

Let's talk about innovation

New solutions to solve unmet formulation needs

Dr. Karl Kolter (left) and
Dr. Thorsten Schmeller (right),
two enablers in excipients



Pharma Ingredients & Services. Welcome to more opportunities.
Custom Synthesis | Excipients | Active Ingredients

 **BASF**
The Chemical Company

Finding new ways to help you grow your business



**“We create chemistry by listening to the market and opening up
to new possibilities.” ...**

... says Dr. Karl Kolter, Head of Research & Development Pharmaceutical Ingredients at BASF and recipient of the IPEC Award for Industry Research Achievement in Excipients Technology. With over 9,300 employees in our central research and development departments, including colleagues dedicated to pharmaceutical ingredients research, we lead the field in making drug manufacturing easier, more consistent and less costly.

“Our innovations contribute to sustainable success for your business.”

... says Dr. Thorsten Schmeller, Head of Global Marketing New Products. With at least one new pharmaceutical excipient every year, BASF has reinforced its leadership in conducting ground-breaking research into innovative excipients and has added value to pharmaceutical products for many decades.

Innovating to meet your needs

With our extensive expertise in polymer chemistry and formulation know-how, we have designed, innovated and grown our cutting-edge excipients portfolio to meet consumer needs. Regardless of how effective the latest active ingredients are, they often come with some characteristic that impedes acceptance and slows uptake within the health-care sector. They may be barely soluble, preventing the body from absorbing their full potential. Or they may have a bad taste, resulting in poor compliance among patients. These are the kinds of practical challenge that we are committed to solving. Whatever the challenge, we work with you to develop new excipients for unmet formulation needs.

Our contribution to your challenges

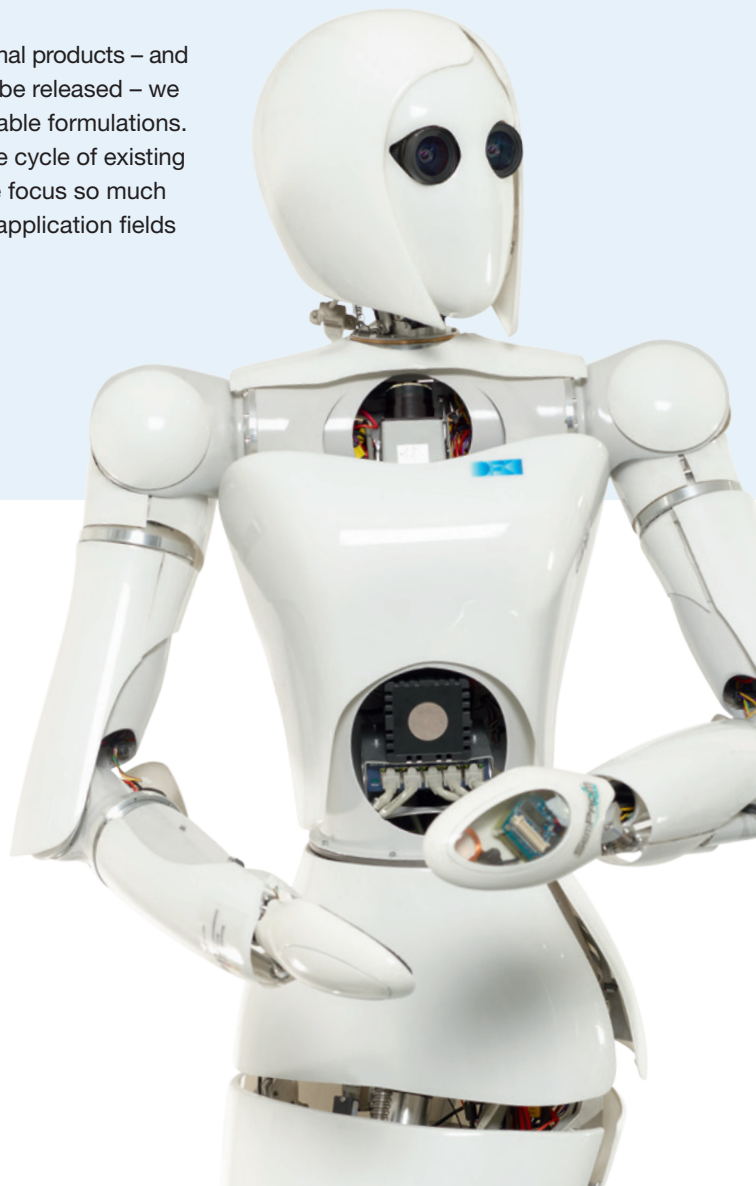
- Broadest solubilizer portfolio in the industry to address the solubility challenge
- Excipients specifically designed for new processes, such as hot-melt extrusion
- Products targeting higher efficiency to reduce your manufacturing costs
- Solutions for special patient groups, such as children and the elderly
- Best-in-class film-coating products for all kinds of functionalities



Cutting-edge products designed to meet your needs

Whether you are manufacturing tablets, sprays, drops, injectables or dermal products – and no matter where in the body or how fast the active ingredients need to be released – we have the right excipient to help you maximize the potential of your valuable formulations. And we even go beyond this by delivering solutions for managing the life cycle of existing formulations or new and beneficial therapeutic systems. This is why we focus so much on the continuous development of new excipients while extending the application fields and efficiency of products already available.

Our product spectrum fulfills all functional and regulatory requirements for the production of all kinds of dosage forms – no matter how fast or where in the body the active ingredient is to be released, whether it tastes bitter or is hardly soluble.



Kollicoat® IR

Next generation IR
coating polymer

2002

Kolliphor® P188 micro

A water-soluble
lubricant

2003

Kolliphor® P407 micro

Excellent
miscibility

2003

Kollicoat® Protect

Effective &
reliable moisture
protection

2004

Kollidon® VA 64 Fine

THE dry-binder

2005

“We are proud of all our excipient products. As they are designed as pharmaceutical excipients targeting unmet needs, they are currently enjoying particular success within the pharmaceutical industry.”

says Dr. Thorsten Schmeller, Head of Global Marketing New Products.

**uprofen
DC 85**

The process
accelerator

2006

**Kollidon®
CL-F**

Disintegration
in small tablets

2006

**Kollidon®
CL-SF**

Convenience
for ODTs

2006

Ludiflash®

As smooth
as ice cream

2007

**Kollicoat®
IR Coating
Systems**

Create your
own colors

2008

Soluplus®

The solid
solution

2009

Coatings

Solubilization

Disintegrants

Binders

Others

**Kollicoat®
Smartseal 30 D**

Active protection

2010

PeroXeal™

The Kollidon®
packaging concept

2011

**A solution
for your next
challenge**

Kollicoat® IR

Kollicoat® IR is the water-soluble film-forming agent ideal for manufacturing instant-release coatings for solid dosage forms, as well as for other applications like drug-layering and binding. It is robust yet flexible and its high pigment binding capacity means quick and easy spraying. The result is a highly reliable, cost-effective process that produces coatings of excellent appearance, every time.

Kollicoat® Protect

Kollicoat® Protect is highly impermeable to water when combined with pigments, thus offers strong, reliable protection for active ingredients. Within production processes, this highly flexible film former requires no plasticizer and is robust during handling. The spraying solution can contain up to 20 % solids, making it exceptionally economical in manufacturing.

Kollicoat® IR Coating System

Kollicoat® IR Coating Systems possess excellent flow properties and can be re-dispersed easily and quickly. The seven globally approved base colors can be combined to produce hundreds of shades. This means you can manufacture unique, instantly recognizable tablets at short notice. Faster and more straightforward production means reduced energy consumption, lower carbon emissions and ultimately lower cost per dosage for you. This product line was nominated for the CPhI Innovation Award in 2009.

Kollicoat® Smartseal 30 D

Kollicoat® Smartseal 30D is the first aqueous dispersion of a protective polymer for taste masking and moisture protection. In addition to tablet coatings, it can easily be used to coat pellets and even particles without sticking during scale-up. This unique product offers rapid release of active ingredients and provides an easy-to-apply, economical coating solution.

Kolliphor® P 188 micro

This solubilizing agent is the substance of choice for dissolution problems with solid oral dosage forms. Useful as a bioavailability enhancer, it is used mainly as a water-soluble lubricant.

Kolliphor® P 407 micro

This product offers effective solubilization, perfect content uniformity in blends used in melt-granulation, hot-melt extrusion or for making tablets. It is soluble in water, alcohol and other solvents.

Soluplus®

Featuring outstanding solubilization properties, Soluplus® was specifically designed to dissolve poorly soluble active pharmaceutical ingredients (APIs), greatly enhancing bioavailability. Due to its high flowability and excellent extrudability, Soluplus® also demonstrates superior performance in forming solid solutions and solid dispersions of APIs, especially in hot-melt extrusion. Soluplus® was awarded the CPhI Silver Innovation Award in 2010.

Kollidon® CL-F

Tablets containing Kollidon® CL-F combine strong disintegration power with fine particles. It is ideal for small tablets as the fine particles mean fewer uniformity problems. Tablets containing Kollidon® CL-F also tend not to form rough surfaces when stored under humid conditions.

Kollidon® CL-SF

When it comes to disintegration properties and superior mouthfeel, Kollidon® CL-SF is a winner. It also results in fewer defects on the tablet surface after storage, making it ideal for orally disintegrating tablets as well as providing a strong ability to absorb water, particularly in wet granulation processes.

Kollidon® VA 64 Fine

Kollidon® VA 64 Fine, a dry binder of unmet binding capacity, which is optimally suited to achieve excellent hardness and low friability in formulations of medium to high-dose actives and actives of low compressibility. Due to its small particles, high porosity and spherical shape of the particles, it is able to cover a large surface area and form numerous bridges in the tablet structure that lead to increased mechanical stability. This reduces susceptibility to capping and makes the tablets less brittle. Less dry binder is needed to achieve the same degree of hardness and it produces better results than any other dry binder.

Ibuprofen DC 85

High-speed compression in a non-sticking process. To develop an improved, direct-compressible grade to meet all tableting challenges, BASF has modified the crystal surface of ibuprofen. A layer of nanomaterial encapsulates the active, thus enabling smooth, fault-free tableting – several times faster than using conventional powder ibuprofen.

Ludiflash®

Ludiflash® is used to make hard tablets dissolve almost instantly on the tongue into a smooth cream – without the need for water. The active pharmaceutical ingredients can thus be swiftly delivered for rapid relief. This helps to significantly improve patient compliance. Children and older people find the tablets far easier to take, while people on the move or without ready access to safe drinking water greatly appreciate their instant solubility.

PeroXeal™

The PeroXeal™ packaging concept is a combination of different film layers complemented by inert gas flushing and heat sealing to reduce residual oxygen. This results in significantly lower risks of oxidation and provides retest periods up to 4 years for our Kollidon® grades.

Quality, consistency and value

Partnership with our customers means we accompany the entire life-cycle of products and projects in the pharmaceutical industry. In doing so, we regard the requirements of our customers as a challenge and stand for highest quality and flexibility. Our customers benefit at every stage from BASF's unique chemical expertise and innovation strength.

Every day, our technical experts and regulatory teams all over the world help our pharmaceutical customers to become more successful. In addition to developing new excipients, we can assist you in capturing exciting new formulation opportunities.

Behind all our solutions lies an uncompromising approach to quality testing and regulatory compliance. All BASF products are tested by independent third parties and conform to all applicable international regulatory standards. We will be pleased to show you the relevant reports and certificates on request. Naturally, you will also be supported with regulatory documentation whenever you use our excipients, helping you avoid unnecessary delays in new product registration. The rigorous quality standards we apply in our own production processes mean that you know you can rely on our products, which in turn gives you even more confidence in the quality of your own products.

BASF quality at a glance

Thorough safety testing in non-clinical program

All our products meet all international standards

Comprehensive regulatory documentation

Support for you in new product registration

BASF excipients make the difference

The current challenges in the drug industry can only be met with new technologies and new excipients. Increasing cost pressure is forcing us to look for new drug delivery solutions, such as Soluplus® which makes your drug candidates bioavailable. Our Kollicoat® products play an active role in driving down costs, optimizing production processes and increasing patient compliance. In addition, the ability to perfectly match a color or to create an entirely new one helps to differentiate your products and strengthen your brand.

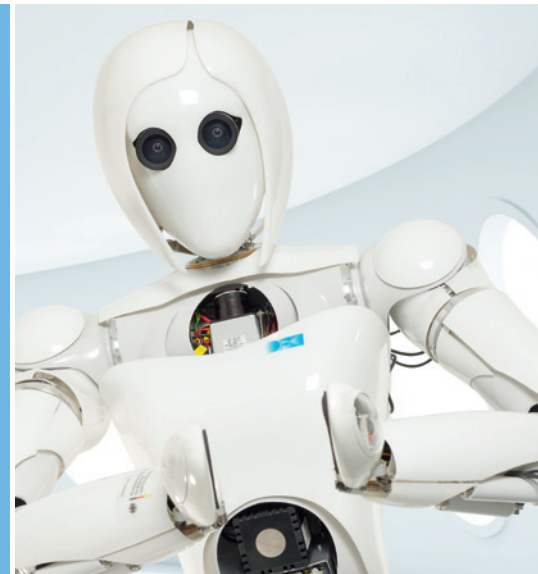
Excipients are set to play an ever-increasing role in the future of the pharmaceutical industry. We aim to be your trusted partner on that journey by continuously offering new solutions along the way.

Practical innovations meeting new needs

Optimizing production processes

Improving customer experience and drug efficacy

Robust supply chain and consistent high quality



We are passionate about innovation and design new solutions for:

- The solubility challenge
- New production processes
- Higher efficiency
- Special patient groups
- Film-coating of solid dosage forms

We constantly work towards helping you improving existing drug formulations and creating innovative therapeutic systems by developing new excipients and extending the application fields of existing products. Customers throughout the world appreciate the high degree of product functionality and expert service we provide.

Contact us to find out how Dr. Karl Kolter and Dr. Thorsten Schmeller and their colleagues can help you create more patient-friendly drugs.

Europe

BASF SE

Dr. Karl Kolter

Dr. Thorsten Schmeller

Phone: +49 621 60-0

karl.kolter@basf.com

thorsten.schmeller@basf.com

With generous support from the German Centre for Artificial Intelligence (DFKI), which developed AILA.



German Research
Center for Artificial
Intelligence GmbH

www.pharma-ingredients.basf.com

www.innovate-excipients.basf.com

Disclaimer

The data contained in this publication are based on our current knowledge and experience. In view of the many factors that may affect processing and application of our product, these data do not relieve processors from carrying out their own investigations and tests; neither do these data imply any guarantee of certain properties, nor the suitability of the product for a specific purpose. Any descriptions, drawings, photographs, data, proportions, weights etc. given herein may change without prior information and do not constitute the agreed contractual quality of the product. It is the responsibility of the recipient of our products to ensure that any proprietary rights and existing laws and legislation are observed. (03/2012)

® = registered trademark of BASF SE