

# Solving Solid-state Problems: Solid-Chem GmbH

## What motivated you to start Solid-Chem GmbH?

**Carsten Schauerte:** During my post-doc studies at a scientific group at the University of Essen, we received more and more inquiries for help with problems in solid-state chemistry from the chemical and pharmaceutical industry. The emerging collaborations contributed significantly to the third party budget. When my Ph.D. supervisor was about to retire, it was unclear how to continue with the collaborative research projects - the multiple contacts and expertise were about to be wasted. In answer to this situation, several managers from the industry encouraged us to continue our activities within an independent spin-off company.

## What are the problems or challenges that your company offers a solution for?

Solid-state chemistry is a branch of chemistry that deals with the analysis and synthesis of substances in the solid-state, specifically, crystalline compounds; this is our field of particular interest. The objective of our company was to transfer the knowledge of our previous research area at the university to the industrial application for the chemical and pharmaceutical industry. More than 80 percent of drugs get administered as crystalline solids – for example in tablets or capsules. The crystallization of the active pharmaceutical ingredients (APIs), their admixture as well as the analyses of the drugs produced are of great importance. Consideration of patent issues is a prerequisite for the costly development and testing of drugs under governmental supervision. Consequently, Solid-Chem is active in a vast field; none of the projects get boring due to permanent repetition. In our laboratories, the most important analytical tools are readily available for our purposes. We evaluate results and summarize them in reports. New crystal forms of the APIs are produced and then examined to see whether they have improved properties. The problems in pro-



**Dr. Carsten Schauerte**, (left) and **Prof. Dr. Roland Boese**, both **Founders & Managing Directors of Solid-Chem GmbH**. (photos: Erik Schwarzer, Grubenglück GmbH)

duction processes are analyzed, and ways to circumvent them are suggested.

## How much time passed between having the idea for your start-up and your launch?

It took us two years to find the appropriate laboratory space. We needed a sufficient number of smoke hoods, and in the end, the only location suitable was next to Bochum University within a new building for start-ups. An option for space expansion was a valuable solution for our requirements. ▶

## Company Facts

**SOLID-CHEM GmbH**, registered in 2010

**Number of employees (2020): 7**

### Business area:

- Modern laboratory equipment for crystallization, polymorphic-, salt- and co-crystal or amorphous, screenings'
- Method development and analysis for particle identification and characterization
- Competent advice and strategy development in patent matters
- A wide range of test methods for cross-linked solid state analysis with in-house and external methods

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**Who helped you getting started? For example friends and family, incubators, investors or mentors?**

Two people, my former Ph.D. supervisor and I raised the shareholder's capital. We were also able to receive local support for leasing further equipment and even received an EU-Objective-2 grant.

**What was your biggest problem in the start-up process? And what was your biggest mistake, or was there an obstacle that you did not expect before?**

With a company, directed to long-lasting projects, we have to cover all running costs until the projects are closed. Moreover, big companies often urge very long payment terms, up to 90 days. This fact also requires an appropriate credit line, which is generally only granted with corresponding guarantees or security. Pricing is also an essential factor at the beginning, as long as site expenses are unknown, such as insurances, safety provisions, administration, consumption, machine failures, and repairs. There are always unpredictable events and severe decisions, for example non-disclosure agreements with high liability coverage, sudden decisions of a customer to stop a project and failure of income, or on the personnel side, sudden illness or maternity or childcare leave.



A Solid-Chem employee in the laboratory (photo: Erik Schwarzer, Grubenglück GmbH)

**CAROTS (Commercial Analytical Research Organisations Transnational Strategy) is an international project that aims to establish a new type of private or public-private company in the Baltic Sea Region: Commercial Analytical Research Organisations (CAROs). CAROs, as intermediary bodies between industry and academia, provide enterprises with much quicker yet complete assistance in analytical research in areas like New Materials, NanoTech or Life Sciences. The project is led by DESY, Deutsches Elektronen-Synchrotron, in dialogue with ten project partners and twelve associated organisations from across the Baltic Sea Region.**

For further information visit  
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**What kind of structures would have helped you to cope better?**

It would have been helpful to have a more extensive customer portfolio to start with. In the beginning, we had a "one-man marketing department," so we had to figure out how to attract new customers. Today, we attend targeted scientific conferences and are well known in the community.

**What has been your most interesting company case so far?**

For proving the shelf-life stability of only a few milligrams of an API within a pill, the samples were stored under heat and high humidity for an extended period and then analyzed. For all of them, always a two percent loss of the API was detected, when subsequently submitting an aqueous solution HPLC analysis. To find out where two percent of the few milligrams got lost, we collected a few million spectra using coherent anti-Stokes Raman scattering (CARS) for increasing the resolution. Finally, we could prove that the two percent remained in the residual portion of the tablet.

**What is your biggest challenge at the moment, personally in your role and for the company?**

Currently, during the Covid-19 pandemic shut-down, two out of ten employees are under quarantine. In case more of them will be off, the company has to close completely - and years of investment of time, money, and efforts are lost. If companies reduce investments in R&D, as it happened during the 2009 financial crisis, we must withstand a drop in turnover.

**What would help you most right now to reduce costs, increase your visibility and to co-operate with other intermediaries?**

I think the idea of a network of similar companies like ours is a way to increase the visibility of CROs, which can save costs, especially for marketing.

**What is your number one advice for a new founder of an intermediary?**

Develop a thick skin, strong nerves, and remain optimistic! You must be aware of taking a ride on a roller coaster several times a day. Be aware that it's not a 9-to-5 job. Much intrinsic motivation is needed and your family's indulgent tolerance is essential. There will be very little time for vacations, at least for continuous relaxation. Nevertheless, enjoy your independence and keep the pride of what you achieved. ■



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