# Prof. Dr.-Ing. Hannsjörg Freund

TU Dortmund University
Department of Biochemical and Chemical Engineering
Chair of Reaction Engineering and Catalysis
Emil-Figge-Str. 66, 44227 Dortmund, Germany
Phone: +49 231 755 4454
hannsjoerg.freund@tu-dortmund.de
www.tu-dortmund.de

## Education and Scientific Career

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| Since 09/2021 | Full Professor, Chair of the “Reaction Engineering and Catalysis” Institute, TU Dortmund University |
| 01/2012-08/2021 | Professor, Head of Group “Catalytic Reactors and Process Technology”, FAU Erlangen-Nürnberg |
| 09/2005-12/2011 | Senior Scientist & Leader of Research Team “Process Intensification” Process Systems Engineering Department, Max Planck Institute for Dynamics of Complex Technical Systems, Magdeburg |
| 06/2000-08/2005 | Research Assistant & PhD Student (Dr.-Ing. *with distinction*) Institute of Technical Chemistry I, FAU Erlangen-Nürnberg |
| 11/1994-05/2000 | Master Studies in Chemical Engineering (Dipl.-Ing. *with distinction*) FAU Erlangen-Nürnberg |

## Further Appointments and Visiting Research Stays

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| Since 01/2024 | Chairman of the Executive Board<br>EUROPIC – European Process Intensification Centre |
| Since 08/2023 | Deputy Editor-in-Chief<br>“Chemical Engineering and Processing: Process Intensification” (Elsevier) |
| 01/2018-12/2023 | Executive Board Member<br>EUROPIC – European Process Intensification Centre |
| 01/2022-07/2023 | Executive Editor<br>“Chemical Engineering and Processing: Process Intensification” (Elsevier) |
| 08/2016-12/2021 | Associate Editor<br>“Chemical Engineering and Processing: Process Intensification” (Elsevier) |
| 01/2012-06/2014 | Guest Professor<br>Process Systems Engineering Department, Max Planck Institute for Dynamics of Complex Technical Systems, Magdeburg |
| 09/2010-10/2010 | Research Stay & Guest Lecturer<br>State Key Laboratory of Chemical Engineering & East China University of Science and Technology, Shanghai, China |
| 10/2007-12/2011 | Scientific Advisor & Lecturer, International Max Planck Research School for Analysis, Design & Optimization in Chemical and Biochemical Process Engineering, Max Planck Institute Magdeburg |
| 10/2006-12/2011 | Adjunct Lecturer, Department of Process Systems Engineering<br>Otto-von-Guericke University Magdeburg |

## Research Areas

- Model-Based Design of Optimal Chemical Reactors and Processes
- Tailor-Made Open Cellular Catalyst Supports Using Additive Manufacturing
- Reaction Kinetics: Analysis and Modeling

## Research Statement

The focus of my research is on the rigorous, model-based design of optimal catalytic reactors for the development of energy and resource efficient chemical processes. For this purpose, we combine methods and tools of conceptual reactor and process design, analysis and optimization with detailed simulations for the computer-aided catalyst support design. This interdisciplinary, method- and model-based approach is complemented by key experiments for phenomenological elucidation, data retrieval and model validation. That way it is possible to identify novel tailor-made reactor concepts that can be realized by means of additive manufacturing techniques.

## Selected Professional Activities

- Vice Chair of the “Reaction Engineering” Division of Dechema/VDI
- Conference Chair of ICOSCAR-6 (6th International Conference on Structured Catalysts and Reactors, Sept. 11-13, 2019, Bad Herrenalb, Germany)
- Delegate of the Working Party “Process Intensification” of the European Federation of Chemical Engineering (EFCE)
- Chair of Process Development Division Area “Process Intensification” of the American Institute of Chemical Engineers (2009-2011 and 2013-2015)
- Project leader and research area coordinator in the Helmholtz Energy Alliance collaborative project “Energy efficient chemical multiphase processes” (2012-2015)
- Session Chair & Scientific Committee Member of various international conferences
- PhD Thesis Examiner at various Universities including RWTH Aachen, TU Berlin, Denmark Technical University, TU Delft, TU Dortmund, FAU Erlangen-Nürnberg, Karlsruhe Institute of Technology, Otto von Guericke University Magdeburg, Politecnico di Milano

## Selected Awards

- Excellence in Engineering of Advanced Materials Award (750k€), 2011
- Hanns Hofmann Award of the ProcessNet Reaction Engineering Division, 2010
- Chemical Engineering Science (Elsevier) Most Cited Paper 2003-2006 Award, 2007

## Projects

The spectrum of funded projects ranges from long-term fundamental research (e.g. funded by the German Research Foundation, DFG) to short- and middle-term application driven industry projects. The work is carried out in both larger research clusters (e.g. DFG Cluster of Excellence, DFG Priority Program, EU projects, Helmholtz-Energy-Alliance projects) as well as in bilateral projects (e.g. EU Marie Curie Initial Training Networks (ITN)) in cooperation with national as well as international partners from academia and industry.

## Publications

> 380 Contributions to Journals, Conferences & Invited Talks at Universities and Companies (see separate List of Publications and Links to Databases for details).

Statistical Information (as of April 2024):

- Contributions to Journals/Books/Proceedings: 115 in total
- Journal Papers (peer reviewed): 89, h-index (Scopus): 30, Total citations: >2.700
- Conference Contributions: 207 (124 Oral, 83 Poster)
- Invited Talks: 66
- Patents: 3