

ESSAY OPEN ACCESS

NaWuReT: The Early-Career Network for Chemical Reaction Engineering

Nils Kurig¹  | Emanuele Moioli²  | Marion Börnhorst³  | Jens Friedland⁴  | Philipp Röse⁵ 

¹Department of Chemistry, Scripps Research Institute, La Jolla, California, USA | ²Dipartimento di Chimica, Materiali e Ingegneria Chimica, Giulio Natta, Politecnico di Milano, Milano, Italy | ³Institute of Reaction Engineering and Catalysis, TU Dortmund University, Dortmund, Germany | ⁴Institute of Chemical Engineering, Ulm University, Ulm, Germany | ⁵Karlsruhe Institute of Technology, Institute for Applied Materials—Electrochemical Technologies, Karlsruhe, Germany

Correspondence: Philipp Röse (philipp.roese@kit.edu)

Received: 25 February 2026 | **Revised:** 25 February 2026 | **Accepted:** 10 March 2026

Keywords: chemical reaction engineering | early-career organization | international research exchange | networking and community building | professional development and education

ABSTRACT

NaWuReT (dt. “Nachwuchsreaktionstechnik”) is the early-career network of the DECHEMA Section on Chemical Reaction Engineering. Since its founding in 2011, it has connected early-career reaction engineers from academia and industry, created spaces for exchange across generations, and supported professional development through recurring formats such as the NaWuReT Colloquium, summer schools, and the NaWuReT-Grant for international research stays. This article summarizes NaWuReT’s origins, its role within DECHEMA, and the activities through which the network strengthens community building, international collaboration, and education in chemical reaction engineering.

1 | What Is NaWuReT

NaWuReT (dt. “Nachwuchsreaktionstechnik,” i.e., early-career reaction engineering) is an organization within DECHEMA that connects early-career scientists in chemical reaction engineering and related fields across academia and industry. Its activities are designed to make exchange easy—scientifically, professionally, and personally—while keeping the link to the reaction engineering community.

1.1 | A Brief History

In 2009, during the Annual Meeting on Reaction Engineering, the board highlighted the need to involve early-career researchers more strongly in the section’s activities and decision-making, both to represent their interests and to bring fresh perspectives

into the community. Around this time, the first edition of the *Roadmap Chemical Reaction Engineering* was completed (2010), already with active contributions from early-career scientists, including B. J. M. Etzold (now FAU Erlangen–Nürnberg), T. Bauer (now Achieverlab), R. Güttel (now Ulm University), B. Pfeuffer (now Boehringer Ingelheim), H. Freund (now TU Dortmund), and S. Palkovits née Olejnik (now RWTH Aachen University).

At the 2010 annual meeting, these early-career researchers emphasized their intention to engage not only short-term but also long-term within the section and called for stronger representation of their perspectives. With explicit support from the then chair E. Klemm (now University of Stuttgart), the formation of a youth organization was encouraged. The founding meeting in January 2011 established the name NaWuReT and the still-valid mission statement:

This is an open access article under the terms of the [Creative Commons Attribution](https://creativecommons.org/licenses/by/4.0/) License, which permits use, distribution and reproduction in any medium, provided the original work is properly cited.

© 2026 The Author(s). *Chemie Ingenieur Technik* published by Wiley-VCH GmbH

NaWuReT is the young researchers' organization of the ProcessNet Section on Reaction Engineering. Its goal is to connect and support early-career scientists from academia and industry. Through scientific exchange on future topics in a societal context, the further development of the field in research and education is actively promoted.

1.2 | NaWuReT's Role Within DECHEMA

NaWuReT is institutionally embedded within the Chemical Reaction Engineering Section of DECHEMA. The organization holds two permanent seats on the section's executive board, occupied by the NaWuReT spokespersons, and participates in the program selection process of the Annual Meeting on Reaction Engineering. In addition, NaWuReT contributes to the section activities, including contributions to thematic working groups (e.g., those involved in developing the current *Roadmap Chemical Reaction Engineering*).

NaWuReT supports the organization and execution of the annual meeting, for example, by introducing and chairing sessions, serving on poster juries, and contributing to the selection and awarding of the annual Young Talent Award for the best oral presentation delivered by a PhD student.

By taking on this range of responsibilities, NaWuReT strengthens the section and the wider reaction-engineering community. In parallel, NaWuReT initiates its own independent activities to promote networking and sustainable community building, partly supported by DECHEMA's early-career development funding. NaWuReT acknowledges and values the trust placed in the organization by the executive board and the reaction engineering section.

1.3 | NaWuReT Today

In recent years, NaWuReT has grown into a larger and increasingly active organizing team. The group expanded from four people in 2023 to 15 by the end of 2025. This development enabled a broader distribution of tasks and engagement opportunities and supported increased visibility of NaWuReT activities. Participation in NaWuReT's formats is open to everyone, allowing early-career researchers to benefit from the network without joining the organizing team. An increasing participation of young scientists from industry in the NaWuReT team has been recognized, aligning with DECHEMA's general goal of strengthening exchange between industry and academia.

In April and May 2025, a transition took place when the two long-serving spokespersons, Dr.-Ing. Marion Börnhorst and Dr.-Ing. Jens Friedland, stepped down to make room for a new generation of NaWuReT members. Dr. rer. nat. Nils Kurig and Dr.-Ing. Christoph Hahn subsequently assumed leadership and continue to receive support from established

members. A characteristic feature of NaWuReT is the continued involvement and support of former members, including founding members, who help to maintain continuity across generations.

2 | The NaWuReT-Mission

NaWuReT's mission is reflected in a set of recurring activities that connect early-career researchers with the wider reaction engineering community. The following sections summarize the main formats through which NaWuReT supports exchange, collaboration, and professional development.

2.1 | Networking

A central mission of NaWuReT is to promote networking across early-career and established reaction engineers. This is pursued through activities such as the NaWuReT Colloquium, dedicated sessions at conferences, and informal exchange formats that facilitate interaction across career stages. By creating regular opportunities across institutions and disciplines, NaWuReT strengthens personal connections and supports long-term collaboration within the community.

2.1.1 | NaWuReT Colloquium

The NaWuReT Colloquium is one of the network's core activities and focuses on both professional and personal development. It was launched during the COVID-19 pandemic, when the absence of in-person meetings created the need for exchange, orientation, and community building. Designed as an online lecture and discussion series, the colloquium has become an established format that combines scientific impulses with career-oriented reflection and open discussion.

Three editions have been documented so far; the fourth is ongoing in 2026. The first colloquium in autumn 2021, "From PhD Student to Assistant Professor—Early Career Chemical Engineers in Academia," featured five international early-career guests who combined scientific talks with insights into their career paths. Key topics in the discussion included networking, mentoring, securing funding, and maintaining a healthy work-life balance [1].

The second edition in winter 2023, "Career Pathways and Opportunities for Reaction Engineers in Industry," brought together five invited speakers from industry. By linking personal perspectives on career pathways with short presentations of current topics, the format stimulated active exchange on career options in industry [2].

The third colloquium (winter 2024), "Veni, Vidi, Vici? Visionary Leaders in Chemical Reaction Engineering," shifted the perspective toward late-career academics and industry experts. Five distinguished speakers shared reflections on translating ideas into long-term impact and provided recommendations for early-career researchers [3].

2.1.2 | Joint Summer Schools With YounGeCatS

NaWuReT maintains a long-standing collaboration with another early-career researchers' association within DECHEMA, the Young German Catalysis Society (YounGeCatS). This collaboration has led to several joint initiatives, including excursions to industrial sites for chemical production and joint summer schools.

The most recent joint summer school took place in Ulm in 2022 under the motto "Shaping a green future by reaction engineering and catalysis" [4]. These summer schools provide opportunities to develop skills through contributions from invited speakers and to extend participants' professional networks, particularly at the interface of catalysis and reaction engineering.

2.2 | Internationalization

NaWuReT supports early-career chemical reaction engineers in expanding their international networks, because global challenges require cross-border collaboration. Such long-term partnerships not only foster personal and professional growth but also drive technologies toward maturity.

2.2.1 | NaWuReT-Grant

The NaWuReT-Grant supports early-career researchers in chemical reaction engineering by funding short research stays at external institutions, often abroad. Its aim is to promote scientific exchange, initiate collaborations, and strengthen personal networks within the community. In recent years, awardees have additionally been invited to present the outcomes of their funded research at the Annual Meeting on Reaction Engineering, thereby increasing visibility within the community. Since 2016, the NaWuReT-Grant has consistently supported early-career scientists.

One example is Dr.-Ing. Verena Schallart, who received the grant in 2019. The funding enabled a 3-month research stay at the University of Warwick (UK). During this time, at the Advanced Manufacturing & Materials Centre in the group of Prof. Michael Auinger, Verena developed an analytical model describing the electrical percolation behavior of semi-ceramic composite materials. This provided an important complement to her experimental work and helped to establish a basis for optimizing electrically conductive ceramic composites for use in directly electrically heated catalytic systems.

Beyond the scientific results, the grant allowed focused work on a clearly defined research question over an extended period, largely free from other obligations. The close day-to-day exchange with the host group offered new methodological and conceptual perspectives and broadened Verena's approach to the topic. The stay further laid the foundation for an ongoing collaboration between the University of Stuttgart, MCI Innsbruck, and the University of Warwick, which has since resulted in joint projects and publications.

2.2.2 | Early-Career Organizations in Europe

In addition to the long-standing collaboration with YounGeCatS, NaWuReT has contributed to strengthening exchange with early-career initiatives beyond Germany. A key example is NaWuReT's involvement in organizing the first edition of the *European Forum for Engineering and Catalysis Towards Sustainability (EFFECTS)* in Karlsruhe in 2024. This engagement expanded NaWuReT's scope toward a broader European context by contributing to an event that brought together researchers from across Europe [5].

EFFECTS placed a particular emphasis on skill development, with a focus on design thinking. The format fostered the exchange of perspectives and supported the initiation of collaborations among participating societies and early-career researchers.

2.3 | Education

The training of the next generation of chemical reaction engineers is a particular interest of NaWuReT. With many members currently teaching at universities and, at the same time, being well connected to established researchers in academia and industry within the reaction engineering community, NaWuReT is perfectly positioned to drive the development of the field.

2.3.1 | Holistic Engineering

NaWuReT is actively engaged in advancing education in the field of Chemical Reaction Engineering. This engagement includes participation in a consortium dedicated to the development of new teaching formats on the topic of "Holistic Chemical and Process Engineering" [6].

The central objective of this initiative is to develop advanced training concepts in chemical engineering and project management that impart additional skills necessary for mastering current challenges, such as climate change, energy shortages, and the impacts of political boundary conditions. Holistic chemical and process engineering education emphasizes skills and competences that are underrepresented in existing curricula. In addition to sound fundamental and technical knowledge, it is imperative to train skills for interdisciplinary teamwork, resilience, system-analytical approaches, and value-oriented working methods with implementation skills.

2.3.2 | Innovationstag Nachwuchs

The Innovationstag Nachwuchs 2025 (engl. Early-Career Innovation Day) focused on improving recruitment, retention, and long-term engagement of early-career researchers in process and reaction engineering. Across several workshops, participants concluded that many initiatives already exist but are often fragmented. Key results included the need to better connect existing activities, improve the visibility and accessibility of committees, reduce entry barriers for young members, and communicate benefits of engagement more clearly—especially to industry.

Concrete proposals such as reserved seats for early-career members in committees, mentoring and buddy programs, shared communication platforms, and stronger use of multipliers were developed. Active participation of NaWuReT members was particularly important, as many of the discussed measures directly affect early-career researchers. Their involvement ensured that perspectives, needs, and realities of the next generation of experts were authentically represented.

3 | The NaWuReT-Vision

Looking ahead, NaWuReT aims to address key challenges faced by early-career chemical reaction engineers. A central goal is to strengthen their visibility and profile in both industry and academia. This includes promoting a holistic understanding of engineering, one that combines solid fundamentals with systems thinking, digital skills, and an application-oriented mindset.

At the same time, the professional landscape is changing: the job market is evolving, and career paths are becoming more diverse and less linear. NaWuReT responds by creating spaces for dialogue and offering formats that help early-career researchers navigate these developments. Furthermore, it acts as a bridge between early-career perspectives and the established community by helping connect young researchers with section activities and decision-making processes. Recent colloquia, including the 2026 edition dedicated to start-ups, reflect this focus on entrepreneurial and diverse career options. Emerging topics such as data-driven engineering will also inform future priorities.

Beyond individual career development, the network aims to contribute to the long-term strength of the field. NaWuReT supports the development of modern curricula and brings fresh perspectives into the reaction engineering community. With a growing organizing team, it will continue to build platforms for exchange and collaboration across institutions as well as between academia and industry. For NaWuReT, “impact” means stronger community ties, easier entry points for engagement, and more collaboration across institutions, with early-career perspectives being more visible. Notably, many former NaWuReT members now hold professorships. This is an encouraging indicator of how early engagement can translate into long-term commitment and academic success.

In this sense, NaWuReT’s vision connects personal development with a broader goal: empowering individuals while helping to shape the future of chemical reaction engineering.

Acknowledgments

The authors thank DECHEMA and its section on Chemical Reaction Engineering for their continued institutional support and for early-career development funding that helps enable NaWuReT activities. We are grateful to all former and current NaWuReT members, invited speakers, and participants whose engagement sustains and advances the network, and to our colleagues in the Young German Catalysis Society (YounGeCatS) for the long-standing collaboration.

Open access funding enabled and organized by Projekt DEAL.

Conflicts of Interest

The authors declare no conflicts of interest.

Data Availability Statement

Data sharing is not applicable to this article as no datasets were generated or analyzed during the current study.

References

1. J. Friedland, M. Börnhorst, B. Kreitz, et al., “NaWuReT Colloquium: From PhD Student to Assistant Professor—Early Career Chemical Engineers in Academia,” *Chemie Ingenieur Technik* 94 (2022): 629–633, <https://doi.org/10.1002/cite.202100200>.
2. B. Kreitz, M. Börnhorst, J. Friedland, et al., “NaWuReT Colloquium: Career Pathways and Opportunities for Reaction Engineers in Industry,” *Chemie Ingenieur Technik* 96 (2024): 729–733, <https://doi.org/10.1002/cite.202300182>.
3. N. Kurig, B. Kreitz, E. Moiola, et al., “NaWuReT Colloquium: Veni, Vidi, Vici? Visionary Leaders in Chemical Reaction Engineering,” *Chemie Ingenieur Technik* 97 (2025): 374–377, <https://doi.org/10.1002/cite.202500029>.
4. P. Naliwajko, J. Friedland, and M. Börnhorst, “NaWuReT and YounGeCatS Joint Summer School—Shaping a Green Future by Reaction Engineering and Catalysis,” *ChemCatChem* 15 (2023): e202201548, <https://doi.org/10.1002/cctc.202201548>.
5. YEuCat. *Effects 2024—Report* (YEuCat, 2024), <https://www.youngcatalysis.net/events/past-events/effects-2024-report>.
6. J. Sauer and O. Wachsen, “Circularity—A Chemical Engineer’s Challenge,” *Chemie Ingenieur Technik* 97 (2025): 588–598, <https://doi.org/10.1002/cite.202500009>.