



Knowledge & Technology Transfer

Transfer guideline of the Leibniz-Institute for Catalysis

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1. Background

The following transfer guideline of the Leibniz Institute for Catalysis explains the transfer understanding of LIKAT, serves as a basis for transfer tasks of the institute and shows current activities.

According to the guiding principle of Gottfried Wilhelm Leibniz *Theoria cum praxi*, LIKAT strives to conduct research for the benefit of the community. This means making scientific knowledge and expertise accessible to society and, ideally, translating research results into practice.

A prerequisite for effective *knowledge and technology transfer (KTT)* at LIKAT is functioning internal communication. On the one hand, this must include specialist information on KTT at LIKAT and, on the other hand, it must aim to raise awareness of the topic and its importance.

The new section on KTT on the catalysis.de website provides information on transfer activities at LIKAT. Furthermore, an offer for support by the transfer officer and an overview of possible activities will be available to all employees on the intranet of the institute.

2. Definition of knowledge & technology transfer (KTT)

Knowledge and technology transfer is now considered the third pillar of science alongside teaching and research. In the sense of the Leibniz Association, transfer means the *exchange between science and the non-academic world*, which always takes place in two directions: On the one hand, the provision of scientific knowledge for societal needs or decision-making processes; on the other hand, the integration of society-generated questions and problems into current research issues. Both require an intensive dialogue on a target group-specific level.

LIKAT understands knowledge and technology transfer as all activities that serve to process scientific findings and technologies in a way that is appropriate for the target group and to transfer them to the non-academic world. In addition, dialogue with society, politics and industry enables research questions to be adapted to social debates and problems.

In particular, technology transfer, as technical utilization and commercial exploitation, has long been one of LIKAT's profile constants. This is expressed in a multitude of transfer examples such as industrial cooperations, transfers and patenting. The close involvement of industrial partners as future users in the research process is an example of successful two-way transfer.

Knowledge transfer at LIKAT is becoming increasingly important: as a *target group-specific and quality-assured translation of scientific findings* and, conversely, as a *translation of problem descriptions and needs from business, politics and society into scientifically workable research questions*. Predestined for such successful knowledge transfer are Leibniz formats such as *Leibniz fragt*, *Leibniz im Bundestag* or *Book a Scientist*, in which LIKAT regularly participates.

Explicitly excluded from the KTT are all activities at LIKAT that concern research (publications, conference contributions, scientific reports). Even if transfer services can be achieved through them in principle, they belong to the core elements of LIKAT's research mission: the generation of scientific knowledge in the field of catalysis.

3. Goals, transfer partners & resources

As a Leibniz Institute, LIKAT is dedicated to socially, economically and ecologically relevant issues and conducts knowledge and application-oriented research in the field of catalysis, e.g. on the application of catalysis in the socially relevant environmental, energy or health sectors. The target group specific communication of the gained research results of LIKAT, a publicly funded research institution, is understood as an obligation and central task.

The superior goal of KTT at LIKAT is the exchange between science and society, politics and industry in the field of applied catalysis. In particular, it means the transfer of research results and knowledge to strengthen society's ability to reflect. Monetary and human resources, the research focus of LIKAT as well as the identification of societal research needs have to be taken into account. Direct dialogue with various actors in society and industry makes it possible to identify and address research needs.

With regard to technology transfer, a concrete goal for the Institute's scientists is the transfer of at least two catalysts or catalytic processes to industrial pilot scale per year for the utilization and exploitation of scientific results by industry.

With regard to knowledge transfer, the transfer work at LIKAT aims to ensure the transfer of knowledge to the public, as well as to educate and disseminate knowledge on public issues and to provide scientifically sound bases for decision-making.

In order to choose the appropriate language and communication channel, it is essential to analyze and consider the respective target group. The following actors are transfer partners or addressees of KTT at LIKAT:

- » Partners from the business community
- » Municipal and regional initiatives (e.g. Hy! Rostock hydrogen initiative)
- » Regional and supra-regional transfer-relevant networks (e.g. Alumni, NFDI4Cat)
- » Politicians of different levels (municipality, state, federal government)
- » Level of policy preparation
- » Ministeries
- » Media
- » Interested public
- » Students
- » Pupils

4. Activities

In the following, various transfer activities at LIKAT are briefly explained. Contact persons at LIKAT for external communication are Dr. Martha Höhne (martha.hoehne@catalysis.de, Staff unit public relations) and Nicole Aulerich (nicole.aulerich@catalysis.de, Assistance to the Scientific Direktor).

4.1 External communication

4.1.1 Publications

Explicitly excluded from KTT at LIKAT are all publications that involve the publication of research results in *peer-reviewed* journals. Even if they basically serve the transfer, they belong to the core elements of LIKAT's research mission.

However, LIKAT staff members regularly report on the latest research findings in articles that are not subject to the *peer-review* process. These include so-called *Perspectives*, *Commentaries* and

Opinions in renowned scientific journals as well as in non-scientific journals or *preprint* articles. These publications are marked as non-peer-reviewed in the statistics and are used as an instrument of (knowledge) transfer. The publication of specific research results enables potential interested parties to approach scientists of LIKAT.

In addition, there are publications in non-scientific journals or the biennial report of LIKAT, which informs about progress and developments in the institute, as well as the biannual journal *Leibniz-Nordost*. The journal, which is published by the four Leibniz institutes in Mecklenburg-Western Pomerania and the Research Institute for Farm Animal Biology (FBN), deals with current socially relevant research work of the institutes and presents it in a popular science format.

4.1.2 Public relations & Mass media

A suitable way to get in contact with the broader interested public is the classical public relations and the use of mass media like newspapers (print and online), radio and television.

LIKAT regularly publishes press releases about current research results and ongoing projects, which are picked up by various media. The regional and supra-regional press, radio as well as regional and supra-regional television stations report at regular intervals on the research activities at LIKAT. In addition to communicating scientific content, this approach provides the public with knowledge and understanding of the scientific process and demonstrates the sense and benefits of investing in research for society.

4.1.3 Social Media

LIKAT is present on selected social media and maintains profiles on Twitter and LinkedIn.

Social media not only offer the opportunity to increase awareness of content and reach, but also to interact and engage with users. They can be an excellent complement to traditional media and KTT activities.

Another aspect of social media is the opportunity to build transfer-relevant networks. By networking with various stakeholders, it is possible on the one hand to place information in a targeted manner and on the other hand to integrate their interests and needs in turn into research content.

4.1.4 Internet presence

LIKAT has an extensive internet presence (catalysis.de): Here, each research group has the opportunity to present their research work in detail and to introduce scientific contact persons, so that inquiries and needs can be responded to immediately.

An image film, which can be accessed via the homepage, presents the research content and competences at LIKAT in a professional manner. Further video contributions dealing with research contents of LIKAT are linked.

4.1.5 Events for the public

LIKAT regularly organizes scientific colloquia, symposia, workshops and conferences. Likewise, LIKAT staff members actively participate in national and international events of this kind. Even though transfer services can be achieved through these activities, they, as well as publications in peer-reviewed journals, belong to the core elements of LIKAT's research mission and are explicitly excluded from the KTT.

In addition, LIKAT regularly participates in various series of events for the public. Worth mentioning here is the *Long Night of Science*, for which the institute opens its doors every year and provides an insight into scientific work and projects.

Other formats: *Rostocks Eleven*, *Girls Day*, *Wissenskarawane*, *Woche der Umwelt*, *VDI Werkstoffferien*, *Virtual LabDay*, *Leibniz fragt*, *Leibniz im Bundestag*, *Book a Scientist*.

There is the possibility of guided tours of the institutes or to carry out practical training for pupils. In addition, LIKAT sponsors a special prize for the winner of *Jugend forscht* every year, which consists of a three-week internship incl. 1000 € to cover expenses.

4.2 Networks relevant to transfer

4.2.1 Alumni Network

In 2015, an alumni network was actively established at LIKAT and has been maintained since then. This includes the regular information of alumni about current developments, research results and projects, which is done specifically via an alumni group of our LinkedIn profile. Alumni meetings are held at LIKAT every two years to promote networking between alumni and current employees. In addition, an alumni section has been set up on our homepage, which provides information on upcoming alumni meetings, reviews of past meetings, and contact information. Meanwhile, the LIKAT alumni network is maintained via *LinkedIn*.

With their experience and know-how in industry and academia, the alumni support the transfer work of LIKAT. Contacts with alumni result in numerous projects in which research questions and needs are addressed. At the same time, there is the possibility that research results can be transferred into practice in a short way.

4.2.2 Scientific Community

LIKAT is a partner of various networks. These include the *NFDI4Cat* project for the promotion of digitization in central scientific areas, for the networking and provision of important research data of participating partners under the leadership of LIKAT.

Another example is the network for fine chemicals *4chiral*. It comprises 40 partners, 75% of which are small and medium-sized enterprises (SMEs) in central Germany's fine chemicals and biotechnology sectors, as well as universities and research institutes.

4.2.2 Regional non-scientific community

LIKAT is a member of the association *Rostock denkt 365°*. The association *sees itself as a motor of exchange with science in the Rostock region as well as a coordinator of the network necessary for this. Under the umbrella of the association, science, business, politics and culture are jointly committed to a dynamic, creative and cosmopolitan science location.*¹ Numerous events of the association serve to improve the visibility of the science scene in the Regiopole Rostock. The good regional networking of the various transfer actors makes it possible to bundle their activities and thus further increase visibility in Rostock and the surrounding area.

1 [Rostock denkt 365 Grad | \(rostock365.de\)](https://www.rostock365.de)

The network *Leibniz-Nordost* connects all Leibniz institutes² located in Mecklenburg-Vorpommern as well as the FBN³ in various activities.

4.3 Education & Training

The support of education and training of young scientists and technicians in cooperation with universities, especially the University of Rostock, is a statutory task at LIKAT.

4.3.1 Training

In close cooperation with the University of Rostock, LIKAT offers a variety of topics for the preparation of doctoral theses as well as bachelor and master theses. In particular, the topics of the doctoral theses are often integrated into tasks of industry-relevant research and introduce the future specialists to related issues at an early stage.

This transfer instrument is extremely well integrated at LIKAT. Numerous doctoral students take up employment in the respective companies after successful completion of their dissertation due to the industrial contacts already established during their dissertation period.

4.3.2 Transfer via individuals

Scientists, students and alumni contribute their knowledge to various institutions and organizations. This happens in the context of dual-supervised theses (with cooperation partners from industry), student internships or through career entries of qualified alumni. The permanent participation or membership of scientists in bodies and committees is also a means of KTT via individuals. Examples are the memberships in the *German Academy of Sciences Leopoldina*, the *German Catalysis Society GECATS*.

4.3.3 Further training

LIKAT recognizes priorities in the training and further education of LIKAT employees on special transfer-relevant topics such as science communication, contract management for research contracts and patenting. There is the possibility of organizing further training measures for this purpose.

Through explanations, in this specific case on issues of contracting and patenting, by the transfer officer, knowledge on these topics is continuously imparted and thus the sensitivity of all employees of LIKAT from science and administration for knowledge and technology transfer is increased. Already in the doctoral phase, doctoral candidates deal with the exploitation potential of their research work.

Scientists interested in a spin-off can be referred to appropriate experts by the transfer officer. The WGL office (Wissensgemeinschaft Gottfried Wilhelm Leibniz) also provides detailed information on its website *Start-ups at Leibniz*.

4.4 Transfer pilot plant Catalysis2Scale

With the institute's own transfer pilot plant, which is unique in northeastern Germany, for testing and transferring chemical research results from the laboratory to practice (pilot scale), the Leibniz

2 Leibniz-Institut für Katalyse (LIKAT), Leibniz-Institut für Atmosphärenphysik (IAP), Leibniz-Institut für Ostseeforschung (IOW), Leibniz-Institut für Plasmaforschung und Technologie (INP)

3 Forschungsinstitut für Nutztierbiologie (FBN)

Institute for Catalysis has another significant unique selling point. The pilot plant was opened in 2022 and enables in-house piloting for the transfer of innovative laboratory results from catalysis research into practice. This opens up further avenues for collaboration with SMEs and non-chemical user industries that do not have the corresponding facilities themselves. It also provides the basis for closer networking with researchers at the University of Rostock and other research institutions in Rostock and MV through joint use.

4.5 Joint facilities with industry

Joint research projects with representatives of industry usually have short project durations of a few months to a year. LIKAT has the resources for long-term framework agreements and is thus a reliable partner for industry. These long-term cooperations allow practice-relevant research over a longer period of time and a sustainable transfer: research concerns are directly taken up and results can be directly implemented in practice.

4.6 Industrial property rights (patents & licenses)

The scientists at LIKAT focus on recognizing and exploiting potentials in their research work and publications. The young scientists are taught this from the beginning of their work.

As a rule, results achieved in collaborative projects are initially patented throughout Europe. In order to benefit from the expertise and infrastructure of the partners and to be able to transfer research results quickly, the patents are preferably filed jointly with the industrial partners.

Individual advice on intellectual property issues is provided by the transfer officer Ute von Zweydorff (ute.zweydorf@catalysis.de).

5. Internal communication

Increasingly, the KTT already plays an important role in the application process for projects. In order to sensitize the employees of LIKAT for the importance of the topic, a transparent internal communication is aimed at. LIKAT's transfer guideline is published on the institute's intranet and thus accessible to all employees. The transfer officer Ute von Zweydorff (ute.zweydorf@catalysis.de) has been appointed and can be contacted for support and advice. The focus here is on support in patent and contract matters for collaborations and corresponding non-disclosure agreements. The close networking of all departments in LIKAT promotes a fast flow of information and the bundling of all transfer-relevant expertise. In this way, KTT can be systematically considered throughout the entire research process, from project planning to dissemination of results.

6. Success & indicators

KTT is essential for the exchange of Leibniz institutes with society. In order to evaluate and track the impact of the transfer lines at the Leibniz Institute for Catalysis, the development of various indicators is necessary (taking into account personnel and economic possibilities). In addition to quantitative indicators, these should also take into account qualitative criteria.

In order to verify the success of the transfer work, transparent, traceable and evaluable quantitative indicators are recorded and communicated transparently at LIKAT. The documented indicators include in each case the number of:

- » Cooperation projects with the industry
- » Transfers
- » Patents & property rights
- » Target group specific events incl. visitor numbers
- » Interviews on radio and television
- » International cooperations
- » Publications in terms of Perspectives, Opinions and Comments as well as pre-print articles (see section [4.1.1](#), p. 6)
- » Press releases
- » Tweets and their reach
- » Articles in trade & general press (print, online), radio & television, Twitter

In 2022, professional media monitoring was added to the toolkit in order to track and respond to the direct media response to output. In this way, input and output of the KTT at LIKAT can be measured well.

However, the informative value of quantitative metrics alone is limited. Measuring the success of transfer services requires the introduction of so-called qualitative indicators. These are far more difficult to measure and often emerge only with a time lag. Nevertheless, knowledge about the impact of the transfer services provided is important in order to continuously adjust and improve research questions and communication of results.

LIKAT intends to develop a set of quantitative and qualitative indicators to evaluate KTT at the institute. They should be collectable at a reasonable cost, be proportionate to human and monetary resources, and be consistent with the statutory research mission.

The KTT guideline of LIKAT will be evaluated regularly and adapted according to relevant developments. The indicators to be developed will serve as an additional instrument to facilitate the continuous adaptation of LIKAT's transfer work to new challenges.