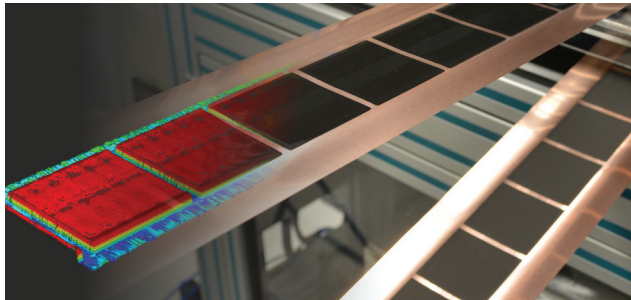


16th Short Course (in person) Coating and Drying of Thin Films

3(+2)-day short course on fundamentals and applications with practical workshop in the coating and printing lab (in person)



May 19-21, 2025

ZEISS Innovation Hub @ KIT
Hermann-von-Helmholtz-Platz 6
76344 Eggenstein-Leopoldshafen

9th Thin Film Technology Forum (virtual) Advances in Processing of Functional Films, Electrodes for Battery, Fuel Cell & Electrolyzer Applications

2-day virtual forum on May 22-23, where renowned scientists will present and discuss recent research results and new trends in industry and academia



May 22-23, 2025

Virtual Thin Film Technology Forum

Organization Team:

Prof. Dr.-Ing. Dr. h. c. Wilhelm Schabel
Dr.-Ing. Philip Scharfer
with 31 experts from industry and academia

Program Short Course and Forum

44 contributions / 33 speakers

Schedule 19.05.2025 – Short Course Monday

- 08:30 *Registration and check-in*
- 09:00 *Welcome and group introduction*
Prof. Dr.-Ing. W. Schabel / Dr.-Ing. P. Scharfer (KIT-TFT)
- 10:00 *Rheology of coating fluids*
Prof. Dr. Norbert Willenbacher (KIT-MVM)
- 11:00 *Coffee break*
- 11:25 *About coating, printing & fluids characterization*
Prof. Gilbert Gugler (iPrint, CH)
- 12:45 *Lunch break*
- 13:45 *Coating & ink preparation for hydrogen applications*
Dr.-Ing. Benjamin Schmidt-Hansberg (BASF SE)
- 14:35 *Premetered coating methods with highlights of slot and curtain coating - Part I*
Dr. Peter Schweizer (Schweizer Coating Consulting, CH)
- 15:20 *Coffee break*
- 15:45 *Premetered coating methods with highlights of slot and curtain coating - Part II*
Dr. Peter Schweizer (Schweizer Coating Consulting, CH)
- 16:30 *Fluid flow in coating tools*
Prof. Dr. Dr. h. c. mult. Franz Durst (FAU Erlangen, em.)
- 19:30 *Social dinner at Enchilada (Waldstraße 63, KA City)*

Schedule 20.05.2025 – Short Course Tuesday

- 09:00 *Stability of coating flows in two-layer slot dies*
Alexander Hoffmann M. Sc. (KIT-TFT)
- 09:30 *Coating & drying from an industrial perspective*
Prof. Dr.-Ing. Daniel Eggerath (Jagenberg Converting)
- 10:15 *Fundamentals of (self) metered coatings*
Prof. Dr. Hadj Benkreira (University of Bradford, UK)
- 10:45 *Coffee break*
- 11:10 *Gravure and roll coating*
Prof. Dr. Hadj Benkreira (University of Bradford, UK)
- 11:55 *Fundamentals of film drying technology I + II*
Prof. Dr.-Ing. Wilhelm Schabel (KIT-TFT)
- 13:05 *Lunch break*
- 14:05 *Film drying phenomena and drying studies*
Prof. Dr.-Ing. Wilhelm Schabel (KIT-TFT)
- 15:35 *Coffee break*
- 16:00 *About drying of colloidal dispersions & film formation*
Prof. Dr. Alex Routh (University of Cambridge, UK)
- 16:45 *Drying and cracking of particulate coatings*
Prof. Dr. Alex Routh (University of Cambridge, UK)

Schedule 21.05.2025 – Short Course Wednesday

- 08:30 *About sorption in polymeric and porous coatings*
Philipp Barbig M. Sc. (KIT-TFT)
- 08:50 *Drying of multicomponent mixtures*
Dr.-Ing. Philip Scharfer (KIT-TFT)
- 09:10 *Simulation and design of industrial thin film dryers*
Dr.-Ing. Philip Scharfer (KIT-TFT)
- 10:30 *Coffee break*
- 10:55 *Industrial perspectives on curtain & slot die coating*
Dipl.-Ing. Harald Döll (TSE, CH)
- 11:25 *Homogeneous drying with comb nozzles*
Dipl.-Ing. Philipp Cavadini (CN Drying Technology GmbH)
- 11:45 *Coating, drying and web handling apps*
Prof. Dr. Steven Abbott (TCNF, UK)
- 13:05 *Group formation and lunch break*
- 14:05 *Walking to workshop building 717*
- 14:35 *Experimental workshop at the TFT coating and printing laboratory*
 - Rheology & wetting
 - Pilot-scale coating trials
 - Heat and mass transfer coefficients
 - Experimental drying curves
- 16:35 *Walking back to FTU*

Schedule 22.05.2025 – Virtual TFT Forum Thursday

- 09:15 *Welcome and introduction to the 9th TFT Forum*
Prof. Dr.-Ing. W. Schabel / Dr.-Ing. P. Scharfer (KIT-TFT)
- 09:35 *Slot coating for battery electrodes: early attempts to understand slurry coating flows*
Prof. Dr. Jaewook Nam (Seoul National University, SNU)
- 10:10 *High-speed & intermittend battery electrode coatings*
Alexander Hoffmann M. Sc. (KIT-TFT)
- 10:35 *Coffee break*
- 10:55 *Agile and flexible production of battery cells*
Prof. Dr.-Ing. Jürgen Fleischer (KIT-wbk)
- 11:30 *Process innovations for a sustainable battery cell production*
Prof. Dr.-Ing. Arno Kwade (Director iPAT, TU Braunschweig)
- 12:05 *Overcoming performance and production bottlenecks in battery electrodes with multilayer curtain coating*
Dr. Paul Baade (8inks, CH)
- 12:40 *Lunch break*
- 13:40 *Product, process & equipment: Teamwork matters*
Dr. André Mecklenburg (PowerCo SE)
- 14:15 *Full coverage inline monitoring of battery electrode coating processes*
Prof. Dr.-Ing. Henning Heuer (Fraunhofer IKTS)

- 14:50** *Optimized inline monitoring and air circulation in the drying process of battery electrodes*
Jonas Mohacsi M. Sc. (KIT-TFT)
- 15:15** *Coffee break*
- 15:35** *Laser- & IR-based drying of battery electrodes*
Julian Borho M. Sc. (KIT-TFT)
- 16:00** *Drying towards solvent-reduced slurry systems for battery applications*
Kevin Ly M. Sc. (KIT-TFT)
- 16:25** *Understanding PEM fuel cell cathode catalyst layers*
Ulf Groos (Fraunhofer ISE)

Schedule 23.05.2025 – Virtual TFT Forum Friday

- 08:30** *From manufacture to series production - Production research for PEM fuel cells*
Prof. Dr.-Ing. Markus Hölzle (Director ZSW Ulm)
- 09:05** *Advances in drying of catalyst layers for PEM fuel cells and electrolyzers*
Nadine Zimmerer M. Sc. (KIT-TFT)
- 09:30** *Processing of catalyst coated membranes for fuel cell applications*
Linus Janning M. Sc. (KIT-TFT)
- 09:55** *Coffee break*
- 10:15** *Cracking in drying coatings*
Prof. Dr. Mahesh S. Tirumkudulu (IIT Bombay, India)
- 10:50** *Challenges in processing of sodium-ion (SIB) battery electrodes*
David Burger M. Sc. (KIT-TFT)
- 11:25** *A research factory for battery cell production*
Prof. Dr. Jens Tübke (KIT-MVM, Director FFB)
- 12:00** *Moisture management and post drying during battery electrode production*
Philipp Barbig M. Sc. (KIT-TFT)
- 12:25** *Recycling of battery electrodes and electrolytes*
Lukas Lödige M. Sc. (KIT-TFT)
- 12:50** *TFT Forum closing session*



Registration fees Short Course and TFT Forum

| | Early Bird (until 15.03.25) | later |
|--------------------------------------|-----------------------------|----------------------|
| Short Course & TFT Forum* | | |
| General | € 1950.– + legal tax | € 2150.– + legal tax |

*Only the virtual TFT Forum can be participated for a reduced fee of 200 Euro.

Information, Registration and Contact

Organizer:
KIT Campus Transfer GmbH
Haid-und-Neu-Straße 7
76131 Karlsruhe

Registration Short Course and TFT Forum*
register@course-forum.de
info@course-forum.de

Note: The Short Course registration includes the registration to the TFT Forum.
Registration online via: <http://www.course-forum.de>

For academia, students, university participants and TFT partners a contingent for "special reduced fees" for the virtual TFT Forum are as well available. Please contact margit.morvaj@kit-ct.de for further details and registration to "TFT Forum" only.

Venue for the Short Course in person

ZEISS Innovation Hub @ KIT
Hermann-von-Helmholtz-Platz 6
76344 Eggenstein-Leopoldshafen



The TFT Forum will take place in a virtual format. After registration, all "login details" of the virtual venue provider for the TFT Forum will be provided via email as soon as available.

Who has been attending last Short Course

Participants from Germany and **more than 12 EU countries, the US, China, Korea, Taiwan, Japan and others (80 % from industry / average value of the last 12 years)**

Further information and registration

<http://www.course-forum.de>



Feedback about the last Short Courses

- "Excellent introduction in coating and drying of films. Demonstrates the complexity, offers better understanding of processes"
- "Very interesting course, lots of information on all coating application! Building bridge from university to industrial applications"
- "Well built-up structure, wide range of theory and application covered, too short time for discussion/break"
- "High level talks with broad range of topics but with good scientific and practical depth, also on application"
- "Hat extrem viel Spaß gemacht! Herzlichen Dank! Theorie und Praxis waren wunderbar abgedeckt"
- "Ich war sehr angetan von den lebhaft präsentierten und informativen Vorträge!"
- "Sehr viele nutzbare Infos"
- "Great and practical"
- "Very good, excellent speakers and good dinner"
- "Excellent foundation and application"

Feedback workshop

- "Good to see how the theory of the courses works in real life"
- "Experiments were very well prepared and perfectly organized"
- "Interesting, well organized"
- "Good coverage of application of topics covered in course"
- "Interesting material analysis; nice discussions"

Feedback TFT Forum

- "Broad topics --> nice"
- "Good to see more application topics after the short-course"
- "Good content"
- "Very good selection of topics; all very good speakers"
- "The TFT Forum 2023 was an excellent overview and provided appropriate depth for the topics covered"
- "Conference content very good, good electronic presentation and definitely worthy of repetition"

For further information please follow us on:

www.course-forum.de and

LinkedIn: <https://www.linkedin.com/company/thin-film-technology/>

Introduction

The short course [Coating and Drying of Thin Films](#) addresses engineers, scientists and technicians working in the areas of coatings, functional films, direct printing, inkjet printing, sensors, adhesives, paints, automotive coatings, patches, optical foils, tapes, diagnostics, membranes, printed electronics, fuel cells, electrolyzers and battery coatings, who intend to get insight into more fundamental aspects with industrial applications or to deepen their expertise. Leading national and international scientists and experts from academia and industry will report on topics of coating technologies, rheology, preparation of coating fluids and about fundamentals and industrial aspects of drying technology. Coating and printing processes and drying technology are explained interactively by easily accessible examples and in a [practical workshop in the TFT Coating and Printing Lab](#).

The 9th [Thin Film Technology Forum](#) will take place [virtually](#) on the last two days, where renowned scientists will present and discuss new trends in industry and academia with a focus on [advances in processing of functional films, electrodes for battery, fuel cell and electrolyzer applications](#).

The Short Course and the TFT Forum provide a platform for scientific and technical exchange with advanced learning.



Prof. Dr.-Ing. Dr. h. c. Wilhelm Schabel (KIT-TFT) is Professor for Thin Film Technology at KIT. His doctoral thesis in the field of film drying was awarded the Carl Freudenberg Prize in 2005. In 2007, he received the Arnold-Eucken Award (VDI), and in 2008, the Scriven Young Investigator Award from the International Society of Coating Science and Technology (ISCST). From 2007 to 2008, he worked in the industry at LOnza FOILs (LOFO) in Basel in the R&D department for film casting and coating applications. In 2009, he was appointed to the first professorship for Thin Film Technology in Germany at KIT, initiated and funded within the KIT Elite Future Concept I with a consortium of BASF, Bayer, and Roche, providing 3 million euros for four years. Schabel is a member of the Board of Directors of the ISCST and a past Vice President. In 2021, he was honored as an "Edwards Fellow" by his colleagues at the University of Cambridge. In 2022, the International Drying Community (IDS) honored Schabel with the highest "Excellence in Drying Award" in the U.S. In 2024, the International Coating Community (ISCTS) honored him with the prestigious Tallmadge Award in recognition of his individual achievements in drying and coating research. From 2023 to 2027, Schabel has been elected by his European colleagues as President of the European Coating Society (ECS).



Dr.-Ing. Philip Scharfer (KIT-TFT) is head of the TFT group at KIT together with Prof. Schabel. He received his PhD in process engineering from the University of Karlsruhe (TH) in 2009. Dr. Scharfer is an expert in the fields of drying and thermodynamics of thin films. He deals with measuring methods for the investigation of polymer film drying and develops numerical simulation tools for industrial dryer applications. Since 2009, Dr. Scharfer is member of the scientific committee of the European Coating Symposium (ECS), since 2012 member of the Board of Directors of the International Society of Coating Science and Technology (ISCST). In 2014, he was awarded with the L. E. Scriven Young Investigator Award by the ISCST. Dr. Scharfer is former Vice President Europe of the ISCST and organized ECS 2009 (Karlsruhe) and ECS 2019 (Heidelberg) as Chairman together with Prof. Schabel.



Dr. Peter M. Schweizer (Schweizer Coating Consulting, CH) received his PhD in Mechanical Engineering from the Swiss Federal Institute of Technology in 1979, and he did postdoctoral research in coating flows at the University of Minnesota with Prof. Scriven from 1979 – 1980. From 1981 – 1986, Dr. Schweizer worked in the Coating Flow Research Group at Kodak in Rochester, New York, and from 1987 – 1996, he worked at ILFORD in Fribourg, Switzerland. From 1997 – 2000, Dr. Schweizer was Managing Director of TSE Troller Schweizer Engineering in Switzerland. From 2001 – 2016, he worked for Polytype Converting in Fribourg, Switzerland. Since 2016, he is heading his own company called Schweizer Coating Consulting GmbH. In 1997, Dr. Schweizer co-edited the book entitled Liquid Film Coating, and in 2022, he published the book entitled Premetered Coating Methods. In 2006, he received the John Tallmadge Award from International Society of Coating Science and Technology, and from 2018 - 2023 he acted as President of the European Coating Society (ECS).



Prof. Dr. Norbert Willenbacher (KIT-MVM) is head of the Institute of Mechanical Process Engineering and Mechanics at Karlsruhe Institute of Technology (KIT) since 2004. He received his diploma degree in Physics and his PhD from the University of Mainz. After his dissertation at the Max-Planck-Institute for Polymer Research he joined BASF SE as a research associate in the fields of rheology of complex fluids and adhesion of soft polymers for 15 years. Prof. Willenbacher is member of the advisory board of the German Society of Rheology, assigned member of the ProcessNet Technical Committee on Rheology, and member of the Editorial Board of Rheologica Acta, Materials and Electronic Materials.



Prof. Gilbert Gugler (iPrint, CH) received his diploma in Material Science from the ETH Zurich in 1992. From 1992 to 1998 he worked in the area of chemical and physical vapour deposition. From 1998 on, he worked at Ilford Imaging Switzerland GmbH. Leading the Technology Center of Wifag-Polytype Technologies AG since 2014 he was responsible for all coating and process related topics. End of 2016 he joined the university of applied science and arts of Western Switzerland. Since 2020 he is one of the director of iPrint institute and competence center. Gilbert Gugler was elected Vice President of the European Coating Society (ECS) in 2023. Gilbert Gugler is an expert in multilayer curtain coating technology, starting from the preparation of coating fluids, characterization, processing, to the multilayer curtain coating and drying. Since 2017, he is heading his own company called Gugler Coatech Consulting.



Prof. Dr. Hadj Benkreira (Univ. of Bradford, UK) (CEng, FIChemE, FHEA) obtained his PhD on the Fluid Mechanics of Coating Flows in 1980 under the supervision of Professor WL Wilkinson (CBE, FRS). Following five years of EPSRC postdoctoral research, he joined the academic staff of the University of Bradford in 1985 and was endowed a Personal Research Chair in 1998 for research in Thin Film Coating and in Polymer Processing and became in 2004-2009 Associate Dean for Research. Professor Benkreira is member of several learned societies including the UK EPSRC Peer Review College, the International Society of Coating Science and Technology (ISCST) of which he was the Vice President in 2006-8 and the European Coating Society (ECS), of which he is the current Vice President and member of its steering committee. He has published widely on coating science and technology and is the editor of the Special Issues of the ISCST conferences and a member of the editorial board of the Journal of Coating Research and Technology and Research (JCTR) and the journal Coatings.



Dipl.-Ing. Harald Döll (TSE Troller AG, CH) successfully graduated from the Technical University in Darmstadt in Mechanical Engineering in 1989. After some years in web-guiding systems Harald Doell joined TSE Troller AG in 1997. In the beginning, he was the head of the engineering team; since 2008, he is in charge of the entire application technology. Design of die internals, experiments with customers, start-ups and technical customer support are part of his assignment. Furthermore, he is giving talks at several short courses and international conferences in the US, Europe and Asia.



Dr.-Ing. Benjamin Schmidt-Hansberg (BASF SE) is a principal scientist for Coating and Film Processing at BASF. His work mainly relates to materials science, processing and manufacturing of novel thin film products in the field of lithium-ion batteries, electrolysis, fuel cells, composites and packaging materials. He holds a PhD in Chemical Engineering (Karlsruhe Institute of Technology) and worked at the University of Cambridge and the start-up Eight19 on the commercialization of organic photovoltaics before joining BASF.



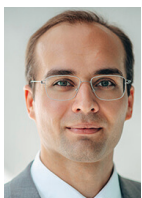
Prof. Dr. Dr. h. c. mult. Franz Durst (FAU Erlangen, em.) graduated from Imperial College at the London University and received his doctor's degree in 1972 (PhD). In 1972, he returned to Germany and worked as project leader of various research projects at the Collaborative Research Center 80 at the University of Karlsruhe for ten years. Prof. Durst was offered a C3 professorship for Fluid Mechanics at the University of Karlsruhe in 1978 and was appointed chair of the Institute of Fluid Mechanics at the University of Erlangen-Nuremberg in 1982. In 2006, Prof. Durst retired from the University of Erlangen-Nuremberg and founded the company FMP TECHNOLOGY GMBH, whose CEO he has been until 13 August 2018. He is now still working on solutions for fundamental problems of fluid mechanics like "Extended Navier-Stokes-Equation", Pipe Flow Transition etc.



Prof. Dr. Alex Routh (University of Cambridge, UK) received his PhD from Princeton University in the United States in 2000. He has been lecturing in Chemical Engineering at the University of Cambridge since 2006 and was promoted to full professor in 2017. His position is a joint appointment with the Institute for Energy and Environmental Flows; a multi-disciplinary research institute, within the university, spanning the physical sciences. His research is in the field of colloid science and Prof Routh has worked in the areas of encapsulation, dispersion stability, formulation and drying. Within the film drying topic, Prof. Routh has been active for the past 20 years and has published extensively in the specifics of film cracking and the flows within thin films.



Prof. Dr.-Ing. Daniel Eggerath (Jagenberg Converting Solutions GmbH) completed his mechanical engineering degree at the Technical University of Darmstadt (2007) and earned his PhD in curtain coating at the University of Erlangen-Nuremberg (2012). He held roles at FMP Technology GmbH (2008-2018), including Technical Director and CEO. He worked at Kroenert GmbH (2012-2014) and taught at the Munich University of Applied Sciences (2014-2023). Prof. Eggerath has a strong focus on coating and drying technology. Since 2020, he has been Managing Director of MeSys GmbH and, since 2023, Business Unit Manager – Hamburg/Technical Director Energy. He also serves on the board of Menzerna GmbH.



Dipl.-Ing. Philipp Cavadini (CN Drying Technology GmbH) graduated in Aerospace Engineering at the University of Stuttgart. In his PhD studies at KIT/TFT until 2015 he investigated surface tension driven convection and the optimisation of impinging jet systems from the viewpoint of homogeneity of the distribution of the heat and mass transfer coefficient. Currently Mr. Cavadini acts as program lead with focus on advanced cooling technologies in the department of "Aero-Thermal and Tools" at Siemens Energy. In secondary employment, he is working on the spin-off creation "CN Drying Technology GmbH", developing highly homogeneous comb nozzle dryers for lab application.



Prof. Dr. Steven Abbott (TCNF, UK) has received his Oxford PhD in Chemistry from Harvard University in 1978 and was postdoc in the Nobel Prize winning lab of Prof. J.-M. Lehn in Strasbourg before working for ICI where he was Senior Manager before joining the high-tech coating company Autotype near Oxford as Research Director. He worked closely with coating experts at U. Leeds (appointed Visiting Professor in 2000) and co-created the TopCoat and TopWeb programs for the coating industry. At Autotype he also worked with U Leeds colleagues on the theory of screen printing, transforming an ill-defined art into a science.

Speakers at the 9th TFT Forum on May 22-23



Prof. Dr. Jaewook Nam (Seoul National University, Korea) is professor at the School of Chemical and Biological Engineering at Seoul National University (SNU) and Director of the Energy and Environmental Materials Process Integration Center (EPI-C). He earned his B.S. and M.S. from SNU and his Ph.D. from the University of Minnesota, followed by research at Rice University and a faculty position at Sungkyunkwan University. As expert in materials processing, rheology, and numerical analysis, Dr. Nam focuses on continuous coating processes for thin films, critical in applications like battery electrodes and ceramic capacitors. Dr. Nam's accolades include the L.E. Scriven Young Investigator Award (2016), Distinguished Young Rheologist Award from TA instruments (2018), Sinyang Outstanding Young Professor Award from SNU (2020).



Prof. Dr.-Ing. Jürgen Fleischer (KIT-wbk) obtained his doctorate at the Institute of Production Science (wbk) in 1989. From 1992 on, he held several leading positions in industry before being appointed professor and head of the wbk at today's Karlsruhe Institute of Technology (KIT) in 2003. Furthermore, he is a visiting professor at Tongji University in Shanghai since 2012. Prof. Fleischer is active in various national and international societies. From 2020 to 2024, Prof. Fleischer was the spokesman of the Battery Competence Cluster "Intelligent Battery Cell Production - InZePro" of the German Federal Ministry of Education and Research. His current scientific research focuses on intelligent production machines and components as well as automated and agile production systems for electromobility.



Prof. Dr.-Ing. Arno Kwade (iPAT, TU Braunschweig) worked 9 years as a process engineer in leading industrial positions after finishing his doctorate in 1996. In 2005, he was appointed as Professor and Director of the Institute for Particle Technology (iPAT) at Braunschweig University of Technology. His research focus lies on developing deep knowledge, process-structure-property relationships and numerical simulations for processes in which particles are mechanically stressed and formulated, from milling and mechanochemical synthesis over mixing and powder handling and characterization to production of drug products and battery electrodes. Today he is Chairman of the interdisciplinary research centre Battery LabFactory Braunschweig (BLB) and received awards like the Lower Saxony Science Award and the Hans Rumpff medal.



Dr. Paul Baade (8inks, CH) is co-CEO of the ETH Zürich spin-off 8inks. He received his PhD in electrical engineering from ETH Zürich in 2021. He completed the Pioneer Fellowship and co-founded 8inks to apply multi-layer curtain coating to the lithium ion battery industry. 8inks provides a manufacturing platform that unlocks mass production of NextGen battery designs and materials. It enables reducing manufacturing costs by 30% and boost battery performance by leaving production constraints behind.



Dr. André Mecklenburg (PowerCo SE) graduated in Chemical Engineering at TU Clausthal in 1997 followed by a Phd in 2001. He started his career at Evonik Industries working for Lithium Ion Battery business since 2005. He helped building the first small German Gigafactory in Kamenz (near Dresden) within a JV of Evonik and Daimler, being CTO for the site. After that he changed sides by taking over responsibility as CEO of the machinery maker Kampf LSF GmbH in 2016, followed by the position of Vice President Process Engineering at Northvolt 2 in 2020. After acquisition of Northvolt 2 by VW, Dr. Mecklenburg moved to Volkswagen Center of Excellence and PowerCo SE in 2021 as Director Engineering & Technology for Process Development and Equipment for Lithium Ion Technology. Since 2024, he is responsible for Prototyping lines at PowerCo as well as Sample Management.



Prof. Dr.-Ing. Henning Heuer (Fraunhofer IKTS) is Division Director at Fraunhofer IKTS and Professor for non-destructive testing at TU-Dresden. In 2012, he became a Junior Professor for Sensor Systems for Nondestructive Testing at TU Dresden that was positive evaluated and transferred to a professorship with full rights as Professor in 2018. In parallel he leads the department of Sensors and Sensor Systems at the Fraunhofer Institute for Ceramic Technologies and Systems-Materials Diagnostics (IKTS). His main interest is the development and industrialization of new nondestructive inspection approaches for new generations of materials and technical structures. With his strong background in semiconductors and their packaging and assembly technologies, his team developed new generation of eddy current and ultrasonic inspection systems for new technical structures and materials such as CFRPs, thin films and battery components. In 2011, together with his students he founded the company SURAGUS GmbH that transfers high frequency eddy current instruments for thin film characterizations.



Prof. Dr.-Ing. Markus Hölzle (ZSW) is member of the ZSW Managing Board and Head of the Electrochemical Energy Technologies division in Ulm since October 2020. He also holds a position as Professor for Energy Storage and Energy Conversion within the faculty of natural sciences at University of Ulm. Before joining ZSW, Prof. Dr. Markus Hölzle held several management positions in BASF in the field of chemical catalysts, fuel cells and battery materials. He received his doctorate in electrochemistry from University of Ulm in 1996. Professor Hölzle is chairperson of the Advisory Board for Green Hydrogen at the Ministry of Environment of the State of Baden-Württemberg, member of the board of directors of KLiB (German industry network Lithium ion batteries) as well as appointed member of the battery advisory board at German Ministry of Science and Education (BMBF).



Ulf Groos (Fraunhofer ISE) studied Chemical Engineering at the Technical University of Hamburg-Harburg until 1996. Afterwards he joined Fraunhofer Institute for Systems and Innovation Research ISI in Karlsruhe until 1997. From 1998 to 1999 he was a consultant at Rudolf Spitzmueller in Gengenbach and gave advice mainly to small and medium sized enterprises regarding their innovation projects. Beginning of 2000 he came to Fraunhofer Institute for Solar Energy Systems ISE in Freiburg. He was responsible for marketing of today's division Hydrogen Technologies until end of 2008. Since beginning of 2008 Ulf Groos is heading the department Fuel Cell with over 34 engineers and scientists and additional students. His department is focusing on membrane electrode assemblies in mobile fuel cells with the perspectives on in-situ characterization, ex-situ analytics, production technologies, and modelling. From mid of 2023 until autumn 2024 he was Interim Director, Division Hydrogen Technologies at Fraunhofer ISE.



Prof. Dr. Mahesh S. Tirumkudulu (IIT Bombay, India) is the Larsen & Toubro Chair Professor and Chair of the Department of Chemical Engineering in Indian Institute of Technology Bombay in Mumbai. He obtained his Bachelors in Technology degree from IIT Madras in 1995 and PhD from City University of New York, USA in 2001. He joined IIT Bombay in 2003 after working in Princeton University as a Postdoctoral Researcher. Prof Tirumkudulu works in the area of fluid mechanics and colloids & interfaces with focus on research problems related to paints & coatings, atomization with applications to combustion and sprays, and Biomedical devices.



Prof. Dr. Jens Tübke (Fraunhofer FFB & ICT, KIT) is the institute director of the Fraunhofer Research Factory Battery Cell FFB in Münster and head of the department "Applied Electrochemistry" at the Fraunhofer Institute for Chemical Technology ICT in Pfinztal. In 2015, Jens Tübke was appointed to a professorship in "Materials and Processes for Electrochemical Storage" at the KIT. He studied chemistry with the specialization of technical and macromolecular chemistry at the Martin-Luther-University Halle Wittenberg and finished his PhD in 1997 with the topic "Structure-Properties-Relationships of Polymeric Gel Electrolytes for Lithium-Ion Batteries". From 1997-2000 followed an overseas stay at Kyoto University (Japan) in the working group Prof. Zempachi Ogumi and the Toyota Corp. with the aim of developing electrolyte and electrode materials for lithium-ion polymer batteries for hybrid and electric vehicles. Since 2000, he has been working with Fraunhofer Gesellschaft.

A total of 33 speakers, including 22 external and following PhD students of the TFT group at KIT:



Jonas Mohacsi M. Sc. (KIT-TFT) graduated in Mechanical Engineering at KIT in 2019, majoring in Thermodynamics and Energy Technology. After he had completed his bachelor's degree at the University of Stuttgart in Automotive Engineering in 2016, he was able to gain practical experience during an internship at the Porsche AG. In his master's thesis, he dealt with the research of hydrogen investigating aspects of hydrogen safety. Since 2020 he is working as a research assistant in the KIT/TFT group. Predominately, he investigates the drying behavior of lithium-ion battery electrodes with a focus on the development of new drying systems.



Kevin Ly M. Sc. (KIT-TFT) completed his master's degree in Chemical Process Engineering at the Karlsruhe Institute of Technology (KIT) in 2019, majoring in Thermal Process Engineering and Chemical Process Engineering. In his master's thesis, he investigated the thermal behavior of lithium-ion batteries and developed a method for the validation of a thermal simulation model. Since 2020, he is working as a research assistant in the KIT/TFT group. His research focuses on the investigation of the drying behavior of lithium-ion battery electrodes.



Nadine Zimmerer M. Sc. (KIT-TFT) completed her master's degree in Process Engineering in 2020 at KIT, specializing in Food Process Engineering and Mechanical Process Engineering. During her studies, she got an insight into food drying technologies in her bachelor thesis and then found her way to drying battery anodes for sodium ion batteries in her master thesis. Since 2021, she is working as a research assistant in the KIT/TFT research group. Her research focuses on the processing of functional layers for fuel cells and electrolyzers.



Alexander Hoffmann M. Sc. (KIT-TFT) received his master's degree in chemical engineering at the Karlsruhe Institut of Technology (KIT) in 2021 with a focus on heat and mass transport as well as homogeneous and heterogeneous catalysis. Since the completion of his master thesis on the topic of the development of a CFD-model for slot-die coating of lithium-ion battery electrodes, he is working in the coating team in the TFT-group at KIT. Currently, he is researching in the field of single- and multilayer slot-die coating in terms of process stability, coating quality and die-geometry optimizations.



Lukas Lödige M. Sc. (KIT-TFT) graduated in process engineering at KIT in 2021, majoring in Thermal Process Engineering and Chemical Process Engineering. Topic of his master's thesis was the investigation of heat and mass transfer in liquid metal heat exchangers. Since 2021, he has been working as a research assistant in the KIT/TFT group. His research focuses on the drying behavior of multicomponent mixtures in complex structures, with the application in advanced recycling processes for lithium-ion batteries.



David Burger M. Sc. (KIT-TFT) completed his master's in Process Engineering at KIT in 2022, specializing in Thermal Process Engineering and Fuel Technology. His Bachelor thesis focused on slot die coating for high-speed applications. During an internship at BASF SE, he gained experience in material formulation, coating technologies, and drying strategies. His master's thesis at TFT investigated process parameters affecting drying and property formation in multi-layer cathodes. Since 2022, he has been a research assistant at KIT/TFT, working on microstructure optimization of Sodium (SIB) and Lithium-ion-Battery (LIB) electrodes, focusing on multi-layer designs and rheological additives.



Julian Borho M. Sc. (KIT-TFT) completed his studies of Chemical Process Engineering at KIT in 2023, majoring thermal process engineering and bioprocess engineering. In his master thesis, he investigated the influence of radiation-based energy input on process and material parameters of battery electrodes. Since 2023, he is working as a research assistant in the KIT/TFT group, focussing on the investigation of the drying behavior of lithium-ion battery electrodes by using different types of energy input for lithium-ion batteries.

Additional speakers and workshop instructors



Philipp Barbig (since 2023)



Linus Janning (since 2023)



Johannes Dörr (since 2024)



Alexandra Decker (since 2025)