its report that people generate approximately 2.5 million terabytes of data per day, and this figure is set to grow in 2016 with the increasing prevalence of pervasive monitoring and "anywhere interface" technologies.

This data has the potential to radically transform the way the pharmaceutical industry operates, especially in relation to research and development. This progress is particularly evident in generics research, PwC suggests.

Biosimilars Cut into Pharma Sales

Sanford C. Bernstein, a research and brokerage firm in New York, in its analysis of the pharmaceutical industry looks at several big-name drugmakers as of 2025. The company expects that biosimilars and regular old generics will continue to cut into pharma sales, but if pipeline drugs come through, drugmakers could see accelerated growth down the line.

By these lights, no company holds as much promise as Bristol-Myers Squibb, which stands at the top of Bernstein's rankings for revenue and earnings growth. Sanofi ranks in second place for growth in its current lineup of drugs. GlaxoSmithKline, in third place with its present drug stable, drops to fifth with pipeline medicines.

One big caveat, however, as the Bernstein analysts point out: The numbers don't include the $160 billion Pfizer-Allergan merger, set to close this year. When those two companies combine, the new Pfizer is likely to move up the rankings.

German Pharma with Bunch of New Drugs

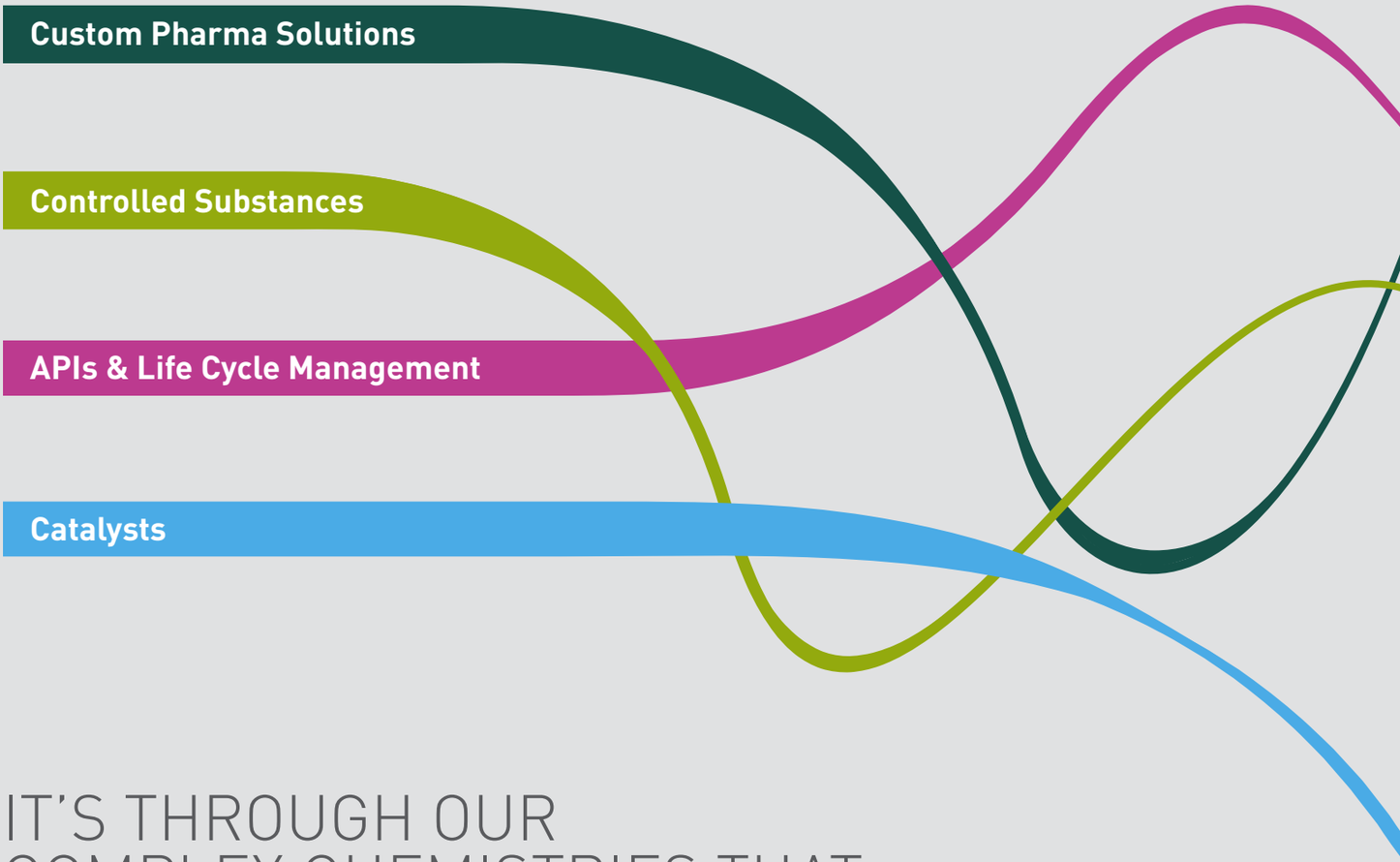
Looking at the German pharmaceutical market for this year, the German pharmaceutical association VFA outlines the upcoming results of research and development. New drugs will result in new therapies and possibilities for prevention. Thus a two-digit number of new cancer drugs — mainly against lung cancer, multiple myeloma and several types of leukemia — should obtain regulatory approval. The VFA says that also the repertoire of highly effective drug combinations to cure hepatitis C is still growing. It is also likely that new antibiotics will be available to treat problematic bacteria.

It is also expected that several new drugs for the treatment of hemophilia A and B will come to the German market. They don't need to be injected as frequently as older drugs and should be applicable in patients where former drugs aren't effective anymore.

Furthermore the VFA estimates more than 10 new medications in 2016 for the treatment of rare diseases, including inherited metabolic disorders or muscle diseases.

Thorsten Schüller,
CHEManager

Fine Chemicals



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The Art of the Alliance

Big Pharma's Partnerships Depend on How They are Managed

Alliances between big pharma and scientists, hospitals and biotech firms are common practice in the health-care business. About half of today's top-selling drugs are the result of such partnerships. In order to be effective, every alliance needs professional management. Experts discussed the topic at the latest Bio-Europe partnering conference in Munich, Germany.

Just two decades ago, many scientists worked silently and isolated in their "silos." Cooperation with companies and institutions was more the exception than the rule. This has changed completely.

"This approach doesn't work anymore," said Patrick Benz, senior director alliance management at US health-care giant Johnson & Johnson (J&J). Today pharmaceutical and biotech companies spend hundreds of millions of dollars annually to utilize the discoveries, development and marketing capabilities of partnering firms in their quests for the next blockbusters. AstraZeneca, for example, one of the big pharma companies, maintains about 400 alliances worldwide, said Shaun Grady, vice president strategic partnering and business development at AstraZeneca. Morphosys, a biotech company from Munich, has about 21 research and development agreements with other companies.

Good Reasons For Alliances

The reasons for making alliances are manifold. Alliances are vital to innovation and success in the pharmaceutical industry. Nearly all companies feel the pressure to maintain strong portfolios. Another reason for cooperation is the evolution of knowledge. "The knowledge of biochemical processes and underlying genetic causes of diseases is growing at record speed, and research and development requires a degree of specialization that cannot be achieved by a single organization on its own any longer. Through partnering we can fully leverage today's scientific know-how and translate it into innovative medicines for patients," according to German pharma company Bayer.

Sometimes the size of a project requires cooperation with other organizations. J&J manager Benz mentioned that his company is engaged in an Alzheimer's fund with a volume of about $100 million. "One company alone cannot manage such a project. You need partners to do this successfully," Benz said. His company also realized that collaborations among pharma and biotech begin in earlier stages today than in years past. For this reason, J&J has adjusted its internal structures to picture this development and to cover the whole spectrum of cooperation from early-stage to late-stage projects.

Furthermore the working time of scientific experts in the knowledge-driven pharma business is expensive. James O'Mara from Ironwood Pharmaceuticals hence reminds biotech companies to focus on their core activities and to outsource all other businesses to a partner.

Jan Nilsson, CEO of the small Swedish biotech company NeuroVive Pharmaceutical, did so. His firm entered an alliance with a Chinese contract research organization (CRO) in order to conduct a phase III trial. NeuroVive was too small to do it by itself. The outsourcing was the right decision since the trial failed, Nilsson said.

Challenge Of Alliance Management

It's a long process to craft a robust alliance, build a solid relationship and keep an alliance on track to deliver value to both parties. Therefore the management of an alliance is crucial. But it is here that many deals fall apart, according to research organization Cutting Edge Information.

So what makes an alliance successful? The experts at the Bio-Europe conference emphasized raising the core questions at the beginning of the partnering process: What is important for us? What do we want to achieve? What will drive the alliance? Grady said this decision-making process at the beginning is important for the subsequent development of the alliance. Also important is to formulate these expectations clearly in the alliance contract. Shaun Grady from AstraZeneca: "You should fight for this. This is better than to renegotiate later or to start interpreting the contract."

Grady also said the deals became more complex in recent years. "Today there is more peer-to-peer partnership," Grady said. His experience is that alliances today also last longer than in years past. "You need a good management to handle such complex processes and alliances," he said. He recommended that the people involved in an alliance should be experts in their fields. "Having a scientific background with hands-on experience of drug development is invaluable. When people with a similar background work together, cultural differences don't matter anymore," he said.

In the end, the alliance management personnel keep things running smoothly and monitor alliance health. Ensuring a thriving collaboration is a daunting responsibility requiring many parts — ample organizational support, efficient project coordination, and constant, open communication, according to Cutting Edge Information.

Communication Is Key

One of the key criteria in an alliance is communication. It is the lifeblood of any ongoing partnership. For both sides to work as members of the same team, they need to constantly interact and touch base with each other. "You can't overcommunicate," pharma manager Grady said.

To keep the communication going, a single dedicated person should manage it. Experts also recommend a determined contact person on the other side of the partnership. Furthermore, the participants have to raise the right questions in the working process. All participants should think as early as possible about challenges that may arise in their collaboration.

"It is very important to be involved as early as possible during the interaction with a potential partner and during contract negotiation. So you have the history of how a particular alliance was built up, and you can build trust with the partner from an early stage," said George Rahim, senior director, alliance management center of expertise at the biopharma company UCB, in an interview.

This is especially necessary when problems arise. Alliance managers report that partners sometimes have different opinions about how fast things should be decided and implemented. J&J manager Benz pointed out that big companies usually have more complex decision-making processes than smaller entities. He said that small companies might expect their bigger alliance partners to make decisions within two or three days. "This isn't realistic for many big companies," Benz said. Also the regular change of personnel from one department to another one in pharmaceutical companies can be surprising for the biotech partner. In such cases, the alliance management has to ensure that the project does not suffer and the transfer of knowledge is ensured.

On the other hand, the managers of big pharma groups sometimes wonder about the working style at their smaller alliance partners. AstraZeneca manager Grady said the decision-making processes in small biotechs already have frustrated him. And J&J manager Benz has learned that the chief executives of biotech firms sometimes have unrealistic expectations — for example, to have the CEO of a big pharma group as their counterpart in business or alliance conversations. "Big pharma generally ensures that the biotech partners can deal with qualified managers. Normally it's not the CEO," Benz said.

Handling Conflicts

A challenge in an alliance is the handling of conflicts. "The last thing an alliance manager wants to do is escalating a conflict to senior levels. This can create negative feelings and irreparable damage," according to Cutting Edge Information. Alliance managers have realized that the quickest way to deal with problems is to keep them on the appropriate level. It is also a good approach to try to see an issue from the perspective of the other side and to work on understanding cultural differences between two companies, especially between large pharma and biotech. UCB manager and alliance specialist George Rahim summarized his experiences: "To be a good alliance manager, you need to have good people skills, and the stamina to deal with and resolve conflicts between companies, people and cultures."

Thorsten Schüller,
CHEManager

Johnson Matthey Expands R&D Facilities

Johnson Matthey's Fine Chemicals Division has completed an expansion of its Cambridge, UK facilities, bringing additional process research & development services and kilo-scale manufacture to the growing site. This investment supports the use of the company's catalyst and biocatalyst technology in process R&D and non-GMP production of materials for pre-clinical pharmaceutical and toxicology studies. The expansion will accommodate teams of chemistry and biocatalysis process R&D scientists who will provide route scouting, process development, optimization and scale-up of heterogeneous, homogeneous and biocatalytic processes, as well as the non-GMP kilo-scale manufacture of APIs and intermediates. (mr)

Aesica Builds New Development Center

Aesica Pharmaceuticals plans the relocation of development and clinical manufacturing services from Nottingham to Queenborough, UK. As a consequence, Aesica now intends to provide full manufacturing and development services at its Queenborough site with the addition of a new development center. The new development center at Queenborough has more than twice the capacity of the existing one in Nottingham and consequently provides significant scope for further business expansion. As the new center sits on a commercial site, the technical transfer from development to commercial will be a smooth transition for the customer. The development center will be able to handle potent and controlled drugs. (mr)

The New Globalism

Recent Acquisitions Transform Swiss Drug Contract Manufacturer Siegfried into a Global Player

In September of 2015, Siegfried completed all closing conditions for its acquisition of the custom synthesis business of BASF and parts of the German group's active pharmaceutical ingredients (APIs). Prior to purchasing these BASF assets for an estimated total consideration of €270 million, the Swiss drug contract manufacturer had already invested approximately €45 million in 2012 to take over California-based Alliance Medical Products (AMP) and €50 million in 2014 to acquire German group Hameln Pharma. CHEManager asked Dr. Rudolf Hanko, CEO of Siegfried, about the strategy behind these acquisitions, the integration process, present challenges and future plans.

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CHEManager: Dr. Hanko, looking back, what were the driving forces behind the recent acquisitions? Did you follow a clear growth strategy or did you also strike when unexpected opportunities arose?

Dr. R. Hanko: The aim was to lead Siegfried through a strategic turnaround. Following a capital increase at the beginning of 2010, all of the preconditions were met to implement the "Transform" strategy. It addressed opportunities available to Siegfried in the CMO field, such as sterile filling as an attractive technology, but also strategic considerations like the backward integration to China. Last but not least, the Zofingen site underwent a competitiveness program which re-established the competitiveness of the whole company. In addition to these goals we aimed at fast yet sustained growth to reach critical size, which is so significant in this business, and to become market leader in the CMO market.

Through the acquisitions, Siegfried has grown significantly. Have you already reached the critical size necessary to play a leading role in the supplier market for the pharmaceutical industry?

Dr. R. Hanko: It is important to point out that our growth is not only due to acquisitions. Without the Swiss franc crisis, for instance, in 2015 we would have experienced double-digit growth in our original market segment. In combination with the above mentioned acquisitions we reached a size which makes us a leading company in the CMO business. Today, the company offers a broader range of products and services and, therefore, is more robust. It is market leader in the field of exclusive synthesis and controlled substances as well as an important supplier in sterile filling and of dossiers used for generic companies, inclusive manufacture of solid dosage forms. However, we are only at the beginning of a consolidation process in our market, and we expect the process to continue.

How do you manage the integration of the three BASF sites in Minden, Germany, Saint Vulbas, France, and Evionnaz, Switzerland?

Dr. R. Hanko: The post-merger integration is a process of several months which we take very seriously. To enable the new sites to become completely integrated into the Siegfried world, many coordination processes are taking place in the background so that we can operate on the market as one company, soon. We aim to uphold the attributes and success factors we cultivated before the recent acquisitions. I consider these factors to be customer orientation, flexibility, entrepreneurship and dynamics. At the same time, we are implementing the necessary structures required by a company of our new size.

"We are only at the beginning of a consolidation process in our market, and we expect the process to continue."

Although being not far from each other in geographical terms, the three BASF sites have had different corporate legacies and cultures. Integrating them into the Siegfried family, did you see that cultural diversity as a challenge or rather as a chance?

Dr. Rudolf Hanko, Siegfried

Dr. R. Hanko: That is an important aspect of any integration activity. Siegfried has changed from a Swiss company with global activities to a global company headquartered in Switzerland. We are working very hard at bringing together our sites, also from a cultural point of view, and to make visible and utilizable the opportunities inherent in the new globalism. For our young management staff, especially, the BASF transaction provides entirely new possibilities concerning personal development and career opportunities, making Siegfried clearly more attractive for talents.

AMP and Hameln Pharma are active in comparable market segments but different regional markets. What kind of synergies in terms of technologies, services, customer relations and market coverage will you be able to leverage across your portfolio?

Dr. R. Hanko: We won customers with needs in the sterile filling segment which we were unable to supply before. Today, in the field of finished dosage forms, we are in a position to offer a complete package that doesn't consist only of oral dosage forms but includes parenterals such as injections and infusions and if necessary in large volumes produced in Hameln. Furthermore, we are recognizing continued individualization in medicine with applications tailored to individual patients. Our range covers various dosage forms, and we can satisfy both the

Core Objective: Critical Size

Siegfried Group reported sales of CHF 480.6 million (+52.4%) for the 2015 financial year, the highest in its history. EBITDA rose by 31.3% to CHF 77 million, corresponding to an EBITDA margin of 16.0%. The Zofingen, Switzerland-based drug contract manufacturer owes the strong growth in sales and results to a combination of internal and external growth. In 2015, Siegfried successfully completed its "Transform" strategy with the acquisition of BASF's active pharmaceutical ingredients segment. The company that today employs a workforce of about 2,200 employees at nine sites on three continents now fulfills the necessary prerequisites to be a leading supplier in its market segments.

large-volume and the individualized demand for drugs.

Besides investing in acquisitions, what investments have you been making recently in creating or increasing capacity at your existing or new plants?

Dr. R. Hanko: The new production facility in Nantong, China, was inaugurated in August 2015 and initial commercial product batches have been successfully produced. Several important customers are showing great interest and have visited the site. In Zofingen, we put into operation a new production plant constructed in vertical flow technology in accordance with the latest technology. Its operation is significantly more efficient than the plant it is replacing. In addition, investments in technologies, such as required for the production of high potency drugs, or a state-of-the-art spray dryer, were essential and position us favorably in the market.

How have the requirements by pharma customers changed over the years, and what need suppliers like Siegfried to do to live up to them?

Dr. R. Hanko: A growing number of companies consider a comprehensive service to be the key to enter into or expand a strategic partnership. Thanks to the connection between chemistry and pharma, we developed a unique USP as an integrated supplier. Owing to our expertise in both chemistry and pharmacology, we are in a position to offer bridging technologies, such as spray drying and micronizing.

"Siegfried has changed from a Swiss company with global activities to a global company headquartered in Switzerland."

What are your plans for future growth in the years to come?

Dr. R. Hanko: It is too soon after "Transform" to demonstrate the full scope of our strategy. We shall do so in the course of this year. But to be clear, we will remain strategically active.

www.siegfried.ch

Patheon and Amgen in Toll Manufacturing Pact

US contract drug development and manufacturing services provider Patheon has signed a toll production agreement with leading biotechnology company Amgen. Under the terms, Patheon will supply flexible manufacturing solutions to Amgen to meet the growing demand for innovative human therapeutics.

As the rapidly changing biopharmaceutical marketplace presents tremendous challenges for biotechnology companies as regards demand forecasting, Patheon said it has developed "unique solutions and business models that provide flexible manufacturing options to allow clients to address complex needs. The Durham, North Carolina company's solutions include high-end process development and cGMP manufacturing services for both drug substance and drug product, from pre-clinical to commercial supply, for a global client base.

"We believe the departure from the 'build or buy' paradigm represents a superior value for our clients," said Michael Lehmann, executive vice president, global sales and marketing for Patheon. He added "This agreement with Amgen is representative of the changing dialogue in the pharmaceutical services industry," Lehmann noted. (dw, mr)

Cerbios Opens New R&D Center for HPAI and mAb

Cerbios-Pharma, a privately held Swiss company that specializes in the development and manufacture of both chemical and biological APIs, officially opened its new R&D center in Lugano, Switzerland.

During the past 15 years, Cerbios has heavily invested in infrastructures, in acquisitions and company participations driven by innovation and differentiation. The new building consists of four floors that are housing Chemical and Biological R&D laboratories, offices and warehouses. The biological laboratories are dedicated to the development of mAbs and/or recombinant proteins based on CHO mammalian cells and to the development of pharmaceutical probiotics. The chemical labs are doubling the company's capacity to develop HPAPIs) for contract manufacturing services. (mr)

Never Compromise

FeF Chemicals, Supplier of High-Quality Pharma Ingredients, Rebrands as Novo Nordisk Pharmatech

FeF Chemicals is a well-known name and a leading global supplier of ingredients for the pharmaceutical industry. Having been a part of the Danish healthcare corporation Novo Nordisk for almost 30 years, the company's name was changed to Novo Nordisk Pharmatech on 1 September 2015. Dr. Michael Reubold asked Rasmus Hother le Fevre, who has been with Novo Nordisk since the year 2000 and FeF Chemicals' managing director & corporate vice president since 2012, about the re-branding and his strategy for further developing the company under the new name.

Rasmus Hother le Fevre, Novo Nordisk Pharmatech

CHEManager: FeF Chemicals has come a long way to become Novo Nordisk Pharmatech. What have been the key developments in the past years that led to the transformation?

R. H. Le Fevre: Novo Nordisk Pharmatech was established in 1949 as FeF Chemicals, acquired by Novo Nordisk in 1986, and has been part of the company since then. For the past ten years we have moved toward becoming a full-fledged pharmaceutical company and changed our product offerings, a transition that is finally completed. It was our wish to find a name that mirrors our focus and future aspirations. Our new name reflects the connection to our parent company, Novo Nordisk, and at the same time it reflects our business focus on the pharmaceutical and biopharmaceutical industries. I am very proud to be able to say that we are a leading worldwide supplier of high quality ingredients for the biopharmaceutical and pharmaceutical industries. We manufacture and supply products such as recombinant insulin for cell growth media and pharmaceutical-grade quaternary ammonium compounds — Quats — for the pharmaceutical and biopharmaceutical industries.

How does the rebranding change your market approach?

R. H. Le Fevre: We have spent the past two decades slowly transforming the company from a fine chemical company into a pharma company, discontinuing all non-pharma products. Now we are a fully focused pharma company, the name FeF chemicals didn't really match what we were doing. And since we are owned by Novo Nordisk, it was natural to adopt part of the parent company into our new name —Novo Nordisk Pharmatech. Our focus on the pharmaceutical industry is supported by a comprehensive regulatory package, products that meet all cGMP requirements as well as requirements from authorities.

Which pharma/biopharma market trends do you see as most important or influential for your business?

R. H. Le Fevre: Big legislative and regulatory changes are coming to the industry. There is an increased in regulatory expectations from Innovators and Generics to be able to guarantee patient safety due to today's expanding global market.

"It was our wish to find a name that mirrors our focus and future aspirations."

We aims to be the best supplier of pharmaceutical ingredients by providing excellence at every step of the supply chain — beginning with a consistent high quality of our products, ensuring continuous availability and a secure global supply chain, to an extensive regulatory documentation living up to the highest available standards. By delivering excellence at every step, we help our customers do the same — whether they're developing a cure for cancer or a new ophthalmic. We deliver a proven record of product purity, reliability and consistency and can even tailor products for future therapies. We help keep development on track and production flowing for hospitals and patients.

The pharmaceutical/healthcare markets are under cost pressure, highly regulated and constantly transforming. Which are the biggest challenges for suppliers to these markets?

R. H. Le Fevre: Patients need affordable medicines that are of high quality. As a supplier this can be achieved by having manufacturing processes in complete control with no variation. When this is achieved, the cost will also be competitive. We must never compromise the quality of our products, and by pursuing zero defects we obtain high quality and low cost at the same time.

What are the key technologies and key differentiators to position the company in the market?

R. H. Le Fevre: We have been on the market for since 1949; we have many years' experience and know what challenges our customers face in a fast growing market. Our customers are assured the highest quality and regulatory standards in the market and we will continue to match and outperform the market as required.

"We must never compromise the quality of our products."

We also draw upon Novo Nordisk's 90 years of experience within the biopharmaceutical industry and access to a large number of in-house specialists who can assist with advice, even from early product development stages. This makes us a reliable partner to provide exactly the right quality ingredients for a range of biologic application needs.

Do you have plans to invest into new capacities or technologies, expand your product range or enter new market segments?

R. H. Le Fevre: We will listen to our customers and the market and develop the business as required. In the past we have been able to customize products for specific needs and we have maintained this capability. We have a very proud heritage in Denmark and have extremely capable people within the organization. As the business increases, our focus may require further expansion so we can serve the market appropriately. I have the privilege working with some of the best people in the market, and we will continue building on this heritage.

What are your goals and your strategy for facilitating the future growth of the company?

R. H. Le Fevre: Our primary focus is to support and develop new products that are of benefit to Novo Nordisk and further expand the usage of our current product portfolio. We have adequate capacity for further expansion, a sound pharmaceutical environment in Denmark with good access to a skilled workforce. All these factors are important levers to facilitate further growth.

http://novonordiskpharmatech.com

Novo Nordisk Pharmatech

The origin of Novo Nordisk Pharmatech dates back to 1949 when Ferrosan Fine Chemicals (FeF Chemicals) was established as part of the Ferrosan Group in Koege, southwest of Copenhagen, Denmark. In 1986, Novo Industries acquired the Ferrosan Group and three years later merged with Nordisk Gentofte to become Novo Nordisk. The Danish healthcare company, in 1990, initiates the sale of the Ferrosan Group but keeps the FeF site in Koege (aerial picture) that has been a wholly owned subsidiary of Novo Nordisk since then. On 1 September 2015 the company's name was changed to Novo Nordisk Pharmatech.

Kolb Takes on the KLK OLEO Identity

In 2007, Hedingen, Switzerland-based performance chemicals manufacturer/distributor Kolb became a subsidiary of Kuala Lumpur Kepong Berhad (KLK), a company incorporated in Malaysia. Since, Kolb and KLK's oleochemical division, KLK OLEO, have successfully been interweaving their roots. As of 1 February 2016, Kolb has rebranded as part of its new identity as a member of the KLK family. CHEManager asked Uwe Halder, who started as CEO of Kolb a year ago, about the strategy behind the rebranding.

CHEManager: Mr. Halder, after the rebranding of Kolb, how will your market strategy and your customer approach change?

U. Halder: The fact that Kolb has taken on the KLK OLEO logo underlines our alliance with the group. Our market strategy is to further develop an integrated approach. With this we hope to increase efficiency in the running of our business and to improve cost efficiencies. We have received very positive feedback from the market about the recent integration with our sister company KLK Tensachem in Ougrée, Belgium. This has encouraged to continue on this path with the sister companies of KLK OLEO in Emmerich and Düsseldorf, Germany. That means: joint marketing activities, key account management and product development.

What are your plans for future growth and the expansion of your business?

U. Halder: We have strengthened our supply chain by several large investment projects to secure delivery to customers. These projects are diverse; additional storage tanks, doubling of the ethylene oxide unloading capacity at Kolb in Moerdijk, The Netherlands, and an own jetty with a connecting pipeline to our site for in-

Uwe Halder, Kolb

"Being part of an industry-leading supplier enables us to connect local customers with world-class products."

and outbound deliveries. These investments will safeguard the continuity of the supply streams to our customers and are a commitment from KLK OLEO to the European market. By combining our specialization in application know-how, rapidity and customer orientation together with KLK OLEO's product value chain, we can boost each other's individual capabilities to new levels.

Speaking about customers, what will be the benefits of the rebranding for them?

U. Halder: We strive towards the ability to create benefits for companies and people all over the world with a strong sense of unity. Being part of an industry-leading supplier enables us to connect local customers with world-class products. With more talent and resources at our R&D centers in Switzerland and Malaysia, we are able to further enhance our excellence in product quality. Integrated along the whole value chain, we offer a wide product range as well as access to services to better meet customer needs.

www.kolb.ch

Supplier-Customer Relationship

Chemical Companies Becoming More Comfortable with Outsourced Contract Manufacturing

Chemical companies both large and small are more comfortable today than ever before with outsourced contract manufacturing, or tolling, as it's commonly called. For many tolling is a first resort unless they have a proprietary product and want to handle the production on their own for intellectual property (IP) reasons. But when you look at the world of contract manufacturing, there are many trends, as well as compelling factors, that impact the supplier-customer relationship.

Lawrence D. Sloan, SOCMA

SOCMA
The Society of Chemical Manufacturers and Affiliates (SOCMA) is a Washington, DC, USA-based trade association dedicated to specialty chemical manufacturers, distributors and affiliated service providers. Lawrence D. "Larry" Sloan joined SOCMA as President and CEO in 2010.

sloanl@socma.com
www.socma.com

Recently, Lawrence D. Sloan, President and CEO of the Society of Chemical Manufacturers & Affiliates (SOCMA), reached out to three global leaders who maintain hundreds of tolling relationships around the world to gain their insight on what customers and suppliers are looking for in a partnership. These industry leaders shared several tolling trends from the perspective of a US toller:

On the positive side:

- Rising wage rates and tightened environmental regulations have resulted in Chinese products being priced almost on par with the US, which has helped domestic tollers become more competitively priced around the world.
- These days fewer domestic specialty chemical plants are being built (there is a greater emphasis on building new petrochemical plants due to the fracking phenomenon). This is resulting in a greater demand for US tollers.

"There are many trends, as well as compelling factors, in the world of contract manufacturing."

- Many larger chemical companies are going "asset light" these days with fewer fixed capital investments planned; this, too, is driving more domestic tolling business.
- Tollers have accrued a healthy mix of customers — ranging from small independent entrepreneurs to big multi-national conglomerates. This diverse customer base helps buoy tollers against the capricious nature of some international business.

On the negative side:

- China's booming economy has cooled off, resulting in reduced demand for tollers overseas. Some tollers have experienced a decline in business in the US
- European companies have recently begun to export some of their tolling business to the US where their end customers are located; this in turn is creating new low priced competition for domestic tollers. There is widespread belief that the US economy is stronger than other global markets, thus helping to fuel this trend.

Neutral:

- Increasingly, more private equity money is chasing specialty chemicals. Private equity likes to invest in companies with proprietary technologies, but may view the tolling operation as "less attractive" and try to

"The value a customer can extract from a toller is much higher than what can be extracted internally."

spin them off. Existing tollers could secure new bolt-on business as a result, or see heightened competition.

Customer-Supplier Relationship

When it comes to the customer-supplier relationship, there are many factors to consider. First, a toller can offer the advantages of flexibility and time sensitivity due to just-in-time customer needs. A toller can also respond more quickly when it comes to putting "steel in the ground" and setting up pricing strategies.

"For a customer expanding into a new market that demands a new product, this new business may not be sustainable," Sloan said. "From a risk perspective, it is better to rely on a toller who can make the exact quantity. A toller also has the ability to put in a capital project at a fraction of the cost and time. The value a customer can extract from a toller is much higher than what can be extracted internally."

A toller can also offer a customer a complete technology package (the formulation recipe plus production of a new chemical), or just lease production equipment and other hybrid equipment. There is ample flexibility in the scope of work provided by the toller.

For customers managing capital re-investment, it is more reasonable to pay a toller 10 cents a pound extra for tolling rather than putting their own capital in the ground. "A toller's internal decision process tends to move more quickly than that of a customer, especially for a large company that requires multiple levels of approval," Sloan said.

What Customers are Looking for in a Tolling Relationship

Customers are looking for a strong environmental, health, safety and security (EHS&S) track record and exemplary history of regulatory compliance. Many factors go into this, and having a certification through program's like SOCMA's ChemStewards gives a positive indication. However, the certification does not automatically put them in a low-risk category.

Also, customers are looking for ways to maximize the utility of their assets. If companies require ancillary needs, they must go outside and procure the services of a toller; and finding the right fit is key. Other key factors include: intimate knowledge about the process chemistry, responsiveness to requests for information, product stewardship accountability, emergency response protocol, and financial stability — this is particularly important criteria for longer term supply agreements. One interesting new requirement that applies to overseas tollers is a "no child labor" mandate that was put into place a few years ago.

"For those looking to outsource, here are the top five factors to consider: EHS&S record, product quality, reliability of supply, security — both IP protection and physical —, and financial stability," Sloan said. "Remember, a tolling partnership can be a smart business decision if companies do their homework and choose a partner they can work with to meet their manufacturing needs, both today and tomorrow," he said.

Staying Ahead In Outsourcing

Meeting the Changing Needs of the Pharma Industry

Pharmaceutical companies of all sizes now routinely outsource many of their research, development and/or manufacturing requirements to contract organizations around the world. Outsourcing enhances the overall performance of pharma companies by enabling them to focus their resources on core activities of understanding the fundamental causes of disease states, discovery of novel therapies, and the eventual marketing and distribution of the finished commercial dose forms. Accordingly, the contract research, development and manufacturing industry continues to grow, driven by an expanding array of customer requirements presenting new challenges for outsourcing partners and CMOs.

Key requirements throughout the industry are reliability, supply chain security and quality and so, for companies considering outsourcing, trust in their partner organizations' ability to deliver is a critical factor underlying the partner selection process. However when numerous partners contribute to the supply chain it can be harder to manage quality and supply chain controls effectively. By establishing a smaller number of flexible suppliers, that provide early-stage expertise and pre-clinical studies as well as large-scale manufacturing and global supply at commercial stages, outsourcing complexity and risk can be greatly reduced. Johnson Matthey Fine Chemicals is well positioned to provide such a range of pharmaceutical API research, development and manufacturing services through its Custom Pharma Solutions offering. Services include API development, from pre-clinical through to commercialization, supported through an extensive portfolio of differentiating technologies across our network of eleven global sites. Collaborative working is a core principle of the Fine Chemicals Division, enabling the Custom Pharma Solutions teams to draw upon the expert capabilities of colleagues specializing in the Division's other offerings: Catalysts, Controlled Substances and APIs & Life Cycle Management.

Vicinity Can Improve Collaboration

Customers often value having their outsourcing partners located near to their own facilities and operations, as this can enhance communications and allow for improved levels of collaboration, especially at key stages of product development. As an example, pharma and biotech companies at the Boston biotechnology hub are able to work closely with Johnson Matthey scientists at our nearby facilities in Devens and North Andover, in Massachusetts. Similarly, our recently expanded Cambridge, UK, facilities are well-placed to serve close collaborations with biotech and pharma companies in many sciences parks in the Cambridge and wider UK region.

Specialist Chemistry Capabilities

A further challenge for the outsourcing industry is meeting customers' growing needs for specialist chemistry capabilities, as biotech and pharma companies increase their understanding of the fundamental causes of diseases and consequently develop highly complex and innovative products. We are seeing increasing demand for our expertise in solving challenging chemistry and engineering scale-up problems, to enable effective and efficient synthetic routes. Customers need access to a diverse range of specialist technologies and Johnson Matthey Fine Chemicals has an extensive range for solving complex chemistries. Our technologies include a world-class portfolio of chiral and catalyst technologies, with both chemocatalysis and biocatalysis platforms; drug-conjugate and polymer-conjugate technologies; chromatography from small- to large-scale; process and analytical technologies, and specialism in solid form sciences. These are enhanced by world-leading expertise in handling controlled substances and highly potent APIs. Additionally we have acquired the Pharmorphix solid form sciences business and integrated this into our Cambridge facility, which is a center of excellence for catalysts, chiral technologies and API development. The challenges with materials such as drug conjugated to ligands or polymers are not limited to their synthesis. For example at Johnson Matthey, we have also invested in specialized process, purification and analytical

technologies such as membrane-bound separation technologies, diafiltration, and instruments for analyzing the impurity profiles of high molecular-weight products.

Improvement of Process Cost-effectiveness

A final concern for pharmaceutical companies is improving their process cost-effectiveness without impacting on quality or innovation, and we have observed growing interest in combining catalytic technologies to achieve this. For example, biocatalysis and chemocatalysis are highly complementary to each other and can be integrated for optimal process efficiency, but few contract service providers have the breadth of capability in both chemo- and biocatalytic technologies. We routinely evaluate an array of chemo- and biocatalytic tools in order to develop the most cost-effective solution for a customer's needs. In addition, Johnson Matthey continues to undertake significant research into applying catalysts in novel and innovative ways to enable new transformations, which will provide even more elegant and effective ways of suitable manufacture in the future.

Sustainability

Sustainability is a particularly important focus for Johnson Matthey as a whole and will remain an ongoing concern for the wider industry. The company has made significant progress in recent years in reducing its own carbon emissions and footprint, and establishing and maintaining best practices for efficiency, including reducing material use and production of waste.

Meeting Customers' Needs

As the pharma industry continues to evolve, it will be critical that outsourcing partners remain equally adaptive in order to meet customers' changing needs. In addition to investing in our pharma-focused capabilities and technologies, we continue to place great emphasis on the innovative capabilities across the wider group, in order to be ready for future demands. For example, Johnson Matthey is a leading advanced material science company with broad expertise in understanding how to control particle morphology and size to an exquisite degree. In the area of continuous processing technologies we have 25 years of experience through our activities in the petroleum industry. We are looking at how we can bring these capabilities together with our Custom Pharma Solutions offering to meet the emerging and future requirements of our customers and their developing needs for more effective, technology enabled outsourced services. We also believe that combining technologies will deliver much greater benefits for the industry, such as combining catalysis capabilities or purification science with continuous processing.

Steve Barr, Vice President Business Development, Johnson Matthey Fine Chemicals

steve.barr@macsmith.com
www.matthey.com

Adding Value to Plastics

Additives Are Becoming Increasingly Important as Demand for High Performance Plastics Grows

Demand is growing around the world for plastics to be made with varying physical and chemical characteristics which can be tailored to specific end-uses.

Additives are added to plastics in various combinations in order to improve impact strength, clarity, resistance to chemicals, heat and weather, and color preservation. They include, among others, plasticizers, flame retardants, colorants, impact modifiers, antimicrobials and UV stabilizers.

The sector is highly fragmented and market competition is quite high. As a result, companies are continuing to invest in developing and introducing new products that offer enhanced quality and performance as they seek to boost portfolios and meet customers' differing requirements.

Engineering Plastics in Automotive Applications

One major area of growth for plastics and additives is the automotive sector where the trend for light weighting to meet stringent fuel emission targets has seen plastic components increasingly replace their heavier metal counterparts.

German specialty chemicals producer Lanxess expects global demand for engineering plastics in automotive applications to grow by an annual 7% in the period 2015–2020. This growth is being driven by rising car production and the trend towards more fuel-efficient vehicles. Depending on the component, Lanxess said a part designed with high-performance plastics can weigh 10–50% less than a metal version

Responding to rising demand, the company has expanded its plastics compounding capacity in the US and Brazil. About $15 million was spent on a second line in Gastonia, North Carolina, USA, which started production in December 2015, doubling capacity to 40,000 t/y. A 20,000 t/y plant in Porto Feliz, Brazil, costing around €20 million, was also inaugurated in April 2014.

In both these plants, Lanxess mixes and refines polyamide (PA) and polybutylene terephthalate (PBT) with additives and glass fiber to make its Durethan and Pocan high-performance plastics which are used primarily in cars. In the coming years, Lanxess plans to invest a further €50–100 million to grow its high-performance plastics business.

"With the investments, we will be further balancing the capacities in our polyamide value chain and driving the globalization of our engineering plastics business," says Michael Zobel, head of Lanxess' High Performance Materials business unit.

LED Light Sources

A current focus in the automotive industry is light emitting diodes (LEDs). LEDs are becoming an important source of lighting worldwide as their energy consumption is significantly lower than that of incandescent and discharge lamps, and their service life is longer. They are increasingly being incorporated in car headlamps and rear lighting clusters, and there is growing potential for using LEDs in buildings, streetlamps and electronic display backlighting, among other applications.

Lanxess' new polyester grade based on PET, Pocan TP 555-001, has been developed for housings, sockets and other components for LEDs. The plastic contains special additives and is reinforced with glass fibers to give an unusually high light reflection, as well as high heat stability and strong resistance to yellowing/ageing.

"This high-tech material represents a new, growing material family that is our response to the global trend in LED light sources. It is designed as an economical alternative to specialty polyamides, materials frequently used to make components such as LED housings thanks to their high melting point," explains Matthias Bienmüller, Lanxess' head of Pocan product development.

He adds: "We are at a very advanced stage in developing a polyester-based material grade that can withstand the even higher temperatures of reflow soldering than vapor phase soldering and still display outstanding LED light reflection."

Germany's Evonik launched Vestamid HTplus M8000 in late 2015, a new additive partially based on the castor oil plant. The material is the key base ingredient in a compound for making products such as high-performance LEDs highly temperature resistant and light-stable.

In smartphones, Vestamid HTplus M8000 provides the mechanical integrity required for the moveable lens module units, allowing a higher pixel count that increases the camera's image resolution. The material was also specially developed for thin-wall applications in the electronics industry.

Covestro, formerly Bayer MaterialScience, has also been developing a range of materials for LED lighting, mostly based on its Makrolon PC. It says there has been significant development of injection mouldable thermally conductive polymers in the last few years for electronic and lighting manufacturers. These plastics generally use large percentages of additives to achieve their high thermal conductivity.

Rising Global Demand for Plastics Additives

According to US market analyst BCC Research, the global plastics additives market was worth $48.2 billion in 2015. The consultancy predicts the market will grow at a compound annual growth rate (CAGR) of 5% over the next five years, from a value of nearly $50.6 billion in 2016 to nearly $50.6 billion in 2021.

Rising populations, rapid urbanization and expanding incomes are contributing to higher plastic consumption, particularly in Asia where the presence of huge untapped market segments will continue to open up opportunities.

Packaging applications in emerging economies as a result of the rapid urbanization and rising demand from the consumer goods and food industries, as well as the increasing use of additives for agricultural and medical applications are expected to offer budding opportunities.

While rising living standards makes Asia-Pacific the leading market for additives, elsewhere in the world — notably in Europe and the US — demand will be affected by strict environmental regulations.

For example, companies are developing phthalate-free plasticizers and alternatives to brominated flame retardants to meet increasingly stringent regulatory requirements.

Rhein Chemie Additives, one of Lanxess' business units, says its plasticizers portfolio is already entirely phthalate-free and it continues to work on developing its phosphorus-based non-halogenated flame retardants Levagard and Disflamoll for rigid and soft PU applications.

"With its network of phosphorus facilities — Phosphorus-Verbund — in Germany and France, Lanxess is strongly placed to further develop its leading position in the phosphorus-based flame retardants market," says Karsten Job, head of the plastic additives business at Rhein Chemie Additives.

He adds that the company's Stabaxol hydrolysis stabilizers are also playing an important part in efforts to increase the use of bio-based polymers which are subject to degradation by hydrolysis, such as polylactic acid (PLA) or polyhydroxyalkanoates (PHA) in durable goods.

BCC Research says plastics additives will continue to gain in importance in the future, not only because of the steadily rising technical standards required of plastics, but also because customers are under increasing pressure to keep on improving productivity.

Elaine Burridge,
CHEManager

Songwon Starts Additives Production at Abu Dhabi

South Korea's Songwon Industrial Group has started up its joint venture additives plant in Abu Dhabi, UAE. The 7,000 t/y facility is located in the Khalifa Industrial Zone and manufactures Songwon's tailor-made additive blends, known as One Pack Systems (OPS). The One Pack Systems are complex formulations that are blends of stabilizers and lubricants for PVC stabilization. The new plant is operated by Polysys Additive Technologies Middle East, the venture formed by Songwon with Polysys Industries and Pan Gulf Holding. The Abu Dhabi facility adds to Songwon's existing OPS production in Greiz, Germany, and Houston, Texas. (eb, mr)

Managing What We Can Control

Chemtura Improved Its Performance in 2015 Despite Numerous Challenges

Chemtura Corporation is a global specialty chemicals company with leading positions in diversified markets and net sales of $1.75 billion in 2015. Formed in 2005 through the merger of Great Lakes Chemical and Crompton, the Philadelphia, Pennsylvania-based company looks back on a history of almost 180 years. After the divestiture of its AgroSolutions business in 2014, Chemtura now focuses its business on two segments: Industrial Performance Products (IPP) and Industrial Engineered Products (IEP). Dr. Ralf Kempf and Dr. Michael Reubold asked Craig A. Rogerson, who has served as Chemtura's Chairman, President and CEO since December 2008, about recent developments and his further growth strategy.

CHEManager: Mr. Rogerson, after the divestiture of the AgroSolutions business in 2014, what is your focus to grow Chemtura's core businesses?

C. Rogerson: Our focus is on profitably growing those businesses in our portfolio through organic means driven by innovation and capital investment, as well as through bolt-on M&A that leverages our technology and/or market access. We have concentrated our capital expenditures over the past three to four years on our four core businesses by expanding our capacities in higher growth markets, as well as extending our capabilities to produce our latest innovations. Examples of investments to serve higher growth markets are the capacity expansions we made for the production of our synthetic lubricant products in The Netherlands and our grease, finished fluids and urethanes products in China. Examples of innovative product lines for which we've expanded production capabilities are our Emerald Innovation 3000 greener flame retardant capability in Eldorado, Arkansas and our high-purity metal organics in Korea.

Craig Rogerson, Chemtura

"I have made it clear that now, with our more focused portfolio, growth is key."

How has Chemtura developed in 2015 in terms of sales and earnings?

C. Rogerson: 2015 was a difficult year as far as revenue growth, due to the slowdown in China and the strong US dollar overseas. In addition, we experienced some specific supply constraints that posed challenges to our topline growth. That being said, a number of our newer product offerings performed well and are positioned for solid growth in 2016. Bottom line, we saw an approximate 40% increase in year-over-year EBITDA as margins improved due to a combination of lower raw material costs, centered around lower oil prices, and a focus on value pricing. EPS grew at an even higher rate due to effective tax planning, lower interest expense and a successful share buyback program.

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Looking back at 2015, what were the challenges affecting your business?

C. Rogerson: As mentioned, the slowdown in China affected the sales, and utilization rates, of our new manufacturing facility in Nantong, China. We were also affected by the shortage of a key raw material constraining the utilization of our new facility in The Netherlands. While a positive on the raw material front, low oil prices did have a negative effect on our key oil company customers, leading to inventory adjustments at year-end and, overall, a more difficult selling environment.

Your theme in 2015 was "managing what we can control." Which initiatives did you implement to improve Chemtura's performance?

C. Rogerson: After a difficult 2014 due to the overall macroeconomic conditions and no real indication that 2015 would show any improvement, we focused our efforts on improving our performance by "managing what we can control." We announced a program in which we would reduce our manufacturing costs by $50 million, achieving that run rate by mid-year and realizing $40 million of that reduction in our 2015 results. Concurrently, we set a target of reducing our SG&A expenses by an additional $12 million over that same period. All of this was on top of the $15 million of corporate costs we committed to reducing as a result of the late 2014 divestiture of our Chemtura AgroSolutions business. I am proud to say we achieved, and even exceeded, the reduction targets in all cases and, even more importantly, we did it while improving our overall business processes effectiveness.

What is your strategy to generate future growth? Will you look for acquisitions to add products or technologies to your portfolio?

C. Rogerson: I have made it clear that now, with our more focused portfolio of businesses, growth is key. Organic growth driven by innovation and the utilization of the increased capacity we have invested in will be a core component of our growth. Bolt-on acquisitions that extend our product lines or add to our capability could be another driver of growth. I have also stated publicly my view that Chemtura would be advantaged by being a part of something bigger via a transformational purchase, sale or merger transaction. Scale is important from the perspective of trading multiples and corporate cost efficiency and also from the perspective of consistent investment in core R&D. We continue to actively identify and evaluate all opportunities.

"The low oil prices did have a negative effect on our key oil company customers."

What is your business outlook for the company and where do you see above-average market growth in terms of regions or application areas?

C. Rogerson: We are confident that we will deliver significant bottom line growth again in 2016. While we do not project or assume an improvement in the overall global economic environment, we will again grow our profitability by managing what we can control. We have alleviated the raw material constraints that affected us in 2015. We will have the full year effect of our cost reductions and our value pricing. We will benefit from the improved operating rates established on some key products as we ended 2015, and we will ramp up the commercialization of key new products in 2016. Key regions or applications for our growth are in our organometallics product lines in Asia, our synthetic lubricants in Europe, applications for bromine in mercury removal at coal-powered utilities in the US and continued growth for flame retardants in insulation foam applications in Europe.

www.chemtura.com

Future Production Concepts in Chemical Industry

At this Dechema Praxisforum taking place on April 27 and 28, 2016 in Frankfurt/Main, Germany, experts will talk about continuous-flow production, modularized plant systems, best practices, new developments and future challenges in chemical and biotechnological engineering and manufacturing.
http://dechema.de

Chemspec Europe 2016

The 31st edition of Chemspec Europe will take place on June 1 – 2, 2016 at Messe Basel, Switzerland. The event includes an exhibition as well as conferences and seminars and offers manufacturers, suppliers and distributors of fine and specialty chemicals a dedicated marketplace to meet with buyers.
www.chemspeceurope.com

FECC Annual Congress 2016

The Annual Congress of the European Association of Chemical Distributors (FECC) attracts more than 250 delegates, from business leaders to stakeholders, every year. In 2016, from June 6 to 8, the congress will take place in Istanbul, Turkey, providing a vibrant setting for leaders from the chemical distribution industry to network, generate new business and reinforce relationships.
www.fecc.org

FEICA 2016 Conference and Expo

The Conference and Expo of the Association of the European Adhesives and Sealants Industry (FEICA) on September 7 – 9, 2016 in Vienna, Austria, provides insights into the key issues affecting the industry and networking opportunities for formulators and materials suppliers to discuss the business environment.
www.feica-conferences.com

ChemOutsourcing 2016

ChemOutsourcing is the largest USA-based API show attracting more than 700 chemists, business development staff and buyers from the pharmaceutical, biotech and chemical industries. For its 10th anniversary, ChemOutsourcing will move to a new venue in Parsippany, New Jersey, on September 19 – 21, 2016.
www.chemoutsourcing.com

CPhI Worldwide 2016

CPhI Worldwide is the leading networking event and exhibition in Europe dedicated to pharmaceutical reserach and development, trends, products and services, including APIs, excipients, ingredients, contract research and custom manufacturing, process and packaging equipment. This year's edition will be staged at Fira de Barcelona Gran Via on October 4 – 6.
www.cphi.com

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Tel.: +49 6201 606 0

Publishing Director
Dr. Heiko Baumgartner

Product Manager + Managing Editor
Dr. Michael Reubold
Tel.: +49 6201 606 745
michael.reubold@wiley.com

Editor in Chief
Dr. Ralf Kempf
Tel.: +49 6201 606 755
ralf.kempf@wiley.com

Media Consultants
Thorsten Kritzer
Tel.: +49 6201 606 730
thorsten.kritzer@wiley.com

Corinna Matz-Grund
Tel.: +49 6201 606 735
corinna.matz-grund@wiley.com

Jan Käppler
Tel.: +49 6201 606 522
jan.kaeppler@wiley.com

Team Assistants
Bettina Wagenhals
Tel.: +49 6201 606 764
bettina.wagenhals@wiley.com

Jörg Stenger
Tel.: +49 6201 606 742
joerg.stenger@wiley.com

Freelancer
Dede Williams, Elaine Burridge, Thorsten Schüller, Miranda Kennedy

Wiley Reader Service:
65341 Eltville
Tel.: +49 6123 9238 246
Fax: +49 6123 9238 244
E-Mail: WileyGIT@vuservice.de

Production Managers
Christiane Potthast
Melanie Horn (Advertising)
Oliver Haja (Layout)
Elke Palzer (Cover/Litho)

Original Articles:
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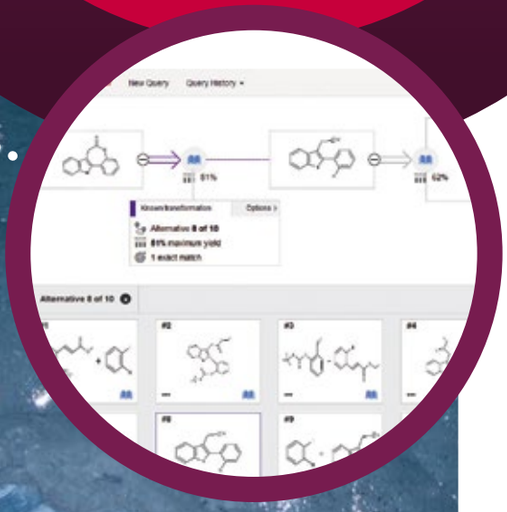

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